Water Quality Monitoring Report - 2022

Sacramento Municipal Utility District

Hydro License Implementation • June 2023

Upper American River Project

FERC Project No. 2101

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Acronyms and Abbreviations

Acronym	Definition
ºC	degrees Celsius
% Sat	percent saturation
BLM	U.S. Bureau of Land Management
BPWQO	Basin Plan Water Quality Objective
CDFW	California Department of Fish and Wildlife
cm	centimeter
COLD	cold freshwater habitat
CTR	California Toxics Rule
EPA	U.S. Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
hr	hour
m	meter
MDL	method detection limit
mg/L	milligram per liter
mL	milliliter
MPN	Most Probable Number
MQO	Measurement Quality Objective
RL	reporting limit
ng/L	nanograms per liter
NRWQC	National Recommended Water Quality Criteria
NTU	Nephelometric Turbidity Unit
QA/QC	quality assurance and quality control
REC-1	recreational water contact
RPD	relative percent difference
RWQCB	Regional Water Quality Control Board
SFAR	South Fork American River
SM	standard method
SMUD	Sacramento Municipal Utility District
SPWN	Spawning, reproduction and/or early development
s.u.	standard unit of pH
SWRCB	State Water Resources Control Board
UARP	Upper American River Project
ug/L	micrograms per liter
uS/cm	microsiemens per centimeter
USFS	United States Forest Service
YSI	Yellow Springs Instruments

1.0 INTRODUCTION AND BACKGROUND

This Water Quality Monitoring Report (Report) addresses monitoring requirements set forth in Sacramento Municipal Utility District's (SMUD) Water Quality Monitoring Plan Revision 3 (Plan) (SMUD 2021). The requirements for this Plan are found in State Water Resources Control Board (SWRCB) Condition 8.J, and U.S. Forest Service (USFS) 4(e) Condition 31.10, located in Appendices A and B, respectively, of the Federal Energy Regulatory Commission's (FERC) Order Issuing New License for the Upper American River Project (UARP), dated July 23, 2014. The Plan was developed by SMUD (SMUD 2015) in coordination with the Consultation Group and Resource Agencies stipulated in the license (FERC 2014). The Plan was revised in 2015 (Revision 1), 2016 (Revision 2), and 2021 (Revision 3) to update the referenced analytical methods for various sub-programs within the Plan.

This report describes the results of the eighth year (2022) of water quality monitoring of basic *in situ* parameters and bacteria for the UARP. In addition to these sub-programs, general chemistry sampling, required in the third year of every five-year cycle of the UARP Project monitoring program, was conducted during Year 8 (2022).

SMUD owns and operates the UARP, which is licensed by FERC. The UARP (FERC Project No. 2101) lies within El Dorado and Sacramento counties, primarily within lands of the Eldorado National Forest. The UARP consists of three major storage reservoirs (Loon Lake, Union Valley, and Ice House) with a combined capacity of approximately 379,000 acre-feet, eight smaller regulating or diversion reservoirs, and eight powerhouses. The UARP also includes recreation facilities containing over 700 campsites, five boat ramps, hiking paths, and bicycle trails at the reservoirs.

2.0 MONITORING OBJECTIVE

The objective of the 2022 monitoring program was to perform *in situ* water quality monitoring, chemistry sampling, and bacteria monitoring in reservoirs and stream reaches of the UARP to meet the objectives and rationale of SWRCB Water Quality Certification Condition 8.J.

The rationale for water quality monitoring, as described by the SWRCB Water Quality Certification is as follows:

Water quality monitoring is important for determining compliance with state and federal water quality standards and examining long-term trends in water quality. The frequency of monitoring for any compound can be reduced if shown to be at background or non-detect levels for a statistically significant period of time.

3.0 STUDY AREA

The study area included UARP reservoirs and diverted stream reaches. All UARP reservoirs (Rubicon, Buck Island, Loon Lake, Gerle Creek, Ice House, Union Valley, Junction, Camino, Brush Creek, and Slab Creek) were included in the monitoring program; the relatively small Robbs Peak Forebay (30 acre-feet) was not included. (Note: Rockbound Lake, although hydraulically associated with the UARP, is not a UARP reservoir and is not included within the FERC-defined boundary.) The diverted stream reaches included in the monitoring program represented all streams and rivers downstream of UARP reservoirs.

4.0 SAMPLING FREQUENCY AND LOCATIONS

Year 8 (2022) sampling frequency for *in situ* water quality was consistent with Winter, Spring, Summer, and Fall monitoring periods designated in the Plan, with additional *in situ* sampling in Summer and Fall/Winter, concurrent with general chemistry sampling (Table 4-1). General chemistry sampling was conducted in Spring, Summer, Fall, and the Fall/Winter period, immediately following the second or third measurable precipitation event of the season (Table 4-1). A "measurable precipitation event" is defined as an event resulting in 0.50 inch of precipitation over a 24-hour period, as designated in the Plan. Precipitation events on November 1, 2022 (1.00 inch) and November 7, 2022 (1.04 inches) were reported at the U.S. Bureau of Reclamation's American River Basin, Pacific House (PFH), gage location (elevation 3,440 feet), establishing the first two measurable rain events for purposes of the Fall/Winter 2022 survey (DWR 2022). Required bacteria monitoring was conducted by sampling sites at the middle elevation UARP reservoirs (Gerle Creek, Ice House, Union Valley, Junction, Brush Creek, Slab Creek) during the 30-day period surrounding Independence Day and sampling sites at the upper elevation UARP reservoirs (Buck Island, Loon Lake) during the 30-day period surrounding Labor Day (5 September 2022).[1]

Table 4-1. Sampling Frequency for *In situ* Parameters, Chemistry, and Bacteria.

Type	2022 (Year 8) Frequency
In situ reservoir	Once in spring – April/May Once in fall – October/November
In situ riverine	Once in winter – January/February Once in spring – April/May Once in summer – August Once in fall – November
General chemistry	Once in spring Once in summer Once in fall Once in fall/winter immediately following the second or third measurable rain event[1]
Bacteria	Five samples within 30 days – around Independence Day Five samples within 35 days – around Labor Day[2]

[1] A "measurable" rain event is defined as an event resulting in a 0.50 inch of precipitation over a 24-hour period (SMUD 2021).
[2] The scheduled sampling was extended due to unhealthy air quality and closures of recreational sites resulting from the Mosquito Fire, and thus the five bacteria surveys occurred within 35 days around Labor Day.

Specific sampling locations within reservoirs and diverted stream reaches varied depending on the water quality parameter or constituent of interest. As specified in the Plan, *in situ* monitoring occurred at 15 representative reservoir locations (Figures 4-1 and 4-2, Table 4-2) and 19 representative stream reaches (Figures 4-1 and 4-2, Table 4-4).

[1] The scheduled sampling within 30 days of Labor Day at Buck Island Reservoir and Loon Lake Reservoir was extended due to unhealthy air quality and closures of recreational sites resulting from the Mosquito Fire, and thus the five bacteria surveys occurred within 35 days around Labor Day.

General water chemistry monitoring occurred at 18 representative reservoir locations (Figures 4-3 and 4-4, Table 4-2) and 19 representative stream reaches (Figures 4-3 and 4-4, Table 4-4). Bacteria sampling occurred at 15 locations (Figures 4-1 and 4-2, Table 4-6). Several reservoir and riverine sites could not be sampled to protocol frequency during 2022 due to snow accumulation and weather conditions (Tables 4-3 and 4-5).

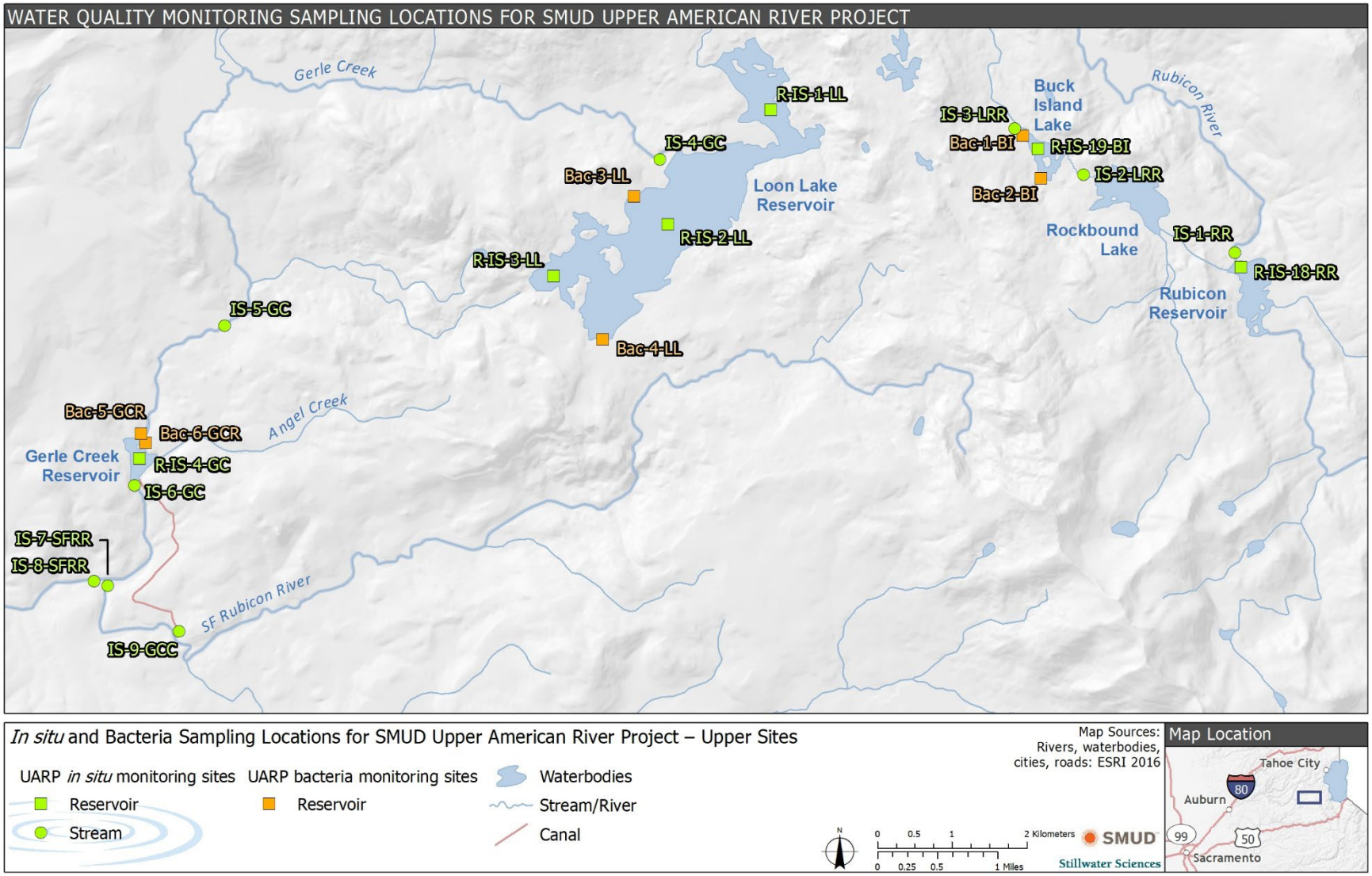


Figure 4-1. *In situ* water quality and bacteria sampling locations for SMUD Upper American River Project – upper sites.

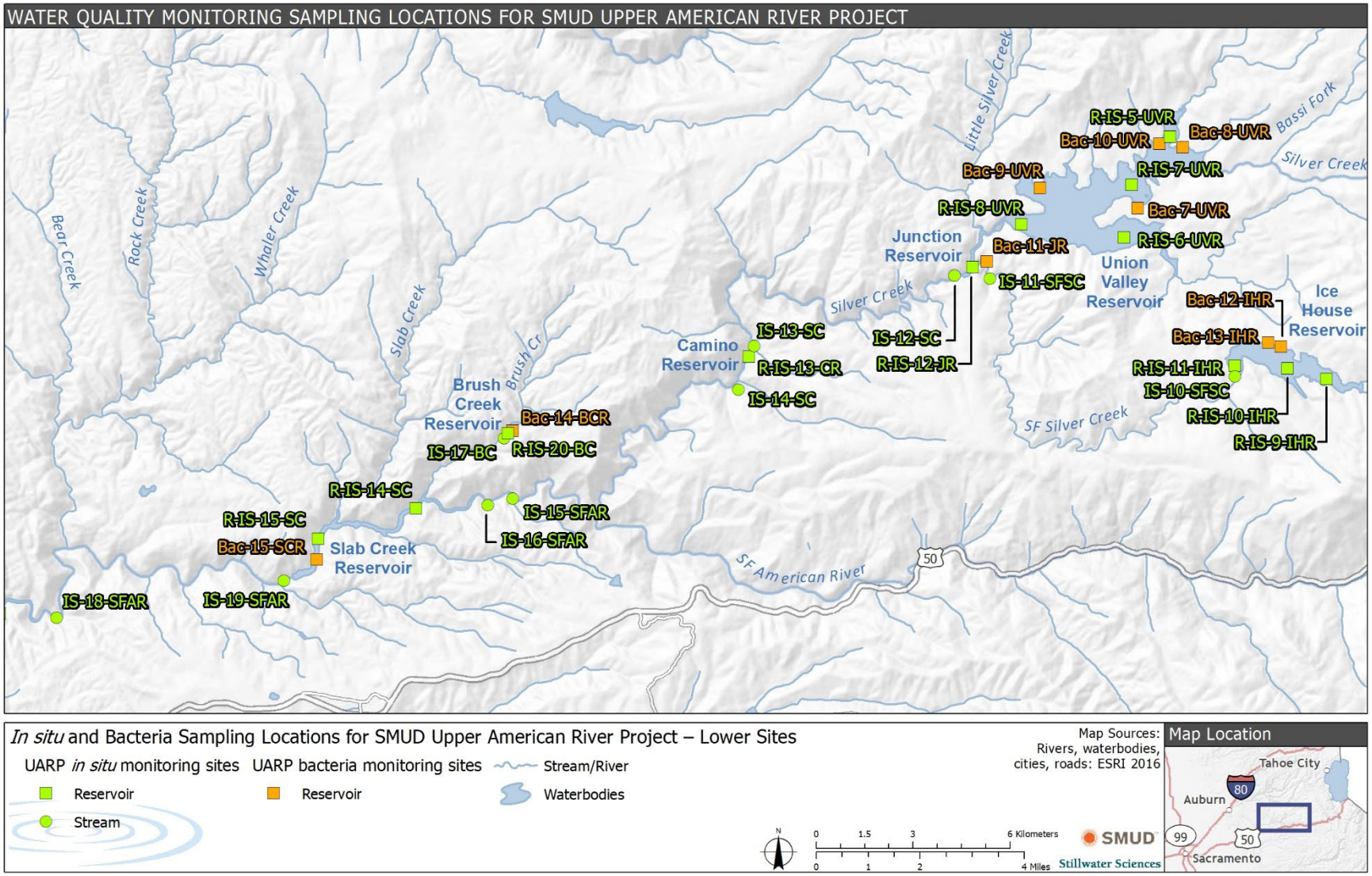


Figure 4-2. *In situ* water quality and bacteria sampling locations for SMUD Upper American River Project – lower sites.

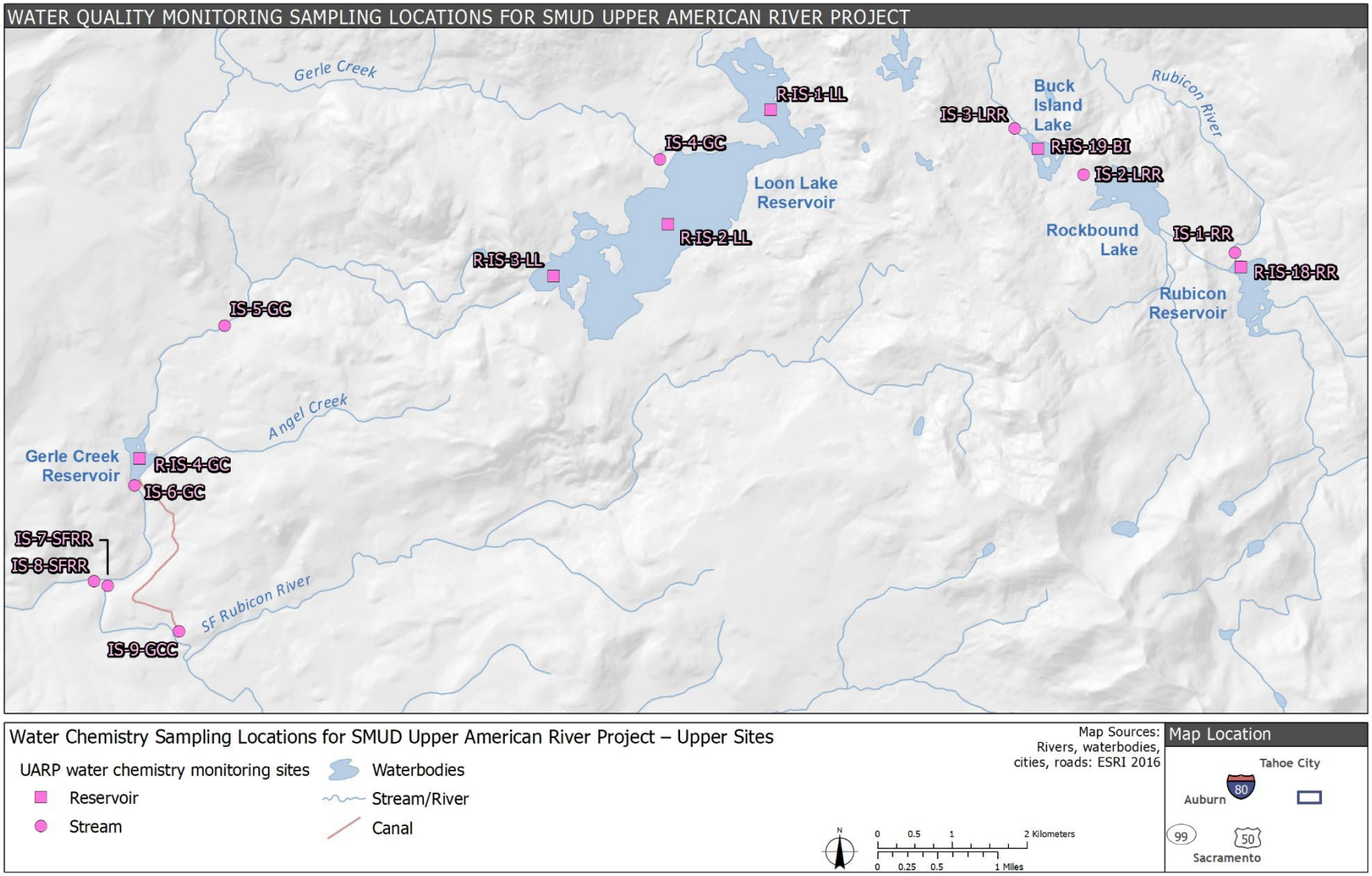


Figure 4-3. General water chemistry sampling locations for SMUD Upper American River Project – upper sites.

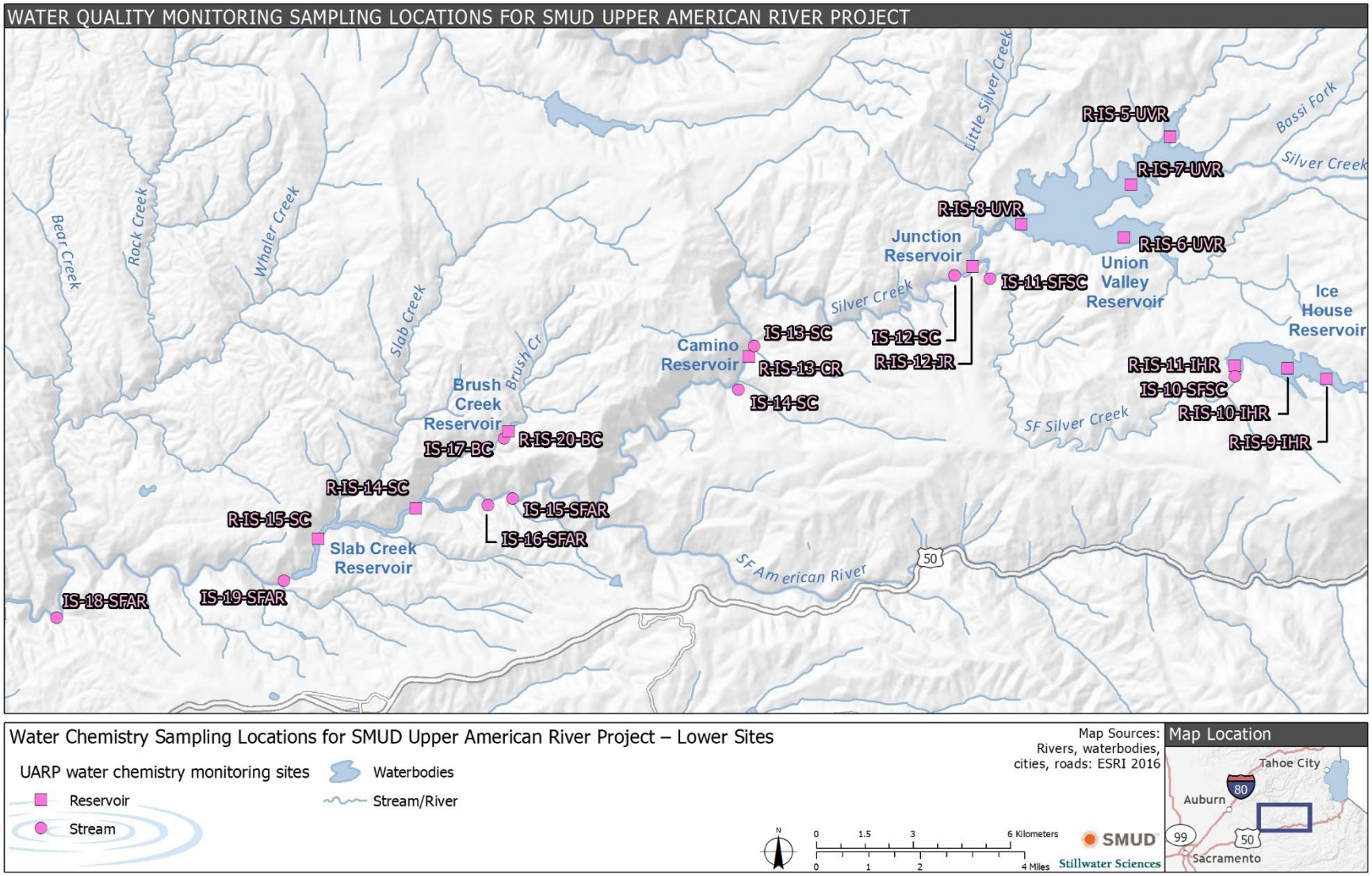


Figure 4-4. General water chemistry locations for SMUD Upper American River Project – lower sites.

Table 4-2. *In situ* Water Quality and General Chemistry Sampling Locations and Dates for SMUD Upper American River Project Reservoir Sites.

SMUD Site Name	Site ID	Location	2022 *In situ* Survey Sample Date	2022 General Chemistry Survey Sample Date
R-1	R-IS-18-RR	Rubicon Reservoir, mid-reservoir	N/A	5/25, 8/23
R-3	R-IS-19-BI	Buck Island Reservoir, mid-reservoir	N/A	5/26, 8/24, 11/17
R-4C	R-IS-1-LL	Loon Lake Reservoir, upper reservoir (northeast body)	5/17, 10/24	5/17, 8/15, 10/24
R-4B	R-IS-2-LL	Loon Lake Reservoir, mid-reservoir (west body)	5/17, 10/24	5/17, 8/15, 10/24
R-4A	R-IS-3-LL	Loon Lake Reservoir, near dam	5/17, 10/24	5/17, 8/15, 10/24
R-5	R-IS-4-GC	Gerle Creek Reservoir, mid-reservoir	5/19, 10/19	5/19, 8/1, 10/19
R-7C	R-IS-9-IHR	Ice House Reservoir, upper reservoir body	5/16, 10/26	5/16, 8/22, 10/26, 11/15
R-7B	R-IS-10-IHR	Ice House Reservoir, mid-reservoir	5/16, 10/26	5/16, 8/22, 10/26, 11/15
R-7A	R-IS-11-IHR	Ice House Reservoir, near dam	5/16, 10/26	5/16, 8/22, 10/26, 11/15
R-6C	R-IS-5-UVR	Union Valley Reservoir, Robbs PH tailrace zone	5/18, 10/25	5/18, 8/18, 10/25, 11/14
R-6D	R-IS-6-UVR	Union Valley Reservoir, Jones Fork Silver Creek arm	5/18, 10/25	5/18, 8/18, 10/25, 11/14
R-6B	R-IS-7-UVR	Union Valley Reservoir, mid-reservoir	5/18, 10/25	5/18, 8/18, 10/25, 11/14
R-6A	R-IS-8-UVR	Union Valley Reservoir, near dam	5/18, 10/25	5/18, 8/18, 10/25, 11/14
R-8	R-IS-12-JR	Junction Reservoir, mid-reservoir between arms	5/23, 10/17	5/23, 8/2, 10/17
R-9	R-IS-13-CR	Camino Reservoir, mid-reservoir	5/23, 10/17	5/23, 8/2, 10/17, 11/16
R-10	R-IS-20-BC	Brush Creek Reservoir, mid-reservoir	N/A	5/19, 8/4, 10/19, 11/10
R-11B	R-IS-14-SC	Slab Creek Reservoir, upper reservoir	5/24, 10/18	5/24, 8/3, 10/18, 11/22
R-11A	R-IS-15-SC	Slab Creek Reservoir, mid-reservoir	5/24, 10/18	5/24, 8/3, 10/18, 11/22

N/A = not applicable

Table 4-3. *In situ* Water Quality and General Chemistry Sampling Locations Not Sampled for SMUD Upper American River Project Reservoir Sites.

SMUD Site Name	Site ID	Location	Reason Not Sampled during 2022 *In situ* Survey	Reason Not Sampled during 2022 General Chemistry Survey
November (Fall)				
R-1	R-IS-18-RR	Rubicon Reservoir, mid-reservoir	N/A	Snow accumulation, weather conditions (helicopter flight)
R-3	R-IS-19-BI	Buck Island Reservoir, mid-reservoir	N/A	Snow accumulation, weather conditions (helicopter flight)
Late November (Fall/Winter)				
R-1	R-IS-18-RR	Rubicon Reservoir, mid-reservoir	N/A	Snow accumulation, weather conditions (helicopter flight)
R-4C	R-IS-1-LL	Loon Lake Reservoir, upper reservoir (northeast body)	N/A	Snow accumulation
R-4B	R-IS-2-LL	Loon Lake Reservoir, mid-reservoir (west body)	N/A	Snow accumulation
R-4A	R-IS-3-LL	Loon Lake Reservoir, near dam	N/A	Snow accumulation
R-5	R-IS-4-GC	Gerle Creek Reservoir, mid-reservoir	N/A	Snow accumulation
R-8	R-IS-12-JR	Junction Reservoir, mid-reservoir between arms	N/A	Snow accumulation

N/A = not applicable

Table 4-4. *In situ* Water Quality and General Chemistry Sampling Locations and Dates for SMUD Upper American River Project Riverine Sites.

SMUD Site Name	Site ID	Location	2022 *In situ* Survey Sample Date	2022 General Chemistry Survey Sample Date
2	IS-1-RR	Rubicon River outflow from Rubicon Reservoir	5/25, 8/23	5/25, 8/23
5	IS-2-LRR	Little Rubicon River outflow from Rockbound Lake	5/26, 8/24	5/26, 8/24
6	IS-3-LRR	Little Rubicon outflow from Buck Island Lake	5/26, 8/24	5/26, 8/24, 11/17
7	IS-4-GC	Gerle Creek outflow from Loon Lake	5/3, 8/23	5/3, 8/23
14	IS-5-GC	Gerle Creek inflow to Gerle Creek Reservoir	5/3, 8/1	5/3, 8/1
15	IS-6-GC	Gerle Creek outflow from Gerle Creek Reservoir	5/3, 8/1	5/3, 8/1
18	IS-7-SFRR	South Fork Rubicon upstream of Gerle Creek confluence	5/3, 8/1	5/3, 8/1
19	IS-8-SFRR	South Fork Rubicon downstream of Gerle Creek confluence	5/3, 8/1	5/3, 8/1
16	IS-9-GCC	Gerle Creek Canal inflow to Robbs Forebay	5/3, 8/1	5/3, 8/1
25	IS-10-SFSC	South Fork Silver Creek outflow from Ice House	2/15, 5/16, 8/23, 11/2	2/15, 5/16, 8/23, 11/2, 11/15
27	IS-11-SFSC	South Fork Silver Creek inflow to Junction Reservoir	2/15, 4/28, 8/2, 11/2	2/15, 4/28, 8/2, 11/2, 11/21
29	IS-12-SC	Silver Creek outflow from Junction Reservoir	2/15, 4/28, 8/2, 11/2	2/15, 4/28, 8/2, 11/2, 11/21
32	IS-13-SC	Silver Creek inflow to Camino Reservoir	2/15, 4/28, 8/2, 11/2	2/15, 4/28, 8/2, 11/2, 11/16
34	IS-14-SC	Silver Creek outflow from Camino Reservoir	2/15, 4/28, 8/2, 11/2	2/15, 4/28, 8/2, 11/2, 11/16
38	IS-15-SFAR	South Fork American River upstream of Camino Powerhouse	2/15, 4/27, 8/4, 11/3	2/15, 4/27, 8/4, 11/3, 11/8
41	IS-16-SFAR	South Fork American River downstream of Camino Powerhouse	2/15, 4/27, 8/4, 11/3	2/15, 4/27, 8/4, 11/3, 11/8
40	IS-17-BC	Brush Creek outflow from Brush Creek Reservoir	2/15, 4/27, 8/4, 11/3	2/15, 4/27, 8/4, 11/3, 11/10
60	IS-18-SFAR	South Fork American River upstream of White Rock Powerhouse	2/16, 4/26, 8/4, 11/7	2/16, 4/26, 8/4, 11/7, 11/9
43	IS-19-SFAR	South Fork American River downstream of Slab Creek Reservoir	2/16, 4/27, 8/3, 11/3	2/16, 4/27, 8/3, 11/3, 11/8

Table 4-5. *In situ* Water Quality and Chemistry Sampling Locations Not Sampled for SMUD Upper American River Project Riverine Sites.

SMUD Site Name	Site ID	Location	Reason Not Sampled during 2022 *In situ* Survey	Reason Not Sampled during 2022 General Chemistry Survey
Winter (February)				
2	IS-1-RR	Rubicon River outflow from Rubicon Reservoir	Snow accumulation	N/A
5	IS-2-LRR	Little Rubicon River outflow from Rockbound Lake	Snow accumulation	N/A
6	IS-3-LRR	Little Rubicon outflow from Buck Island Lake	Snow accumulation	N/A
7	IS-4-GC	Gerle Creek outflow from Loon Lake	Snow accumulation	N/A
14	IS-5-GC	Gerle Creek inflow to Gerle Creek Reservoir	Snow accumulation	N/A
15	IS-6-GC	Gerle Creek outflow from Gerle Creek Reservoir	Snow accumulation	N/A
18	IS-7-SFRR	South Fork Rubicon upstream of Gerle Creek confluence	Snow accumulation	N/A
19	IS-8-SFRR	South Fork Rubicon downstream of Gerle Creek confluence	Snow accumulation	N/A
16	IS-9-GCC	Gerle Creek Canal inflow to Robbs Forebay	Snow accumulation	N/A
Fall (November)				
2	IS-1-RR	Rubicon River outflow from Rubicon Reservoir	Snow accumulation, weather conditions (helicopter flight)	Snow accumulation, weather conditions (helicopter flight)
5	IS-2-LRR	Little Rubicon River outflow from Rockbound Lake	Snow accumulation, weather conditions (helicopter flight)	Snow accumulation, weather conditions (helicopter flight)
6	IS-3-LRR	Little Rubicon outflow from Buck Island Lake	Snow accumulation, weather conditions (helicopter flight)	Snow accumulation, weather conditions (helicopter flight)
7	IS-4-GC	Gerle Creek outflow from Loon Lake	Snow accumulation, weather conditions	Snow accumulation, weather conditions
14	IS-5-GC	Gerle Creek inflow to Gerle Creek Reservoir	Snow accumulation, weather conditions	Snow accumulation, weather conditions

SMUD Site Name	Site ID	Location	Reason Not Sampled during 2022 *In situ* Survey	Reason Not Sampled during 2022 General Chemistry Survey
15	IS-6-GC	Gerle Creek outflow from Gerle Creek Reservoir	Snow accumulation, weather conditions	Snow accumulation, weather conditions
18	IS-7-SFRR	South Fork Rubicon upstream of Gerle Creek confluence	Snow accumulation, weather conditions	Snow accumulation, weather conditions
19	IS-8-SFRR	South Fork Rubicon downstream of Gerle Creek confluence	Snow accumulation, weather conditions	Snow accumulation, weather conditions
16	IS-9-GCC	Gerle Creek Canal inflow to Robbs Forebay	Snow accumulation, weather conditions	Snow accumulation, weather conditions
Fall/Winter (Late November)				
2	IS-1-RR	Rubicon River outflow from Rubicon Reservoir	N/A	Snow accumulation, weather conditions (helicopter flight)
5	IS-2-LRR	Little Rubicon River outflow from Rockbound Lake	N/A	Snow accumulation, weather conditions (helicopter flight)
7	IS-4-GC	Gerle Creek outflow from Loon Lake	N/A	Snow accumulation, weather conditions
14	IS-5-GC	Gerle Creek inflow to Gerle Creek Reservoir	N/A	Snow accumulation, weather conditions
15	IS-6-GC	Gerle Creek outflow from Gerle Creek Reservoir	N/A	Snow accumulation, weather conditions
18	IS-7-SFRR	South Fork Rubicon upstream of Gerle Creek confluence	N/A	Snow accumulation, weather conditions
19	IS-8-SFRR	South Fork Rubicon downstream of Gerle Creek confluence	N/A	Snow accumulation, weather conditions
16	IS-9-GCC	Gerle Creek Canal inflow to Robbs Forebay	N/A	Snow accumulation, weather conditions

N/A = not applicable

Table 4-6. Bacteria Sampling Locations and Dates for SMUD Upper American River Project Sites.

Reservoir	SMUD Site Name	Site ID	Location	2022 Sample Dates
Buck Island Reservoir (beach locations)	R-3B	Bac-1-BI	On Northshore, near dam and Off-Highway Vehicle camping	8/24, 9/7, 9/23, 9/27, 9/28
	77	Bac-2-BI	On south shore, near Rubicon hiking trail	8/24, 9/7, 9/23, 9/27, 9/28
Loon Lake Reservoir (beach locations)	64	Bac-3-LL	West of main dam, near Red Fir Campground	8/24, 9/7, 9/23, 9/27, 9/28
	65	Bac-4-LL	West of Loon Lake Campground, near boat launch	8/24, 9/7, 9/23, 9/27, 9/28
Gerle Creek Reservoir (beach locations)	66	Bac-5-GCR	Near Gerle Creek Campground	6/22, 6/29, 7/6, 7/13, 7/20
	67	Bac-6-GCR	Near Angel Creek picnic area	6/22, 6/29, 7/6, 7/13, 7/20
Union Valley Reservoir (swim areas)	R-6H	Bac-7-UVR	At Fashoda Beach	6/22, 6/29, 7/6, 7/13, 7/20
	R-6E	Bac-8-UVR	Near Wench Creek Campground	6/22, 6/29, 7/6, 7/13, 7/20
	FC-2	Bac-9-UVR	Near Camino Cove Campground	6/22, 6/29, 7/6, 7/13, 7/20
	R-6F	Bac-10-UVR	Near Yellowjacket Campground	6/22, 6/29, 7/6, 7/13, 7/20
Other UARP Locations	R-8B	Bac-11-JR	Junction Reservoir, near boat launch	6/22, 6/29, 7/6, 7/13, 7/20
Ice House Reservoir (beach locations)	68	Bac-12-IHR	Northshore near private campground access	6/21, 6/28, 7/5, 7/12, 7/19
	69	Bac-13-IHR	Beach east of Northwind Campground[1]	6/28, 7/5, 7/6, 7/12, 7/19
Other UARP locations	R-10B	Bac-14-BCR	Brush Creek Reservoir, near boat launch	6/21, 6/28, 7/5, 7/12, 7/19
	R-11C	Bac-15-SCR	Slab Creek Reservoir, near boat launch	6/21, 6/28, 7/5, 7/12, 7/19

[1] Original location east of boat launch and picnic area was inaccessible during 2022 Independence Day sampling event due to heavy construction.

5.0 METHODS

5.1 *IN SITU* PARAMETERS

Reservoir *in situ* water quality monitoring was conducted by watercraft to access mid-reservoir areas (Figure 5-1). A multi-probe Sonde (Yellow Springs Instruments [YSI] EXO2) was deployed from the boat for measurement of *in situ* parameters, including water temperature, conductivity, dissolved oxygen, pH, and turbidity (Table 5-1).

Figure 5-1. Example of mid-reservoir *in situ* water quality sampling site (R-IS-19-BI) at Buck Island Reservoir.

Table 5-1. *In situ* Water Quality Methods.

Parameter[1]	Method	Units	MDL
Water temperature	EPA 170.1	degrees Celsius (ºC)	0.1
Conductivity	SM 2510-B	microsiemens per centimeter (uS/cm)	1.0
Dissolved oxygen	SM 4500-O(G)	milligrams per liter (mg/L)	0.1
pH	SM 4500-H	standard unit of pH (s.u.)	0.1
Turbidity	SM 2130B	Nephelometric Turbidity Unit (NTU)	0.1
Secchi depth (Secchi disk)	USGS	meter (m)	0.1

EPA = U.S. Environmental Protection Agency
MDL = method detection limit
SM = Standard Method

At each reservoir site, a vertical water column profile was collected for all *in situ* water quality parameters at one-meter depth intervals. For bottom water samples, the Sonde was drawn back 0.5 meter (m) from the sediment layer before taking a reading. Prior to taking each reading, the Sonde was allowed to stabilize (typically requiring no more than 90 seconds). Water transparency was measured at reservoir stations with a standard 7.9-inch-diameter Secchi disk.

At riverine sites, Sonde readings were obtained where sufficient stream turbulence provided good lateral and vertical mixing of the water, and as near as possible to the stream thalweg (Figure 5-2). Prior to taking each reading, the Sonde was allowed to stabilize (typically requiring no more than 90 seconds) such that there was little variability in parameter readings at each location.

Figure 5-2. Example of an *in situ* water quality sampling site (IS-8-SFRR) at the South Fork Rubicon River downstream of the Gerle Creek confluence.

For both reservoir and riverine *in situ* monitoring, Sonde calibration was conducted on-site prior to the start of each sampling day, and a post-sampling calibration check was conducted following each sampling day, using standard solutions and recorded on calibration logs (Appendix F). Comparisons between post-sampling and post-calibration values were made and Measurement Quality Objective (MQO) codes (Accept, Qualify, Reject) were assigned to each parameter. MQO criteria for each *in situ* parameter are provided in Table 5-2.

Table 5-2. Measurement Quality Objectives Criteria for *In situ* Parameters.

Measurement Quality Objectives				
Parameter	**Units**	**Accept**	**Qualify**	**Reject**
Dissolved Oxygen	% Saturation	≤ 5%	> 5% and ≤ 10%	> 10%
Conductivity	uS/cm	≤ 5%	> 5% and ≤ 15%	> 15%
pH	s.u.	≤ 0.2	> 0.2 and ≤ 0.5	> 0.5
Turbidity	NTU	≤ 5%[1]	> 5% and ≤ 10%	> 10%

NTU = Nephelometric Turbidity Unit
s.u. = standard unit of pH
uS/cm = microsiemens per centimeter

[1] Due to the inherent variation in deionized water turbidity, ±1 NTU on the deionized water post-sampling calibration check is considered acceptable. See also Appendix G.

Other data gathered at each monitoring station included date, time, site name, sampling location, collector's name, weather conditions, and any other pertinent observations related to the monitoring station. Following each field event, data were added to a database template provided by SMUD for eventual transfer into SMUD's master database. All *in situ* water quality sampling was conducted in compliance with the Plan.

5.2 GENERAL CHEMISTRY

In situ water quality parameters (water temperature, conductivity, dissolved oxygen, pH, and turbidity) were collected as part of general chemistry sampling, consistent with the Plan. Methods for measurement of *in situ* parameters are described in Section 5.1.

General chemistry samples at stream reach sites were collected as grab samples into certified, pre-cleaned bottles supplied by the analytical laboratory. Sample bottles were filled by direct immersion in stream locations where sufficient turbulence provided good lateral and vertical mixing and, where possible, near the approximate thalweg of the stream. Water samples were immediately placed on ice for transport to the analytical laboratory within the required field hold time.

Water column sampling procedures in reservoirs (Figure 5-3) varied depending on thermal stratification, which was determined using the *in situ* methods described above prior to collecting water samples. During periods of reservoir stratification, samples were collected within the upper epilimnion layer as well as in the hypolimnion layer less than or equal to two meters above the reservoir bottom. In instances when the reservoir was isothermal, samples were collected at a point below the water surface equivalent to approximately one-third of the water depth (SMUD 2021). General chemistry samples were collected using a Van Dorn sampling apparatus lowered by a marked line to the appropriate depth. Between sampling events, the Van Dorn was rinsed with laboratory grade U.S. Environmental Protection Agency (EPA) 1638 Trace Metals Clean de-ionized water and then rinsed with water from the water body to be collected from. Water was transferred from the Van Dorn directly to certified, pre-cleaned bottles supplied by the

analytical laboratory, which were placed on ice immediately for transport to the analytical laboratory within the required field hold time.

Consistent with the Plan, clean sampling techniques were applied throughout the sampling event. Disposable gloves were used by all field crew members for collection of all analytes. For low level trace metals (total mercury, methylmercury, and total and dissolved arsenic, cadmium, copper, lead, nickel, selenium, and zinc), samples were collected and/or transferred to sample bottles using “clean hands/dirty hands” procedures, preventing potential cross contamination between samples. For each sampling event, one field sampling member was designated as “clean hands” and another as “dirty hands.” All contact with sample bottles and transfers of samples from the sample collection device to the sample bottles was handled by the individual designated as “clean hands.” Preparation of the sampling device and all other activities not involving direct contact with the sample was the responsibility of the individual designated as “dirty hands.”

Sample bottles were prepared by California state-certified laboratories (California Laboratory Services, Rancho Cordova, California, and Pace Analytical, Redding, California). The laboratory prepared all sample bottles and, where necessary, placed the appropriate amount and type of preservative within the sample bottles. Quality assurance and quality control (QA/QC) in the field was assured by accurate and thoroughly completed sample labels, field sheets, chain of custody, and sample log forms. Sample labels included sample identification code, date, time, sampling location, collector’s name, sample type, and preservative, if applicable.

General chemistry samples were analyzed for 44 separate chemical constituents, or analytes, consistent with the Plan. Analytes were divided into four categories: miscellaneous, nutrients, trace elements, and standard minerals (Table 5-3). Metals were analyzed for total and dissolved fractions. Chemistry results were compared to the Sacramento and San Joaquin River Basin Plan numerical water quality objectives (CRWQCB 2019, SMUD 2021), the California Toxics Rule (CTR) standards (EPA 2000), and EPA National Recommended Water Quality Criteria (NRWQC) (EPA 1986), where applicable. Acute and chronic NRWQC for the dissolved metals cadmium, lead, nickel, silver, and zinc were based on hardness-dependent equations provided in Table 5-3 (EPA 2022).

General chemistry results were further assessed for potential trends with season, sampling depth, and longitudinal movement of flow through the system. Inclusion of analytes in the trend analysis was predicated on the majority of results for the analyte of interest being above the analyte-specific reporting limit (RL). Seasonal analysis was performed by comparison of results across the four sampling periods (Spring, Summer, Fall, and Fall/Winter). Depth analysis at reservoir sites was performed on a sample site basis, and longitudinal flow analysis was assessed throughout two longitudinal flow transects. Transects originated at either Ice House or Union Valley reservoir, with both

terminating at Site IS-18-SFAR, the most downstream UARP riverine sampling site on the South Fork American River.

Table 5-3. General Chemistry Constituents, Laboratory Methods, Method Detection/Reporting Limits, and Water Quality Standards.

Analyte	Laboratory	Method	Units	Method Detection Limit[1] (MDL)	Reporting Limit[1] (RL)	California Toxics Rule (CTR)	Basin Plan Water Quality Objectives (BPWQOs)[2]	National Recommended Water Quality Criteria (NRWQC)	Hold Time
Miscellaneous									
Total Suspended Solids (TSS)	CLS	SM2540D	mg/L	2.0	5.0	NA	NA	NA	7 days
Total Dissolved Solids (TDS)	CLS	SM2540C	mg/L	5.0	10	NA	500 [v]	NA	7 days
Total Organic Carbon (TOC)	CLS	SM5310B	mg/L	0.54	1.0	NA	NA	NA	28 days
Cyanide	CLS	SM4500-CN E	mg/L	0.0012	0.0050	0.022/0.0052 [ii, iii, vi]	NA	0.022/0.0052 [ii, iii, vi]	14 days
Oil & Grease	CLS	EPA 1664A	mg/L	1.0	5.0	NA	NA	NA	28 days
Total Petroleum Hydrocarbons (TPH)	CLS	EPA 8015M	ug/L	2.1–30	50	NA	NA	NA	7 days
MTBE	CLS	EPA 8260B	ug/L	0.095	0.5	151/51 [i, vi]	5	NA	14 days
Hardness (as $CaCO_3$)	CLS	EPA 200.7	mg/L	0.19	1	NA	NA	NA	180 days
Total Alkalinity (as $CaCO_3$)	CLS	SM2320B	mg/L	1.0	5	NA	NA	>20 [i]	14 days
Nutrients									
Nitrate/Nitrite (as N)	CLS	EPA 300.0	mg/L	0.055 as N	0.40 as N	NA	1	10 [i, vii]	28 days
Total Kjeldahl Nitrogen (TKN)	CLS	SM4500-NH3F-2011	mg/L	0.040	0.2	NA	NA	NA	28 days
Ammonia (as N)	CLS	SM4500-NH3F-2011	mg/L	0.025	0.1	NA	1.5	[iv]	28 days
Total Phosphorous (as P)	CLS	SM4500-P E	mg/L	0.023	0.050	NA	NA	NA	28 days
Orthophosphate (as PO_4^{3-})	CLS	SM4500-P E	mg/L	0.0051	0.15	NA	NA	NA	48 hours
Trace Elements[3]									
Aluminum (Total)	CLS	EPA 200.8	ug/L	1.6	20	NA	NA	750/87 [i, vi]	28 days
Aluminum (Dissolved)	CLS	EPA 200.8	ug/L	0.52	20	NA	NA	NA	28 days
Arsenic (Total)	Pace	EPA 1638	ug/L	0.12	0.50	340/150 [i, iii, vi]	10	340/150 [i, iii, vi]	28 days
Arsenic (Dissolved)	Pace	EPA 1638	ug/L	0.12	0.50	NA	NA	NA	28 days
Barium (Total)	CLS	EPA 200.8	ug/L	0.14	5.0	NA	NA	1000 [i, vii]	28 days
Cadmium (Total)	Pace	EPA 1638	ug/L	0.02	0.10	0.29/0.22 [iii, vi, viii]	5	0.14/0.037 [i, viii, ix]	28 days
Cadmium (Dissolved)	Pace	EPA 1638	ug/L	0.02	0.10	NA	NA	[xi]	28 days
Copper (Total)	Pace	EPA 1638	ug/L	0.04	0.10	1.0/0.9 [iii, vi, viii]	1	[i, x]	28 days
Copper (Dissolved)	Pace	EPA 1638	ug/L	0.04	0.10	NA	NA	[xi]	28 days
Iron (Total)	CLS	EPA 200.7	ug/L	9.1	100	NA	300	1000 [i]	28 days
Iron (Dissolved)	CLS	EPA 200.7	ug/L	6.8	100	NA	NA	NA	28 days

Analyte	Laboratory	Method	Units	Method Detection Limit[1] (MDL)	Reporting Limit[1] (RL)	California Toxics Rule (CTR)	Basin Plan Water Quality Objectives (BPWQOs)[2]	National Recommended Water Quality Criteria (NRWQC)	Hold Time
Lead (Total)	Pace	EPA 1638	ug/L	0.007	0.0500	3/0.12 [iii, vi, viii]	15	3/0.12 [iii, vi, viii]	28 days
Lead (Dissolved)	Pace	EPA 1638	ug/L	0.007	0.0500	NA	NA	[xi]	28 days
Manganese	CLS	EPA 200.8	ug/L	0.050	2.0	NA	50	50 [i, v]	28 days
Mercury (Total)	Pace	EPA 1631E	ng/L	0.22	0.50	50 [vii]	NA	1400/770 [i, vi]	90 days
Methyl mercury (Total)	Pace	EPA 1630	ng/L	0.017	0.050	NA	NA	300 [vii]	6 months
Nickel (Total)	Pace	EPA 1638	ug/L	0.02	0.10	610 [iii, vi]	100	50/5 [i, vi, viii]	28 days
Nickel (Dissolved)	Pace	EPA 1638	ug/L	0.02	0.10	NA	NA	[xi]	28 days
Selenium (Total)	Pace	EPA 200.8	ug/L	0.3	2.0	20/5 [iii, vi]	NA	258/5 [i, vi]	28 days
Selenium (Dissolved)	Pace	EPA 200.8	ug/L	0.3	2.0	NA	NA	NA	28 days
Silver (Total)	CLS	EPA 200.8	ug/L	0.070	0.50	0.03 [iii, viii]	NA	0.03 [i, viii]	28 days
Silver (Dissolved)	CLS	EPA 200.8	ug/L	0.15	0.50	NA	NA	[xi]	28 days
Zinc (Total)	Pace	EPA 1638	ug/L	0.12	0.50	12/12 [iii, vi, viii]	NA	12/12 [i, vi, viii]	28 days
Zinc (Dissolved)	Pace	EPA 1638	ug/L	0.12	0.50	NA	NA	[xi]	28 days
Standard Minerals									
Calcium	CLS	EPA 200.7	ug/L	27	1000	NA	NA	NA	6 months
Chloride	CLS	EPA 300.0	mg/L	0.026	0.50	NA	250	860/230 [i, vi]	28 days
Magnesium	CLS	EPA 200.7	ug/L	21	1000	NA	NA	NA	6 months
Potassium	CLS	EPA 200.7	ug/L	61	1000	NA	NA	NA	6 months
Sodium	CLS	EPA 200.7	ug/L	34	1000	NA	NA	NA	6 months
Sulfate (as SO_4^{2-})	CLS	EPA 300.0	mg/L	0.038	0.50	NA	250	250 [i, v]	6 months

[1] MDLs and RLs based on analytical results from California Laboratory Services (CLS) and Pace Analytical (Pace).
[2] BPWQOs are taken from Table 5 in the UARP Water Quality Monitoring Plan (SMUD 2021).
[3] Metals were measured for both dissolved and total recoverable fractions. The thresholds between the two differ slightly, and most are dependent on water hardness. Final thresholds were calculated as a function of method and water hardness (Table 3-5).
EPA = U.S. Environmental Protection agency; mg/L = milligrams per liter; NA = Not applicable; ng/L = nanograms per liter; SM = Standard Method; ug/L = micrograms per liter.
[i] National Recommended Water Quality Criteria for Freshwater Aquatic Life Protection
[ii] U.S. Environmental Protection Agency, Federal Register, Volume 57, No. 246
[iii] U.S. Environmental Protection Agency, Federal Register, Vol. 65 No. 97
[iv] Aquatic Life Ambient Water Quality for Ammonia – Freshwater 2013
[v] This threshold is based off a “secondary” Maximum Contaminant Level that is primarily concerned with taste and odor
[vi] Values correspond to 1-hour Average/4-day Average
[vii] National Recommended Water Quality Criteria for Human Health & Welfare Protection (Water & Fish Consumption)
[viii] Hardness dependent. Value(s) in this table are approximated based on an average hardness value of 6.5 mg/L, taken during FERC re-licensing. Actual thresholds were calculated based on the water hardness of the sample (Tables C-9 through C-16)
[ix] Values correspond to 24-hour Average/4-day Average
[x] U.S. Environmental Protection Agency, Aquatic Life Ambient Freshwater Quality Criteria – Copper (EPA 2007)
[xi] Dissolved thresholds dependent on water hardness and equations found in EPA 2022

Table 5-4. U.S. Environmental Protection Agency National Recommended Water Quality Criteria Hardness-Dependent Equations for Dissolved Metals (EPA 2022).

Analyte	Acute Threshold	Chronic Threshold
Cadmium	$e^{(0.9789(ln(\text{hardness}))-3.866)}(1.136672-(ln(\text{hardness}))(0.041838))$	$e^{(0.7977(ln(\text{hardness}))-3.909)}(1.101672-(ln(\text{hardness}))(0.041838))$
Lead	$e^{(1.273(ln(\text{hardness}))-1.460)}(1.46203-(ln(\text{hardness}))(0.145712))$	$e^{(1.273(ln(\text{hardness}))-4.705)}(1.46203-(ln(\text{hardness}))(0.145712))$
Nickel	$e^{(0.8460(ln(\text{hardness}))+2.255)}(0.998)$	$e^{(0.8460(ln(\text{hardness}))+0.0584)}(0.997)$
Silver	$e^{(1.72(ln(\text{hardness}))-6.59)}(0.85)$	NA
Zinc	$e^{(0.8473(ln(\text{hardness}))+0.884)}(0.978)$	$e^{(0.8473(\ln(\text{hardness}))+0.884)}(0.986)$

NA = Not applicable

Figure 5-3. Example of mid-reservoir general chemistry sampling site (R-IS-14-SC) at Slab Creek Reservoir.

For analytical water chemistry samples, precision was evaluated using field and laboratory duplicates to calculate quantitative relative percent difference (RPD), as follows:

$$RPD = \frac{(C_1 - C_2)}{(C_1 + C_2)/2} \times 100$$

where:
RPD = relative percent difference
C_1 = sample concentration
C_2 = duplicate concentration

Field duplicate samples were collected at four sites, with each sampling event represented by at least one set of duplicates. Field duplicates were taken on 28 April 2022 (Site IS-11-SFSC), 23 August 2022 (Site IS-4-GC), 17 October 2022 (Site R-IS-12-JR), and 16 November 2022 (Site R-IS-13-CR).

Quantitative RPD for most analytes was low (Appendix C, Table C-17) where sample and/or duplicate concentrations were above the RL. During the Spring sampling event, quantitative RPD for duplicate samples was elevated for cyanide (31%) and dissolved silver (35%). During the Summer sampling event, quantitative RPD was elevated for orthophosphate (30%). During the Fall sampling event, quantitative RPD was elevated for total aluminum (46%). During the Fall/Winter sampling event, quantitative RPD was elevated for orthophosphate (31%).

To determine the potential for analyte contamination, field and equipment blanks were collected using EPA 1638 Trace Metals Clean deionized water (from Pace Analytical). As with duplicate samples, blanks collected during UARP general chemistry sampling events were used to evaluate potential analyte contamination at UARP sites.

Blank results were overwhelmingly less than the RL and typically less than the method detection limit (MDL) for all analytes in each sample, with a few exceptions (Appendix D).

The equipment blank for the Spring sampling event exhibited total copper (0.19 micrograms per liter [ug/L]), total zinc (2.08 ug/L), dissolved zinc (0.66 ug/L), and chloride (5.5 milligrams per liter [mg/L]) at levels greater than the RL for these analytes (0.1 ug/L, 0.5 ug/L, 0.5 ug/L, and 0.5 mg/L, respectively). The field blank for the Summer sampling event exhibited total zinc (0.66 ug/L) at levels slightly greater than the RL (0.5 ug/L). The equipment blank for the Summer sampling event exhibited total Kjeldahl nitrogen (0.36 mg/L) and total zinc (1.06 ug/L) at levels greater than the RL for these analytes (0.2 mg/L and 0.5 ug/L, respectively). The field blank for the Fall sampling event exhibited orthophosphate (0.26 mg/L) at levels greater than the RL (0.15 mg/L). The equipment blank for the Fall sampling event exhibited total zinc (1.06 ug/L) and chloride (0.54 ug/L) at levels slightly greater than the RL for these analytes (0.5 ug/L and 0.5 mg/L, respectively). The field blank for the Fall/Winter sampling event exhibited mercury (1.25 nanograms per liter [ng/L]) at levels greater than the RL (0.5 ng/L).

With four possible exceptions, field blanks did not result in exceedances of water quality criteria (Appendix D, Tables D-1 through D-4). The exceptions included a slightly elevated field blank for total aluminum during the Summer sampling event and slightly elevated field blanks for cyanide during the Fall and Fall/Winter sampling events. The total aluminum and cyanide field blanks were below the RL for all three sampling events, and further analysis indicates that total aluminum and cyanide contamination of UARP reservoir samples was unlikely (Section 6.2.4). Overall, field and equipment blank results for the 2022 general chemistry survey were satisfactory. No equipment blank was collected during the Fall/Winter sampling event.

5.3 BACTERIA

Bacteria grab samples were collected near reservoir and river shorelines in shallow water, particularly at swim areas/beach locations (Table 4-6, Figure 5-4). Samples were

collected in sterilized bottles supplied by the analytical laboratory. Field sampling personnel wearing sterile gloves filled each sample bottle by direct immersion in the reservoir or stream. Immediately after collection, samples were placed on ice for transport to the analytical laboratory within the required field hold time (Table 5-5).

Figure 5-4. Example of a bacteria sampling site at Ice House Reservoir (Site Bac-12-IHR).

Table 5-5. Bacteria Analytical Methods and Field Hold Times.

Analyte	Method	Units	MDL	Hold time
Escherichia coli (*E. coli*)	SM9223B (Quantitray)	MPN/100 mL	1.8	8 hr[1]
Fecal coliforms	SM9221E (MPN 15 or 25)	MPN/100 mL	1.0	8 hr[1]

MDL = method detection limit
mL = milliliter
MPN = most probable number
SM = Standard Method

[1] Samples collected on 7 September at sites Bac-1-BI and Bac-2-BI were processed by the analytical laboratory 2 and 1.5 hours, respectively, beyond the hold time due to an autoclave malfunction. However, previous study results indicate that analysis of most surface water for *E. coli* and fecal coliform up to 18 hours after sample collection generates data comparable to analysis within 8 hours of sample collection (Pope et al. 2003, Aulenbach 2010).

Field-based QA/QC for bacterial samples was assured by accurate and thoroughly completed sample labels and chain of custody forms. Sample labels included sample identification code, date, time, preservative, client name, collector's name, reservoir/river name, sampling location, and analysis/sample type.

6.0 RESULTS

6.1. *IN SITU* PARAMETERS

6.1.1. Riverine Sites

In situ water quality data for UARP riverine sites can be found in Table 6-1. Field data were recorded on a field tablet using ArcGIS Survey123 software; these data records are provided in Appendix E. As noted in Section 5, *in situ* water quality parameters were collected as part of both *in situ* sampling events and general chemistry sampling events in 2022, consistent with the Plan. Several riverine sites were not sampled in 2022 due to lack of accessibility (Table 4-5).

Winter In situ Water Quality Sampling Event

During the Winter sampling event, water temperatures ranged from 2.0 to 5.8 degrees Celsius (°C). Riverine dissolved oxygen ranged from 11.5 to 12.9 mg/L (87 to 100% saturation), with no measurements falling below the Basin Plan instantaneous minimum concentration of 7.0 mg/L for cold freshwater habitat (COLD) and spawning, reproduction, and/or early development (SPWN) designated beneficial uses. pH at riverine sites ranged from 5.6 to 7.3 standard units (s.u.), with three results falling below the Basin Plan instantaneous minimum pH objective (6.5 s.u.) and no exceedances of the instantaneous maximum pH objective (8.5 s.u.). Measured pH below the Basin Plan instantaneous minimum occurred at sites IS-10-SFSC (5.6 s.u.), IS-11-SFSC (6.2 s.u.), and IS-12-SC (6.1 s.u.) (Table 6-1).

Typical of granitic watersheds, conductivity at the riverine sites was low, ranging from 9 to 35 microsiemens per centimeter (uS/cm) (Table 6-1).

Turbidity measurements at riverine sites were low, ranging from 0.1 to 0.9 Nephelometric Turbidity Units (NTU) (Table 6-1).

Spring In situ Water Quality and General Chemistry Sampling Event

During the Spring sampling event, water temperatures ranged from 4.5 to 12.1°C. Riverine dissolved oxygen ranged from 9.1 to 11.8 mg/L (79 to 100% saturation) across all riverine sites, which is well above the minimum Basin Plan concentration of 7.0 mg/L for COLD and SPWN (Table 6-1). pH at riverine sites ranged from 6.7 to 7.9 s.u., with no measurements falling below the Basin Plan instantaneous minimum pH objective (6.5 s.u.) and no exceedances of the instantaneous maximum (8.5 s.u.) (Table 6-1).

Conductivity at the riverine sites was low, ranging from 6 to 40 uS/cm during the Spring sampling event (Table 6-1).

Turbidity measurements at riverine sites were low, ranging from 0.1 to 3.2 NTU (Table 6-1).

Summer In situ Water Quality and General Chemistry Sampling Event

During the Summer sampling event, water temperatures ranged from 7.7 to 23.5°C. Riverine dissolved oxygen during the August sampling event ranged from 6.4 to 9.9 mg/L (71 to 99% saturation). Measured dissolved oxygen concentrations below the Basin Plan instantaneous minimum concentration of 7.0 mg/L for COLD and SPWN occurred at three upper riverine sites: IS-1-RR (6.4 mg/L), IS-2-LRR (6.5 mg/L), and IS-3-LRR (6.6 mg/L). pH at riverine sites ranged from 6.3 to 7.8 s.u. with two measurements falling below the Basin Plan instantaneous minimum pH objective (6.5 s.u.) and no exceedances of the instantaneous maximum (8.5 s.u.). Measured pH below the Basin Plan instantaneous minimum occurred at sites IS-5-GC (6.3 s.u.) and IS-14-SC (6.3 s.u.) (Table 6-1).

Conductivity at the riverine sites was low, ranging from 10 to 53 uS/cm (Table 6-1).

Turbidity measurements at riverine sites were low, ranging from 0.0 to 4.8 NTU (Table 6-1).

Fall In situ Water Quality and General Chemistry Sampling Event

Water temperatures during the Fall sampling event ranged from 1.4 to 11.8 °C. Riverine dissolved oxygen ranged from 10.4 to 12.7 mg/L (85 to 103% saturation), with no measurements falling below Basin Plan instantaneous minimum concentration of 7.0 mg/L for COLD and SPWN. pH at riverine sites ranged from 6.5 to 7.4 s.u., with no measurements falling below the Basin Plan instantaneous minimum pH objective (6.5 s.u.) at all sites and no exceedances of the instantaneous maximum (8.5 s.u.).

Conductivity at the riverine sites was low, ranging from 20 to 46 uS/cm.

Turbidity measurements at riverine sites were low, ranging from 0.7 to 4.5 NTU.

Fall/Winter General Chemistry Sampling Event

Water temperatures during the Fall/Winter sampling event ranged from 0.0 to 10.9°C. Riverine dissolved oxygen ranged from 10.0 to 13.0 mg/L (80 to 99% saturation), with no measurements falling below Basin Plan instantaneous minimum concentration of 7.0 mg/L for COLD and SPWN. pH at riverine sites ranged from 6.4 to 7.4 s.u. with one measurement falling below the Basin Plan instantaneous minimum pH objective (6.5 s.u.) and no exceedances of the instantaneous maximum (8.5 s.u.). Measured pH below the Basin Plan instantaneous minimum occurred at Site IS-15-SFAR (6.4 s.u.) (Table 6-1).

Conductivity at the riverine sites was low, ranging from 10 to 35 uS/cm.

Turbidity measurements at riverine sites were low, ranging from 0.2 to 2.4 NTU.

Table 6-1. *In situ* Water Quality for Upper American River Project Riverine Sites.

Site ID	2022 Sample Date	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)
Winter							
IS-1-RR	–	–	–	–	–	–	–
IS-2-LRR	–	–	–	–	–	–	–
IS-3-LRR	–	–	–	–	–	–	–
IS-4-GC	–	–	–	–	–	–	–
IS-5-GC	–	–	–	–	–	–	–
IS-6-GC	–	–	–	–	–	–	–
IS-9-GCC	–	–	–	–	–	–	–
IS-7-SFRR	–	–	–	–	–	–	–
IS-8-SFRR	–	–	–	–	–	–	–
IS-10-SFSC	2/15	3.9	5.6	11.5	87	9	0.4
IS-11-SFSC	2/15	4.0	6.2	11.8	90	11	0.4
IS-12-SC	2/15	2.0	6.1	12.3	89	11	0.4
IS-13-SC	2/15	5.3	6.8	12.2	96	12	0.3
IS-14-SC	2/15	5.0	7.0	12.3	96	14	0.1
IS-15-SFAR	2/15	5.7	7.3	12.5	100	33	0.9
IS-16-SFAR	2/15	5.8	7.3	12.5	100	33	0.8
IS-17-BC	2/15	5.4	6.8	12.0	95	15	0.8
IS-18-SFAR	2/16	4.5	7.1	12.9	100	35	0.4
IS-19-SFAR	2/16	4.4	7.2	12.5	97	32	0.6
Spring							
IS-1-RR	5/25	7.7	6.8	9.8	82	7	0.4[Q]
IS-2-LRR	5/26	9.4	6.8	9.5	83	7[Q]	0.3
IS-3-LRR	5/26	11.2	6.7	9.1	83	7[Q]	0.2
IS-4-GC	5/3	7.5	7.9	9.5	79	6	0.2
IS-5-GC	5/3	4.5	7.3	10.6	82	7	0.1
IS-6-GC	5/3	6.3	7.4	10.2	82	7	0.1
IS-9-GCC	5/3	7.7	7.2	10.0	84	8	0.1
IS-7-SFRR	5/3	6.5	7.6	10.2	83	9	0.1
IS-8-SFRR	5/3	6.7	7.3	10.3	84	9	0.1
IS-10-SFSC	5/16	6.6	7.0	10.2	83	13[Q]	0.6
IS-11-SFSC	4/28	8.5	7.0[Q]	10.1	87	27	0.1
IS-12-SC	4/28	5.7	7.1[Q]	10.7	86	20	0.5

Site ID	2022 Sample Date	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)
IS-13-SC	4/28	8.5	7.0[Q]	10.6	91	28	0.2
IS-14-SC	4/28	6.7	6.9[Q]	11.2	91	29	0.5
IS-15-SFAR	4/27	9.7	7.2	10.7	94	35	3.2
IS-16-SFAR	4/27	8.4	7.2	11.8	96	23	1.4
IS-17-BC	4/27	9.1	7.1	10.2	89	19	1.3
IS-18-SFAR	4/26	12.1	7.6	10.7	100	40	1.0
IS-19-SFAR	4/27	8.4	6.8	10.7	92	28	1.1
Summer							
IS-1-RR	8/23	20.9	6.8	6.4	71	17[Q]	4.8
IS-2-LRR	8/24	19.3	6.9	6.5	71	14[Q]	0.5[Q]
IS-3-LRR	8/24	21.2	6.6	6.6	74	12[Q]	0.0[Q]
IS-4-GC	8/23	11.8	7.0	8.6	80	8[Q]	0.9
IS-5-GC	8/1	15.1	6.3	8.3	83	10	0.2
IS-6-GC	8/1	14.9	6.7	8.4	84	10	0.2
IS-9-GCC	8/1	17.5	6.7	8.6	90	11	0.2
IS-7-SFRR	8/1	16.5	6.7	8.3	85	11	0.1
IS-8-SFRR	8/1	16.4	6.9	8.4	86	11	0.1
IS-10-SFSC	8/23	7.7	7.0	9.9	83	11[Q]	0.0
IS-11-SFSC	8/2	17.6	7.2	8.3	87	15	0.3
IS-12-SC	8/2	11.9	7.3	9.1	85	12	0.2
IS-13-SC	8/2	17.7	7.0	8.7	92	16	0.3
IS-14-SC	8/2	11.4	6.3	9.9	91	13	0.2
IS-15-SFAR	8/4	23.5	7.8	8.0	95	53	0.3
IS-16-SFAR	8/4	16.3	7.2	9.4	96	25	0.2
IS-17-BC	8/4	13.2	7.3	9.2	88	21	2.2
IS-18-SFAR	8/4	22.0	7.4	8.7	99	30	0.6
IS-19-SFAR	8/3	15.0	6.8	9.3	93	22	1.2
Fall							
IS-1-RR	–	–	–	–	–	–	–
IS-2-LRR	–	–	–	–	–	–	–
IS-3-LRR	–	–	–	–	–	–	–
IS-4-GC	–	–	–	–	–	–	–
IS-5-GC	–	–	–	–	–	–	–
IS-6-GC	–	–	–	–	–	–	–

Site ID	2022 Sample Date	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)
IS-9-GCC	–	–	–	–	–	–	–
IS-7-SFRR	–	–	–	–	–	–	–
IS-8-SFRR	–	–	–	–	–	–	–
IS-10-SFSC	11/2	6.9	6.5	10.4	85	13[Q]	0.3[Q]
IS-11-SFSC	11/2	1.4	7.4	12.7	90	11[Q]	0.2[Q]
IS-12-SC	11/2	4.7	7.3	11.4	89	11[Q]	0.5[Q]
IS-13-SC	11/2	5.7	7.3	12.0	95	13[Q]	2.8[Q]
IS-14-SC	11/2	6.7	7.3	11.7	96	14[Q]	0.3[Q]
IS-15-SFAR	11/3	6.4	7.1	12.3	100	46	0.7
IS-16-SFAR	11/3	7.3	7.2	12.4	103	23	4.5
IS-17-BC	11/3	11.8	7.0	10.4	96	22	1.3
IS-18-SFAR	11/7	9.6	6.8	10.7	94	25[Q]	1.0[Q]
IS-19-SFAR	11/3	9.2	7.1	11.3	98	20	4.3
Fall/Winter							
IS-1-RR	–	–	–	–	–	–	–
IS-2-LRR	–	–	–	–	–	–	–
IS-3-LRR	11/17	2.6	7.3	10.9	80	8[Q]	1.8
IS-4-GC	–	–	–	–	–	–	–
IS-5-GC	–	–	–	–	–	–	–
IS-6-GC	–	–	–	–	–	–	–
IS-9-GCC	–	–	–	–	–	–	–
IS-7-SFRR	–	–	–	–	–	–	–
IS-8-SFRR	–	–	–	–	–	–	–
IS-10-SFSC	11/15	7.4	6.5	10.0	83	14[Q]	–[R]
IS-11-SFSC	11/21	0.0	6.4[Q]	13.0	89	11	0.2
IS-12-SC[1]	11/21	4.0	7.3[Q]	11.4	87	10	2.4
IS-13-SC	11/16	4.5	7.1	12.6	98	11[Q]	0.5[Q]
IS-14-SC	11/16	5.8	7.4	12.4	99	12[Q]	0.4[Q]

Site ID	2022 Sample Date	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)
IS-15-SFAR	11/8	6.1	6.4	11.7	94	35	2.1
IS-16-SFAR	11/8	7.0	6.5	11.8	97	23	0.8
IS-17-BC	11/10	10.9	6.9	10.2	92	19	--[R]
IS-18-SFAR	11/9	8.2	7.1	11.7	99	31	2.5[Q]
IS-19-SFAR	11/8	8.4	6.7	10.8	92	11	0.5

°C = degrees Celsius
s.u. = standard unit of pH
mg/L = milligrams per liter
% sat = percent saturation
uS/cm = microsiemens per centimeter
NTU = Nephelometric Turbidity Unit
"–" indicates that data were not collected due to site inaccessibility. See also Table 4-5.

[Q] Data are designated as "qualified" because the post-sampling calibration check measurement quality objective (MQO) for acceptability was not met (see Appendix F for detailed calibration data). Qualified values are known with relatively less certainty (see Table 5-2).
[R] Data are designated as "rejected" because the post-sampling calibration check MQO for acceptability was not met (see Appendix F).
[1] SMUD was conducting valve tests at the Junction Reservoir outflow on the sampling date. Sampling was deferred until one hour after valve tests were completed to allow measurement parameters to restabilize to typical levels.

6.1.2. Reservoir Sites

In situ water quality data for selected UARP reservoir sites are presented in Figures 6-1 through 6-4 as representative of vertical profiles at other sites. Tabular and graphical data for all sites are presented in Appendices A and B, respectively. As noted in Section 5, *in situ* water quality parameters were collected as part of both *in situ* sampling events and general chemistry sampling events in 2022, consistent with the Plan.

Spring In situ Water Quality and General Chemistry Sampling Event

During the Spring sampling event, thermal stratification (i.e., a water temperature change of more than 1.0°C per 1.0 meter of depth in the reservoir) was apparent in Union Valley and Ice House reservoirs (Figure 6-1 and Appendix B, Figures B-1 through B-9), with thermoclines located between 3 and 5 m depth. Water temperature also decreased with depth at all other reservoir sites but did not meet the thermal stratification criterion, exhibiting more gradual temperature changes (e.g., Slab Creek Reservoir, Figure 6-1 and Appendix B, Figures B-1 through B-9). Surface water temperatures ranged from 9.5 to 16.9°C, and bottom water temperatures ranged from 5.3 to 13.1°C. At the thermally stratified sites, pH decreased slightly with depth, while dissolved oxygen concentrations increased slightly, likely due to simultaneously decreasing water temperatures. Turbidity was generally consistent with depth below the shallowest five meters of the water column. pH, dissolved oxygen, and turbidity were generally consistent with depth at all other reservoir sites, with the exception of localized turbidity variations of less than 1.0 NTU (e.g., Slab Creek Reservoir, Figure 6-1). Dissolved oxygen concentrations were greater than or equal to 7.5 mg/L at all reservoir sites in Spring, above the Basin Plan instantaneous minimum concentration of 7.0 mg/L for COLD and SPAWN designated beneficial uses. pH ranged from 5.4 to 8.0 s.u., with values below the Basin Plan instantaneous minimum pH objective (6.5 s.u.) at Loon Lake, Union Valley, Ice House, Junction, Camino, Rubicon, and Buck Island reservoirs (Appendix A, Table A-1). There were no exceedances of the instantaneous maximum pH objective (8.5 s.u.). Turbidity was very low (less than or equal to 1.6 NTU) at all sites.

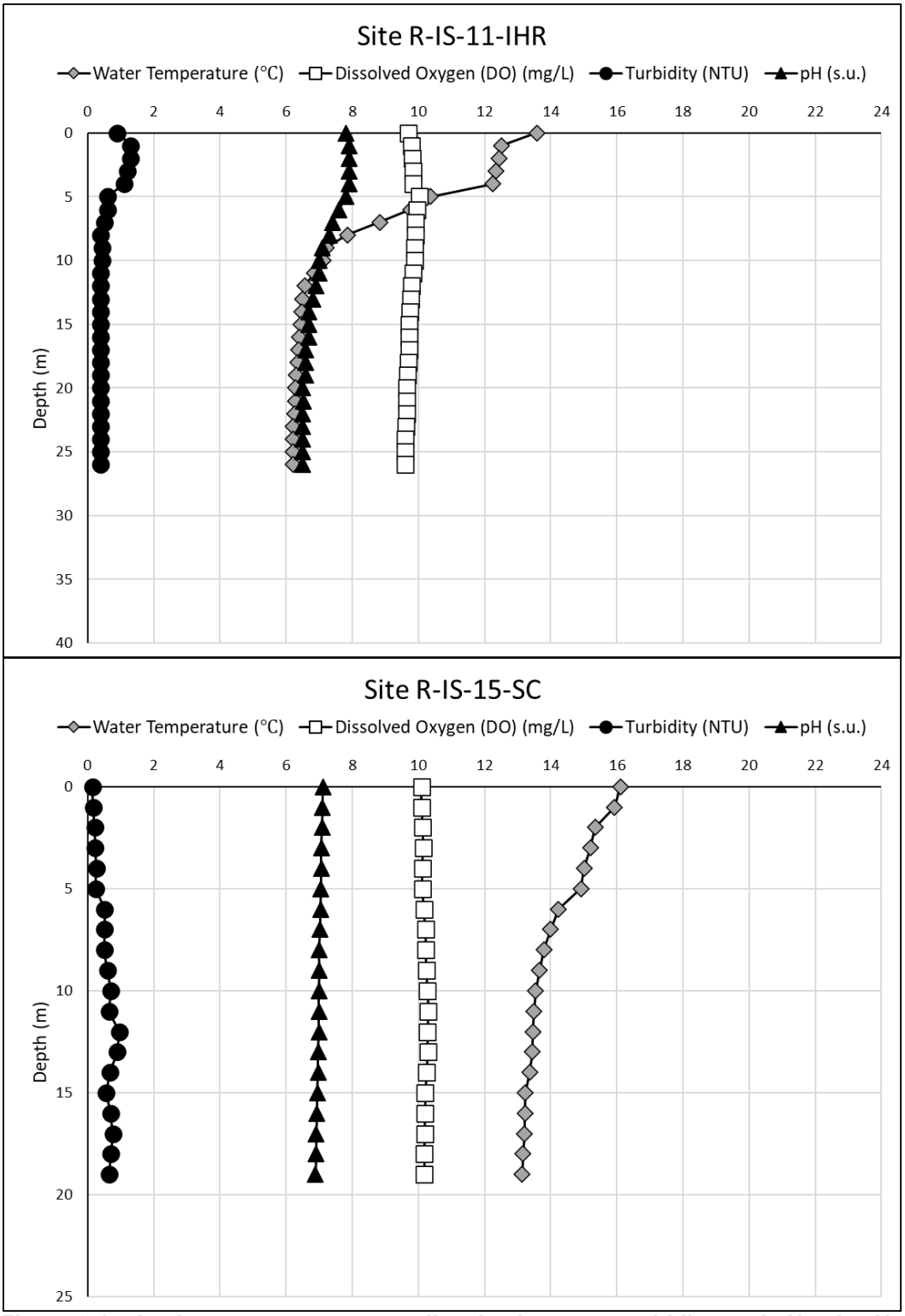


Figure 6-1. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Ice House Reservoir Site R-IS-11-IHR and Slab Creek Reservoir Site R-IS-15-BC, Spring 2022.

Summer General Chemistry Sampling Event

During the Summer sampling event, thermal stratification was apparent in all reservoirs except Rubicon and Camino. Broad, seasonal thermoclines occurred in Union Valley, Ice House, Loon Lake, and Brush Creek reservoirs, typically between 10 and 20 m depth (Figure 6-2 and Appendix B, Figures B-10 through B-18). Other reservoirs exhibited shallower thermoclines at depths less than 5 m (e.g., Junction Reservoir, Figure 6-2 and Appendix B, Figures B-10 through B-18). Surface water temperatures ranged from 12.9 to 23.7°C, and bottom water temperatures ranged from 6.4 to 21.5°C. pH typically decreased slightly with depth, particularly in deeper reservoirs. Dissolved oxygen concentrations typically increased by 1 to 2 mg/L at the thermocline, reflecting increased oxygen solubility at lower temperatures (Figure 6-2). Turbidity was generally consistent with depth at all sites (Appendix B, Figures B-10 through B-18). Dissolved oxygen concentrations ranged from 4.3 to 10.2 mg/L. Dissolved oxygen concentrations below the Basin Plan instantaneous minimum concentration of 7.0 mg/L for COLD and SPAWN designated beneficial uses occurred at Loon Lake, Ice House, Rubicon, Buck Island, and Brush Creek reservoirs (Appendix A, Table A-2). pH ranged from 5.5 to 9.2 s.u., with values below the Basin Plan instantaneous minimum pH objective (6.5 s.u.) at depth in deeper reservoirs (Appendix B, Figures B-10 through B-18). pH exceeded the instantaneous maximum pH objective (8.5 s.u.) near and at the surface of Slab Creek Reservoir (Site R-IS-15-SC). Turbidity was very low (less than or equal to 1.7 NTU), except at Rubicon Reservoir, where turbidity was 4.8 NTU throughout the 1-m water column.

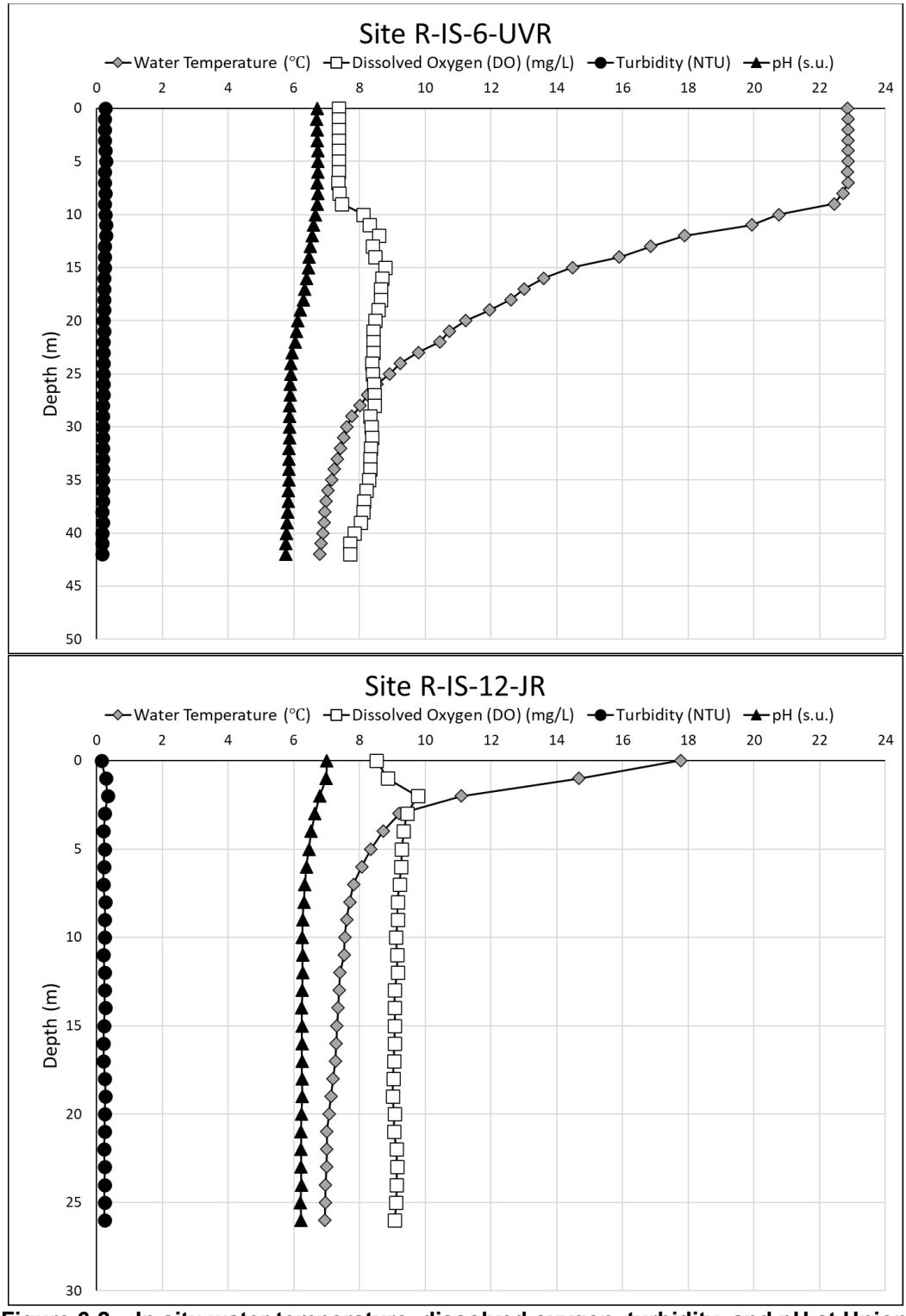


Figure 6-2. In situ water temperature, dissolved oxygen, turbidity, and pH at Union Valley Reservoir Site R-IS-6-UVR and Junction Reservoir Site R-IS-12-JR, Summer 2022.

Fall In situ and General Chemistry Sampling Event

During the Fall sampling event, thermal stratification was apparent at Loon Lake (Figure 6-3), Union Valley, Ice House, and Brush Creek reservoirs (Appendix B, Figures B-19 through B-26). Thermoclines typically started between 15 and 20 m depth, slightly deeper than in summer. Temperature differences across thermoclines during the Fall survey were typically 5°C less than differences during the Summer survey due to lower surface water temperatures. Stratification also occurred at the shallow Slab Creek Reservoir site (R-IS-14-SC, Appendix B, Figure B-26). The deeper Slab Creek Reservoir site (R-IS-15-SC) exhibited a distinct region of greatest temperature change but did not meet the required water temperature change of more than 1.0°C per 1.0 meter of depth to qualify as thermally stratified (Appendix B, Figure B-26). Surface water temperatures ranged from 8.8 to 17.6°C, and bottom water temperatures ranged from 6.3 to 15.4°C. pH typically decreased slightly with depth, particularly in deeper reservoirs. Dissolved oxygen concentrations typically decreased with depth, with the exception of Slab Creek Reservoir, where dissolved oxygen concentrations increased slightly with depth (Figure 6-3). Turbidity was generally consistent with depth at all sites (Appendix B, Figures B-19 through B-26). Dissolved oxygen concentrations ranged from 2.2 to 11.1 mg/L. At Site R-IS-1-LL, Dissolved oxygen concentrations decreased over the relatively deep thermocline by more than 4 mg/L to 2.2 to 2.8 mg/L in the lowest three meters of the water column (Appendix B, Figure B-19). While the data were qualified, additional dissolved oxygen concentrations below the Basin Plan instantaneous minimum concentration of 7.0 mg/L for COLD and SPAWN designated beneficial uses occurred at Union Valley Reservoir. All qualified results were greater than 6.4 mg/L (Appendix A, Table A-3). pH ranged from 5.2 to 7.2 s.u., with values below the Basin Plan instantaneous minimum pH objective (6.5 s.u.) at Union Valley, Junction, Slab Creek, Gerle Creek, and Loon Lake reservoirs (Appendix B, Figures B-19 through B-26). There were no exceedances of the instantaneous maximum pH objective (8.5 s.u.). Turbidity was very low (less than or equal to 1.2 NTU), with the exception of Gerle Creek Reservoir, where turbidity ranged from 3.2 to 3.5 NTU (Appendix A, Table A-3).

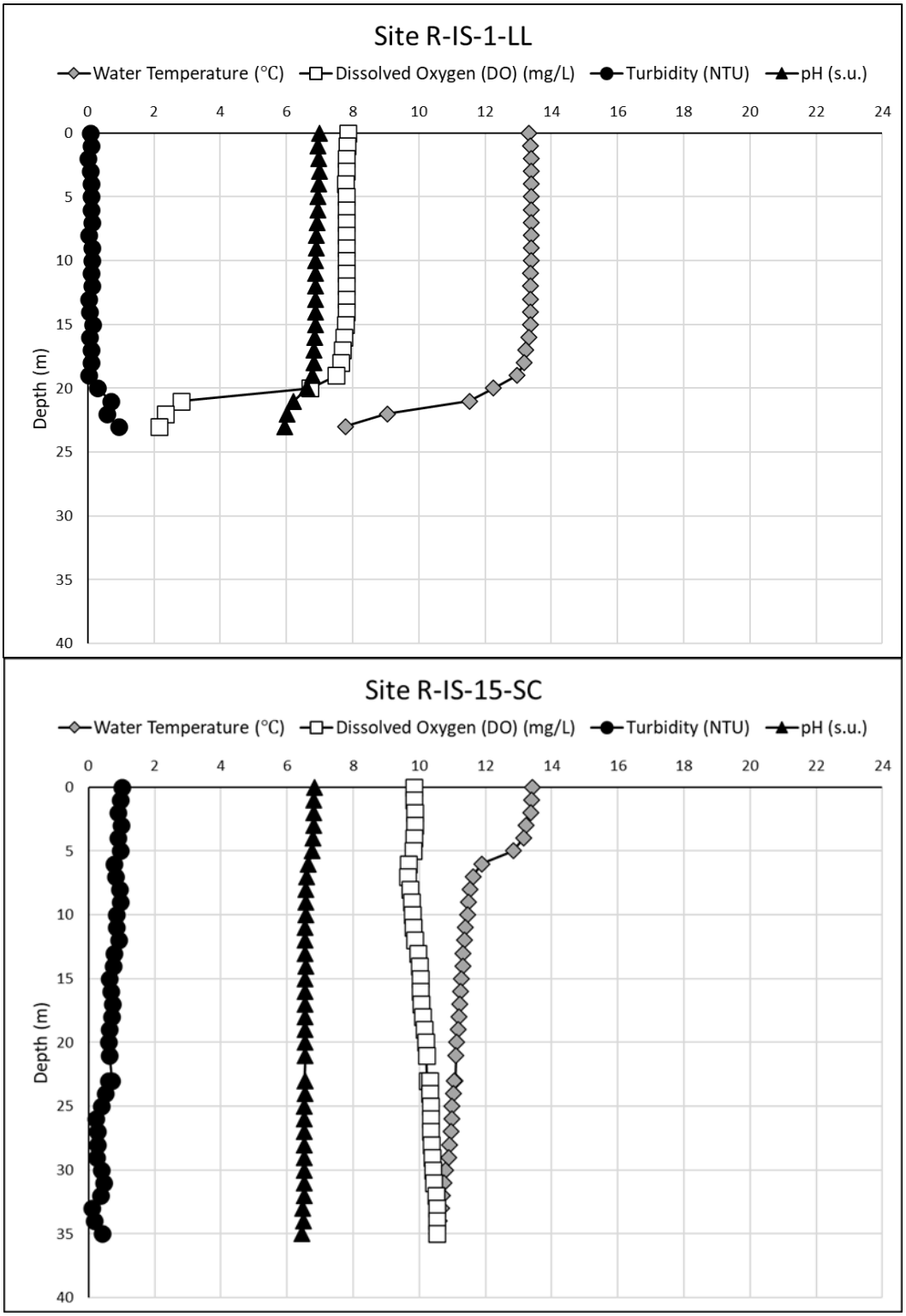
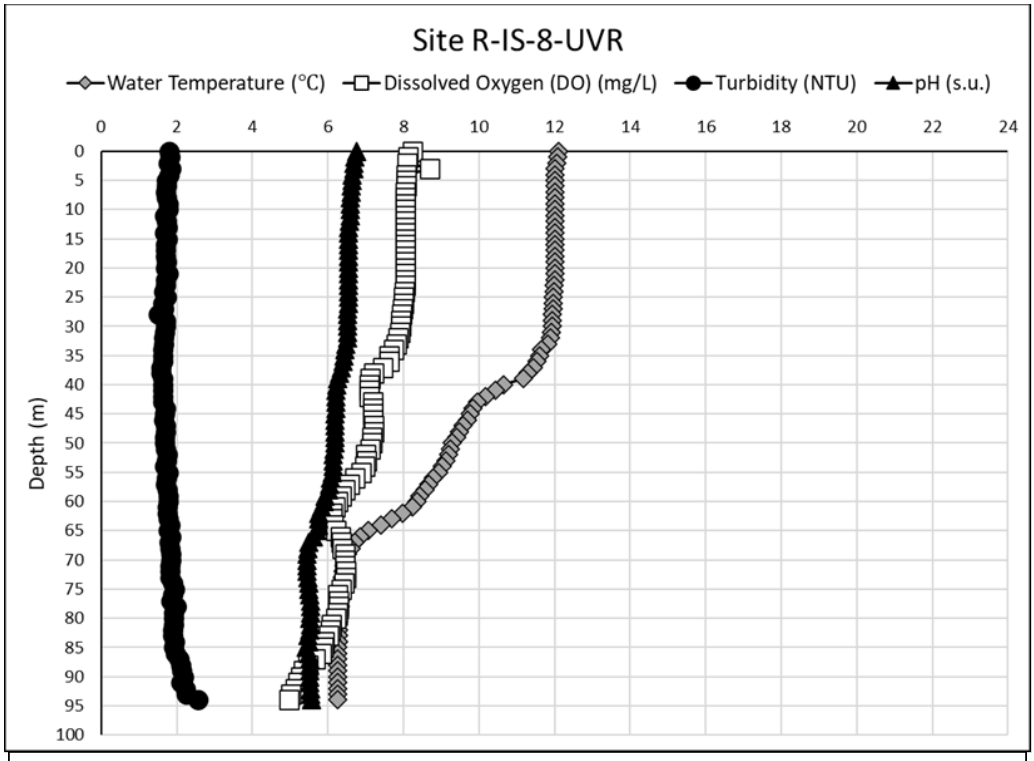


Figure 6-3. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Loon Lake Reservoir Site R-IS-1-LL and Slab Creek Reservoir Site R-IS-15-SC, Fall 2022.

Fall/Winter General Chemistry Sampling Event

During the Fall/Winter sampling event, no reservoir sites met the criterion for thermal stratification. Surface water temperatures ranged from 2.6° to 12.1°C, and bottom water temperatures ranged from 3.1° to 11.7°C (Appendix A, Table A-4). With the exception of sites R-IS-8-UVR (Figure 6-4), R-IS-11-IHR , and R-IS-15-SC (Figure 6-4), all sites exhibited little to no variation in water temperature with depth, indicating fully mixed conditions (Appendix B, Figures B-27 through B-32). Of the three exceptions, sites R-IS-8-UVR and R-IS-11-IHR exhibited a distinct region of greatest temperature change but did not meet the required water temperature change of more than 1.0°C per 1.0 meter of depth to qualify as thermally stratified. Dissolved oxygen concentration, pH, and turbidity in all reservoirs were generally consistent with depth, with the exception of the three sites listed above. At Site R-IS-8-UVR, dissolved oxygen concentrations decreased from approximately 8.0 mg/L at the top of the thermocline (30 m) to 5.0 mg/L at the bottom of the water column, with slight local increases at 45 and 70 m depth (Appendix B, Figure B-28). Dissolved oxygen concentrations also decreased with the thermocline at Site R-IS-11-IHR (Appendix B, Figure B-30). At Site R-IS-15-SC, dissolved oxygen concentrations increased with the thermocline by approximately 1 mg/L between 14 m depth and the bottom of the water column (Figure 6-4). pH decreased slightly with depth at sites R-IS-8-UVR and R-IS-11-IHR, while turbidity increased near the bottom of the water column (Appendix B, Figures B-28 and B-30). Dissolved oxygen concentrations ranged from 0.7 to 13.0 mg/L. Dissolved oxygen concentrations were below the Basin Plan instantaneous minimum concentration of 7.0 mg/L for COLD and SPAWN designated beneficial uses at Site R-IS-8-UVR below 55 m depth and at Site R-IS-11-IHR below 22 m depth (Appendix A, Table A-4). pH ranged from 5.3 to 7.2 s.u. Values below the Basin Plan instantaneous minimum pH objective (6.5 s.u.) occurred primarily at depth at sites R-IS-10-IHR and R-IS-11-IHR, with two isolated values at Site R-IS-20-BC. Turbidity was low (less or equal to than 1.3 NTU), with the highest values occurring at Site R-IS-20-BC.



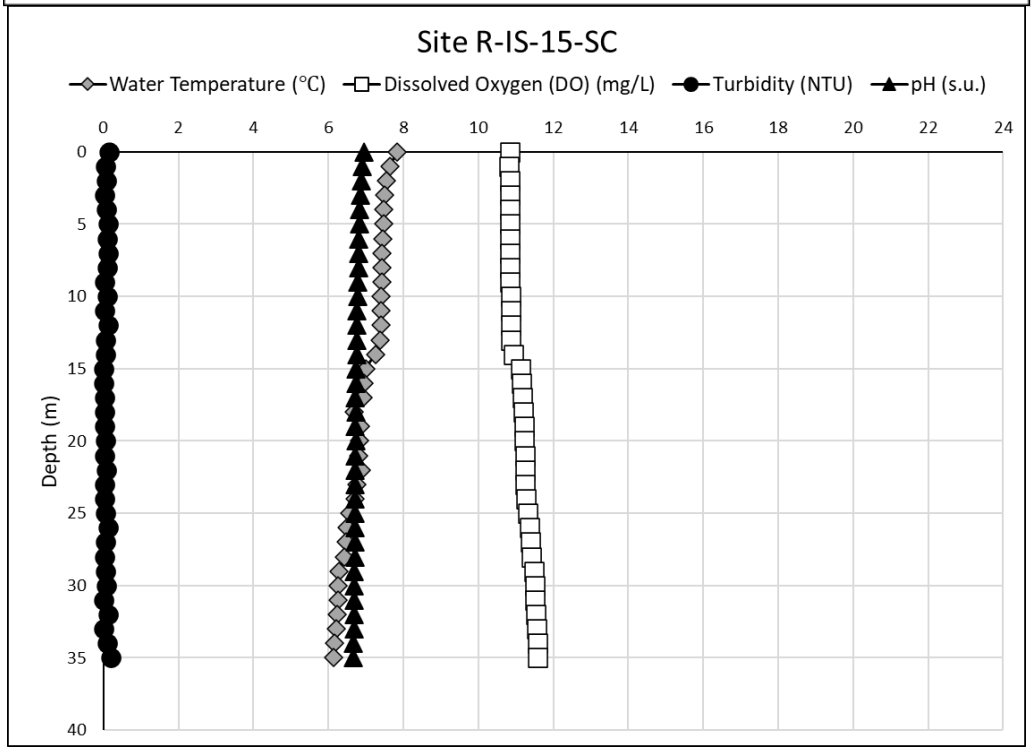


Figure 6-4. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Union Valley Reservoir Site R-IS-8-UVR and Slab Creek Reservoir Site R-IS-15-SC during Fall/Winter 2022.

6.2. GENERAL CHEMISTRY

6.2.1. *In situ* Parameters

In situ water quality parameters measured during the 2022 Spring, Summer, Fall, and Fall/Winter general chemistry sampling events are discussed in Section 6.1.

6.2.2. Chemical Constituents

General chemistry data for UARP riverine and reservoir sites are presented in Appendix C, Tables C-1 through C-8. Analytical laboratory chemistry reports are provided in Appendix G. Water quality standards are presented in Table 5-2, with equations for hardness-dependent water quality standards presented in Table 5-3. In general, suspended and dissolved solids, total organic carbon (TOC), oil and grease, total petroleum hydrocarbons, nutrients, and total alkalinity were low, and there were no exceedances of water quality standards. Hardness was also very low (< 17 mg/L) at all sites, such that acute and chronic hardness-dependent criteria for associated metals were also low and exceedances occasionally occurred. In the case of dissolved silver, the hardness-based acute criterion was below the MDL (0.15 ug/L) at all but three sites (IS-15-SFAR in Fall, IS-16-SFAR in Summer, and IS-18 SFAR in Spring and Fall/Winter; Appendix C, Tables C-9 through C-12). The CTR and NRWQC standards for total silver (0.03 ug/L, Table 5-3) were also below the analyte MDL (0.07 ug/L). Most exceedances for both total and dissolved silver were less than the analyte RL.

Across a total of 2,595 analyte records for riverine samples, there were only 25 instances of exceedances of water quality standards (1.0%). Across a total of 3,959 analyte records for reservoir samples, there were only 47 instances of exceedances (1.2%). The sections below summarize general chemistry samples that exceeded one or more water quality standards. Exceedances of water quality standards observed during 2022 UARP riverine and reservoir sampling events are summarized in Tables 6-2 and 6-3.

Some sites were inaccessible during at least one 2022 sampling event. Refer to Tables 4-3 and 4-5 for explanations regarding chemistry sites that could not be sampled.

6.2.3. Riverine Sites

Spring Sampling Event

During the Spring sampling event, 16 of 19 riverine sites had no exceedances of water quality standards. One exceedance for total iron occurred at Site IS-3-LRR, and one exceedance for total lead occurred at Site IS-15-SFAR (Table 6-2). Exceedances for total aluminum occurred at sites IS-1-RR and IS-15-SFAR. The total lead and total aluminum results exceeded the four-day average standard but not the one-hour average standard.

General chemistry data for the Spring at UARP riverine sites are presented in Appendix C, Table C-1. Hardness-dependent acute and chronic NRWQC for metals are presented in Appendix C, Table C-9.

Summer Sampling Event

During the Summer sampling event, 13 of 19 sites had no exceedances of water quality standards. Exceedances for total aluminum, total cadmium, total iron, total lead, manganese, total silver, and/or dissolved silver occurred at six sites (IS-1-RR, IS-2-LRR, IS-3-LRR, IS-9-GCC, IS-12-SC, IS-17-BC) (Table 6-2). The total aluminum, total cadmium, and total lead results exceeded the four-day average standard but not the one-hour average standard.

General chemistry data for Summer UARP riverine sites are presented in Appendix C, Table C-2. Hardness-dependent acute and chronic NRWQC for metals are presented in Appendix C, Table C-10.

Fall Sampling Event

During the Fall sampling event, eight of ten sites had no exceedances of water quality standards. Exceedances for manganese occurred at two sites (IS-10-SFSC, IS-17-BC) (Table 6-2).

General chemistry data for Fall at UARP riverine sites are presented in Appendix C, Table C-3. Hardness-dependent acute and chronic NRWQC for metals are presented in Appendix C, Table C-11.

Fall/Winter Sampling Event

During the Fall/Winter sampling event, 6 of 11 sites had no exceedances of water quality standards. Exceedances for total aluminum, cyanide, total iron, manganese, total silver, and/or dissolved silver occurred at five sites (IS-10-SFSC, IS-11-SFSC, IS-12-SC, IS-18-SFAR, IS-19-SFAR) (Table 6-2). The total aluminum and cyanide results exceeded the four-day average standard but not the one-hour average standard.

General chemistry data for Fall/Winter at UARP riverine sites are presented in Appendix C, Table C-4. Hardness-dependent acute and chronic NRWQC for metals are presented in Appendix C, Table C-12.

Table 6-2. Exceedances of Water Quality Standards Observed during 2022 UARP General Chemistry Riverine Sampling Events.

Site ID	Total Aluminum (ug/L)	Total Cadmium (ug/L)	Cyanide (mg/L)	Total Iron (ug/L)	Total Lead (ug/L)	Manganese (ug/L)	Total Silver (ug/L)[1]	Dissolved Silver (ug/L)
Water Quality Standards								
BPWQO	NA	5	NA	300	15	50	NA	NA
CTR	NA	0.29/0.22 [i]	0.022/0.0052 [i]	NA	3/0.12 [i]	NA	0.03	NA
NRWQC	750/87 [i]	0.14/0.037 [i]	0.022/0.0052 [i]	1,000	3/0.12 [i]	50	0.03	NA
Spring								
IS-1-RR	560[FB]	--	--	--	--	--	--	--
IS-3-LRR	--	--	--	670[FB]	--	--	--	--
IS-15-SFAR	630[FB]	--	--	--	0.173	--	--	--
Summer								
IS-1-RR	--	0.05[J]		630[FB]	--	--	--	--
IS-2-LRR	170[FB]	--	--	--	--	--	<0.50[RL]	<0.50[RL,2,3]
IS-3-LRR	--	--	--	--	--	--	<0.50[RL]	<0.50[RL,2,3]
IS-9-GCC	--	--	--	--	0.408	--	--	--
IS-12-SC	--	--	--	--	--	--	0.094[J]	--
IS-17-BC	--	--	--	330[FB]	--	120[FB]	--	--
Fall								
IS-10-SFSC	--	--	--	--	--	230[FB]	--	--
IS-17-BC	--	--	--	--	--	64[FB]	--	--
Fall/Winter								
IS-10-SFSC	--	--	--	600	--	360[FB]	<0.50	<0.50[2]
IS-11-SFSC	--	--	0.0053[FB]	--	--	--	--	--
IS-12-SC	--	--	--	880	--	--	--	--
IS-19-SFAR	97	--	--	--	--	--	--	--
IS-18-SFAR	130	--	--	--	--	--	--	--

-- = No exceedance observed
BPWQO = Basin Plan water quality objectives (CRWQCB 2019, SMUD 2021)
CTR = California Toxics Rule (EPA 2000)

NA = Not applicable
NRWQC = National Recommended Water Quality Criteria (EPA 1986)
mg/L = milligrams per liter
ug/L = micrograms per liter
[i] = 1-hour average/four-day average

[1] Note that the method detection limit (MDL) for total silver is 0.07 ug/L, which is greater than the CTR and NWRQC criteria.
[2] Exceeds EPA National Recommended Water Quality Criteria, hardness-dependent acute and/or chronic criteria (EPA 2022) (Appendix C, Tables C-10 and C-12).
[3] Dissolved fraction is greater than total fraction, which may be a result of reporting near the MDL.
[FB] Field Blank was greater than the MDL for this analyte. Field blank for Spring sampling event corresponded to sample “R-IS-20-BC-FB.” Field blank for Summer sampling event corresponded to sample “IS-10-SFSC-FB.” Field blank for Fall sampling event corresponded to sample “R-IS-4-GC-FB.” Field blank for Fall/Winter sampling event corresponded to sample “IS-14-SC-FB.”
[J] Result falls between MDL and reporting limit (RL).
[RL] Laboratory reported result as <RL.

6.2.4. Reservoir Sites

Spring Sampling Event

During the Spring sampling event, there were no exceedances of water quality standards at 16 of 21 sites. Thermal stratification occurred at sites R-IS-11-IHR, R-IS-6-UVR, and R-IS-8-UVR. Exceedances for total and dissolved silver occurred at two sites (R-IS-4-GC-SUR and R-IS-20-BC-SUR) (suffix "-SUR" indicates a surface sample taken at or above approximately one-third of the water depth) (Table 6-3).

General chemistry data for Spring at UARP reservoir sites are presented in Appendix C, Table C-5. Hardness-dependent acute and chronic NRWQC for metals are presented in Appendix C, Table C-13.

Summer Sampling Event

During the Summer sampling event, there were no exceedances of water quality standards at 24 of 33 sites. Thermal stratification occurred at all sites except for sites R-IS-18-RR, R-IS-13-CR, and R-IS-14-SC. Exceedances for total aluminum, total cadmium, dissolved cadmium, total iron, dissolved lead, manganese, total silver, and/or dissolved silver occurred at seven sites (R-IS-18-RR-SUR, R-IS-19-BI-SUR, R-IS-19-BI-BOT, R-IS-1-LL-BOT, R-IS-GC-SUR, R-IS-9-IHR-BOT, R-IS-5-UVR-BOT, R-IS-8-UVR-BOT, R-IS-14-SC-BOT) (suffix "-BOT" indicates a surface sample taken near the reservoir bottom) (Table 6-3). The total aluminum, total cadmium, and total lead results exceeded the four-day average standard but not the one-hour average standard. The slightly elevated Summer field blank for total aluminum during the Summer sampling event may explain the standard exceedance associated with Site R-IS-8-UVR-BOT, although because the field blank was between the MDL and the RL, the reported value is inherently less certain.

General chemistry data for Summer at UARP reservoir sites are presented in Appendix C, Table C-6. Hardness-dependent acute and chronic NRWQC for metals are presented in Appendix C, Table C-14.

Fall Sampling Event

During the Fall sampling event, there were no exceedances of water quality standards at 14 of 24 sites. Thermal stratification occurred at sites R-IS-1-LL, R-IS-9-IHR, R-IS-10-IHR, R-IS-11-IHR, R-IS-7-UVR, R-IS-6-UVR, R-IS-20-BC, and R-IS-14-SC. Exceedances for total aluminum, total copper, cyanide, total iron, total lead, manganese, total silver, and/or dissolved silver occurred at nine sites (R-IS-1-LL-BOT, R-IS-9-IHR-SUR, R-IS-9-IHR-BOT, R-IS-10-IHR-SUR, R-IS-10-IHR-BOT, R-IS-11-IHR-SUR, R-IS-11-IHR-BOT, R-IS-5-UVR-SUR, R-IS-14-SC-BOT) (Table 6-3). The total aluminum, total lead, cyanide, results exceeded the four-day average standard but not the one-hour average standard. The slightly elevated Fall field blank for cyanide

may explain the standard exceedance at Site R-IS-9-IHR-BOT (Table 6-3), although 13 of 18 cyanide results collected during the Fall survey were below the field blank value (0.0034 ug/L; Appendix C, Table C-7). These results were also below the RL (0.0050 ug/L) so they are inherently less certain. However, the preponderance of cyanide sample results below the field blank value suggests that cyanide contamination of UARP reservoir samples was unlikely.

General chemistry data for Fall at UARP reservoir sites are presented in Appendix C, Table C-7. Hardness-dependent acute and chronic NRWQC for metals are presented in Appendix C, Table C-15.

Fall/Winter Sampling Event

During the Fall/Winter sampling event, there were no exceedances of water quality standards at 7 of 12 sites. No sites were thermally stratified. Exceedances for cyanide, total silver, and dissolved silver occurred at five sites (R-IS-9-IHR-SUR, R-IS-10-IHR-SUR, R-IS-11-IHR-SUR, R-IS-7-UVR-SUR, and R-IS-13-CR-SUR) (Table 6-3). The cyanide results exceeded the four-day average standard but not the one-hour average standard. The slightly elevated Fall/Winter field blank for cyanide may explain the standard exceedance at sites R-IS-7-UVR-SUR and R-IS-13-CR-SUR (Table 6-3), although 4 of 12 cyanide results collected during the Fall/Winter survey were below the field blank value (0.0042 ug/L; Appendix C, Table C-8). These results were also below the RL (0.0050 ug/L), so they are inherently less certain. However, the preponderance of cyanide sample results below the field blank value suggests that cyanide contamination of UARP reservoir samples was unlikely.

General chemistry data for Fall/Winter at UARP reservoir sites are presented in Appendix C, Table C-8. Hardness-dependent acute and chronic NRWQC for metals are presented in Appendix C, Table C-16.

Table 6-3. Exceedances of Water Quality Standards Observed during 2022 Upper American River Project General Chemistry Reservoir Sampling Events.

Site ID	Total Aluminum (ug/L)	Total Cadmium (ug/L)	Dissolved Cadmium (ug/L)	Total Copper (ug/L)	Cyanide (mg/L)	Total Iron (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Manganese (ug/L)	Total Silver (ug/L)[1]	Dissolved Silver (ug/L)
Water Quality Standards											
BPWQO	NA	5	NA	1.0	NA	300	15	NA	50	NA	NA
CTR	NA	0.29/0.22 [i]	NA	1.0	0.022/0.0052 [i]	NA	3/0.12 [i]	NA	NA	0.03	NA
NRWQC	750/87 [i]	0.14/0.037 [i]	NA	NA	0.022/0.0052 [i]	1,000	3/0.12 [i]	NA	50	0.03	NA
Spring											
R-IS-4-GC-SUR	--	--	--	--	--	--	--	--	--	<0.50[RL]	<0.50[RL,2]
R-IS-20-BC-SUR	--	--	--	--	--	--	--	--	--	<0.50[RL]	<0.50[RL,2]
Summer											
R-IS-18-RR-SUR	--	--	--	--	--	610[FB]	--	--	--	--	--
R-IS-19-BI-SUR	--	--	--	--	--	--	--	--	--	<0.50[RL]	<0.50[RL,2]
R-IS-19-BI-BOT	--	--	--	--	--	--	--	--	--	<0.50[RL]	<0.50[RL,2]
R-IS-1-LL-BOT	--	--	0.26[2,3]	--	--	--	--	0.127[2,3]	--	--	--
R-IS-4-GC-SUR	--	0.05	--	--	--	--	--	--	--	--	--
R-IS-9-IHR-BOT	120[FB,EB]	--	--	--	--	--	--	--	91[FB]	--	--
R-IS-5-UVR-BOT	170[FB,EB]	--	--	--	--	--	--	--	--	--	--
R-IS-8-UVR-BOT	96[FB,EB]	--	--	--	--	--	--	--	--	--	--
R-IS-14-SC-BOT	--	--	--	--	--	--	--	--	--	--	0.17[J,2,3]
Fall											
R-IS-1-LL-BOT	--	--	--	--	0.0090[FB]	--	--	--	--	--	--
R-IS-9-IHR-SUR	--	--	--	--	--	--	--	--	--	<0.50[RL]	<0.50[RL,2]
R-IS-9-IHR-BOT	--	--	--	--	0.0064[FB]	1,000	--	--	410[FB,EB]	<0.50[RL]	<0.50[RL,2]
R-IS-10-IHR-SUR	--	--	--	--	--	--	--	--	--	<0.50[RL]	<0.50[RL,2]
R-IS-10-IHR-BOT	--	--	--	--	--	--	--	--	--	<0.50[RL]	<0.50[RL,2]
R-IS-11-IHR-SUR	--	--	--	--	--	--	--	--	--	<0.50[RL]	<0.50[RL,2]
R-IS-11-IHR-BOT	--	--	--	--	--	--	--	--	59[FB,EB]	<0.50[RL]	<0.50[RL,2]
R-IS-5-UVR-SUR	230[EB]	--	--	--	--	1,200	--	--	160[FB,EB]	--	--
R-IS-14-SC-BOT	--	--	--	1.90	--	--	1.54[FB]	--	--	--	--
Fall/Winter											
R-IS-9-IHR-SUR	--	--	--	--	--	--	--	--	--	<0.50[RL]	<0.50[RL,2]
R-IS-10-IHR-SUR	--	--	--	--	--	--	--	--	--	0.73	<0.50[RL,2]
R-IS-11-IHR-SUR	--	--	--	--	--	--	--	--	--	0.51	<0.50[RL,2]
R-IS-7-UVR-SUR	--	--	--	--	0.0060[FB]	--	--	--	--	--	--
R-IS-13-CR-SUR	--	--	--	--	0.0057[FB]	--	--	--	--	--	--

-- = No exceedance observed
BPWQO = Basin Plan water quality objectives (CRWQCB 2019, SMUD 2021)
CTR = California Toxics Rule (EPA 2000)
NA = Not applicable
NRWQC = National Recommended Water Quality Criteria (EPA 1986)
ug/L = micrograms per liter
mg/L = milligrams per liter

[i] = one-hour average/four-day average
[1] Note that the method detection limit (MDL) for total silver is 0.07 ug/L, which is greater than the CTR and NWRQC criteria.
[2] Exceeds EPA National Recommended Water Quality Criteria, hardness-dependent acute and/or chronic criteria (EPA 2022) (Appendix C, Tables C-10 and C-12).
[3] Dissolved fraction is greater than total fraction, which may be a result of reporting near the MDL.
[EB] Equipment blank was greater than the MDL for this analyte. Equipment Blank for Summer sampling event corresponded to sample “R-IS-21-EB.” Equipment Blank for Fall sampling event corresponded to sample “R-IS-20-BC-EB.”
[FB] Field Blank was greater than the MDL for this analyte. Field blank for Spring sampling event corresponded to sample “R-IS-20-BC-FB.” Field blank for Summer sampling event corresponded to sample “IS-10-SFSC-FB.” Field blank for Fall sampling event corresponded to sample “R-IS-4-GC-FB.” Field blank for Fall/Winter sampling event corresponded to sample “IS-14-SC-FB.”
[J] Result falls between MDL and reporting limit (RL).
[RL] Laboratory reported result as <RL.

6.2.5. Trend Analysis

Trend analyses identified several analytes that exhibited seasonal, depth, and/or longitudinal flow trends.

The most pronounced seasonal trend was observed for TOC at sites R-IS-9-IHR through IS-12-SC, where concentrations decreased slightly over the course of the year (Figure 6-5). This pattern may be due to the increased transport of natural organic material in runoff and elevated flows along the Ice House Reservoir and South Fork Silver Creek transect prior to the Spring sampling event, with relatively lower transport once flows decrease in Summer and Fall prior to rain events. Elevated TOC at Ice House Reservoir and South Fork Silver Creek sites may also be due to the Caldor Fire, which burned over 221,000 acres in the Eldorado National Forest and adjacent areas, including the upstream reaches of Lyons Creek, a tributary of South Fork Silver Creek, between August and October 2021 (CAL FIRE 2022). TOC concentrations at downstream sites exhibited more variation in Fall and Fall/Winter than in Spring or Summer, but in general TOC concentrations were low across all sites.

Longitudinal trends were apparent for other analytes. For example, hardness (as $CaCO_3$) (Figure 6-6) and total alkalinity (as $CaCO_3$) increased with distance downstream in all four sampling events. This pattern likely reflects contribution of dissolved minerals from geologic weathering of a larger portion of total watershed area at downstream sites compared to upstream sites.

Concentration of several trace elements, including total and dissolved copper (Figure 6-7, Figure 6-8), also increased with distance downstream.

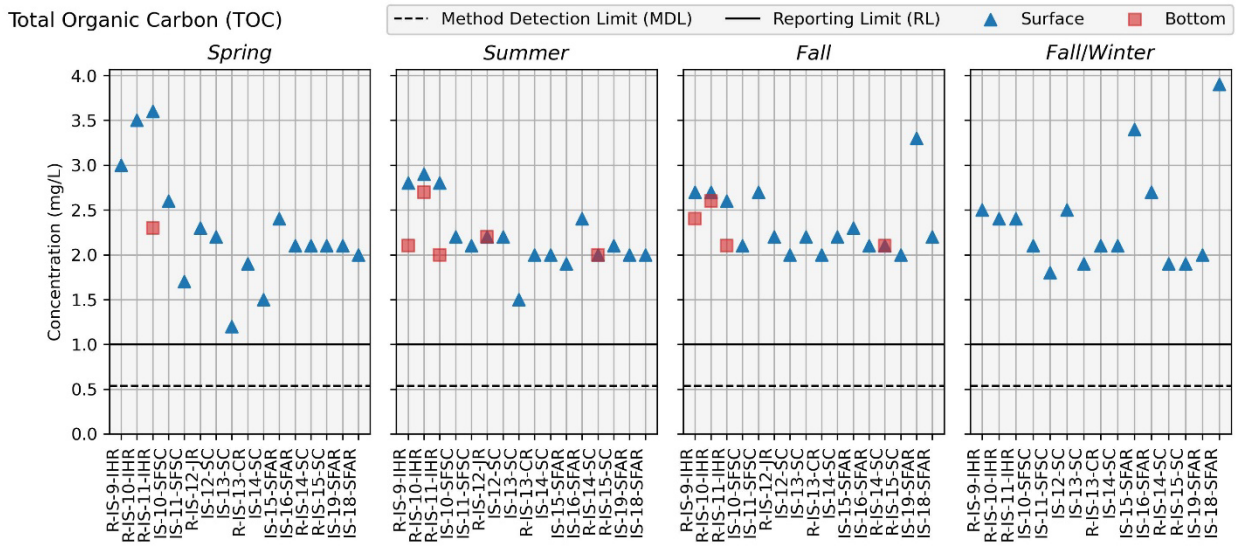


Figure 6-5. Total organic carbon by sampling event.

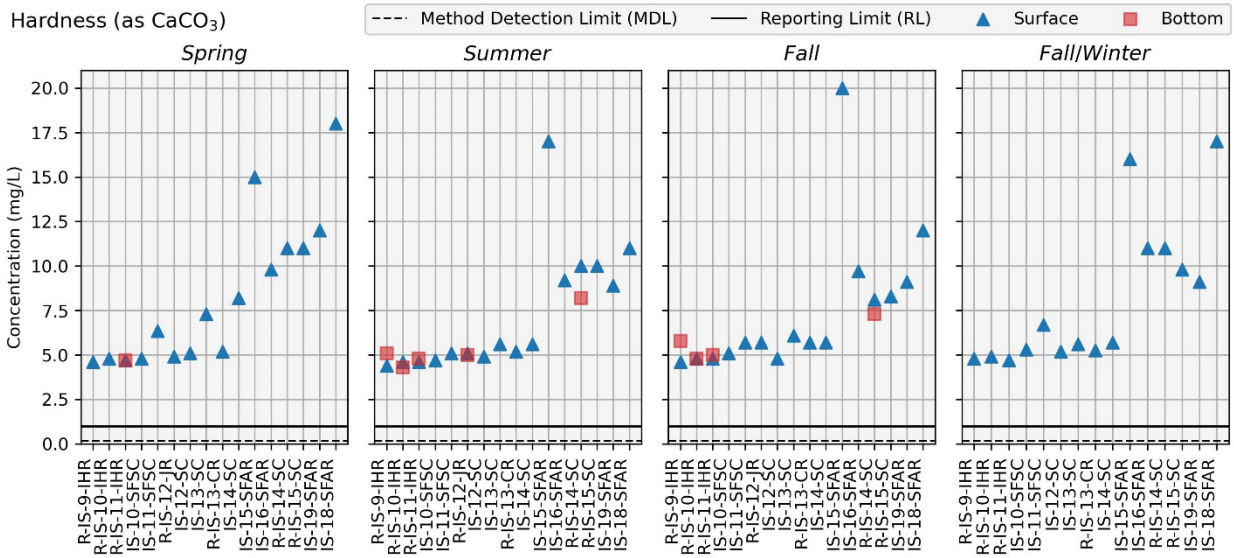


Figure 6-6. Hardness (as $CaCO_3$) by sampling event.

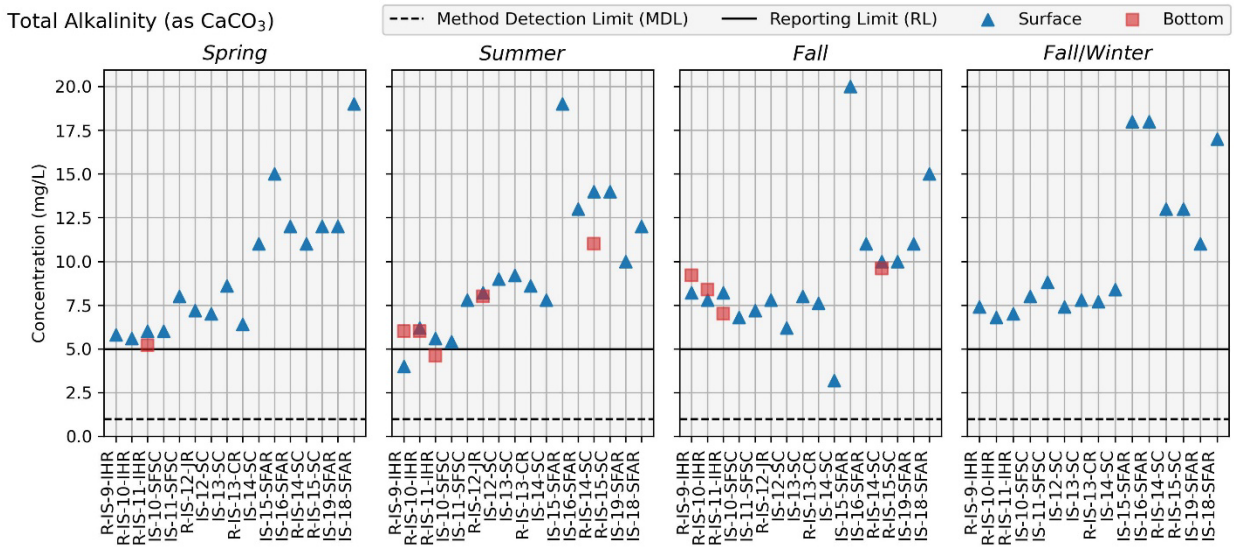


Figure 6-7. Total alkalinity (as $CaCO_3$) by sampling event

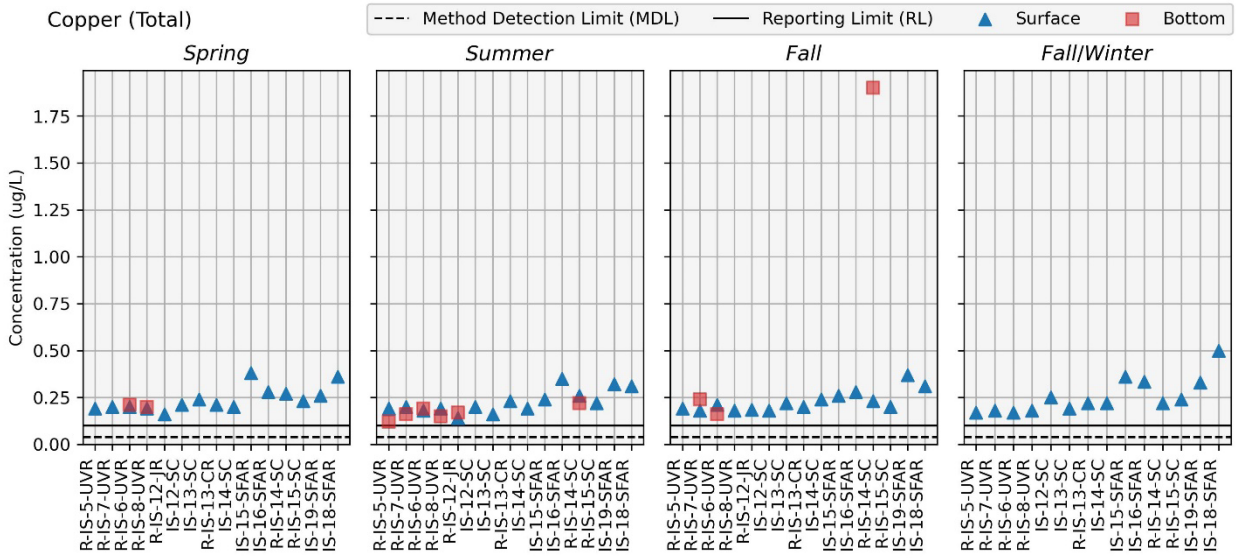


Figure 6-8. Total copper by sampling event.

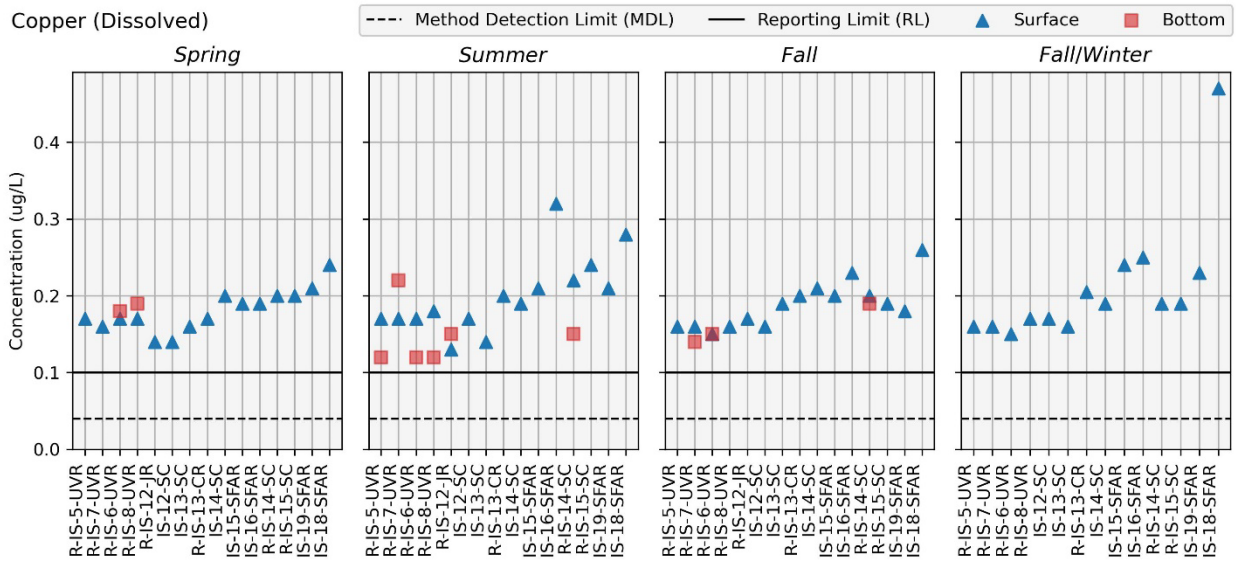


Figure 6-9. Dissolved copper by sampling event.

6.3. BACTERIA

Bacteria counts for UARP sites are summarized in Appendix D, Tables D-1 and D-2. Analytical laboratory bacteria reports are provided in Appendix H.

Instantaneous fecal coliform counts ranged from less than the method detection limit (MDL) (i.e., 1.8 most probable number per 100 milliliters [MPN/100 mL]) to over 1,600 MPN/100 mL during the 2022 Independence Day and Labor Day sampling events

(Appendix D, Tables D-1 and D-2). Results less than the MDL were treated as 0.5 x MDL for the calculation. The lowest geometric mean fecal coliform counts (0.9 MPN/100 mL) occurred in Loon Lake Reservoir (sites Bac-3-LL and Bac-4-LL) during the Labor Day sampling event (Table 6-4). The highest geometric mean fecal coliform count (86.9 MPN/100 mL) occurred in Junction Reservoir (Site Bac-11-JR) during the Independence Day sampling event (Table 6-4). The highest count was well below the Basin Plan objective of 200 MPN/100 mL, as a geometric mean of five samples collected over 30 days, for the recreational water contact (REC-1) designated beneficial use. Eight samples exceeded the instantaneous maximum Basin Plan objective of 400 MPN/100 mL. These samples were collected at Gerle Creek Reservoir (sites Bac-5-GCR and Bac-6-GCR), Union Valley Reservoir (sites Bac-8-UVR and Bac-10-UVR), Junction Reservoir (Site Bac-11-JR), and Ice House Reservoir (Site Bac-13-IHR) during the Independence Day sampling event (Appendix D, Table D-1).

Independence Day geometric mean fecal coliform counts were higher in 2022 than 2021 at sites Bac-7-UVR, Bac-10-UVR, and Bac-11-JR and lower than in 2021 at sites Bac-13-IHR and Bac-15-SCR. Fecal coliform counts at Site Bac-11-JR were similarly elevated relative to other sites during the 2021 Independence Day sampling event. The remaining 2022 UARP sites were not sampled in 2021. Independence Day geometric mean fecal coliform counts were higher in 2022 than in 2020 at all sites but sites Bac-5-GCR and Bac-14-BCR. Fecal coliform counts at sites Bac-5-GCR, Bac-6-GCR, and Bac-11-JR were similarly elevated relative to other sites during the 2020 Independence Day sampling event. Labor Day geometric mean fecal coliform counts in 2022 were similar to or lower than all 2020 Labor Day counts.

Instantaneous *Escherichia coli* (*E. coli*) counts ranged from less than the MDL (1 MPN/100 mL) to 1,553 MPN/100 mL during the 2022 Independence Day and Labor Day sampling events (Appendix D, Tables D-1 and D-2). Results less than the MDL were treated as 0.5 x MDL for the calculation. The lowest geometric mean *E. coli* counts (0.5 MPN/100 mL) occurred in Buck Island and Loon Lake reservoirs (sites Bac-1-BI and Bac-3-LL, respectively) during the Labor Day sampling event, while the highest geometric mean *E. coli* count (19.3 MPN/100 mL) occurred in Junction Reservoir (Site Bac-11-JR) during the Independence Day sampling event. There is no Basin Plan numeric objective for *E. coli.*[2]

[2] While there is no Basin Plan instantaneous objective for *E. coli*, the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California (Water Quality Control Plan) (SWRCB 2019) has replaced the Basin Plan instantaneous fecal coliform objective of 200 MPN/100 mL (reported above) with an instantaneous *E. coli* objective that is based on colony forming units (CFUs) (i.e., 320 CFU/100 mL). The Water Quality Control Plan has also replaced the geometric mean fecal coliform objective with a geometric mean *E. coli* objective of 100 CFU/100 mL for no less than five samples distributed over a six-week period. Although the geometric mean periods for the Basin Plan and Water Quality Control Plan are similar, and MPN and CFU counts are approximately equivalent, future comparisons of *E. coli* results to the Water Quality Control Plan instantaneous objective of 320 CFU/100 mL or the geometric mean objective of 100 CFU/100 mL would require use of a heterotrophic plate count method (Standard Method 9215b) for *E. coli* analysis, rather than Standard Method 9223B (Quantitray) that is specified in the Monitoring Plan (SMUD 2021).

Independence Day geometric mean *E. coli* counts were higher in 2022 than in 2021 at sites Bac-7-UVR, Bac-10-UVR, and Bac-13-IHR and lower than in 2021 at sites Bac-11-JR and Bac-15-SCR. Independence Day geometric mean *E. coli* counts were higher in 2022 than in 2020 at sites Bac-6-GCR, Bac-7-UVR, Bac-10-UVR, Bac-12-IHR, and Bac-13-IHR. Labor Day geometric mean *E. coli* counts in 2022 were similar to or lower than all 2020 Labor Day counts. Overall, the 2022 geometric mean *E. coli* counts were low (0.5 to 19.3 MPN/100 ML) (Table 6-4).

Table 6-4. Bacteria Counts for Upper American River Project Reservoir Sites.

Site ID	Fecal coliform geometric mean[1,2,3] (MPN/100 mL)	*E. coli* geometric mean[1] (MPN/100 mL)
Independence Day		
Bac-5-GCR	19.6	7.2
Bac-6-GCR	86.9	17.1
Bac-7-UVR	34.9	13.6
Bac-8-UVR	4.2	0.8
Bac-9-UVR	7.5	1.4
Bac-10-UVR	11.0	1.3
Bac-11-JR	93.8	19.3
Bac-12-IHR	6.2	14.4
Bac-13-IHR	16.2	4.5
Bac-14-BCR	2.1	0.8
Bac-15-SCR	1.7	0.9
Labor Day		
Bac-1-BI	2.0	0.5
Bac-2-BI	2.1	0.8
Bac-3-LL	0.9	0.5
Bac-4-LL	0.9	0.6

MPN/100 mL = most probable number per 100 milliliters

[1] Method detection limit (MDL for fecal coliform = 1.8 MPN/100 mL. MDL for *E. coli* = 1.0 MPN/100 mL). Individual results less than the MDL were treated as 0.5 x MDL for the geometric mean calculations.

[2] The Basin Plan REC-1 water quality objective for fecal coliform is 200 MPN/100 mL expressed as the geometric mean of five samples collected over 30 days, and no more than ten percent of the total number of samples collected during any 30-day period shall exceed 400 MPN/100 mL (CRWQCB 2019, SMUD 2021).

[3] Individual results greater than 1,600 MPN/100 mL (maximum allowable count for SM9221E laboratory analytical test) were treated as 2.0 x 1,600 for the geometric mean calculations.

7.0 CONCLUSIONS

Based on 2022 *in situ* monitoring results, riverine water quality in the UARP study area consistently met Basin Plan water quality objectives for dissolved oxygen and turbidity. Dissolved oxygen measurements consistently exceeded the Basin Plan instantaneous minimum objective (7.0 mg/L) for COLD and SPWN. There were seven instances of pH measured below the Basin Plan instantaneous minimum objective (6.5 s.u.). The occasionally low pH values may be due to low buffering capacity characteristic of headwater reaches in granitic watersheds. There were no instances of pH measured above the Basin Plan instantaneous maximum objective (8.5 s.u.).

Reservoir water quality was also generally good, with occasional values measured below the Basin Plan instantaneous minimum objectives for dissolved oxygen (7.0 mg/L) in Summer, Fall, and Fall/Winter months in the bottom waters of stratified reservoirs (e.g., Ice House Reservoir, Brush Creek Reservoir), which is not uncommon for deep waterbodies that have been thermally stratified for several months. There were several instances of pH measured below the Basin Plan instantaneous minimum objective (6.5 s.u.) in surface and bottom waters, which, similar to the riverine pH results, may be due to low buffering capacity characteristic of headwater reaches in granitic watersheds. pH measurements in the upper three meters of Slab Creek Reservoir exceeded the Basin Plan instantaneous maximum objective (8.5 s.u.) in Summer, ranging from 8.6 to 9.2 s.u. Turbidity was typically low and would not be expected to cause nuisance or adversely affect beneficial uses.

The 2022 general chemistry monitoring results indicate that riverine and reservoir water quality in the UARP study area meet water quality criteria, with a small number of exceedances of the NRWQC, Basin Plan water quality objectives, and/or CTR standards. Hardness was very low (≤ 17 mg/L) across all seasons and at all sites, such that acute and chronic hardness-dependent criteria were also very low (below the MDL for total and dissolved silver) and thus more easily exceeded by even low concentrations of trace elements. Across a total of 2,897 analyte records for riverine samples, there were only 25 instances of exceedances of water quality standards (1.0%). there was no seasonal or spatial pattern with respect to exceedances. Across a total of 3,925 analyte records for reservoir samples, there were 47 instances of exceedances (1.2%). A cluster of total and dissolved silver exceedances was observed in Ice House Reservoir in Fall, persisting and extending into South Fork Silver Creek in Fall/Winter, but concentrations for both analytes were below the RL. Overall, the 2022 general chemistry monitoring results indicate no analytes of concern for the UARP study area.

Sampling results for 2022 indicated no exceedances of the geometric mean fecal coliform Basin Plan objective of 200 MPN/100 mL (geometric mean of five samples collected over 30 days). There were a total of eight exceedances of the instantaneous maximum Basin Plan objective of 400 MPN/100 mL.

Despite occasional low dissolved oxygen and pH measurements, and some instances of elevated turbidity, 2022 monitoring results indicate that overall, surface waters of the UARP study area support designated beneficial uses, including COLD, SPWN, and REC-1.

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APPENDIX A
In situ Vertical Profile Data for Upper American River Project Reservoir Sites

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Table A-1. *In situ* Vertical Profile Data for Upper American River Project Reservoir Sites – Spring *In situ* and General Chemistry Surveys.

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
Rubicon Reservoir									
R-IS-18-RR	5/25	surface	9.5	6.1	9.5	84	7	0.2[Q]	5.2
		1	8.4	6.0	9.7	82	7	0.3[Q]	
		2	6.1	5.8	10.2	82	6	0.3[Q]	
		3	6.1	5.6	10.2	82	6	0.3[Q]	
Buck Island Reservoir									
R-IS-19-BI	5/26	surface	10.7	6.0	9.2	83	7[Q]	0.2	8.1
		1	10.6	5.8	9.2	83	7[Q]	0.2	
		2	10.4	5.5	9.3	83	7[Q]	0.2	
		3	10.3	5.5	9.3	83	7[Q]	0.2	
		4	10.2	5.5	9.3	83	7[Q]	0.2	
		5	10.2	5.5	9.3	83	7[Q]	0.2	
		6	9.7	5.6	9.4	83	7[Q]	0.2	
		7	9.3	5.6	9.6	83	7[Q]	0.2	
		8	8.7	5.6	9.7	83	6[Q]	0.3	
Loon Lake Reservoir									
R-IS-1-LL	5/17	surface	11.2	6.5	8.7	80	8[Q]	0.2	10.8
		1	11.0	6.3	8.8	80	8[Q]	0.2	
		2	11.0	6.3	8.8	80	8[Q]	0.2	
		3	10.9	6.3	8.8	80	8[Q]	0.2	
		4	10.9	6.2	8.8	80	8[Q]	0.2	
		5	10.2	6.2	8.9	79	7[Q]	0.2	
		6	9.8	6.2	8.9	79	7[Q]	0.2	
		7	9.4	6.2	8.9	78	7[Q]	0.2	
		8	9.0	6.2	9.0	78	7[Q]	0.2	
		9	8.8	6.2	9.0	77	7[Q]	0.2	
		10	8.4	6.1	9.0	77	7[Q]	0.2	
		11	8.0	6.1	9.0	76	7[Q]	0.3	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-1-LL	5/17	12	7.8	6.1	9.0	76	7[Q]	0.3	10.8
		13	7.7	6.1	9.0	76	7[Q]	0.2	
		14	7.6	6.1	9.0	75	7[Q]	0.2	
		15	7.5	6.1	9.0	75	7[Q]	0.2	
		16	7.5	6.0	9.0	75	7[Q]	0.3	
		17	7.4	6.0	9.0	75	7[Q]	0.2	
		18	7.2	6.0	9.0	74	7[Q]	0.3	
		19	7.2	6.0	9.0	74	7[Q]	0.2	
		20	7.0	6.0	8.9	74	7[Q]	0.3	
		21	6.9	6.0	8.9	73	7[Q]	0.3	
		22	6.8	6.0	8.9	73	7[Q]	0.3	
		23	6.7	5.9	8.9	73	7[Q]	0.3	
		24	6.7	5.9	8.9	73	7[Q]	0.3	
		25	6.7	5.9	8.9	73	7[Q]	0.3	
		26	6.7	5.9	8.9	72	7[Q]	0.3	
		27	6.5	5.9	8.9	72	7[Q]	0.3	
		28	6.4	5.9	8.8	72	7[Q]	0.3	
		29	6.3	5.9	8.8	71	7[Q]	0.4	
R-IS-2-LL	5/17	surface	11.0	6.7	8.9	80	8[Q]	0.2	not recorded
		1	10.2	6.7	8.9	79	8[Q]	0.2	
		2	9.9	6.7	8.9	79	8[Q]	0.2	
		3	9.8	6.7	8.9	79	8[Q]	0.2	
		4	9.6	6.7	8.9	78	8[Q]	0.2	
		5	9.3	6.7	9.0	78	8[Q]	0.2	
		6	9.1	6.7	9.0	78	8[Q]	0.2	
		7	8.7	6.6	9.0	77	7[Q]	0.2	
		8	8.4	6.7	9.0	77	7[Q]	0.2	
		9	8.1	6.7	9.1	77	7[Q]	0.2	
		10	8.0	6.6	9.1	77	7[Q]	0.3	
		11	7.9	6.6	9.1	76	7[Q]	0.2	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-2-LL	5/17	12	7.7	6.6	9.0	76	7[Q]	0.3	not recorded
		13	7.7	6.6	9.0	76	7[Q]	0.3	
		14	7.6	6.6	9.0	75	7[Q]	0.3	
		15	7.6	6.6	9.0	75	7[Q]	0.3	
		16	7.6	6.6	9.0	75	7[Q]	0.3	
		17	7.6	6.6	9.0	75	7[Q]	0.3	
R-IS-3-LL	5/17	surface	10.6	6.8	8.9	80	8[Q]	0.2	11.6
		1	9.8	6.7	8.9	79	8[Q]	0.2	
		2	9.6	6.7	8.9	78	8[Q]	0.2	
		3	9.6	6.7	8.9	78	8[Q]	0.2	
		4	9.5	6.7	8.9	78	8[Q]	0.2	
		5	9.5	6.7	8.9	78	8[Q]	0.2	
		6	9.5	6.7	9.0	78	8[Q]	0.2	
		7	9.4	6.7	9.0	78	8[Q]	0.2	
		8	9.4	6.7	9.0	78	8[Q]	0.2	
		9	9.0	6.7	9.0	77	8[Q]	0.2	
		10	8.8	6.7	9.0	77	7[Q]	0.2	
		11	8.5	6.7	9.0	77	7[Q]	0.2	
		12	8.3	6.7	9.0	76	7[Q]	0.2	
		13	7.9	6.7	9.0	76	7[Q]	0.3	
		14	7.8	6.7	9.0	75	7[Q]	0.3	
Gerle Creek Reservoir									
R-IS-4-GC	5/19	surface	13.4	6.9	8.8	84	11	0.1[Q]	7.3
		1	12.1	6.8	9.2	85	10	0.2[Q]	
		2	11.2	6.7	9.3	85	10	0.2[Q]	
		3	10.6	6.6	9.3	83	10	0.2[Q]	
		4	10.2	6.6	9.4	84	10	0.2[Q]	
		5	9.6	6.6	9.6	84	10	0.2[Q]	
		6	8.7	6.6	9.9	85	9	0.2[Q]	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
Ice House Reservoir									
R-IS-9-IHR	5/16	surface	13.0	7.3	9.8	93	15[Q]	0.9	2.5
		1	12.8	7.3	9.9	93	15[Q]	1.0	
		2	12.3	7.3	10.0	93	15[Q]	0.9	
		3	11.2	7.3	10.1	92	15[Q]	0.9	
		4	10.6	7.1	10.1	91	14[Q]	0.7	
		5	10.5	7.0	10.1	91	14[Q]	0.7	
		6	10.5	7.0	10.1	91	14[Q]	0.8	
		7	10.2	6.9	10.1	89	14[Q]	0.7	
		8	10.0	6.9	10.1	89	14[Q]	0.7	
		9	9.7	6.8	10.0	87	14[Q]	0.6	
		10	9.0	6.7	9.9	86	13[Q]	0.5	
		11	8.8	6.6	9.9	85	13[Q]	0.5	
		12	7.9	6.5	9.9	83	13[Q]	0.5	
		13	7.5	6.4	9.9	82	13[Q]	0.5	
		14	7.0	6.3	9.8	81	13[Q]	0.5	
		15	6.9	6.2	9.8	81	14[Q]	0.5	
		16	6.8	6.1	9.8	80	13[Q]	0.4	
		17	6.7	6.0	9.8	80	13[Q]	0.5	
		18	6.6	6.0	9.7	80	13[Q]	0.4	
		19	6.6	5.9	9.7	79	13[Q]	0.4	
		20	6.6	5.9	9.7	79	13[Q]	0.5	
		21	6.5	5.9	9.7	79	13[Q]	0.4	
		22	6.4	5.8	9.7	79	13[Q]	0.4	
		23	6.5	5.8	9.7	79	13[Q]	0.4	
		24	6.4	5.8	9.7	78	13[Q]	0.4	
		25	6.4	5.8	9.6	78	13[Q]	0.4	
R-IS-10-IHR	5/16	surface	13.6	7.9	9.8	94	16[Q]	1.1	2.0
		1	12.9	8.0	9.8	94	15[Q]	1.6	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-10-IHR	5/16	2	12.7	8.0	10.0	94	15[Q]	1.4	2.0
		3	12.1	8.0	9.9	92	15[Q]	0.8	
		4	10.8	7.9	10.0	91	15[Q]	0.7	
		5	10.5	7.8	10.1	90	14[Q]	0.6	
		6	10.0	7.7	10.1	87	14[Q]	0.6	
		7	9.6	7.5	10.0	88	15[Q]	0.6	
		8	9.6	7.4	10.0	87	14[Q]	0.6	
		9	8.9	7.4	9.9	86	14[Q]	0.5	
		10	8.1	7.2	9.8	83	13[Q]	0.5	
		11	8.0	7.1	9.8	83	13[Q]	0.5	
R-IS-11-IHR	5/16	surface	13.6	7.8	9.7	93	16[Q]	0.9	2.3
		1	12.5	7.9	9.8	92	15[Q]	1.3	
		2	12.5	7.9	9.8	92	15[Q]	1.3	
		3	12.3	7.9	9.8	92	15[Q]	1.2	
		4	12.2	7.9	9.9	92	15[Q]	1.1	
		5	10.4	7.8	10.0	90	15[Q]	0.6	
		6	9.8	7.6	10.0	87	14[Q]	0.6	
		7	8.8	7.4	9.9	86	14[Q]	0.5	
		8	7.9	7.3	9.9	83	14[Q]	0.4	
		9	7.2	7.1	9.9	82	14[Q]	0.4	
		10	7.1	7.0	9.9	82	13[Q]	0.4	
		11	6.9	7.0	9.8	81	13[Q]	0.4	
		12	6.6	6.9	9.8	80	13[Q]	0.4	
		13	6.5	6.8	9.8	79	13[Q]	0.4	
		14	6.5	6.7	9.7	79	13[Q]	0.4	
		15	6.4	6.7	9.7	79	13[Q]	0.4	
		16	6.4	6.7	9.7	79	13[Q]	0.4	
		17	6.4	6.6	9.7	79	13[Q]	0.4	
		18	6.4	6.6	9.7	79	13[Q]	0.4	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-11-IHR	5/16	19	6.3	6.6	9.7	78	13[Q]	0.4	2.3
		20	6.3	6.5	9.7	78	13[Q]	0.4	
		21	6.3	6.5	9.7	78	13[Q]	0.4	
		22	6.3	6.5	9.6	78	13[Q]	0.4	
		23	6.2	6.5	9.6	78	13[Q]	0.4	
		24	6.2	6.5	9.6	78	13[Q]	0.4	
		25	6.2	6.5	9.6	78	13[Q]	0.4	
		26	6.2	6.5	9.6	78	13[Q]	0.4	
Union Valley Reservoir									
R-IS-5-UVR	5/18	surface	14.8	6.8	9.2	91	12[Q]	0.3	8.2
		1	14.3	6.8	9.3	91	12[Q]	0.3	
		2	14.2	6.8	9.3	91	12[Q]	0.5	
		3	13.9	6.7	9.4	91	12[Q]	0.4	
		4	12.8	6.7	9.5	90	12[Q]	0.5	
		5	12.0	6.6	9.6	89	12[Q]	0.5	
		6	11.2	6.6	9.6	88	11[Q]	0.3	
		7	10.7	6.6	9.6	87	11[Q]	0.3	
		8	10.5	6.5	9.7	87	10[Q]	0.4	
		9	10.2	6.5	9.7	86	11[Q]	0.3	
		10	9.9	6.5	9.8	86	11[Q]	0.3	
		11	9.4	6.5	9.8	86	10[Q]	0.4	
		12	9.2	6.4	9.8	85	10[Q]	0.3	
		13	9.0	6.4	9.9	85	10[Q]	0.3	
		14	8.5	6.3	9.9	85	10[Q]	0.3	
		15	8.3	6.3	9.9	84	10[Q]	0.4	
		16	7.5	6.2	9.7	81	10[Q]	0.3	
		17	7.3	6.2	9.6	80	10[Q]	0.3	
		18	7.2	6.1	9.6	80	10[Q]	0.3	
		19	7.1	6.1	9.6	79	10[Q]	0.3	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-5-UVR	5/18	20	7.0	6.1	9.6	78	10[Q]	0.5	
R-IS-6-UVR	5/18	surface	15.7	7.0	9.2	92	13[Q]	0.3	
		1	14.7	7.1	9.2	91	13[Q]	0.3	
		2	14.3	7.1	9.3	91	12[Q]	0.3	
		3	14.0	7.1	9.4	91	12[Q]	0.4	
		4	12.7	7.1	9.7	92	12[Q]	0.5	
		5	12.5	7.2	9.8	92	12[Q]	0.7	
		6	11.6	7.2	9.8	90	11[Q]	0.4	
		7	11.3	7.2	9.8	90	11[Q]	0.4	
		8	11.0	7.2	9.8	89	11[Q]	0.4	
		9	10.6	7.1	9.8	88	11[Q]	0.4	
		10	10.4	7.1	9.8	87	11[Q]	0.4	
		11	10.2	7.1	9.8	87	11[Q]	0.4	
		12	10.0	7.1	9.8	87	11[Q]	0.4	
		13	9.9	7.0	9.9	87	11[Q]	0.4	8.2
		14	9.5	7.0	9.9	86	11[Q]	0.4	
		15	9.0	6.9	9.9	86	11[Q]	0.4	
		16	8.5	6.9	9.9	84	11[Q]	0.4	
		17	8.5	6.8	9.8	84	11[Q]	0.3	
		18	8.0	6.8	9.9	83	11[Q]	0.3	
		19	7.6	6.8	9.9	82	10[Q]	0.4	
		20	7.5	6.7	9.8	82	10[Q]	0.3	
		21	7.4	6.7	9.8	82	10[Q]	0.3	
		22	7.0	6.7	9.8	81	10[Q]	0.3	
		23	6.9	6.7	9.8	81	10[Q]	0.3	
		24	6.8	6.6	9.8	80	10[Q]	0.3	
		25	6.7	6.6	9.8	80	10[Q]	0.3	
		26	6.7	6.5	9.7	80	10[Q]	0.3	
		27	6.6	6.5	9.7	80	10[Q]	0.3	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-6-UVR	5/18	28	6.6	6.5	9.7	80	10[Q]	0.3	8.2
		29	6.6	6.5	9.8	80	10[Q]	0.3	
		30	6.6	6.4	9.8	80	10[Q]	0.3	
		31	6.4	6.4	9.7	79	10[Q]	0.3	
		32	6.2	6.4	9.7	78	10[Q]	0.3	
		33	6.0	6.4	9.6	77	10[Q]	0.3	
		34	5.9	6.3	9.5	76	10[Q]	0.3	
		35	5.9	6.3	9.5	76	10[Q]	0.3	
R-IS-7-UVR	5/18	surface	14.7	7.1	9.3	91	12[Q]	0.3	5.6
		1	14.2	7.1	9.4	91	12[Q]	0.4	
		2	14.1	7.1	9.4	91	12[Q]	0.4	
		3	14.0	7.1	9.4	91	12[Q]	0.4	
		4	12.9	7.1	9.6	91	12[Q]	0.5	
		5	11.9	7.1	9.7	90	11[Q]	0.6	
		6	11.8	7.0	9.7	90	11[Q]	0.4	
		7	11.2	7.0	9.7	88	11[Q]	0.4	
		8	11.0	7.0	9.7	88	11[Q]	0.4	
		9	10.6	7.0	9.7	88	11[Q]	0.3	
		10	10.4	7.0	9.8	87	11[Q]	0.4	
		11	10.0	7.0	9.8	87	11[Q]	0.4	
		12	9.2	7.0	9.9	86	11[Q]	0.3	
		13	8.7	6.9	9.9	85	10[Q]	0.4	
		14	8.3	6.8	9.8	84	10[Q]	0.4	
		15	7.9	6.8	9.8	83	10[Q]	0.3	
		16	7.4	6.7	9.8	81	10[Q]	0.3	
		17	7.3	6.7	9.8	81	10[Q]	0.3	
		18	7.2	6.7	9.8	81	11[Q]	0.3	
		19	7.0	6.6	9.7	80	10[Q]	0.3	
		20	6.7	6.6	9.7	79	10[Q]	0.3	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-7-UVR	5/18	21	6.7	6.6	9.7	79	10[Q]	0.3	5.6
		22	6.6	6.5	9.6	79	10[Q]	0.3	
		23	6.4	6.5	9.6	78	10[Q]	0.3	
		24	6.3	6.5	9.6	78	10[Q]	0.3	
		25	6.3	6.5	9.5	77	10[Q]	0.3	
		26	6.3	6.4	9.5	77	10[Q]	0.3	
		27	6.3	6.4	9.5	77	10[Q]	0.3	
		28	6.2	6.4	9.5	77	10[Q]	0.3	
		29	6.2	6.4	9.5	77	10[Q]	0.3	
		30	6.1	6.4	9.5	77	10[Q]	0.3	
		31	6.0	6.4	9.5	76	10[Q]	0.3	
		32	6.0	6.4	9.5	76	10[Q]	0.3	
		33	5.9	6.4	9.5	76	10[Q]	0.5	
		34	5.9	6.4	9.5	76	10[Q]	0.3	
		35	5.9	6.4	9.5	76	10[Q]	0.3	
		36	5.8	6.4	9.5	76	10[Q]	0.3	
		37	5.8	6.4	9.4	75	10[Q]	0.3	
		38	5.8	6.3	9.4	75	10[Q]	0.3	
		39	5.8	6.3	9.5	76	10[Q]	0.3	
		40	5.8	6.4	9.5	76	10[Q]	0.3	
		41	5.8	6.3	9.5	76	10[Q]	0.3	
		42	5.7	6.4	9.5	76	10[Q]	0.3	
		43	5.7	6.3	9.5	76	10[Q]	0.3	
		44	5.7	6.3	9.4	75	10[Q]	0.3	
		45	5.7	6.3	9.4	75	10[Q]	0.3	
		46	5.6	6.3	9.4	75	10[Q]	0.3	
		47	5.6	6.3	9.4	75	10[Q]	0.3	
R-IS-8-UVR	5/18	surface	14.3	7.0	9.3	91	12[Q]	0.3	6.1
		1	13.8	7.0	9.4	91	12[Q]	0.4	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-8-UVR	5/18	2	13.6	7.1	9.5	91	12[Q]	0.4	6.1
		3	13.5	7.1	9.5	91	12[Q]	0.4	
		4	12.1	7.1	9.7	90	12[Q]	0.4	
		5	11.8	7.1	9.8	90	12[Q]	0.4	
		6	11.6	7.1	9.8	90	12[Q]	0.4	
		7	11.2	7.1	9.8	89	11[Q]	0.4	
		8	10.8	7.1	9.8	88	11[Q]	0.4	
		9	10.6	7.1	9.8	88	11[Q]	0.4	
		10	10.3	7.0	5.8	87	11[Q]	0.4	
		11	9.9	7.0	9.8	87	11[Q]	0.4	
		12	9.4	7.0	9.9	87	11[Q]	0.4	
		13	9.1	6.9	9.9	86	11[Q]	0.4	
		14	8.8	6.9	9.9	86	11[Q]	0.4	
		15	8.5	6.8	9.9	85	11[Q]	0.4	
		16	8.0	6.8	9.9	84	11[Q]	0.3	
		17	7.7	6.7	9.9	83	11[Q]	0.3	
		18	7.4	6.7	9.7	81	11[Q]	0.3	
		19	7.2	6.6	9.7	81	10[Q]	0.3	
		20	6.9	6.6	9.7	80	10[Q]	0.3	
		21	6.8	6.6	9.7	79	10[Q]	0.3	
		22	6.6	6.5	9.7	79	10[Q]	0.4	
		23	6.5	6.5	9.7	79	10[Q]	0.3	
		24	6.4	6.5	9.6	78	10[Q]	0.3	
		25	6.3	6.5	9.6	78	10[Q]	0.3	
		26	6.3	6.4	9.6	78	10[Q]	0.3	
		27	6.1	6.4	9.6	78	10[Q]	0.3	
		28	6.1	6.4	9.6	78	10[Q]	0.3	
		29	6.1	6.4	9.6	78	10[Q]	0.3	
		30	6.0	6.4	9.6	77	10[Q]	0.0	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-8-UVR	5/18	31	6.0	6.4	9.6	77	10[Q]	0.3	6.1
		32	6.0	6.4	9.6	77	10[Q]	0.3	
		33	5.3	6.4	9.6	77	10[Q]	0.5	
		34	5.9	6.4	9.6	77	10[Q]	0.3	
		35	5.9	6.5	9.6	77	10[Q]	0.3	
		36	5.9	6.4	9.6	77	10[Q]	0.3	
		37	5.9	6.4	9.7	77	10[Q]	0.3	
		38	5.8	6.4	9.7	77	10[Q]	0.3	
		39	5.8	6.4	9.7	77	10[Q]	0.3	
		40	5.8	6.4	9.7	77	10[Q]	0.3	
		41	5.8	6.4	9.7	77	10[Q]	0.3	
		42	5.8	6.4	9.7	77	10[Q]	0.4	
		43	5.7	6.4	9.6	77	10[Q]	0.3	
		44	5.7	6.4	9.6	77	10[Q]	0.3	
		45	5.7	6.4	9.6	77	10[Q]	0.3	
		46	5.7	6.4	9.6	77	10[Q]	0.3	
		47	5.7	6.4	9.6	77	10[Q]	0.3	
		48	5.7	6.4	9.6	77	10[Q]	0.3	
		49	5.7	6.4	9.6	77	10[Q]	0.3	
		50	5.6	6.4	9.7	77	10[Q]	0.3	
		51	5.6	6.4	9.7	77	10[Q]	0.3	
		52	5.6	6.4	9.7	77	10[Q]	0.3	
		53	5.6	6.4	9.6	77	10[Q]	0.3	
		54	5.6	6.4	9.6	76	10[Q]	0.3	
		55	5.5	6.4	9.6	76	10[Q]	0.3	
		56	5.5	6.4	9.6	76	10[Q]	0.3	
		57	5.6	6.4	9.6	76	10[Q]	0.3	
		58	5.5	6.4	9.6	76	10[Q]	0.3	
		59	5.5	6.4	9.6	76	10[Q]	0.3	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-8-UVR	5/18	60	5.5	6.4	9.6	76	10[Q]	0.3	6.1
		61	5.5	6.4	9.5	76	10[Q]	0.3	
		62	5.5	6.4	9.5	76	10[Q]	0.3	
		63	5.5	6.4	9.5	76	10[Q]	0.3	
		64	5.4	6.4	9.5	76	10[Q]	0.3	
		65	5.3	6.4	9.5	75	10[Q]	0.3	
		66	5.4	6.4	9.5	75	10[Q]	0.3	
		67	5.4	6.4	9.5	75	10[Q]	0.3	
		68	5.3	6.4	9.5	75	10[Q]	0.3	
		69	5.4	6.4	9.5	75	10[Q]	0.3	
		70	5.4	6.4	9.5	75	10[Q]	0.3	
		71	5.4	6.4	9.5	75	10[Q]	0.3	
		72	5.4	6.4	9.5	75	10[Q]	0.3	
		73	5.4	6.4	9.5	75	10[Q]	0.3	
		74	5.4	6.4	9.5	75	10[Q]	0.3	
		75	5.4	6.4	9.5	75	10[Q]	0.3	
		76	5.4	6.4	9.5	75	10[Q]	0.3	
		77	5.4	6.4	9.5	75	10[Q]	0.3	
		78	5.4	6.4	9.5	75	10[Q]	0.3	
		79	5.4	6.4	9.5	75	10[Q]	0.3	
		80	5.4	6.4	9.5	75	10[Q]	0.3	
		81	5.4	6.4	9.5	75	10[Q]	0.3	
		82	5.4	6.4	9.5	75	10[Q]	0.3	
		83	5.4	6.4	9.5	75	10[Q]	0.3	
		84	5.4	6.4	9.5	75	10[Q]	0.3	
		85	5.4	6.4	9.5	75	10[Q]	0.3	
		86	5.3	6.4	9.5	75	10[Q]	0.3	
Junction Reservoir									
R-IS-12-JR	5/23	surface	13.0	6.7	9.3	88	13[Q]	0.3	5.5

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-12-JR	5/23	1	11.5	6.7	9.4	86	12[Q]	0.4	5.5
		2	11.2	6.7	9.4	86	12[Q]	0.4	
		3	10.6	6.7	9.6	86	12[Q]	0.4	
		4	9.1	6.6	9.9	85	11[Q]	0.3	
		5	8.6	6.6	10.0	85	11[Q]	0.3	
		6	8.2	6.5	10.0	85	11[Q]	0.3	
		7	7.9	6.4	10.0	84	11[Q]	0.2	
		8	7.9	6.3	9.9	83	10[Q]	0.2	
		9	7.6	6.2	9.8	82	10[Q]	0.2	
		10	7.5	6.2	9.7	81	10[Q]	0.3	
		11	7.5	6.1	9.7	81	10[Q]	0.2	
		12	7.4	6.1	9.7	81	10[Q]	0.2	
		13	7.3	6.1	9.7	80	10[Q]	0.2	
		14	7.2	6.1	9.7	80	10[Q]	0.2	
		15	7.2	6.1	9.6	80	10[Q]	0.2	
		16	7.1	6.1	0.6	80	10[Q]	0.3	
Camino Reservoir									
R-IS-13-CR	5/23	surface	10.9	5.4	10.2	92	12[Q]	0.3	6.0
		1	10.1	5.5	10.3	91	12[Q]	0.3	
		2	9.9	5.5	10.3	91	12[Q]	0.3	
		3	9.6	5.6	10.3	91	12[Q]	0.4	
		4	9.4	5.6	10.4	91	12[Q]	0.3	
		5	9.2	5.5	10.4	91	12[Q]	0.4	
Brush Creek Reservoir									
R-IS-20-BC	5/19	surface	16.9	7.3	9.1	93	20	0.2[Q]	6.4
		1	16.8	7.3	9.1	93	20	0.3[Q]	
		2	16.7	7.3	9.1	93	20	0.3[Q]	
		3	15.5	7.3	9.3	94	20	0.3[Q]	
		4	14.6	7.3	9.7	95	19	0.3[Q]	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-20-BC	5/19	5	14.1	7.3	9.7	95	19	0.4[Q]	6.4
		6	13.8	7.3	10.0	96	18	0.5[Q]	
		7	13.4	7.4	10.1	97	18	0.5[Q]	
		8	13.0	7.4	10.2	97	18	0.4[Q]	
		9	12.5	7.4	10.3	96	18	0.5[Q]	
		10	12.3	7.4	10.3	97	18	0.5[Q]	
		11	12.0	7.4	10.3	96	18	0.5[Q]	
		12	11.9	7.4	10.2	95	18	0.5[Q]	
		13	11.7	7.3	10.2	94	17	0.5[Q]	
		14	11.6	7.3	10.3	94	17	0.5[Q]	
		15	11.5	7.3	10.3	95	17	0.5[Q]	
		16	11.3	7.3	10.3	94	17	0.5[Q]	
		17	11.1	7.3	10.3	94	17	0.5[Q]	
		18	11.0	7.2	10.4	94	17	0.6[Q]	
		19	10.9	7.2	10.3	94	17	0.5[Q]	
		20	10.7	7.2	10.4	93	17	0.6[Q]	
		21	10.3	7.1	10.4	93	17	0.6[Q]	
		22	10.0	7.1	10.1	89	16	0.5[Q]	
		23	9.6	7.0	9.9	87	16	0.4[Q]	
		24	9.5	6.9	9.7	85	16	0.5[Q]	
		25	9.3	6.8	9.6	83	17	0.6[Q]	
		26	9.2	6.8	9.4	81	17	0.7[Q]	
		27	8.9	6.7	8.9	78	17	0.6[Q]	
		28	8.8	6.6	9.0	77	17	0.7[Q]	
		29	8.5	6.6	8.7	74	17	0.7[Q]	
		30	8.1	6.5	7.5	64	17	0.8[Q]	
Slab Creek Reservoir									
R-IS-14-SC	5/24	surface	13.2	6.8	10.4	100	23[Q]	0.8	4.0
		1	13.0	6.7	10.4	99	23[Q]	0.9	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-14-SC	5/24	2	12.8	6.5	10.4	99	23[Q]	1.1	4.0
		3	12.7	6.5	10.5	99	22[Q]	1.0	
		4	12.7	6.5	10.5	99	22[Q]	0.9	
		5	12.7	6.5	10.5	99	22[Q]	1.0	
		6	12.7	6.5	10.5	99	22[Q]	1.1	
		7	12.7	6.5	10.5	99	22[Q]	1.0	
		8	12.4	6.6	10.5	99	21[Q]	0.9	
R-IS-15-SC	5/24	surface	16.1	7.1	10.1	103	26[Q]	0.1	5.9
		1	15.9	7.1	10.1	102	26[Q]	0.2	
		2	15.3	7.1	10.1	101	26[Q]	0.2	
		3	15.2	7.1	10.1	101	26[Q]	0.2	
		4	15.0	7.1	10.1	100	26[Q]	0.3	
		5	14.9	7.1	10.1	100	26[Q]	0.2	
		6	14.2	7.0	10.2	99	25[Q]	0.5	
		7	14.0	7.0	10.2	99	25[Q]	0.5	
		8	13.8	7.0	10.2	99	25[Q]	0.5	
		9	13.7	7.0	10.2	99	25[Q]	0.6	
		10	13.5	7.0	10.3	99	25[Q]	0.7	
		11	13.5	7.0	10.3	99	25[Q]	0.7	
		12	13.5	7.0	10.3	99	25[Q]	1.0	
		13	13.5	7.0	10.3	99	25[Q]	0.9	
		14	13.4	7.0	10.3	98	25[Q]	0.7	
		15	13.2	7.0	10.2	97	25[Q]	0.6	
		16	13.2	6.9	10.2	97	25[Q]	0.7	
		17	13.2	6.9	10.2	97	24[Q]	0.8	
		18	13.2	6.9	10.2	97	24[Q]	0.7	
		19	13.1	6.9	10.2	97	24[Q]	0.7	

ºC = degrees Celsius
m = meter
mg/L = milligrams per liter

s.u = standard unit of pH
uS/cm = microsiemens per centimeter
NTU = Nephelometric Turbidity Unit
[Q] Data are designated as “qualified” because the post-sampling calibration check measurement quality objective (MQO) for acceptability was not met (see Appendix F for detailed calibration data). Qualified values are known with relatively less certainty (see Table 5-2).

Table A-2. *In situ* Vertical Profile Data for Upper American River Project Reservoir Sites – Summer General Chemistry Survey.

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
Rubicon Reservoir									
R-IS-18-RR	8/23	surface	20.6	6.6	6.5	73	17[Q]	4.8	2.7
		1	20.4	6.6	6.5	71	17[Q]	4.8	
Buck Island Reservoir									
R-IS-19-BI	8/24	surface	21.6	6.9	6.8	77	12[Q]	0.1[Q]	7.3
		1	21.6	6.8	6.8	77	12[Q]	0.2[Q]	
		2	21.6	6.8	6.8	77	12[Q]	0.2[Q]	
		3	21.6	6.8	6.8	77	12[Q]	0.1[Q]	
		4	21.5	6.8	6.8	77	12[Q]	0.2[Q]	
		5	21.5	6.7	6.8	77	12[Q]	0.2[Q]	
		6	20.9	6.6	6.7	76	11[Q]	0.1[Q]	
		7	18.2	6.4	6.7	71	10[Q]	0.5[Q]	
Loon Lake Reservoir									
R-IS-1-LL	8/15	surface	22.0	7.5	6.8	78	10	0.1	8.7
		1	21.8	7.5	6.8	78	10	0.1	
		2	21.8	7.2	6.8	78	10	0.0	
		3	21.8	7.1	6.8	78	10	0.1	
		4	21.8	6.9	6.8	78	10	0.1	
		5	21.8	6.7	6.8	78	10	0.1	
		6	21.8	6.6	6.8	78	10	0.1	
		7	21.7	6.5	6.8	78	10	0.1	
		8	19.1	6.4	7.7	84	9	0.2	
		9	18.4	6.3	7.8	82	9	0.1	
		10	17.2	6.2	7.8	81	9	0.1	
		11	16.2	6.1	7.8	79	9	0.2	
		12	15.5	5.9	7.7	77	8	0.2	
		13	14.6	5.6	7.4	73	8	0.2	
		14	14.5	5.4	7.4	72	8	0.2	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-1-LL	8/15	15	14.1	5.3	7.2	70	8	0.2	8.7
		16	13.9	5.2	7.1	69	8	0.3	
		17	13.8	5.1	7.0	67	8	0.2	
		18	13.5	4.9	6.7	64	8	0.3	
		19	13.2	5.0	6.5	62	8	0.2	
		20	12.7	4.9	6.2	58	8	0.2	
		21	11.9	4.8	6.0	56	8	0.2	
		22	10.1	4.8	6.0	52	8	0.2	
		23	9.0	4.7	5.6	48	8	0.3	
		24	8.1	4.7	5.5	46	8	0.3	
		25	7.8	4.6	5.3	45	8	0.3	
		26	7.5	4.6	4.9	41	8	0.3	
R-IS-2-LL	8/15	surface	21.8	7.4	6.9	79	10	0.0	10.2
		1	21.7	7.3	6.9	79	10	0.0	
		2	21.6	6.8	6.9	79	10	0.1	
		3	21.6	6.2	6.9	8	10	0.1	
		4	21.7	5.7	6.9	79	10	0.0	
		5	21.5	5.3	6.9	78	10	0.1	
		6	21.4	4.6	6.9	78	10	0.0	
		7	21.4	5.4	6.9	78	10	0.1	
		8	21.2	5.4	6.9	78	10	0.1	
		9	18.8	5.6	7.5	81	9	0.1	
		10	17.2	6.0	8.0	83	9	0.1	
		11	16.7	6.3	8.0	81	9	0.1	
		12	15.6	6.6	8.1	80	8	0.1	
		13	14.8	6.5	8.0	78	8	0.2	
		14	14.3	6.5	7.8	76	8	0.1	
		15	14.0	6.6	7.6	73	8	0.2	
		16	13.7	6.7	7.5	72	8	0.2	
		17	13.2	6.7	7.4	8	8	0.2	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-2-LL	8/15	18	13.0	6.6	7.3	69	8	0.2	10.2
		19	12.4	6.6	7.1	66	8	0.2	
		20	11.3	6.8	6.6	60	8	0.2	
		21	11.1	6.8	6.4	58	8	0.2	
		22	10.9	6.9	6.4	57	8	0.2	
		23	10.7	7.0	6.3	57	8	0.3	
		24	21.8	7.4	6.9	79	10	0.0	
R-IS-3-LL	8/15	surface	21.8	6.4	6.7	76	10	0.1	9.0
		1	21.5	6.3	6.8	77	10	0.0	
		2	21.5	6.9	6.9	78	10	0.1	
		3	21.3	6.6	6.9	77	10	0.1	
		4	21.2	6.4	6.9	77	10	0.1	
		5	21.2	6.3	6.9	77	10	0.1	
		6	21.1	6.1	6.9	77	10	0.1	
		7	21.1	6.0	6.9	77	10	0.1	
		8	21.0	6.9	6.9	77	10	0.1	
		9	17.4	6.2	7.4	78	9	0.1	
		10	16.9	6.4	7.9	81	9	0.0	
		11	15.1	6.5	8.0	80	8	0.2	
		12	14.9	6.9	8.0	79	8	0.2	
		13	14.4	6.5	7.9	77	8	0.2	
		14	14.0	6.5	7.8	76	8	0.3	
Gerle Creek Reservoir									
R-IS-4-GC	8/1	surface	18.4	6.6	8.0	85	11	0.1	7.8
		1	17.1	6.6	8.4	87	10	0.1	
		2	16.1	6.6	8.6	87	10	0.2	
		3	15.6	6.5	8.6	87	10	0.2	
		4	15.4	6.4	8.6	86	10	0.2	
		5	15.2	6.3	8.6	86	10	0.2	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-4-GC	8/1	6	15.1	6.2	8.6	85	10	0.2	7.8
		7	15.0	6.2	8.5	85	10	0.1	
Ice House Reservoir									
R-IS-9-IHR	8/22	surface	22.0	6.6	7.2	82	14[Q]	0.1[Q]	8.8
		1	22.0	6.6	7.2	82	14[Q]	0.0[Q]	
		2	22.0	6.5	7.2	82	14[Q]	0.0[Q]	
		3	22.0	6.5	7.2	82	14[Q]	0.0[Q]	
		4	22.0	6.5	7.2	82	14[Q]	0.1[Q]	
		5	22.0	6.5	7.9	82	14[Q]	0.0[Q]	
		6	22.0	6.5	7.2	82	14[Q]	0.1[Q]	
		7	21.9	6.6	7.2	82	14[Q]	0.1[Q]	
		8	21.4	6.6	7.3	83	14[Q]	0.0[Q]	
		9	20.6	6.6	7.7	86	13[Q]	0.0[Q]	
		10	17.3	6.6	8.7	91	12[Q]	0.1[Q]	
		11	15.0	6.6	9.0	90	11[Q]	0.6[Q]	
		12	13.9	6.6	8.9	86	11[Q]	0.1[Q]	
		13	12.4	6.5	8.3	77	11[Q]	0.2[Q]	
		14	11.5	6.3	7.7	70	11[Q]	0.2[Q]	
		15	10.9	6.2	7.3	66	11[Q]	0.1[Q]	
		16	10.3	6.2	7.4	66	11[Q]	0.2[Q]	
		17	9.5	5.9	7.3	64	11[Q]	0.2[Q]	
		18	8.9	5.8	6.9	58	11[Q]	0.2[Q]	
		19	8.4	6.2	6.4	54	11[Q]	0.3[Q]	
		20	8.0	5.5	5.6	46	11[Q]	0.4[Q]	
		21	7.8	5.4	4.9	41	11[Q]	0.4[Q]	
		22	7.6	5.4	4.8	40	11[Q]	0.3[Q]	
		23	7.4	5.3	4.6	38	11[Q]	0.3[Q]	
		24	7.3	5.3	4.3	36	11[Q]	0.4[Q]	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-9-IHR	8/22	25	7.3	5.3	4.3	36	11[Q]	0.5[Q]	8.8
R-IS-10-IHR	8/22	surface	22.5	7.0	7.2	83	14[Q]	0.1[Q]	8.8
		1	22.4	7.0	7.2	83	14[Q]	0.0[Q]	
		2	22.3	7.0	7.2	83	14[Q]	0.1[Q]	
		3	22.0	7.1	7.2	83	14[Q]	0.0[Q]	
		4	21.9	7.1	7.2	83	14[Q]	0.0[Q]	
		5	21.9	7.1	7.3	83	14[Q]	0.0[Q]	
		6	21.8	7.1	7.3	83	14[Q]	0.1[Q]	
		7	21.8	7.1	7.3	83	14[Q]	0.0[Q]	
		8	21.8	7.1	7.3	8	14[Q]	0.0[Q]	
R-IS-11-IHR	8/22	surface	22.0	6.9	7.1	82	14[Q]	0.0[Q]	8.8
		1	21.9	7.0	7.2	82	14[Q]	0.1[Q]	
		2	21.8	7.0	7.2	82	14[Q]	0.1[Q]	
		3	21.8	7.0	7.2	82	14[Q]	0.1[Q]	
		4	21.7	7.0	7.2	82	14[Q]	0.0[Q]	
		5	21.7	7.0	7.2	82	14[Q]	0.0[Q]	
		6	21.7	7.0	7.2	82	14[Q]	0.0[Q]	
		7	21.7	7.0	7.2	82	14[Q]	0.0[Q]	
		8	21.6	7.0	7.2	82	14[Q]	0.0[Q]	
		9	21.5	7.1	7.3	83	14[Q]	0.0[Q]	
		10	16.4	7.1	8.9	92	12[Q]	0.0[Q]	
		11	13.7	7.0	9.2	89	11[Q]	0.2[Q]	
		12	13.3	6.9	9.0	86	11[Q]	0.2[Q]	
		13	12.5	6.8	8.7	81	11[Q]	0.2[Q]	
		14	11.7	6.7	8.3	76	11[Q]	0.2[Q]	
		15	10.9	6.6	8.0	72	11[Q]	0.2[Q]	
		16	10.3	6.5	7.7	68	11[Q]	0.3[Q]	
		17	9.4	6.3	7.5	65	11[Q]	0.3[Q]	
		18	8.9	6.3	7.3	63	11[Q]	0.2[Q]	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-11-IHR	8/22	19	8.4	6.1	7.1	60	11[Q]	0.3[Q]	8.8
		20	8.0	6.1	7.0	59	11[Q]	0.2[Q]	
		21	6.7	6.0	6.9	58	11[Q]	0.3[Q]	
		22	7.5	6.0	6.6	55	11[Q]	0.3[Q]	
		23	7.4	5.9	6.5	54	11[Q]	0.2[Q]	
		24	7.3	5.8	6.4	54	11[Q]	0.3[Q]	
		25	7.3	5.8	6.5	54	11[Q]	0.3[Q]	
		26	7.2	5.7	6.6	54	11[Q]	0.3[Q]	
		27	7.2	5.6	6.5	54	11[Q]	0.3[Q]	
		28	7.1	5.6	6.6	55	11[Q]	0.3[Q]	
		29	7.1	5.6	6.5	54	11[Q]	0.3[Q]	
		30	7.1	5.6	6.4	53	11[Q]	0.3[Q]	
		31	7.1	5.5	6.3	52	11[Q]	0.3[Q]	
		32	7.1	5.4	5.8	44	11[Q]	0.4[Q]	
		33	7.0	5.4	4.9	41	11[Q]	0.4[Q]	
		34	7.0	5.4	4.8	39	11[Q]	0.4[Q]	
Union Valley Reservoir									
R-IS-5-UVR	8/17	surface	23.7	6.7	7.3	86	15[Q]	0.1	6.6
		1	23.6	6.8	7.3	86	15[Q]	0.1	
		2	23.6	6.8	7.3	86	15[Q]	0.1	
		3	23.5	6.8	7.3	86	15[Q]	0.1	
		4	23.5	6.8	7.3	86	15[Q]	0.2	
		5	23.5	6.8	7.3	86	15[Q]	0.1	
		6	23.4	6.8	7.3	85	15[Q]	0.4	
		7	22.6	6.7	7.4	85	14[Q]	0.2	
		8	22.9	6.7	7.6	86	14[Q]	0.2	
		9	21.5	6.7	7.6	86	14[Q]	0.2	
R-IS-6-UVR	8/18	surface	22.9	6.7	7.4	86	15	0.3	5.6
		1	22.9	6.7	7.4	86	15	0.3	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-6-UVR	8/18	2	22.9	6.7	7.4	86	15	0.3	5.6
		3	22.9	6.7	7.4	86	15	0.3	
		4	22.9	6.7	7.4	86	15	0.3	
		5	22.9	6.7	7.4	86	15	0.3	
		6	22.9	6.7	7.4	86	15	0.3	
		7	22.9	6.7	7.4	86	15	0.3	
		8	22.7	6.7	7.4	86	15	0.3	
		9	22.4	6.7	7.5	87	14	0.3	
		10	20.8	6.7	8.1	91	14	0.3	
		11	19.9	6.6	8.3	91	13	0.3	
		12	17.9	6.6	8.6	91	13	0.3	
		13	16.9	6.5	8.4	87	12	0.2	
		14	15.9	6.5	8.5	86	12	0.3	
		15	14.5	6.4	8.8	86	11	0.2	
		16	13.6	6.4	8.7	83	11	0.2	
		17	13.0	6.3	8.6	82	11	0.2	
		18	12.6	6.3	8.6	81	11	0.2	
		19	12.0	6.2	8.6	79	11	0.2	
		20	11.2	6.1	8.5	77	11	0.2	
		21	10.7	6.1	8.4	76	11	0.2	
		22	10.5	6.0	8.4	75	11	0.2	
		23	9.8	6.0	8.4	74	10	0.2	
		24	9.3	5.9	8.4	73	10	0.2	
		25	8.9	5.9	8.4	72	10	0.2	
		26	8.5	5.9	8.4	72	10	0.2	
		27	8.2	5.9	8.5	72	10	0.2	
		28	8.0	5.9	8.5	71	10	0.2	
		29	7.8	5.9	8.3	70	10	0.2	
		30	7.6	5.9	8.4	70	10	0.2	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-6-UVR	8/18	31	7.5	5.9	8.4	70	10	0.2	5.6
		32	7.4	5.9	8.4	70	10	0.2	
		33	7.3	5.9	8.3	69	10	0.2	
		34	7.2	5.9	8.3	69	10	0.2	
		35	7.2	5.9	8.3	68	10	0.2	
		36	7.1	5.8	8.2	68	10	0.2	
		37	7.0	5.8	8.1	67	10	0.2	
		38	7.0	5.8	8.1	67	10	0.2	
		39	6.9	5.8	8.0	66	10	0.2	
		40	6.9	5.8	7.9	64	10	0.2	
		41	6.8	5.8	7.7	63	10	0.2	
		42	6.8	5.8	7.7	63	10	0.2	
R-IS-7-UVR	8/17	surface	23.6	6.9	7.3	86	15[Q]	0.3	6.3
		1	23.5	6.9	7.3	86	15[Q]	0.2	
		2	23.4	7.0	7.3	86	15[Q]	0.2	
		3	23.4	7.0	7.3	86	15[Q]	0.1	
		4	23.4	7.0	7.3	86	15[Q]	0.1	
		5	23.3	7.0	7.3	86	15[Q]	0.1	
		6	23.3	7.0	7.3	86	15[Q]	0.1	
		7	23.0	7.0	7.4	86	15[Q]	0.1	
		8	22.7	7.0	7.5	87	14[Q]	0.2	
		9	22.1	6.9	7.7	88	14[Q]	0.2	
		10	21.1	6.9	7.8	88	13[Q]	0.1	
		11	20.4	6.9	8.1	90	13[Q]	0.1	
		12	18.7	6.9	8.6	91	12[Q]	0.2	
		13	16.8	6.8	8.9	91	12[Q]	0.3	
		14	15.3	6.8	9.1	90	12[Q]	0.3	
		15	14.4	6.7	9.0	88	11[Q]	0.3	
		16	13.8	6.7	8.8	84	11[Q]	0.4	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-7-UVR	8/17	17	12.9	6.6	8.6	81	11[Q]	0.3	6.3
		18	12.4	6.6	8.5	80	11[Q]	0.4	
		19	11.9	6.5	8.5	78	11[Q]	0.4	
		20	11.4	6.5	8.3	76	11[Q]	0.5	
		21	11.1	6.4	8.1	74	11[Q]	0.4	
		22	10.3	6.4	8.0	72	11[Q]	0.5	
		23	9.8	6.3	7.9	70	11[Q]	0.5	
R-IS-8-UVR	8/18	surface	22.7	6.8	7.5	87	15	0.3	7.8
		1	22.9	6.9	7.4	86	15	0.3	
		2	22.9	7.0	7.4	86	15	0.3	
		3	22.9	7.0	7.4	86	15	0.3	
		4	22.9	7.0	7.4	86	15	0.3	
		5	22.9	7.0	7.4	86	15	0.3	
		6	22.9	7.1	7.4	86	15	0.3	
		7	22.9	7.1	7.4	86	15	0.3	
		8	22.9	7.1	7.4	86	15	0.3	
		9	22.8	7.1	7.4	86	15	0.3	
		10	21.6	7.1	7.9	90	14	0.3	
		11	19.6	7.0	8.7	95	13	0.3	
		12	7.9	7.0	8.9	94	12	0.3	
		13	17.4	7.0	9.0	94	12	0.3	
		14	16.0	6.9	9.1	91	12	0.3	
		15	14.7	6.9	9.1	89	11	0.3	
		16	13.8	6.9	8.9	85	11	0.3	
		17	13.2	6.8	8.8	83	11	0.3	
		18	12.4	6.8	8.7	82	11	0.3	
		19	11.9	6.7	8.7	80	11	0.3	
		20	11.4	6.7	8.5	78	11	0.3	
		21	10.9	6.6	8.4	76	11	0.3	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-8-UVR	8/18	22	10.1	6.5	8.4	75	11	0.3	7.8
		23	9.9	6.5	8.4	74	11	0.3	
		24	9.5	6.5	8.4	73	11	0.3	
		25	9.2	6.5	8.4	73	11	0.3	
		26	8.8	6.5	8.4	73	11	0.3	
		27	8.5	6.5	8.5	73	10	0.3	
		28	8.2	6.5	8.6	72	10	0.3	
		29	7.9	6.5	85.7	72	10	0.3	
		30	7.7	6.5	8.6	72	10	0.3	
		31	7.6	6.5	8.6	72	10	0.3	
		32	7.5	6.5	8.7	72	10	0.3	
		33	7.3	6.4	8.7	72	10	0.3	
		34	7.2	6.4	8.7	72	10	0.3	
		35	7.1	6.4	8.6	71	10	0.3	
		36	7.0	6.4	8.6	71	10	0.3	
		37	7.0	6.4	8.6	70	10	0.3	
		38	7.0	6.4	8.5	70	10	0.3	
		39	6.9	6.4	8.5	70	10	0.3	
		40	6.9	6.4	8.5	70	10	0.3	
		41	6.8	6.4	8.6	70	10	0.3	
		42	6.8	6.4	8.6	70	10	0.3	
		43	6.8	6.4	8.6	70	10	0.3	
		44	6.8	6.4	8.5	70	10	0.3	
		45	6.7	6.4	8.5	70	10	0.3	
		46	6.7	6.4	8.5	70	10	0.3	
		47	6.7	6.4	8.5	70	10	0.3	
		48	6.6	6.4	8.6	70	10	0.3	
		49	6.6	6.4	8.6	70	10	0.3	
		50	6.6	6.4	8.5	69	10	0.3	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-8-UVR	8/18	51	6.6	6.4	8.5	69	10	0.3	7.8
		52	6.6	6.4	8.5	69	10	0.3	
		53	6.6	6.4	8.5	69	10	0.3	
		54	6.5	6.4	8.5	69	10	0.3	
		55	6.5	6.9	8.5	69	10	0.3	
		56	6.5	6.4	8.5	69	10	0.3	
		57	6.5	6.4	8.5	69	10	0.3	
		58	6.5	6.4	8.5	69	10	0.3	
		59	6.4	6.4	8.5	69	10	0.3	
		60	6.4	6.4	8.5	69	10	0.3	
		61	6.4	6.4	8.4	68	10	0.3	
		62	6.4	6.4	8.4	68	10	0.3	
Junction Reservoir									
R-IS-12-JR	8/2	surface	17.8	7.0	8.5	90	15	0.2	6.9
		1	14.7	7.0	8.9	87	14	0.3	
		2	11.1	6.8	9.8	89	12	0.3	
		3	9.2	6.6	9.5	82	11	0.3	
		4	8.7	6.5	9.3	80	11	0.2	
		5	8.3	6.5	9.3	79	11	0.2	
		6	8.1	6.4	9.3	79	11	0.2	
		7	7.8	6.3	9.2	77	11	0.2	
		8	7.7	6.3	9.2	77	11	0.3	
		9	7.6	6.3	9.2	77	11	0.3	
		10	7.6	6.3	9.1	76	10	0.3	
		11	7.5	6.3	9.1	76	10	0.2	
		12	7.4	6.3	9.2	76	10	0.2	
		13	7.4	6.3	9.1	75	10	0.2	
		14	7.4	6.2	9.1	75	10	0.3	
		15	7.3	6.3	9.1	75	10	0.2	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-12-JR	8/2	16	7.3	6.3	9.1	75	10	0.2	6.9
		17	7.3	6.3	9.1	75	10	0.2	
		18	7.2	6.3	9.0	75	10	0.3	
		19	7.1	6.3	9.0	75	10	0.3	
		20	7.1	6.2	9.1	75	10	0.2	
		21	7.0	6.2	9.1	75	10	0.3	
		22	7.0	6.2	9.1	75	10	0.2	
		23	7.0	6.2	9.1	75	10	0.3	
		24	7.0	6.2	9.1	75	10	0.2	
		25	7.0	6.2	9.1	75	10	0.2	
		26	7.0	6.2	9.1	75	10	0.2	
Camino Reservoir									
R-IS-13-CR	8/2	surface	12.9	6.6	9.7	92	13	0.2	6.6
		1	12.0	6.5	9.8	91	13	0.3	
		2	11.3	6.4	10.0	91	12	0.2	
		3	10.8	6.4	10.1	91	12	0.3	
		4	10.6	6.3	10.1	91	12	0.3	
		5	10.2	6.3	10.2	91	12	0.3	
Brush Creek Reservoir									
R-IS-20-BC	8/4	surface	22.9	7.1	7.7	89	25	0.1	10.4
		1	22.9	7.3	7.7	89	25	0.0	
		2	22.9	7.2	7.7	89	25	0.1	
		3	22.8	7.2	7.7	89	25	0.0	
		4	22.3	7.2	8.0	93	25	0.0	
		5	22.0	7.1	8.0	91	25	0.0	
		6	21.8	7.0	8.0	91	24	0.0	
		7	21.6	7.0	7.9	90	24	0.1	
		8	21.5	6.9	7.9	89	24	0.0	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-20-BC	8/4	9	21.3	6.9	7.9	89	24	0.0	10.4
		10	21.1	6.8	7.9	89	24	0.1	
		11	20.9	6.8	7.9	89	24	0.1	
		12	20.7	6.7	7.9	88	24	0.1	
		13	20.3	6.7	7.8	86	23	0.2	
		14	20.1	6.6	7.9	87	23	0.3	
		15	19.6	6.6	7.9	87	23	0.3	
		16	19.3	6.5	7.9	86	23	0.3	
		17	18.7	6.4	7.6	81	23	0.2	
		18	16.0	6.1	6.7	68	22	0.9	
		19	13.8	6.0	6.5	63	20	1.1	
		20	12.3	5.9	7.4	69	17	0.7	
		21	11.6	5.7	7.7	71	16	0.6	
		22	11.3	5.7	7.9	72	16	0.6	
		23	11.1	5.6	8.0	73	15	0.7	
		24	11.0	5.5	8.1	74	15	0.7	
		25	10.9	5.4	8.1	74	15	0.8	
		26	10.9	5.4	8.1	73	15	0.8	
		27	10.8	5.4	8.2	74	15	0.7	
Slab Creek Reservoir									
R-IS-14-SC	8/3	surface	22.2	7.1	8.9	102	30	0.3	6.1
		1	22.1	7.1	8.9	102	30	0.3	
		2	20.2	7.0	9.0	100	29	0.5	
		3	18.4	6.9	9.1	97	27	0.7	
		4	15.9	6.8	9.5	96	22	0.7	
		5	12.9	6.7	10.0	95	18	0.6	
R-IS-15-SC	8/3	surface	22.8	8.6	8.9	103	31	0.2	5.6
		1	22.1	9.2	9.0	103	30	0.3	
		2	21.4	8.8	9.3	105	30	0.3	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-15-SC	8/3	3	18.7	7.6	10.1	108	27	0.4	5.6
		4	18.0	7.4	9.9	104	26	0.3	
		5	17.7	7.1	9.8	103	26	0.4	
		6	17.3	7.0	9.5	98	25	0.4	
		7	16.8	6.8	8.7	89	25	0.3	
		8	16.5	6.6	8.2	84	25	0.3	
		9	16.2	6.4	7.6	77	25	0.4	
		10	15.9	6.3	7.5	76	25	0.3	
		11	15.7	6.2	8.2	82	24	0.3	
		12	15.5	6.2	8.5	85	23	0.3	
		13	15.5	6.2	8.8	88	23	0.4	
		14	15.4	6.2	9.1	91	22	0.4	
		15	15.3	6.2	9.2	92	22	0.4	
		16	15.3	6.1	9.3	92	22	0.5	
		17	15.3	6.1	9.3	93	22	0.7	
		18	15.3	6.1	9.3	93	22	0.6	
		19	15.2	6.1	9.3	93	22	0.6	
		20	15.2	6.0	9.3	93	22	0.6	
		21	15.2	6.0	9.3	93	22	0.7	
		22	15.2	6.0	9.4	93	22	0.6	
		23	15.1	6.0	9.4	93	22	0.6	
		24	15.1	6.0	9.4	93	22	0.7	
		25	15.1	6.0	9.3	93	22	0.7	
		26	15.1	5.9	9.4	93	22	0.8	
		27	15.0	5.9	9.4	93	22	0.8	
		28	14.9	5.9	9.5	94	21	1.0	
		29	14.8	5.9	9.6	95	21	1.0	
		30	14.8	5.9	9.6	95	21	1.2	
		31	14.8	5.9	9.6	95	21	1.1	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-15-SC	8/3	32	14.7	5.9	9.6	95	21	1.1	5.6
		33	14.6	5.9	9.7	95	21	1.4	
		34	14.6	5.9	9.7	95	21	1.7	

ºC = degrees Celsius
m = meter
mg/L = milligrams per liter
s.u. = standard unit of pH
uS/cm = microsiemens per centimeter
NTU = Nephelometric Turbidity Unit
Q Data are designated as “qualified” because the post-sampling calibration check measurement quality objective (MQO) for acceptability was not met (see Appendix F for detailed calibration data). Qualified values are known with relatively less certainty (see Table 5-2).

Table A-3. *In situ* Vertical Profile Data for Upper American River Project Reservoir Sites – Fall *In situ* and General Chemistry Surveys.

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
Loon Lake Reservoir									
R-IS-1-LL	10/24	surface	13.3	7.0	7.9	75	9[Q]	0.1	6.5
		1	13.4	6.9	7.8	75	9[Q]	0.1	
		2	13.4	7.0	7.8	75	9[Q]	0.0	
		3	13.4	7.0	7.8	75	9[Q]	0.1	
		4	13.4	7.0	7.8	75	9[Q]	0.1	
		5	13.4	7.0	7.8	75	9[Q]	0.1	
		6	13.4	7.0	7.8	75	9[Q]	0.1	
		7	13.4	6.9	7.8	75	9[Q]	0.1	
		8	13.4	6.9	7.8	75	9[Q]	0.0	
		9	13.4	6.9	7.8	75	9[Q]	0.1	
		10	13.4	6.9	7.8	75	9[Q]	0.1	
		11	13.4	6.9	7.8	75	9[Q]	0.1	
		12	13.4	6.9	7.8	75	9[Q]	0.1	
		13	13.4	6.9	7.8	75	9[Q]	0.0	
		14	13.4	6.9	7.8	75	9[Q]	0.1	
		15	13.4	6.9	7.8	75	9[Q]	0.1	
		16	13.3	6.9	7.7	74	9[Q]	0.1	
		17	13.2	6.8	7.7	73	9[Q]	0.1	
		18	13.2	6.8	7.6	73	9[Q]	0.1	
		19	13.0	6.8	7.5	71	9[Q]	0.0	
		20	12.3	6.6	6.7	61	9[Q]	0.3	
		21	11.5	6.2	2.8	24	10[Q]	0.7	
		22	9.0	6.0	2.3	20	10[Q]	0.6	
		23	7.8	6.0	2.2	18	10[Q]	0.9	
R-IS-2-LL	10/24	surface	13.8	7.0	7.8	75	9[Q]	0.0	7.9
		1	13.7	6.9	7.7	75	9[Q]	0.0	
		2	13.1	6.9	7.7	74	9[Q]	0.0	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-2-LL	10/24	3	13.7	6.9	7.7	74	9[Q]	0.0	7.9
		4	13.7	6.7	7.7	74	9[Q]	0.1	
		5	13.7	6.8	7.7	74	9[Q]	0.0	
		6	13.7	6.8	7.7	74	9[Q]	0.0	
		7	13.7	6.8	7.7	74	9[Q]	0.1	
		8	13.7	6.8	7.7	74	9[Q]	0.1	
		9	13.7	6.8	7.7	74	9[Q]	0.0	
		10	13.7	6.8	7.7	74	9[Q]	0.0	
		11	13.7	6.8	7.7	74	9[Q]	0.1	
		12	13.7	6.8	7.7	74	9[Q]	0.0	
		13	13.7	6.8	7.7	74	9[Q]	0.1	
R-IS-3-LL	10/24	surface	13.4	7.0	8.0	76	9[Q]	0.1	9.8
		1	13.3	7.0	8.0	76	9[Q]	0.1	
		2	13.3	7.0	8.0	76	9[Q]	0.0	
		3	13.3	7.0	8.0	76	9[Q]	0.0	
		4	13.2	7.0	8.0	76	9[Q]	0.0	
		5	13.2	7.0	7.9	76	9[Q]	0.0	
		6	13.2	6.9	7.9	76	9[Q]	0.0	
		7	13.2	6.9	7.9	76	9[Q]	0.0	
		8	13.1	6.9	7.9	76	9[Q]	0.0	
		9	13.1	6.9	8.0	76	9[Q]	0.0	
Gerle Creek Reservoir									
R-IS-4-GC	10/19	surface	13.8	6.8	8.2	79	11	3.2	7.9
		1	13.7	6.7	8.2	79	11	3.3	
		2	13.7	6.7	8.2	79	11	3.2	
		3	13.7	6.5	8.2	79	11	3.2	
		4	13.5	6.3	8.2	79	11	3.3	
		5	13.3	6.2	8.3	79	10	3.3	
		6	13.1	6.2	8.2	78	10	3.4	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-4-GC	10/19	7	12.6	6.1	8.2	78	10	3.5	7.9
Ice House Reservoir									
R-IS-9-IHR	10/26	surface	14.6	6.7	8.3	86	13	0.2	7.1
		1	14.7	6.9	8.2	81	14	0.1	
		2	14.8	7.0	8.2	81	14	0.1	
		3	14.8	7.0	8.2	80	14	0.2	
		4	14.8	7.1	8.2	81	14	0.1	
		5	14.8	7.0	8.1	80	14	0.1	
		6	14.8	7.0	8.2	80	14	0.1	
		7	13.8	7.0	8.1	80	14	0.1	
		8	14.8	7.0	8.1	80	14	0.0	
		9	14.8	7.0	8.1	80	14	0.1	
		10	14.8	7.0	8.1	80	14	0.1	
		11	14.8	7.0	8.1	80	14	0.1	
		12	14.8	7.0	8.1	80	13	0.0	
		13	14.8	7.0	8.1	80	13	0.1	
		14	14.7	7.0	8.1	80	13	0.1	
		15	12.7	6.6	5.9	54	13	0.2	
		16	9.9	6.3	3.7	32	13	0.8	
		17	9.1	6.1	2.4	21	13	0.8	
		18	8.5	6.0	1.9	17	14	0.9	
		19	8.1	6.0	1.4	11	14	1.1	
		20	7.8	6.0	1.1	9	14	2.7	
		21	7.7	5.9	1.0	8	14	1.2	
		22	7.7	5.9	1.0	8	14	1.2	
R-IS-10-IHR	10/26	surface	14.7	6.8	8.2	81	13	0.1	7.1
		1	14.7	6.8	8.2	81	13	0.1	
		2	14.7	6.9	8.2	81	13	0.1	
		3	14.7	6.9	8.2	81	13	0.0	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-10-IHR	10/26	4	14.7	6.9	8.2	81	13	0.2	7.1
		5	14.7	6.9	8.2	80	13	0.2	
		6	14.7	6.9	8.1	80	13	0.2	
		7	14.7	6.9	8.1	80	13	0.2	
		8	14.7	6.9	8.1	80	13	0.2	
		9	14.7	6.9	8.2	80	13	0.1	
		10	14.7	6.9	8.1	80	13	0.1	
		11	14.7	7.0	8.1	80	13	0.1	
		12	14.7	7.0	8.1	80	13	0.1	
		13	14.7	7.0	8.1	80	13	0.1	
		14	14.7	7.0	8.1	80	13	0.1	
		15	14.4	6.9	7.8	76	13	0.0	
		16	11.4	6.7	6.3	57	12	0.1	
		17	9.9	6.4	5.3	46	12	0.1	
		18	8.9	6.3	4.3	37	12	0.2	
		19	8.4	6.2	3.7	31	13	0.3	
R-IS-11-IHR	10/26	surface	14.5	6.7	8.3	82	13	0.0	7.1
		1	14.7	6.8	8.2	81	13	0.0	
		2	14.7	6.8	8.2	80	13	0.1	
		3	14.7	6.8	8.2	80	13	0.1	
		4	14.7	6.8	8.1	80	13	0.2	
		5	14.7	6.9	8.2	80	13	0.1	
		6	14.7	6.9	8.2	80	13	0.2	
		7	14.7	6.9	8.2	80	13	0.1	
		8	14.7	6.9	8.1	80	13	0.1	
		9	14.7	6.9	8.1	80	13	0.0	
		10	14.7	6.9	8.1	80	13	0.0	
		11	14.7	6.9	8.1	80	13	0.1	
		12	14.7	6.9	8.1	80	13	0.1	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-11-IHR	10/26	13	14.7	6.9	8.1	80	13	0.2	7.1
		14	14.7	6.9	8.1	79	13	0.3	
		15	14.6	6.9	8.1	79	13	0.1	
		16	14.3	6.8	7.8	75	13	0.2	
		17	10.2	6.6	6.4	56	12	0.2	
		18	9.1	6.4	5.5	47	12	0.1	
		19	8.3	6.3	5.1	43	12	0.1	
		20	7.8	6.2	5.0	32	12	0.1	
		21	7.7	6.2	5.0	42	12	0.3	
		22	7.6	6.1	5.0	41	12	0.3	
		23	7.5	6.1	4.9	41	12	0.2	
		24	7.5	6.1	4.9	40	12	0.2	
		25	7.4	6.0	4.7	39	12	0.2	
		26	7.4	6.0	4.4	36	12	0.3	
		27	7.3	6.0	3.9	31	13	0.6	
		28	7.3	6.0	3.3	27	13	0.4	
		29	7.2	6.0	2.9	24	13	0.6	
		30	7.2	5.9	2.6	21	14	0.8	
		31	7.2	5.9	2.3	19	14	0.7	
		32	7.2	5.9	2.0	17	14	0.9	
Union Valley Reservoir									
R-IS-5-UVR	10/24	surface	16.7	7.2	7.8	80	14[Q]	0.1	6.7
		1	16.7	7.1	7.8	80	14[Q]	0.1	
		2	16.3	7.0	7.9	80	14[Q]	0.1	
		3	16.0	7.0	7.9	80	14[Q]	0.1	
		4	15.9	7.0	7.9	80	14[Q]	0.1	
		5	15.8	7.0	7.9	80	14[Q]	0.1	
		6	15.8	7.0	8.0	80	14[Q]	0.0	
		7	15.7	7.0	8.0	80	14[Q]	0.1	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-5-UVR	10/24	8	15.6	7.0	8.0	80	14[Q]	0.1	6.7
		9	15.4	6.9	8.0	80	14[Q]	0.1	
R-IS-6-UVR	10/25	surface	16.2	6.6	8.1[Q]	82[Q]	14[Q]	0.2	5.9
		1	16.3	6.6	8.0[Q]	82[Q]	14[Q]	0.1	
		2	16.3	6.6	8.0[Q]	82[Q]	14[Q]	0.1	
		3	16.3	6.7	8.0[Q]	81[Q]	14[Q]	0.0	
		4	16.3	6.8	8.0[Q]	81[Q]	14[Q]	0.0	
		5	16.3	6.8	8.0[Q]	81[Q]	14[Q]	0.1	
		6	16.3	6.8	8.0[Q]	81[Q]	14[Q]	0.1	
		7	16.4	6.8	8.0[Q]	81[Q]	14[Q]	0.1	
		8	16.4	6.8	8.0[Q]	81[Q]	14[Q]	0.1	
		9	16.4	6.8	8.0[Q]	81[Q]	14[Q]	0.1	
		10	16.4	6.8	8.0[Q]	81[Q]	14[Q]	0.1	
		11	16.4	6.8	8.0[Q]	81[Q]	14[Q]	0.0	
		12	16.4	6.8	8.0[Q]	81[Q]	14[Q]	0.0	
		13	16.4	6.8	8.0[Q]	81[Q]	14[Q]	0.1	
		14	16.4	6.8	8.0[Q]	81[Q]	14[Q]	0.1	
		15	16.4	6.8	8.0[Q]	81[Q]	14[Q]	0.1	
		16	16.4	6.8	8.0[Q]	81[Q]	14[Q]	0.1	
		17	16.4	6.8	8.0[Q]	81[Q]	14[Q]	0.0	
		18	16.4	6.8	8.0[Q]	81[Q]	14[Q]	0.0	
		19	16.4	6.8	8.0[Q]	81[Q]	14[Q]	0.0	
		20	16.4	6.8	8.0[Q]	81[Q]	14[Q]	0.1	
		21	16.3	6.8	8.0[Q]	81[Q]	14[Q]	0.1	
		22	15.3	6.7	7.4[Q]	74[Q]	15[Q]	0.1	
		23	14.5	6.5	7.2[Q]	70[Q]	13[Q]	0.0	
		24	14.0	6.4	7.1[Q]	69[Q]	13[Q]	0.0	
		25	13.8	6.4	7.1[Q]	69[Q]	13[Q]	0.0	
		26	13.5	6.3	7.3[Q]	70[Q]	12[Q]	0.1	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-6-UVR	10/25	27	13.3	6.3	7.3[Q]	70[Q]	12[Q]	0.0	5.9
		28	12.9	6.2	7.3[Q]	69[Q]	12[Q]	0.2	
		29	12.6	6.2	7.2[Q]	68[Q]	12[Q]	0.1	
		30	12.4	6.2	7.1[Q]	66[Q]	12[Q]	0.1	
		31	12.1	6.1	7.0[Q]	65[Q]	12[Q]	0.1	
		32	11.6	6.1	6.8[Q]	63[Q]	12[Q]	0.1	
		33	11.1	6.1	6.6[Q]	60[Q]	12[Q]	0.2	
		34	10.9	6.0	6.5[Q]	59[Q]	12[Q]	0.2	
		35	10.7	6.0	6.4[Q]	58[Q]	12[Q]	0.3	
		36	10.5	6.0	6.4[Q]	57[Q]	12[Q]	0.2	
R-IS-7-UVR	10/25	surface	16.3	6.4	7.9[Q]	81[Q]	14[Q]	0.5	5.9
		1	16.4	6.5	7.9[Q]	81[Q]	14[Q]	0.5	
		2	16.4	6.6	7.9[Q]	81[Q]	14[Q]	0.4	
		3	16.4	6.6	7.9[Q]	81[Q]	14[Q]	0.6	
		4	16.4	6.6	7.9[Q]	81[Q]	14[Q]	0.5	
		5	16.4	6.6	7.9[Q]	81[Q]	14[Q]	0.4	
		6	16.4	6.7	7.9[Q]	81[Q]	14[Q]	0.4	
		7	16.4	6.6	7.9[Q]	81[Q]	14[Q]	0.4	
		8	16.4	6.6	7.9[Q]	81[Q]	14[Q]	0.4	
		9	16.4	6.6	7.9[Q]	81[Q]	14[Q]	0.4	
		10	16.4	6.6	7.9[Q]	81[Q]	14[Q]	0.5	
		11	16.4	6.6	7.9[Q]	81[Q]	14[Q]	0.4	
		12	16.4	6.7	7.9[Q]	81[Q]	14[Q]	0.4	
		13	16.4	6.7	7.9[Q]	81[Q]	14[Q]	0.5	
		14	16.4	6.7	7.9[Q]	81[Q]	14[Q]	0.5	
		15	16.3	6.7	7.9[Q]	81[Q]	14[Q]	0.4	
		16	16.3	6.6	7.9[Q]	81[Q]	14[Q]	0.4	
		17	16.3	6.7	7.9[Q]	81[Q]	14[Q]	0.4	
		18	16.3	6.7	7.9[Q]	81[Q]	14[Q]	0.5	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-7-UVR	10/25	19	16.1	6.7	7.9[Q]	80[Q]	14[Q]	0.4	5.9
		20	16.1	6.6	7.8[Q]	79[Q]	14[Q]	0.4	
		21	16.0	6.6	7.8[Q]	79[Q]	14[Q]	0.4	
		22	15.3	6.5	7.5[Q]	74[Q]	13[Q]	0.5	
		23	15.0	6.4	7.3[Q]	72[Q]	13[Q]	0.5	
		24	14.7	6.4	7.1[Q]	70[Q]	13[Q]	0.4	
		25	13.5	6.2	6.5[Q]	62[Q]	13[Q]	0.6	
		26	13.3	6.1	6.2[Q]	59[Q]	13[Q]	0.7	
		27	13.0	6.1	6.0[Q]	57[Q]	13[Q]	3.5	
R-IS-8-UVR	10/25	surface	16.4	6.8	8.0[Q]	81[Q]	14[Q]	0.2	5.9
		1	16.4	6.8	8.0[Q]	81[Q]	14[Q]	0.2	
		2	16.4	6.8	7.9[Q]	81[Q]	14[Q]	0.1	
		3	16.4	6.8	7.9[Q]	81[Q]	14[Q]	0.1	
		4	16.4	6.8	7.9[Q]	81[Q]	14[Q]	0.1	
		5	16.4	6.8	7.9[Q]	81[Q]	14[Q]	0.1	
		6	16.4	6.7	7.9[Q]	81[Q]	14[Q]	0.2	
		7	16.4	6.8	7.9[Q]	81[Q]	14[Q]	0.1	
		8	16.4	6.8	7.9[Q]	81[Q]	14[Q]	0.0	
		9	16.4	6.7	7.9[Q]	81[Q]	14[Q]	0.1	
		10	16.4	6.7	7.9[Q]	81[Q]	14[Q]	0.2	
		11	16.4	6.7	7.9[Q]	81[Q]	14[Q]	0.1	
		12	16.4	6.7	7.9[Q]	81[Q]	14[Q]	0.1	
		13	16.4	6.7	7.9[Q]	81[Q]	14[Q]	0.1	
		14	16.4	6.7	7.9[Q]	81[Q]	14[Q]	0.1	
		15	16.4	6.7	7.9[Q]	81[Q]	14[Q]	0.1	
		16	16.4	6.7	7.9[Q]	81[Q]	14[Q]	0.1	
		17	16.4	6.7	7.9[Q]	80[Q]	14[Q]	0.1	
		18	16.4	6.7	7.9[Q]	81[Q]	14[Q]	0.1	
		19	16.4	6.7	7.9[Q]	80[Q]	14[Q]	0.1	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
		20	16.3	6.7	7.9[Q]	80[Q]	14[Q]	0.1	
		21	16.2	6.7	7.8[Q]	79[Q]	14[Q]	0.1	
		22	15.8	6.6	7.6[Q]	77[Q]	13[Q]	0.0	
		23	15.3	6.6	7.5[Q]	75[Q]	13[Q]	0.0	
		24	14.6	6.5	7.5[Q]	74[Q]	13[Q]	0.0	
		25	14.0	6.4	7.5[Q]	73[Q]	13[Q]	0.0	
		26	13.6	6.4	7.9[Q]	71[Q]	12[Q]	0.0	
R-IS-8-UVR	10/25	27	12.8	6.3	7.3[Q]	69[Q]	12[Q]	0.0	5.9
		28	12.4	6.3	7.3[Q]	68[Q]	12[Q]	0.0	
		29	12.0	6.2	7.1[Q]	66[Q]	12[Q]	0.1	
		30	11.8	6.2	7.2[Q]	66[Q]	12[Q]	0.0	
		31	11.5	6.2	7.3[Q]	67[Q]	12[Q]	0.0	
		32	11.3	6.2	7.3[Q]	66[Q]	12[Q]	0.0	
		33	11.1	6.2	7.2[Q]	65[Q]	12[Q]	0.0	
		34	10.9	6.1	7.3[Q]	66[Q]	12[Q]	0.1	
		35	10.8	6.1	7.2[Q]	65[Q]	12[Q]	0.1	
		36	10.5	6.1	7.3[Q]	66[Q]	12[Q]	0.1	
		37	10.4	6.1	7.4[Q]	66[Q]	12[Q]	0.1	
		38	10.1	6.1	7.4[Q]	65[Q]	11[Q]	0.1	
		39	10.0	6.1	7.4[Q]	66[Q]	11[Q]	0.1	
		40	9.9	6.1	7.4[Q]	66[Q]	11[Q]	0.1	
		41	9.8	6.1	7.4[Q]	65[Q]	11[Q]	0.1	
		42	9.7	6.0	7.5[Q]	66[Q]	11[Q]	0.1	
		43	9.4	6.0	7.5[Q]	66[Q]	11[Q]	0.1	
		44	9.3	6.0	7.5[Q]	65[Q]	11[Q]	0.1	
		45	9.1	6.0	7.5[Q]	65[Q]	11[Q]	0.1	
		46	9.1	6.0	7.5[Q]	65[Q]	11[Q]	0.1	
		47	8.9	5.9	7.5[Q]	65[Q]	11[Q]	0.1	
		48	8.9	5.8	7.5[Q]	64[Q]	11[Q]	0.1	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-8-UVR	10/25	49	8.8	5.8	7.5[Q]	64[Q]	11[Q]	0.1	5.9
		50	8.7	5.8	7.5[Q]	64[Q]	11[Q]	0.1	
		51	8.6	5.6	7.5[Q]	64[Q]	11[Q]	0.1	
		52	8.6	5.5	7.5[Q]	64[Q]	11[Q]	0.1	
		53	8.5	5.4	7.5[Q]	64[Q]	11[Q]	0.1	
		54	8.4	5.4	7.4[Q]	63[Q]	11[Q]	0.1	
		55	8.4	5.4	7.4[Q]	63[Q]	11[Q]	0.1	
		56	8.3	5.4	7.2[Q]	61[Q]	11[Q]	0.1	
		57	8.2	5.3	7.1[Q]	60[Q]	11[Q]	0.1	
		58	8.1	5.3	7.0[Q]	59[Q]	11[Q]	0.1	
		59	8.0	5.3	7.0[Q]	59[Q]	9[Q]	0.2	
		60	7.9	5.3	6.9[Q]	58[Q]	11[Q]	0.1	
		61	7.8	5.3	6.8[Q]	57[Q]	11[Q]	0.1	
		62	7.7	5.3	6.7[Q]	56[Q]	11[Q]	0.2	
		63	7.1	5.3	6.7[Q]	55[Q]	11[Q]	0.2	
		64	6.9	5.3	6.7[Q]	55[Q]	11[Q]	0.2	
		65	6.7	5.2	6.6[Q]	54[Q]	11[Q]	0.2	
		66	6.6	5.2	6.7[Q]	54[Q]	11[Q]	0.4	
		67	6.5	5.2	6.7[Q]	55[Q]	11[Q]	0.2	
		68	6.4	5.2	6.7[Q]	55[Q]	11[Q]	0.2	
		69	6.4	5.2	6.7[Q]	55[Q]	11[Q]	0.2	
		70	6.4	5.2	6.8[Q]	55[Q]	11[Q]	0.1	
		71	6.3	5.2	6.7[Q]	55[Q]	11[Q]	0.2	
		72	6.3	5.2	6.8[Q]	55[Q]	11[Q]	0.3	
		73	6.3	5.2	6.8[Q]	55[Q]	11[Q]	0.3	
		74	6.3	5.2	6.7[Q]	54[Q]	11[Q]	0.2	
		75	6.3	5.2	6.6[Q]	53[Q]	11[Q]	0.2	
		76	6.3	5.2	6.6[Q]	53[Q]	11[Q]	0.2	
		77	6.3	5.2	6.6[Q]	53[Q]	11[Q]	0.3	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-8-UVR	10/25	78	6.3	5.2	6.5[Q]	53[Q]	11[Q]	0.3	5.9
		79	6.3	5.2	6.5[Q]	53[Q]	11[Q]	0.2	
		80	6.3	5.3	6.5[Q]	53[Q]	11[Q]	0.3	
		81	6.3	5.3	6.5[Q]	53[Q]	11[Q]	0.3	
		82	6.3	5.3	6.5[Q]	52[Q]	11[Q]	0.3	
		83	6.3	5.3	6.4[Q]	52[Q]	11[Q]	0.3	
		84	6.3	5.3	6.4[Q]	52[Q]	11[Q]	0.8	
Junction Reservoir									
R-IS-12-JR	10/17	surface	8.8	6.2	9.4	81	10	0.0	5.1
		1	8.8	5.9	9.6	82	10	1.0	
		2	8.8	5.8	9.4	81	10	1.2	
		3	8.8	5.9	9.4	81	10	1.2	
		4	8.8	5.7	9.4	81	10	1.2	
		5	8.8	5.6	9.4	81	10	1.2	
		6	8.4	5.5	9.1	77	10	1.1	
		7	8.3	5.5	8.7	74	10	1.2	
		8	8.3	5.5	8.6	73	10	1.2	
		9	8.2	5.5	8.6	73	10	1.2	
		10	8.2	5.4	8.6	73	10	1.2	
		11	8.2	5.4	8.5	72	10	1.2	
		12	8.2	5.4	8.4	71	10	1.2	
		13	8.1	5.4	8.6	73	10	1.2	
		14	8.1	5.4	8.5	72	10	1.2	
		15	8.1	5.4	8.5	72	10	1.2	
		16	8.1	5.4	8.5	72	10	1.1	
		17	8.1	5.4	8.5	72	10	1.1	
		18	8.1	5.4	8.5	71	10	1.1	
		19	8.1	5.4	8.5	72	10	1.2	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-12-JR	10/17	20	8.0	5.4	8.5	72	10	1.1	5.1
		21	8.0	5.4	8.6	73	10	1.2	
Camino Reservoir									
R-IS-13-CR	10/17	surface	8.9	6.7	10.8	94	10	0.0	6.7
		1	8.8	6.7	10.9	94	10	0.1	
		2	8.8	6.6	11.0	94	10	0.1	
		3	8.7	6.6	11.0	94	10	0.0	
		4	8.6	6.6	11.0	94	10	0.0	
		5	8.5	6.5	11.0	94	10	0.0	
Brush Creek Reservoir									
R-IS-20-BC	10/19	surface	17.6	7.2	8.4	88	22	0.8	6.9
		1	16.7	7.2	8.4	86	21	0.8	
		2	16.6	7.2	8.4	86	21	0.8	
		3	16.5	7.2	8.4	86	21	0.8	
		4	16.5	7.2	8.4	86	21	0.7	
		5	16.5	7.1	8.4	86	21	0.7	
		6	16.4	7.1	8.4	86	21	0.8	
		7	16.4	7.1	8.4	86	21	0.8	
		8	16.4	7.1	8.4	86	21	0.8	
		9	16.4	7.1	8.4	86	21	0.8	
		10	16.4	7.1	8.4	86	21	0.7	
		11	16.4	7.1	8.4	86	21	0.8	
		12	16.4	7.1	8.4	86	21	0.7	
		13	16.3	7.1	8.4	86	21	0.7	
		14	16.3	7.1	8.4	85	21	0.8	
		15	16.2	7.1	8.4	86	21	0.7	
		16	16.2	7.1	8.4	86	21	0.6	
		17	16.1	7.1	8.4	86	21	0.7	
		18	16.1	7.1	8.4	85	21	0.6	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-20-BC	10/19	19	16.0	7.0	8.4	85	21	0.7	6.9
		20	15.9	7.0	8.3	84	21	0.6	
		21	15.3	6.9	8.2	82	20	0.7	
		22	13.4	6.7	7.7	74	16	0.4	
		23	12.8	6.6	7.9	75	16	0.3	
		24	12.6	6.6	8.0	75	16	0.3	
		25	12.4	6.5	8.0	75	15	0.0	
Slab Creek Reservoir									
R-IS-14-SC	10/18	surface	13.9	6.3	9.9	95	20	1.2	7.3
		1	13.9	6.4	9.9	95	20	1.1	
		2	13.4	6.3	10.0	96	20	1.1	
		3	12.8	6.3	10.2	96	20	1.1	
		4	11.7	6.3	10.6	97	21	0.9	
		5	10.6	6.3	10.8	97	18	0.9	
		6	9.8	6.3	11.0	97	16	0.8	
		7	9.7	6.2	11.0	97	15	0.7	
		8	9.6	6.2	11.0	97	15	0.6	
R-IS-15-SC	10/18	surface	13.4	6.8	9.8	94	19	1.0	6.8
		1	13.4	6.8	9.9	94	19	1.0	
		2	13.4	6.8	9.9	94	19	0.9	
		3	13.2	6.8	9.9	94	19	1.0	
		4	13.1	6.8	9.8	94	19	0.9	
		5	12.8	6.8	9.8	93	19	1.0	
		6	11.9	6.7	9.7	89	17	0.8	
		7	11.6	6.6	9.7	89	17	0.8	
		8	11.5	6.6	9.7	89	17	0.9	
		9	11.5	6.6	9.8	90	17	1.0	
		10	11.5	6.6	9.8	90	17	0.9	
		11	11.4	6.6	9.8	90	18	0.8	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-15-SC	10/18	12	11.4	6.6	9.9	90	18	0.9	6.8
		13	11.3	6.6	10.0	91	18	0.8	
		14	11.3	6.6	10.0	91	18	0.7	
		15	11.3	6.6	10.0	92	18	0.6	
		16	11.2	6.6	10.0	92	18	0.7	
		17	11.2	6.5	10.1	92	18	0.7	
		18	11.2	6.6	10.1	92	18	0.7	
		19	11.2	6.6	10.2	92	18	0.6	
		20	11.1	6.6	10.2	93	17	0.6	
		21	11.1	6.6	10.2	93	17	0.6	
		22	11.1	6.5	10.2	93	17	0.7	
		23	11.0	6.5	10.3	94	17	0.6	
		24	11.0	6.5	10.3	94	17	0.5	
		25	11.0	6.5	10.3	94	17	0.4	
		26	11.0	6.5	10.3	94	17	0.2	
		27	11.0	6.5	10.3	94	17	0.3	
		28	10.9	6.5	10.4	94	17	0.3	
		29	10.9	6.5	10.4	94	17	0.3	
		30	10.8	6.5	10.4	94	17	0.4	
		31	10.8	6.5	10.4	94	17	0.5	
		32	10.7	6.5	10.5	95	17	0.4	
		33	10.7	6.5	10.5	95	16	0.1	
		34	10.6	6.5	10.5	95	16	0.2	
		35	10.5	6.4	10.5	94	16	0.4	

°C = degrees Celsius
m = meter
mg/L = milligrams per liter
s.u. = standard unit of pH
uS/cm = microsiemens per centimeter

NTU = Nephelometric Turbidity Unit
Q Data are designated as “qualified” because the post-sampling calibration check measurement quality objective (MQO) for acceptability was not met (see Appendix F for detailed calibration data). Qualified values are known with relatively less certainty (see Table 5-2).

Table A-4. *In situ* Vertical Profile Data for Upper American River Project Reservoir Sites – Fall/Winter General Chemistry Survey.

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
Buck Island Reservoir									
R-IS-19-BI	11/17	surface	2.6	7.0	10.7	79	8[Q]	0.5	4.6
		1	3.0	6.9	10.7	80	8[Q]	0.6	
		2	3.1	6.9	10.7	79	8[Q]	0.6	
Ice House Reservoir									
R-IS-9-IHR	11/15	surface	9.5	7.2	8.9	78	12[Q]	--[R]	6.0
		1	9.4	7.1	8.9	78	12[Q]	--[R]	
		2	9.4	7.1	8.9	78	12[Q]	--[R]	
		3	9.4	7.0	8.9	78	12[Q]	--[R]	
		4	9.4	7.0	8.9	78	12[Q]	--[R]	
		5	9.4	7.0	8.9	78	12[Q]	--[R]	
		6	9.4	7.0	8.9	78	12[Q]	--[R]	
		7	9.4	6.9	8.9	78	12[Q]	--[R]	
		8	9.4	6.9	8.9	77	12[Q]	--[R]	
		9	9.4	6.9	8.9	78	12[Q]	--[R]	
		10	9.4	6.9	8.9	78	12[Q]	--[R]	
		11	9.4	6.9	8.9	78	12[Q]	--[R]	
		12	9.4	6.9	8.9	78	12[Q]	--[R]	
		13	9.4	6.8	8.9	78	12[Q]	--[R]	
		14	9.4	6.8	8.9	78	12[Q]	--[R]	
		15	9.4	6.8	8.9	78	12[Q]	--[R]	
		16	9.4	6.8	8.9	78	12[Q]	--[R]	
R-IS-10-IHR	11/15	surface	9.5	6.6	8.6	75	12[Q]	--[R]	6.0
		1	9.5	6.6	8.6	75	12[Q]	--[R]	
		2	9.5	6.5	8.6	75	12[Q]	--[R]	
		3	9.5	6.5	8.6	75	12[Q]	--[R]	
		4	9.5	6.5	8.6	75	12[Q]	--[R]	
		5	9.5	6.5	8.6	75	12[Q]	--[R]	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-10-IHR	11/15	6	9.4	6.5	8.6	75	12[Q]	--[R]	6.0
		7	9.4	6.5	8.6	75	12[Q]	--[R]	
		8	9.4	6.5	8.6	75	12[Q]	--[R]	
		9	9.4	6.5	8.6	75	12[Q]	--[R]	
		10	9.4	6.5	8.6	75	12[Q]	--[R]	
		11	9.4	6.5	8.6	75	12[Q]	--[R]	
		12	9.4	6.4	8.6	75	12[Q]	--[R]	
		13	9.4	6.4	8.6	75	12[Q]	--[R]	
		14	9.4	6.4	8.6	75	12[Q]	--[R]	
		15	9.4	6.3	8.6	75	12[Q]	--[R]	
		16	9.4	6.3	8.6	75	12[Q]	--[R]	
R-IS-11-IHR	11/15	surface	9.6	6.9	8.5	75	12[Q]	--[R]	6.0
		1	9.5	6.9	8.5	74	12[Q]	--[R]	
		2	9.5	6.8	8.5	74	12[Q]	--[R]	
		3	9.5	6.8	8.5	74	12[Q]	--[R]	
		4	9.5	6.8	8.4	74	12[Q]	--[R]	
		5	9.4	6.8	8.4	74	12[Q]	--[R]	
		6	9.4	6.8	8.4	74	12[Q]	--[R]	
		7	9.4	6.7	8.4	73	12[Q]	--[R]	
		8	9.4	6.7	8.4	73	12[Q]	--[R]	
		9	9.4	6.7	8.4	73	12[Q]	--[R]	
		10	9.4	6.7	8.4	73	12[Q]	--[R]	
		11	9.4	6.6	8.3	73	12[Q]	--[R]	
		12	9.4	6.6	8.4	73	12[Q]	--[R]	
		13	9.4	6.6	8.4	73	12[Q]	--[R]	
		14	9.4	6.6	8.4	73	12[Q]	--[R]	
		15	9.4	6.6	8.4	73	12[Q]	--[R]	
		16	9.4	6.6	8.4	73	12[Q]	--[R]	
		17	9.4	6.6	8.3	73	12[Q]	--[R]	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-11-IHR	11/15	18	9.4	6.5	8.3	72	12[Q]	--[R]	6.0
		19	9.3	6.5	8.2	72	12[Q]	--[R]	
		20	9.3	6.5	8.1	71	12[Q]	--[R]	
		21	9.3	6.4	8.0	70	12[Q]	--[R]	
		22	8.5	6.2	6.7	54	13[Q]	--[R]	
		23	7.8	5.9	4.6	38	13[Q]	--[R]	
		24	7.6	5.7	4.4	37	13[Q]	--[R]	
		25	7.5	5.6	4.4	37	13[Q]	--[R]	
		26	7.5	5.5	4.4	36	13[Q]	--[R]	
		27	7.4	5.4	3.8	31	13[Q]	--[R]	
		28	7.4	5.3	3.3	27	14[Q]	--[R]	
		29	7.3	5.3	2.7	22	14[Q]	--[R]	
		30	7.3	5.3	2.1	17	15[Q]	--[R]	
		31	7.2	5.3	1.8	15	15[Q]	--[R]	
		32	7.2	5.3	1.2	10	16[Q]	--[R]	
		33	7.1	5.3	0.7	6	17[Q]	--[R]	
Union Valley Reservoir									
R-IS-5-UVR	11/14	surface	11.5	7.3[Q]	8.5	78	12	0.1[Q]	5.6
		1	11.5	7.2[Q]	8.5	78	12	0.1[Q]	
		2	11.5	7.1[Q]	8.5	78	12	0.1[Q]	
		3	11.5	7.1[Q]	8.5	78	12	0.1[Q]	
		4	11.4	7.1[Q]	8.5	78	12	0.1[Q]	
		5	11.3	7.1[Q]	8.5	78	12	0.2[Q]	
		6	11.3	7.0[Q]	8.5	78	12	0.1[Q]	
		7	11.1	7.0[Q]	8.6	78	12	0.1[Q]	
		8	10.9	7.0[Q]	8.6	78	12	0.1[Q]	
R-IS-6-UVR	11/14	surface	12.0	6.9[Q]	8.5	79	12	2.0[Q]	7.3
		1	12.0	6.8[Q]	8.4	78	12	2.0[Q]	
		2	12.0	6.8[Q]	8.4	78	12	1.9[Q]	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-6-UVR	11/14	3	12.0	6.8[Q]	8.4	78	12	1.9[Q]	7.3
		4	12.0	6.8[Q]	8.4	78	12	2.0[Q]	
		5	12.0	6.8[Q]	8.4	77	12	1.9[Q]	
		6	12.0	6.8[Q]	8.4	77	12	1.9[Q]	
		7	12.0	6.8[Q]	8.4	77	12	1.9[Q]	
		8	12.0	6.8[Q]	8.3	77	12	1.9[Q]	
		9	12.0	6.7[Q]	8.3	77	12	1.9[Q]	
		10	12.0	6.7[Q]	8.3	77	12	2.0[Q]	
		11	12.0	6.7[Q]	8.3	77	12	1.9[Q]	
		12	12.0	6.7[Q]	8.3	77	12	1.9[Q]	
		13	12.0	6.7[Q]	8.3	77	12	1.9[Q]	
		14	11.9	6.7[Q]	8.3	77	12	1.8[Q]	
		15	11.9	6.7[Q]	8.3	77	12	1.9[Q]	
		16	11.9	6.8[Q]	8.3	77	12	1.9[Q]	
		17	11.9	6.7[Q]	8.3	77	12	1.8[Q]	
		18	11.9	6.7[Q]	8.3	77	12	1.9[Q]	
		19	11.9	6.7[Q]	8.3	77	12	1.9[Q]	
		20	11.9	6.7[Q]	8.3	77	12	1.8[Q]	
		21	11.9	6.7[Q]	8.4	77	12	1.9[Q]	
		22	11.9	6.7[Q]	8.3	77	12	1.8[Q]	
		23	11.9	6.7[Q]	8.3	77	12	1.8[Q]	
		24	11.9	6.7[Q]	8.3	77	12	1.9[Q]	
		25	11.9	6.7[Q]	8.4	77	12	1.8[Q]	
		26	11.9	6.7[Q]	8.4	77	12	1.8[Q]	
		27	11.9	6.7[Q]	8.4	77	12	1.8[Q]	
		28	11.9	6.7[Q]	8.3	77	12	1.8[Q]	
		29	11.9	6.7[Q]	8.4	77	12	1.9[Q]	
		30	11.9	6.7[Q]	8.3	77	12	1.9[Q]	
		31	11.8	6.7[Q]	8.3	77	12	1.8[Q]	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-6-UVR	11/14	32	11.9	6.7[Q]	8.3	77	12	1.8[Q]	7.3
		33	11.8	6.7[Q]	8.3	77	12	1.9[Q]	
		34	11.8	6.7[Q]	8.3	76	12	1.8[Q]	
		35	11.8	6.7[Q]	8.2	76	12	1.8[Q]	
		36	11.7	6.6[Q]	8.2	75	12	1.8[Q]	
		37	11.7	6.6[Q]	8.0	74	12	1.8[Q]	
R-IS-7-UVR	11/14	surface	11.9	6.8[Q]	8.4	78	12	2.4[Q]	6.7
		1	12.0	6.9[Q]	8.4	78	12	2.4[Q]	
		2	12.0	6.9[Q]	8.4	78	12	2.3[Q]	
		3	12.0	6.9[Q]	8.4	78	12	2.3[Q]	
		4	12.0	6.9[Q]	8.4	78	12	2.3[Q]	
		5	12.0	6.9[Q]	8.4	78	12	2.3[Q]	
		6	12.0	6.9[Q]	8.4	78	12	2.3[Q]	
		7	12.0	6.9[Q]	8.4	78	12	2.3[Q]	
		8	12.0	6.9[Q]	8.4	78	12	2.3[Q]	
		9	12.0	6.9[Q]	8.4	77	12	2.3[Q]	
		10	12.0	6.9[Q]	8.4	77	12	2.3[Q]	
		11	12.0	6.9[Q]	8.4	78	12	2.3[Q]	
		12	12.0	6.9[Q]	8.4	77	12	2.2[Q]	
		13	12.0	6.9[Q]	8.4	77	12	2.3[Q]	
		14	12.0	6.9[Q]	8.4	77	12	2.3[Q]	
		15	12.0	6.9[Q]	8.4	77	12	2.3[Q]	
		16	12.0	6.9[Q]	8.4	77	12	2.2[Q]	
		17	12.0	6.9[Q]	8.4	77	12	2.2[Q]	
		18	12.0	6.9[Q]	8.4	77	12	2.3[Q]	
		19	12.0	6.9[Q]	8.4	77	12	2.2[Q]	
		20	11.9	6.9[Q]	8.4	77	12	2.2[Q]	
		21	11.9	6.9[Q]	8.4	78	12	2.3[Q]	
		22	11.9	6.8[Q]	8.4	77	12	2.2[Q]	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-7-UVR	11/14	23	12.0	6.8[Q]	8.4	77	12	2.2[Q]	6.7
		24	11.7	6.8[Q]	8.4	77	12	2.2[Q]	
R-IS-8-UVR	11/14	surface	12.1	6.8[Q]	8.3	77	12	1.8[Q]	7.4
		1	12.1	6.7[Q]	8.1	76	12	1.8[Q]	
		2	12.1	6.7[Q]	8.1	75	12	1.8[Q]	
		3	12.0	6.7[Q]	8.7	75	12	1.8[Q]	
		4	12.0	6.7[Q]	8.1	75	12	1.8[Q]	
		5	12.0	6.6[Q]	8.1	75	12	1.7[Q]	
		6	12.0	6.6[Q]	8.1	75	12	1.7[Q]	
		7	12.0	6.6[Q]	8.1	75	12	1.7[Q]	
		8	12.0	6.6[Q]	8.1	75	12	1.7[Q]	
		9	12.0	6.6[Q]	8.1	75	12	1.8[Q]	
		10	12.0	6.6[Q]	8.1	75	12	1.8[Q]	
		11	12.0	6.6[Q]	8.1	75	12	1.7[Q]	
		12	12.0	6.6[Q]	8.1	75	12	1.7[Q]	
		13	12.0	6.6[Q]	8.1	75	12	1.8[Q]	
		14	12.0	6.5[Q]	8.1	75	12	1.7[Q]	
		15	12.0	6.5[Q]	8.1	75	12	1.7[Q]	
		16	12.0	6.6[Q]	8.1	75	12	1.7[Q]	
		17	12.0	6.6[Q]	8.1	75	12	1.7[Q]	
		18	12.0	6.6[Q]	8.0	75	12	1.7[Q]	
		19	12.0	6.6[Q]	8.0	75	12	1.7[Q]	
		20	12.0	6.5[Q]	8.0	75	12	1.7[Q]	
		21	12.0	6.5[Q]	8.0	75	12	1.8[Q]	
		22	12.0	6.6[Q]	8.0	75	12	1.7[Q]	
		23	12.0	6.6[Q]	8.1	75	12	1.7[Q]	
		24	12.0	6.5[Q]	8.0	74	12	1.7[Q]	
		25	12.0	6.5[Q]	8.0	74	12	1.7[Q]	
		26	12.0	6.5[Q]	8.0	74	12	1.6[Q]	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-8-UVR	11/14	27	12.0	6.5[Q]	8.0	74	12	1.7[Q]	7.4
		28	12.0	6.5[Q]	8.0	74	12	1.5[Q]	
		29	11.9	6.5[Q]	7.9	74	12	1.7[Q]	
		30	11.9	6.5[Q]	7.9	74	12	1.7[Q]	
		31	11.9	6.5[Q]	7.9	73	12	1.7[Q]	
		32	11.9	6.5[Q]	7.9	73	12	1.7[Q]	
		33	11.8	6.5[Q]	7.8	72	12	1.7[Q]	
		34	11.7	6.5[Q]	7.7	71	12	1.6[Q]	
		35	11.6	6.4[Q]	7.6	70	12	1.6[Q]	
		36	11.5	6.4[Q]	7.6	70	12	1.6[Q]	
		37	11.4	6.4[Q]	7.5	68	12	1.6[Q]	
		38	11.3	6.3[Q]	7.2	66	12	1.6[Q]	
		39	11.2	6.3[Q]	7.1	65	12	1.6[Q]	
		40	10.6	6.2[Q]	7.1	64	11	1.6[Q]	
		41	10.4	6.2[Q]	7.1	63	11	1.6[Q]	
		42	10.2	6.2[Q]	7.1	63	11	1.6[Q]	
		43	10.0	6.2[Q]	7.2	64	11	1.6[Q]	
		44	9.9	6.2[Q]	7.2	63	11	1.7[Q]	
		45	9.8	6.2[Q]	7.2	63	11	1.7[Q]	
		46	9.7	6.2[Q]	7.2	63	11	1.7[Q]	
		47	9.6	6.2[Q]	7.2	63	11	1.7[Q]	
		48	9.5	6.2[Q]	7.2	63	11	1.7[Q]	
		49	9.4	6.2[Q]	7.2	63	11	1.7[Q]	
		50	9.3	6.2[Q]	7.2	62	11	1.7[Q]	
		51	9.3	6.2[Q]	7.1	62	11	1.7[Q]	
		52	9.2	6.2[Q]	7.0	61	11	1.7[Q]	
		53	9.1	6.1[Q]	7.0	61	11	1.7[Q]	
		54	9.0	6.1[Q]	7.0	60	11	1.7[Q]	
		55	8.9	6.1[Q]	6.9	59	11	1.8[Q]	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-8-UVR	11/14	56	8.8	6.1[Q]	6.7	58	11	1.7[Q]	7.4
		57	8.7	6.1[Q]	6.6	56	11	1.7[Q]	
		58	8.6	6.0[Q]	6.4	55	11	1.8[Q]	
		59	8.4	5.9[Q]	6.4	54	11	1.8[Q]	
		60	8.4	5.9[Q]	6.3	53	11	1.8[Q]	
		61	8.2	5.8[Q]	6.2	52	11	1.8[Q]	
		62	8.0	5.8[Q]	6.1	52	11	1.8[Q]	
		63	7.7	5.8[Q]	6.1	51	11	1.8[Q]	
		64	7.4	5.8[Q]	6.1	51	11	1.8[Q]	
		65	7.1	5.7[Q]	6.2	51	11	1.8[Q]	
		66	6.9	5.6[Q]	6.3	52	11	1.8[Q]	
		67	6.7	5.5[Q]	6.4	52	11	1.8[Q]	
		68	6.6	5.5[Q]	6.4	52	11	1.8[Q]	
		69	6.5	5.5[Q]	6.5	53	11	1.9[Q]	
		70	6.5	5.4[Q]	6.5	52	11	1.9[Q]	
		71	6.4	5.5[Q]	6.5	53	11	1.8[Q]	
		72	6.4	5.5[Q]	6.5	53	11	1.8[Q]	
		73	6.4	5.5[Q]	6.5	52	11	1.8[Q]	
		74	6.4	5.5[Q]	6.4	52	11	1.9[Q]	
		75	6.4	5.5[Q]	6.4	51	11	1.9[Q]	
		76	6.4	5.5[Q]	6.3	51	11	1.9[Q]	
		77	6.3	5.6[Q]	6.3	51	11	1.8[Q]	
		78	6.3	5.5[Q]	6.3	51	11	2.0[Q]	
		79	6.3	5.5[Q]	6.3	51	11	1.9[Q]	
		80	6.3	5.5[Q]	6.2	50	11	1.9[Q]	
		81	6.3	5.5[Q]	6.1	49	11	1.9[Q]	
		82	6.3	5.5[Q]	6.1	49	11	1.9[Q]	
		83	6.3	5.5[Q]	6.0	49	11	1.9[Q]	
		84	6.3	5.5[Q]	5.9	47	11	1.9[Q]	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-8-UVR	11/14	85	6.3	5.4[Q]	5.9	48	11	1.9[Q]	7.4
		86	6.3	5.5[Q]	5.8	47	12	2.0[Q]	
		87	6.3	5.5[Q]	5.7	48	12	2.1[Q]	
		88	6.3	5.5[Q]	5.5	44	12	2.1[Q]	
		89	6.3	5.5[Q]	5.4	43	12	2.1[Q]	
		90	6.3	5.5[Q]	5.3	43	12	2.2[Q]	
		91	6.3	5.5[Q]	5.2	42	12	2.1[Q]	
		92	6.3	5.5[Q]	5.1	41	13	2.2[Q]	
		93	6.3	5.6[Q]	5.0	41	13	2.3[Q]	
		94	6.3	5.6[Q]	5.0	40	13	2.6[Q]	
Camino Reservoir									
R-IS-13-CR	11/16	surface	7.1	7.0	12.0	99	11[Q]	0.3[Q]	5.8
		1	6.9	6.8	12.0	98	11[Q]	0.4[Q]	
		2	6.9	6.7	12.0	99	11[Q]	0.3[Q]	
		3	6.8	6.7	12.0	98	11[Q]	0.3[Q]	
		4	6.7	6.6	12.0	98	11[Q]	0.3[Q]	
		5	6.6	6.6	12.0	98	11[Q]	0.5[Q]	
Brush Creek Reservoir									
R-IS-20-BC	11/10	surface	12.1	6.9	8.7	81	19	--[R]	6.4
		1	12.0	6.8	8.7	80	19	--[R]	
		2	12.0	6.8	8.6	80	19	--[R]	
		3	12.0	6.8	8.6	80	19	--[R]	
		4	11.9	6.8	8.6	80	19	--[R]	
		5	11.9	6.8	8.6	80	19	--[R]	
		6	11.9	6.8	8.6	80	19	--[R]	
		7	11.9	6.8	8.6	80	19	--[R]	
		8	11.9	6.8	8.6	80	19	--[R]	
		9	11.9	6.8	8.6	80	19	--[R]	
		10	11.9	6.8	8.6	80	19	--[R]	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-20-BC	11/10	11	11.9	6.8	8.6	80	19	--[R]	6.4
		12	11.9	6.8	8.6	80	19	--[R]	
		13	11.9	6.8	8.6	80	19	--[R]	
		14	11.9	6.3	8.6	80	19	--[R]	
		15	11.9	6.8	8.6	80	19	--[R]	
		16	11.8	6.8	8.7	80	19	--[R]	
		17	11.8	6.8	8.7	80	19	--[R]	
		18	11.8	6.8	8.7	80	19	--[R]	
		19	11.8	6.8	8.7	80	19	--[R]	
		20	11.7	6.8	8.7	80	19	--[R]	
		21	11.7	6.8	8.7	80	19	--[R]	
		22	11.7	6.8	8.7	80	19	--[R]	
		23	11.7	6.8	8.7	80	19	--[R]	
		24	11.7	6.1	8.7	80	19	--[R]	
		25	11.7	6.8	8.7	80	19	--[R]	
		26	11.6	6.8	8.7	80	19	--[R]	
Slab Creek Reservoir									
R-IS-14-SC	11/22	surface	4.7	7.1	12.8	100	22	0.6	7.6
		1	4.7	7.0	12.9	100	22	0.7	
		2	4.7	6.8	12.9	100	22	0.7	
		3	4.7	6.8	12.9	100	22	0.7	
		4	4.7	6.8	12.9	100	22	0.8	
		5	4.7	6.8	12.9	100	22	0.7	
		6	4.6	6.8	12.9	100	22	0.7	
		7	4.6	6.7	13.0	100	22	0.9	
R-IS-15-SC	11/22	surface	7.8	7.0	10.8	91	21	0.2	7.6
		1	7.6	6.9	10.8	91	21	0.1	
		2	7.6	6.9	10.8	91	21	0.1	
		3	7.5	6.9	10.8	90	21	0.0	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (ºC)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-15-SC	11/22	4	7.5	6.8	10.8	90	21	0.1	7.6
		5	7.5	6.8	10.8	90	21	0.1	
		6	7.4	6.8	10.8	90	21	0.1	
		7	7.4	6.8	10.8	90	21	0.1	
		8	7.4	6.8	10.8	90	21	0.1	
		9	7.4	6.8	10.9	90	21	0.0	
		10	7.4	6.8	10.9	90	21	0.1	
		11	7.4	6.8	10.9	90	21	0.0	
		12	7.4	6.8	10.9	90	21	0.1	
		13	7.4	6.8	10.9	90	21	0.1	
		14	7.3	6.8	10.9	91	21	0.1	
		15	7.0	6.7	11.1	92	20	0.0	
		16	6.9	6.7	11.2	92	21	0.0	
		17	6.9	6.7	11.2	92	21	0.0	
		18	6.7	6.7	11.2	92	21	0.0	
		19	6.9	6.7	11.2	92	21	0.0	
		20	6.8	6.7	11.2	92	21	0.1	
		21	6.8	6.7	11.2	92	21	0.0	
		22	6.9	6.7	11.3	92	21	0.1	
		23	6.8	6.7	11.3	92	21	0.0	
		24	6.7	6.7	11.3	92	21	0.0	
		25	6.6	6.7	11.3	92	21	0.1	
		26	6.5	6.7	11.4	93	21	0.1	
		27	6.5	6.7	11.4	93	21	0.1	
		28	6.4	6.7	11.4	93	21	0.0	
		29	6.3	6.7	11.5	93	21	0.1	
		30	6.3	6.7	11.5	93	21	0.1	
		31	6.3	6.7	11.5	93	21	0.0	
		32	6.2	6.7	11.5	93	21	0.1	

Site ID	2022 Sample Date	Sample Depth (m)	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)	Secchi disk (m)
R-IS-15-SC	11/22	33	6.2	6.7	11.6	93	21	0.0	7.6
		34	6.2	6.7	11.6	93	21	0.1	
		35	6.1	6.7	11.6	93	21	0.2	

°C = degrees Celsius
m = meter
mg/L = milligrams per liter
s.u. = standard unit of pH
uS/cm = microsiemens per centimeter
NTU = Nephelometric Turbidity Unit
[Q] Data are designated as "qualified" because the post-sampling calibration check measurement quality objective (MQO) for acceptability was not met (see Appendix F for detailed calibration data). Qualified values are known with relatively less certainty (see Table 5-2).
[R] Data are designated as "rejected" because the post-sampling calibration check measurement quality objective (MQO) for acceptability was not met (see Appendix F).

APPENDIX B
In situ Vertical Profiles for Upper American River Project Reservoir Sites

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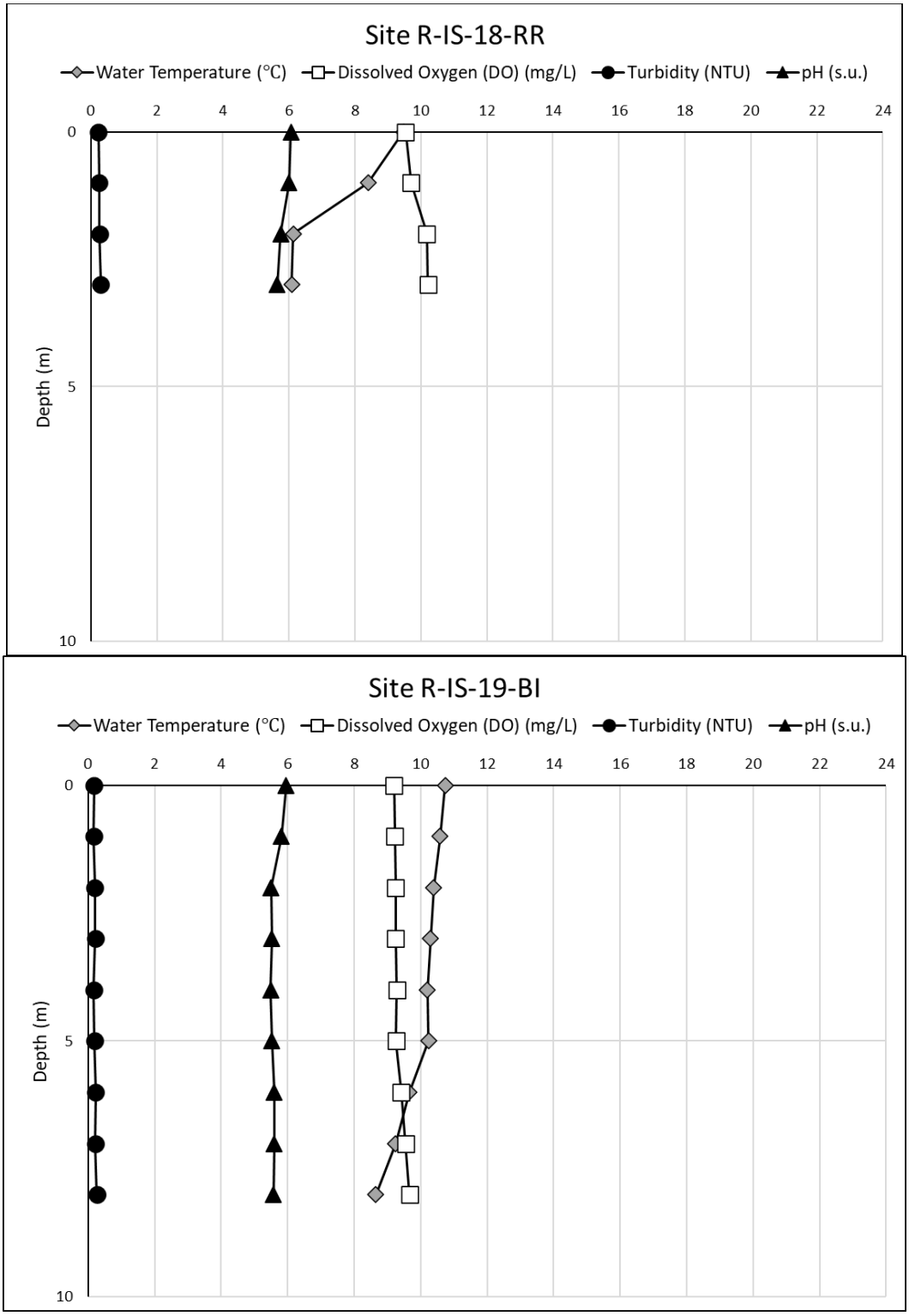


Figure B-1. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Rubicon Reservoir Site R-IS-18-RR and Buck Island Reservoir Site R-IS-19-BI, Spring 2022.

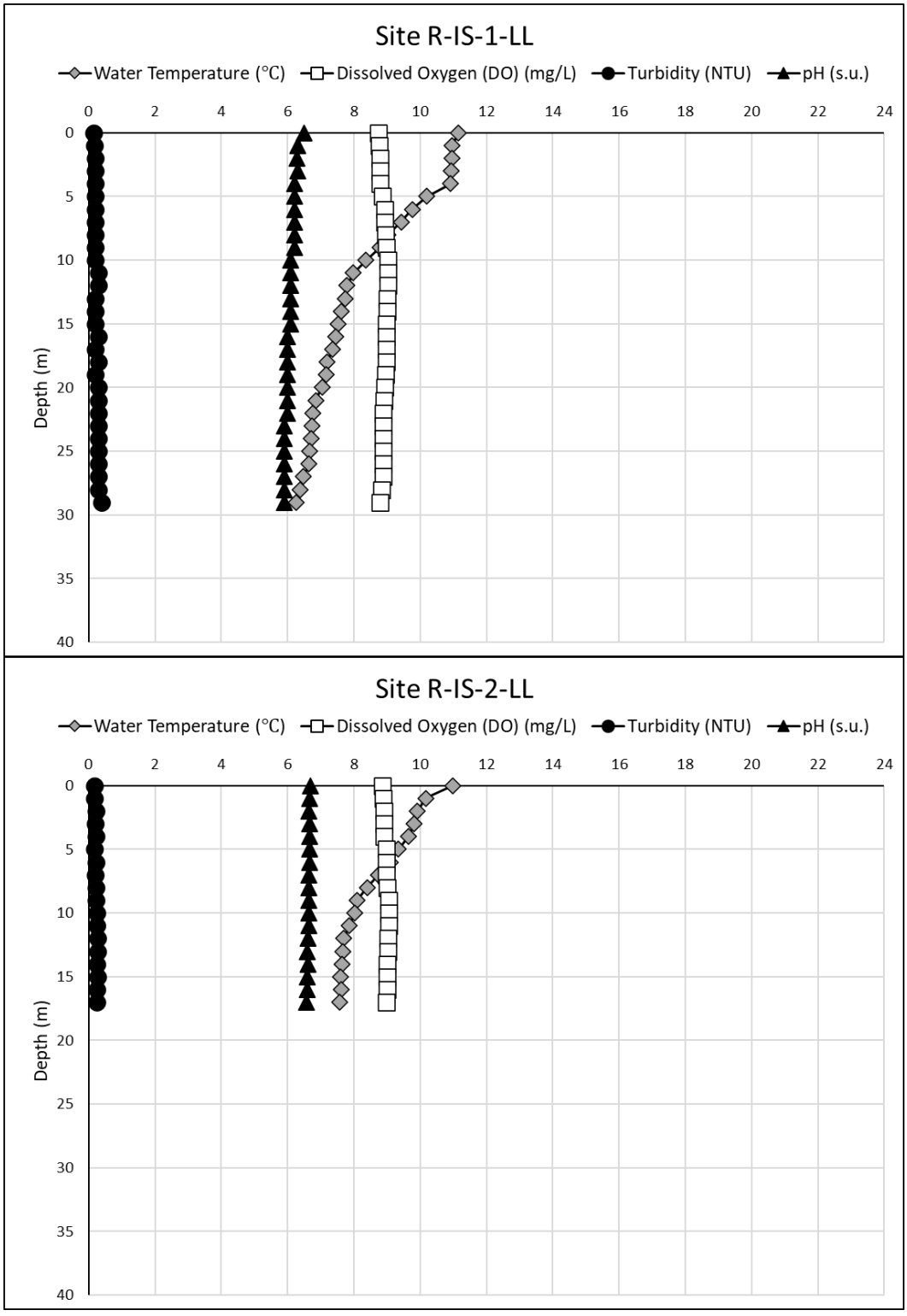


Figure B-2. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Loon Lake Reservoir sites R-IS-1-LL and R-IS-2-LL, Spring 2022.

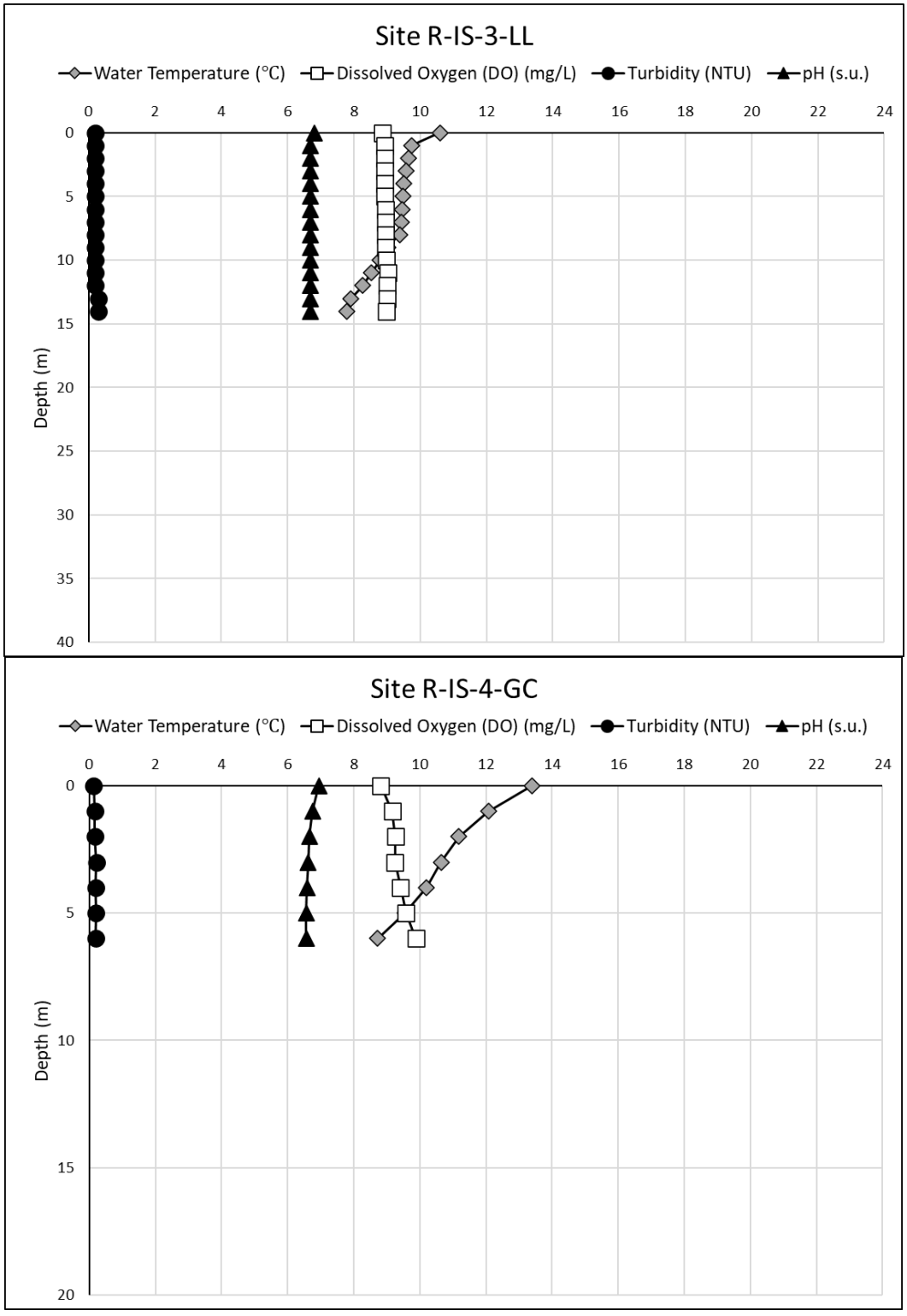


Figure B-3. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Loon Lake Reservoir Site R-IS-3-LL and Gerle Creek Reservoir Site R-IS-4-GC, Spring 2022.

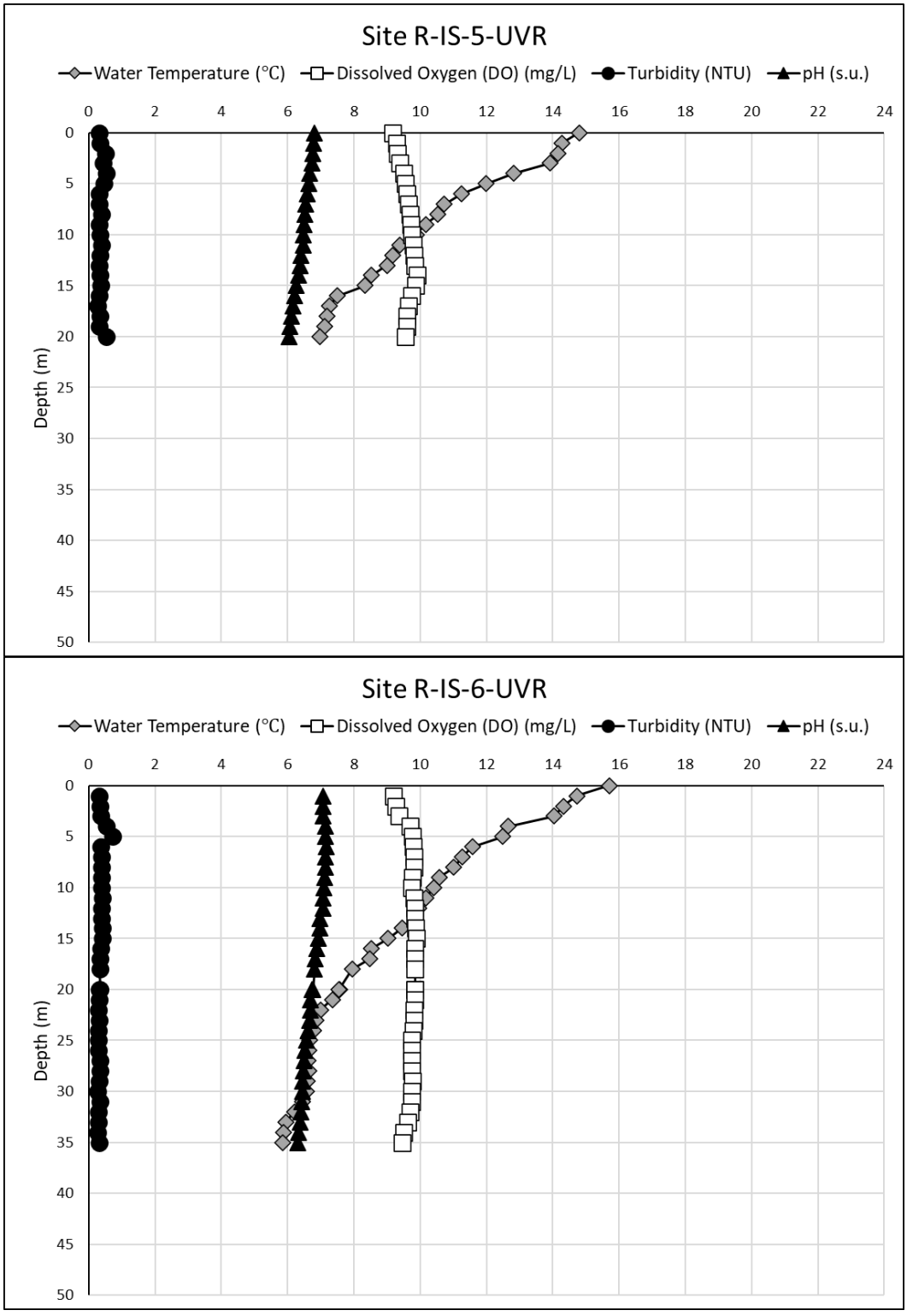


Figure B-4. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Union Valley Reservoir sites R-IS-5-UVR and R-IS-6-UVR, Spring 2022.

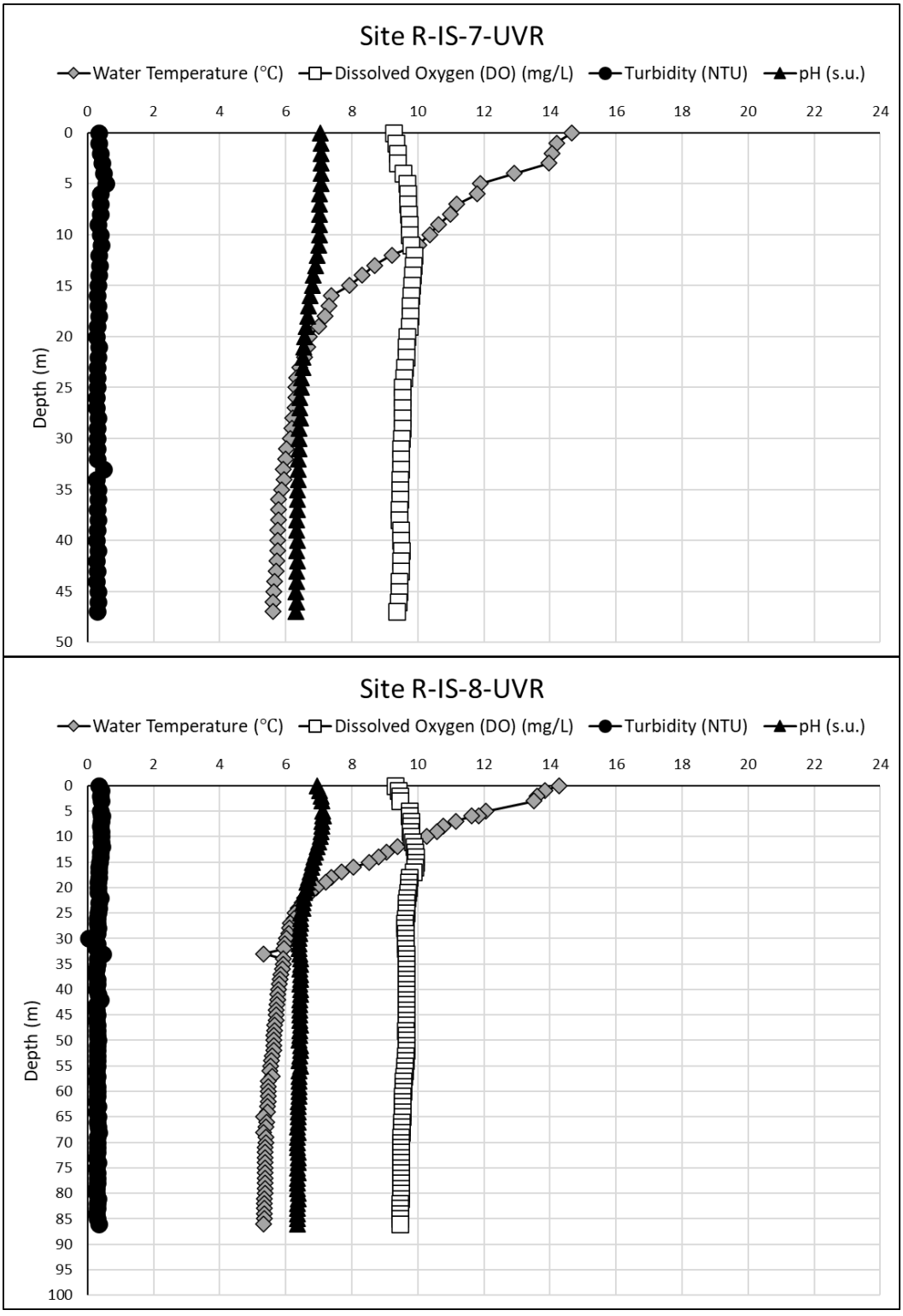


Figure B-5. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Union Valley Reservoir sites R-IS-7-UVR and R-IS-8-UVR, Spring 2022.

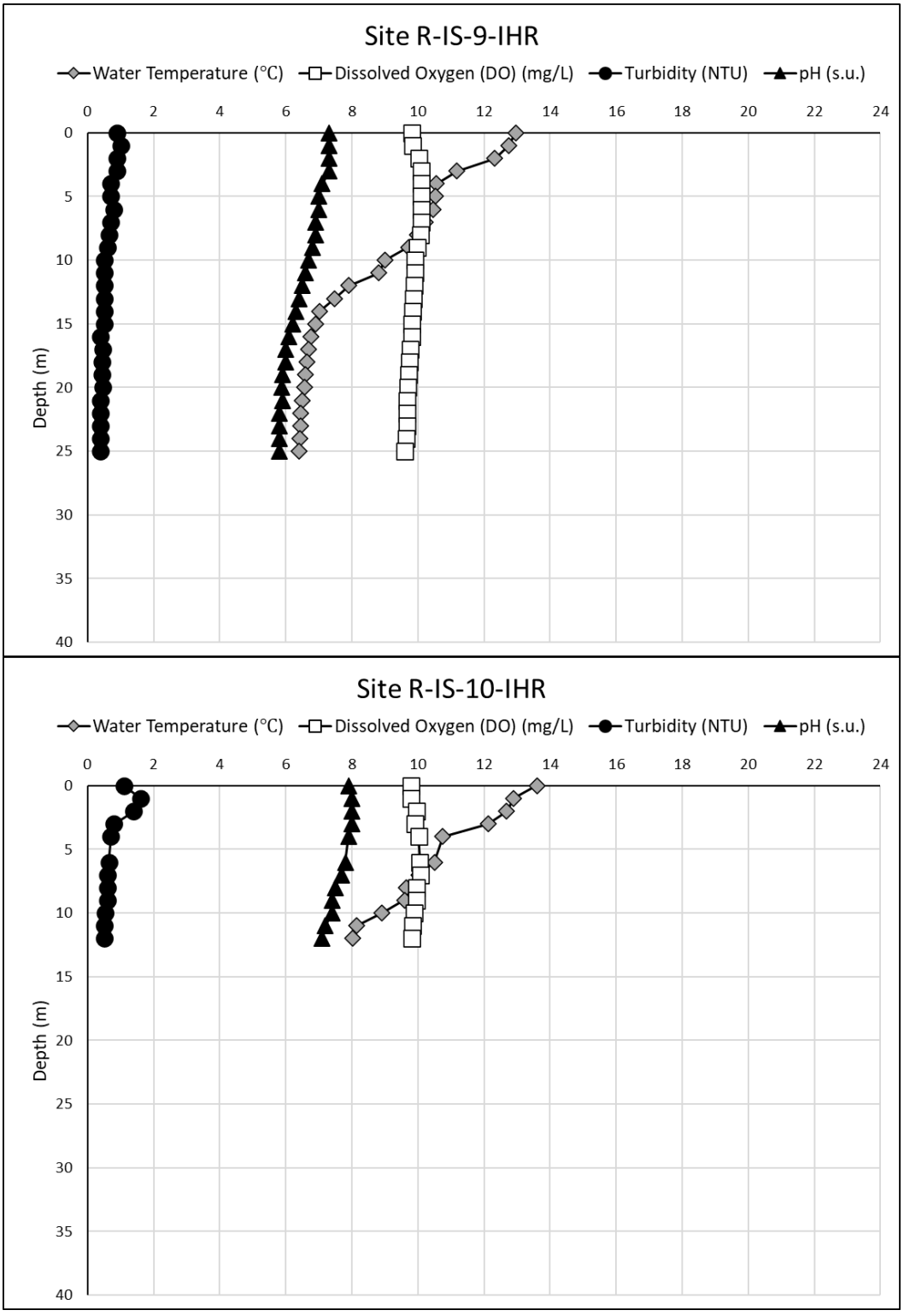


Figure B-6. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Ice House Reservoir sites R-IS-9-IHR and R-IS-10-IHR, Spring 2022.

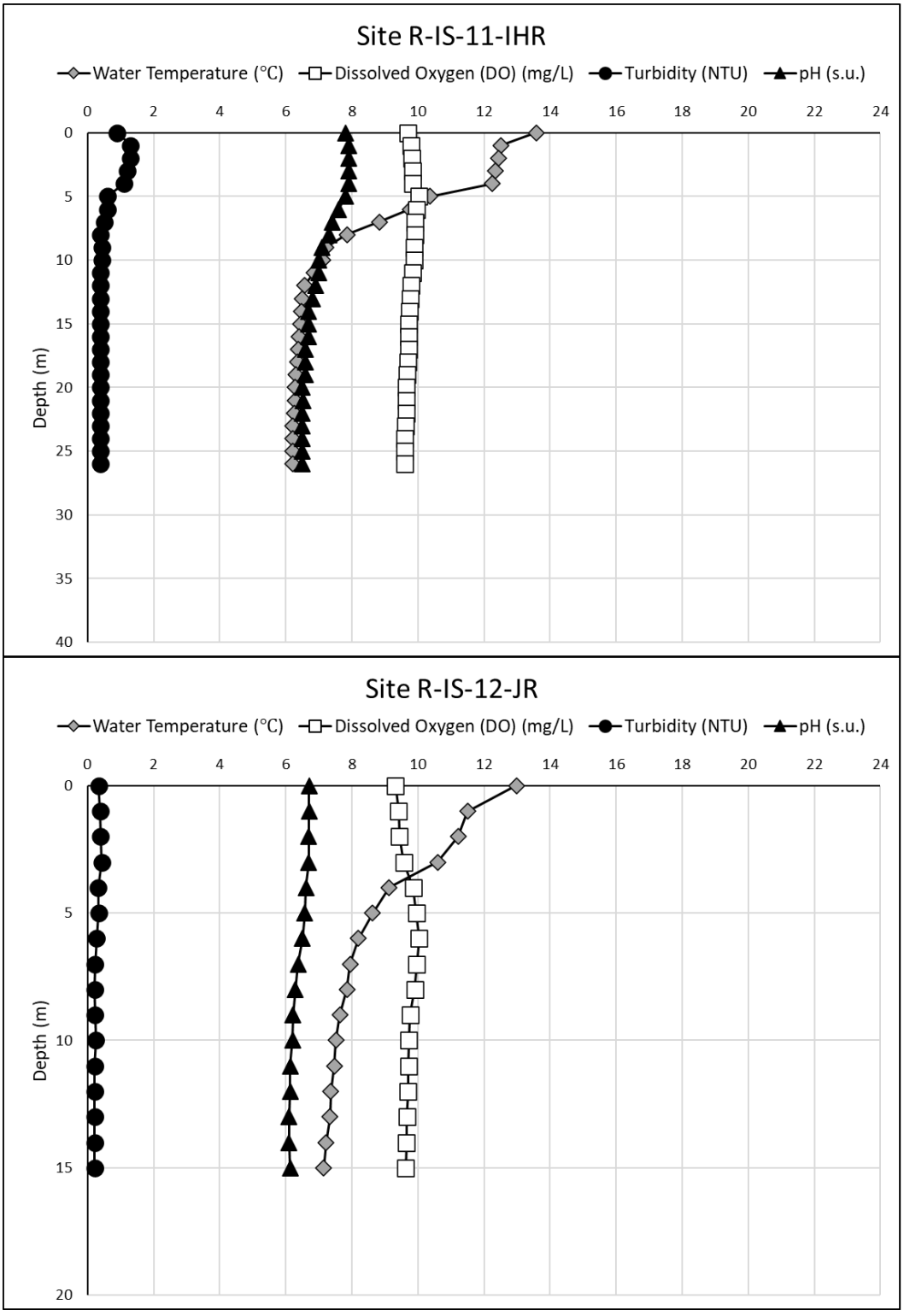


Figure B-7. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Ice House Reservoir Site R-IS-11-IHR and Junction Reservoir Site R-IS-12-JR, Spring 2022.

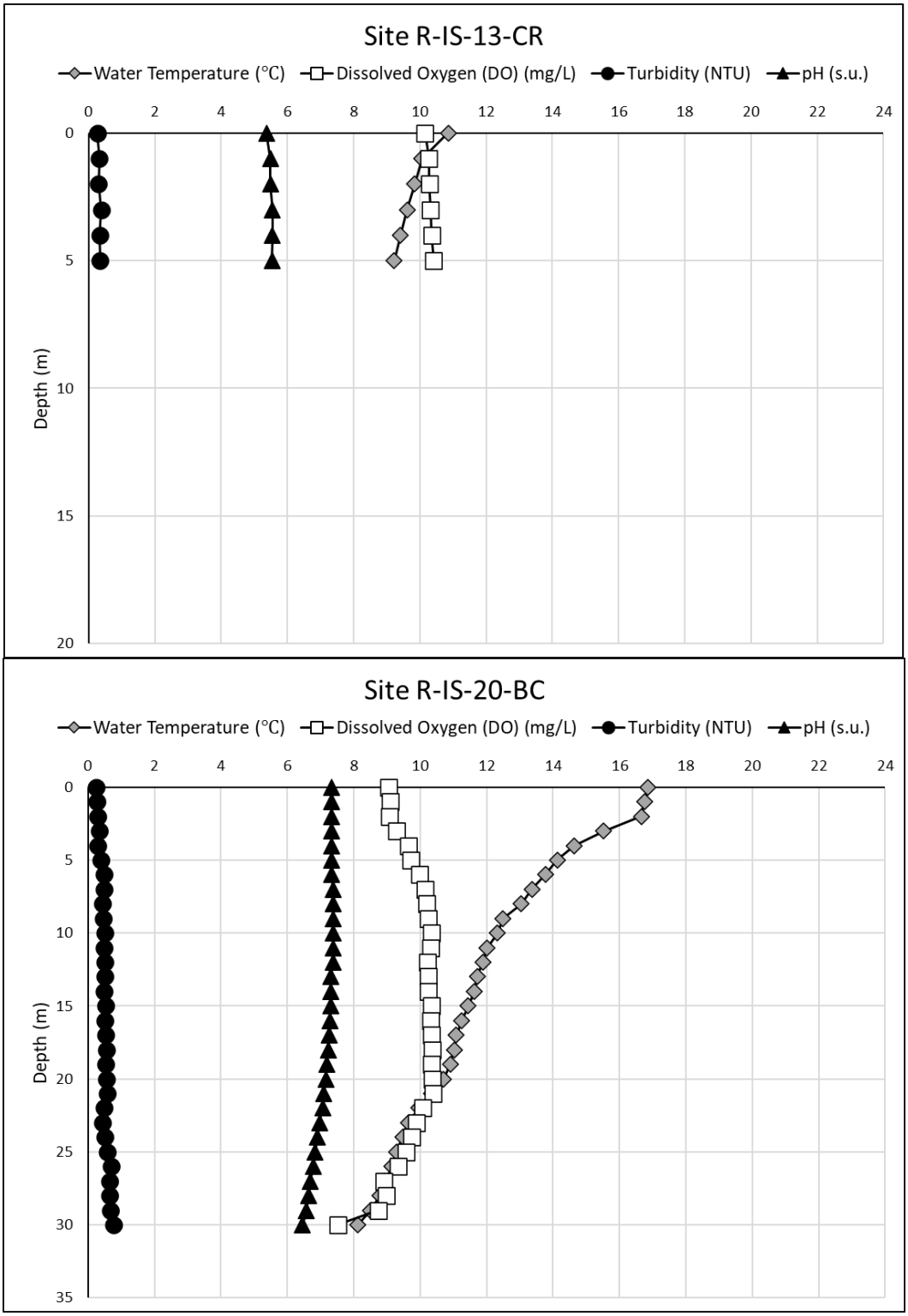


Figure B-8. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Camino Reservoir Site R-IS-13-CR and Brush Creek Reservoir Site R-IS-20-BC, Spring 2022.

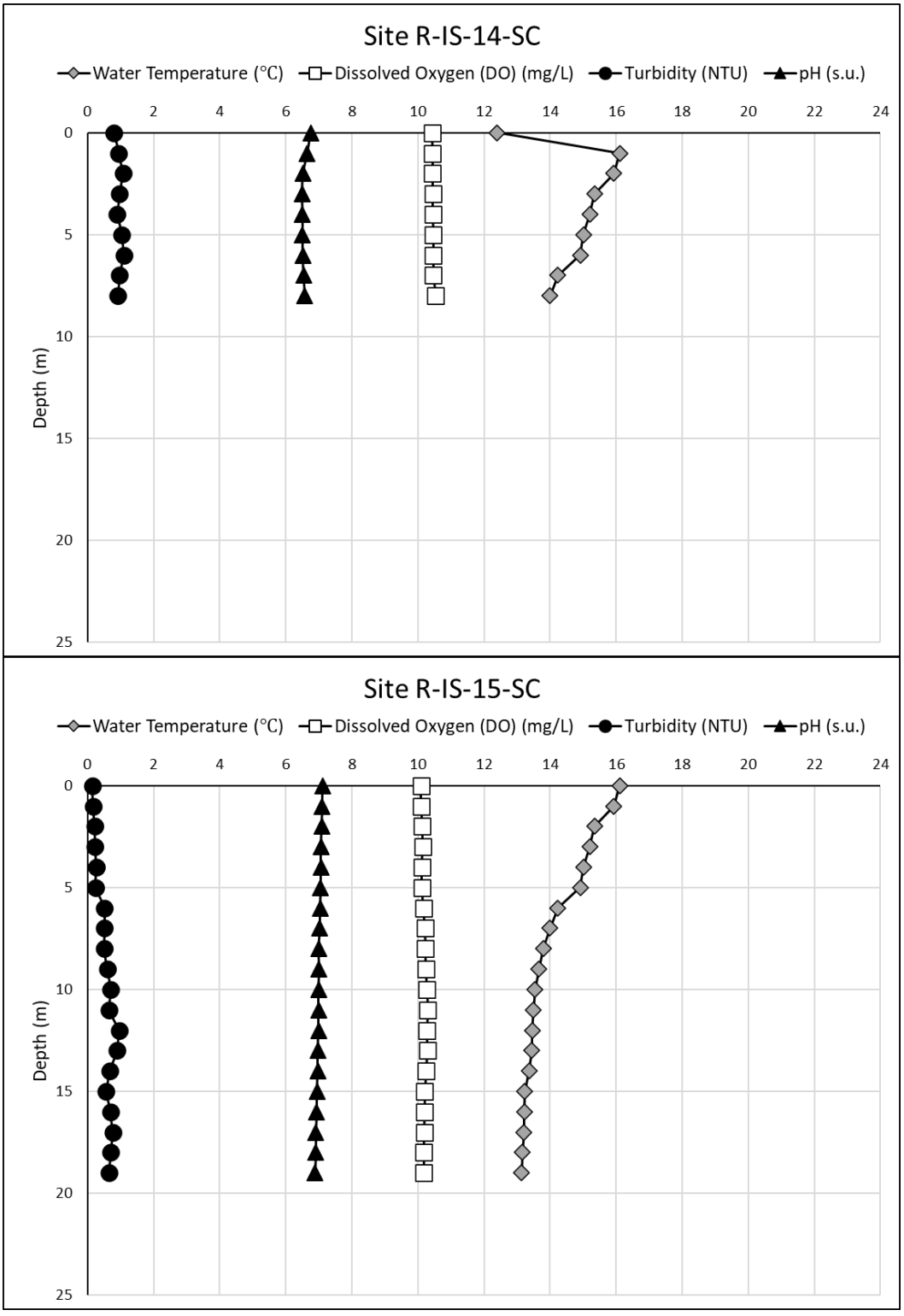


Figure B-9. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Slab Creek Reservoir sites R-IS-14-SC and R-IS-15-SC, Spring 2022.

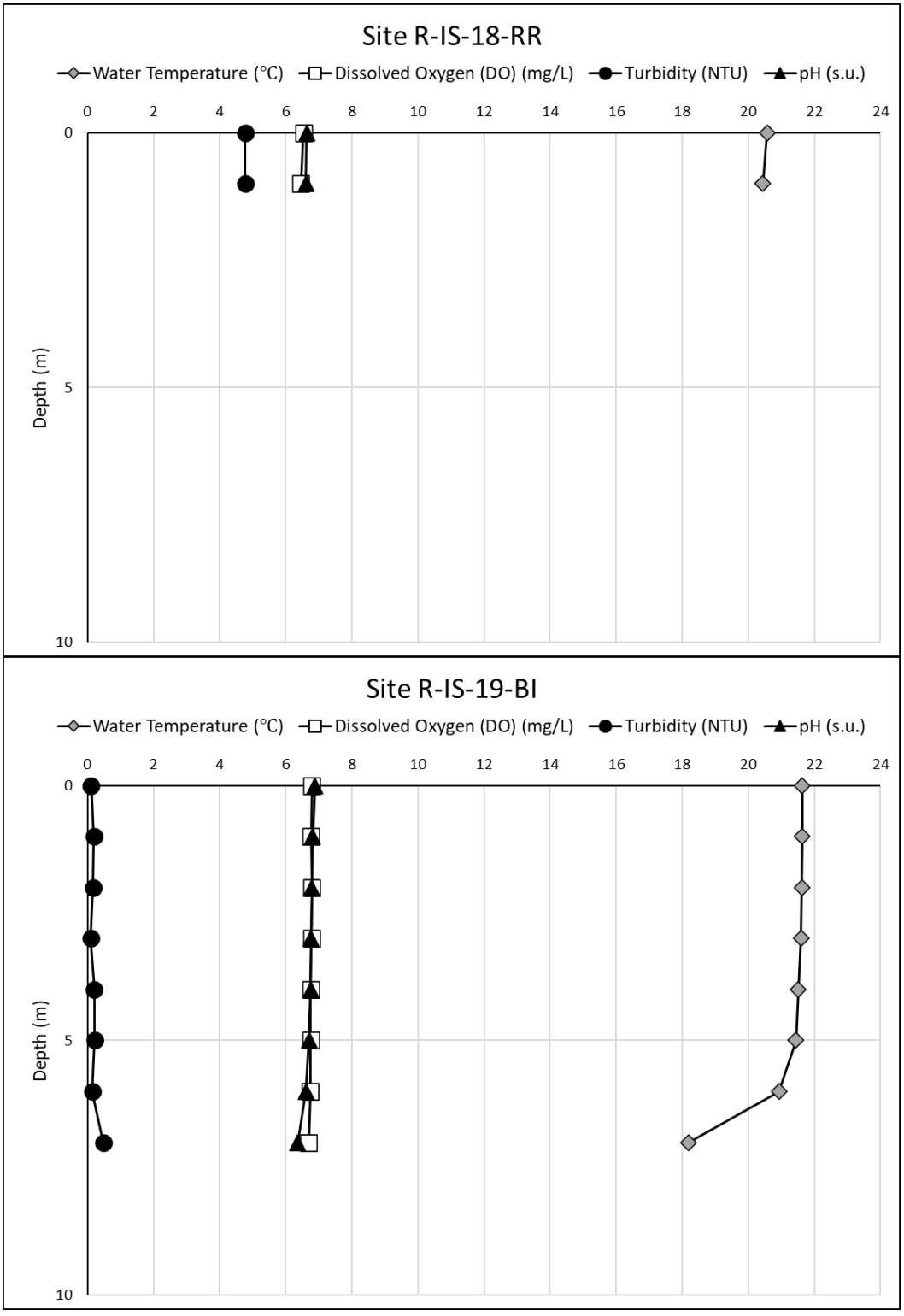


Figure B-10. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Rubicon Reservoir Site R-IS-18-RR and Buck Island Reservoir Site R-IS-19-BI, Summer 2022.

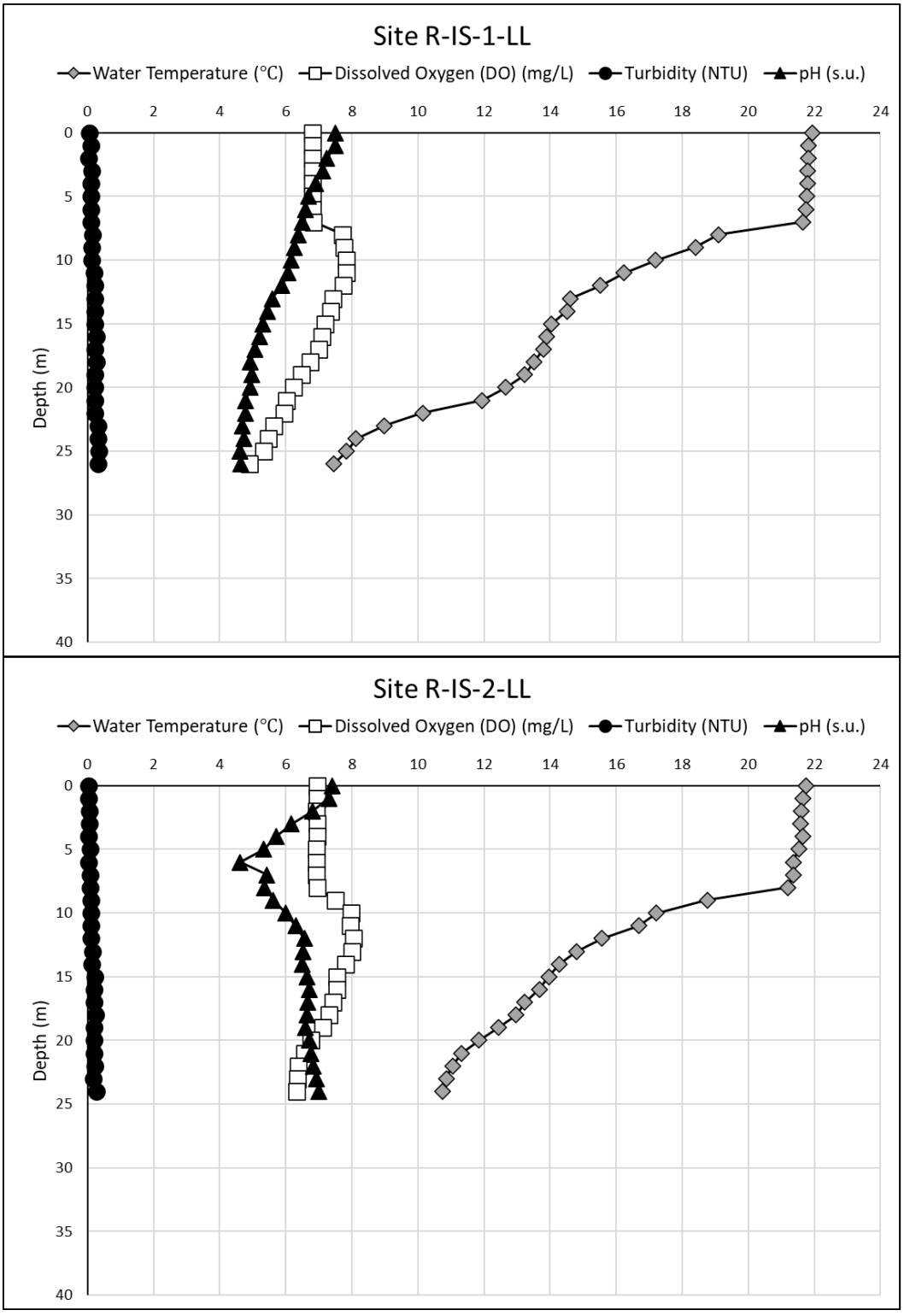


Figure B-11. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Loon Lake Reservoir sites R-IS-1-LL and R-IS-2-LL, Summer 2022.

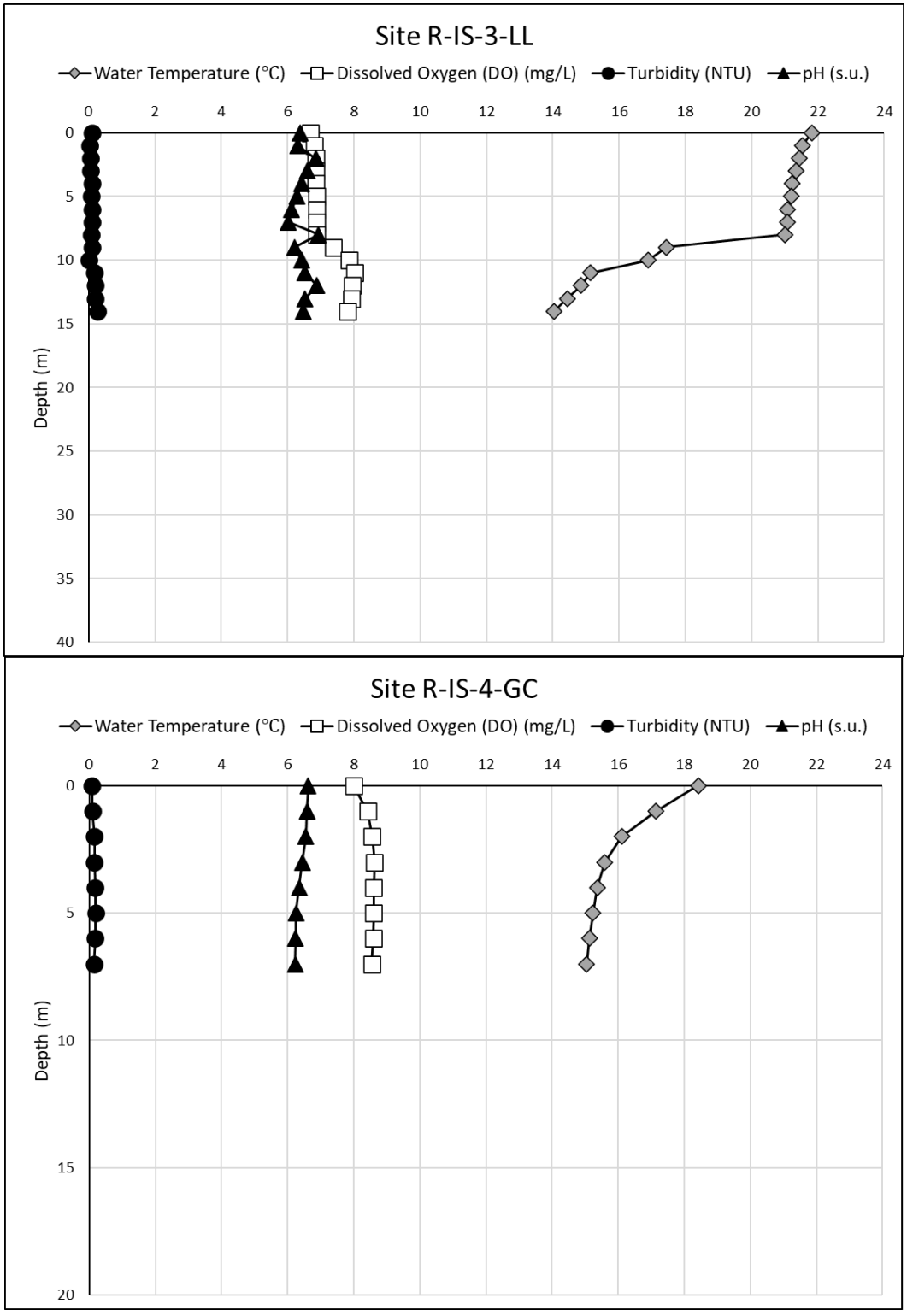


Figure B-12. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Loon Lake Reservoir Site R-IS-3-LL and Gerle Creek Reservoir Site R-IS-4-GC, Summer 2022.

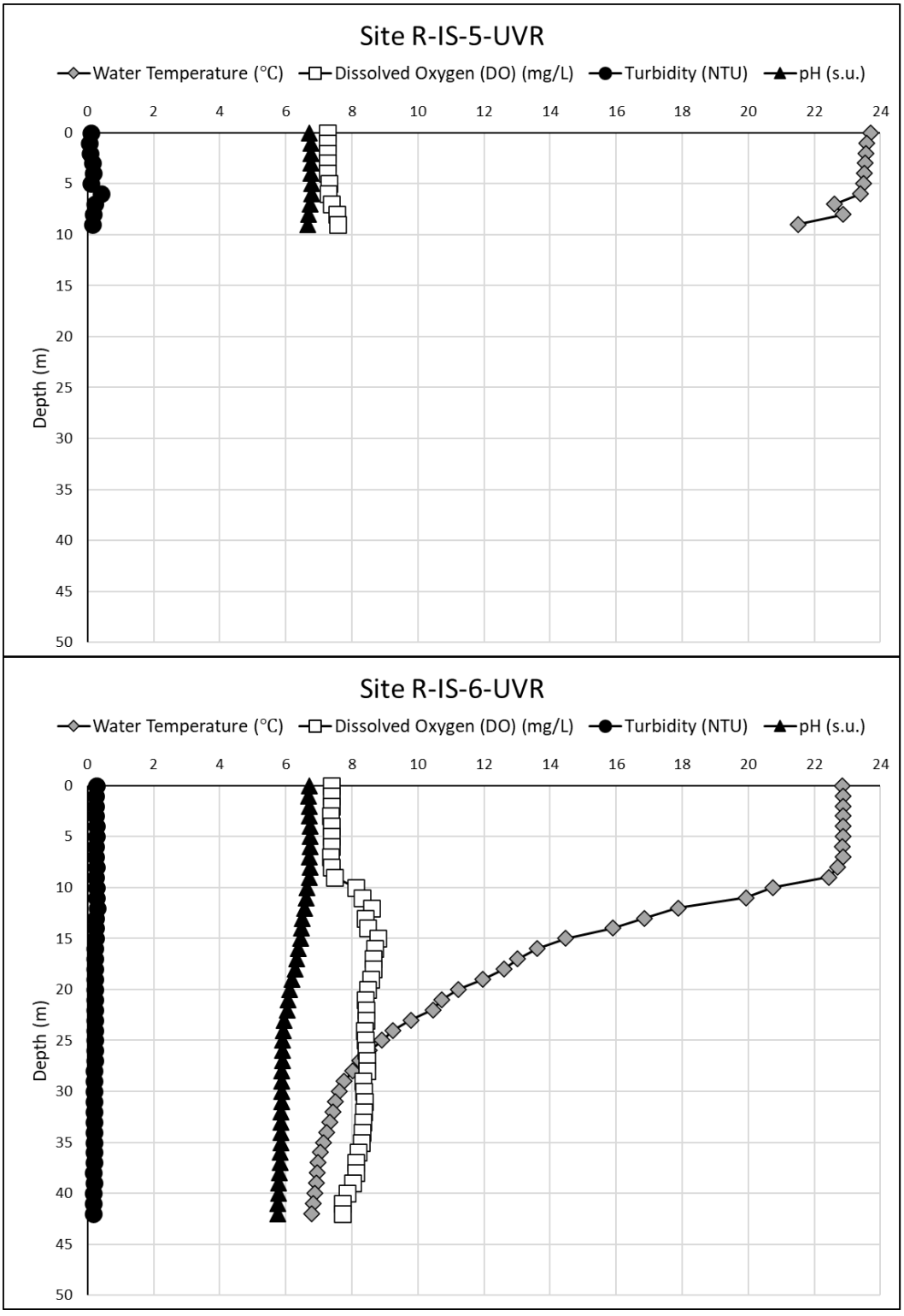


Figure B-13. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Union Valley Reservoir sites R-IS-5-UVR and R-IS-6-UVR, Summer 2022.

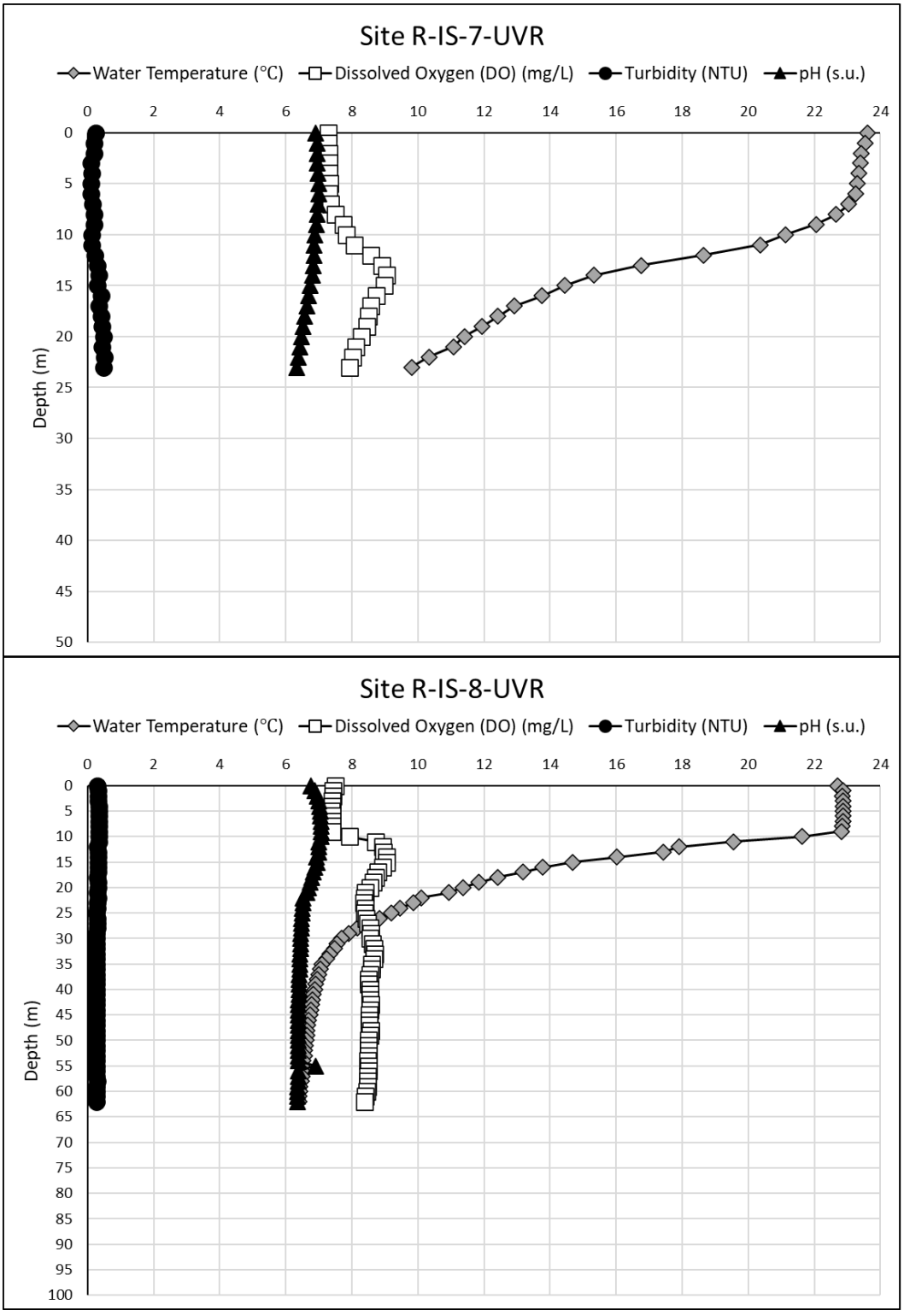


Figure B-14. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Union Valley Reservoir sites R-IS-7-UVR and R-IS-8-UVR, Summer 2022.

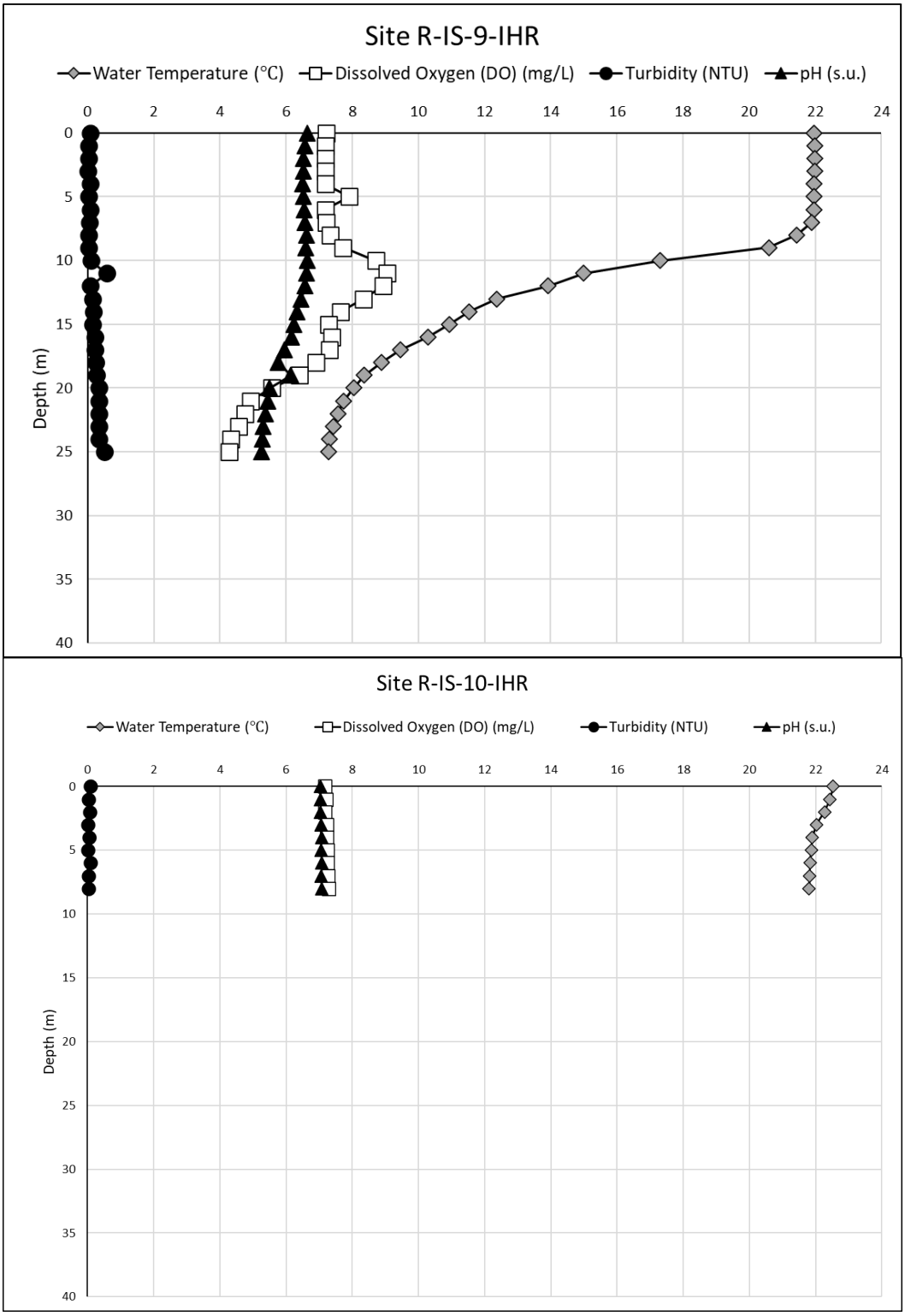


Figure B-15. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Ice House Reservoir sites R-IS-9-IHR and R-IS-10-IHR, Summer 2022.

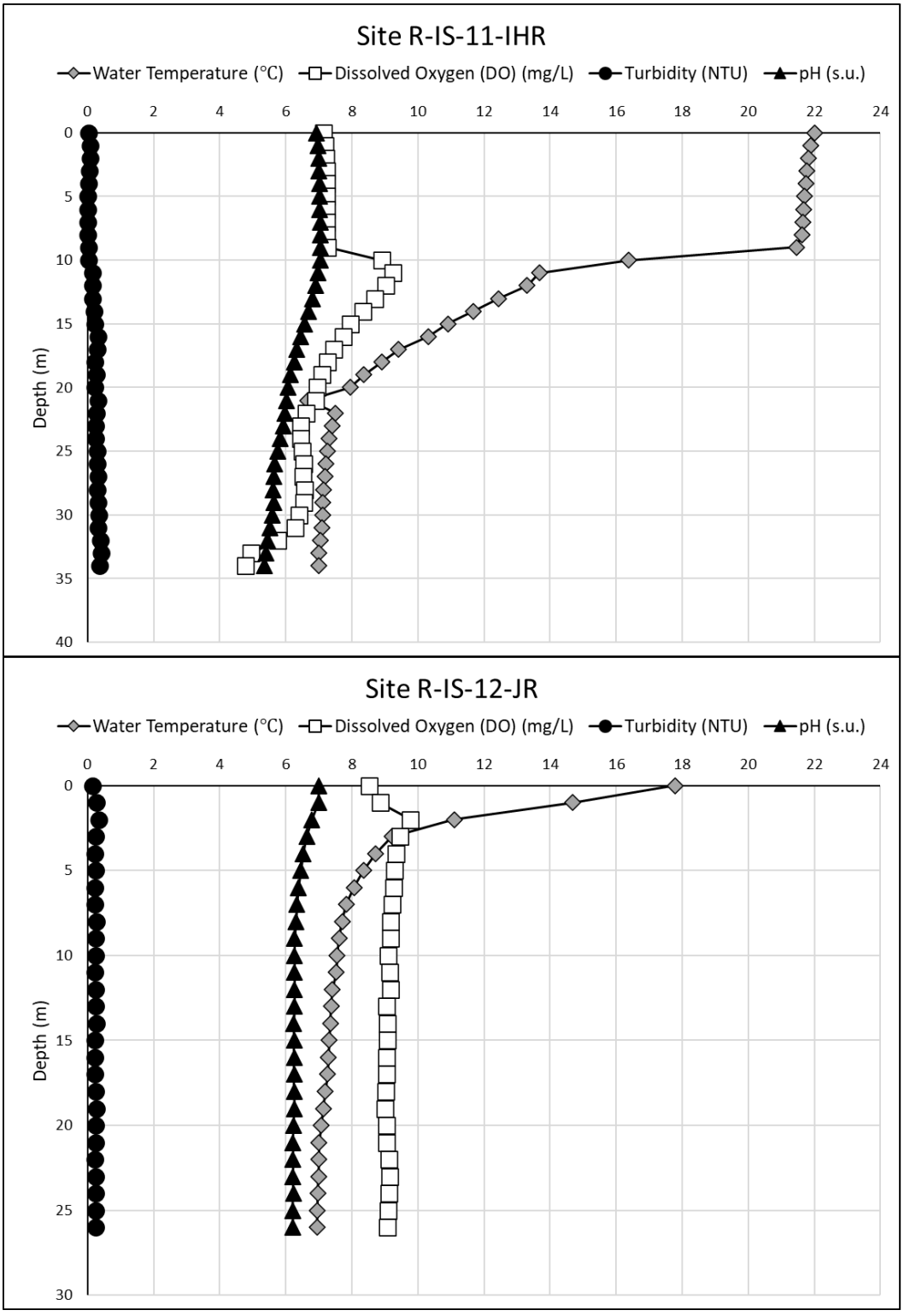


Figure B-16. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Ice House Reservoir Site R-IS-11-IHR and Junction Reservoir Site R-IS-12-JR, Summer 2022.

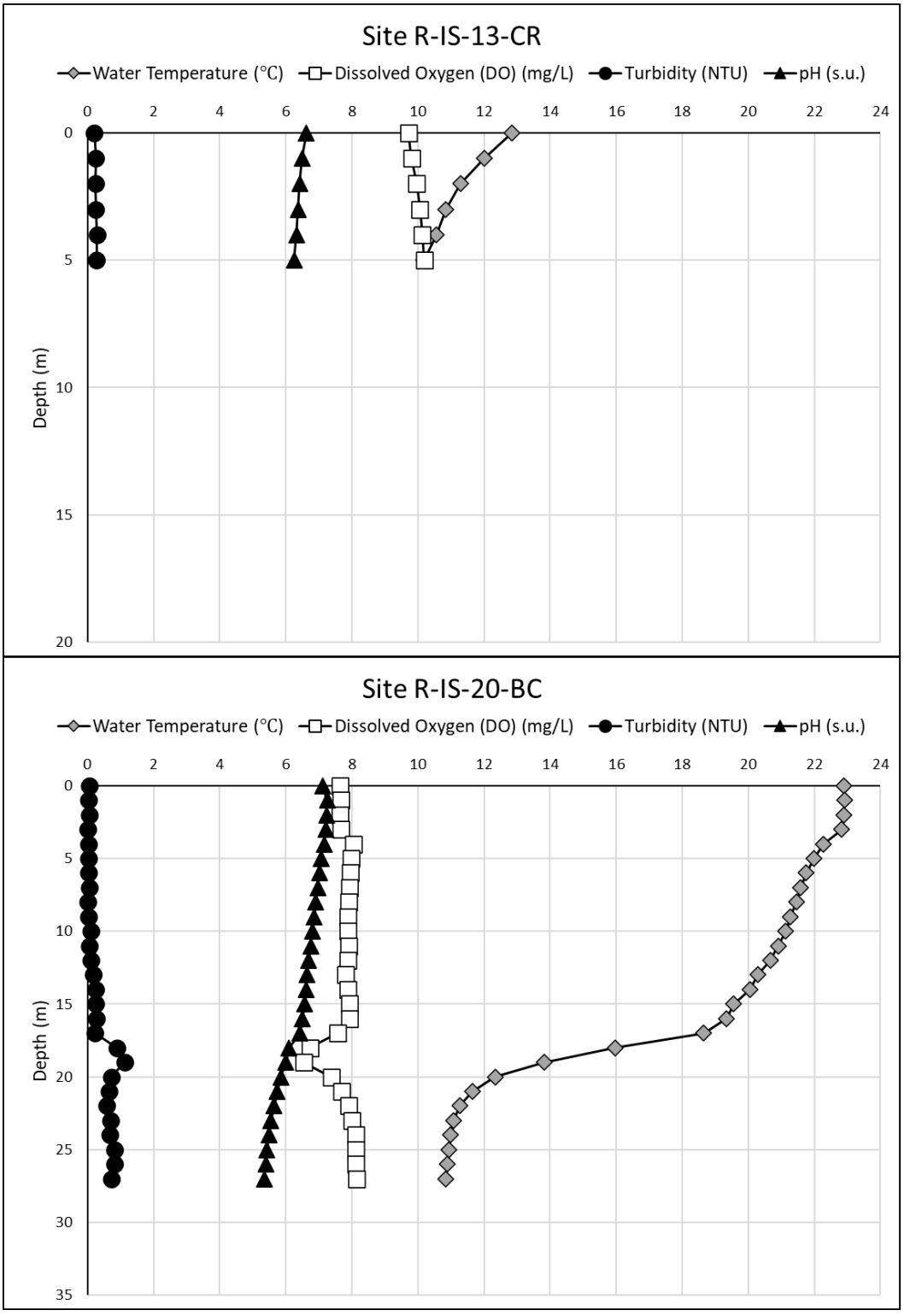


Figure B-17. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Camino Reservoir Site R-IS-13-CR and Brush Creek Reservoir Site R-IS-20-BC, Summer 2022.

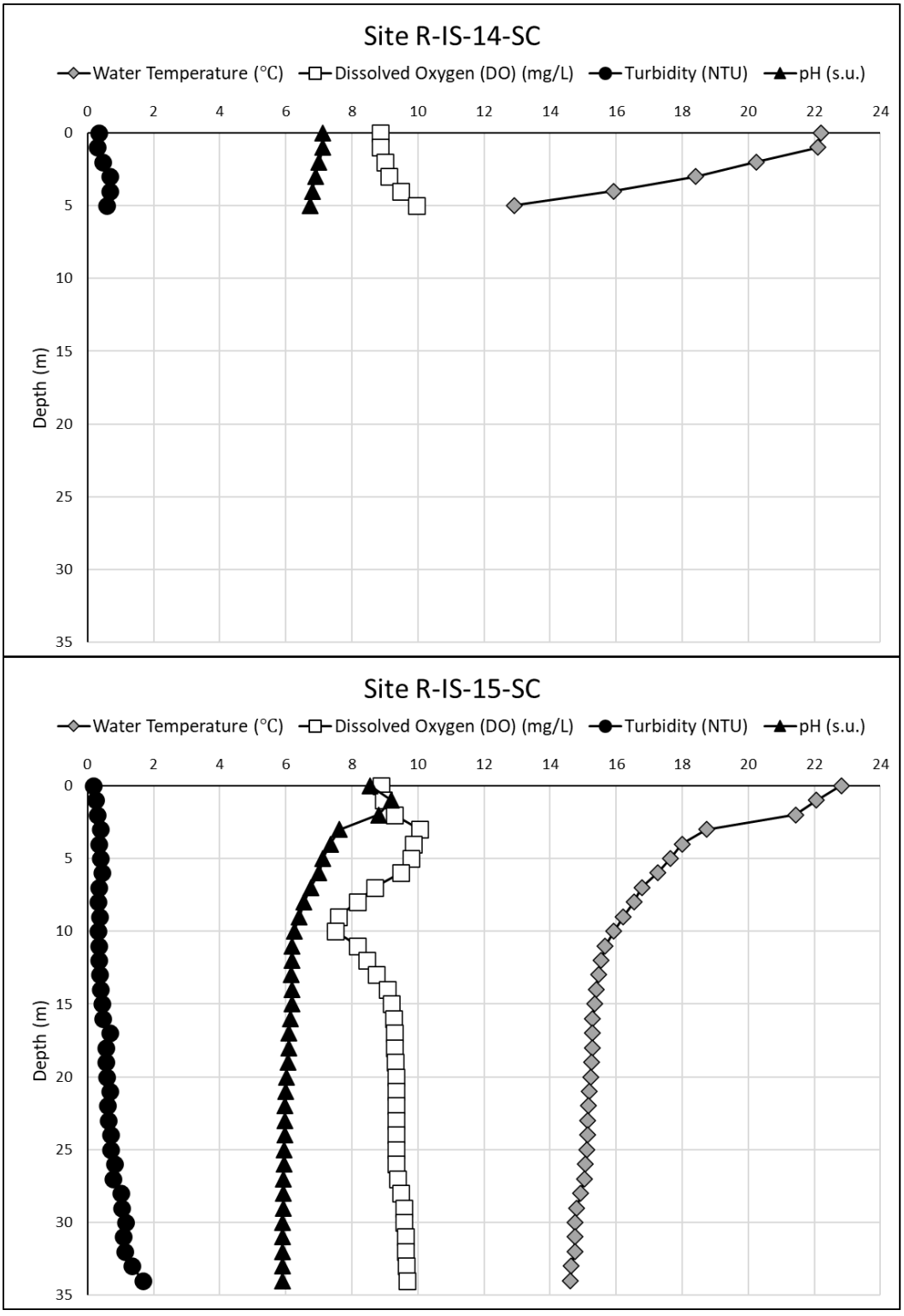


Figure B-18. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Slab Creek Reservoir sites R-IS-14-SC and R-IS-15-SC, Summer 2022.

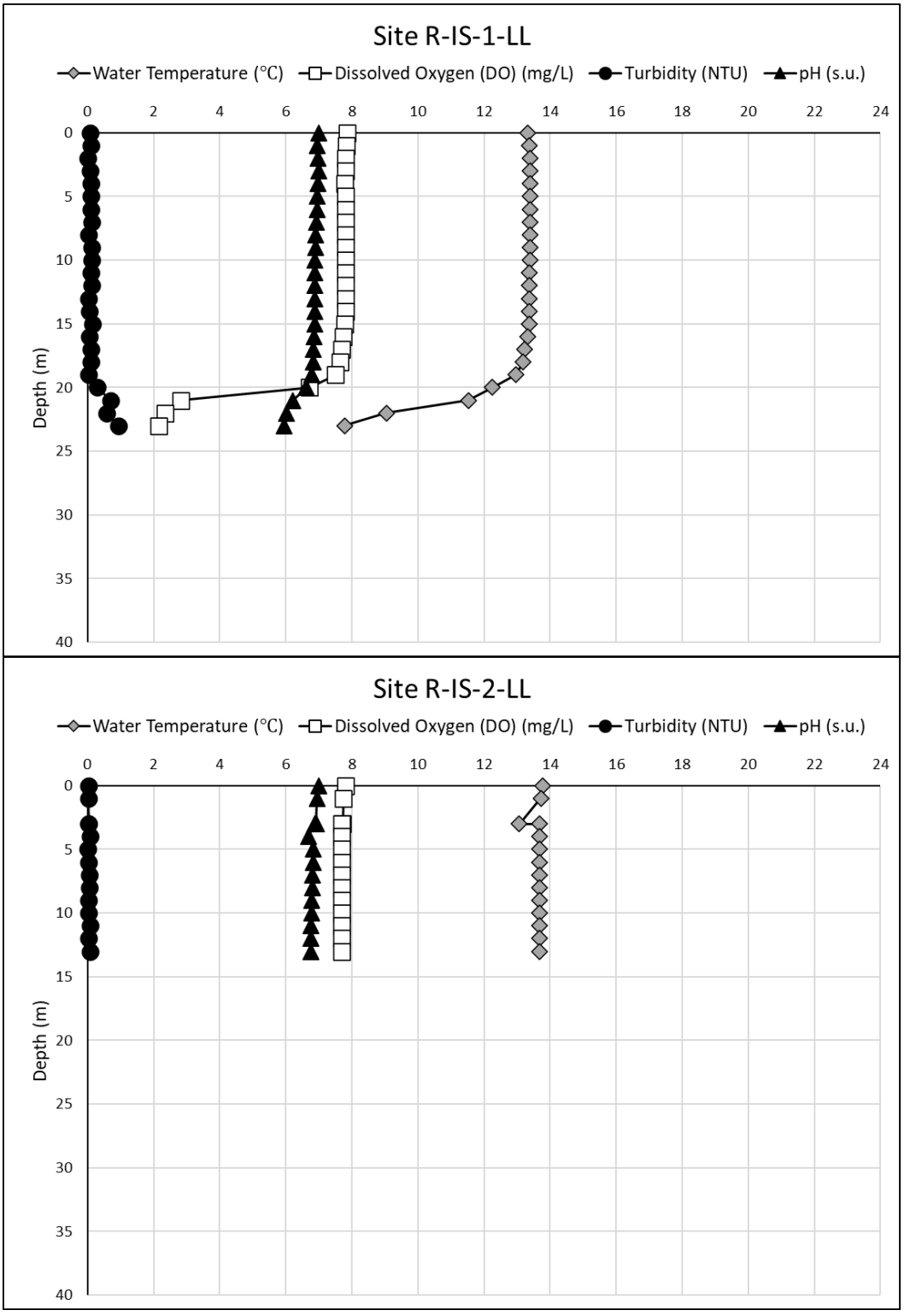


Figure B-19. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Loon Lake Reservoir sites R-IS-1-LL and R-IS-2-LL, Fall 2022.

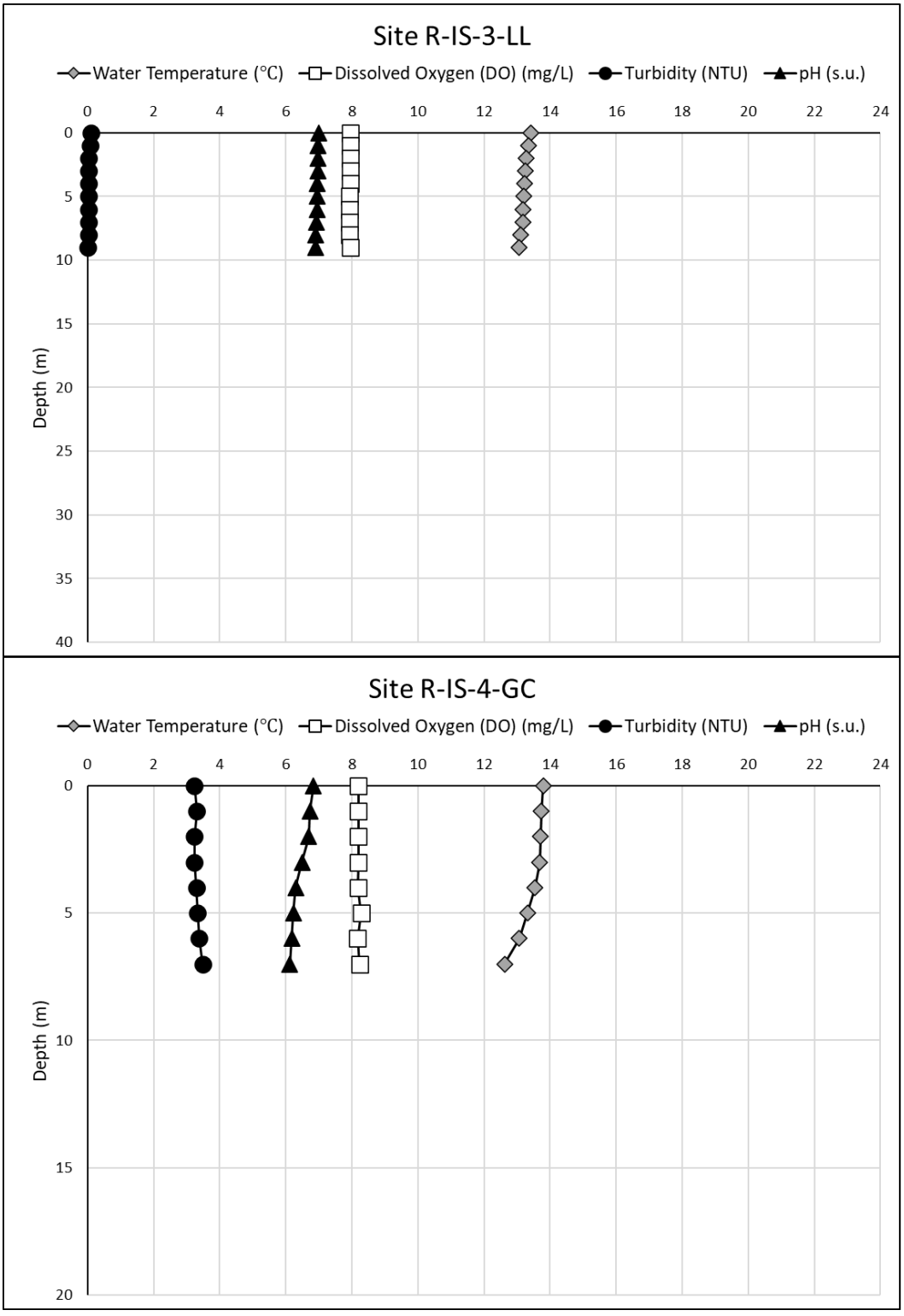


Figure B-20. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Loon Lake Reservoir Site R-IS-3-LL and Gerle Creek Reservoir Site R-IS-4-GC, Fall 2022.

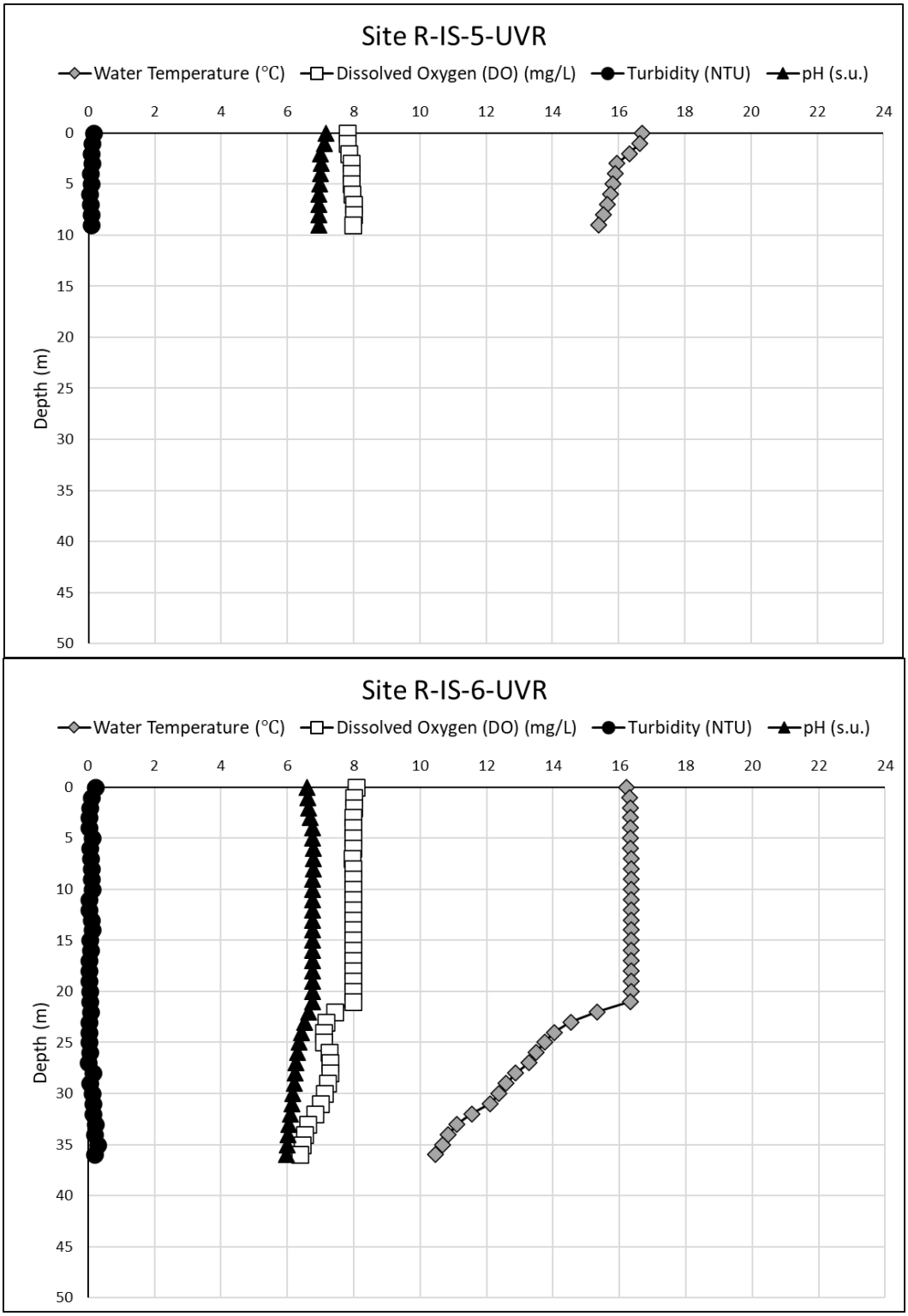


Figure B-21. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Union Valley Reservoir sites R-IS-5-UVR and R-IS-6-UVR, Fall 2022.

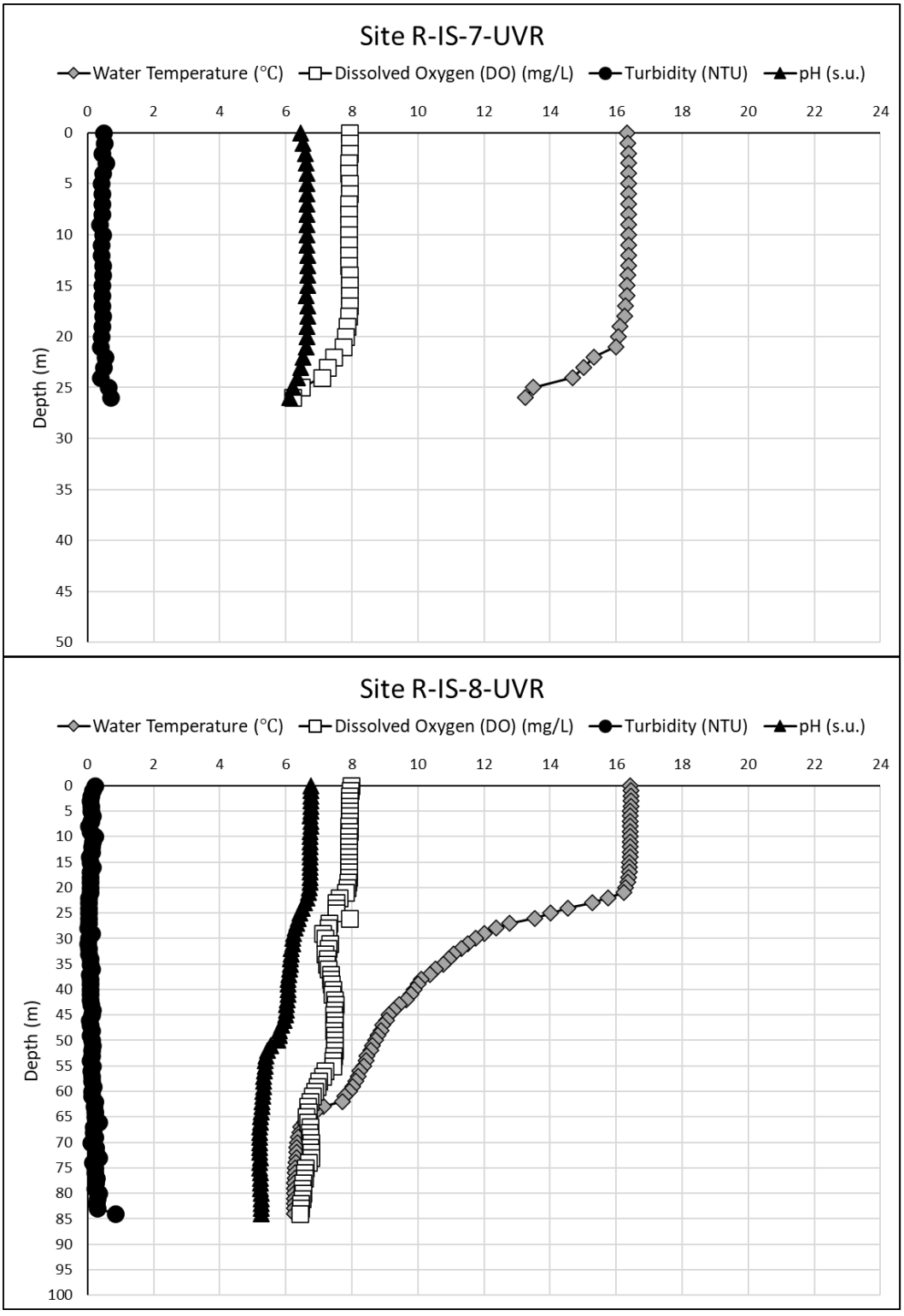


Figure B-22. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Union Valley Reservoir sites R-IS-7-UVR and R-IS-8-UVR, Fall 2022.

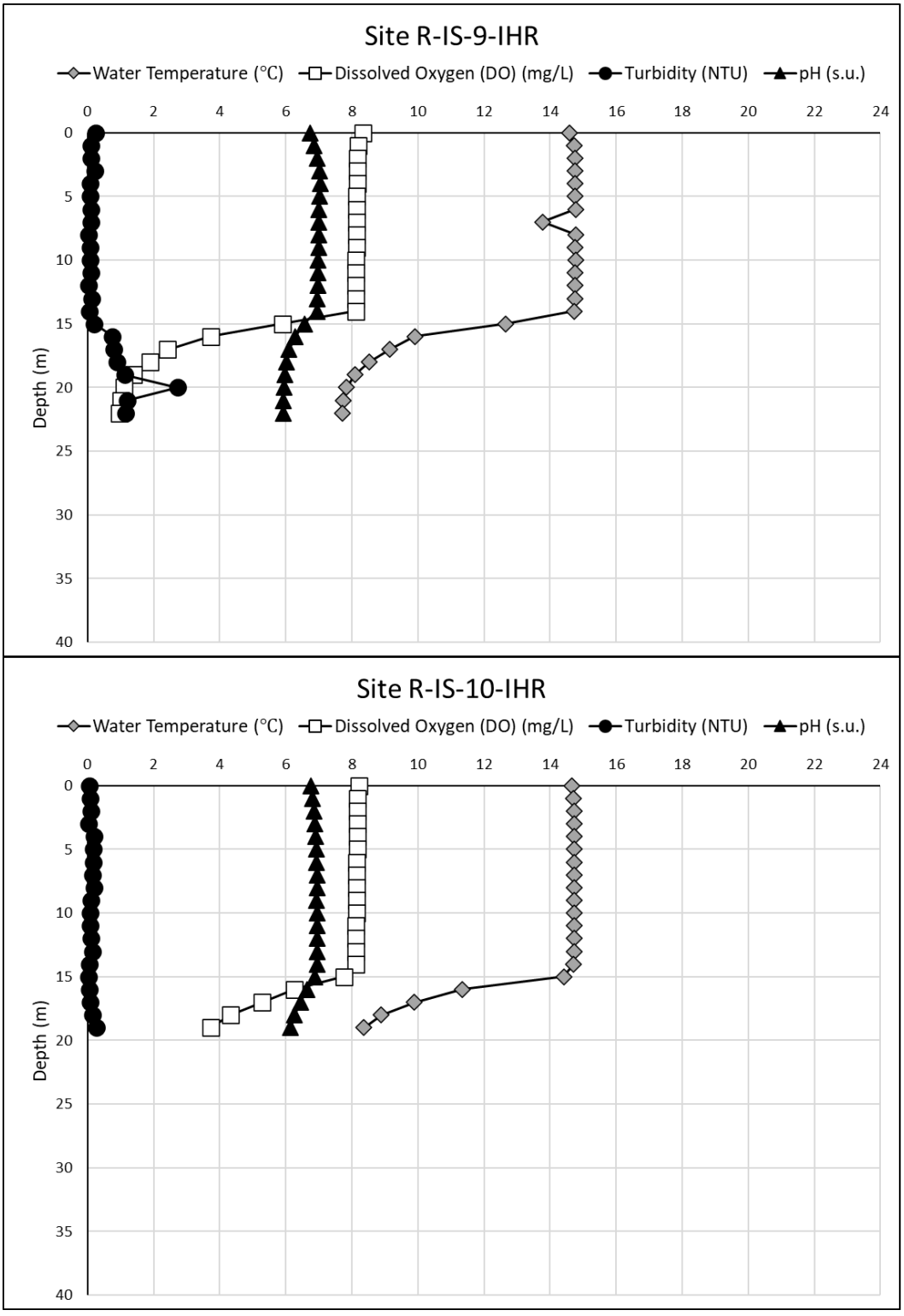


Figure B-23. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Ice House Reservoir sites R-IS-9-IHR and R-IS-10-IHR, Fall 2022.

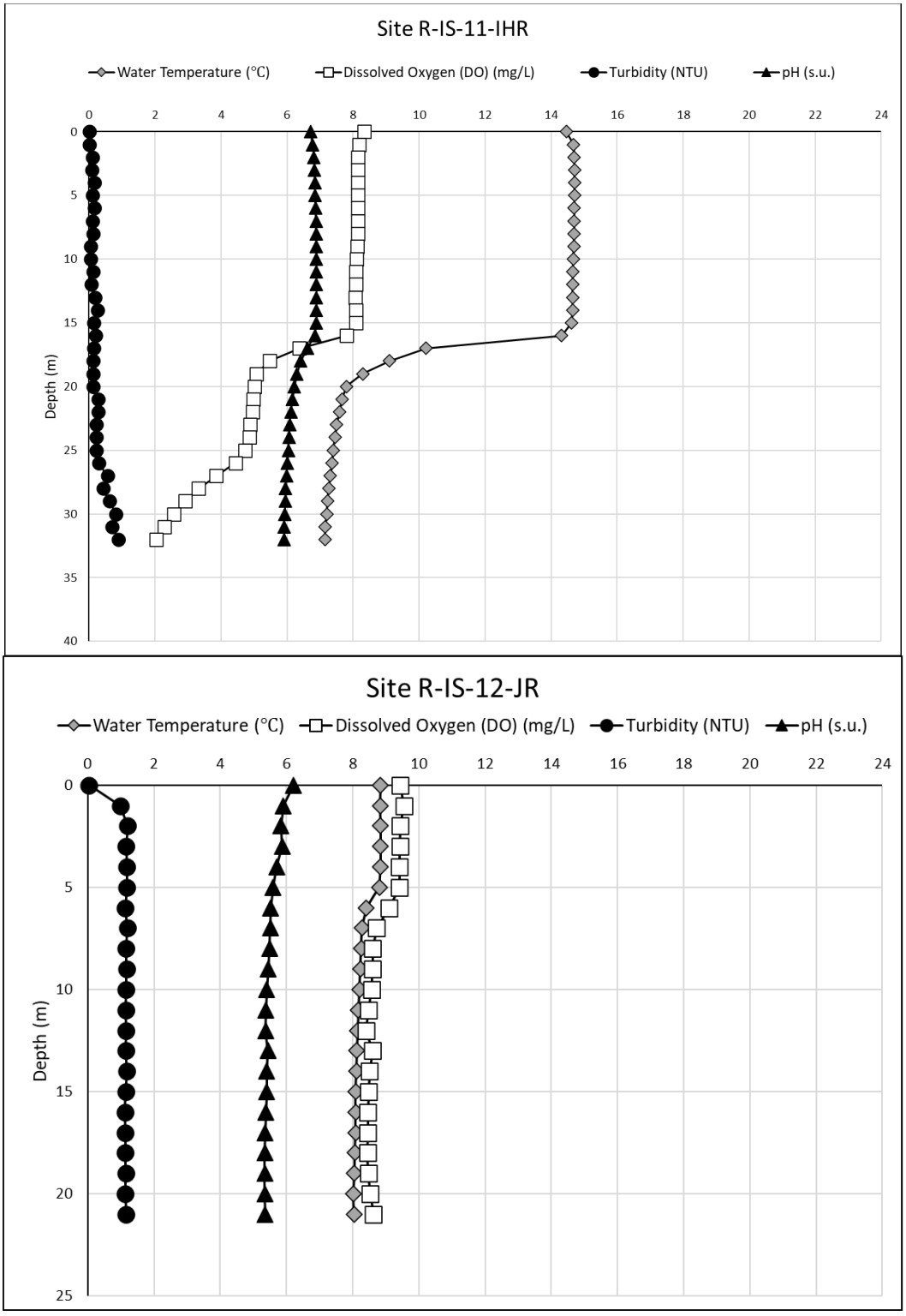


Figure B-24. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Ice House Reservoir Site R-IS-11-IHR and Junction Reservoir Site R-IS-12-JR, Fall 2022.

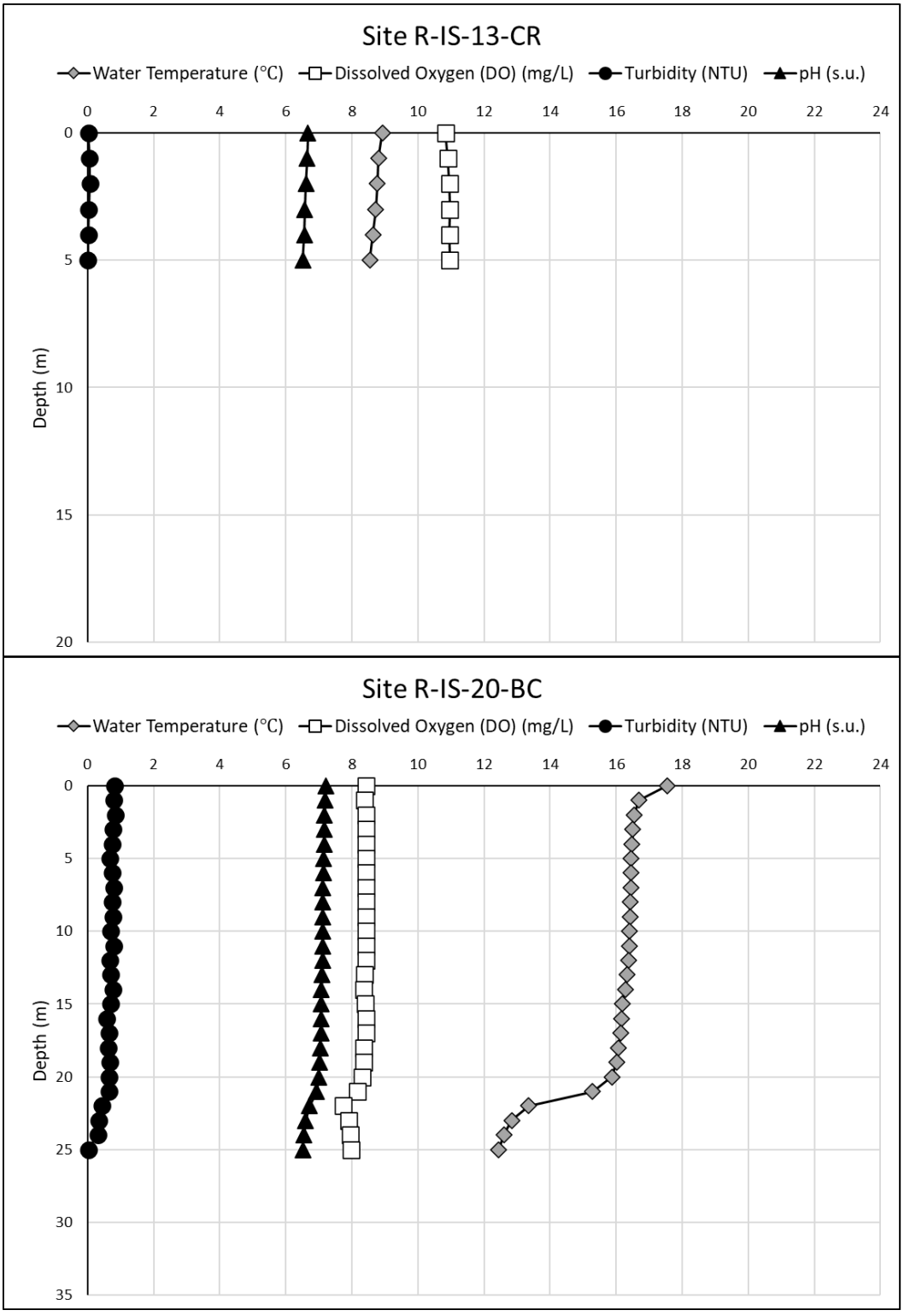


Figure B-25. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Camino Reservoir Site R-IS-13-CR and Brush Creek Reservoir Site R-IS-20-BC, Fall 2022.

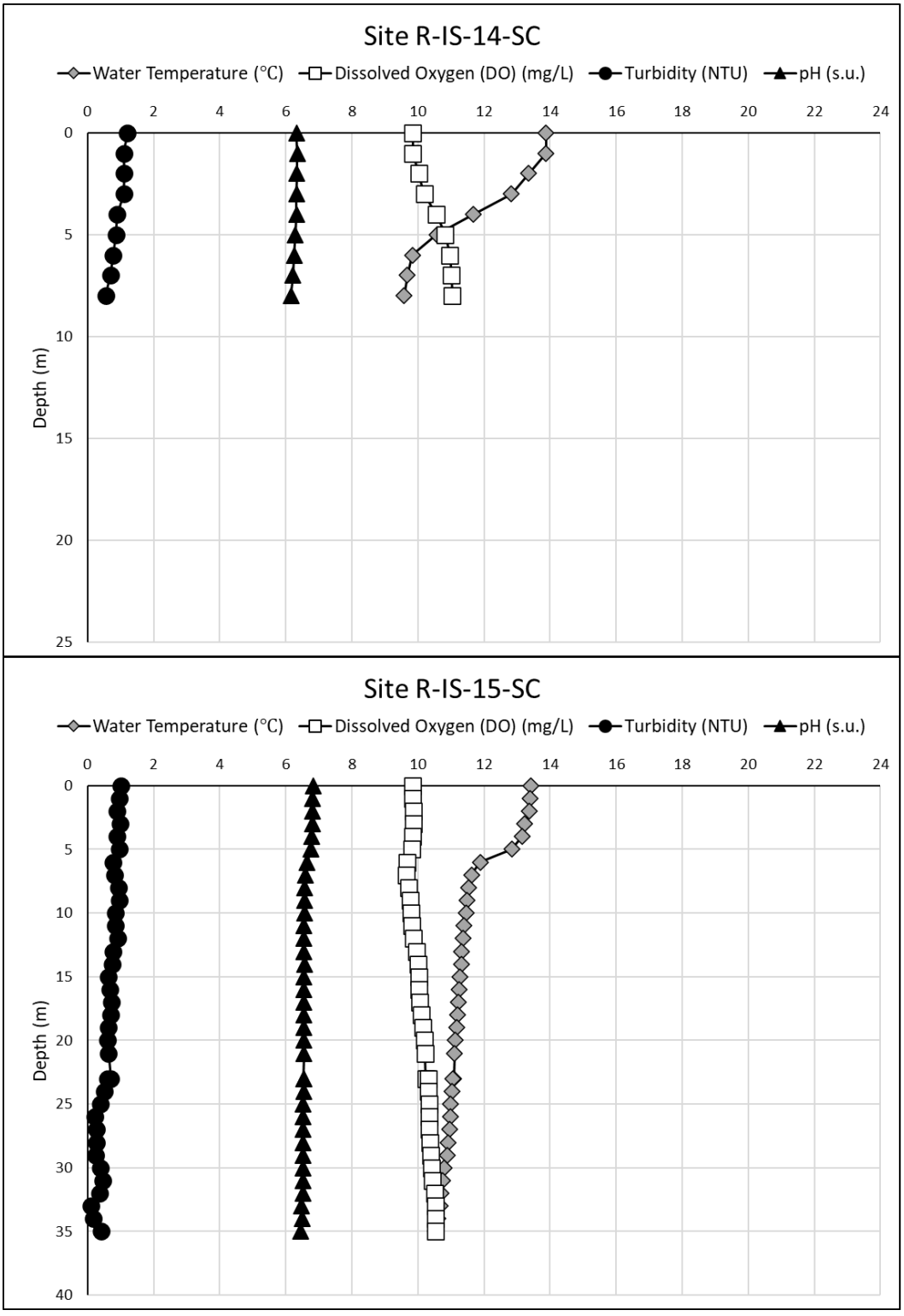


Figure B-26. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Slab Creek Reservoir sites R-IS-14-SC and R-IS-15-SC, Fall 2022.

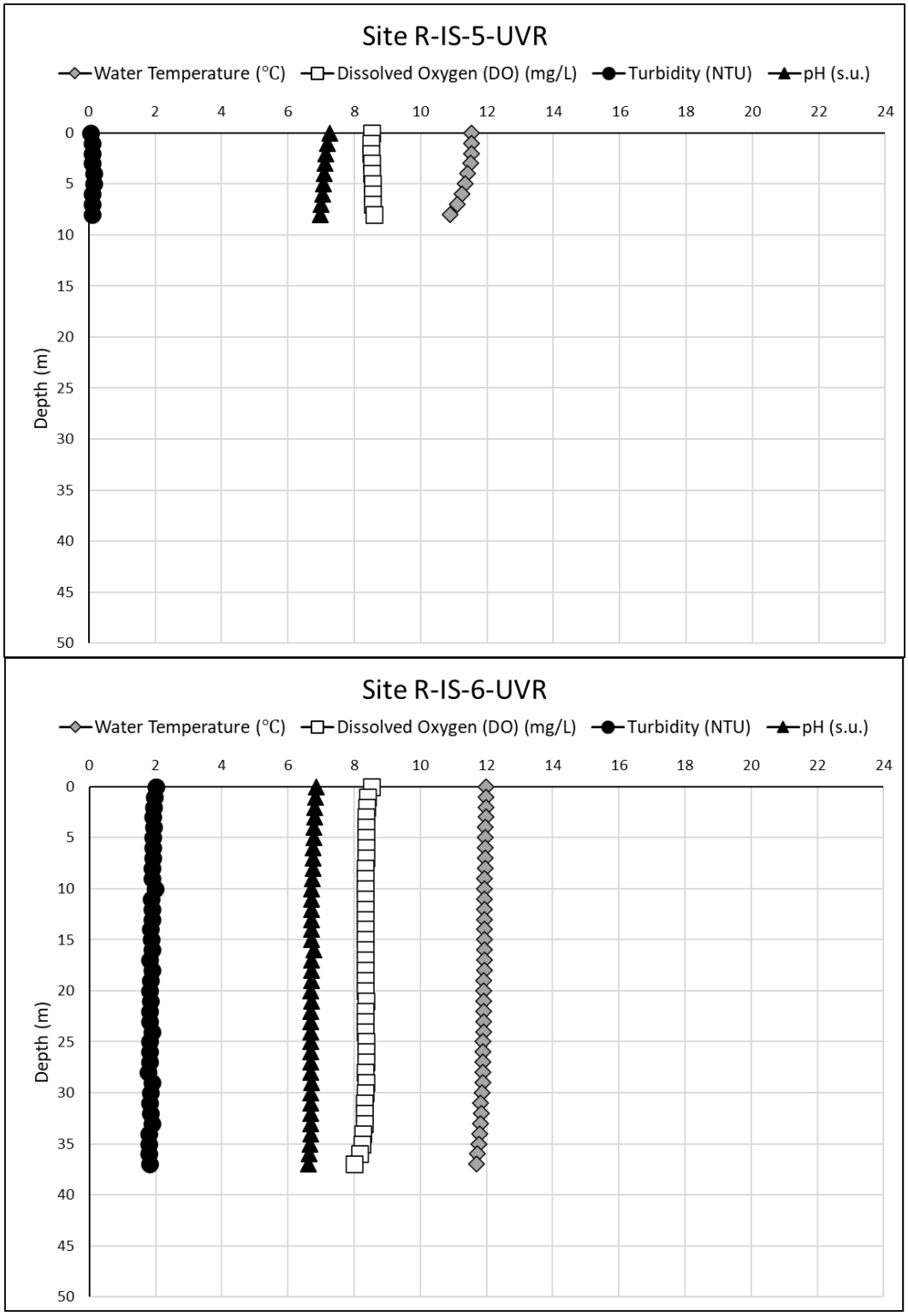


Figure B-27. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Union Valley Reservoir sites R-IS-5-UVR and R-IS-6-UVR, Fall/Winter 2022.

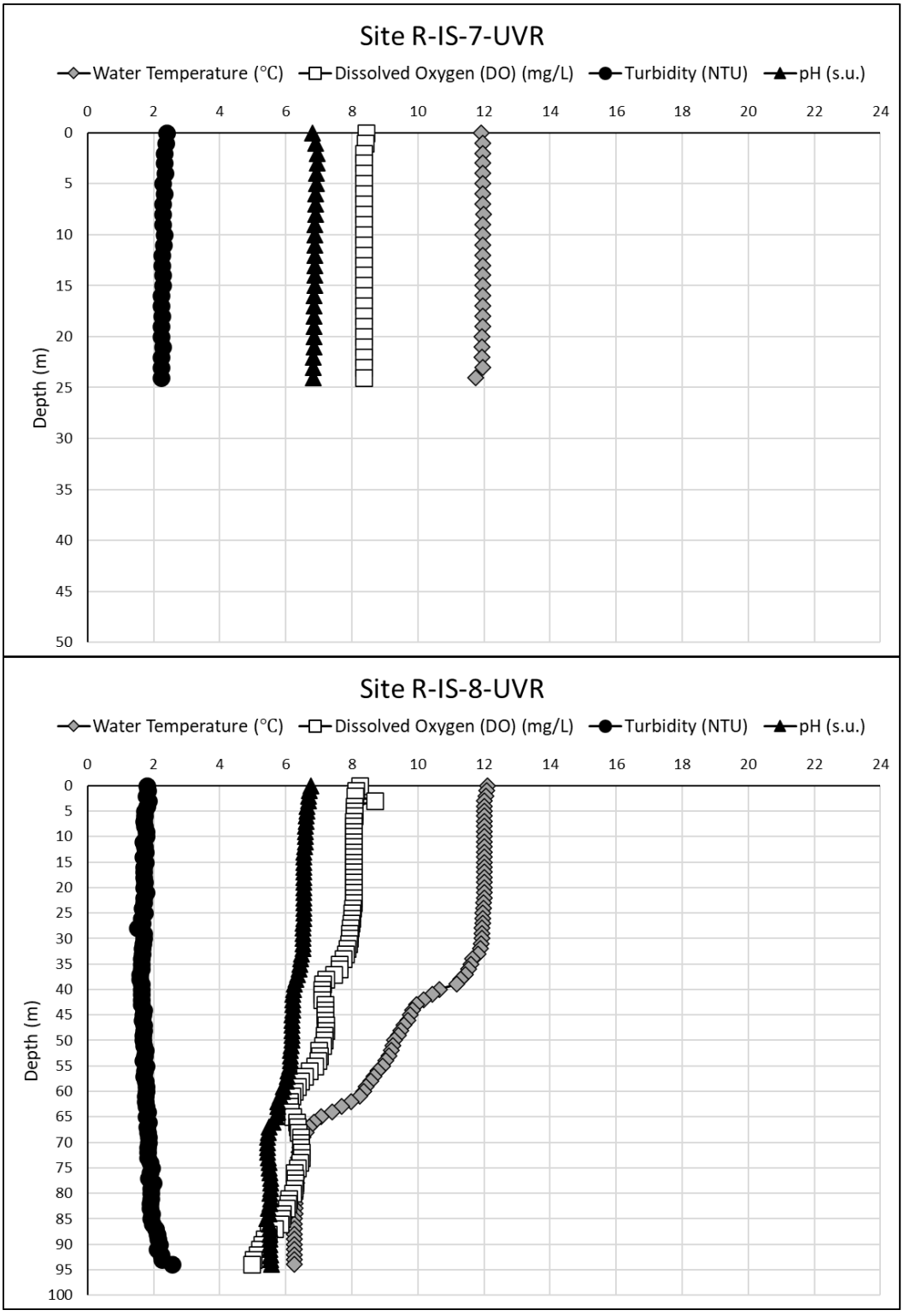
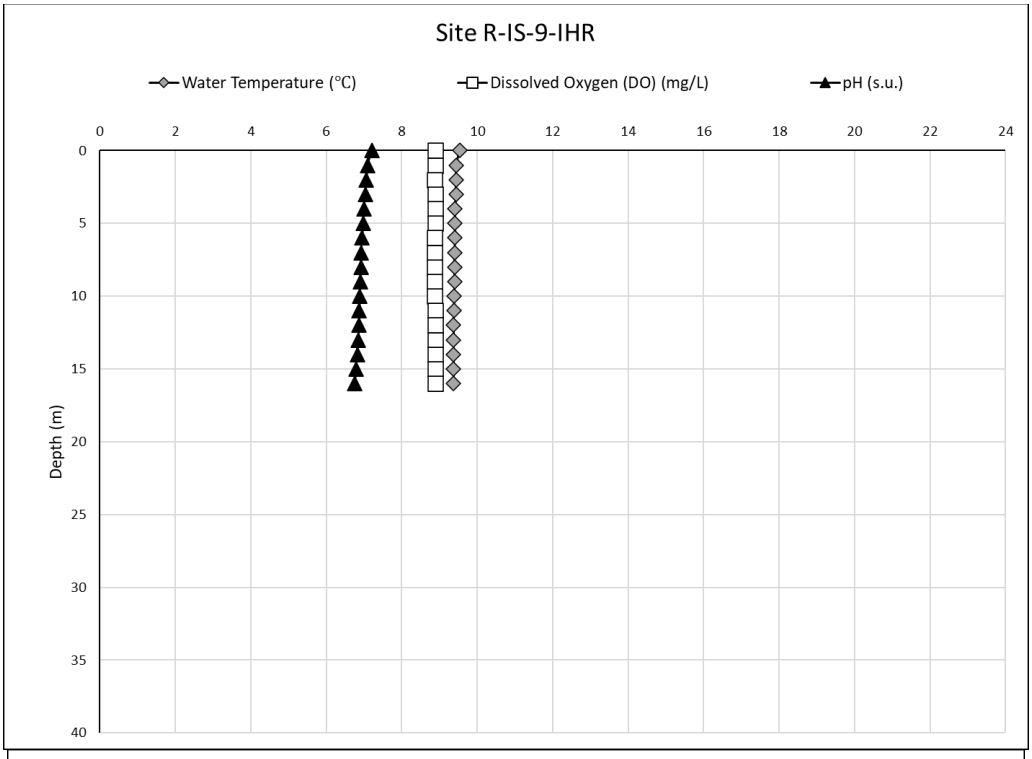


Figure B-28. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Union Valley Reservoir sites R-IS-7-UVR and R-IS-8-UVR, Fall/Winter 2022.



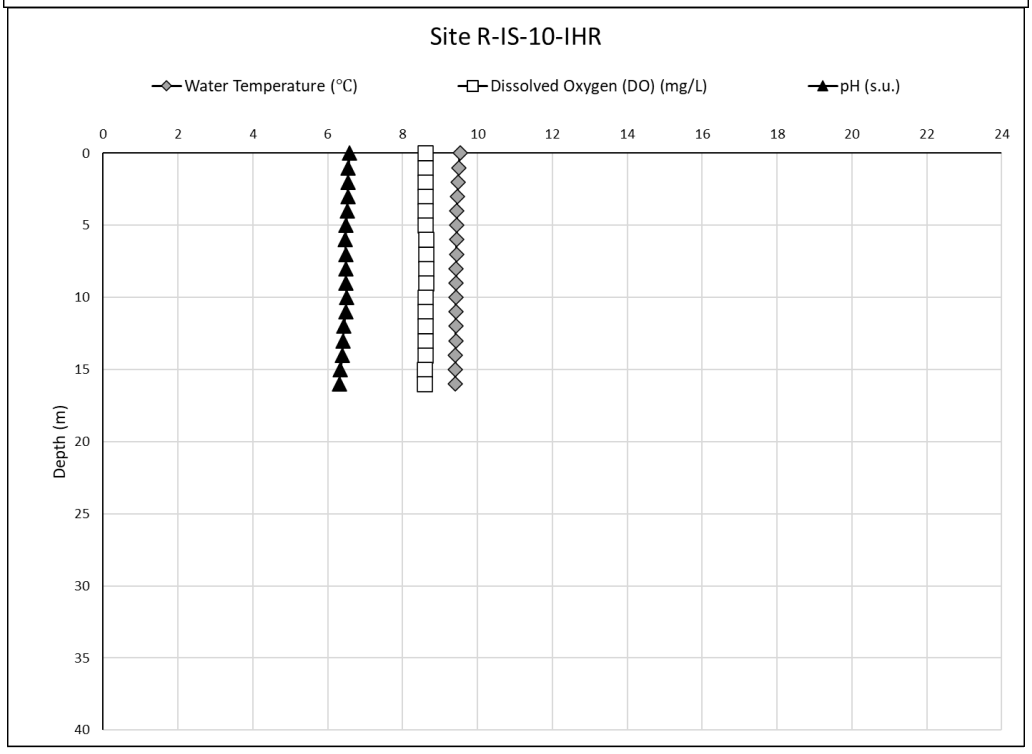


Figure B-29. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Ice House Reservoir sites R-IS-9-IHR and R-IS-10-IHR, Fall/Winter 2022. Turbidity data collected at R-IS-9-IHR and R-IS-10-IHR did not meet the post-sampling calibration check MQO for acceptability and are omitted.

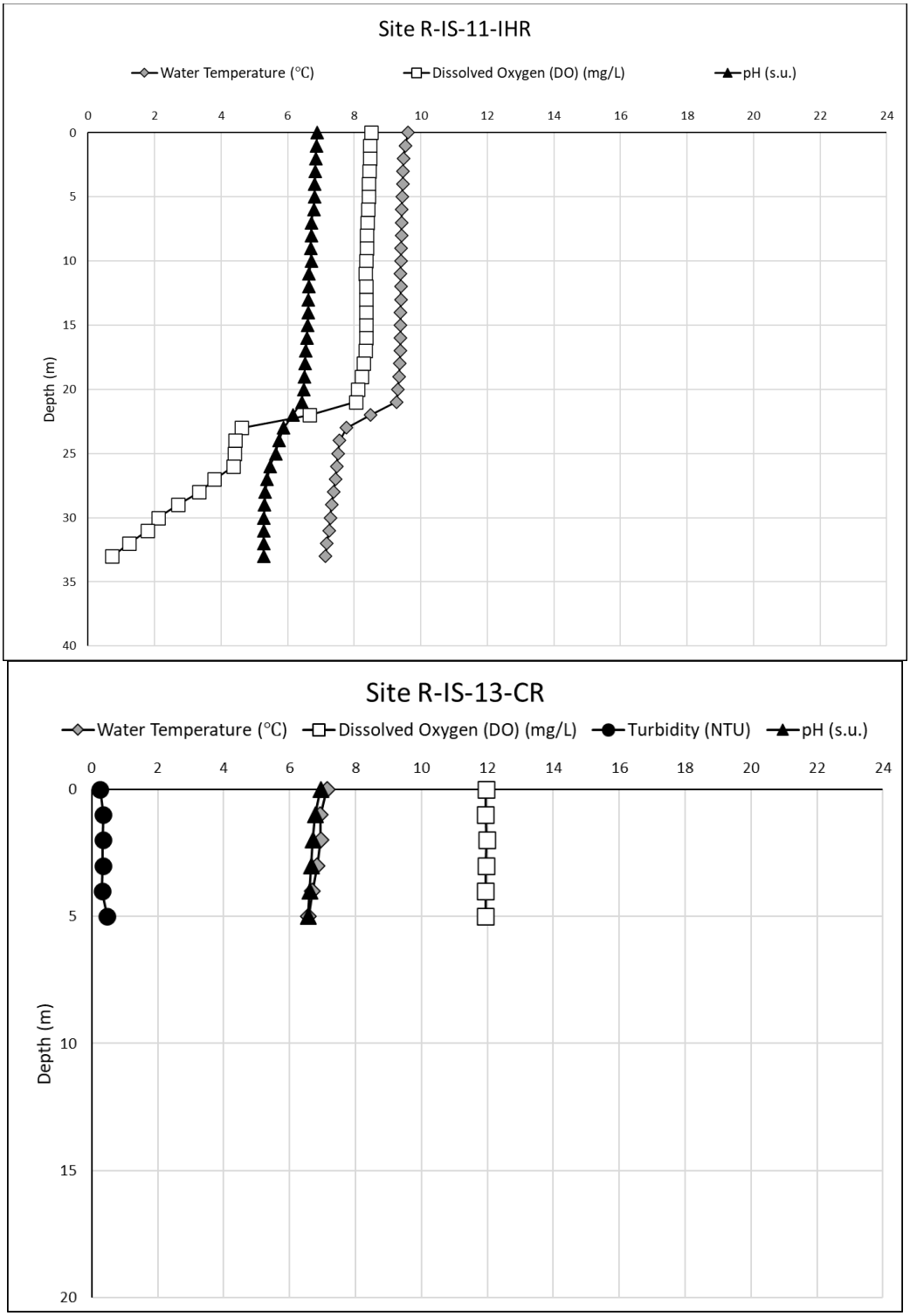


Figure B-30. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Ice House Reservoir Site R-IS-11-IHR and Camino Reservoir Site R-IS-13-CR, Fall/Winter 2022. Turbidity data collected at R-IS-11-IHR did not meet the post-sampling calibration check MQO for acceptability and are omitted.

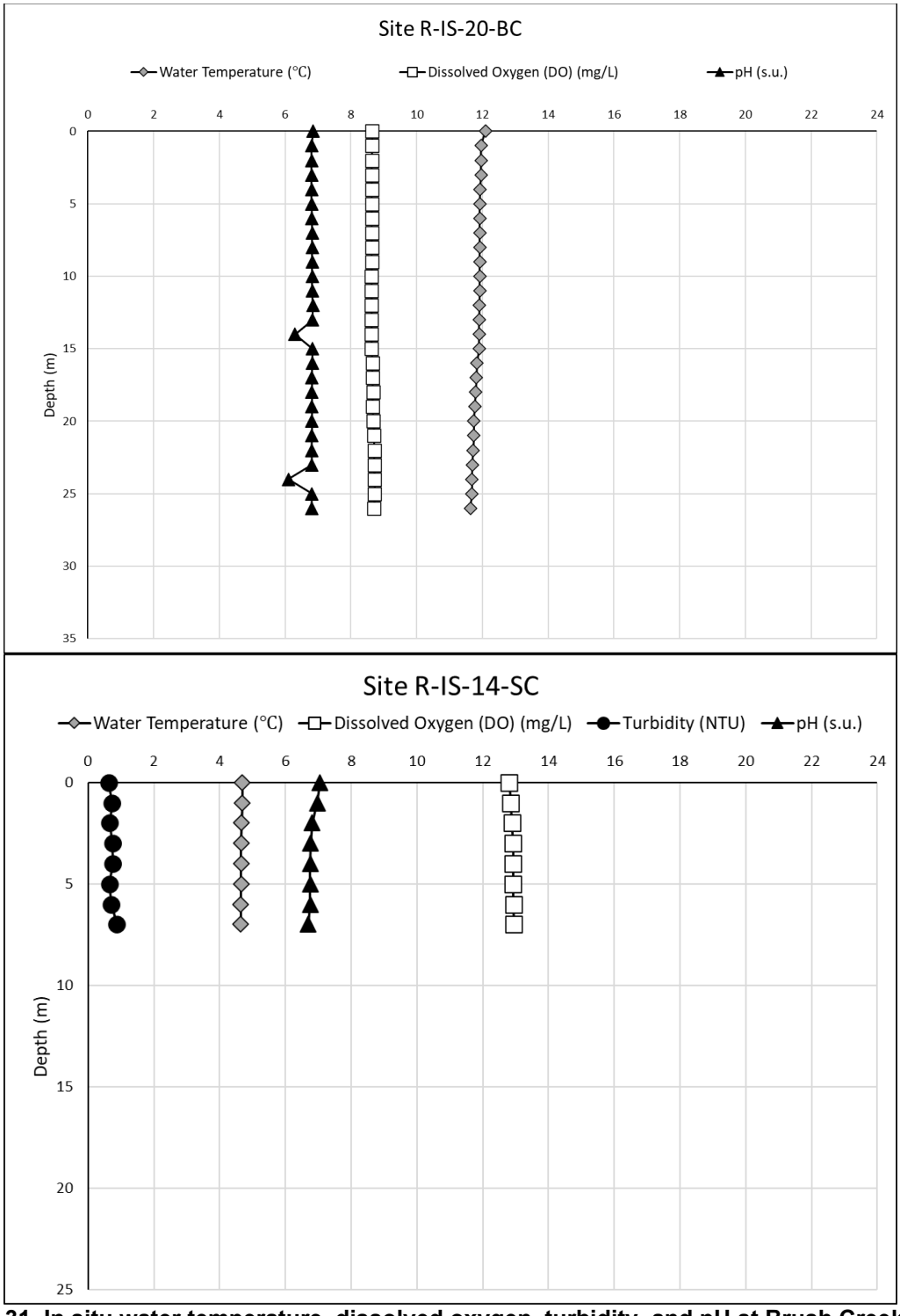


Figure B-31. In situ water temperature, dissolved oxygen, turbidity, and pH at Brush Creek Reservoir Site R-IS-20-BC and Slab Creek Reservoir Site R-IS-14-SC, Fall/Winter 2022. Turbidity data collected at R-IS-20-BC did not meet the post-sampling calibration check MQO for acceptability and are omitted.

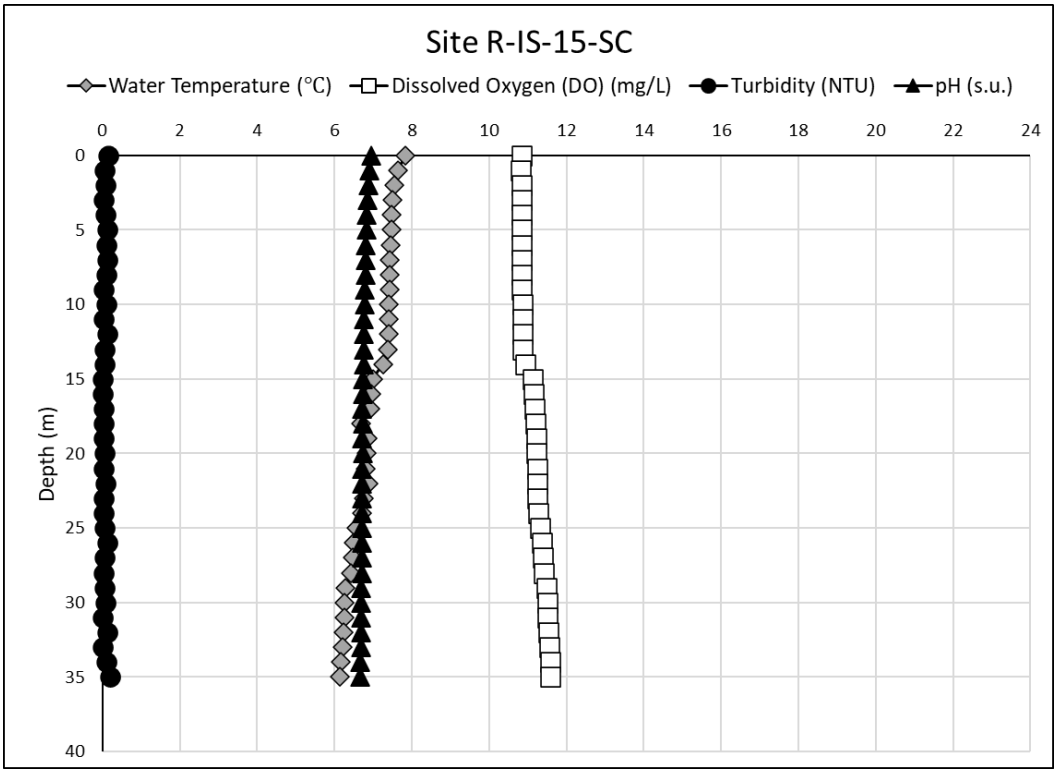


Figure B-32. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Slab Creek Reservoir Site R-IS-15-SC, Fall/Winter 2022

APPENDIX C
Chemistry Results for Upper American River Project Riverine and Reservoir Sites

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Table C-1. General Chemistry Results for Upper American River Project Riverine Sites during the Spring Sampling Event.

Analyte	Units	IS-1-RRR	IS-2-LRR	IS-3-LRR	IS-4-GC	IS-5-GC	IS-6-GC	IS-9-GCC	IS-7-SFRR	IS-8-SFRR	IS-10-SFSC	IS-11-SFSC	IS-12-SC	IS-13-SC	IS-14-SC	IS-15-SFAR	IS-16-SFAR	IS-17-BC	IS-19-SFAR	IS-18-SFAR	Field Blank
Miscellaneous																					
Total Suspended Solids (TSS)	mg/L	<2.0[FB]	<2.0[FB]	<2.0[FB]	<2.0[FB]	<2.0[FB]	<2.0[FB]	<2.0[FB]	<2.0[FB]	<2.0[FB]	<2.0[FB]	<2.0[FB]	<2.0[FB]	<2.0[FB]	<2.0[FB]	6.7[FB]	<2.0[FB]	<2.0[FB]	4.0[J,FB]	<2.0[FB]	<5.0[RL]
Total Dissolved Solids (TDS)	mg/L	9.0[J,FB]	6.0[J,FB]	<5.0[FB]	17[FB]	15[FB]	21[FB]	24[FB]	17[FB]	28[FB]	19[FB]	17[FB]	21[FB]	24[FB]	30[FB]	46[FB]	27[FB]	17[FB]	33[FB]	39[FB]	<10[RL]
Total Organic Carbon (TOC)	mg/L	2.1[FB]	2.1[FB]	1.9[FB]	2.0[FB]	2.8[FB]	3.2[FB]	2.7[FB]	2.7[FB]	2.7[FB]	2.6[FB]	1.8[FB]	2.2[FB]	1.2[FB]	1.5[FB]	2.4[FB]	2.1[FB]	1.2[FB]	2.1[FB]	2.0[FB]	<1.0[RL]
Cyanide	mg/L	0.0030[J,FB]	0.0038[J,FB]	<0.0012[FB]	0.0026[J,FB]	0.0023[J,FB]	<0.0012[FB]	0.0019[J,FB]	0.0019[J,FB]	0.0019[J,FB]	<0.0012[FB]	<0.0012[FB]	0.0026[J,FB]	0.0023[J,FB]	0.0023[J,FB]	<0.0012[FB]	<0.0012[FB]	0.0019[J,FB]	<0.0012[FB]	<0.0012[FB]	<0.0050
Oil & Grease	mg/L	<1.0[FB]	<1.0[FB]	<1.0[FB]	<1.0[FB]	<1.0[FB]	<1.0[FB]	<1.0[FB]	<1.0[FB]	<1.0[FB]	<1.0[FB]	<1.0[FB]	<1.0[FB]	<1.0[FB]	<1.0[FB]	<1.0[FB]	<1.0[FB]	<1.0[FB]	<1.0[FB]	<1.0[FB]	<5.0[RL]
Total Petroleum Hydrocarbons (TPH)	ug/L	<10[FB]	<10[FB]	<10[FB]	<10[FB]	<10[FB]	<10[FB]	<10[FB]	<10[FB]	<10[FB]	<10[FB]	<10[FB]	<10[FB]	<10[FB]	<10[FB]	<10[FB]	<10[FB]	<10[FB]	<10[FB]	<10[FB]	<50[RL]
MTBE	ug/L	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.50[RL]
Hardness (as $CaCO_3$)	mg/L	5.3[FB]	4.6[FB]	3.5[FB]	3.4[FB]	3.8[FB]	3.9[FB]	4.2[FB]	5.0[FB]	4.7[FB]	4.8[FB]	6.3[FB]	5.1[FB]	7.3[FB]	8.2[FB]	15[FB]	9.8[FB]	8.3[FB]	12[FB]	18[FB]	<1.0[RL]
Total Alkalinity (as $CaCO_3$)	mg/L	3.4[J,FB]	4.0[J,FB]	4.2[J,FB]	3.8[J,FB]	4.8[J,FB]	4.6[J,FB]	5.6[FB]	4.6[J,FB]	6.2[FB]	6.0[FB]	8.0[FB]	7.0[FB]	8.6[FB]	11[FB]	15[FB]	12[FB]	<1.0[FB]	12[FB]	19[FB]	<5.0[RL]
Nutrients																					
Nitrate/Nitrite (as N)	mg/L	0.14[J,FB]	0.061[J,FB]	<0.055[FB]	<0.055[FB]	<0.055[FB]	<0.055[FB]	<0.055[FB]	<0.055[FB]	<0.055[FB]	0.086[J,FB]	0.096[J,FB]	0.092[J,FB]	0.12[J,FB]	0.067[J,FB]	0.19[J,FB]	0.13[J,FB]	0.065[J,FB]	0.15[J,FB]	0.12[J,FB]	<0.40[RL]
Total Kjeldahl Nitrogen (TKN)	mg/L	0.17[J,FB]	0.074[J,FB]	0.091[J,FB]	0.16[J,FB]	0.11[J,FB]	0.090[J,FB]	0.11[J,FB]	0.11[J,FB]	0.13[J,FB]	0.10[J,FB]	0.11[J,FB]	0.070[J,FB]	<0.040[FB]	0.065[J,FB]	0.078[J,FB]	0.21[FB]	0.31[FB]	0.24[FB]	0.072[J,FB]	<0.20[RL]
Ammonia (as N)	mg/L	0.081[J,FB]	<0.025[FB]	0.045[J,FB]	0.028[J,FB]	0.053[J,FB]	0.043[J,FB]	0.052[J,FB]	0.037[J,FB]	0.026[J,FB]	0.038[J,FB]	0.036[J,FB]	0.033[J,FB]	0.031[J,FB]	<0.025[FB]	0.036[J,FB]	<0.025[FB]	<0.025[FB]	0.040[J,FB]	<0.025[FB]	<0.10[RL]
Total Phosphorous (as P)	mg/L	0.061[FB]	<0.023[FB]	<0.023[FB]	<0.023[FB]	<0.023[FB]	<0.023[FB]	<0.023[FB]	<0.023[FB]	<0.023[FB]	0.31[FB]	<0.023[FB]	<0.023[FB]	<0.023[FB]	<0.023[FB]	<0.023[FB]	<0.023[FB]	<0.023[FB]	0.026[J,FB]	<0.023[FB]	<0.050[RL]
Ortho-phosphate (as PO_4^{3-})	mg/L	0.010[J,FB]	0.030[J,FB]	<0.0051[FB]	<0.0051[FB]	0.059[J,FB]	0.11[J,FB]	<0.0051[FB]	0.022[J,FB]	<0.0051[FB]	0.047[J,FB]	<0.0051[FB]	<0.0051[FB]	<0.0051[FB]	<0.0051[FB]	<0.0051[FB]	0.0060[J,FB]	<0.0051[FB]	<0.0051[FB]	<0.0051[FB]	<0.15[RL]
Trace Elements																					
Aluminum (Total)	ug/L	**560[FB,3]**	57[FB]	60[FB]	26[FB]	42[FB]	45[FB]	44[FB]	39[FB]	44[FB]	33[FB]	25[FB]	2.5[J,FB]	72[FB]	12[J,FB]	**630[FB,3]**	81[FB]	53[FB]	80[FB]	58[FB]	<20[RL]
Aluminum (Dissolved)	ug/L	30[FB]	23[FB]	23[FB]	7.8[J,FB]	13[J,FB]	12[J,FB]	10[J,FB]	11[J,FB]	7.2[J,FB]	9.6[J,FB]	<0.52[FB]	<0.52[FB]	<0.52[FB]	<0.52[FB]	20[FB]	12[J,FB]	4.2[J,FB]	9.8[J,FB]	58[FB]	<20[RL]
Arsenic (Total)	ug/L	0.20[J]	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	0.16[J]	<0.12	<0.12	0.14[J]	0.15[J]	<0.12

Analyte	Units	IS-1-RR	IS-2-LRR	IS-3-LRR	IS-4-GC	IS-5-GC	IS-6-GC	IS-9-GCC	IS-7-SFRR	IS-8-SFRR	IS-10-SFSC	IS-11-SFSC	IS-12-SC	IS-13-SC	IS-14-SC	IS-15-SFAR	IS-16-SFAR	IS-17-BC	IS-19-SFAR	IS-18-SFAR	Field Blank
Arsenic (Dissolved)	ug/L	0.13[J]	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	0.15[J]	<0.12	<0.12	0.13[J]	0.12	<0.12
Barium (Total)	ug/L	3.6[J,FB]	1.9[J,FB]	2.1[J,FB]	3.0[J,FB]	5.7[FB]	5.6[FB]	5.8[FB]	5.2[FB]	5.5[FB]	7.2[FB]	12[FB]	7.5[FB]	14[FB]	12[FB]	43[FB]	14[FB]	13[FB]	15[FB]	14[FB]	<5.0[RL]
Cadmium (Total)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Cadmium (Dissolved)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Copper (Total)	ug/L	0.24	0.17	0.16	0.26	0.22	0.22	0.21	0.21	0.21	0.14	0.21	0.21	0.24	0.20	0.38	0.28	0.14	0.26	0.36	<0.04
Copper (Dissolved)	ug/L	0.19	0.16	0.15	0.21	0.21	0.21	0.20	0.18	0.19	0.14	0.10	0.14	0.16	0.20	0.19	0.19	0.11	0.21	0.24	<0.04
Iron (Total)	ug/L	170[FB]	20[J,FB]	**670[FB,2]**	<9.1[FB]	14[J,FB]	13[J,FB]	24[J,FB]	13[J,FB]	39[J,FB]	190[FB]	31[J,FB]	47[J,FB]	89[J,FB]	37[J,FB]	140[FB]	73[J,FB]	87[J,FB]	150[FB]	94[J,FB]	<100[RL]
Iron (Dissolved)	ug/L	7.4[J,FB]	<6.8[FB]	<6.8[FB]	<6.8[FB]	14[J,FB]	13[J,FB]	24[J,FB]	13[J,FB]	39[J,FB]	<6.8[FB]	<6.8[FB]	<6.8[FB]	<6.8[FB]	<6.8[FB]	9.2[J,FB]	<6.8[FB]	<6.8[FB]	8.1[J,FB]	12[J,FB]	<100[RL]
Lead (Total)	ug/L	0.025[J]	0.017[J]	0.014[J]	0.012[J]	0.019[J]	0.019[J]	0.016[J]	0.012[J]	0.014[J]	0.014[J]	0.018[J]	0.009[J]	0.048[J]	0.009[J]	**0.173[3,4]**	0.088	0.042[J]	0.038[J]	0.038[J]	<0.007
Lead (Dissolved)	ug/L	<0.007	<0.007	<0.007	<0.007	0.007	0.008[J]	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	0.008[J]	<0.007	0.009[J]	<0.007	<0.007	<0.007
Manganese	ug/L	5.3[FB]	1.6[J,FB]	1.8[J,FB]	4.8[FB]	4.2[FB]	4.8[FB]	3.6[FB]	1.9[J,FB]	2.7[FB]	6.2[FB]	9.4[FB]	6.3[FB]	11[FB]	3.4[FB]	46[FB]	9.7[FB]	24[FB]	28[FB]	10[FB]	<2.0[RL]
Mercury (Total)	ng/L	1.31	0.99	0.97	0.91	1.02	1.64	1.23	1.11	1.14	3.35	0.63	0.63	0.42[J]	0.43[J]	1.64	5.33	0.69	0.87	1.06	<0.22
Methyl mercury	ng/L	0.027[J]	<0.017	<0.017	<0.017	0.023[J]	0.021[J]	0.024[J]	0.019[J]	0.031[J]	<0.017	0.017	<0.017	<0.017	<0.017	0.047[J]	0.028[J]	0.027[J]	0.033[J]	0.045[J]	<0.017
Nickel (Total)	ug/L	0.09[J]	0.07[J]	0.06[J]	0.25	0.28	0.28	0.26	0.18	0.19	0.04[J]	0.08[J]	0.14	0.21	0.08[J]	0.11	0.14	0.15	0.11	0.36	<0.02
Nickel (Dissolved)	ug/L	0.07[J]	0.07[J]	0.05[J]	0.22	0.26	0.26	0.24	0.18	0.18	0.03[J]	0.06[J]	0.06[J]	0.16	0.10	0.05[J]	0.11	0.11	0.08[J]	0.28	<0.02
Selenium (Total)	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Selenium (Dissolved)	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Silver (Total)[1]	ug/L	<0.070[FB]	<0.070[FB]	<0.070[FB]	<0.070[FB]	<0.070[FB]	<0.070[FB]	<0.070[FB]	<0.070[FB]	<0.070[FB]	<0.070[FB]	<0.070[FB]	<0.070[FB]	<0.070[FB]	<0.070[FB]	<0.070[FB]	<0.070[FB]	<0.070[FB]	<0.070[FB]	<0.070[FB]	<0.50[RL]
Silver (Dissolved)	ug/L	<0.15[FB]	<0.15[FB]	<0.15[FB]	<0.15[FB]	<0.15[FB]	<0.15[FB]	<0.15[FB]	<0.15[FB]	<0.15[FB]	<0.15[FB]	<0.15[FB]	<0.15[FB]	<0.15[FB]	<0.15[FB]	<0.15[FB]	<0.15[FB]	<0.15[FB]	<0.15[FB]	<0.15[FB]	<0.50[RL]
Zinc (Total)	ug/L	0.64	0.53	0.29[J]	1.42	0.98	1.53	0.85	0.72	0.56	0.27[J]	0.62	0.27[J]	0.83	0.24[J]	1.14	0.57	0.34[J]	0.46[J]	0.53	<0.12
Zinc (Dissolved)	ug/L	0.57	0.52	0.30[J]	1.08	0.84	0.68	0.61	0.47[J]	0.38[J]	0.15[J]	0.27[J]	0.27[J]	0.49[J]	0.35[J]	0.38[J]	0.19[J]	0.51	0.27[J]	0.33[J]	<0.12
Standard Minerals																					
Calcium	ug/L	1900[FB]	1700[FB]	1300[FB]	1200[FB]	1000[FB]	1100[FB]	1200[FB]	1400[FB]	1300[FB]	1500[FB]	1800[FB]	1500[FB]	2100[FB]	2300[FB]	4300[FB]	2800[FB]	2100[FB]	3400[FB]	4600[FB]	<1000[RL]
Chloride	mg/L	0.70[FB]	0.57[FB]	0.36[J,FB]	0.46[J,FB]	0.62[FB]	0.62[FB]	0.60[FB]	0.59[FB]	0.57[FB]	0.54[FB]	0.55[FB]	0.56[FB]	0.68[FB]	0.64[FB]	1.9[FB]	1.2[FB]	0.85[FB]	1.5[FB]	1.5[FB]	<0.50
Magnesium	ug/L	130[J,FB]	100[J,FB]	95[J,FB]	130[J,FB]	300[J,FB]	300[J,FB]	300[J,FB]	390[J,FB]	350[J,FB]	270[J,FB]	430[J,FB]	330[J,FB]	530[J,FB]	590[J,FB]	1000[FB]	690[J,FB]	750[J,FB]	850[J,FB]	1600[FB]	<1000[RL]
Potassium	ug/L	370[J,FB]	2900[FB]	3300[FB]	<61[FB]	<61[FB]	<61[FB]	1100[FB]	<61[FB]	<61[FB]	1200[FB]	510[J,FB]	570[J,FB]	370[J,FB]	560[J,FB]	740[J,FB]	1200[FB]	1100[FB]	2000[FB]	1300[FB]	<1000[RL]

Analyte	Units	IS-1-RR	IS-2-LRR	IS-3-LRR	IS-4-GC	IS-5-GC	IS-6-GC	IS-9-GCC	IS-7-SFRR	IS-8-SFRR	IS-10-SFSC	IS-11-SFSC	IS-12-SC	IS-13-SC	IS-14-SC	IS-15-SFAR	IS-16-SFAR	IS-17-BC	IS-19-SFAR	IS-18-SFAR	Field Blank
Sodium	ug/L	1900[FB]	150000[FB]	69000[FB]	820[J,FB]	1100[FB]	1100[FB]	1100[FB]	1200[FB]	1200[FB]	1100[FB]	1100[FB]	860[J,FB]	1400[FB]	1100[FB]	2800[FB]	2600[FB]	2300[FB]	3700[FB]	3100[FB]	<1000[RL]
Sulfate (as SO_4^{2-})	mg/L	0.93[FB]	0.64[FB]	0.63[FB]	0.58[FB]	0.52[FB]	0.63[FB]	0.49[J,FB]	0.54[FB]	0.43[J,FB]	0.84[FB]	0.48[J,FB]	0.46[J,FB]	1.1[FB]	0.51[FB]	1.7[FB]	0.95[FB]	0.50[FB]	1.2[FB]	1.8[FB]	<0.50[RL]

mg/L = milligrams per liter
ng/L = nanograms per liter
ug/L = micrograms per liter

[1] Although both the method detection limit (MDL) and one-half the MDL are greater than water quality standards for total silver, <MDL and non-detect results are not classified as exceedances of water quality standards.
[2] Exceeds Basin Plan water quality objectives (CRWQCB 2019, SMUD 2021).
[3] Exceeds National Recommended Water Quality Criteria (EPA 1986)
[4] Exceeds California Toxics Rule standards (EPA 2000)
[FB] Field Blank was greater than the MDL for this analyte. Field blank for Spring sampling event corresponded to sample “R-IS-20-BC-FB.”
[J] Result falls between MDL and reporting limit (RL).
[RL] Laboratory reported result as <RL.

Table C-2. General Chemistry Results for Upper American River Project Riverine Sites during the Summer Sampling Event.

Analyte	Units	IS-1-RR	IS-2-LRR	IS-3-LRR	IS-4-GC	IS-5-GC	IS-6-GC	IS-9-GCC	IS-7-SFRR	IS-8-SFRR	IS-10-SFSC	IS-11-SFSC	IS-12-SC	IS-13-SC	IS-14-SC	IS-15-SFAR	IS-16-SFAR	IS-17-BC	IS-19-SFAR	IS-18-SFAR	Field Blank
Miscellaneous																					
Total Suspended Solids (TSS)	mg/L	<2.0	<5.0[RL]	<5.0[RL]	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids (TDS)	mg/L	12	<10[RL]	<10[RL]	11	15	15	11	10	15	16	20	24	20	26	42	25	23	28	25	<5.0
Total Organic Carbon (TOC)	mg/L	3.9[FB]	3.4[FB]	2.5[FB]	2.1[FB]	2.8[FB]	2.1[FB]	2.2[FB]	1.9[FB]	1.9[FB]	2.2[FB]	2.1[FB]	2.2[FB]	1.5[FB]	2.0[FB]	1.9[FB]	2.4[FB]	1.6[FB]	2.0[FB]	2.0[FB]	0.93[J]
Cyanide	mg/L	<0.0012[FB]	<0.0050[FB]	<0.0050[FB]	0.0023[J,FB]	<0.0012[FB]	<0.0012[FB]	<0.0012[FB]	<0.0012[FB]	<0.0012[FB]	0.0023[J,FB]	<0.0012[FB]	<0.0012[FB]	<0.0012[FB]	<0.0012[FB]	<0.0012[FB]	<0.0012[FB]	<0.0012[FB]	<0.0012[FB]	<0.0012[FB]	0.0023[J]
Oil & Grease	mg/L	<1.0	<5.0[RL]	<5.0[RL]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Petroleum Hydrocarbons (TPH)	ug/L	<10	<50[RL]	<50[RL]	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
MTBE	ug/L	<0.095	<0.50[RL]	<0.50[RL]	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095
Hardness (as $CaCO_3$)	mg/L	7.3	6.8	5.3	4.1	3.9	4.0	4.2	4.1	4.1	4.7	5.1	4.9	5.6	5.6	17	9.2	10	8.9	11	<0.19
Total Alkalinity (as $CaCO_3$)	mg/L	7.2	6.2	5.2	5.2	6.2	5.0	6.0	6.6	6.0	5.4	7.8	9.0	9.2	7.8	19	13	13	10	12	<1.0
Nutrients																					
Nitrate/Nitrite (as N)	mg/L	0.22[J]	<0.40[RL]	<0.40[RL]	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	0.11[J]	0.093[J]	0.076[J]	0.064[J]	0.065[J]	<0.055	<0.055	<0.055	0.066[J]	<0.055	<0.055
Total Kjeldahl Nitrogen (TKN)	mg/L	0.28[FB]	0.46[FB]	0.46[FB]	0.28[FB]	<0.04[FB]	<0.04[FB]	<0.04[FB]	<0.04[FB]	<0.04[FB]	0.29[FB]	0.33[FB]	0.32[FB]	0.27[FB]	0.28[FB]	0.43[FB]	0.67[FB]	0.39[FB]	0.26[FB]	0.37[FB]	0.20
Ammonia (as N)	mg/L	0.033[J]	<0.10[RL]	<0.10[RL]	0.037[J]	<0.025	<0.025	<0.025	<0.025	<0.025	0.058[J]	0.025	0.029[J]	<0.025	0.043[J]	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Total Phosphorous (as P)	mg/L	<0.023	<0.050[RL]	<0.050[RL]	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023
Ortho-phosphate (as PO_4^{3-})	mg/L	<0.0051	<0.15[RL]	<0.15[RL]	0.0099[J]	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	0.022[J]	0.018[J]	0.030[J]	0.051[J]	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051
Trace Elements																					
Aluminum (Total)	ug/L	75[FB]	29[FB]	**170[FB,3]**	32[FB]	24[FB]	28[FB]	59[FB]	23[FB]	27[FB]	42[FB]	18[J,FB]	19[J,FB]	18[J,FB]	16[J,FB]	32[FB]	26[FB]	36[FB]	75[FB]	32[FB]	9.6[J]
Aluminum (Dissolved)	ug/L	30	26	<20[RL]	4.2[J]	<0.52	<0.52	<0.52	<0.52	<0.52	4.2[J]	16[J]	18[J]	12[J]	15[J]	<0.52	<0.52	<0.52	7.6[J]	<0.52	<0.52
Arsenic (Total)	ug/L	2.08	0.36[J]	0.25[J]	<0.12	<0.12	<0.12	0.14[J]	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	0.29[J]	0.17[J]	0.13[J]	0.22[J]	0.20[J]	<0.12

Analyte	Units	IS-1-RR	IS-2-LRR	IS-3-LRR	IS-4-GC	IS-5-GC	IS-6-GC	IS-9-GCC	IS-7-SFRR	IS-8-SFRR	IS-10-SFSC	IS-11-SFSC	IS-12-SC	IS-13-SC	IS-14-SC	IS-15-SFAR	IS-16-SFAR	IS-17-BC	IS-19-SFAR	IS-18-SFAR	Field Blank
Arsenic (Dissolved)	ug/L	1.78	0.35[J]	0.25[J]	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	0.31[J]	0.16[J]	<0.12	0.17[J]	0.20[J]	<0.12
Barium (Total)	ug/L	5.3	<5.0[RL]	5.3	4.0[J]	5.1	<0.14	<0.14	5.1	5.2	8.7	9.0	6.5	10	8.3	17	9.4	12	12	11	<0.14
Cadmium (Total)	ug/L	**0.05[J,3]**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Cadmium (Dissolved)	ug/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Copper (Total)	ug/L	0.59[FB]	0.24[FB]	0.24[FB]	0.23[FB]	0.21[FB]	0.26[FB]	0.71[FB]	0.20[FB]	0.23[FB]	0.14[FB]	0.13[FB]	0.20[FB]	0.16[FB]	0.19[FB]	0.24[FB]	0.35[FB]	0.19[FB]	0.32[FB]	0.31[FB]	0.05[J]
Copper (Dissolved)	ug/L	0.51	0.20	0.20	0.18	0.18	0.22	0.56	0.18	0.20	0.14	0.12	0.17	0.14	0.19	0.21	0.32	0.12	0.21	0.28	<0.04
Iron (Total)	ug/L	**630[2,FB]**	<100[RL,FB]	160[FB]	50[J,FB]	130[FB]	9.1[FB]	110[FB]	9.1[FB]	9.1[FB]	100[FB]	39[J,FB]	90[J,FB]	15[J,FB]	35[J,FB]	9.1[FB]	9.1[FB]	**330[2,FB]**	110[FB]	9.1[FB]	15[J]
Iron (Dissolved)	ug/L	60[J]	<100[RL]	<100[RL]	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	7.4[J]	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8
Lead (Total)	ug/L	0.098	0.036[J]	0.014[J]	0.016[J]	0.024[J]	0.015[J]	**0.408[3,4]**	0.014[J]	0.014[J]	0.012[J]	0.012[J]	0.017[J]	0.013[J]	0.007	0.024[J]	0.018[J]	0.085	0.083	0.034[J]	<0.007
Lead (Dissolved)	ug/L	0.067	0.009[J]	<0.007	<0.007	0.014[J]	<0.007	0.008[J]	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	0.009[J]	0.009[J]	<0.007
Manganese	ug/L	22[FB]	8.0[FB]	42[FB]	24[FB]	6.9[FB]	8.8[FB]	11[FB]	4.4[FB]	4.5[FB]	50[FB]	7.0[FB]	8.9[FB]	2.2[FB]	5.1[FB]	10[FB]	7.9[FB]	**120[FB,2,5]**	34[FB]	13[FB]	0.22[J]
Mercury (Total)	ng/L	1.74	1.42	0.69	0.49[J]	0.42[J]	0.57	1.32	0.48[J]	0.41[J]	0.74	0.59	0.63	0.44[J]	0.50	0.43[J]	0.63	0.42[J]	--	0.54	<0.22
Methyl mercury	ng/L	0.184	0.082	0.050	<0.017	0.035[J]	<0.017	0.065	0.020[J]	0.021[J]	0.019[J]	<0.017	<0.017	0.017	0.022[J]	0.047[J]	0.030[J]	0.019[J]	0.044[J]	0.042[J]	<0.017
Nickel (Total)	ug/L	0.19	0.13	0.07[J]	0.19	0.16	0.10	0.34	0.09[J]	0.09[J]	0.04[J]	0.05[J]	0.10	0.12	0.10	0.08[J]	0.09[J]	0.16	0.11	0.15	<0.02
Nickel (Dissolved)	ug/L	0.17	0.10	0.05[J]	0.19	0.15	0.09[J]	0.11	0.08[J]	0.07[J]	0.04[J]	0.05[J]	0.08[J]	0.11	0.09[J]	0.07[J]	0.09[J]	0.10	0.07[J]	0.12	<0.02
Selenium (Total)	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Selenium (Dissolved)	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Silver (Total)[1]	ug/L	<0.070	**<0.50[RL,3,4]**	**<0.50[RL,3,4]**	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	**0.094[J,3,4]**	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070
Silver (Dissolved)	ug/L	<0.15	**<0.50[RL,5]**	**<0.50[RL,5]**	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Zinc (Total)	ug/L	1.06[FB]	0.67[FB]	0.14[J,FB]	0.90[FB]	0.65[FB]	0.43[J,FB]	2.70[FB]	0.28[J,FB]	0.40[J,FB]	0.18[J,FB]	0.15[J,FB]	0.25[J,FB]	0.19[J,FB]	0.15[J,FB]	0.20[J,FB]	0.21[J,FB]	0.43[J,FB]	0.42[J,FB]	0.33[J,FB]	0.66
Zinc (Dissolved)	ug/L	0.76	0.44[J]	<0.12	0.83	0.53	0.33[J]	0.77	0.21[J]	0.25[J]	0.33[J]	0.22[J]	0.23[J]	0.25[J]	0.19[J]	0.14[J]	0.16[J]	0.17[J]	0.29[J]	0.16[J]	<0.12
Standard Minerals																					
Calcium	ug/L	2600[FB]	1800[FB]	2200[FB]	1400[FB]	1300[FB]	1300[FB]	1300[FB]	1300[FB]	1300[FB]	1500[FB]	1500[FB]	1400[FB]	1600[FB]	1700[FB]	4700[FB]	2500[FB]	2900[FB]	2300[FB]	3300[FB]	29[J]
Chloride	mg/L	0.87[FB]	<0.50[RL,FB]	<0.50[RL,FB]	0.43[J,FB]	0.79[FB]	0.54[FB]	0.91[FB]	<0.026[FB]	0.52[FB]	0.56[FB]	0.56[FB]	0.55[FB]	0.60[FB]	0.55[FB]	3.8[FB]	1.6[FB]	1.2[FB]	1.3[FB]	1.4[FB]	0.30[J]
Magnesium	ug/L	190[J]	<1000	<1000	140[J]	<21	<21	<21	<21	<21	260[J]	310[J]	310[J]	410[J]	350[J]	<21	<21	<21	480[J]	<21	<21
Potassium	ug/L	480[J,FB]	<1000[RL FB]	<1000[RL FB]	330[J,FB]	<61[FB]	<61[FB]	<61[FB]	<61[FB]	<61[FB]	500[J,FB]	670[J,FB]	600[J,FB]	550[J,FB]	450[J,FB]	1500[FB]	1200[FB]	<61[FB]	920[J,FB]	1300[FB]	180[J]

Analyte	Units	IS-1-RR	IS-2-LRR	IS-3-LRR	IS-4-GC	IS-5-GC	IS-6-GC	IS-9-GCC	IS-7-SFRR	IS-8-SFRR	IS-10-SFSC	IS-11-SFSC	IS-12-SC	IS-13-SC	IS-14-SC	IS-15-SFAR	IS-16-SFAR	IS-17-BC	IS-19-SFAR	IS-18-SFAR	Field Blank
Sodium	ug/L	570[J]	<1000[RL]	<1000[RL]	570[J]	<34	<34	<34	<34	<34	970[J]	1000	1000	1100	1200	3400	2000	1400	1800	2000	<34
Sulfate (as SO_4^{2-})	mg/L	1.2	0.50	0.61	0.63	0.72	0.74	1.0	0.58	0.63	0.86	0.75	0.45[J]	0.53	0.51	0.76	0.59	1.1	0.61	0.82	<0.038

mg/L = milligrams per liter
ng/L = nanograms per liter
ug/L = micrograms per liter
-- = no results provided by laboratory

[1] Although both the method detection limit (MDL) and one-half the MDL are greater than water quality standards for total silver, <MDL and non-detect results are not classified as exceedances of water quality standards.
[2] Exceeds Basin Plan water quality objectives (CRWQCB 2019, SMUD 2021)
[3] Exceeds National Recommended Water Quality Criteria (EPA 1986)
[4] Exceeds California Toxics Rule standards (EPA 2000)
[5] Exceeds U.S. Environmental Protection Agency National Recommended Water Quality Criteria, hardness-dependent acute and/or chronic criteria (EPA 2022) (Appendix C, Table C-10)
[FB] Field Blank was greater than the MDL for this analyte. Field blank for Summer sampling event corresponded to sample "IS-10-SFSC-FB."
[J] Result falls between MDL and reporting limit (RL).
[RL] Laboratory reported result as <RL.

Table C-3. General Chemistry Results for Upper American River Project Riverine Sites during the Fall Sampling Event.

Analyte	Units	IS-10-SFSC	IS-11-SFSC	IS-12-SC	IS-13-SC	IS-14-SC	IS-15-SFAR	IS-16-SFAR	IS-17-BC	IS-19-SFAR	IS-18-SFAR	Field Blank
Miscellaneous												
Total Suspended Solids (TSS)	mg/L	<2.0	2.3[J]	<2.0	<2.0	2.0	<2.0	<2.0	3.8[J]	<2.0	<2.0	<2.0
Total Dissolved Solids (TDS)	mg/L	27	28	58	16	42	48	27	25	32	18	<5.0
Total Organic Carbon (TOC)	mg/L	2.1	2.7	2.0	2.2	2.2	2.3	2.1	1.1	3.3	2.2	<0.54
Cyanide	mg/L	0.0020[J,FB]	0.0027[J,FB]	0.0038[J,FB]	0.0031[J,FB]	0.0023[J,FB]	0.0045[J,FB]	0.0038[J,FB]	0.0027[J,FB]	0.0020[J,FB]	0.0049[J,FB]	0.0034[J]
Oil & Grease	mg/L	<1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	<1.0	<1.2	<1.0
Total Petroleum Hydrocarbons (TPH)	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
MTBE	ug/L	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095
Hardness (as $CaCO_3$)	mg/L	5.1[FB]	5.7[FB]	4.8[FB]	6.1[FB]	5.7[FB]	20[FB]	9.7[FB]	9.8[FB]	9.1[FB]	12[FB]	0.28[J]
Total Alkalinity (as $CaCO_3$)	mg/L	6.8[FB]	7.2[FB]	6.2[FB]	8.0[FB]	3.2[J,FB]	20[FB]	11[FB]	13[FB]	11[FB]	15[FB]	1.8[J]
Nutrients												
Nitrate/Nitrite (as N)	mg/L	<0.055	1.0	<0.055	<0.055	0.46	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055
Total Kjeldahl Nitrogen (TKN)	mg/L	0.35[FB]	0.27[FB]	0.24[FB]	0.26[FB]	0.22[FB]	0.40[FB]	0.34[FB]	0.44[FB]	0.41[FB]	0.43[FB]	0.18[J]
Ammonia (as N)	mg/L	0.095[J,FB]	0.052[J,FB]	0.036[J,FB]	0.034[J,FB]	0.047[J,FB]	<0.025[FB]	<0.025[FB]	<0.025[FB]	<0.025[FB]	<0.025[FB]	0.037[J]
Total Phosphorous (as P)	mg/L	<0.023	<0.023	<0.023	<0.023	<0.023	0.045[J]	0.026[J]	<0.023	<0.023	<0.023	<0.023
Orthophosphate (as PO_4^{3-})	mg/L	<0.0051[FB]	0.019[J,FB]	0.0066[J,FB]	<0.0051[FB]	<0.0051[FB]	<0.0051[FB]	0.011[J,FB]	0.0066[J,FB]	0.025[J,FB]	<0.0051[FB]	0.26
Trace Elements												
Aluminum (Total)	ug/L	32	23	23	22	38	30	21	38	44	25	<1.6
Aluminum (Dissolved)	ug/L	9.9[J,FB]	11[J,FB]	11[J,FB]	11[J,FB]	9.7[J,FB]	9.2[J,FB]	9.1[J,FB]	3.3[J,FB]	8.3[J,FB]	7.3[J,FB]	1.2[J]
Arsenic (Total)	ug/L	<0.12	<0.12	<0.12	<0.12	<0.12	0.29[J]	<0.12	<0.12	<0.12	<0.12	<0.12
Arsenic (Dissolved)	ug/L	<0.12	<0.12	<0.12	<0.12	<0.12	0.26[J]	<0.12	<0.12	<0.12	<0.12	<0.12
Barium (Total)	ug/L	10	8.7	7.2	11	8.5	17	11	14	10	14	<0.14
Cadmium (Total)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Cadmium (Dissolved)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Copper (Total)	ug/L	0.14	0.13	0.18	0.22	0.24	0.26	0.28	0.15	0.37	0.31	<0.04
Copper (Dissolved)	ug/L	0.11	0.12	0.16	0.19	0.21	0.20	0.23	0.08[J]	0.18	0.26	<0.04
Iron (Total)	ug/L	300	130	82[J]	28[J]	92[J]	59[J]	54[J]	170	69[J]	51[J]	<9.1
Iron (Dissolved)	ug/L	24[J]	12[J]	<6.8	<6.8	<6.8	14[J]	<6.8	<6.8	<6.8	13[J]	<6.8

Analyte	Units	IS-10-SFSC	IS-11-SFSC	IS-12-SC	IS-13-SC	IS-14-SC	IS-15-SFAR	IS-16-SFAR	IS-17-BC	IS-19-SFAR	IS-18-SFAR	Field Blank
Lead (Total)	ug/L	0.015[J,FB]	0.016[J,FB]	0.011[J,FB]	0.015[J,FB]	0.020[J,FB]	0.027[J,FB]	0.018[J,FB]	0.076[FB]	0.094[FB]	0.032[J,FB]	0.011[J]
Lead (Dissolved)	ug/L	<0.007	0.008[J]	<0.007	0.011[J]	<0.007	0.007	<0.007	<0.007	<0.007	0.008[J]	<0.007
Manganese	ug/L	**230[2,3,FB]**	7.4[FB]	9.6[FB]	2.1[FB]	16[FB]	10[FB]	9.9[FB]	**64[2,3,FB]**	19[FB]	9.3[FB]	0.33[J]
Mercury (Total)	ng/L	4.04	0.85	0.71	0.92	0.64	0.64	0.69	0.36[J]	0.43[J]	0.65	<0.22
Methyl mercury	ng/L	0.032[J,FB]	0.021[J,FB]	<0.017[FB]	0.020[J,FB]	0.027[J,FB]	0.021[J,FB]	<0.017[FB]	<0.017[FB]	0.030[J,FB]	0.022[J,FB]	0.022[J]
Nickel (Total)	ug/L	0.06[J]	0.07[J]	0.10	0.19	0.12	0.10	0.12	0.13	0.14	0.21	<0.02
Nickel (Dissolved)	ug/L	0.04[J]	0.07[J]	0.07[J]	0.14	0.10	0.07[J]	0.10	0.07[J]	0.06[J]	0.25	<0.02
Selenium (Total)	ug/L	0.4[J]	0.4[J]	0.3	0.3	0.4[J]	0.4[J]	0.4[J]	0.4[J]	0.4[J]	<0.3	<0.3
Selenium (Dissolved)	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Silver (Total)[1]	ug/L	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070
Silver (Dissolved)	ug/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Zinc (Total)	ug/L	0.27[J]	0.20[J]	0.17[J]	0.25[J]	0.46[J]	1.43	0.27[J]	0.30[J]	1.55	0.45[J]	<0.12
Zinc (Dissolved)	ug/L	0.17[J]	0.24[J]	0.16[J]	0.21[J]	0.44[J]	0.45[J]	0.29[J]	<0.12	0.31[J]	0.66	<0.12
Standard Minerals												
Calcium	ug/L	1600	1700	1400	1700	1600	6000	3000	2500	2700	3400	<27
Chloride	mg/L	0.47[J,FB]	0.66[FB]	0.49[J,FB]	0.71[FB]	0.65[FB]	7.0[FB]	2.2[FB]	0.86[FB]	1.6[FB]	2.2[FB]	0.20[J]
Magnesium	ug/L	290[J]	380[J]	330[J]	460[J]	390[J]	1200	630[J]	760[J]	550[J]	890[J]	<21
Potassium	ug/L	980[J]	1100	770[J]	1000	850[J]	1500	800[J]	790[J]	790[J]	970[J]	<61
Sodium	ug/L	1100[FB]	1100[FB]	1100[FB]	1200[FB]	1200[FB]	5100[FB]	2300[FB]	1600[FB]	1900[FB]	2900[FB]	65[J]
Sulfate (as SO_4^{2-})	mg/L	0.79	0.79	0.47[J]	0.63	2.3	0.91	0.63	0.45[J]	0.52	1.2	<0.038

mg/L = milligrams per liter
ng/L = nanograms per liter
ug/L = micrograms per liter

[1] Although both the method detection limit (MDL) and one-half the MDL are greater than water quality standards for total silver, <MDL and non-detect results are not classified as exceedances of water quality standards.
[2] Exceeds Basin Plan water quality objectives (CRWQCB 2019, SMUD 2021)
[3] Exceeds National Recommended Water Quality Criteria (EPA 1986)
[FB] Field Blank was greater than the MDL for this analyte. Field blank for Fall sampling event corresponded to sample “R-IS-4-GC-FB.”
[J] Result falls between MDL and reporting limit.

Table C-4. General Chemistry Results for Upper American River Project Riverine Sites during the Fall/Winter Sampling Event.

Analyte	Units	IS-3-LRR	IS-10-SFSC	IS-11-SFSC	IS-12-SC	IS-13-SC	IS-14-SC	IS-15-SFAR	IS-16-SFAR	IS-17-BC	IS-19-SFAR	IS-18-SFAR	Field Blank
Miscellaneous													
Total Suspended Solids (TSS)	mg/L	2.3[J]	<5.0[RL]	<2.0	3.5[J]	2.5[J]	<2.0	2.5[J]	<2.0	<2.0	3.1[J]	3.0[J]	<2.0
Total Dissolved Solids (TDS)	mg/L	21[FB]	25[FB]	19[FB]	16[FB]	47[FB]	21[FB]	35[FB]	29[FB]	23[FB]	17[FB]	43[FB]	9.0[J]
Total Organic Carbon (TOC)	mg/L	2.4	2.1	1.8	2.5	1.9	2.1	3.4	2.7	0.98[J]	2.0	3.9	<0.54
Cyanide	mg/L	0.0027[J,FB]	<0.0050[FB]	**0.0053[3,4,FB]**	0.0045[J,FB]	0.0038[J,FB]	0.0034[J,FB]	0.0049[J,FB]	0.0023[J,FB]	0.0038[JFB]	0.0038[J,FB]	0.0020[J,FB]	0.0042[J]
Oil & Grease	mg/L	<1.0	<5.0[RL]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Petroleum Hydrocarbons (TPH)	ug/L	<10	<50[RL]	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
MTBE	ug/L	<0.095	<0.50[RL]	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095
Hardness (as $CaCO_3$)	mg/L	4.6	5.3	6.7	5.2	5.6	5.7	16	11	9.3	9.1	17	<0.19
Total Alkalinity (as $CaCO_3$)	mg/L	6.2[FB]	8.0[FB]	8.8[FB]	7.4[FB]	7.8[FB]	8.4[FB]	18[FB]	18[FB]	11[FB]	11[FB]	17[FB]	2.2[J]
Nutrients													
Nitrate/Nitrite (as N)	mg/L	<0.055	<0.40[RL]	0.075[J]	<0.055	<0.055	<0.055	0.14[J]	0.081[J]	<0.055	0.068[J]	0.079[J]	<0.055
Total Kjeldahl Nitrogen (TKN)	mg/L	0.28[FB]	0.47[FB]	0.18[J,FB]	0.62[FB]	0.11[J,FB]	0.17[J,FB]	0.42[FB]	0.26[FB]	0.24[FB]	0.44[FB]	0.16[J,FB]	0.073[J]
Ammonia (as N)	mg/L	0.045[J,FB]	<0.10[RL FB]	0.060[J,FB]	0.066[J,FB]	0.070[J,FB]	0.090[J,FB]	<0.025[FB]	0.026[J,FB]	0.041[J,FB]	0.029[J,FB]	0.055[J,FB]	0.061[J]
Total Phosphorous (as P)	mg/L	<0.023	<0.050[RL]	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023
Orthophosphate (as PO_4^{3-})	mg/L	<0.0051	<0.15[RL]	0.015[J]	0.0066[J]	0.0066[J]	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051
Trace Elements													
Aluminum (Total)	ug/L	52	34	12[J]	53	26	36	65	67	30	**97[2]**	**130[2]**	1.6
Aluminum (Dissolved)	ug/L	5.2[J,FB]	<20[RL FB]	5.3[J,FB]	7.2[J,FB]	8.2[J,FB]	8.1[J,FB]	11[J,FB]	6.7[J,FB]	2.5[J,FB]	4.5[J,FB]	15[J,FB]	10[J]
Arsenic (Total)	ug/L	0.24[J]	<0.12	<0.12	<0.12	<0.12	<0.12	0.26[J]	0.15[J]	<0.12	<0.12	0.14[J]	<0.12
Arsenic (Dissolved)	ug/L	0.21[J]	<0.12	<0.12	<0.12	<0.12	<0.12	0.21[J]	.013	<0.12	<0.12	0.14[J]	<0.12
Barium (Total)	ug/L	4.3[J]	11	9.6	8.4	9.2	8.1	17	12	13	12	17	<0.14
Cadmium (Total)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Cadmium (Dissolved)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Copper (Total)	ug/L	0.24	0.14	0.28	0.25	0.19	0.22	0.36	0.333	0.11	0.33	0.50	<0.04
Copper (Dissolved)	ug/L	0.20	0.10	0.10	0.17	0.16	0.19	0.24	0.25	0.06[J]	0.23	0.47	<0.04
Iron (Total)	ug/L	200	**600[2]**	160	**880[2]**	77[J]	110	170	110	110	130	270	<9.1
Iron (Dissolved)	ug/L	8.7[J]	<100[RL]	37[J]	<6.8	77[J]	110	14[J]	20[J]	<6.8	<6.8	33[J]	<6.8
Lead (Total)	ug/L	0.042[J]	0.019[J]	0.012[J]	0.058	0.019[J]	0.020[J]	0.080	0.045[J]	0.055	0.042[J]	0.071	<0.007

Analyte	Units	IS-3-LRR	IS-10-SFSC	IS-11-SFSC	IS-12-SC	IS-13-SC	IS-14-SC	IS-15-SFAR	IS-16-SFAR	IS-17-BC	IS-19-SFAR	IS-18-SFAR	Field Blank
Lead (Dissolved)	ug/L	0.016[J]	<0.007	0.008[J]	<0.007	<0.007	<0.007	0.012[J]	0.007	<0.007	<0.007	0.027[J]	<0.007
Manganese	ug/L	23[FB]	**360[2,3,FB]**	3.3[FB]	37[FB]	6.6[FB]	17[FB]	14[FB]	11[FB]	32[FB]	39[FB]	23[FB]	0.19[J]
Mercury (Total)	ng/L	0.61[FB]	0.78[FB]	0.39[J,FB]	0.81[FB]	0.70[FB]	0.79[FB]	1.36[FB]	1.01[FB]	0.41[J,FB]	0.64[FB]	1.93[FB]	1.25
Methyl mercury	ng/L	0.023[J]	0.038[J]	<0.017	--	<0.017	<0.017	0.044[J]	<0.017	<0.017	<0.017	0.043[J]	<0.017
Nickel (Total)	ug/L	0.06[J]	0.06[J]	0.07[J]	0.15	0.16	0.15	0.13	0.14	0.11	0.12	0.52	<0.02
Nickel (Dissolved)	ug/L	0.04[J]	0.04[J]	0.05[J]	0.08[J]	0.13	0.11	0.08[J]	0.10	0.06[J]	0.08[J]	0.52	<0.02
Selenium (Total)	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Selenium (Dissolved)	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Silver (Total)[1]	ug/L	<0.070	**<0.50[RL,3,4]**	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070
Silver (Dissolved)	ug/L	<0.15	**<0.50[RL,5]**	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Zinc (Total)	ug/L	0.22[J]	0.34[J]	0.14[J]	0.54	0.25[J]	0.29[J]	0.50	.050	0.19[J]	0.74	0.66	<0.12
Zinc (Dissolved)	ug/L	0.26[J]	0.21[J]	0.15[J]	0.15[J]	0.25[J]	0.27[J]	0.25[J]	0.27[J]	<0.12	0.36[J]	0.85	<0.12
Standard Minerals													
Calcium	ug/L	1600	1700	2000	1500	1600	1700	4800	3300	2500	2700	4100	<27
Chloride	mg/L	0.29[J,FB]	0.67[FB]	0.60[FB]	0.51[FB]	0.59[FB]	0.60[FB]	5.7[FB]	2.9[FB]	0.93[FB]	1.9[FB]	2.0[FB]	0.20[J]
Magnesium	ug/L	150[J]	<1000[RL]	430[J]	350[J]	420[J]	380[J]	1000	690[J]	770[J]	570[J]	1600	<21
Potassium	ug/L	910[J]	<1000[RL]	980[J]	850[J]	510[J]	200[J]	1400	1200	550[J]	950[J]	970[J]	<61
Sodium	ug/L	960[J,FB]	<1000[RL,FB]	1400[FB]	1300[FB]	1400[FB]	1200[FB]	4400[FB]	2700[FB]	1700[FB]	1900[FB]	2200[FB]	140[J]
Sulfate (as SO_4^{2-})	mg/L	0.51	0.77	0.70	0.45[J]	0.58	0.53	0.90	0.64	0.46[J]	0.63	2.7	<0.038

mg/L = milligrams per liter
ng/L = nanograms per liter
ug/L = micrograms per liter
-- = no results provided by laboratory

[1] Although both the method detection limit (MDL) and one-half the MDL are greater than water quality standards for total silver, <MDL and non-detect results are not classified as exceedances of water quality standards.
[2] Exceeds Basin Plan water quality objectives (CRWQCB 2019, SMUD 2021)
[3] Exceeds National Recommended Water Quality Criteria (EPA 1986)
[4] Exceeds California Toxics Rule Standards (EPA 2000)
[5] Exceeds U.S. Environmental Protection Agency National Recommended Water Quality Criteria, hardness-dependent acute and/or chronic criteria (EPA 2022) (Appendix C, Table C-12)
[FB] Field Blank was greater than the MDL for this analyte. Field blank for Fall/Winter sampling event corresponded to sample "IS-14-SC-FB."
[J] Result falls between MDL and reporting limit (RL).
[RL] Laboratory reported result as <RL.

Table C-5. General Chemistry Results for Upper American River Project Reservoir Sites during the Spring Sampling Event.

Analyte	Units	R-IS-18-RR-SUR	R-IS-19-BI-SUR	R-IS-1-LL-SUR	R-IS-2-LL-SUR	R-IS-3-LL-SUR	R-IS-4-GC-SUR	R-IS-9-IHR-SUR	R-IS-10-IHR-SUR	R-IS-11-IHR-SUR	R-IS-11-IHR-BOT	Field Blank	Equipment Blank
Miscellaneous													
Total Suspended Solids (TSS)	mg/L	<2.0[FB]	<2.0[FB]	<2.0[FB]	<2.0[FB]	<2.0[FB]	<5.0[RL,FB]	<2.0[FB]	<2.0[FB]	<2.0[FB]	<2.0[FB]	<5.0[R]	<2.0
Total Dissolved Solids (TDS)	mg/L	14[FB,EB]	13[FB,EB]	8.0[J,FB,EB]	6.0[J,FB,EB]	6.0[JFB,EB]	18[FB,EB]	22[FB,EB]	28[FB,EB]	24[FB,EB]	27[FB,EB]	<10[RL]	10
Total Organic Carbon (TOC)	mg/L	1.8[FB]	2.1[FB]	2.1[FB]	1.9[FB]	2.0[FB]	2.3[FB]	3.0[FB]	3.5[FB]	3.6[FB]	2.3[FB]	<1.0[RL]	<0.54
Cyanide	mg/L	0.0026[J,FB,EB]	<0.0012[FB,EB]	0.0030[J,FB,EB]	0.0026[J,FB,EB]	0.0019[J,FB,EB]	<0.0050[RL,FB,EB]	<0.0012[FB,EB]	0.0019[J,FB,EB]	<0.0012[FB,EB]	<0.0012[FB,EB]	<0.0050	0.0023[J]
Oil & Grease	mg/L	<1.0[FB]	<1.0[FB]	<1.0[FB]	<1.0[FB]	<1.0[FB]	<5.0[RL,FB]	<1.0[FB]	<1.0[FB]	<1.0[FB]	<1.0[FB]	<5.0[RL]	<1.0
Total Petroleum Hydro-carbons (TPH)	ug/L	<10[FB]	<10[FB]	<10[FB]	<10[FB]	<10[FB]	<50[RL,FB]	<10[FB]	<10[FB]	<10[FB]	<10[FB]	<50[RL]	<10
MTBE	ug/L	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.50[RL,FB]	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.50[RL]	<0.095
Hardness (as $CaCO_3$)	mg/L	4.8[FB]	4.1[FB]	3.2[FB]	3.5[FB]	3.5[FB]	4.1[FB]	4.6[FB]	4.8[FB]	4.7[FB]	4.7[FB]	<1.0[RL]	<0.19
Total Alkalinity (as $CaCO_3$)	mg/L	4.4[J,FB]	3.8[J,FB]	3.6[J,FB]	2.4[J,FB]	4.2[J,FB]	5.4[FB]	5.8[FB]	5.6[FB]	6.0[FB]	5.2[FB]	<5.0[RL]	<1.0
Nutrients													
Nitrate/Nitrite (as N)	mg/L	<0.055[FB]	<0.055[FB]	0.064[J,FB]	<0.055[FB]	<0.055[FB]	<0.40[RL,FB]	<0.055[FB]	0.16[J,FB]	0.16[J,FB]	0.18[J,FB]	<0.40[RL]	<0.055
Total Kjeldahl Nitrogen (TKN)	mg/L	0.11[J,FB,EB]	0.11[J,FB,EB]	0.22[FB,EB]	0.11[J,FB,EB]	0.13[J,FB,EB]	<0.20[RL,FB,EB]	0.16[J,FB,EB]	0.22[FB,EB]	0.31[FB,EB]	0.12[J,FB,EB]	<0.20[RL]	0.12[J]
Ammonia (as N)	mg/L	0.072[J,FB,EB]	0.026[J,FB,EB]	0.046[J,FB,EB]	0.17[FB,EB]	0.038[J,FB,EB]	<0.10[RL,FB,EB]	0.062[J,FB,EB]	0.056[J,FB,EB]	0.034[J,FB,EB]	0.068[J,FB,EB]	<0.10[RL]	0.026[J]
Total Phosphorous (as P)	mg/L	<0.023[FB]	<0.023[FB]	0.31[FB]	0.17[FB]	<0.023[FB]	<0.050[RLFB]	<0.023[FB]	0.17[FB]	0.025[FB]	0.025[FB]	<0.050[RL]	<0.023
Orthophosphate (as PO_4^{3-})	mg/L	0.018[J,FB,EB]	<0.0051[FB,EB]	<0.0051[FB,EB]	<0.0051[FB,EB]	<0.0051[FB,EB]	<0.15,[RL,FB,EB]	0.039[J,FB,EB]	0.030[J,FB,EB]	0.018[J,FB,EB]	0.047[J,FB,EB]	<0.15[RL]	0.018[J]
Trace Elements													
Aluminum (Total)	ug/L	54[FB]	60[FB]	36[FB]	30[FB]	26[FB]	37[FB]	60[FB]	63[FB]	63[FB]	29[FB]	<20[RL]	<1.6
Aluminum (Dissolved)	ug/L	28[FB]	25[FB]	12[J,FB]	8.8[J,FB]	9.4[J,FB]	<20[RL,FB]	21[FB]	19[J,FB]	17[J,FB]	10[J,FB]	<20[RL]	<0.52
Arsenic (Total)	ug/L	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
Arsenic (Dissolved)	ug/L	0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
Barium (Total)	ug/L	2.0[J,FB]	2.0[J,FB]	3.1[J,FB]	3.2[J,FB]	3.2[J,FB]	6.0[FB]	6.3[FB]	6.5[FB]	6.7[FB]	7.1[FB]	<5.0[RL]	<0.14
Cadmium (Total)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Cadmium (Dissolved)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Copper (Total)	ug/L	0.17[EB]	0.21[EB]	0.19[EB]	0.20[EB]	0.22[EB]	0.21[EB]	0.15[EB]	0.16[EB]	0.17[EB]	0.15[EB]	<0.04	0.19
Copper (Dissolved)	ug/L	0.16[EB]	0.18[EB]	0.18[EB]	0.16[EB]	0.18[EB]	0.21[EB]	0.13[EB]	0.13[EB]	0.13[EB]	0.13[EB]	<0.04	0.05[J]

Analyte	Units	R-IS-18-RR-SUR	R-IS-19-BI-SUR	R-IS-1-LL-SUR	R-IS-2-LL-SUR	R-IS-3-LL-SUR	R-IS-4-GC-SUR	R-IS-9-IHR-SUR	R-IS-10-IHR-SUR	R-IS-11-IHR-SUR	R-IS-11-IHR-BOT	Field Blank	Equipment Blank
Iron (Total)	ug/L	11[J,FB]	200[FB]	21[J,FB]	72[J,FB]	24[J,FB]	<100[FB]	48[J,FB]	32[J,FB]	48[J,FB]	29[J,FB]	<100[RL]	<9.1
Iron (Dissolved)	ug/L	<6.8[FB]	<6.8[FB]	<6.8[FB]	<6.8[FB]	<6.8[FB]	<100[FB]	<6.8[FB]	<6.8[FB]	<6.8[FB]	<6.8[FB]	<100[RL]	<6.8
Lead (Total)	ug/L	0.010[J,EB]	0.014[J,EB]	<0.007[EB]	<0.007[EB]	0.007[EB]	0.016[J,EB]	0.013[J,EB]	0.017[J,EB]	0.018[J,EB]	0.016[J,EB]	<0.007[EB]	0.028[J]
Lead (Dissolved)	ug/L	<0.007	<0.007	<0.007	<0.007	<0.007	0.009[J]	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
Manganese	ug/L	1.6[J,FB,EB]	1.8[J,FB,EB]	3.6[FB,EB]	4.1[FB,EB]	4.4[FB,EB]	5.0[FB,EB]	2.8[FB,EB]	2.9[FB,EB]	3.3[FB,EB]	5.2[FB,EB]	<2.0[RL]	0.052[J]
Mercury (Total)	ng/L	0.92[EB]	0.98[EB]	0.88[EB]	0.75[EB]	0.67[EB]	1.00[EB]	0.63[EB]	1.06[EB]	0.99[EB]	1.61[EB]	<0.22	0.27[J]
Methyl mercury	ng/L	<0.017	<0.017	0.020[J]	<0.017	<0.017	0.023[J]	<0.017	0.028[J]	0.047[J]	<0.017	<0.017	<0.017
Nickel (Total)	ug/L	0.08[J]	0.07[J]	0.08[J]	0.09[J]	0.08[J]	0.24	0.05[J]	0.05[J]	0.08[J]	0.09[J]	<0.02	<0.02
Nickel (Dissolved)	ug/L	0.07[J]	0.07[J]	0.07[J]	0.08[J]	0.08[J]	0.22	0.04[J]	0.04[J]	0.04[J]	0.07[J]	<0.02	<0.02
Selenium (Total)	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Selenium (Dissolved)	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Silver (Total)[1]	ug/L	<0.070[FB]	<0.070[FB]	<0.070[FB]	<0.070[FB]	<0.070[FB]	**<0.50[RL,FB,2,3]**	<0.070[FB]	<0.070[FB]	<0.070[FB]	<0.070[FB]	<0.50[RL]	<0.070
Silver (Dissolved)	ug/L	<0.15[FB]	<0.15[FB]	<0.15[FB]	<0.15[FB]	<0.15[FB]	**<0.50[RL,FB,4]**	<0.15[FB]	<0.15[FB]	<0.15[FB]	<0.15[FB]	<0.50[RL]	<0.15
Zinc (Total)	ug/L	0.36[J,EB]	1.13[EB]	0.31[J,EB]	0.30[J,EB]	0.29[J,EB]	0.73[EB]	0.20[J,EB]	0.51[EB]	1.24[EB]	0.64[EB]	<0.12	2.08
Zinc (Dissolved)	ug/L	0.31[J,EB]	1.33[EB]	0.35[J,EB]	0.99[EB]	0.28[J,EB]	0.63[EB]	0.20[J,EB]	0.31[J,EB]	0.15[J,EB]	0.55[EB]	<0.12	0.66
Standard Minerals													
Calcium	ug/L	1700[FB]	1500[FB]	1100[FB]	1200[FB]	1200[FB]	1200[FB]	1400[FB]	1500[FB]	1400[FB]	1400[FB]	<1000[RL]	<27
Chloride	mg/L	0.53[FB,EB]	0.45[J,FB,EB]	0.40[J,FB,EB]	0.57[FB,EB]	0.41[J,FB,EB]	0.62[FB,EB]	0.58[FB,EB]	0.99[FB,EB]	0.86[FB,EB]	0.54[FB,EB]	<0.50[RL]	5.5
Magnesium	ug/L	110[J,FB]	100[J,FB]	110[J,FB]	130[J,FB]	130[J,FB]	<1000[RL,FB]	260[J,FB]	280[J,FB]	270[J,FB]	270[J,FB]	<1000[RL]	<21
Potassium	ug/L	290[J,FB,EB]	1900[FB,EB]	530[J,FB,EB]	650[J,FB,EB]	730[J,FB,EB]	<1000[RL,FB,EB]	1000[FB,EB]	960[J,FB,EB]	790[J,FB,EB]	530[J,FB,EB]	<1000[RL]	550[J]
Sodium	ug/L	2800[FB]	65000[FB]	510[J,FB]	520[J,FB]	510[J,FB]	1000[FB]	1100[FB]	1100[FB]	1100[FB]	1100[FB]	<1000[RL]	<34
Sulfate (as SO_4^{2-})	mg/L	0.73[FB]	0.63[FB]	0.55[FB]	0.54[FB]	0.54[FB]	<0.50[FB]	0.73[FB]	1.1[FB]	1.1[FB]	0.83[FB]	<0.50[RL]	<0.038

mg/L = milligrams per liter
ng/L = nanograms per liter
ug/L = micrograms per liter
SUR = suffix indicates a surface sample taken at or above approximately one-third of the water depth
BOT = suffix indicates a sample taken near the reservoir bottom

[1] Although both the method detection limit (MDL) and one-half the MDL are greater than water quality standards for total silver, <MDL and non-detect results are not classified as exceedances of water quality standards.
[2] Exceeds National Recommended Water Quality Criteria (EPA 1986)
[3] Exceeds California Toxics Rule Standards (EPA 2000)
[4] Exceeds U.S. Environmental Protection Agency National Recommended Water Quality Criteria, hardness-dependent acute and/or chronic criteria (EPA 2022) (Appendix C, Table C-13)
[EB] Equipment Blank was greater than the MDL for this analyte. Equipment blank for Spring sampling event corresponded to sample "R-IS-16-EBR."
[FB] Field Blank was greater than the MDL for this analyte. Field blank for Spring sampling event corresponded to sample "IS-20-BC-FB."
[J] Result falls between MDL and reporting limit (RL).
[RL] Laboratory reported result as <RL.

Table C-5 (continued). General Chemistry Results for Upper American River Project Reservoir Sites during the Spring Sampling Event.

Analyte	Units	R-IS-5-UVR-SUR	R-IS-7-UVR-SUR	R-IS-6-UVR-SUR	R-IS-6-UVR-BOT	R-IS-8-UVR-SUR	R-IS-8-UVR-BOT	R-IS-12-JR-SUR	R-IS-13-CR-SUR	R-IS-20-BC-SUR	R-IS-14-SC-SUR	R-IS-15-SC-SUR	Field Blank	Equipment Blank
Miscellaneous														
Total Suspended Solids (TSS)	mg/L	<2.0[FB]	<2.0[FB]	<2.0[FB]	<2.0[FB]	<2.0[FB]	<2.0[FB]	<2.0 [FB]	<2.0 [FB]	<5.0[RL FB]	<2.0 [FB]	<2.0 [FB]	<5.0[RL]	<2.0
Total Dissolved Solids (TDS)	mg/L	15[FB,EB]	14[FB,EB]	16[FB,EB]	8.0[J,FB,EB]	6.0[J,FB,EB]	10[FB,EB]	24[FB,EB]	24[FB,EB]	15[FB,EB]	27[FB,EB]	28[FB,EB]	<10[RL]	10
Total Organic Carbon (TOC)	mg/L	2.7[FB]	2.7[FB]	2.6[FB]	2.3[FB]	2.6[FB]	2.1[FB]	2.3[FB]	1.9[FB]	1.4[FB]	2.1[FB]	2.1[FB]	<1.0[RL]	<0.54
Cyanide	mg/L	0.0023[J,FB,EB]	0.0023[J,FB,EB]	0.0019[J,FB,EB]	0.0026[J,FB,EB]	0.0034[J,FB,EB]	0.0019[J,FB,EB]	0.0023[J,FB,EB]	<0.0012[FB,EB]	<0.0050[RL,FB,EB]	0.0023[J,FB,EB]	0.0019[J,FB,EB]	<0.0050	0.0023[J]
Oil & Grease	mg/L	<1.0[FB]	<1.0[FB]	<1.0[FB]	<1.0[FB]	<1.0[FB]	<1.0[FB]	<1.0[FB]	<1.0[FB]	<5.0[RL,FB]	<1.0[FB]	<1.0[FB]	<5.0[RL]	<1.0
Total Petroleum Hydro-carbons (TPH)	ug/L	<10[FB]	<10[FB]	<10[FB]	<10[FB]	<10[FB]	<10[FB]	<10[FB]	<10[FB]	<50[RL,FB]	<10[FB]	<10[FB]	<50[RL]	<10
MTBE	ug/L	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.095[FB]	<0.50[RL,FB]	<0.095[FB]	<0.095[FB]	<0.50[RL]	<0.095
Hardness (as $CaCO_3$)	mg/L	4.5[FB]	4.9[FB]	4.8[FB]	4.8[FB]	4.7[FB]	4.7[FB]	4.9[FB]	5.2[FB]	7.9[FB]	11[FB]	11[FB]	<1.0[RL]	<0.19
Total Alkalinity (as $CaCO_3$)	mg/L	6.4[FB]	5.6[FB]	6.6[FB]	6.8[FB]	6.2[FB]	6.8[FB]	7.2[FB]	6.4[FB]	9.8[FB]	11[FB]	12[FB]	<5.0[RL]	<1.0
Nutrients														
Nitrate/Nitrite (as N)	mg/L	<0.055[FB]	<0.055[FB]	<0.055[FB]	0.066[J,FB]	<0.055[FB]	0.070[J,FB]	0.087[J,FB]	0.071[J,FB]	<0.40[RL,FB]	0.16[J,FB]	0.080[J,FB]	<0.40[RL]	<0.055
Total Kjeldahl Nitrogen (TKN)	mg/L	0.15[J,FB,EB]	0.18[J,FB,EB]	0.18[J,FB,EB]	0.10[J,FB,EB]	0.14[J,FB,EB]	0.18[J,FB,EB]	0.092[J,FB,EB]	0.093[J,FB,EB]	<0.20[RL,FB,EB]	0.26[FB,EB]	0.079[J,FB,EB]	<0.20[RL]	0.12[J]
Ammonia (as N)	mg/L	0.087[J,FB,EB]	0.050[J,FB,EB]	0.093[J,FB,EB]	0.047[J,FB,EB]	0.052[J,FB,EB]	0.056[J,FB,EB]	0.028[J,FB,EB]	0.033[J,FB,EB]	<0.10[RL,FB,EB]	0.081[J,FB,EB]	0.066[J,FB,EB]	<0.10[RL]	0.026[J]
Total Phosphorous (as P)	mg/L	<0.023[FB]	<0.023[FB]	<0.023[FB]	<0.023[FB]	<0.023[FB]	<0.023[FB]	<0.023[FB]	<0.023[FB]	<0.050[RLFB]	<0.023[FB]	<0.023[FB]	<0.050[RL]	<0.023
Orthophosphate (as PO_4^{3-})	mg/L	0.014[J,FB,EB]	0.010[J,FB,EB]	0.030[J,FB,EB]	<0.0051[FB,EB]	0.034[J,FB,EB]	0.014[J,FB,EB]	<0.0051[FB,EB]	0.014[J,FB,EB]	<0.15[RL,FB,EB]	0.022[J,FB,EB]	0.014[J,FB,EB]	<0.15[RL]	0.018[J]
Trace Elements														
Aluminum (Total)	ug/L	34[FB]	33[FB]	33[FB]	19[J,FB]	32[FB]	15[J,FB]	30[FB]	17[J,FB]	<20[RL,FB]	27[FB]	50[FB]	<20[RL]	<1.6
Aluminum (Dissolved)	ug/L	17[J,FB]	13[J,FB]	14[J,FB]	2.8[J,FB]	14[J,FB]	4.3[J,FB]	6.9[J,FB]	5.6[J,FB]	<20[RL,FB]	44[FB]	18[J,FB]	<20[RL]	<0.52
Arsenic (Total)	ug/L	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	0.14[J]	0.14[J]	<0.12	<0.12
Arsenic (Dissolved)	ug/L	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	0.13[J]	0.14[J]	<0.12	<0.12
Barium (Total)	ug/L	5.2[FB]	5.4[FB]	5.3[FB]	5.6[FB]	5.3[FB]	5.6[FB]	7.8[FB]	8.2[FB]	12[FB]	12[FB]	12[FB]	<5.0[RL]	<0.14
Cadmium (Total)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Cadmium (Dissolved)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Copper (Total)	ug/L	0.19[EB]	0.20[EB]	0.20[EB]	0.21[EB]	0.19[EB]	0.20[EB]	0.16[EB]	0.21[EB]	0.08[J,EB]	0.27[EB]	0.23[EB]	<0.04	0.19
Copper (Dissolved)	ug/L	0.17[EB]	0.16[EB]	0.17[EB]	0.18[EB]	0.17[EB]	0.19[EB]	0.14[EB]	0.17[EB]	0.05[J,EB]	0.20[EB]	0.20[EB]	<0.04	0.05[J]
Iron (Total)	ug/L	17[J,FB]	54[J,FB]	12[J,FB]	22[J,FB]	15[J,FB]	37[J,FB]	36[J,FB]	25[J,FB]	<100[FB]	75[J,FB]	36[J,FB]	<100[RL]	<9.1

Analyte	Units	R-IS-5-UVR-SUR	R-IS-7-UVR-SUR	R-IS-6-UVR-SUR	R-IS-6-UVR-BOT	R-IS-8-UVR-SUR	R-IS-8-UVR-BOT	R-IS-12-JR-SUR	R-IS-13-CR-SUR	R-IS-20-BC-SUR	R-IS-14-SC-SUR	R-IS-15-SC-SUR	Field Blank	Equipment Blank
Iron (Dissolved)	ug/L	23^{J,FB}	64^{J,FB}	<6.8^{FB}	<6.8^{FB}	14^{J,FB}	<6.8^{FB}	<6.8^{FB}	<6.8^{FB}	<100^{FB}	<6.8^{FB}	<6.8^{FB}	<100^{RL}	<6.8
Lead (Total)	ug/L	<0.007^{EB}	<0.007^{EB}	<0.007^{EB}	<0.007^{EB}	<0.007^{EB}	<0.007^{EB}	0.018^{J,EB}	0.047^{J,EB}	0.014^{J,EB}	0.033^{J,EB}	0.016^{J,EB}	<0.007^{EB}	0.028^{J}
Lead (Dissolved)	ug/L	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
Manganese	ug/L	1.2^{J,FB,EB}	1.2^{J,FB,EB}	1.0^{J,FB,EB}	3.5^{FB,EB}	1.2^{J,FB,EB}	8.8^{FB,EB}	12^{FB,EB}	4.8^{FB,EB}	2.2^{FB,EB}	12^{FB,EB}	20^{FB,EB}	<2.0^{RL}	0.052^{J}
Mercury (Total)	ng/L	0.69^{EB}	0.78^{EB}	0.84^{EB}	0.60^{EB}	0.54^{EB}	0.76^{EB}	0.49^{J,EB}	0.56^{EB}	0.29^{J,EB}	0.62^{EB}	0.50^{EB}	<0.22	0.27^{J}
Methyl mercury	ng/L	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	0.020^{J}	<0.017	<0.017	0.026^{J}	<0.017	<0.017	<0.017
Nickel (Total)	ug/L	0.10	0.11	0.11	0.11	0.11	0.09^{J}	0.07^{J}	0.11	0.13	0.06^{J}	0.06^{J}	<0.02	<0.02
Nickel (Dissolved)	ug/L	0.11	0.09^{J}	0.09^{J}	0.09^{J}	0.09^{J}	0.09^{J}	0.05^{J}	0.08^{J}	0.10	0.04^{J}	0.07^{J}	<0.02	<0.02
Selenium (Total)	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Selenium (Dissolved)	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Silver (Total)[1]	ug/L	<0.070^{FB}	<0.070^{FB}	<0.070^{FB}	<0.070^{FB}	<0.070^{FB}	<0.070^{FB}	<0.070^{FB}	<0.070^{FB}	**<0.50^{RL,FB,2,3}**	<0.070^{FB}	<0.070^{FB}	<0.50^{RL}	<0.070
Silver (Dissolved)	ug/L	<0.15^{FB}	<0.15^{FB}	<0.15^{FB}	<0.15^{FB}	<0.15^{FB}	<0.15^{FB}	<0.15^{FB}	<0.15^{FB}	**<0.50^{RL,FB,4}**	<0.15^{FB}	<0.15^{FB}	<0.50^{RL}	<0.15
Zinc (Total)	ug/L	0.26^{J,EB}	0.13^{J,EB}	0.36^{J,EB}	0.32^{J,EB}	0.16^{J,EB}	0.31^{J,EB}	0.19^{J,EB}	0.31^{J,EB}	0.42^{J,EB}	1.12^{EB}	0.81^{EB}	<0.12	2.08
Zinc (Dissolved)	ug/L	0.56^{EB}	0.17^{J,EB}	0.26^{J,EB}	0.38^{J,EB}	<0.12^{EB}	0.25^{J,EB}	0.46^{J,EB}	0.29^{J,EB}	0.34^{J,EB}	0.59^{EB}	1.05^{EB}	<0.12	0.66
Standard Minerals														
Calcium	ug/L	1200^{FB}	1200^{FB}	1200^{FB}	1200^{FB}	1200^{FB}	1300^{FB}	1500^{FB}	1500^{FB}	2000^{FB}	3100^{FB}	3000^{FB}	<1000^{RL}	<27
Chloride	mg/L	0.54^{FB,EB}	0.80^{FB,EB}	0.56^{FB,EB}	0.58^{FB,EB}	0.54^{FB,EB}	0.58^{FB,EB}	0.86^{FB,EB}	0.60^{FB,EB}	0.96^{FB,EB}	1.7^{FB,EB}	1.4^{FB,EB}	<0.50^{RL}	5.5
Magnesium	ug/L	320^{J,FB}	320^{J,FB}	310^{J,FB}	300^{J,FB}	310^{J,FB}	310^{J,FB}	300^{J,FB}	370^{J,FB}	<1000^{RL,FB}	680^{J,FB}	700^{J,FB}	<1000^{RL}	<21
Potassium	ug/L	400^{J,FB,EB}	370^{J,FB,EB}	520^{J,FB,EB}	650^{J,FB,EB}	620^{J,FB,EB}	320^{J,FB,EB}	2300^{FB,EB}	2800^{FB,EB}	<1000^{RL,FB,EB}	1100^{FB,EB}	770^{J,FB,EB}	<1000^{RL}	550^{J}
Sodium	ug/L	2400^{FB}	1500^{FB}	1600^{FB}	1400^{FB}	1400^{FB}	1300^{FB}	1100^{FB}	1100^{FB}	1500^{FB}	2200^{FB}	2200^{FB}	<1000^{RL}	<34
Sulfate (as SO_4^{2-})	mg/L	0.37^{J,FB}	0.63^{FB}	0.39^{J,FB}	0.49^{J,FB}	0.37^{J,FB}	0.46^{J,FB}	0.76^{FB}	0.60^{FB}	<0.50^{FB}	1.2^{FB}	0.89^{FB}	<0.50^{RL}	<0.038

mg/L = milligrams per liter
ng/L = nanograms per liter
ug/L = micrograms per liter
SUR = suffix indicates a surface sample taken at or above approximately one-third of the water depth
BOT = suffix indicates a sample taken near the reservoir bottom
[1] Although both the method detection limit (MDL) and one-half the MDL are greater than water quality standards for total silver, <MDL and non-detect results are not classified as exceedances of water quality standards.
[2] Exceeds National Recommended Water Quality Criteria (EPA 1986)
[3] Exceeds California Toxics Rule Standards (EPA 2000)
[4] Exceeds U.S. Environmental Protection Agency National Recommended Water Quality Criteria, hardness-dependent acute and/or chronic criteria (EPA 2022) (Appendix C, Table C-13)
[EB] Equipment Blank was greater than the MDL for this analyte. Equipment blank for Spring sampling event corresponded to sample "R-IS-16-EBR."
[FB] Field Blank was greater than the MDL for this analyte. Field blank for Spring sampling event corresponded to sample "IS-20-BC-FB."
[J] Result falls between MDL and reporting limit (RL).
[RL] Laboratory reported result as <RL.

Table C-6. General Chemistry Results for Upper American River Project Reservoir Sites during the Summer Sampling Event.

Analyte	Units	R-IS-18-RR-SUR	R-IS-19-BI-SUR	R-IS-19-BI-BOT	R-IS-1-LL-SUR	R-IS-1-LL-BOT	R-IS-2-LL-SUR	R-IS-2-LL-BOT	R-IS-3-LL-SUR	R-IS-3-LL-BOT	Field Blank	Equipment Blank
Miscellaneous												
Total Suspended Solids (TSS)	mg/L	<2.0	<5.0[RL]	<5.0[RL]	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids (TDS)	mg/L	13	11	<10[RL]	13	11	9.0[J]	8.0[J]	12	9.0[J]	<5.0	<5.0
Total Organic Carbon (TOC)	mg/L	3.5[FB]	2.6[FB]	2.5[FB]	2.0[FB]	1.9[FB]	2.0[FB]	1.9[FB]	2.0[FB]	2.2[FB]	0.93[J]	<0.54
Cyanide	mg/L	0.0034[J,FB,EB]	<0.0050[RL,FB,EB]	<0.0050[RL,FB,EB]	0.0030[J,FB,EB]	0.0023[J,FB,EB]	0.0026[J,FB,EB]	<0.0012[FB,EB]	<0.0012[FB,EB]	0.0026[J,FB,EB]	0.0023[J]	0.0026[J]
Oil & Grease	mg/L	<1.0	<5.0[RL]	<5.0[RL]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Petroleum Hydrocarbons (TPH)	ug/L	<10	<50[RL]	<50[RL]	<10	<10	<10	<10	<10	<10	<10	<10
MTBE	ug/L	<0.095	<0.50[RL]	<0.50[RL]	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095
Hardness (as $CaCO_3$)	mg/L	7.2[EB]	5.5[EB]	5.3[EB]	3.6[EB]	3.9[EB]	3.6[EB]	3.6[EB]	3.5[EB]	3.4[EB]	<0.19	0.66[J]
Total Alkalinity (as $CaCO_3$)	mg/L	7.6	6.6	<5.0[RL]	4.6[J]	4.4[J]	4.8[J]	4.6[J]	4.4[J]	4.6[J]	<1.0	<1.0
Nutrients												
Nitrate/Nitrite (as N)	mg/L	0.16[J]	<0.40[RL]	<0.40[RL]	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055
Total Kjeldahl Nitrogen (TKN)	mg/L	0.33[FB,EB]	0.33[FB,EB]	0.21[FB,EB]	0.24[FB,EB]	0.23[FB,EB]	0.23[FB,EB]	0.22[FB,EB]	0.25[FB,EB]	0.21[FB,EB]	0.20	0.36
Ammonia (as N)	mg/L	0.047[J]	<0.10[RL]	<0.10[RL]	0.047[J]	0.042[J]	0.045[J]	0.034[J]	0.038[J]	<0.025	<0.025	<0.025
Total Phosphorous (as P)	mg/L	<0.023	<0.050[RL]	<0.050[RL]	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023
Orthophosphate (as PO_4^{3-})	mg/L	<0.0051	<0.15[RL]	<0.15[RL]	0.026[J]	0.018[J]	<0.0051	0.0059[J]	0.0099[J]	0.0059[J]	<0.0051	<0.0051
Trace Elements												
Aluminum (Total)	ug/L	73[FB,EB]	26[FB,EB]	23[FB,EB]	28[FB,EB]	27[FB,EB]	28[FB,EB]	22[FB,EB]	27[FB,EB]	27[FB,EB]	9.6[J]	2.0[J]
Aluminum (Dissolved)	ug/L	16[J,EB]	<20[RL,EB]	<20[RL,EB]	6.9[J,EB]	3.6[J,EB]	9.0[J,EB]	4.0[J,EB]	8.2[J,EB]	6.8[J,EB]	<0.52	1.1[J]
Arsenic (Total)	ug/L	2.04	0.21[J]	0.22[J]	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
Arsenic (Dissolved)	ug/L	1.74	0.27[J]	0.22[J]	<0.12	1.34	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
Barium (Total)	ug/L	5.4	<5.0[RL]	<5.0[RL]	3.3[J]	3.7[J]	3.3[J]	3.4[J]	3.2[J]	3.0[J]	<0.14	<0.14
Cadmium (Total)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Cadmium (Dissolved)	ug/L	<0.02	<0.02	<0.02	<0.02	**0.26[5]**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Copper (Total)	ug/L	0.53[FB]	0.24[FB]	0.15[FB]	0.24[FB]	0.17[FB]	0.28[FB]	0.14[FB]	0.23[FB]	0.16[FB]	0.05[J]	<0.04

Analyte	Units	R-IS-18-RR-SUR	R-IS-19-BI-SUR	R-IS-19-BI-BOT	R-IS-1-LL-SUR	R-IS-1-LL-BOT	R-IS-2-LL-SUR	R-IS-2-LL-BOT	R-IS-3-LL-SUR	R-IS-3-LL-BOT	Field Blank	Equipment Blank
Copper (Dissolved)	ug/L	0.47	0.20	0.14	0.17	0.41	0.20	0.15	0.19	0.18	<0.04	<0.04
Iron (Total)	ug/L	**610[FB,2]**	<100[RL,FB]	<100[RL,FB]	23[J,FB]	49[J,FB]	17[J,FB]	22[J,FB]	17[J,FB]	18[J,FB]	15[J]	<9.1
Iron (Dissolved)	ug/L	7.5[J]	<100[RL]	<100[RL]	<6.8	<6.8	<6.8	<6.8	<6.8	10[J]	<6.8	<6.8
Lead (Total)	ug/L	0.086	0.008[J]	<0.007	<0.007	0.012[J]	0.009[J]	0.008[J]	0.014[J]	0.009[J]	<0.007	<0.007
Lead (Dissolved)	ug/L	0.065	<0.007	<0.007	<0.007	**0.127[5]**	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
Manganese	ug/L	20[FB]	7.3[FB]	8.4[FB]	2.7[FB]	12[FB]	2.2[FB]	7.0[FB]	2.3[FB]	2.4[FB]	0.22[J]	<0.05
Mercury (Total)	ng/L	1.68	0.80	1.60	0.52	0.56	0.42[J]	1.06	0.42[J]	0.52	<0.22	<0.22
Methyl mercury	ng/L	0.163	0.033[J]	0.129	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017
Nickel (Total)	ug/L	0.17	0.06[J]	0.07[J]	0.13	0.10	0.14	0.09[J]	0.14	0.16	<0.02	<0.02
Nickel (Dissolved)	ug/L	0.14	0.06[J]	0.05[J]	0.10	0.33	0.13	0.08[J]	0.12	0.10	<0.02	<0.02
Selenium (Total)	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Selenium (Dissolved)	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Silver (Total)[1]	ug/L	<0.070	**<0.50[RL,3,4]**	**<0.50[RL,3,4]**	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070
Silver (Dissolved)	ug/L	<0.15	**<0.50[RL5]**	**<0.50[RL5]**	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Zinc (Total)	ug/L	0.46[J,FB,EB]	<0.12[FB,EB]	2.31[FB,EB]	0.38[J,FB,EB]	2.09[FB,EB]	0.52[FB,EB]	1.83[FB,EB]	0.48[J,FB,EB]	1.37[FB,EB]	0.66	1.06
Zinc (Dissolved)	ug/L	0.43[J]	0.30[J]	1.73	0.35[J]	2.91	0.43[J]	0.63	0.38[J]	0.53	<0.12	<0.12
Standard Minerals												
Calcium	ug/L	2600[FB]	1700[FB]	1700[FB]	1200[FB]	1300[FB]	1300[FB]	1200[FB]	1200[FB]	1200[FB]	29[J]	<27
Chloride	mg/L	0.78[FB,EB]	<0.50[FB,EB]	<0.50[FB,EB]	0.38[J,FB,EB]	0.38[J,FB,EB]	0.46[J,FB,EB]	0.38[J,FB,EB]	0.38[J,FB,EB]	0.38[J,FB,EB]	0.30[J]	0.27[J]
Magnesium	ug/L	190[J]	<1000[RL]	<1000[RL]	110[J]	120[J]	120[J]	110[J]	110[J]	110[J]	<21	<21
Potassium	ug/L	480[J,FB,EB]	<1000[RL,FB,EB]	<1000[RL,FB,EB]	850[J,FB,EB]	640[J,FB,EB]	700[J,FB,EB]	600[J,FB,EB]	550[J,FB,EB]	640[J,FB,EB]	180[J]	350[J]
Sodium	ug/L	570[J,EB]	<1000[EB]	<1000[EB]	810[J,EB]	590[J,EB]	530[J,EB]	700[J,EB]	520[J,EB]	480[J,EB]	<34	920[J]
Sulfate (as SO_4^{2-})	mg/L	1.1	0.61	0.64	0.56	0.56	0.59	0.55	0.58	0.58	<0.038	<0.038

mg/L = milligrams per liter
ng/L = nanograms per liter
ug/L = micrograms per liter
SUR = suffix indicates a surface sample taken at or above approximately one-third of the water depth
BOT = suffix indicates a sample taken near the reservoir bottom

[1] Although both the method detection limit (MDL) and one-half the MDL are greater than water quality standards for total silver, <MDL and non-detect results are not classified as exceedances of water quality standards.
[2] Exceeds Basin Plan water quality objectives (CRWQCB 2019, SMUD 2021)
[3] Exceeds National Recommended Water Quality Criteria (EPA 1986)
[4] Exceeds California Toxics Rule Standards (EPA 2000)
[5] Exceeds U.S. Environmental Protection Agency National Recommended Water Quality Criteria, hardness-dependent acute and/or chronic criteria (EPA 2022) (Appendix C, Table C-14)
[EB] Equipment Blank was greater than the MDL for this analyte. Equipment Blank for Summer sampling event corresponded to sample "R-IS-21-EB."
[FB] Field Blank was greater than the MDL for this analyte. Field blank for Summer sampling event corresponded to sample "IS-10-SFSC-FB."
[J] Result falls between MDL and reporting limit (RL).
[RL] Laboratory reported result as <RL.

Table C-6 (continued). General Chemistry Results for Upper American River Project Reservoir Sites during the Summer Sampling Event.

Analyte	Units	R-IS-4-GC-SUR	R-IS-4-GC-BOT	R-IS-9-IHR-SUR	R-IS-9-IHR-BOT	R-IS-10-IHR-SUR	R-IS-10-IHR-BOT	R-IS-11-IHR-SUR	R-IS-11-IHR-BOT	Field Blank	Equipment Blank
Miscellaneous											
Total Suspended Solids (TSS)	mg/L	<2.0	<2.0	<2.0	8.8	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids (TDS)	mg/L	14	11	19	13	16	16	8.0[J]	12	<5.0	<5.0
Total Organic Carbon (TOC)	mg/L	2.1[FB]	2.0[FB]	2.8[FB]	2.1[FB]	2.9[FB]	2.7[FB]	2.8[FB]	2.0[FB]	0.93[J]	<0.54
Cyanide	mg/L	<0.0012[FB,EB]	<0.0012[FB,EB]	<0.0012[FB,EB]	0.0038[J,FB,EB]	<0.0012[FB,EB]	<0.0012[FB,EB]	<0.0012[FB,EB]	<0.0012[FB,EB]	0.0023[J]	0.0026[J]
Oil & Grease	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Petroleum Hydrocarbons (TPH)	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
MTBE	ug/L	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095
Hardness (as $CaCO_3$)	mg/L	4.0[EB]	4.1[EB]	4.4[EB]	5.1[EB]	4.6[EB]	4.3[EB]	4.6[EB]	4.8[EB]	<0.19	0.66[J]
Total Alkalinity (as $CaCO_3$)	mg/L	6.0	5.4	4.0[J]	6.0	6.2	6.0	5.6	4.6[J]	<1.0	<1.0
Nutrients											
Nitrate/Nitrite (as N)	mg/L	<0.055	<0.055	0.46	0.11[J]	<0.055	<0.055	<0.055	0.12[J]	<0.055	<0.055
Total Kjeldahl Nitrogen (TKN)	mg/L	<0.04[FB,EB]	<0.04[FB,EB]	0.17[J,FB,EB]	0.24[FB,EB]	0.17[J,FB,EB]	0.20[FB,EB]	0.23[FB,EB]	0.071[J,FB,EB]	0.20	0.36
Ammonia (as N)	mg/L	<0.025	<0.025	0.036[J]	0.039[J]	0.040[J]	0.051[J]	0.038[J]	0.060[J]	<0.025	<0.025
Total Phosphorous (as P)	mg/L	<0.023	<0.023	<0.023	0.045[J]	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023
Orthophosphate (as PO_4^{3-})	mg/L	<0.0051	<0.0051	<0.0051	0.014[J]	<0.0051	<0.0051	0.022[J]	<0.0051	<0.0051	<0.0051
Trace Elements											
Aluminum (Total)	ug/L	38[FB,EB]	25[FB,EB]	36[FB,EB]	**120[FB,EB,3]**	32[FB,EB]	35[FB,EB]	32[FB,EB]	32[FB,EB]	9.6[J]	2.0[J]
Aluminum (Dissolved)	ug/L	<0.52EB	40[EB]	7.5[J,EB]	4.5[J,EB]	9.0[J,EB]	11[J,EB]	11[J,EB]	4.8[J,EB]	<0.52	1.1[J]
Arsenic (Total)	ug/L	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
Arsenic (Dissolved)	ug/L	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
Barium (Total)	ug/L	<0.14	<0.14	5.4	10	5.6	5.6	5.6	8.9	<0.14	<0.14
Cadmium (Total)	ug/L	**0.05[J,3]**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Cadmium (Dissolved)	ug/L	0.05[J]	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Copper (Total)	ug/L	0.22[FB]	0.28[FB]	0.14[FB]	0.13[FB]	0.14[FB]	0.08[J,FB]	0.14[FB]	0.10[FB]	0.05[J]	<0.04
Copper (Dissolved)	ug/L	0.20	0.22	0.14	0.12	0.14	0.06[J]	0.13	0.08[J]	<0.04	<0.04
Iron (Total)	ug/L	150[FB]	<9.1[FB]	<9.1[FB]	250[FB]	<9.1[FB]	11[J,FB]	15[J,FB]	110[FB]	15[J]	<9.1
Iron (Dissolved)	ug/L	<6.8	<6.8	9.8[J]	<6.8	<6.8	<6.8	<6.8	13[J]	<6.8	<6.8

Analyte	Units	R-IS-4-GC-SUR	R-IS-4-GC-BOT	R-IS-9-IHR-SUR	R-IS-9-IHR-BOT	R-IS-10-IHR-SUR	R-IS-10-IHR-BOT	R-IS-11-IHR-SUR	R-IS-11-IHR-BOT	Field Blank	Equipment Blank
Lead (Total)	ug/L	0.018[J]	0.018[J]	<0.007	0.013[J]	<0.007	0.008[J]	<0.007	<0.007	<0.007	<0.007
Lead (Dissolved)	ug/L	0.011[J]	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
Manganese	ug/L	7.5[FB]	8.4[FB]	1.8[J,FB]	**91[FB,3,4]**	1.8[J,FB]	1.9[J,FB]	1.7[J,FB]	49[FB]	0.22[J]	<0.05
Mercury (Total)	ng/L	0.73	0.47[J]	0.45[J]	0.71	0.42[J]	0.38[J]	0.36[J]	0.54	<0.22	<0.22
Methyl mercury	ng/L	0.024[J]	<0.017	<0.017	0.026[J]	<0.017	<0.017	<0.017	0.019[J]	<0.017	<0.017
Nickel (Total)	ug/L	0.16	0.14	0.04[J]	0.05[J]	0.04[J]	0.04[J]	0.04[J]	0.05[J]	<0.02	<0.02
Nickel (Dissolved)	ug/L	0.13	0.11	0.04[J]	0.05[J]	0.04[J]	0.03[J]	0.04[J]	0.03[J]	<0.02	<0.02
Selenium (Total)	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Selenium (Dissolved)	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Silver (Total)[1]	ug/L	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070
Silver (Dissolved)	ug/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Zinc (Total)	ug/L	0.99[FB,EB]	3.78[FB,EB]	0.31[J,FB,EB]	1.30[FB,EB]	<0.12[FB,EB]	3.20[FB,EB]	0.24[J,FB,EB]	1.29[FB,EB]	0.66	1.06
Zinc (Dissolved)	ug/L	0.84	3.37	0.23[J]	0.92	0.40[J]	2.78	0.26[J]	1.15	<0.12	<0.12
Standard Minerals											
Calcium	ug/L	1300[FB]	1300[FB]	1400[FB]	1600[FB]	1400[FB]	1300[FB]	1400[FB]	1500[FB]	29[J]	<27
Chloride	mg/L	0.59[FB,EB]	0.54[FB,EB]	0.51[FB,EB]	1.1[FB,EB]	0.51[FB,EB]	0.49[J,FB,EB]	0.55[FB,EB]	0.93[FB,EB]	0.30[J]	0.27[J]
Magnesium	ug/L	<21	<21	220[J]	250[J]	230[J]	220[J]	230[J]	240[J]	<21	<21
Potassium	ug/L	<61[FB,EB]	<61[FB,EB]	700[J,FB,EB]	630[J,FB,EB]	440[J,FB,EB]	410[J,FB,EB]	560[J,FB,EB]	510[J,FB,EB]	180[J]	350[J]
Sodium	ug/L	<34[EB]	<34[EB]	1100[EB]	1000[EB]	1000[EB]	980[J,EB]	1000[EB]	940[J,EB]	<34	920[J]
Sulfate (as SO_4^{2-})	mg/L	0.62	0.64	0.63	1.2	0.64	0.63	0.64	1.2	<0.038	<0.038

mg/L = milligrams per liter
ng/L = nanograms per liter
ug/L = micrograms per liter
SUR = suffix indicates a surface sample taken at or above approximately one-third of the water depth
BOT = suffix indicates a sample taken near the reservoir bottom
[1] Although both the method detection limit (MDL) and one-half the MDL are greater than water quality standards for total silver, <MDL and non-detect results are not classified as exceedances of water quality standards.
[2] Exceeds Basin Plan water quality objectives (CRWQCB 2019, SMUD 2021)
[3] Exceeds National Recommended Water Quality Criteria (EPA 1986)
[4] Exceeds California Toxics Rule Standards (EPA 2000)
[5] Exceeds U.S. Environmental Protection Agency National Recommended Water Quality Criteria, hardness-dependent acute and/or chronic criteria (EPA 2022) (Appendix C, Table C-14)
[EB] Equipment Blank was greater than the MDL for this analyte. Equipment Blank for Summer sampling event corresponded to sample "R-IS-21-EB."
[FB] Field Blank was greater than the MDL for this analyte. Field blank for Summer sampling event corresponded to sample "IS-10-SFSC-FB."
[J] Result falls between MDL and reporting limit (RL).
[RL] Laboratory reported result as <RL.

Table C-6 (continued). General Chemistry Results for Upper American River Project Reservoir Sites during the Summer Sampling Event.

Analyte	Units	R-IS-5-UVR-SUR	R-IS-5-UVR-BOT	R-IS-7-UVR-SUR	R-IS-7-UVR-BOT	R-IS-6-UVR-SUR	R-IS-6-UVR-BOT	R-IS-8-UVR-SUR	R-IS-8-UVR-BOT	R-IS-12-JR-SUR	R-IS-12-JR-BOT	R-IS-13-CR-SUR	R-IS-20-BC-SUR	R-IS-20-BC-BOT	R-IS-14-SC-SUR	R-IS-14-SC-BOT	R-IS-15-SC-SUR	Field Blank	Equipment Blank
Miscellaneous																			
Total Suspended Solids (TSS)	mg/L	<2.0	4.0[J]	<2.0	<2.0	<2.0	<2.0	<2.0	8.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids (TDS)	mg/L	31	13	31	14	14	16	21	10	22	25	20	24	20	28	30	39	<5.0	<5.0
Total Organic Carbon (TOC)	mg/L	2.8[FB]	2.7[FB]	2.5[FB]	2.5[FB]	2.4[FB]	2.2[FB]	2.5[FB]	2.2[FB]	2.2[FB]	2.2[FB]	2.0[FB]	1.4[FB]	1.5[FB]	2.0[FB]	2.0[FB]	2.1[FB]	0.93[J]	<0.54
Cyanide	mg/L	0.0019[J,FB,EB]	<0.0012[FB,EB]	<0.0012[FB,EB]	<0.0012[FB,EB]	0.0026[J,FB,EB]	<0.0012[FB,EB]	<0.0012[FB,EB]	<0.0012[FB,EB]	0.0023[J,FB,EB]	<0.0012[FB,EB]	<0.0012[FB,EB]	<0.0012[FB,EB]	<0.0012[FB,EB]	0.0019[J,FB,EB]	<0.0012[FB,EB]	<0.0012[FB,EB]	0.0023[J]	0.0026[J]
Oil & Grease	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0
Total Petroleum Hydro-carbons (TPH)	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
MTBE	ug/L	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095
Hardness (as $CaCO_3$)	mg/L	5.1[EB]	5.3[EB]	5.1[EB]	4.9[EB]	4.4[EB]	4.7[EB]	4.5[EB]	4.3[EB]	5.1[EB]	5.0[EB]	5.2[EB]	8.9[EB]	7.6[EB]	10[EB]	8.2[EB]	10[EB]	<0.19	0.66[J]
Total Alkalinity (as $CaCO_3$)	mg/L	7.6	6.4	7.0	7.0	7.0	7.0	6.8	5.6	8.2	8.0	8.6	11	10	14	11	14	<1.0	<1.0
Nutrients																			
Nitrate/ Nitrite (as N)	mg/L	<0.055	<0.055	<0.055	<0.055	<0.055	0.060[J]	<0.055	0.060[J]	0.084[J]	0.062[J]	0.072[J]	<0.055	<0.055	<0.055	0.059[J]	<0.055	<0.055	<0.055
Total Kjeldahl Nitrogen (TKN)	mg/L	0.27[FB,EB]	0.25[FB,EB]	0.24[FB,EB]	0.27[FB,EB]	0.26[FB,EB]	0.18[J,FB,EB]	0.19[J,FB,EB]	0.31[FB,EB]	0.31[FB,EB]	0.39[FB,EB]	0.31[FB,EB]	0.34[FB,EB]	0.36[FB,EB]	0.24[FB,EB]	0.24[FB,EB]	0.18[J,FB,EB]	0.20	0.36
Ammonia (as N)	mg/L	0.028[J]	0.036[J]	0.030[J]	0.026[J]	<0.025	0.043[J]	0.035[J]	0.033[J]	<0.025	0.030[J]	<0.025	<0.025	<0.025	<0.025	0.026[J]	<0.025	<0.025	<0.025
Total Phos-	mg/L	0.034[J]	0.045[J]	0.028[J]	0.045[J]	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023

Analyte	Units	R-IS-5-UVR-SUR	R-IS-5-UVR-BOT	R-IS-7-UVR-SUR	R-IS-7-UVR-BOT	R-IS-6-UVR-SUR	R-IS-6-UVR-BOT	R-IS-8-UVR-SUR	R-IS-8-UVR-BOT	R-IS-12-JR-SUR	R-IS-12-JR-BOT	R-IS-13-CR-SUR	R-IS-20-BC-SUR	R-IS-20-BC-BOT	R-IS-14-SC-SUR	R-IS-14-SC-BOT	R-IS-15-SC-SUR	Field Blank	Equipment Blank
phorous (as P)																			
Ortho-phosphate (as PO_4^{3-})	mg/L	0.018[J]	<0.0051	0.034[J]	0.026[J]	0.0059[J]	0.0099[J]	<0.0051	0.0099[J]	0.055[J]	0.14[J]	0.014[J]	<0.0051	<0.0051	0.034[J]	0.0099[J]	0.018[J]	<0.0051	<0.0051
Trace Elements																			
Aluminum (Total)	ug/L	27[FB,EB]	**170[FB,EB,2]**	26[FB,EB]	25[FB,EB]	24[FB,EB]	26[FB,EB]	22[FB,EB]	**96[FB,EB,2]**	14[J,FB,EB]	20[FB,EB]	20[FB,EB]	1.6[FB,EB]	1.6[FB,EB]	24[FB,EB]	42[FB,EB]	15[J,FB,EB]	9.6[J]	2.0[J]
Aluminum (Dissolved)	ug/L	7.3[J,EB]	5.2[J,EB]	7.5[J,EB]	9.2[J,EB]	7.5[J,EB]	3.2[J,EB]	5.4[J,EB]	3.3[J,EB]	13[J,EB]	17[J,EB]	18[J,EB]	<0.52[EB]	<0.52[EB]	7.1[J,EB]	8.6[J,EB]	7.5[J,EB]	<0.52	1.1[J]
Arsenic (Total)	ug/L	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	0.17[J]	0.13[J]	0.18[J]	<0.12	<0.12
Arsenic (Dissolved)	ug/L	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	0.18[J]	0.13[J]	0.17[J]	<0.12	<0.12
Barium (Total)	ug/L	5.6	7.6	5.5	5.2	5.6	5.9	5.8	6.4	9.0	6.6	8.3	12	11	11	8.9	12	<0.14	<0.14
Cadmium (Total)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Cadmium (Dissolved)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Copper (Total)	ug/L	0.19[FB]	0.12[FB]	0.20[FB]	0.16[FB]	0.18[FB]	0.19[FB]	0.19[FB]	0.15[FB]	0.14[FB]	0.17[FB]	0.23[FB]	0.09[JFB]	0.12[FB]	0.26[FB]	0.22[FB]	0.22[FB]	0.05[J]	<0.04
Copper (Dissolved)	ug/L	0.17	0.12	0.17	0.22	0.17	0.12	0.18	0.12	0.13	0.15	0.20	0.08[J]	0.10	0.22	0.15	0.24	<0.04	<0.04
Iron (Total)	ug/L	12[JFB]	140[FB]	11[JFB]	<9.1[FB]	<9.1[FB]	31[JFB]	17[JFB]	91[JFB]	38[JFB]	30[JFB]	31[JFB]	<9.1[FB]	<9.1[FB]	35[JFB]	49[JFB]	27[JFB]	15[J]	<9.1
Iron (Dissolved)	ug/L	<6.8	<6.8	<6.8	12[J]	<6.8	<6.8	6.9[J]	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8
Lead (Total)	ug/L	0.008[J]	0.014[J]	0.008[J]	<0.007	<0.007	<0.007	<0.007	<0.007	0.017[J]	<0.007	0.008[J]	0.014[J]	0.025[J]	0.020[J]	0.042[J]	0.012[J]	<0.007	<0.007
Lead (Dissolved)	ug/L	<0.007	<0.007	<0.007	0.030[J]	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	0.008[J]	<0.007	0.008[J]	<0.007	<0.007
Manganese	ug/L	2.5[FB]	22[FB]	2.1[FB]	2.0[FB]	2.1[FB]	5.1[FB]	2.0[FB]	8.8[FB]	8.1[FB]	7.6[FB]	4.8[FB]	2.7[FB]	36[FB]	9.1[FB]	13[FB]	9.1[FB]	0.22[J]	<0.05
Mercury (Total)	ng/L	0.27[J]	0.32[J]	0.29[J]	0.85	0.28[J]	0.57	0.30[J]	0.69	0.47[J]	0.74	0.61	<0.22	0.39[J]	1.15	0.56	0.31[J]	<0.22	<0.22
Methyl mercury	ng/L	<0.017	<0.017	<0.017	0.041[J]	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	0.019[J]	<0.017	<0.017	0.038[J]	0.031[J]	<0.017	<0.017	<0.017
Nickel (Total)	ug/L	0.09[J]	0.08[J]	0.11	0.10	0.10	0.09[J]	0.09[J]	0.09[J]	0.07[J]	0.10	0.14	0.09[J]	0.10	0.10	0.10	0.08[J]	<0.02	<0.02
Nickel (Dissolved)	ug/L	0.08[J]	0.09[J]	0.09[J]	0.10	0.09[J]	0.09[J]	0.09[J]	0.08[J]	0.06[J]	0.10	0.14	0.07[J]	0.07[J]	0.07[J]	0.09[J]	0.07[J]	<0.02	<0.02
Selenium (Total)	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3

Analyte	Units	R-IS-5-UVR-SUR	R-IS-5-UVR-BOT	R-IS-7-UVR-SUR	R-IS-7-UVR-BOT	R-IS-6-UVR-SUR	R-IS-6-UVR-BOT	R-IS-8-UVR-SUR	R-IS-8-UVR-BOT	R-IS-12-JR-SUR	R-IS-12-JR-BOT	R-IS-13-CR-SUR	R-IS-20-BC-SUR	R-IS-20-BC-BOT	R-IS-14-SC-SUR	R-IS-14-SC-BOT	R-IS-15-SC-SUR	Field Blank	Equipment Blank
Selenium (Dissolved)	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Silver (Total)[1]	ug/L	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070
Silver (Dissolved)	ug/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	**0.17**[J3]	<0.15	<0.15	<0.15
Zinc (Total)	ug/L	0.16[J,FB,EB]	1.49[FB,EB]	0.70[FB,EB]	0.76[FB,EB]	0.29[J,FB,EB]	0.73[FB,EB]	ND[FB,EB]	0.96[FB,EB]	0.29[J,FB,EB]	1.21[FB,EB]	0.71[FB,EB]	0.34[J,FB,EB]	1.95[FB,EB]	0.33[J,FB,EB]	1.98[FB,EB]	<0.12[FB,EB]	0.66	1.06
Zinc (Dissolved)	ug/L	0.21[J]	1.30	0.21[J]	1.40	0.31[J]	1.33	0.21[J]	0.87	0.21[J]	0.87	0.56	0.25[J]	0.57	0.19[J]	2.14	0.44[J]	<0.12	<0.12
Standard Minerals																			
Calcium	ug/L	1200[FB]	1300[FB]	1300[FB]	1200[FB]	1300[FB]	1300[FB]	1400[FB]	1300[FB]	1500[FB]	1500[FB]	1500[FB]	2100[FB]	2000[FB]	2700[FB]	2000[FB]	2800[FB]	29[J]	<27
Chloride	mg/L	0.51[FB,EB]	0.50[FB,EB]	0.55[FB,EB]	0.50[FB,EB]	0.51[FB,EB]	0.53[FB,EB]	0.56[FB,EB]	0.53[FB,EB]	0.56[FB,EB]	0.54[FB,EB]	0.61[FB,EB]	1.1[FB,EB]	0.72[FB,EB]	1.6[FB,EB]	1.2[FB,EB]	2.0[FB,EB]	0.30[J]	0.27[J]
Magnesium	ug/L	290[J]	280[J]	290[J]	290[J]	310[J]	300[J]	310[J]	300[J]	320[J]	310[J]	350[J]	<21	<21	630[J]	440[J]	650[J]	<21	<21
Potassium	ug/L	340[J,FB,EB]	400[J,FB,EB]	460[J,FB,EB]	190[J,FB,EB]	340[J,FB,EB]	260[J,FB,EB]	370[J,FB,EB]	260[J,FB,EB]	630[J,FB,EB]	510[J,FB,EB]	580[J,FB,EB]	1100[FB,EB]	<61[FB,EB]	900[J,FB,EB]	790[J,FB,EB]	960[J,FB,EB]	180[J]	350[J]
Sodium	ug/L	950[J,EB]	900[J,EB]	1000[EB]	970[J,EB]	1100[EB]	980[J,EB]	1100[EB]	980[J,EB]	1000[EB]	980[J,EB]	990[J,EB]	1900[EB]	1300[EB]	2100[EB]	1600[EB]	2200[EB]	<34	920[J]
Sulfate (as SO_4^{2-})	mg/L	0.37[J]	0.41[J]	0.38[J]	0.37[J]	0.37[J]	0.43[J]	0.37[J]	0.43[J]	0.69	0.47[J]	0.52	<0.038	0.53	0.63	0.54	0.49[J]	<0.038	<0.038

mg/L = milligrams per liter
ng/L = nanograms per liter
ug/L = micrograms per liter
SUR = suffix indicates a surface sample taken at or above approximately one-third of the water depth
BOT = suffix indicates a sample taken near the reservoir bottom
[1] Although both the method detection limit (MDL) and one-half the MDL are greater than water quality standards for total silver, <MDL and non-detect results are not classified as exceedances of water quality standards.
[2] Exceeds National Recommended Water Quality Criteria (EPA 1986)
[3] Exceeds U.S. Environmental Protection Agency National Recommended Water Quality Criteria, hardness-dependent acute and/or chronic criteria (EPA 2022) (Appendix C, Table C-14)
[EB] Equipment Blank was greater than the MDL for this analyte. Equipment Blank for Summer sampling event corresponded to sample "R-IS-21-EB."
[FB] Field Blank was greater than the MDL for this analyte. Field blank for Summer sampling event corresponded to sample "IS-10-SFSC-FB."
[J] Result falls between MDL and reporting limit.

Table C-7. General Chemistry Results for Upper American River Project Reservoir Sites during the Fall Sampling Event.

Analyte	Units	R-IS-1-LL-SUR	R-IS-1-LL-BOT	R-IS-2-LL-SUR	R-IS-3-LL-SUR	R-IS-4-GC-SUR	R-IS-9-IHR-SUR	R-IS-9-IHR-BOT	R-IS-10-IHR-SUR	R-IS-10-IHR-BOT	Field Blank	Equipment Blank
Miscellaneous												
Total Suspended Solids (TSS)	mg/L	<2.0	19	<2.0	<2.0	<2.0	<5.0[RL]	<5.0[RL]	<5.0[RL]	<5.0[RL]	<2.0	<2.0
Total Dissolved Solids (TDS)	mg/L	8.0[J]	16	11	8.0[J]	<5.0	23	29	<10	28	<5.0	<5.0
Total Organic Carbon (TOC)	mg/L	1.9	1.8	1.9	1.9	2.0	2.7	2.4	2.7	2.6	<0.54	<0.54
Cyanide	mg/L	0.0034[J,FB]	**0.0090[3,4,FB]**	0.0038[J,FB]	<0.0012[FB]	0.0038[J,FB]	<0.0050[RL,FB]	**0.0064[3,4,FB]**	<0.0050[RL,FB]	<0.0050[RL,FB]	0.0034[J]	<0.0012
Oil & Grease	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0[RL]	<5.0[RL]	<5.6[RL]	<5.0[RL]	<1.0	<1.0
Total Petroleum Hydrocarbons (TPH)	ug/L	<10	<10	<10	<10	<10	<50[RL]	<50[RL]	<50[RL]	<50[RL]	<10	<10
MTBE	ug/L	<0.095	<0.095	<0.095	<0.095	<0.095	<0.50[RL]	<0.50[RL]	<0.50[RL]	<0.50[RL]	<0.095	<0.095
Hardness (as $CaCO_3$)	mg/L	4.2[FB]	4.7[FB]	3.9[FB]	3.9[FB]	5.2[FB]	4.6[FB]	5.8[FB]	4.8[FB]	4.8[FB]	0.28[J]	<0.19
Total Alkalinity (as $CaCO_3$)	mg/L	5.4[FB,EB]	6.2[FB,EB]	8.2[FB,EB]	5.4[FB,EB]	6.4[FB,EB]	8.2[FB,EB]	9.2[FB,EB]	7.8[FB,EB]	8.4[FB,EB]	1.8[J]	1.4[J]
Nutrients												
Nitrate/Nitrite (as N)	mg/L	<0.055	0.073[J]	<0.055	<0.055	<0.055	<0.40[RL]	<0.40[RL]	<0.40[RL]	<0.40[RL]	<0.055	<0.055
Total Kjeldahl Nitrogen (TKN)	mg/L	0.51[FB,EB]	0.38[FB,EB]	0.28[FB,EB]	0.046[J,FB,EB]	0.27[FB,EB]	0.24[FB,EB]	<0.20[RL,FB,EB]	0.23[FB,EB]	0.29[FB,EB]	0.18[J]	0.17[J]
Ammonia (as N)	mg/L	<0.025[FB]	0.038[J,FB]	<0.025[FB]	<0.025[FB]	0.080[J,FB]	<0.10[RL,FB]	<0.10[RL,FB]	<0.10[RL,FB]	<0.10[RL,FB]	0.037[J]	<0.025
Total Phosphorous (as P)	mg/L	<0.023	<0.023	<0.023	<0.023	<0.023	<0.050[RL]	<0.050[RL]	<0.050[RL]	<0.050[RL]	<0.023	<0.023
Orthophosphate (as PO_4^{3-})	mg/L	0.015[J,FB,EB]	<0.0051[FB,EB]	0.023[J,FB,EB]	0.0066[J,FB,EB]	0.11[J,FB,EB]	<0.15[RL,FB,EB]	<0.15[RL,FB,EB]	<0.15[RL,FB,EB]	<0.15[RL,FB,EB]	0.26	0.13[J]
Trace Elements												
Aluminum (Total)	ug/L	19[J,EB]	22[EB]	15[J,EB]	18[J,EB]	13[J,EB]	27[EB]	28[EB]	26[EB]	32[EB]	<1.6	1.8[J]
Aluminum (Dissolved)	ug/L	4.8[J,FB,EB]	4.0[J,FB,EB]	5.4[J,FB,EB]	4.9[J,FB,EB]	4.5[J,FB,EB]	<20[RL,FB,EB]	<20[RL,FB,EB]	<20[RL,FB,EB]	<20[RL,FB,EB]	1.2[J]	15[J]
Arsenic (Total)	ug/L	<0.12	<0.12	<0.12	<0.12	0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
Arsenic (Dissolved)	ug/L	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
Barium (Total)	ug/L	4.2[J]	6.4	4.0[J]	4.0[J]	5.4	6.4	12	6.6	6.7	<0.14	<0.14
Cadmium (Total)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Cadmium (Dissolved)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Copper (Total)	ug/L	0.20	0.21	0.21	0.21	0.21	0.14	0.13	0.13	0.12	<0.04	<0.04
Copper (Dissolved)	ug/L	0.18	0.15	0.19	0.18	0.19	0.14	0.09[J]	0.12	0.09[J]	<0.04	<0.04
Iron (Total)	ug/L	42[J]	33[J]	42[J]	41[J]	150	<100[RL]	**1000[2]**	<100[RL]	<100[RL]	<9.1	<9.1

Analyte	Units	R-IS-1-LL-SUR	R-IS-1-LL-BOT	R-IS-2-LL-SUR	R-IS-3-LL-SUR	R-IS-4-GC-SUR	R-IS-9-IHR-SUR	R-IS-9-IHR-BOT	R-IS-10-IHR-SUR	R-IS-10-IHR-BOT	Field Blank	Equipment Blank
Iron (Dissolved)	ug/L	<6.8	<6.8	<6.8	<6.8	9.5^{J}	<100^{RL}	<100^{RL}	<100^{RL}	<100^{RL}	<6.8	<6.8
Lead (Total)	ug/L	0.013^{J,FB}	0.029^{J,FB}	0.009^{J,FB}	0.012^{J,FB}	0.015^{J,FB}	<0.007^{FB}	0.017^{J,FB}	<0.007^{FB}	<0.007^{FB}	0.011^{J}	<0.007
Lead (Dissolved)	ug/L	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
Manganese	ug/L	13^{FB,EB}	5.6^{FB,EB}	17^{FB,EB}	12^{FB,EB}	12^{FB,EB}	6.1^{FB,EB}	**410^{FB,EB,2,3}**	5.0^{FB,EB}	6.8^{FB,EB}	0.33^{J}	0.47^{J}
Mercury (Total)	ng/L	0.36^{J}	0.40^{J}	0.33^{J}	0.59	0.38^{J}	0.31^{J}	2.24	0.28^{J}	0.30^{J}	<0.22	<0.22
Methyl mercury	ng/L	<0.017^{FB,EB}	<0.017^{FB,EB}	<0.017^{FB,EB}	<0.017^{FB,EB}	0.021^{J,FB,EB}	<0.017^{FB,EB}	0.072^{FB,EB}	<0.017^{FB,EB}	<0.017^{FB,EB}	0.022^{J}	0.026^{J}
Nickel (Total)	ug/L	0.09^{J}	0.09^{J}	0.11	0.09^{J}	0.14	0.04^{J}	0.08^{J}	0.06^{J}	0.05^{J}	<0.02	<0.02
Nickel (Dissolved)	ug/L	0.08^{J}	0.08^{J}	0.07^{J}	0.07^{J}	0.12	0.03^{J}	0.08^{J}	0.03^{J}	0.04^{J}	<0.02	<0.02
Selenium (Total)	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Selenium (Dissolved)	ug/L	0.4^{J}	<0.3	0.3	0.4^{J}	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Silver (Total)[1]	ug/L	<0.070	<0.070	<0.070	<0.070	<0.070	**<0.50^{RL,3,4}**	**<0.50^{RL,3,4}**	**<0.50^{RL3,4}**	**<0.50^{RL3,4}**	<0.070	<0.070
Silver (Dissolved)	ug/L	<0.15	<0.15	<0.15	<0.15	<0.15	**<0.50^{RL,5}**	**<0.50^{RL,5}**	**<0.50^{RL5}**	**<0.50^{RL5}**	<0.15	<0.15
Zinc (Total)	ug/L	0.19^{J,EB}	0.83^{EB}	0.27^{J,EB}	0.23^{J,EB}	0.60^{EB}	<0.12^{EB}	0.60^{EB}	1.35^{EB}	0.25^{J,EB}	<0.12	1.06
Zinc (Dissolved)	ug/L	0.21^{J}	0.70	0.16^{J}	0.21^{J}	0.45^{J}	0.16^{J}	0.77	0.14^{J}	0.28^{J}	<0.12	<0.12
Standard Minerals												
Calcium	ug/L	1300	1500	1300	1400	1800	1500	1700	1500	1400	<27	<27
Chloride	mg/L	0.33^{J,FB,EB}	0.41^{J,FB,EB}	0.33^{J,FB,EB}	0.34^{J,FB,EB}	0.60^{FB,EB}	<0.50^{RL,FB,EB}	<0.50^{RL,FB,EB}	<0.50^{RL,FB,EB}	<0.50^{RL,FB,EB}	0.20^{J}	0.54
Magnesium	ug/L	130^{J}	300^{J}	130^{J}	130^{J}	200^{J}	<1000^{RL}	<1000^{RL}	<1000^{RL}	<1000^{RL}	<21	<21
Potassium	ug/L	340^{J}	400^{J}	580^{J}	610^{J}	240^{J}	<1000^{RL}	<1000^{RL}	<1000^{RL}	<1000^{RL}	<61	<61
Sodium	ug/L	560^{J,FB}	1100^{FB}	660^{J,FB}	550^{J,FB}	960^{J,FB}	1200^{FB}	<1000^{RL,FB}	<1000^{RL,FB}	<1000^{RL,FB}	65^{J}	<34
Sulfate (as SO_4^{2-})	mg/L	0.54	0.51	0.54	0.58	0.62	0.58	0.79	0.59	0.59	<0.038	<0.038

mg/L = milligrams per liter
ng/L = nanograms per liter
ug/L = micrograms per liter
SUR = suffix indicates a surface sample taken at or above approximately one-third of the water depth
BOT = suffix indicates a sample taken near the reservoir bottom

[1] Although both the method detection limit (MDL) and one-half the MDL are greater than water quality standards for total silver, <MDL and non-detect results are not classified as exceedances of water quality standards.
[2] Exceeds Basin Plan water quality objectives (CRWQCB 2019, SMUD 2021)
[3] Exceeds National Recommended Water Quality Criteria (EPA 1986)
[4] Exceeds California Toxics Rule Standards (EPA 2000)
[5] Exceeds U.S. Environmental Protection Agency National Recommended Water Quality Criteria, hardness-dependent acute and/or chronic criteria (EPA 2022) (Appendix C, Table C-15)
[EB] Equipment Blank was greater than the MDL for this analyte. Equipment Blank for Fall sampling event corresponded to sample "R-IS-20-BC-EB."
[FB] Field Blank was greater than the MDL for this analyte. Field blank for Fall sampling event corresponded to sample "R-IS-4-GC-FB."
[J] Result falls between MDL and reporting limit (RL).
[RL] Laboratory reported result as <RL.

Table C-7 (continued). General Chemistry Results for Upper American River Project Reservoir Sites during the Fall Sampling Event.

Analyte	Units	R-IS-11-IHR-SUR	R-IS-11-IHR-BOT	R-IS-5-UVR-SUR	R-IS-7-UVR-SUR	R-IS-7-UVR-BOT	R-IS-6-UVR-SUR	R-IS-6-UVR-BOT	Field Blank	Equipment Blank
Miscellaneous										
Total Suspended Solids (TSS)	mg/L	<5.0[RL]	<5.0[RL]	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids (TDS)	mg/L	28	23	17	17	18	12	13	<5.0	<5.0
Total Organic Carbon (TOC)	mg/L	2.6	2.1	2.3	2.3	2.3	2.3	2.3	<0.54	<0.54
Cyanide	mg/L	<0.0050[RL,FB]	<0.0050[RL,FB]	0.0016[J,FB]	0.0034[J,FB]	0.0031[J,FB]	0.0023[J,FB]	0.0023[J,FB]	0.0034[J]	<0.0012
Oil & Grease	mg/L	<5.0[RL]	<5.0[RL]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Petroleum Hydrocarbons (TPH)	ug/L	<50[RL]	<50[RL]	<10	<10	<10	<10	<10	<10	<10
MTBE	ug/L	<0.50[RL]	<0.50[RL]	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095
Hardness (as $CaCO_3$)	mg/L	4.8[FB]	5.0[FB]	4.8[FB]	4.9[FB]	5.0[FB]	5.0[FB]	5.3[FB]	0.28[J]	<0.19
Total Alkalinity (as $CaCO_3$)	mg/L	8.2[FB,EB]	7.0[FB,EB]	11[FB,EB]	7.8[FB,EB]	8.0[FB,EB]	8.4[FB,EB]	17[FB,EB]	1.8[J]	1.4[J]
Nutrients										
Nitrate/Nitrite (as N)	mg/L	<0.40[RL]	<0.40[RL]	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055
Total Kjeldahl Nitrogen (TKN)	mg/L	0.25[FB,EB]	<0.20[RL,FB,EB]	0.18[J,FB,EB]	0.28[FB,EB]	0.33[FB,EB]	0.43[FB,EB]	0.44[FB,EB]	0.18[J]	0.17[J]
Ammonia (as N)	mg/L	<0.10[RL,FB]	<0.10[RL,FB]	0.035[J,FB]	<0.025[FB]	0.074[J,FB]	0.29[FB]	0.15[FB]	0.037[J]	<0.025
Total Phosphorous (as P)	mg/L	<0.050[RL]	<0.050[RL]	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023
Orthophosphate (as PO_4^{3-})	mg/L	<0.15[RL,FB,EB]	<0.15[RL,FB,EB]	<0.0051[FB,EB]	0.011[J,FB,EB]	0.011[J,FB,EB]	0.0066[J,FB,EB]	0.011[J,FB,EB]	0.26	0.13[J]
Trace Elements										
Aluminum (Total)	ug/L	43[EB]	27[EB]	**230[EB,3]**	28[EB]	81[EB]	24[EB]	21[EB]	<1.6	1.8[J]
Aluminum (Dissolved)	ug/L	<20[RL,FB,EB]	<20[RL,FB,EB]	5.8[J,FB,EB]	7.9[J,FB,EB]	9.8[J,FB,EB]	6.8[J,FB,EB]	11[J,FB,EB]	1.2[J]	15[J]
Arsenic (Total)	ug/L	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
Arsenic (Dissolved)	ug/L	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
Barium (Total)	ug/L	6.3	9.4	6.8	6.6	8.0	6.2	6.5	<0.14	<0.14
Cadmium (Total)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Cadmium (Dissolved)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Copper (Total)	ug/L	0.13	0.12	0.19	0.18	0.24	0.21	0.16	<0.04	<0.04
Copper (Dissolved)	ug/L	0.10	0.11	0.16	0.16	0.14	0.15	0.15	<0.04	<0.04
Iron (Total)	ug/L	<100[RL]	<100[RL]	**1200[2,3]**	22[J]	280	17[J]	110	<9.1	<9.1
Iron (Dissolved)	ug/L	<100[RL]	<100	<6.8	<6.8	39[J]	<6.8	7.3[J]	<6.8	<6.8
Lead (Total)	ug/L	<0.007[FB]	0.008[J,FB]	0.039[J,FB]	<0.007[FB]	0.057[FB]	<0.007[FB]	<0.007[FB]	0.011[J]	<0.007
Lead (Dissolved)	ug/L	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007

Analyte	Units	R-IS-11-IHR-SUR	R-IS-11-IHR-BOT	R-IS-5-UVR-SUR	R-IS-7-UVR-SUR	R-IS-7-UVR-BOT	R-IS-6-UVR-SUR	R-IS-6-UVR-BOT	Field Blank	Equipment Blank
Manganese	ug/L	4.7^{FB,EB}	**59^{FB,EB2,3}**	**160^{FB,EB,2,3}**	5.0^{FB,EB}	31^{FB,EB}	3.8^{FB,EB}	37^{FB,EB}	0.33^{J}	0.47^{J}
Mercury (Total)	ng/L	0.44^{J}	0.46^{J}	0.50	0.42^{J}	5.90	0.29^{J}	0.57	<0.22	<0.22
Methyl mercury	ng/L	<0.017^{FB,EB}	0.017^{FB,EB}	<0.017^{FB,EB}	<0.017^{FB,EB}	0.025^{J,FB,EB}	<0.017^{FB,EB}	<0.017^{FB,EB}	0.022^{J}	0.026^{J}
Nickel (Total)	ug/L	0.04^{J}	0.05^{J}	0.09^{J}	0.09^{J}	0.14	0.09^{J}	0.10	<0.02	<0.02
Nickel (Dissolved)	ug/L	0.04^{J}	0.04^{J}	0.08^{J}	0.07^{J}	0.09^{J}	0.07^{J}	0.09^{J}	<0.02	<0.02
Selenium (Total)	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Selenium (Dissolved)	ug/L	<0.3	<0.3	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Silver (Total)[1]	ug/L	**<0.50^{RL,3,4}**	**<0.50^{RL,3,4}**	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070
Silver (Dissolved)	ug/L	**<0.50^{RL,5}**	**<0.50^{RL,5}**	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Zinc (Total)	ug/L	0.95^{EB}	0.35^{J,EB}	0.15^{J,EB}	<0.12^{EB}	1.00^{EB}	0.46^{J,EB}	0.29^{J,EB}	<0.12	1.06
Zinc (Dissolved)	ug/L	0.15^{J}	0.39^{J}	0.15^{J}	<0.12	0.52	0.36^{J}	0.36^{J}	<0.12	<0.12
Standard Minerals										
Calcium	ug/L	1400	1500	1500	1500	1400	1500	1400	<27	<27
Chloride	mg/L	<0.50^{RL,FB,EB}	<0.50^{RL,FB,EB}	0.45^{J,FB,EB}	0.45^{J,FB,EB}	0.45^{J,FB,EB}	0.46^{J,FB,EB}	0.46^{J,FB,EB}	0.20^{J}	0.54
Magnesium	ug/L	<1000^{RL}	<1000^{RL}	200^{J}	300^{J}	300^{J}	310^{J}	310^{J}	<21	<21
Potassium	ug/L	<1000^{RL}	<1000^{RL}	420^{J}	650^{J}	350^{J}	320^{J}	470^{J}	<61	<61
Sodium	ug/L	<1000^{RL,FB}	<1000^{RL,FB}	660^{J,FB}	1200^{FB}	1000^{FB}	1100^{FB}	1000^{FB}	65^{J}	<34
Sulfate (as SO_4^{2-})	mg/L	0.59	0.82	0.36^{J}	0.35^{J}	0.33^{J}	0.34^{J}	0.34^{J}	<0.038	<0.038

mg/L = milligrams per liter
ng/L = nanograms per liter
ug/L = micrograms per liter
SUR = suffix indicates a surface sample taken at or above approximately one-third of the water depth
BOT = suffix indicates a sample taken near the reservoir bottom

[1] Although both the method detection limit (MDL) and one-half the MDL are greater than water quality standards for total silver, <MDL and non-detect results are not classified as exceedances of water quality standards.
[2] Exceeds Basin Plan water quality objectives (CRWQCB 2019, SMUD 2021)
[3] Exceeds National Recommended Water Quality Criteria (EPA 1986)
[4] Exceeds California Toxics Rule Standards (EPA 2000)
[5] Exceeds U.S. Environmental Protection Agency National Recommended Water Quality Criteria, hardness-dependent acute and/or chronic criteria (EPA 2022) (Appendix C, Table C-15)
[EB] Equipment Blank was greater than the MDL for this analyte. Equipment Blank for Fall sampling event corresponded to sample "R-IS-20-BC-EB."
[FB] Field Blank was greater than the MDL for this analyte. Field blank for Fall sampling event corresponded to sample "R-IS-4-GC-FB."
[J] Result falls between MDL and reporting limit (RL).
[RL] Laboratory reported result as <RL.

Table C-7 (continued). General Chemistry Results for Upper American River Project Reservoir Sites during the Fall Sampling Event.

Analyte	Units	R-IS-8-UVR-SUR	R-IS-12-JR-SUR	R-IS-13-CR-SUR	R-IS-20-BC-SUR	R-IS-20-BC-BOT	R-IS-14-SC-SUR	R-IS-14-SC-BOT	R-IS-15-SC-SUR	Field Blank	Equipment Blank
Miscellaneous											
Total Suspended Solids (TSS)	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids (TDS)	mg/L	15	14	21	11	9.0[J]	25	20	24	<5.0	<5.0
Total Organic Carbon (TOC)	mg/L	2.3	2.2	2.0	0.95[J]	1.6	2.1	2.1	2.0	<0.54	<0.54
Cyanide	mg/L	0.0031[J,FB]	<0.0012[FB]	<0.0012[FB]	0.0038[J,FB]	0.0042[J,FB]	<0.0012[FB]	<0.0012[FB]	<0.0012[FB]	0.0034[J]	<0.0012
Oil & Grease	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Petroleum Hydrocarbons (TPH)	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
MTBE	ug/L	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095
Hardness (as $CaCO_3$)	mg/L	4.9[FB]	5.6[FB]	5.7[FB]	8.9[FB]	7.2[FB]	8.1[FB]	7.3[FB]	8.3[FB]	0.28[J]	<0.19
Total Alkalinity (as $CaCO_3$)	mg/L	7.8[FB,EB]	7.6[FB,EB]	7.6[FB,EB]	9.4[FB,EB]	9.4[FB,EB]	10[FB,EB]	9.6[FB,EB]	10[FB,EB]	1.8[J]	1.4[J]
Nutrients											
Nitrate/Nitrite (as N)	mg/L	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055
Total Kjeldahl Nitrogen (TKN)	mg/L	0.35[FB,EB]	0.38[FB,EB]	0.44[FB,EB]	0.22[FB,EB]	0.088[J,FB,EB]	0.32[FB,EB]	0.30[FB,EB]	0.31[FB,EB]	0.18[J]	0.17[J]
Ammonia (as N)	mg/L	0.026[J,FB]	<0.025[FB]	<0.025[FB]	0.031[J,FB]	0.035[J,FB]	<0.025[FB]	<0.025[FB]	<0.025[FB]	0.037[J]	<0.025
Total Phosphorous (as P)	mg/L	<0.023	<0.025	<0.025	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023
Orthophosphate (as PO_4^{3-})	mg/L	0.019[J,FB,EB]	<0.0051[FB,EB]	<0.0051[FB,EB]	0.18[FB,EB]	0.085[J,FB,EB]	0.16[FB,EB]	<0.0051[FB,EB]	<0.0051[FB,EB]	0.26	0.13[J]
Trace Elements											
Aluminum (Total)	ug/L	27[EB]	21[EB]	<1.6[EB]	9.0[JEB]	21[EB]	25[EB]	28[EB]	<1.6[EB]	<1.6	1.8[J]
Aluminum (Dissolved)	ug/L	7.4[J,FB,EB]	<0.52[FB,EB]	<0.52[FB,EB]	3.1[J,FB,EB]	21[FB,EB]	<0.52[FB,EB]	<0.52[FB,EB]	<0.52[FB,EB]	1.2[J]	15[J]
Arsenic (Total)	ug/L	<0.12	<0.12	<0.12	<0.12	<0.12	0.12	0.36[J]	<0.12	<0.12	<0.12
Arsenic (Dissolved)	ug/L	<0.12	<0.12	<0.12	<0.12	<0.12	0.13[J]	<0.12	<0.12	<0.12	<0.12
Barium (Total)	ug/L	6.6	7.5	7.8	13	11	9.8	9.2	10	<0.14	<0.14
Cadmium (Total)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03[J]	<0.02	<0.02	<0.02
Cadmium (Dissolved)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Copper (Total)	ug/L	0.18	0.19	0.20	0.09[J]	0.16	0.23	**1.90[2,3]**	0.20	<0.04	<0.04
Copper (Dissolved)	ug/L	0.16	0.16	0.20	0.07[J]	0.12	0.20	0.19	0.19	<0.04	<0.04
Iron (Total)	ug/L	18[J]	<9.1	<9.1	33[J]	74[J]	<9.1	<9.1	<9.1	<9.1	<9.1
Iron (Dissolved)	ug/L	<6.8	<6.8	<6.8	7.2[J]	6.9[J]	<6.8	<6.8	<6.8	<6.8	<6.8
Lead (Total)	ug/L	<0.007[FB]	<0.007[FB]	0.007[FB]	0.012[J,FB]	0.025[J,FB]	0.007[FB]	**1.54[FB3,4]**	<0.007[FB]	0.011[J]	<0.007
Lead (Dissolved)	ug/L	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007

Analyte	Units	R-IS-8-UVR-SUR	R-IS-12-JR-SUR	R-IS-13-CR-SUR	R-IS-20-BC-SUR	R-IS-20-BC-BOT	R-IS-14-SC-SUR	R-IS-14-SC-BOT	R-IS-15-SC-SUR	Field Blank	Equipment Blank
Manganese	ug/L	3.7[FB,EB]	9.8[FB,EB]	7.5[FB,EB]	7.1[FB,EB]	30[FB,EB]	12[FB,EB]	9.3[FB,EB]	5.0[FB,EB]	0.33[J]	0.47[J]
Mercury (Total)	ng/L	0.51	0.74	0.56	0.22	0.42[J]	0.32[J]	4.30	0.38[J]	<0.22	<0.22
Methyl mercury	ng/L	<0.017[FB,EB]	<0.017[FB,EB]	<0.017[FB,EB]	<0.017[FB,EB]	<0.017[FB,EB]	<0.017[FB,EB]	0.444[FB,EB]	<0.017[FB,EB]	0.022[J]	0.026[J]
Nickel (Total)	ug/L	0.09[J]	0.12	0.10	0.06[J]	0.10	0.10	0.79	0.07[J]	<0.02	<0.02
Nickel (Dissolved)	ug/L	0.07[J]	0.10	0.09[J]	0.06[J]	0.08[J]	0.08[J]	0.06[J]	0.07[J]	<0.02	<0.02
Selenium (Total)	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Selenium (Dissolved)	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Silver (Total)[1]	ug/L	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070
Silver (Dissolved)	ug/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Zinc (Total)	ug/L	0.13[JEB]	0.84[EB]	0.17[JEB]	3.16[EB]	0.81[EB]	0.96[EB]	6.00[EB]	<0.12[EB]	<0.12	1.06
Zinc (Dissolved)	ug/L	<0.12	0.66	0.29[J]	<0.12	0.84	1.68	0.18[J]	0.14[J]	<0.12	<0.12
Standard Minerals											
Calcium	ug/L	1400	1700	1700	2300	2000	2400	2200	2400	<27	<27
Chloride	mg/L	0.45[J,FB,EB]	0.53[FB,EB]	0.51[FB,EB]	1.0[FB,EB]	0.68[FB,EB]	1.3[FB,EB]	1.2[FB,EB]	1.3[FB,EB]	0.20[J]	0.54
Magnesium	ug/L	300[J]	<21	<21	790[J]	570[J]	<21	<21	<21	<21	<21
Potassium	ug/L	440[J]	1300	1200	430[J]	310[J]	<61	<61	<61	<61	<61
Sodium	ug/L	1100[FB]	2000[FB]	1600[FB]	1700[FB]	1400[FB]	1700[FB]	1600[FB]	1700[FB]	65[J]	<34
Sulfate (as SO_4^{2-})	mg/L	0.35[J]	0.50	<0.038	0.46[J]	0.46[J]	0.51	<0.038	0.51	<0.038	<0.038

mg/L = milligrams per liter
ng/L = nanograms per liter
ug/L = micrograms per liter
SUR = suffix indicates a surface sample taken at or above approximately one-third of the water depth
BOT = suffix indicates a sample taken near the reservoir bottom
[1] Although both the method detection limit (MDL) and one-half the MDL are greater than water quality standards for dissolved silver, <MDL and non-detect results are not classified as exceedances of water quality standards.
[2] Exceeds Basin Plan water quality objectives (CRWQCB 2019, SMUD 2021)
[3] Exceeds California Toxics Rule Standards (EPA 2000)
[4] Exceeds National Recommended Water Quality Criteria (EPA 1986)
[EB] Equipment Blank was greater than the MDL for this analyte. Equipment Blank for Fall sampling event corresponded to sample "R-IS-20-BC-EB."
[FB] Field Blank was greater than the MDL for this analyte. Field blank for Fall sampling event corresponded to sample "R-IS-4-GC-FB."
[J] Result falls between MDL and reporting limit.

Table C-8. General Chemistry Results for Upper American River Project Reservoir Sites during the Fall/Winter Sampling Event.

Analyte	Units	R-IS-19-BI-SUR	R-IS-9-IHR-SUR	R-IS-10-IHR-SUR	R-IS-11-IHR-SUR	R-IS-5-UVR-SUR	R-IS-7-UVR-SUR	R-IS-6-UVR-SUR	R-IS-8-UVR-SUR	R-IS-13-CR-SUR	R-IS-20-BC-SUR	R-IS-14-SC-SUR	R-IS-15-SC-SUR	Field Blank
Miscellaneous														
Total Suspended Solids (TSS)	mg/L	<2.0	<5.0[RL]	<5.0[RL]	<5.0[RL]	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids (TDS)	mg/L	18[FB]	26[FB]	30[FB]	20[FB]	19[FB]	24[FB]	19[FB]	23[FB]	16[FB]	34[FB]	29[FB]	28[FB]	9.0[J]
Total Organic Carbon (TOC)	mg/L	2.7	2.5	2.4	2.4	2.3	2.2	2.2	2.2	2.2	1.1	1.9	1.9	<0.54
Cyanide	mg/L	0.0016[J,FB]	<0.0050[RL,FB]	<0.0050[RL,FB]	<0.0050[RL,FB]	0.0038[J,FB]	**0.0060[FB,2,3]**	0.0049[J,FB]	0.0049[J,FB]	**0.0057[FB,2,3]**	0.0042[J,FB]	0.0034[J,FB]	0.0034[J,FB]	0.0042[J]
Oil & Grease	mg/L	<1.0	<5.0[RL]	<5.0[RL]	<5.0[RL]	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Petroleum Hydrocarbons (TPH)	ug/L	<10	<50[RL]	<50[RL]	<50[RL]	<10	<10	<10	<10	<10	<10	<10	<10	<10
MTBE	ug/L	<0.095	<0.50[RL]	<0.50[RL]	<0.50[RL]	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095
Hardness (as $CaCO_3$)	mg/L	4.6	4.8	4.9	4.7	4.8	4.8	4.9	4.9	5.2	8.6	11	9.8	<0.19
Total Alkalinity (as $CaCO_3$)	mg/L	7.0[FB]	7.4[FB]	6.8[FB]	7.0[FB]	7.6[FB]	7.2[FB]	7.6[FB]	7.4[FB]	7.8[FB]	12[FB]	13[FB]	13[FB]	2.2[J]
Nutrients														
Nitrate/Nitrite (as N)	mg/L	<0.055	<0.40[RL]	<0.40[RL]	<0.40[RL]	<0.055	<0.055	0.15[J]	<0.055	<0.055	<0.055	0.068[J]	<0.055	<0.055
Total Kjeldahl Nitrogen (TKN)	mg/L	0.050[J,FB]	0.23[FB]	0.31[FB]	0.46[FB]	0.21[FB]	0.23[FB]	0.16[J,FB]	0.24[FB]	0.063[J,FB]	0.23[FB]	0.31[FB]	0.30[FB]	0.073[J]
Ammonia (as N)	mg/L	0.048[J,FB]	<0.10[FB]	<0.10[FB]	<0.10[FB]	0.031[J,FB]	0.051[J,FB]	0.073[J,FB]	0.027[J,FB]	0.059[J,FB]	0.045[J,FB]	0.034[J,FB]	0.045[J,FB]	0.061[J]
Total Phosphorous (as P)	mg/L	<0.023	<0.050[RL]	<0.050[RL]	<0.050[RL]	<0.023	<0.023	<0.023	<0.023	0.024[J]	<0.023	<0.023	<0.023	<0.023
Orthophosphate (as PO_4^{3-})	mg/L	<0.0051	<0.15[RL]	<0.15[RL]	<0.15[RL]	<0.0051	0.023[J]	0.0066[J]	0.0066[J]	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051
Trace Elements														
Aluminum (Total)	ug/L	12[J]	<20[RL]	<20[RL]	<20[RL]	17[J]	18[J]	18[J]	18[J]	27	15[J]	15[J]	17[J]	1.6
Aluminum (Dissolved)	ug/L	1.3[J,FB]	<20[RL,FB]	<20[RL,FB]	<20[RL,FB]	4.9[J,FB]	3.6[J,FB]	5.7[J,FB]	6.1[J,FB]	9.8[J,FB]	1.6[J,FB]	10[J,FB]	5.9[J,FB]	10[J]
Arsenic (Total)	ug/L	0.23[J]	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	0.13[J]	<0.12
Arsenic (Dissolved)	ug/L	0.24[J]	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
Barium (Total)	ug/L	4.0[J]	6.9	6.7	6.8	6.4	6.3	6.3	6.5	7.7	13	10	10	<0.14
Cadmium (Total)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Cadmium (Dissolved)	ug/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Copper (Total)	ug/L	0.20	0.12	0.11	0.12	0.17	0.18	0.17	0.18	0.22	0.11	0.22	0.24	<0.04
Copper (Dissolved)	ug/L	0.20	0.18	0.11	0.11	0.16	0.16	0.15	0.17	0.20	0.07[J]	0.19	0.19	<0.04
Iron (Total)	ug/L	89[J]	<100[RL]	<100[RL]	<100[RL]	23[J]	24[J]	25[J]	24[J]	59[J]	44[J]	46[J]	31[J]	<9.1

Analyte	Units	R-IS-19-BI-SUR	R-IS-9-IHR-SUR	R-IS-10-IHR-SUR	R-IS-11-IHR-SUR	R-IS-5-UVR-SUR	R-IS-7-UVR-SUR	R-IS-6-UVR-SUR	R-IS-8-UVR-SUR	R-IS-13-CR-SUR	R-IS-20-BC-SUR	R-IS-14-SC-SUR	R-IS-15-SC-SUR	Field Blank
Iron (Dissolved)	ug/L	16[J]	<100[RL]	<100[RL]	<100[RL]	9.9[J]	15[J]	8.8[J]	8.0[J]	59[J]	<6.8	7.5[J]	<6.8	<6.8
Lead (Total)	ug/L	0.021[J]	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	0.009[J]	0.020[J]	0.010[J]	0.015[J]	<0.007
Lead (Dissolved)	ug/L	0.016[J]	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
Manganese	ug/L	8.8[FB]	18[FB]	23[FB]	21[FB]	5.7[FB]	6.1[FB]	7.3[FB]	7.1[FB]	12[FB]	12[FB]	6.6[FB]	7.8[FB]	0.19[J]
Mercury (Total)	ng/L	0.49[J,FB]	0.31[J,FB]	0.43[J,FB]	0.40[J,FB]	0.42[J,FB]	0.34[J,FB]	0.34[J,FB]	0.42[J,FB]	0.65[FB]	0.29[J,FB]	0.52[FB]	0.49[J,FB]	1.25
Methyl mercury	ng/L	0.026[J]	0.018[J]	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	0.018[J]	0.021[J]	<0.017
Nickel (Total)	ug/L	0.06[J]	0.04[J]	0.04[J]	0.04[J]	0.09[J]	0.09[J]	0.08[J]	0.10	0.14	0.08[J]	0.13	0.08[J]	<0.02
Nickel (Dissolved)	ug/L	0.08[J]	0.06[J]	0.03[J]	0.04[J]	0.09[J]	0.08[J]	0.06[J]	0.07[J]	0.13	0.20	0.08[J]	0.06[J]	<0.02
Selenium (Total)	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Selenium (Dissolved)	ug/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Silver (Total)	ug/L	<0.070	**<0.50[RL,2,3]**	**0.73[2,3]**	**0.51[2,3]**	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070
Silver (Dissolved)	ug/L	<0.15	**<0.50[RL,4]**	**<0.50[RL,4]**	**<0.50[RL,4]**	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Zinc (Total)	ug/L	0.63	<0.12	0.19[J]	<0.12	<0.12	0.16[J]	<0.12	<0.12	0.23[J]	0.95	0.20[J]	0.13[J]	<0.12
Zinc (Dissolved)	ug/L	0.83	0.63	0.14[J]	<0.12	0.16[J]	0.19[J]	<0.12	0.13[J]	0.23[J]	0.70	0.16[J]	<0.12	<0.12
Standard Minerals														
Calcium	ug/L	1600	1500	1600	1500	1500	1400	1500	1500	1500	2200	3200	2900	<27
Chloride	mg/L	0.32[J,FB]	0.68[FB]	0.62[FB]	0.67[FB]	0.45[J,FB]	0.44[J,FB]	0.44[J,FB]	0.44[J,FB]	0.51[FB]	0.94[FB]	2.6[FB]	2.0[FB]	0.20[J]
Magnesium	ug/L	140[J]	<1000[RL]	<1000[RL]	<1000[RL]	290[J]	290[J]	280[J]	290[J]	340[J]	730[J]	680[J]	610[J]	<21
Potassium	ug/L	1200	<1000[RL]	<1000[RL]	<1000[RL]	400[J]	280[J]	320[J]	220[J]	280[J]	390[J]	1700	1100	<61
Sodium	ug/L	1300[FB]	1200[FB]	1100[FB]	1000[FB]	1100[FB]	1000[FB]	1000[FB]	1000[FB]	1200[FB]	1600[FB]	3200[FB]	2400[FB]	140[J]
Sulfate (as SO_4^{2-})	mg/L	0.52	0.62	0.61	0.58	0.33[J]	0.34[J]	0.33[J]	0.34[J]	0.46[J]	0.46[J]	0.63	0.59	<0.038

mg/L = milligrams per liter
ng/L = nanograms per liter
ug/L = micrograms per liter
SUR = suffix indicates a surface sample taken at or above approximately one-third of the water depth
BOT = suffix indicates a sample taken near the reservoir bottom
[1] Although both the method detection limit (MDL) and one-half the MDL are greater than water quality standards for total silver, <MDL and non-detect results are not classified as exceedances of water quality standards.
[2] Exceeds National Recommended Water Quality Criteria (EPA 1986)
[3] Exceeds California Toxics Rule Standards (EPA 2000)
[4] Exceeds U.S. Environmental Protection Agency National Recommended Water Quality Criteria, hardness-dependent acute and/or chronic criteria (EPA 2022) (Appendix C, Table C-16)
[FB] Field Blank was greater than the MDL for this analyte. Field blank for Fall sampling event corresponded to sample "IS-14-SC-FB."
[J] Result falls between MDL and reporting limit (RL).
[RL] Laboratory reported result as <RL.

Table C-9. Dissolved Metals Results for Upper American River Project Riverine Sites during the Spring Sampling Event and EPA Recommended Hardness-Dependent Acute and Chronic Criteria.

Site	Dissolved Metal					Hardness as $CaCO_3$ (mg/L)	Acute Criteria					Chronic Criteria				
	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)[1]	Zinc (ug/L)		Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)
IS-1-RR	<0.02	<0.007	0.07[J]	<0.15[FB]	0.57	5.3[FB]	0.11	2.37	39.01	0.02	9.73	0.08	0.09	4.33	NA	9.81
IS-2-LRR	<0.02	<0.007	0.07[J]	<0.15[FB]	0.52	4.6[FB]	0.10	2.01	34.61	0.02	8.63	0.07	0.08	3.84	NA	8.70
IS-3-LRR	<0.02	<0.007	0.05[J]	<0.15[FB]	0.30[J]	3.5[FB]	0.08	1.46	27.46	0.01	6.84	0.06	0.06	3.05	NA	6.90
IS-4-GC	<0.02	<0.007	0.22	<0.15[FB]	1.08	3.4[FB]	0.08	1.42	26.8	0.01	6.68	0.06	0.06	2.98	NA	6.73
IS-5-GC	<0.02	0.007	0.26	<0.15[FB]	0.84	3.8[FB]	0.08	1.61	29.44	0.01	7.34	0.06	0.06	3.27	NA	7.40
IS-6-GC	<0.02	0.008[J]	0.26	<0.15[FB]	0.68	3.9[FB]	0.09	1.66	30.10	0.01	7.50	0.06	0.06	3.34	NA	7.56
IS-9-GCC	<0.02	<0.007	0.24	<0.15[FB]	0.61	4.2[FB]	0.09	1.81	32.04	0.01	7.99	0.07	0.07	3.56	NA	8.05
IS-7-SFRR	<0.02	<0.007	0.18	<0.15[FB]	0.47[J]	5.0[FB]	0.11	2.21	37.14	0.02	9.26	0.07	0.09	4.12	NA	9.33
IS-8-SFRR	<0.02	<0.007	0.18	<0.15[FB]	0.38[J]	4.7[FB]	0.10	2.06	35.24	0.02	8.78	0.07	0.08	3.91	NA	8.86
IS-10-SFSC	<0.02	<0.007	0.03[J]	<0.15[FB]	0.15[J]	4.8[FB]	0.10	2.11	35.88	0.02	8.94	0.07	0.08	3.98	NA	9.02
IS-11-SFSC	<0.02	<0.007	0.06[J]	<0.15[FB]	0.27[J]	6.3[FB]	0.13	2.89	45.16	0.03	11.26	0.09	0.11	5.02	NA	11.35
IS-12-SC	<0.02	<0.007	0.06[J]	<0.15[FB]	0.27[J]	5.1[FB]	0.11	2.26	37.76	0.02	9.41	0.08	0.09	4.19	NA	9.49
IS-13-SC	<0.02	<0.007	0.16	<0.15[FB]	0.49[J]	7.3[FB]	0.15	3.42	51.15	0.04	12.76	0.10	0.13	5.68	NA	12.86
IS-14-SC	<0.02	<0.007	0.10	<0.15[FB]	0.35[J]	8.2[FB]	0.17	3.91	56.44	0.04	14.08	0.11	0.15	6.27	NA	14.19
IS-15-SFAR	<0.02	0.008[J]	0.05[J]	<0.15[FB]	0.38[J]	15[FB]	0.30	7.79	94.07	0.12	23.48	0.17	0.30	10.45	NA	23.68
IS-16-SFAR	<0.02	<0.007	0.11	<0.15[FB]	0.19[J]	9.8[FB]	0.20	4.79	65.62	0.06	16.37	0.12	0.19	7.29	NA	16.51
IS-17-BC	<0.02	0.009[J]	0.11	<0.15[FB]	0.51	8.3[FB]	0.17	3.96	57.02	0.04	14.22	0.11	0.15	6.33	NA	14.34
IS-19-SFAR	<0.02	<0.007	0.08[J]	<0.15[FB]	0.27[J]	12[FB]	0.25	6.04	77.88	0.08	19.44	0.15	0.24	8.65	NA	19.60
IS-18-SFAR	<0.02	<0.007	0.28	<0.15[FB]	0.33[J]	18[FB]	0.36	9.58	109.76	0.17	27.41	0.20	0.37	12.19	NA	27.63

mg/L = milligrams per liter
ug/L = micrograms per liter
EPA = U.S. Environmental Protection Agency
NA = Chronic criteria not applicable for silver
[1] Although the method detection limit (MDL) is typically greater than the hardness-dependent acute criteria for dissolved silver, <MDL and non-detect results are not classified as exceedances of hardness-dependent acute criteria.
[J] Result falls between MDL and reporting limit.
[FB] Field Blank was greater than the MDL for this analyte. Field blank for Spring sampling event corresponded to sample "IS-20-BC-FB."

Table C-10. Dissolved Metals Results for Upper American River Project Riverine Sites during the Summer Sampling Event and EPA Recommended Hardness-Dependent Acute and Chronic Criteria.

Site	Dissolved Metal					Hardness as $CaCO_3$ (mg/L)	Acute Criteria					Chronic Criteria				
	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)[1]	Zinc (ug/L)		Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)
IS-1-RR	0.02	0.067	0.17	<0.15	0.76	7.3	0.15	3.42	51.15	0.04	12.76	0.10	0.13	5.68	NA	12.86
IS-2-LRR	<0.02	0.009[J]	0.10	**<0.50[RL,2]**	0.44[J]	6.8	0.14	3.15	48.17	0.03	12.01	0.09	0.12	5.35	NA	12.11
IS-3-LRR	<0.02	<0.007	0.05[J]	**<0.50[RL,2]**	<0.12	5.3	0.11	2.37	39.01	0.02	9.73	0.08	0.09	4.33	NA	9.81
IS-4-GC	<0.02	<0.007	0.19	<0.15	0.83	4.1	0.09	1.76	31.40	0.01	7.82	0.06	0.07	3.49	NA	7.89
IS-5-GC	<0.02	0.014[J]	0.15	<0.15	0.53	3.9	0.09	1.66	30.10	0.01	7.50	0.06	0.06	3.34	NA	7.56
IS-6-GC	<0.02	<0.007	0.09[J]	<0.15	0.33[J]	4.0	0.09	1.71	30.75	0.01	7.66	0.06	0.07	3.42	NA	7.73
IS-9-GCC	<0.02	0.008[J]	0.11	<0.15	0.77	4.2	0.09	1.81	32.04	0.01	7.99	0.07	0.07	3.56	NA	8.05
IS-7-SFRR	<0.02	<0.007	0.08[J]	<0.15	0.21[J]	4.1	0.09	1.76	31.40	0.01	7.82	0.06	0.07	3.49	NA	7.89
IS-8-SFRR	<0.02	<0.007	0.07[J]	<0.15	0.25[J]	4.1	0.09	1.76	31.40	0.01	7.82	0.06	0.07	3.49	NA	7.89
IS-10-SFSC	<0.02	<0.007	0.04[J]	<0.15	0.33[J]	4.7	0.10	2.06	35.24	0.02	8.78	0.07	0.08	3.91	NA	8.86
IS-11-SFSC	<0.02	<0.007	0.05[J]	<0.15	0.22[J]	5.1	0.11	2.26	37.76	0.02	9.41	0.08	0.09	4.19	NA	9.49
IS-12-SC	<0.02	<0.007	0.08[J]	<0.15	0.23[J]	4.9	0.11	2.16	36.51	0.02	9.10	0.07	0.08	4.05	NA	9.17
IS-13-SC	<0.02	<0.007	0.11	<0.15	0.25[J]	5.6	0.12	2.52	40.87	0.02	10.19	0.08	0.10	4.54	NA	10.27
IS-14-SC	<0.02	<0.007	0.09[J]	<0.15	0.19[J]	5.6	0.12	2.52	40.87	0.02	10.19	0.08	0.10	4.54	NA	10.27
IS-15-SFAR	<0.02	<0.007	0.07[J]	<0.15	0.14[J]	17	0.34	8.98	104.57	0.15	26.11	0.19	0.35	11.61	NA	26.32
IS-16-SFAR	<0.02	<0.007	0.09[J]	<0.15	0.16[J]	9.2	0.19	4.46	62.21	0.05	15.52	0.12	0.17	6.91	NA	15.65
IS-17-BC	<0.02	<0.007	0.10	<0.15	0.17[J]	10	0.21	4.91	66.75	0.06	16.66	0.13	0.19	7.41	NA	16.79
IS-19-SFAR	<0.02	0.009[J]	0.07[J]	<0.15	0.29[J]	8.9	0.19	4.29	60.49	0.05	15.09	0.12	0.17	6.72	NA	15.21
IS-18-SFAR	<0.02	0.009[J]	0.12	<0.15	0.16[J]	11	0.23	5.47	72.36	0.07	18.06	0.14	0.21	8.04	NA	18.201

mg/L = milligrams per liter
ug/L = micrograms per liter
EPA = U.S. Environmental Protection Agency
NA = Chronic criteria not applicable for silver
[1] Although the method detection limit (MDL) is typically greater than the hardness-dependent acute criteria for dissolved silver, <MDL and non-detect results are not classified as exceedances of hardness-dependent acute criteria.
[2] Result (**in bold**) exceeds EPA National Recommended Water Quality acute criteria (EPA 2022).
[J] Result falls between MDL and reporting limit (RL).
[RL] Laboratory reported result as <RL.

Table C-11. Dissolved Metals Results for Upper American River Project Riverine Sites during the Fall Sampling Event and EPA Recommended Hardness-Dependent Acute and Chronic Criteria.

Site	Dissolved Metal					Hardness as $CaCO_3$ (mg/L)	Acute Criteria					Chronic Criteria				
	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)[1]	Zinc (ug/L)		Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)
IS-10-SFSC	<0.02	<0.007	0.04[J]	<0.15	0.17[J]	5.1[FB]	0.11	2.26	37.76	0.02	9.41	0.08	0.09	4.19	NA	9.49
IS-11-SFSC	<0.02	0.008[J]	0.07[J]	<0.15	0.24[J]	5.7[FB]	0.12	2.57	41.49	0.02	10.34	0.08	0.10	4.61	NA	10.43
IS-12-SC	<0.02	<0.007	0.07[J]	<0.15	0.16[J]	4.8[FB]	0.10	2.11	35.88	0.02	8.94	0.07	0.08	3.98	NA	9.02
IS-13-SC	<0.02	0.011[J]	0.14	<0.15	0.21[J]	6.1[FB]	0.13	2.78	43.94	0.03	10.96	0.09	0.11	4.88	NA	11.05
IS-14-SC	<0.02	<0.007	0.10	<0.15	0.44[J]	5.7[FB]	0.12	2.57	41.49	0.02	10.34	0.08	0.10	4.61	NA	10.43
IS-15-SFAR	<0.02	0.007	0.07[J]	<0.15	0.45[J]	20[FB]	0.40	10.79	119.99	0.20	29.97	0.21	0.42	13.33	NA	30.21
IS-16-SFAR	<0.02	<0.007	0.10	<0.15	0.29[J]	9.7[FB]	0.20	4.74	65.05	0.06	16.23	0.12	0.18	7.23	NA	16.36
IS-17-BC	<0.02	<0.007	0.07[J]	<0.15	<0.12	9.8[FB]	0.20	4.79	65.62	0.06	16.37	0.12	0.19	7.29	NA	16.51
IS-19-SFAR	<0.02	<0.007	0.06[J]	<0.15	0.31[J]	9.1[FB]	0.19	4.40	61.63	0.05	15.38	0.12	0.17	6.85	NA	15.50
IS-18-SFAR	<0.02	0.008[J]	0.25	<0.15	0.66	12[FB]	0.25	6.04	77.88	0.08	19.44	0.15	0.24	8.65	NA	19.60

mg/L = milligrams per liter
ug/L = micrograms per liter
EPA = U.S. Environmental Protection Agency
NA = Chronic criteria not applicable for silver
[1] Although the method detection limit (MDL) is typically greater than the hardness-dependent acute criteria for dissolved silver, <MDL and non-detect results are not classified as exceedances of hardness-dependent acute criteria.
[J] Result falls between MDL and reporting limit.
[FB] Field Blank was greater than the MDL for this analyte. Field blank for Fall sampling event corresponded to sample "R-IS-4-GC-FB."

Table C-12. Dissolved Metals Results for Upper American River Project Riverine Sites during the Fall/Winter Sampling Event and EPA Recommended Hardness-Dependent Acute and Chronic Criteria.

Site	Dissolved Metal					Hardness as $CaCO_3$ (mg/L)	Acute Criteria					Chronic Criteria				
	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)[1]	Zinc (ug/L)		Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)
IS-3-LRR	<0.02	0.016[J]	0.04[J]	<0.15	0.26[J]	4.6	0.10	2.01	34.61	0.02	8.63	0.07	0.08	3.84	NA	8.70
IS-10-SFSC	<0.02	<0.007	0.04[J]	**<0.50[RL,2]**	0.21[J]	5.3	0.11	2.37	39.01	0.02	9.73	0.08	0.09	4.33	NA	9.81
IS-11-SFSC	<0.02	0.008[J]	0.05[J]	<0.15	0.15[J]	6.7	0.14	3.10	47.57	0.03	11.86	0.09	0.12	5.28	NA	11.96
IS-12-SC	<0.02	<0.007	0.08[J]	<0.15	0.15[J]	5.2	0.11	2.31	38.39	0.02	9.57	0.08	0.09	4.26	NA	9.65
IS-13-SC	<0.02	<0.007	0.13	<0.15	0.25[J]	5.6	0.12	2.52	40.87	0.02	10.19	0.08	0.10	4.54	NA	10.27
IS-14-SC	<0.02	<0.007	0.11	<0.15	0.27[J]	5.7	0.12	2.57	41.49	0.02	10.34	0.08	0.10	4.61	NA	10.43
IS-15-SFAR	<0.02	0.012[J]	0.08[J]	<0.15	0.25[J]	16	0.32	8.38	99.35	0.14	24.8	0.18	0.33	11.03	NA	25.01
IS-16-SFAR	<0.02	0.007	0.10	<0.15	0.27[J]	11	0.23	5.47	72.36	0.07	18.06	0.14	0.21	8.04	NA	18.20
IS-17-BC	<0.02	<0.007	0.06[J]	<0.15	<0.12	9.3	0.19	4.51	62.78	0.05	15.66	0.12	0.18	6.97	NA	15.79
IS-19-SFAR	<0.02	<0.007	0.08[J]	<0.15	0.36[J]	9.1	0.19	4.40	61.63	0.05	15.38	0.12	0.17	6.85	NA	15.50
IS-18-SFAR	<0.02	0.027[J]	0.52	<0.15	0.85	17	0.34	8.98	104.57	0.15	26.11	0.19	0.35	11.61	NA	26.32

mg/L = milligrams per liter
ug/L = micrograms per liter
EPA = U.S. Environmental Protection Agency
NA = Chronic criteria not applicable for silver

[1] Although the method detection limit (MDL) is typically greater than the hardness-dependent acute criteria for dissolved silver, <MDL and non-detect (ND) results are not classified as exceedances of hardness-dependent acute criteria.
[2] Result (**in bold**) exceeds EPA National Recommended Water Quality acute criteria (EPA 2022).
[J] Result falls between MDL and reporting limit (RL).
[RL] Laboratory reported result as <RL.

Table C-13. Dissolved Metals Results for Upper American River Project Reservoir Sites during the Spring Sampling Event and EPA Recommended Hardness-Dependent Acute and Chronic Criteria.

Site	Dissolved Metal					Hardness as $CaCO_3$ (mg/L)	Acute Criteria					Chronic Criteria				
	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)[1]	Zinc (ug/L)		Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)
R-IS-18-RR-SUR	<0.02	<0.007	0.07[J]	<0.15[FB]	0.31[J,EB]	4.8[FB]	0.10	2.11	35.88	0.02	8.94	0.07	0.08	3.98	NA	9.02
R-IS-19-BI-SUR	<0.02	<0.007	0.07[J]	<0.15[FB]	1.33[EB]	4.1[FB]	0.09	1.76	31.40	0.01	7.82	0.06	0.07	3.49	NA	7.89
R-IS-1-LL-SUR	<0.02	<0.007	0.07[J]	<0.15[FB]	0.35[J,EB]	3.2[FB]	0.07	1.32	25.46	0.01	6.34	0.05	0.05	2.83	NA	6.39
R-IS-2-LL-SUR	<0.02	<0.007	0.08[J]	<0.15[FB]	0.99[EB]	3.5[FB]	0.08	1.46	27.46	0.01	6.84	0.06	0.06	3.05	NA	6.90
R-IS-3-LL-SUR	<0.02	<0.007	0.08[J]	<0.15[FB]	0.28[J,EB]	3.5[FB]	0.08	1.46	27.46	0.01	6.84	0.06	0.06	3.05	NA	6.90
R-IS-4-GC-SUR	<0.02	0.009[J]	0.22	**<0.50[RL,FB,2]**	0.63[EB]	4.1[FB]	0.09	1.76	31.40	0.01	7.82	0.06	0.07	3.49	NA	7.89
R-IS-9-IHR-SUR	<0.02	<0.007	0.04[J]	<0.15[FB]	0.20[J,EB]	4.6[FB]	0.10	2.01	34.61	0.02	8.63	0.07	0.08	3.84	NA	8.70
R-IS-10-IHR-SUR	<0.02	<0.007	0.04[J]	<0.15[FB]	0.31[J,EB]	4.8[FB]	0.10	2.11	35.88	0.02	8.94	0.07	0.08	3.98	NA	9.02
R-IS-11-IHR-SUR	<0.02	<0.007	0.04[J]	<0.15[FB]	0.15[J,EB]	4.7[FB]	0.10	2.06	35.24	0.02	8.78	0.07	0.08	3.91	NA	8.86
R-IS-11-IHR-BOT	<0.02	<0.007	0.07[J]	<0.15[FB]	0.55[EB]	4.7[FB]	0.10	2.06	35.24	0.02	8.78	0.07	0.08	3.91	NA	8.86
R-IS-5-UVR-SUR	<0.02	<0.007	0.11	<0.15[FB]	0.56[EB]	4.5[FB]	0.10	1.96	33.97	0.02	8.47	0.07	0.08	3.77	NA	8.54
R-IS-7-UVR-SUR	<0.02	<0.007	0.09[J]	<0.15[FB]	0.17[J,EB]	4.9[FB]	0.11	2.16	36.51	0.02	9.10	0.07	0.08	4.05	NA	9.17
R-IS-6-UVR-SUR	<0.02	<0.007	0.09[J]	<0.15[FB]	0.26[J,EB]	4.8[FB]	0.10	2.11	35.88	0.02	8.94	0.07	0.08	3.98	NA	9.02
R-IS-6-UVR-BOT	<0.02	<0.007	0.09[J]	<0.15[FB]	0.38[J,EB]	4.8[FB]	0.10	2.11	35.88	0.02	8.94	0.07	0.08	3.98	NA	9.02
R-IS-8-UVR-SUR	<0.02	<0.007	0.09[J]	<0.15[FB]	<0.12[EB]	4.7[FB]	0.10	2.06	35.24	0.02	8.78	0.07	0.08	3.91	NA	8.86
R-IS-8-UVR-BOT	<0.02	<0.007	0.09[J]	<0.15[FB]	0.25[J,EB]	4.7[FB]	0.10	2.06	35.24	0.02	8.78	0.07	0.08	3.91	NA	8.86
R-IS-12-JR-SUR	<0.02	<0.007	0.05[J]	<0.15[FB]	0.46[J,EB]	4.9[FB]	0.11	2.16	36.51	0.02	9.10	0.07	0.08	4.05	NA	9.17
R-IS-13-CR-SUR	<0.02	<0.007	0.08[J]	<0.15[FB]	0.29[J,EB]	5.2[FB]	0.11	2.31	38.39	0.02	9.57	0.08	0.09	4.26	NA	9.65
R-IS-20-BC-SUR	<0.02	<0.007	0.10	**<0.50[RL,FB,2]**	0.34[J,EB]	7.9[FB]	0.17	3.74	54.68	0.04	13.64	0.11	0.15	6.07	NA	13.75
R-IS-14-SC-SUR	<0.02	<0.007	0.04[J]	<0.15[FB]	0.59[EB]	11[FB]	0.23	5.47	72.36	0.07	18.06	0.14	0.21	8.04	NA	18.20
R-IS-15-SC-SUR	<0.02	<0.007	0.07[J]	<0.15[FB]	1.05[EB]	11[FB]	0.23	5.47	72.36	0.07	18.06	0.14	0.21	8.04	NA	18.20

mg/L = milligrams per liter
ug/L = micrograms per liter
EPA = U.S. Environmental Protection Agency
NA = Chronic criteria not applicable for silver
SUR = suffix indicates a surface sample taken at or above approximately one-third of the water depth
BOT = suffix indicates a sample taken near the reservoir bottom

[1] Although the method detection limit (MDL) is typically greater than the hardness-dependent acute criteria for dissolved silver, <MDL and non-detect results are not classified as exceedances of hardness-dependent acute criteria.
[2] Result (**in bold**) exceeds EPA National Recommended Water Quality acute criteria (EPA 2022).
[J] Result falls between MDL and reporting limit (RL).
[RL] Laboratory reported result as <RL.
[EB] Equipment Blank was greater than the MDL for this analyte. Equipment blank for Spring sampling event corresponded to sample "R-IS-16-EBR."
[FB] Field Blank was greater than the MDL for this analyte. Field blank for Spring sampling event corresponded to sample "IS-20-BC-FB."

Table C-14. Dissolved Metals Results for Upper American River Project Reservoir Sites during the Summer Sampling Event and EPA Recommended Hardness-Dependent Acute and Chronic Criteria.

Site	Dissolved Metal					Hardness as $CaCO_3$ (mg/L)	Acute Criteria					Chronic Criteria				
	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)[1]	Zinc (ug/L)		Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)
R-IS-18-RR-SUR	<0.02	0.065	0.14	<0.15	0.43[J]	7.2[EB]	0.15	3.37	50.56	0.03	12.61	0.10	0.13	5.62	NA	12.71
R-IS-19-BI-SUR	<0.02	<0.007	0.06[J]	**<0.50[RL,2]**	0.30[J]	5.5[EB]	0.12	2.47	40.25	0.02	10.04	0.08	0.10	4.47	NA	10.12
R-IS-19-BI-BOT	<0.02	<0.007	0.05[J]	**<0.50[RL,2]**	1.73	5.3[EB]	0.11	2.37	39.01	0.02	9.73	0.08	0.09	4.33	NA	9.81
R-IS-1-LL-SUR	<0.02	<0.007	0.10	<0.15	0.35[J]	3.6[EB]	0.08	1.51	28.13	0.01	7.01	0.06	0.06	3.12	NA	7.07
R-IS-1-LL-BOT	**0.26[2,3]**	**0.127[3]**	0.33	<0.15	2.91	3.9[EB]	0.09	1.66	30.10	0.01	7.50	0.06	0.06	3.34	NA	7.56
R-IS-2-LL-SUR	<0.02	<0.007	0.13	<0.15	0.43[J]	3.6[EB]	0.08	1.51	28.13	0.01	7.01	0.06	0.06	3.12	NA	7.07
R-IS-2-LL-BOT	<0.02	<0.007	0.08[J]	<0.15	0.63	3.6[EB]	0.08	1.51	28.13	0.01	7.01	0.06	0.06	3.12	NA	7.07
R-IS-3-LL-SUR	<0.02	<0.007	0.12	<0.15	0.38[J]	3.5[EB]	0.08	1.46	27.46	0.01	6.84	0.06	0.06	3.05	NA	6.90
R-IS-3-LL-BOT	<0.02	<0.007	0.10	<0.15	0.53	3.4[EB]	0.08	1.42	26.80	0.01	6.68	0.06	0.06	2.98	NA	6.73
R-IS-4-GC-SUR	0.05[J]	0.011[J]	0.13	<0.15	0.84	4.0[EB]	0.09	1.71	30.75	0.01	7.66	0.06	0.07	3.42	NA	7.73
R-IS-4-GC-BOT	<0.02	<0.007	0.11	<0.15	3.37	4.1[EB]	0.09	1.76	31.40	0.01	7.82	0.06	0.07	3.49	NA	7.89
R-IS-9-IHR-SUR	<0.02	<0.007	0.04[J]	<0.15	0.23[J]	4.4[EB]	0.10	1.91	33.33	0.01	8.31	0.07	0.07	3.7	NA	8.38
R-IS-9-IHR-BOT	<0.02	<0.007	0.05[J]	<0.15	0.92	5.1[EB]	0.11	2.26	37.76	0.02	9.41	0.08	0.09	4.19	NA	9.49
R-IS-10-IHR-SUR	<0.02	<0.007	0.04[J]	<0.15	0.40[J]	4.6[EB]	0.10	2.01	34.61	0.02	8.63	0.07	0.08	3.84	NA	8.70
R-IS-10-IHR-BOT	<0.02	<0.007	0.03[J]	<0.15	2.78	4.3[EB]	0.09	1.86	32.69	0.01	8.15	0.07	0.07	3.63	NA	8.21
R-IS-11-IHR-SUR	<0.02	<0.007	0.04[J]	<0.15	0.26[J]	4.6[EB]	0.10	2.01	34.61	0.02	8.63	0.07	0.08	3.84	NA	8.70
R-IS-11-IHR-BOT	<0.02	<0.007	0.03[J]	<0.15	1.15	4.8[EB]	0.10	2.11	35.88	0.02	8.94	0.07	0.08	3.98	NA	9.02
R-IS-5-UVR-SUR	<0.02	<0.007	0.08[J]	<0.15	0.21[J]	5.1[EB]	0.11	2.26	37.76	0.02	9.41	0.08	0.09	4.19	NA	9.49
R-IS-5-UVR-BOT	<0.02	<0.007	0.09[J]	<0.15	1.30	5.3[EB]	0.11	2.37	39.01	0.02	9.73	0.08	0.09	4.33	NA	9.81
R-IS-7-UVR-SUR	<0.02	<0.007	0.09[J]	<0.15	0.21[J]	5.1[EB]	0.11	2.26	37.76	0.02	9.41	0.08	0.09	4.19	NA	9.49
R-IS-7-UVR-BOT	<0.02	0.030[J]	0.10	<0.15	1.40	4.9[EB]	0.11	2.16	36.51	0.02	9.10	0.07	0.08	4.05	NA	9.17
R-IS-6-UVR-SUR	<0.02	<0.007	0.09[J]	<0.15	0.31[J]	4.4[EB]	0.10	1.91	33.33	0.01	8.31	0.07	0.07	3.70	NA	8.38
R-IS-6-UVR-BOT	<0.02	<0.007	0.09[J]	<0.15	1.33	4.7[EB]	0.10	2.06	35.24	0.02	8.78	0.07	0.08	3.91	NA	8.86
R-IS-8-UVR-SUR	<0.02	<0.007	0.09[J]	<0.15	0.21[J]	4.5[EB]	0.10	1.96	33.97	0.02	8.47	0.07	0.08	3.77	NA	8.54
R-IS-8-UVR-BOT	<0.02	<0.007	0.08[J]	<0.15	0.87	4.3[EB]	0.09	1.86	32.69	0.01	8.15	0.07	0.07	3.63	NA	8.21
R-IS-12-JR-SUR	<0.02	<0.007	0.06[J]	<0.15	0.21[J]	5.1[EB]	0.11	2.26	37.76	0.02	9.41	0.08	0.09	4.19	NA	9.49
R-IS-12-JR-BOT	<0.02	<0.007	0.10	<0.15	0.87	5.0[EB]	0.11	2.21	37.14	0.02	9.26	0.07	0.09	4.12	NA	9.33
R-IS-13-CR-SUR	<0.02	<0.007	0.14	<0.15	0.56	5.2[EB]	0.11	2.31	38.39	0.02	9.57	0.08	0.09	4.26	NA	9.65
R-IS-20-BC-SUR	<0.02	<0.007	0.07[J]	<0.15	0.25[J]	8.9[EB]	0.19	4.29	60.49	0.05	15.09	0.12	0.17	6.72	NA	15.21
R-IS-20-BC-BOT	<0.02	<0.007	0.07[J]	<0.15	0.57	7.6[EB]	0.16	3.58	52.92	0.04	13.2	0.10	0.14	5.88	NA	13.31

Site	Dissolved Metal					Hardness as $CaCO_3$ (mg/L)	Acute Criteria					Chronic Criteria				
	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)[1]	Zinc (ug/L)		Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)
R-IS-14-SC-SUR	<0.02	0.008[J]	0.07[J]	<0.15	0.19[J]	10[EB]	0.21	4.91	66.75	0.06	16.66	0.13	0.19	7.41	NA	16.79
R-IS-14-SC-BOT	<0.02	<0.007	0.09[J]	**0.17[J,2]**	2.14	8.2[EB]	0.17	3.91	56.44	0.04	14.08	0.11	0.15	6.27	NA	14.19
R-IS-15-SC-SUR	<0.02	0.008[J]	0.07[J]	<0.15	0.44[J]	10[EB]	0.21	4.91	66.75	0.06	16.66	0.13	0.19	7.41	NA	16.79

mg/L = milligrams per liter
ug/L = micrograms per liter
EPA = U.S. Environmental Protection Agency
NA = Chronic criteria not applicable for silver
SUR = suffix indicates a surface sample taken at or above approximately one-third of the water depth
BOT = suffix indicates a sample taken near the reservoir bottom
[1] Although the method detection limit (MDL) is typically greater than the hardness-dependent acute criteria for dissolved silver, <MDL and non-detect results are not classified as exceedances of hardness-dependent acute criteria.
[2] Result (**in bold**) exceeds EPA National Recommended Water Quality acute criteria (EPA 2022).
[3] Result exceeds EPA National Recommended Water Quality chronic criteria (EPA 2022).
[J] Result falls between MDL and reporting limit (RL).
[RL] Laboratory reported result as <RL.
[EB] Equipment Blank was greater than the MDL for this analyte. Equipment Blank for Summer sampling event corresponded to sample “R-IS-21-EB.”

Table C-15. Dissolved Metals Results for Upper American River Project Reservoir Sites during the Fall Sampling Event and EPA Recommended Hardness-Dependent Acute and Chronic Criteria.

Site	Dissolved Metal					Hardness as $CaCO_3$ (mg/L)	Acute Criteria					Chronic Criteria				
	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)[1]	Zinc (ug/L)		Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)
R-IS-1-LL-SUR	<0.02	<0.007	0.08[J]	<0.15	0.21[J]	4.2[FB]	0.09	1.81	32.04	0.01	7.99	0.07	0.07	3.56	NA	8.05
R-IS-1-LL-BOT	<0.02	<0.007	0.08[J]	<0.15	0.70	4.7[FB]	0.10	2.06	35.24	0.02	8.78	0.07	0.08	3.91	NA	8.86
R-IS-2-LL-SUR	<0.02	<0.007	0.07[J]	<0.15	0.16[J]	3.9[FB]	0.09	1.66	30.10	0.01	7.50	0.06	0.06	3.34	NA	7.56
R-IS-3-LL-SUR	<0.02	<0.007	0.07[J]	<0.15	0.21[J]	3.9[FB]	0.09	1.66	30.1	0.01	7.50	0.06	0.06	3.34	NA	7.56
R-IS-4-GC-SUR	<0.02	<0.007	0.12	<0.15	0.45[J]	5.2[FB]	0.11	2.31	38.39	0.02	9.57	0.08	0.09	4.26	NA	9.65
R-IS-9-IHR-SUR	<0.02	<0.007	0.03[J]	**<0.50[RL,2]**	0.16[J]	4.6[FB]	0.10	2.01	34.61	0.02	8.63	0.07	0.08	3.84	NA	8.70
R-IS-9-IHR-BOT	<0.02	<0.007	0.08[J]	**<0.50[RL,2]**	0.77	5.8[FB]	0.12	2.62	42.10	0.02	10.5	0.08	0.10	4.68	NA	10.58
R-IS-10-IHR-SUR	<0.02	<0.007	0.03[J]	**<0.50[RL,2]**	0.14[J]	4.8[FB]	0.10	2.11	35.88	0.02	8.94	0.07	0.08	3.98	NA	9.02
R-IS-10-IHR-BOT	<0.02	<0.007	0.04[J]	**<0.50[RL,2]**	0.28[J]	4.8[FB]	0.10	2.11	35.88	0.02	8.94	0.07	0.08	3.98	NA	9.02
R-IS-11-IHR-SUR	<0.02	<0.007	0.04[J]	**<0.50[RL,2]**	0.15[J]	4.8[FB]	0.10	2.11	35.88	0.02	8.94	0.07	0.08	3.98	NA	9.02
R-IS-11-IHR-BOT	<0.02	<0.007	0.04[J]	**<0.50[RL,2]**	0.39[J]	5.0[FB]	0.11	2.21	37.14	0.02	9.26	0.07	0.09	4.12	NA	9.33
R-IS-5-UVR-SUR	<0.02	<0.007	0.08[J]	<0.15	0.15[J]	4.8[FB]	0.10	2.11	35.88	0.02	8.94	0.07	0.08	3.98	NA	9.02
R-IS-7-UVR-SUR	<0.02	<0.007	0.07[J]	<0.15	<0.12	4.9[FB]	0.11	2.16	36.51	0.02	9.10	0.07	0.08	4.05	NA	9.17
R-IS-7-UVR-BOT	<0.02	<0.007	0.09[J]	<0.15	0.52	5.0[FB]	0.11	2.21	37.14	0.02	9.26	0.07	0.09	4.12	NA	9.33
R-IS-6-UVR-SUR	<0.02	<0.007	0.07[J]	<0.15	0.36[J]	5.0[FB]	0.11	2.21	37.14	0.02	9.26	0.07	0.09	4.12	NA	9.33
R-IS-6-UVR-BOT	<0.02	<0.007	0.09[J]	<0.15	0.36[J]	5.3[FB]	0.11	2.37	39.01	0.02	9.73	0.08	0.09	4.33	NA	9.81
R-IS-8-UVR-SUR	<0.02	<0.007	0.07[J]	<0.15	<0.12	4.9[FB]	0.11	2.16	36.51	0.02	9.10	0.07	0.08	4.05	NA	9.17
R-IS-12-JR-SUR	<0.02	<0.007	0.10	<0.15	0.66	5.6[FB]	0.12	2.52	40.87	0.02	10.19	0.08	0.10	4.54	NA	10.27
R-IS-13-CR-SUR	<0.02	<0.007	0.09[J]	<0.15	0.29[J]	5.7[FB]	0.12	2.57	41.49	0.02	10.34	0.08	0.10	4.61	NA	10.43
R-IS-20-BC-SUR	<0.02	<0.007	0.06[J]	<0.15	<0.12	8.9[FB]	0.19	4.29	60.49	0.05	15.09	0.12	0.17	6.72	NA	15.21
R-IS-20-BC-BOT	<0.02	<0.007	0.08[J]	<0.15	0.84	7.2[FB]	0.15	3.37	50.56	0.03	12.61	0.10	0.13	5.62	NA	12.71
R-IS-14-SC-SUR	<0.02	<0.007	0.08[J]	<0.15	1.68	8.1[FB]	0.17	3.85	55.85	0.04	13.93	0.11	0.15	6.20	NA	14.05
R-IS-14-SC-BOT	<0.02	<0.007	0.06[J]	<0.15	0.18[J]	7.3[FB]	0.15	3.42	51.15	0.04	12.76	0.10	0.13	5.68	NA	12.86
R-IS-15-SC-SUR	<0.02	<0.007	0.07[J]	<0.15	0.14[J]	8.3[FB]	0.17	3.96	57.02	0.04	14.22	0.11	0.15	6.33	NA	14.34

mg/L = milligrams per liter
ug/L = micrograms per liter
EPA = U.S. Environmental Protection Agency
NA = Chronic criteria not applicable for silver
SUR = suffix indicates a surface sample taken at or above approximately one-third of the water depth
BOT = suffix indicates a sample taken near the reservoir bottom
[1] Although the method detection limit (MDL) is typically greater than the hardness-dependent acute criteria for dissolved silver, <MDL and non-detect results are not classified as exceedances of hardness-dependent acute criteria.
[2] Result (**in bold**) exceeds EPA National Recommended Water Quality acute criteria (EPA 2022).
[J] Result falls between MDL and reporting limit (RL).
[RL] Laboratory reported result as <RL.
[FB] Field Blank was greater than the MDL for this analyte. Field blank for Fall sampling event corresponded to sample "R-IS-4-GC-FB."

Table C-16. Dissolved Metals Results for Upper American River Project Reservoir Sites during the Fall/Winter Sampling Event and EPA Recommended Hardness-Dependent Acute and Chronic Criteria.

Site	Dissolved Metal					Hardness as $CaCO_3$ (mg/L)	Acute Criteria					Chronic Criteria				
	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)[1]	Zinc (ug/L)		Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)
R-IS-19-BI-SUR	<0.02	0.016[J]	0.08[J]	<0.15	0.83	4.6	0.10	2.01	34.61	0.02	8.63	0.07	0.08	3.84	NA	8.70
R-IS-9-IHR-SUR	<0.02	<0.007	0.06[J]	**<0.50[RL,2]**	0.63	4.8	0.10	2.11	35.88	0.02	8.94	0.07	0.08	3.98	NA	9.02
R-IS-10-IHR-SUR	<0.02	<0.007	0.03[J]	**<0.50[RL,2]**	0.14[J]	4.9	0.11	2.16	36.51	0.02	9.10	0.07	0.08	4.05	NA	9.17
R-IS-11-IHR-SUR	<0.02	<0.007	0.04[J]	**<0.50[RL,2]**	<0.12	4.7	0.10	2.06	35.24	0.02	8.78	0.07	0.08	3.91	NA	8.86
R-IS-5-UVR-SUR	<0.02	<0.007	0.09[J]	<0.15	0.16[J]	4.8	0.10	2.11	35.88	0.02	8.94	0.07	0.08	3.98	NA	9.02
R-IS-7-UVR-SUR	<0.02	<0.007	0.08[J]	<0.15	0.19[J]	4.8	0.10	2.11	35.88	0.02	8.94	0.07	0.08	3.98	NA	9.02
R-IS-6-UVR-SUR	<0.02	<0.007	0.06[J]	<0.15	<0.12	4.9	0.11	2.16	36.51	0.02	9.10	0.07	0.08	4.05	NA	9.17
R-IS-8-UVR-SUR	<0.02	<0.007	0.07[J]	<0.15	0.13[J]	4.9	0.11	2.16	36.51	0.02	9.10	0.07	0.08	4.05	NA	9.17
R-IS-13-CR-SUR	<0.02	<0.007	0.13	<0.15	0.23[J]	5.2	0.11	2.31	38.39	0.02	9.57	0.08	0.09	4.26	NA	9.65
R-IS-20-BC-SUR	<0.02	<0.007	0.20	<0.15	0.70	8.6	0.18	4.13	58.76	0.05	14.66	0.11	0.16	6.53	NA	14.78
R-IS-14-SC-SUR	<0.02	<0.007	0.08[J]	<0.15	0.16[J]	11	0.23	5.47	72.36	0.07	18.06	0.14	0.21	8.04	NA	18.20
R-IS-15-SC-SUR	<0.02	<0.007	0.06[J]	<0.15	<0.12	9.8	0.20	4.79	65.62	0.06	16.37	0.12	0.19	7.29	NA	16.51

mg/L = milligrams per liter
ug/L = micrograms per liter
EPA = U.S. Environmental Protection Agency
NA = Chronic criteria not applicable for silver
SUR = suffix indicates a surface sample taken at or above approximately one-third of the water depth
BOT = suffix indicates a sample taken near the reservoir bottom

[1] Although the method detection limit (MDL) is typically greater than the hardness-dependent acute criteria for dissolved silver, <MDL and non-detect results are not classified as exceedances of hardness-dependent acute criteria.
[2] Result (**in bold**) exceeds EPA National Recommended Water Quality acute criteria (EPA 2022).
[J] Result falls between MDL and reporting limit (RL).
[RL] Laboratory reported result as <RL.

Table C-17. Relative Percent Difference Values for Each Duplicate Sample Pair Collected in 2022.

Analyte	Date	Relative Percent Difference (%)
Spring		
Total Suspended Solids (TSS)	4/28/2022	0.0
Total Dissolved Solids (TDS)	4/28/2022	2.8
Total Organic Carbon (TOC)	4/28/2022	2.9
Cyanide	4/28/2022	31.3[J]
Oil & Grease	4/28/2022	0.0
Total Petroleum Hydrocarbons (TPH)	4/28/2022	0.0
MTBE	4/28/2022	0.0
Hardness (as $CaCO_3$)	4/28/2022	0.4
Total Alkalinity (as $CaCO_3$)	4/28/2022	0.0
Nitrate/Nitrite (as N)	4/28/2022	0.0[J]
Total Kjeldahl Nitrogen (TKN)	4/28/2022	3.1[J]
Ammonia (as N)	4/28/2022	6.2[J]
Total Phosphorus (as P)	4/28/2022	0.0
Orthophosphate (as PO_4^{3-})	4/28/2022	0.0
Aluminum (Total)	4/28/2022	11.0[J]
Aluminum (Dissolved)	4/28/2022	0.0
Arsenic (Total)	4/28/2022	0.0
Arsenic (Dissolved)	4/28/2022	0.0
Barium (Total)	4/28/2022	4.5
Cadmium (Total)	4/28/2022	0.0
Cadmium (Dissolved)	4/28/2022	0.0
Copper (Total)	4/28/2022	11.8
Copper (Dissolved)	4/28/2022	0.0[J]
Iron (Total)	4/28/2022	9.2[J]
Iron (Dissolved)	4/28/2022	0.0
Lead (Total)	4/28/2022	2.6[J]
Lead (Dissolved)	4/28/2022	0.0
Manganese	4/28/2022	1.4
Mercury (Total)	4/28/2022	2.9
Methyl mercury (Total)	4/28/2022	16.7[J]
Nickel (Total)	4/28/2022	0.0[J]
Nickel (Dissolved)	4/28/2022	0.0[J]
Selenium (Total)	4/28/2022	0.0
Selenium (Dissolved)	4/28/2022	0.0
Silver (Total)	4/28/2022	0.0

Analyte	Date	Relative Percent Difference (%)
Silver (Dissolved)	4/28/2022	35.4[J]
Zinc (Total)	4/28/2022	9.0[J]
Zinc (Dissolved)	4/28/2022	12.8[J]
Calcium	4/28/2022	0.0
Chloride	4/28/2022	0.0
Magnesium	4/28/2022	1.1[J]
Potassium	4/28/2022	2.3[J]
Sodium	4/28/2022	4.2
Sulfate (as SO_4^{2-})	4/28/2022	0.5[J]
Summer		
Total Suspended Solids (TSS)	8/23/2022	0.0
Total Dissolved Solids (TDS)	8/23/2022	6
Total Organic Carbon (TOC)	8/23/2022	3.8
Cyanide	8/23/2022	3.1
Oil & Grease	8/23/2022	0.0
Total Petroleum Hydrocarbons (TPH)	8/23/2022	0.0
MTBE	8/23/2022	0.0
Hardness (as $CaCO_3$)	8/23/2022	5.4
Total Alkalinity (as $CaCO_3$)	8/23/2022	6.7
Nitrate/Nitrite (as N)	8/23/2022	21.5
Total Kjeldahl Nitrogen (TKN)	8/23/2022	10.9
Ammonia (as N)	8/23/2022	6.1
Total Phosphorus (as P)	8/23/2022	0.0
Orthophosphate (as PO_4^{3-})	8/23/2022	29.5
Aluminum (Total)	8/23/2022	0.0
Aluminum (Dissolved)	8/23/2022	0.6
Arsenic (Total)	8/23/2022	0.0
Arsenic (Dissolved)	8/23/2022	0.0
Barium (Total)	8/23/2022	0.6
Cadmium (Total)	8/23/2022	0.0
Cadmium (Dissolved)	8/23/2022	0.0
Copper (Total)	8/23/2022	1.1
Copper (Dissolved)	8/23/2022	1.4
Iron (Total)	8/23/2022	9.5
Iron (Dissolved)	8/23/2022	0.0
Lead (Total)	8/23/2022	1.6[J]
Lead (Dissolved)	8/23/2022	0.0

Analyte	Date	Relative Percent Difference (%)
Manganese	8/23/2022	0.0
Mercury (Total)	8/23/2022	1.0 [J]
Methyl mercury (Total)	8/23/2022	0.0
Nickel (Total)	8/23/2022	0.0
Nickel (Dissolved)	8/23/2022	1.4
Selenium (Total)	8/23/2022	0.0
Selenium (Dissolved)	8/23/2022	0.0
Silver (Total)	8/23/2022	0.0
Silver (Dissolved)	8/23/2022	0.0
Zinc (Total)	8/23/2022	0.0
Zinc (Dissolved)	8/23/2022	1.2
Calcium	8/23/2022	6.2
Chloride	8/23/2022	12.3
Magnesium	8/23/2022	0.0
Potassium	8/23/2022	6
Sodium	8/23/2022	0.4
Sulfate (as SO_4^{2-})	8/23/2022	0.0
Fall		
Total Suspended Solids (TSS)	10/17/2022	0.0
Total Dissolved Solids (TDS)	10/17/2022	12.2
Total Organic Carbon (TOC)	10/17/2022	0.0
Cyanide	10/17/2022	0.0
Oil & Grease	10/17/2022	0.0
Total Petroleum Hydrocarbons (TPH)	10/17/2022	0.0
MTBE	10/17/2022	0.0
Hardness (as $CaCO_3$)	10/17/2022	0.9
Total Alkalinity (as $CaCO_3$)	10/17/2022	1.3
Nitrate/Nitrite (as N)	10/17/2022	0.0
Total Kjeldahl Nitrogen (TKN)	10/17/2022	11.3
Ammonia (as N)	10/17/2022	0.0
Total Phosphorus (as P)	10/17/2022	0.0
Orthophosphate (as PO_4^{3-})	10/17/2022	0.0
Aluminum (Total)	10/17/2022	46.3
Aluminum (Dissolved)	10/17/2022	0.0
Arsenic (Total)	10/17/2022	0.0
Arsenic (Dissolved)	10/17/2022	0.0
Barium (Total)	10/17/2022	0.3

Analyte	Date	Relative Percent Difference (%)
Cadmium (Total)	10/17/2022	0.0
Cadmium (Dissolved)	10/17/2022	0.0
Copper (Total)	10/17/2022	1.4
Copper (Dissolved)	10/17/2022	2.9
Iron (Total)	10/17/2022	0.0
Iron (Dissolved)	10/17/2022	0.0
Lead (Total)	10/17/2022	0.0
Lead (Dissolved)	10/17/2022	0.0
Manganese	10/17/2022	0.3
Mercury (Total)	10/17/2022	2.9
Methyl mercury (Total)	10/17/2022	0.0
Nickel (Total)	10/17/2022	2.2
Nickel (Dissolved)	10/17/2022	0.0[J]
Selenium (Total)	10/17/2022	0.0
Selenium (Dissolved)	10/17/2022	0.0
Silver (Total)	10/17/2022	0.0
Silver (Dissolved)	10/17/2022	0.0
Zinc (Total)	10/17/2022	21.2[J]
Zinc (Dissolved)	10/17/2022	13.5[J]
Calcium	10/17/2022	0.0
Chloride	10/17/2022	0.0
Magnesium	10/17/2022	0.0
Potassium	10/17/2022	0.0
Sodium	10/17/2022	5.6
Sulfate (as SO_4^{2-})	10/17/2022	6.1
Fall/Winter		
Total Suspended Solids (TSS)	11/16/2022	0.0
Total Dissolved Solids (TDS)	11/16/2022	3.3
Total Organic Carbon (TOC)	11/16/2022	2.4
Cyanide	11/16/2022	1.3
Oil & Grease	11/16/2022	0.0
Total Petroleum Hydrocarbons (TPH)	11/16/2022	0.0
MTBE	11/16/2022	0.0
Hardness (as $CaCO_3$)	11/16/2022	0.5
Total Alkalinity (as $CaCO_3$)	11/16/2022	0.6
Nitrate/Nitrite (as N)	11/16/2022	0.0
Total Kjeldahl Nitrogen (TKN)	11/16/2022	26.9[J]

Analyte	Date	Relative Percent Difference (%)
Ammonia (as N)	11/16/2022	1.2[J]
Total Phosphorus (as P)	11/16/2022	17.6[J]
Orthophosphate (as PO_4^{3-})	11/16/2022	31.2[J]
Aluminum (Total)	11/16/2022	5.1
Aluminum (Dissolved)	11/16/2022	7.6 [J]
Arsenic (Total)	11/16/2022	0.0
Arsenic (Dissolved)	11/16/2022	0.0
Barium (Total)	11/16/2022	1.7
Cadmium (Total)	11/16/2022	0.0
Cadmium (Dissolved)	11/16/2022	0.0
Copper (Total)	11/16/2022	0.0
Copper (Dissolved)	11/16/2022	1.2
Iron (Total)	11/16/2022	1.6[J]
Iron (Dissolved)	11/16/2022	1.6[J]
Lead (Total)	11/16/2022	0.0
Lead (Dissolved)	11/16/2022	0.0
Manganese	11/16/2022	0.0
Mercury (Total)	11/16/2022	1.6
Methyl mercury (Total)	11/16/2022	0.0
Nickel (Total)	11/16/2022	0.0
Nickel (Dissolved)	11/16/2022	2
Selenium (Total)	11/16/2022	0.0
Selenium (Dissolved)	11/16/2022	0.0
Silver (Total)	11/16/2022	0.0
Silver (Dissolved)	11/16/2022	0.0
Zinc (Total)	11/16/2022	2.3
Zinc (Dissolved)	11/16/2022	2.1
Calcium	11/16/2022	1.6
Chloride	11/16/2022	4.5
Magnesium	11/16/2022	0.7[J]
Potassium	11/16/2022	3.8[J]
Sodium	11/16/2022	0.0
Sulfate (as SO_4^{2-})	11/16/2022	0.0[J]

[J] Result falls between method detection limit and reporting limit.

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APPENDIX D
Bacteria Results for UARP Reservoir Sites

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Table D-1. Bacteria (MPN/100mL) for Upper American River Project Sites During the 30-day Period Surrounding Independence Day.

Site ID	Sample 1		Sample 2		Sample 3		Sample 4		Sample 5		Fecal coliform geometric mean[1,2]	*E. coli* geometric mean[1]
	Fecal coliform	*E. coli*	Fecal coliform	*E. coli*	Fecal coliform	*E. coli*	Fecal coliform	*E. coli*	Fecal coliform	*E. coli*		
Bac-5-GCR	<1.8	1.0	23.0	17.1	4.0	6.3	>1,600	9.8	11.0	18.9	19.6	7.2
Bac-6-GCR	<1.8	1.0	49.0	17.3	>1,600	1,553.1	>1,600	8.6	11.0	6.3	86.9	17.1
Bac-7-UVR	7.8	7.4	33.0	6.2	49.0	32.7	240.0	25.9	17.0	12.1	34.9	13.6
Bac-8-UVR	<1.8	1.0	2.0	2.0	<1.8	<1.0	920.0	<1.0	<1.8	<1.0	4.2	0.8
Bac-9-UVR	6.1	11.0	6.8	1.0	1.8	<1.0	350.0	1.0	<1.8	1.0	7.5	1.4
Bac-10-UVR	4.5	4.1	<1.8	<1.0	49.0	6.3	920.0	<1.0	<1.8	<1.0	11.0	1.3
Bac-11-JR	7.8	13.2	1,600	98.8	14.0	8.6	>1,600	27.9	13.0	8.6	93.8	19.3
Bac-12-IHR	4.5	2.0	23.0	21.6	2.0	550.4	2.0	2.0	23.0	13.2	6.2	14.4
Bac-13-IHR	<1.8	<1.0	920.0	<1.0	23.0	65.7	4.5	14.5	13.0	7.5	16.2	4.5
Bac-14-BCR	<1.8	<1.0	<1.8	<1.0	<1.8	<1.0	4.0	3.1	13.0	1.0	2.1	0.8
Bac-15-SCR	2.0	2.0	<1.8	2.0	<1.8	<1.0	2.0	<1.0	4.5	<1.0	1.7	0.9
MDL	1.8	1.0	1.8	1.0	1.8	1.0	1.8	1.0	1.8	1.0	-	-
RL	1.8	1.0	1.8	1.0	1.8	1.0	1.8	1.0	1.8	1.0	-	-

MDL = method detection limit
RL = method reporting limit
[1] Individual results less than the MDL were treated as 0.5 x MDL for the geometric mean calculations.
[2] Individual results greater than 1,600 MPN/100 mL (maximum allowable count for SM9221E laboratory analytical test) were treated as 2.0 x 1,600 for the geometric mean calculations.

Table D-2. Bacteria (MPN/100mL) for Upper American River Project Sites During the 30-day Period Surrounding Labor Day.

Site ID	Sample 1		Sample 2		Sample 3		Sample 4		Sample 5		Fecal coliform geometric mean[1]	*E. coli* geometric mean[1]
	Fecal coliform	*E. coli*	Fecal coliform	*E. coli*	Fecal coliform	*E. coli*	Fecal coliform	*E. coli*	Fecal coliform	*E. coli*		
Bac-1-BI	<1.8	<1.0	2[2]	<1.0[2]	<1.8	<1.0	<1.8	<1.0	23	<1.0	2.0	0.5
Bac-2-BI	<1.8	<1.0	4.0[2]	1.0[2]	<1.8	<1.0	13.0	2.0	<1.8	<1.0	2.1	0.8
Bac-3-LL	<1.8	<1.0	<1.8	<1.0	<1.8	<1.0	<1.8	<1.0	<1.8	<1.0	0.9	0.5
Bac-4-LL	<1.8	1.0	<1.8	<1.0	<1.8	<1.0	<1.8	<1.0	<1.8	<1.0	0.9	0.6
MDL	1.8	1.0	1.8	1.0	1.8	1.0	1.8	1.0	1.8	1.0	-	-
RL	1.8	1.0	1.8	1.0	1.8	1.0	1.8	1.0	1.8	1.0	-	-

MDL = method detection limit
RL = method reporting limit

[1] Individual results <MDL were treated as 0.5 x MDL for the geometric mean calculations.

[2] Samples collected on 7 September at sites Bac-1-BI and Bac-2-BI were processed by the analytical laboratory 2 and 1.5 hours, respectively, beyond the recommended hold time due to an autoclave malfunction.

APPENDIX E
In situ Field Data

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Table E-1. *In situ* Tablet Raw Data, UARP Riverine Sites.

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.) [1]	Turbidity (NTU)[1]	Mercury (mmHg) [1]
2/15/2022 10:13	YSI EXO2	Eric Sommerauer	Clear, cold	IS-10-SFSC	3.85	11.46	87	9.3	0.016	5.57	0.38	623.4
2/15/2022 11:04	YSI EXO2	Eric Sommerauer	Clear, cold	IS-11-SFSC	3.99	11.8	90	11.4	0.019	6.16	0.38	643.9
2/15/2022 11:34	YSI EXO2	Joey Verdian	Cold, clear, snowy, light wind	IS-12-SC	1.99	12.32	89.1	10.7	0.019	6.09	0.35	647.9
2/15/2022 12:31	YSI EXO2	Eric Sommerauer	Clear	IS-13-SC	5.26	12.21	96.2	12	0.019	6.76	0.27	681.9
2/15/2022 13:06	YSI EXO2	Joey Verdian	Clear, light wind, cold	IS-14-SC	4.95	12.3	96.2	14.4	0.023	7.02	0.09	685.7
2/15/2022 15:20	YSI EXO2	Joey Verdian	Clear, calm, cool	IS-17-BC	5.42	12	95	14.8	0.025	6.84	0.82	685.7
2/15/2022 15:58	YSI EXO2	Joey Verdian	Calm, clear, cool	IS-15-SFAR	5.67	12.51	99.7	33.1	0.052	7.28	0.94	707.8
2/15/2022 16:12	YSI EXO2	Joey Verdian	Calm, clear, cool	IS-16-SFAR	5.8	12.48	99.8	33	0.052	7.29	0.84	708.2
2/16/2022 09:23	YSI EXO2	Joey Verdian	Calm, clear, cool	IS-21-SFAR	5.12	12.91	101.4	33.8	0.054	6.8	0.57	742.7
2/16/2022 09:59	YSI EXO2	Joey Verdian	Cool, clear, calm	IS-20-SFAR	5.25	12.77	100.8	33.6	0.054	6.72	0.51	737.8
2/16/2022 10:43	YSI EXO2	Joey Verdian	Clear, calm, cool	IS-18-SFAR	4.52	12.87	99.6	35.4	0.058	7.1	0.38	735.5
2/16/2022 11:42	YSI EXO2	Eric Sommerauer	Clear	IS-19-SFAR	4.42	12.51	96.5	32.1	0.053	7.24	0.6	717.7
2/16/2022 13:05	YSI EXO2	Joey Verdian	Clear	IS-22-SFAR	6.23	12.81	103.6	35.7	0.056	7.41	0.4	744.3
2/16/2022 14:27	YSI EXO2	Joey Verdian	Clear, breezy	IS-23-SFAR	8.05	12.21	103.4	143.3	0.212	8.35	0.31	747.9
4/26/2022 10:24	YSI EXO2	Bruce Hitch	Mild, light wind	IS-22-SFAR	9.19	11.73	101.9	31.7	0.045	6.92	1.62	743.3
4/26/2022 11:39	YSI EXO2	Bruce Hitch	Mild, light wind	IS-21-SFAR	9.39	11.74	102.6	30.4	0.043	7.46	1.27	740.6
4/26/2022 12:36	YSI EXO2	Bruce Hitch	Warm, no wind	IS-20-SFAR	8.8	11.69	100.7	29.5	0.043	7.28	1.05	735.2
4/26/2022 14:40	YSI EXO2	Bruce Hitch	Mild, no wind	IS-18-SFAR	12.09	10.7	99.5	40.1	0.053	7.6	1.03	732.6
4/27/2022 10:06	YSI EXO2	Esther Adelstein	Sunny, slight breeze, mid 60s temperature	IS-19-SFAR	8.41	10.74	91.6	27.9	0.041	6.75	1.08	716.1
4/27/2022 12:06	YSI EXO2	Esther Adelstein	Sunny, slight breeze, 60 F	IS-17-BC	9.06	10.23	88.7	18.8	0.027	7.07	1.28	689.5
4/27/2022 13:10	YSI EXO2	Esther Adelstein	Sunny, 70s	IS-15-SFAR	9.72	10.69	94.2	35.3	0.05	7.16	3.15	710.9
4/27/2022 14:14	YSI EXO2	Esther Adelstein	Sunny, light breeze, 70 F	IS-16-SFAR	8.44	11.82	95.5	23	0.034	7.15	1.41	710.9
4/28/2022 10:35	YSI EXO2	Esther Adelstein	Sunny, breeze, high 50 F	IS-14-SC	6.66	11.18	91.4	29.3	0.045	6.92	0.45	688.4
4/28/2022 11:17	YSI EXO2	Esther Adelstein	Sunny, 60s F	IS-13-SC	8.49	10.6	90.8	27.7	0.04	6.97	0.22	685
4/28/2022 12:27	YSI EXO2	Esther Adelstein	Sunny, breezy, 60s F	IS-11-SFSC	8.53	10.14	86.8	26.7	0.039	7.04	0.14	646.9
4/28/2022 13:47	YSI EXO2	Esther Adelstein	Sunny, breezy, 60s F	IS-12-SC	5.68	10.72	85.5	19.6	0.035	7.06	0.45	650.9
5/3/2022 09:23	YSI EXO2	Emily Applequist	Clear, cool	IS-5-GC	4.485	10.64	82.2	6.6	0.011	7.29	0.08	626.6
5/3/2022 10:10	YSI EXO2	Emily Applequist	Clear, cool, slight wind	IS-6-GC	6.267	10.17	82.2	7.3	0.011	7.41	0.09	630.8
5/3/2022 10:51	YSI EXO2	Esther Adelstein	Sunny, 60s	IS-9-GCC	7.658	9.99	83.6	8	0.012	7.18	0.05	629.6
5/3/2022 11:47	YSI EXO2	Emily Applequist	Calm, clear, warm	IS-7-SFRR	6.514	10.23	83.2	8.9	0.014	7.64	0.12	635.2
5/3/2022 12:18	YSI EXO2	Emily Applequist	Calm, clear, warm	IS-8-SFRR	6.74	10.32	84.4	8.7	0.013	7.32	0.08	636.3
5/3/2022 13:31	YSI EXO2	Esther Adelstein	Sunny, breezy, 60s	IS-4-GC	7.508	9.52	79.4	6.3	0.009	7.88	0.22	606.2

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Mercury (mmHg)[1]
4/28/2022 17:43	YSI EXO2	Bruce Hitch	Clear	IS-23-SFAR	17.31	9.33	97.2	381.9	0.448	8.09	0.14	0
5/16/2022 14:06	YSI EXO2	Bruce Hitch	Sunny and mild	IS-10-SFSC	6.58	10.24	83.4	13.4	0.02	7	0.59	629
5/25/2022 11:33	YSI EXO2	Joey Verdian	Sunny	IS-1-RR	7.66	9.75	81.8	6.8	0.01	6.78	0.4	601.8
5/26/2022 11:06	YSI EXO2	Esther Adelstein	Sunny	IS-3-LRR	11.241	9.12	83.2	7	0.009	6.66	0.23	603.3
5/26/2022 12:25	YSI EXO2	Joey Verdian	Sunny	IS-2-LRR	9.377	9.48	82.7	6.7	0.01	6.81	0.25	601.7
4/26/2022 10:24	YSI EXO2	Bruce Hitch	Mild, light wind	IS-22-SFAR	9.19	11.73	101.9	31.7	0.045	6.92	1.62	743.3
4/26/2022 11:39	YSI EXO2	Bruce Hitch	Mild, light wind	IS-21-SFAR	9.39	11.74	102.6	30.4	0.043	7.46	1.27	740.6
4/26/2022 12:36	YSI EXO2	Bruce Hitch	Warm, no wind	IS-20-SFAR	8.8	11.69	100.7	29.5	0.043	7.28	1.05	735.2
4/26/2022 14:40	YSI EXO2	Bruce Hitch	Mild, no wind	IS-18-SFAR	12.09	10.7	99.5	40.1	0.053	7.6	1.03	732.6
4/27/2022 10:06	YSI EXO2	Esther Adelstein	Sunny, slight breeze, mid 60s temperaturE	IS-19-SFAR	8.41	10.74	91.6	27.9	0.041	6.75	1.08	716.1
4/27/2022 12:06	YSI EXO2	Esther Adelstein	Sunny, slight breeze, 60 F	IS-17-BC	9.06	10.23	88.7	18.8	0.027	7.07	1.28	689.5
4/27/2022 13:10	YSI EXO2	Esther Adelstein	Sunny, 70s	IS-15-SFAR	9.72	10.69	94.2	35.3	0.05	7.16	3.15	710.9
4/27/2022 14:14	YSI EXO2	Esther Adelstein	Sunny, light breeze, 70 F	IS-16-SFAR	8.44	11.82	95.5	23	0.034	7.15	1.41	710.9
4/28/2022 10:35	YSI EXO2	Esther Adelstein	Sunny, breeze, high 50 F	IS-14-SC	6.66	11.18	91.4	29.3	0.045	6.92	0.45	688.4
4/28/2022 11:17	YSI EXO2	Esther Adelstein	Sunny, 60s F	IS-13-SC	8.49	10.6	90.8	27.7	0.04	6.97	0.22	685
4/28/2022 12:27	YSI EXO2	Esther Adelstein	Sunny, breezy, 60s F	IS-11-SFSC	8.53	10.14	86.8	26.7	0.039	7.04	0.14	646.9
4/28/2022 13:47	YSI EXO2	Esther Adelstein	Sunny, breezy, 60s F	IS-12-SC	5.68	10.72	85.5	19.6	0.035	7.06	0.45	650.9
5/3/2022 09:23	YSI EXO2	Emily Applequist	Clear, cool	IS-5-GC	4.485	10.64	82.2	6.6	0.011	7.29	0.08	626.6
5/3/2022 10:10	YSI EXO2	Emily Applequist	Clear, cool, slight wind	IS-6-GC	6.267	10.17	82.2	7.3	0.011	7.41	0.09	630.8
5/3/2022 10:51	YSI EXO2	Esther Adelstein	Sunny, 60s	IS-9-GCC	7.658	9.99	83.6	8	0.012	7.18	0.05	629.6
5/3/2022 11:47	YSI EXO2	Emily Applequist	Calm, clear, warm	IS-7-SFRR	6.514	10.23	83.2	8.9	0.014	7.64	0.12	635.2
5/3/2022 12:18	YSI EXO2	Emily Applequist	Calm, clear, warm	IS-8-SFRR	6.74	10.32	84.4	8.7	0.013	7.32	0.08	636.3
5/3/2022 13:31	YSI EXO2	Esther Adelstein	Sunny, breezy, 60s	IS-4-GC	7.508	9.52	79.4	6.3	0.009	7.88	0.22	606.2
4/28/2022 17:43	YSI EXO2	Bruce Hitch	Clear	IS-23-SFAR	17.31	9.33	97.2	381.9	0.448	8.09	0.14	0
5/16/2022 14:06	YSI EXO2	Bruce Hitch	Sunny and mild	IS-10-SFSC	6.58	10.24	83.4	13.4	0.02	7	0.59	629
5/25/2022 11:33	YSI EXO2	Joey Verdian	Sunny	IS-1-RR	7.66	9.75	81.8	6.8	0.01	6.78	0.4	601.8
5/26/2022 11:06	YSI EXO2	Esther Adelstein	Sunny	IS-3-LRR	11.241	9.12	83.2	7	0.009	6.66	0.23	603.3
5/26/2022 12:25	YSI EXO2	Joey Verdian	Sunny	IS-2-LRR	9.377	9.48	82.7	6.7	0.01	6.81	0.25	601.7
8/1/2022 08:29	YSI EXO2	Bethany Leach	Cloudy, 65 degrees, humid	IS-5-GC	15.133	8.3	82.6	9.8	0.012	6.25	0.16	631.1
8/1/2022 11:50	YSI EXO2	Bethany Leach	Cloudy, humid	IS-6-GC	14.866	8.44	83.5	9.6	0.012	6.66	0.16	635.2
8/1/2022 12:32	YSI EXO2	Bethany Leach	Cloudy, humid	IS-9-GCC	17.53	8.6	90.2	10.5	0.012	6.66	0.16	634.1
8/1/2022 13:23	YSI EXO2	Bethany Leach	Partly cloudy, warm	IS-7-SFRR	16.49	8.26	84.5	10.7	0.013	6.66	0.12	639.2

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Mercury (mmHg)[1]
8/1/2022 13:47	YSI EXO2	Bethany Leach	Partly cloudy, warm	IS-8-SFRR	16.397	8.4	85.8	10.7	0.013	6.86	0.12	640.1
8/2/2022 08:53	YSI EXO2	Emily Applequist	Cool, clear, light breeze	IS-14-SC	11.383	9.92	90.8	12.9	0.017	6.27	0.2	691.5
8/2/2022 11:26	YSI EXO2	Emily Applequist	Sunny, warm, clear	IS-13-SC	17.685	8.73	91.6	15.5	0.018	6.98	0.33	687.5
8/2/2022 12:31	YSI EXO2	Emily Applequist	Sunny, warm, clear	IS-11-SFSC	17.647	8.33	87.4	15.2	0.018	7.23	0.27	651.4
8/2/2022 13:06	YSI EXO2	Emily Applequist	Sunny, warm, clear	IS-12-SC	11.905	9.14	84.8	11.6	0.016	7.26	0.23	655.2
8/3/2022 07:17	YSI EXO2	Emily Applequist	Cool, clear, calm	IS-19-SFAR	14.957	9.33	92.5	21.5	0.027	6.75	1.18	716.9
8/4/2022 10:50	YSI EXO2	Emily Applequist	Sunny, warm, clear	IS-17-BC	13.233	9.24	88.2	21.1	0.027	7.27	2.15	689.1
8/4/2022 12:01	YSI EXO2	Emily Applequist	Sunny, warm, clear	IS-15-SFAR	23.478	8.04	94.6	52.9	0.054	7.76	0.25	709.5
8/4/2022 12:36	YSI EXO2	Emily Applequist	Sunny, hot, clear	IS-16-SFAR	16.255	9.4	95.8	25	0.03	7.2	0.24	709.7
8/4/2022 14:05	YSI EXO2	Emily Applequist	Sunny, hot	IS-18-SFAR	22.038	8.67	99.2	30	0.032	7.42	0.55	730.1
8/18/2022 13:06	YSI EXO2	Bruce Hitch	Hot, sunny	IS-20-SFAR	16.37	10.25	104.6	22.7	0.027	6.97	0.22	733.6
8/18/2022 14:13	YSI EXO2	Bruce Hitch	Hot, sunny	IS-21-SFAR	18.54	9.65	102.7	23.5	0.027	7.36	0.11	737.7
8/23/2022 10:34	YSI EXO2	Bruce Hitch	Sunny	IS-1-RR	20.94	6.38	71.4	17.4	0.019	6.78	4.78	602.4
8/23/2022 12:15	YSI EXO2	Bruce Hitch	Sunny	IS-4-GC	11.84	8.63	80	8.4	0.011	6.95	0.85	607.2
8/23/2022 13:50	YSI EXO2	Bruce Hitch	Sunny, warm	IS-10-SFSC	7.65	9.87	82.6	11.4	0.017	6.96	0.02	628.6
8/24/2022 11:06	YSI EXO2	Bruce Hitch	Warm,sunny,idyllic	IS-3-LRR	21.157	6.61	74.3	12	0.013	6.6	0.01	604.5
8/24/2022 12:30	YSI EXO2	Bruce Hitch	Sunny,idyllic	IS-2-LRR	19.33	6.53	70.7	14.2	0.016	6.88	0.46	602.9
8/25/2022 09:56	YSI EXO2	Bruce Hitch	Warm, sunny	IS-22-SFAR	16.65	9.68	99.4	24.8	0.03	6.86	1.85	742.6
8/25/2022 12:50	YSI EXO2	Bruce Hitch	Hot,sunny	IS-23-SFAR	20.39	9.22	102.4	27.1	0.03	7.22	0.81	746.6
11/2/2022 08:19	YSI EXO2	Bruce Hitch	Snow	IS-10-SFSC	6.92	10.37	85.3	12.5	0.019	6.52	0.3	626.3
11/2/2022 09:41	YSI EXO2	Bruce Hitch	Cold, snowy	IS-11-SFSC	1.404	12.68	90.3	11.2	0.02	7.42	0.22	647.3
11/2/2022 10:39	YSI EXO2	Bruce Hitch	Snow	IS-12-SC	4.72	11.39	88.5	10.8	0.013	7.32	0.45	651.4
11/2/2022 12:40	YSI EXO2	Bruce Hitch	Rain	IS-14-SC	6.65	11.69	95.6	13.8	0.021	7.27	0.34	690.1
11/2/2022 13:26	YSI EXO2	Bruce Hitch	Rain	IS-13-SC	5.67	11.95	95.3	13.1	0.021	7.3	2.75	685.9
11/3/2022 08:49	YSI EXO2	Bruce Hitch	Cold, clear	IS-17-BC	11.75	10.38	95.8	21.7	0.029	7.04	1.25	692.1
11/3/2022 09:43	YSI EXO2	Bruce Hitch	Cold, clear	IS-15-SFAR	6.43	12.31	100	46	0.071	7.08	0.74	715.5
11/3/2022 10:15	YSI EXO2	Bruce Hitch	Cold, clear	IS-16-SFAR	7.33	12.44	103.4	22.6	0.034	7.22	4.5	716
11/3/2022 11:46	YSI EXO2	Bruce Hitch	Cold, clear	IS-19-SFAR	9.16	11.31	98.2	20.2	0.029	7.13	4.3	720.9
11/7/2022 08:37	YSI EXO2	Esther Adelstein	Clear cool	IS-18-SFAR	9.621	10.73	94.3	25.3	0.036	6.79	0.99	732.4
11/7/2022 09:29	YSI EXO2	Esther Adelstein	Clear cool	IS-20-SFAR	9.797	11.33	99.9	20.9	0.03	6.87	0.75	734.4
11/7/2022 10:24	YSI EXO2	Esther Adelstein	Sunny cold	IS-21-SFAR	10.023	11.13	98.6	21.2	0.03	7.16	0.42	738.9
11/7/2022 11:05	YSI EXO2	Esther Adelstein	Sunny cool	IS-22-SFAR	11.161	11.29	103.1	28.6	0.039	7.11	0.87	11.198
11/7/2022 12:42	YSI EXO2	Esther Adelstein	Cool clear	IS-23-SFAR	10.917	10.96	99.3	41.9	0.058	7.38	0.5	744.9
11/8/2022 09:07	YSI EXO2	Esther Adelstein	Rain and snow	IS-15-SFAR	6.127	11.7	94.2	34.8	0.055	6.39	2.08	702.4
11/8/2022 09:36	YSI EXO2	Esther Adelstein	Rain and snow	IS-16-SFAR	6.971	11.75	96.8	22.8	0.035	6.48	0.77	702.5

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Mercury (mmHg)[1]
11/8/2022 11:05	YSI EXO2	Esther Adelstein	Rainy	IS-19-SFAR	8.437	10.77	91.9	10.77	0.027	6.66	0.52	707.6
11/9/2022 10:19	YSI EXO2	Esther Adelstein	Overcast cold	IS-18-SFAR	8.221	11.66	99	31.4	0.046	7.13	2.46	737.1
11/9/2022 11:14	YSI EXO2	Esther Adelstein	9.792	IS-20-SFAR	9.783	11.64	102.6	22.1	0.031	7.23	0.97	739.5
11/9/2022 12:01	YSI EXO2	Esther Adelstein	Overcast and cold	IS-21-SFAR	10.041	11.57	102.6	22.2	0.031	7.28	0.85	744.6
11/9/2022 12:39	YSI EXO2	Esther Adelstein	Overcast and rainy	IS-22-SFAR	9.572	11.66	102.2	23.8	0.034	7.34	0.98	747.6
11/10/2022 12:24	YSI EXO2	Esther Adelstein	Cold and clear	IS-17-BC	10.944	10.17	92.1	19.1	0.026	6.92	1.57	694.2
11/15/2022 12:44	YSI EXO2	Bruce Hitch	Cool, clear	IS-10-SFSC	7.4	10	83.2	13.9	0.021	6.49	0.73	632.1
11/16/2022 11:03	YSI EXO2	Bruce Hitch	Cold, sunny	IS-13-SC	4.53	12.6	97.9	11.2	0.018	7.13	0.48	693.1
11/16/2022 12:07	YSI EXO2	Bruce Hitch	Cool, sunny	IS-14-SC	5.79	12.35	98.8	11.7	0.018	7.37	0.44	696.7
11/17/2022 10:50	YSI EXO2	Bruce Hitch	Cool, beautiful	IS-3-LRR	2.58	10.85	79.8	8	0.014	7.25	1.79	607.4
11/21/2022 10:30	YSI EXO2	Annabelle Howe	Cold, clear	IS-11-SFSC	-0.029	12.98	88.7	11.2	0.021	6.43	0.21	652.5
11/21/2022 11:21	YSI EXO2	Jakob Woodall	Cold clear	IS-12-SC	3.953	11.36	86.5	9.5	0.016	7.29	2.4	655.8

[1] Data were transcribed from the YSI EXO2 to a tablet, including additional digits beyond the parameter method detection limit (MDL).

Table E-2. *In situ* Tablet Raw Data, UARP Reservoir Sites.

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	0	12.96	9.82	93.1	15.1	0.02	7.3	0.9	8.1
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	1	12.76	9.85	93	15	0.02	7.3	1	8.1
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	2	12.33	10.03	92.5	14.6	0.02	7.3	0.9	8.1
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	3	11.18	10.09	91.8	14.5	0.02	7.31	0.9	8.1
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	4	10.56	10.1	90.7	14.4	0.02	7.1	0.7	8.1
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	5	10.52	10.1	90.6	14.3	0.02	7	0.7	8.1
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	6	10.47	10.11	90.5	14.3	0.02	7	0.8	8.1
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	7	10.22	10.09	89.4	13.9	0.02	6.9	0.7	8.1
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	8	9.99	10.07	88.8	13.8	0.02	6.91	0.66	8.1
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	9	9.72	9.99	87.2	13.8	0.02	6.81	0.6	8.1
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	10	9	9.92	85.8	13.4	0.019	6.7	0.5	8.1
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	11	8.82	9.9	84.7	13.2	0.019	6.6	0.5	8.1
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	12	7.91	9.89	8.31	13.1	0.019	6.5	0.5	8.1
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	13	7.48	9.87	82	13	0.02	6.4	0.5	8.1
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	14	7.03	9.84	81.1	13.1	0.02	6.3	0.5	8.1
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	15	6.91	9.81	80.6	13.6	0.02	6.2	0.5	8.1
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	16	6.77	9.81	80.3	13.1	0.02	6.1	0.4	8.1
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	17	6.68	9.77	79.8	13.1	0.02	6	0.46	8.1
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	18	6.64	9.74	79.5	13.1	0.02	6	0.44	8.1
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	19	6.6	9.72	79.3	13.1	0.02	5.9	0.43	8.1
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	20	6.56	9.7	79	13.1	0.02	5.88	0.45	8.1
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	21	6.49	9.68	78.7	13.2	0.02	5.9	0.4	8.1
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	22	6.44	9.68	78.7	13.2	0.02	5.8	0.4	8.1
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	23	6.45	9.68	78.7	13.2	0.02	5.8	0.4	8.1
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	24	6.43	9.65	78.3	13.2	0.02	5.8	0.4	8.1
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	25	6.41	9.61	78	13.2	0.2	5.8	0.4	8.1
5/16/2022 10:00	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-9-IHR	25								8.1

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
5/16/2022 11:05	YSI EXO2	Bruce Hitch	Sunny, slight wind	R-IS-10-IHR	0	13.6	9.8	94.3	15.6	0.02	7.9	1.1	6.5
5/16/2022 11:05	YSI EXO2	Bruce Hitch	Sunny, slight wind	R-IS-10-IHR	1	12.9	9.8	93.5	15.3	0.02	8	1.6	6.5
5/16/2022 11:05	YSI EXO2	Bruce Hitch	Sunny, slight wind	R-IS-10-IHR	2	12.68	9.96	93.9	15.2	0.02	8	1.4	6.5
5/16/2022 11:05	YSI EXO2	Bruce Hitch	Sunny, slight wind	R-IS-10-IHR	3	12.12	9.92	92.4	15.1	0.02	8	0.8	6.5
5/16/2022 11:05	YSI EXO2	Bruce Hitch	Sunny, slight wind	R-IS-10-IHR	4	10.75	10.02	90.5	14.5	0.02	7.9	0.7	6.5
5/16/2022 11:05	YSI EXO2	Bruce Hitch	Sunny, slight wind	R-IS-10-IHR	6	10.5	10.06	90.1	14.3	0.02	7.8	0.64	6.5
5/16/2022 11:05	YSI EXO2	Bruce Hitch	Sunny, slight wind	R-IS-10-IHR	7	10.02	10.07	87.1	14.2	0.02	7.7	0.6	6.5
5/16/2022 11:05	YSI EXO2	Bruce Hitch	Sunny, slight wind	R-IS-10-IHR	8	9.64	9.96	87.6	14.6	0.02	7.5	0.6	6.5
5/16/2022 11:05	YSI EXO2	Bruce Hitch	Sunny, slight wind	R-IS-10-IHR	9	9.59	9.95	87.2	14	0.02	7.4	0.6	6.5
5/16/2022 11:05	YSI EXO2	Bruce Hitch	Sunny, slight wind	R-IS-10-IHR	10	8.9	9.89	85.5	13.7	0.02	7.4	0.53	6.5
5/16/2022 11:05	YSI EXO2	Bruce Hitch	Sunny, slight wind	R-IS-10-IHR	11	8.14	9.83	83.2	13.3	0.02	7.2	0.5	6.5
5/16/2022 11:05	YSI EXO2	Bruce Hitch	Sunny, slight wind	R-IS-10-IHR	12	8.03	9.81	82.8	13.3	0.02	7.1	0.5	6.5
5/16/2022 11:05	YSI EXO2	Bruce Hitch	Sunny, slight wind	R-IS-10-IHR	13								6.5
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	0	13.58	9.7	93.4	15.6	0.02	7.8	0.9	7.5
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	1	12.52	9.8	92.1	15.2	0.02	7.9	1.3	7.5
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	2	12.45	9.82	92	15.1	0.02	7.9	1.3	7.5
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	3	12.34	9.83	92.1	15.1	0.02	7.9	1.2	7.5
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	4	12.24	9.85	91.9	15.1	0.02	7.9	1.1	7.5
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	5	10.37	10.04	89.5	14.5	0.02	7.8	0.6	7.5
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	6	9.76	9.95	87.4	14.1	0.02	7.6	0.6	7.5
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	7	8.83	9.9	85.5	13.9	0.02	7.4	0.5	7.5
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	8	7.85	9.91	83.2	13.7	0.02	7.3	0.4	7.5
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	9	7.22	9.88	82.1	13.5	0.02	7.1	0.44	7.5
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	10	7.11	9.88	81.6	13.4	0.02	7	0.44	7.5
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	11	6.85	9.84	80.6	13.4	0.021	7	0.4	7.5
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	12	6.56	9.79	79.7	13.3	0.02	6.9	0.4	7.5
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	13	6.5	9.76	79.3	13.3	0.021	6.8	0.4	7.5
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	14	6.47	9.74	79.2	13.3	0.021	6.7	0.4	7.5
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	15	6.44	9.73	79	13.3	0.02	6.7	0.4	7.5
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	16	6.4	9.72	78.8	13.3	0.021	6.7	0.4	7.5
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	17	6.38	9.71	78.7	13.3	0.02	6.6	0.4	7.5
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	18	6.35	9.7	78.6	13.3	0.02	6.6	0.4	7.5
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	19	6.3	9.68	78.3	13.3	0.02	6.6	0.4	7.5

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	20	6.29	9.66	78.2	13.3	0.02	6.5	0.4	7.5
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	21	6.28	9.65	78.1	13.3	0.02	6.53	0.4	7.5
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	22	6.27	9.64	78	13.3	0.02	6.5	0.4	7.5
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	23	6.22	9.63	77.7	13.3	0.02	6.5	0.4	7.5
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	24	6.21	9.61	77.6	13.3	0.02	6.5	0.4	7.5
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	25	6.2	9.6	77.6	13.3	0.02	6.5	0.4	7.5
5/16/2022 12:02	YSI EXO2	Bruce Hitch	Sunny, windy	R-IS-11-IHR	26	6.21	9.61	77.6	13.3	0.02	6.5	0.4	7.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	0	11.16	8.74	79.5	7.7	0.01	6.5	0.16	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	1	10.97	8.77	79.5	7.6	0.01	6.3	0.17	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	2	10.95	8.78	79.5	7.6	0.01	6.29	0.2	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	3	10.94	8.78	79.5	7.6	0.01	6.3	0.2	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	4	10.92	8.78	79.5	7.6	0.01	6.2	0.2	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	5	10.2	8.85	78.8	7.4	0.01	6.2	0.2	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	6	9.76	8.94	78.7	7.2	0.01	6.2	0.2	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	7	9.43	8.94	78.2	7.1	0.01	6.2	0.2	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	8	9.03	8.96	77.6	7.1	0.01	6.2	0.2	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	9	8.79	8.99	77.3	7.2	0.01	6.2	0.2	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	10	8.37	9.03	76.8	7.1	0.01	6.1	0.2	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	11	7.98	9.03	76.1	7.1	0.01	6.1	0.3	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	12	7.79	9.02	75.8	7	0.01	6.1	0.3	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	13	7.73	9.01	75.5	7	0.01	6.1	0.2	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	14	7.61	9	75.3	7	0.01	6.1	0.2	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	15	7.53	8.99	75	6.9	0.01	6.1	0.2	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	16	7.46	8.99	74.9	6.9	0.01	6	0.3	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	17	7.35	8.99	74.6	6.9	0.01	6	0.2	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	18	7.2	8.97	74.2	6.9	0.01	6	0.3	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	19	7.16	8.95	74	6.8	0.01	6	0.2	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	20	7.04	8.93	73.6	6.8	0.01	6	0.3	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	21	6.85	8.9	73	6.8	0.01	6	0.3	35.5

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	22	6.76	8.89	72.8	6.8	0.01	6	0.3	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	23	6.73	8.89	72.7	6.7	0.01	5.9	0.3	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	24	6.71	8.89	72.7	6.7	0.01	5.9	0.3	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	25	6.67	8.89	72.6	6.7	0.01	5.9	0.3	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	26	6.65	8.88	72.4	6.7	0.01	5.9	0.3	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	27	6.48	8.88	72.1	6.8	0.01	5.9	0.3	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	28	6.38	8.84	71.7	6.8	0.01	5.9	0.3	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	29	6.27	8.8	71	6.9	0.01	5.9	0.4	35.5
5/17/2022 09:53	YSI EXO2	Bruce Hitch	Sunny and calm	R-IS-1-LL	30								35.5
5/17/2022 11:42	YSI EXO2	Bruce Hitch	Sunny and no mild	R-IS-3-LL	0	10.6	8.87	79.7	7.8	0.01	6.8	0.2	38
5/17/2022 11:42	YSI EXO2	Bruce Hitch	Sunny and no mild	R-IS-3-LL	1	9.75	8.93	78.6	7.6	0.01	6.7	0.2	38
5/17/2022 11:42	YSI EXO2	Bruce Hitch	Sunny and no mild	R-IS-3-LL	2	9.64	8.93	78.4	7.6	0.01	6.7	0.2	38
5/17/2022 11:42	YSI EXO2	Bruce Hitch	Sunny and no mild	R-IS-3-LL	3	9.57	8.94	78.4	7.6	0.01	6.7	0.2	38
5/17/2022 11:42	YSI EXO2	Bruce Hitch	Sunny and no mild	R-IS-3-LL	4	9.5	8.94	78.2	7.6	0.01	6.7	0.2	38
5/17/2022 11:42	YSI EXO2	Bruce Hitch	Sunny and no mild	R-IS-3-LL	5	9.47	8.94	78.2	7.5	0.01	6.7	0.2	38
5/17/2022 11:42	YSI EXO2	Bruce Hitch	Sunny and no mild	R-IS-3-LL	6	9.45	8.95	78.3	7.5	0.01	6.7	0.2	38
5/17/2022 11:42	YSI EXO2	Bruce Hitch	Sunny and no mild	R-IS-3-LL	7	9.43	8.95	78.2	7.5	0.01	6.7	0.2	38
5/17/2022 11:42	YSI EXO2	Bruce Hitch	Sunny and no mild	R-IS-3-LL	8	9.38	8.95	78.2	7.5	0.01	6.7	0.2	38
5/17/2022 11:42	YSI EXO2	Bruce Hitch	Sunny and no mild	R-IS-3-LL	9	9.02	8.95	77.3	7.5	0.01	6.7	0.2	38
5/17/2022 11:42	YSI EXO2	Bruce Hitch	Sunny and no mild	R-IS-3-LL	10	8.8	8.99	77.3	7.4	0.01	6.7	0.2	38
5/17/2022 11:42	YSI EXO2	Bruce Hitch	Sunny and no mild	R-IS-3-LL	11	8.52	9.02	76.8	7.4	0.01	6.7	0.2	38
5/17/2022 11:42	YSI EXO2	Bruce Hitch	Sunny and no mild	R-IS-3-LL	12	8.27	9	76.2	7.3	0.01	6.7	0.2	38
5/17/2022 11:42	YSI EXO2	Bruce Hitch	Sunny and no mild	R-IS-3-LL	13	7.91	9.01	75.8	7.3	0.01	6.7	0.3	38
5/17/2022 11:42	YSI EXO2	Bruce Hitch	Sunny and no mild	R-IS-3-LL	14	7.79	8.99	75.4	7.2	0.01	6.7	0.3	38
5/17/2022 11:42	YSI EXO2	Bruce Hitch	Sunny and no mild	R-IS-3-LL	15								38
5/18/2022 09:17	YSI EXO2	Bruce Hitch	Sunny	R-IS-5-UVR	0	14.8	9.18	90.9	12.3	0.015	6.81	0.32	27
5/18/2022 09:17	YSI EXO2	Bruce Hitch	Sunny	R-IS-5-UVR	1	14.29	9.28	90.7	12.1	0.015	6.79	0.34	27
5/18/2022 09:17	YSI EXO2	Bruce Hitch	Sunny	R-IS-5-UVR	2	14.17	9.32	90.8	12.1	0.015	6.76	0.51	27
5/18/2022 09:17	YSI EXO2	Bruce Hitch	Sunny	R-IS-5-UVR	3	13.91	9.38	90.8	12	0.015	6.73	0.43	27

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
5/18/2022 09:17	YSI EXO2	Bruce Hitch	Sunny	R-IS-5-UVR	4	12.82	9.51	89.7	11.7	0.015	6.67	0.54	27
5/18/2022 09:17	YSI EXO2	Bruce Hitch	Sunny	R-IS-5-UVR	5	11.99	9.56	88.7	11.5	0.015	6.63	0.45	27
5/18/2022 09:17	YSI EXO2	Bruce Hitch	Sunny	R-IS-5-UVR	6	11.24	9.59	87.5	11.2	0.015	6.59	0.32	27
5/18/2022 09:17	YSI EXO2	Bruce Hitch	Sunny	R-IS-5-UVR	7	10.73	9.64	86.9	10.8	0.015	6.55	0.31	27
5/18/2022 09:17	YSI EXO2	Bruce Hitch	Sunny	R-IS-5-UVR	8	10.54	9.69	86.9	10.3	0.014	6.52	0.38	27
5/18/2022 09:17	YSI EXO2	Bruce Hitch	Sunny	R-IS-5-UVR	9	10.17	9.71	86.4	10.7	0.015	6.5	0.32	27
5/18/2022 09:17	YSI EXO2	Bruce Hitch	Sunny	R-IS-5-UVR	10	9.88	9.75	86.2	10.7	0.015	6.48	0.34	27
5/18/2022 09:17	YSI EXO2	Bruce Hitch	Sunny	R-IS-5-UVR	11	9.39	9.8	85.6	10.1	0.014	6.47	0.38	27
5/18/2022 09:17	YSI EXO2	Bruce Hitch	Sunny	R-IS-5-UVR	12	9.16	9.82	85.2	9.8	0.014	6.41	0.33	27
5/18/2022 09:17	YSI EXO2	Bruce Hitch	Sunny	R-IS-5-UVR	13	9	9.85	85.2	9.6	0.014	6.38	0.31	27
5/18/2022 09:17	YSI EXO2	Bruce Hitch	Sunny	R-IS-5-UVR	14	8.53	9.9	84.7	9.6	0.014	6.33	0.34	27
5/18/2022 09:17	YSI EXO2	Bruce Hitch	Sunny	R-IS-5-UVR	15	8.34	9.86	83.9	9.7	0.014	6.27	0.37	27
5/18/2022 09:17	YSI EXO2	Bruce Hitch	Sunny	R-IS-5-UVR	16	7.51	9.74	81.3	9.8	0.015	6.22	0.31	27
5/18/2022 09:17	YSI EXO2	Bruce Hitch	Sunny	R-IS-5-UVR	17	7.26	9.64	79.9	9.8	0.015	6.16	0.28	27
5/18/2022 09:17	YSI EXO2	Bruce Hitch	Sunny	R-IS-5-UVR	18	7.19	9.61	79.5	9.8	0.015	6.11	0.33	27
5/18/2022 09:17	YSI EXO2	Bruce Hitch	Sunny	R-IS-5-UVR	19	7.12	9.61	79.4	9.8	0.015	6.08	0.32	27
5/18/2022 09:17	YSI EXO2	Bruce Hitch	Sunny	R-IS-5-UVR	20	6.97	9.56	78.4	9.8	0.015	6.05	0.54	27
5/18/2022 09:17	YSI EXO2	Bruce Hitch	Sunny	R-IS-5-UVR	21								27
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	0	14.67	9.27	91.3	12.3	0.015	7.05	0.33	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	1	14.2	9.35	91.2	12.2	0.015	7.06	0.35	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	2	14.06	9.38	91.1	12.1	0.015	7.07	0.39	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	3	13.97	9.39	91.1	12.2	0.015	7.07	0.43	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	4	12.93	9.55	90.5	11.5	0.015	7.08	0.49	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	5	11.88	9.67	89.5	11.2	0.015	7.06	0.55	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	6	11.8	9.7	89.5	11.3	0.015	7.03	0.38	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	7	11.18	9.69	88.3	11.2	0.015	7.02	0.38	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	8	10.98	9.73	88.1	11.1	0.015	7.03	0.39	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	9	10.63	9.74	87.6	11	0.015	7.03	0.32	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	10	10.36	9.75	87.1	11	0.015	7.02	0.39	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	11	10.02	9.78	86.8	10.9	0.015	6.99	0.42	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	12	9.21	9.88	85.8	10.6	0.015	6.95	0.34	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	13	8.69	9.86	84.7	10.2	0.015	6.9	0.37	18.5

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	14	8.32	9.84	83.7	10.1	0.015	6.84	0.35	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	15	7.93	9.82	82.6	10.1	0.015	6.8	0.31	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	16	7.38	9.8	81.4	10	0.015	6.74	0.3	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	17	7.31	9.77	81.1	10	0.015	6.7	0.31	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	18	7.2	9.76	80.8	10.9	0.015	6.66	0.33	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	19	7.01	9.74	80.2	10	0.015	6.62	0.3	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	20	6.71	9.68	79.2	10	0.015	6.58	0.27	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	21	6.67	9.66	78.9	10	0.015	6.55	0.33	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	22	6.56	9.64	78.5	10	0.015	6.53	0.32	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	23	6.43	9.6	77.9	10	0.015	6.51	0.3	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	24	6.34	9.57	77.5	10	0.015	6.48	0.29	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	25	6.31	9.54	77.3	10	0.015	6.48	0.3	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	26	6.31	9.54	77.2	10	0.016	6.43	0.26	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	27	6.29	9.54	77.2	10	0.016	6.43	0.28	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	28	6.22	9.53	77	10	0.016	6.44	0.32	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	29	6.19	9.52	76.8	10	0.016	6.41	0.3	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	30	6.13	9.51	76.6	10	0.016	6.4	0.29	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	31	6.01	9.48	76.2	10	0.016	6.4	0.29	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	32	6	9.48	76.1	10	0.016	6.39	0.29	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	34	5.93	9.47	75.9	10	0.016	6.37	0.48	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	34	5.94	9.46	75.9	10	0.016	6.37	0.28	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	35	5.87	9.46	75.7	10.1	0.016	6.36	0.31	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	36	5.78	9.45	75.5	10.1	0.016	6.35	0.31	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	37	5.78	9.44	75.4	10.1	0.016	6.36	0.29	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	38	5.78	9.44	75.4	10.1	0.016	6.34	0.31	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	39	5.77	9.47	75.6	10.1	0.016	6.33	0.29	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	40	5.75	9.49	75.8	10.1	0.015	6.36	0.28	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	41	5.75	9.5	75.8	10.1	0.016	6.34	0.31	18.5

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	42	5.74	9.49	75.7	10.2	0.016	6.35	0.27	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	43	5.71	9.47	75.5	10.1	0.016	6.32	0.29	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	44	5.66	9.44	75.2	10.1	0.016	6.33	0.26	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	45	5.65	9.43	75	10.1	0.016	6.31	0.31	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	46	5.62	9.4	74.7	10.1	0.016	6.32	0.32	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	47	5.62	9.37	74.6	10.1	0.016	6.31	0.3	18.5
5/18/2022 10:04	YSI EXO2	Bruce Hitch	Sunny and light wind	R-IS-7-UVR	48								18.5
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	0	15.7	9.18	92.3	12.8	0.016	7.04	0.31	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	1	14.72	9.19	90.6	12.5	0.016	7.06	0.32	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	2	14.32	9.27	90.6	12.3	0.015	7.07	0.33	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	3	14.04	9.37	91.1	12.2	0.015	7.07	0.36	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	4	12.66	9.69	91.7	11.8	0.015	7.14	0.52	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	5	12.5	9.76	91.6	11.7	0.015	7.15	0.72	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	6	11.57	9.8	90.1	11.4	0.015	7.16	0.36	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	7	11.27	9.81	89.5	11.3	0.015	7.15	0.39	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	8	11.01	9.81	89	11.2	0.015	7.15	0.4	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	9	10.58	9.77	87.7	11.1	0.015	7.11	0.38	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	10	10.42	9.75	87.3	11	0.015	7.09	0.39	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	11	10.17	9.81	87.3	11	0.015	7.07	0.41	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	12	9.95	9.84	87	10.9	0.015	7.06	0.39	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	13	9.86	9.85	86.9	10.9	0.015	6.98	0.39	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	14	9.45	9.87	86.3	10.8	0.015	6.98	0.41	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	15	9.03	9.88	85.5	10.7	0.015	6.93	0.41	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	16	8.52	9.85	84.2	10.6	0.015	6.89	0.37	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	17	8.47	9.83	84	10.6	0.015	6.84	0.33	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	18	7.95	9.85	83	10.5	0.016	6.82	0.34	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	20	7.57	9.85	82.3	10.4	0.016	6.77	0.35	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	20	7.54	9.84	82.2	10.4	0.016	6.73	0.31	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	21	7.35	9.83	81.7	10.4	0.016	6.7	0.32	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	22	6.99	9.82	80.9	10.3	0.016	6.68	0.3	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	23	6.85	9.81	80.5	10.3	0.016	6.66	0.31	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	24	6.78	9.78	80.1	10.3	0.016	6.61	0.29	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	25	6.66	9.75	79.6	10.3	0.016	6.56	0.3	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	26	6.65	9.74	79.5	10.3	0.016	6.51	0.3	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	27	6.62	9.74	79.5	10.3	0.016	6.49	0.34	27

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	28	6.63	9.74	79.5	10.3	0.016	6.47	0.33	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	29	6.59	9.76	79.6	10.3	0.016	6.45	0.32	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	30	6.57	9.75	79.5	10.3	0.016	6.44	0.28	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	31	6.44	9.74	79	10.2	0.016	6.42	0.34	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	32	6.21	9.7	78.2	10	0.016	6.4	0.29	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	33	5.96	9.62	77.2	10.2	0.016	6.37	0.29	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	34	5.87	9.51	76.1	10.2	0.016	6.33	0.27	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	35	5.85	9.45	75.6	10.2	0.016	6.31	0.31	27
5/18/2022 11:27	YSI EXO2	Bruce Hitch	Sunny	R-IS-6-UVR	36								27
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	0	14.27	9.31	90.9	12.3	0.015	6.96	0.33	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	1	13.84	9.42	91.2	12.2	0.015	7.03	0.42	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	2	13.61	9.45	91	12.1	0.015	7.08	0.39	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	3	13.52	9.46	90.8	12.1	0.015	7.09	0.42	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	5	12.05	9.74	90.4	11.6	0.015	7.13	0.4	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	6	11.84	9.75	90	11.5	0.015	7.13	0.43	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	6	11.63	9.75	89.7	11.5	0.015	7.14	0.41	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	7	11.16	9.8	89.1	11.3	0.015	7.1	0.42	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	8	10.76	9.79	88.3	11.2	0.015	7.09	0.4	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	9	10.59	9.77	87.8	11.2	0.015	7.08	0.42	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	10	10.28	5.78	87.1	11	0.015	7.04	0.42	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	11	9.85	9.84	86.8	10.9	0.015	7	0.41	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	12	9.39	9.89	86.5	10.8	0.015	6.95	0.43	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	13	9.05	9.92	85.9	10.7	0.015	6.9	0.38	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	14	8.82	9.93	85.6	10.6	0.015	6.86	0.38	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	15	8.53	9.94	85	10.6	0.015	6.82	0.36	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	16	8.04	9.92	83.9	10.6	0.016	6.79	0.33	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	17	7.7	9.87	82.7	10.5	0.016	6.74	0.33	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	18	7.39	9.74	81	10.5	0.016	6.68	0.33	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	19	7.22	9.73	80.6	10.4	0.016	6.64	0.31	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	20	6.93	9.72	80	10.3	0.016	6.63	0.31	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	21	6.75	9.7	79.3	10.3	0.016	6.58	0.31	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	22	6.57	9.67	78.8	10.2	0.016	6.54	0.38	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	23	6.49	9.65	78.5	10.2	0.016	6.52	0.33	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	24	6.39	9.64	78.3	10.2	0.016	6.51	0.33	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	25	6.29	9.64	78	10.2	0.016	6.45	0.31	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	26	6.25	9.63	77.8	10.2	0.016	6.44	0.3	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	27	6.13	9.61	77.5	10.2	0.016	6.44	0.3	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	28	6.11	9.61	77.5	10	0.016	6.43	0.32	20

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	29	6.09	9.63	77.5	10.2	0.016	6.42	0.29	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	30	6.02	9.63	77.4	10.2	0.016	6.41	0.035	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	31	5.97	9.63	77.3	10.2	0.016	6.41	0.29	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	32	5.96	9.63	77.3	10.2	0.016	6.41	0.26	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	33	5.34	9.64	77.3	10.2	0.016	6.43	0.45	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	34	5.93	9.64	77.3	10.2	0.016	6.44	0.3	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	35	5.93	9.64	77.3	10.2	0.016	6.45	0.29	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	36	5.9	9.64	77.3	10.2	0.016	6.43	0.28	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	37	5.86	9.65	77.2	10.2	0.016	6.44	0.25	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	38	5.83	9.65	77.2	10.2	0.016	6.44	0.3	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	39	5.8	9.65	77.2	10.2	0.016	6.43	0.29	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	40	5.79	9.65	77.1	10.2	0.016	6.44	0.28	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	41	5.76	9.65	77	10.2	0.016	6.44	0.31	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	42	5.75	9.65	77	10.2	0.016	6.42	0.39	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	43	5.73	9.64	76.9	10.2	0.016	6.43	0.28	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	44	5.71	9.64	76.9	10.2	0.016	6.43	0.26	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	45	5.71	9.64	76.9	10.1	0.016	6.42	0.3	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	46	5.71	9.64	76.9	10.2	0.016	6.43	0.28	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	47	5.67	9.64	76.8	10.1	0.016	6.44	0.3	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	48	5.66	9.63	76.7	10.2	0.016	6.43	0.3	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	49	5.65	9.64	76.8	10.1	0.016	6.43	0.3	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	50	5.64	9.65	76.8	10.2	0.016	6.4	0.31	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	51	5.64	9.65	76.8	10.1	0.016	6.44	0.3	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	52	5.63	9.65	76.7	10.1	0.016	6.44	0.29	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	53	5.59	9.63	76.6	10.1	0.016	6.42	0.3	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	54	5.57	9.62	76.4	10.1	0.016	6.41	0.29	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	55	5.54	9.6	76.2	10.1	0.016	6.44	0.3	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	56	5.53	9.59	76.1	10.1	0.016	6.4	0.28	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	57	5.6	9.58	76	10.1	0.016	6.41	0.29	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	58	5.48	9.56	75.8	10.1	0.016	6.4	0.27	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	59	5.46	9.55	75.7	10.1	0.016	6.4	0.3	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	60	5.46	9.55	75.6	10.1	0.016	6.4	0.29	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	61	5.46	9.54	75.6	10.1	0.016	6.4	0.3	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	62	5.46	9.54	75.6	10.1	0.016	6.38	0.27	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	63	5.45	9.54	75.5	10.1	0.016	6.38	0.31	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	64	5.44	9.53	75.5	10.1	0.016	6.38	0.28	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	65	5.34	9.52	75.4	10.1	0.016	6.39	0.31	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	66	5.42	9.51	75.3	10.1	0.016	6.37	0.29	20

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	67	5.41	9.51	75.2	10.1	0.016	6.36	0.31	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	68	5.34	9.5	75.1	10.1	0.016	6.37	0.33	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	69	5.39	9.49	75	10.1	0.016	6.36	0.29	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	70	5.39	9.49	75	10.1	0.016	6.36	0.3	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	71	5.38	9.48	75	10.1	0.016	6.36	0.29	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	72	5.38	9.48	75	10.1	0.016	6.37	0.29	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	73	5.38	9.48	74.9	10.1	0.016	6.38	0.28	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	74	5.37	9.48	74.9	10.1	0.016	6.37	0.31	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	75	5.37	9.47	74.9	10.1	0.016	6.36	0.28	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	76	5.37	9.47	74.9	10.1	0.016	6.37	0.3	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	77	5.37	9.47	74.9	10.1	0.016	6.36	0.3	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	78	5.37	9.47	74.9	10.1	0.016	6.36	0.29	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	79	5.37	9.47	74.9	10.1	0.016	6.36	0.28	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	80	5.37	9.47	74.9	10.1	0.016	6.38	0.28	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	81	5.36	9.47	74.8	10.1	0.016	6.37	0.31	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	82	5.36	9.46	74.8	10.1	0.016	6.36	0.3	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	83	5.35	9.46	74.7	10.1	0.016	6.36	0.29	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	84	5.35	9.45	74.7	10.1	0.016	6.36	0.28	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	85	5.35	9.45	74.7	10.1	0.016	6.35	0.29	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	86	5.34	9.45	74.6	10.1	0.016	6.35	0.33	20
5/18/2022 13:16	YSI EXO2	Bruce Hitch	Sunny, breezy	R-IS-8-UVR	87								20
5/19/2022 08:55	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-4-GC	0	13.4	8.82	84.4	10.8	0.014	6.94	0.13	24
5/19/2022 08:55	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-4-GC	1	12.08	9.17	85.2	10.1	0.013	6.76	0.17	24
5/19/2022 08:55	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-4-GC	2	11.18	9.26	84.6	9.9	0.013	6.66	0.17	24
5/19/2022 08:55	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-4-GC	3	10.64	9.25	83.2	9.7	0.013	6.62	0.21	24
5/19/2022 08:55	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-4-GC	4	10.2	9.42	83.9	9.6	0.013	6.59	0.19	24
5/19/2022 08:55	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-4-GC	5	9.55	9.58	83.9	9.5	0.014	6.56	0.2	24
5/19/2022 08:55	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-4-GC	6	8.72	9.88	85	9.3	0.014	6.56	0.19	24
5/19/2022 08:55	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-4-GC	7								24
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	0	16.86	9.05	93.4	20.3	0.024	7.34	0.24	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	1	16.76	9.09	93.4	20.2	0.02	7.34	0.26	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	2	16.66	9.07	93	20.1	0.024	7.33	0.3	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	3	15.53	9.3	93.5	19.7	0.024	7.34	0.34	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	4	14.64	9.66	95.1	19.2	0.024	7.34	0.3	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	5	14.13	9.73	94.7	18.9	0.024	7.33	0.39	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	6	13.77	9.98	96.3	18.4	0.024	7.34	0.48	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	7	13.37	10.14	97	18.3	0.024	7.37	0.48	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	8	13.04	10.19	96.8	18	0.023	7.39	0.44	21

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	9	12.49	10.25	96.2	17.8	0.023	7.39	0.47	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	10	12.33	10.33	96.5	17.6	0.023	7.39	0.5	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	11	12.02	10.32	95.6	17.6	0.023	7.39	0.49	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	12	11.88	10.22	94.5	17.6	0.023	7.37	0.51	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	13	11.72	10.24	94.4	17.4	0.023	7.32	0.5	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	14	11.64	10.25	94.3	17.3	0.023	7.32	0.49	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	15	11.45	10.33	94.6	17.2	0.023	7.31	0.52	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	16	11.25	10.31	94	17.2	0.023	7.28	0.51	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	17	11.09	10.33	93.9	17.1	0.023	7.25	0.54	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	18	11.03	10.36	93.9	17	0.023	7.23	0.55	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	19	10.91	10.33	93.5	17	0.023	7.19	0.54	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	20	10.71	10.36	93.2	16.8	0.023	7.16	0.55	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	21	10.34	10.39	92.7	16.7	0.023	7.1	0.57	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	22	9.97	10.08	88.7	16.4	0.023	7.07	0.49	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	23	9.64	9.89	86.5	16.3	0.023	6.97	0.44	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	24	9.48	9.74	85.1	16.3	0.023	6.91	0.51	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	25	9.29	9.58	83.3	16.5	0.024	6.84	0.58	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	26	9.15	9.35	80.5	16.8	0.024	6.78	0.71	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	27	8.94	8.91	77.5	16.7	0.024	6.69	0.64	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	28	8.78	8.97	76.7	16.6	0.024	6.64	0.65	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	29	8.51	8.74	74.2	16.7	0.024	6.58	0.68	21
5/19/2022 11:35	YSI EXO2	Bruce Hitch	Sunny and mild	R-IS-20-BC	30	8.13	7.53	63.6	17.3	0.026	6.46	0.78	21
5/23/2022 09:38	YSI EXO2	Emily Applequist	Calm, sunny, clear	R-IS-13-CR	0	10.865	10.15	91.7	11.9	0.016	5.37	0.26	19.7
5/23/2022 09:38	YSI EXO2	Emily Applequist	Calm, sunny, clear	R-IS-13-CR	1	10.058	10.27	91.1	11.7	0.016	5.49	0.32	19.7
5/23/2022 09:38	YSI EXO2	Emily Applequist	Calm, sunny, clear	R-IS-13-CR	2	9.85	10.29	90.8	11.7	0.016	5.49	0.3	19.7
5/23/2022 09:38	YSI EXO2	Emily Applequist	Calm, sunny, clear	R-IS-13-CR	3	9.62	10.32	90.5	11.6	0.017	5.55	0.38	19.7
5/23/2022 09:38	YSI EXO2	Emily Applequist	Calm, sunny, clear	R-IS-13-CR	4	9.415	10.36	90.5	11.6	0.017	5.55	0.34	19.7
5/23/2022 09:38	YSI EXO2	Emily Applequist	Calm, sunny, clear	R-IS-13-CR	5	9.23	10.42	90.6	11.5	0.016	5.54	0.35	19.7
5/23/2022 12:02	YSI EXO2	Emily Applequist	Warm, calm, clear	R-IS-12-JR	0	12.98	9.32	88.4	12.5	0.016	6.71	0.34	18.1
5/23/2022 12:02	YSI EXO2	Emily Applequist	Warm, calm, clear	R-IS-12-JR	1	11.5	9.42	86.3	12	0.016	6.71	0.38	18.1
5/23/2022 12:02	YSI EXO2	Emily Applequist	Warm, calm, clear	R-IS-12-JR	2	11.215	9.44	86	12	0.016	6.7	0.4	18.1
5/23/2022 12:02	YSI EXO2	Emily Applequist	Warm, calm, clear	R-IS-12-JR	3	10.6	9.57	85.8	11.8	0.016	6.69	0.43	18.1
5/23/2022 12:02	YSI EXO2	Emily Applequist	Warm, calm, clear	R-IS-12-JR	4	9.13	9.86	85.4	11.1	0.016	6.61	0.32	18.1

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
5/23/2022 12:02	YSI EXO2	Emily Applequist	Warm, calm, clear	R-IS-12-JR	5	8.63	9.95	85.3	11.1	0.016	6.57	0.34	18.1
5/23/2022 12:02	YSI EXO2	Emily Applequist	Warm, calm, clear	R-IS-12-JR	6	8.2	10.04	85.1	10.7	0.016	6.5	0.27	18.1
5/23/2022 12:02	YSI EXO2	Emily Applequist	Warm, calm, clear	R-IS-12-JR	7	7.949	9.97	84.1	10.5	0.016	6.37	0.23	18.1
5/23/2022 12:02	YSI EXO2	Emily Applequist	Warm, calm, clear	R-IS-12-JR	8	7.85	9.91	83.4	10.3	0.015	6.29	0.22	18.1
5/23/2022 12:02	YSI EXO2	Emily Applequist	Warm, calm, clear	R-IS-12-JR	9	7.64	9.76	81.7	10.2	0.015	6.22	0.23	18.1
5/23/2022 12:02	YSI EXO2	Emily Applequist	Warm, calm, clear	R-IS-12-JR	10	7.52	9.73	81.2	10.1	0.015	6.2	0.25	18.1
5/23/2022 12:02	YSI EXO2	Emily Applequist	Warm, calm, clear	R-IS-12-JR	11	7.47	9.72	81	10.1	0.015	6.13	0.21	18.1
5/23/2022 12:02	YSI EXO2	Emily Applequist	Warm, calm, clear	R-IS-12-JR	12	7.36	9.7	80.7	10	0.015	6.13	0.22	18.1
5/23/2022 12:02	YSI EXO2	Emily Applequist	Warm, calm, clear	R-IS-12-JR	13	7.34	9.67	80.3	10	0.015	6.1	0.22	18.1
5/23/2022 12:02	YSI EXO2	Emily Applequist	Warm, calm, clear	R-IS-12-JR	14	7.22	9.66	79.9	10	0.015	6.1	0.22	18.1
5/23/2022 12:02	YSI EXO2	Emily Applequist	Warm, calm, clear	R-IS-12-JR	15	7.15	9.63	79.7	9.9	0.015	6.13	0.21	18.1
5/23/2022 12:02	YSI EXO2	Emily Applequist	Warm, calm, clear	R-IS-12-JR	16	7.14	0.61	79.5	9.9	0.015	6.05	0.25	18.1
5/24/2022 09:58	YSI EXO2	Joey Verdian	Sunny	R-IS-14-SC	0	13.249	10.43	99.5	23.3	0.03	6.75	0.8	13.1
5/24/2022 09:58	YSI EXO2	Joey Verdian	Sunny	R-IS-14-SC	1	12.97	10.44	98.9	23	0.03	6.65	0.94	13.1
5/24/2022 09:58	YSI EXO2	Joey Verdian	Sunny	R-IS-14-SC	2	12.827	10.44	98.7	22.8	0.03	6.51	1.08	13.1
5/24/2022 09:58	YSI EXO2	Joey Verdian	Sunny	R-IS-14-SC	3	12.71	10.45	98.6	22.3	0.039	6.49	0.97	13.1
5/24/2022 09:58	YSI EXO2	Joey Verdian	Sunny	R-IS-14-SC	4	12.698	10.45	98.5	22.1	0.029	6.5	0.9	13.1
5/24/2022 09:58	YSI EXO2	Joey Verdian	Sunny	R-IS-14-SC	5	12.687	10.46	98.6	22.2	0.029	6.5	1.04	13.1
5/24/2022 09:58	YSI EXO2	Joey Verdian	Sunny	R-IS-14-SC	6	12.686	10.46	98.5	22	0.029	6.51	1.1	13.1
5/24/2022 09:58	YSI EXO2	Joey Verdian	Sunny	R-IS-14-SC	7	12.684	10.46	98.6	22.1	0.029	6.54	0.97	13.1
5/24/2022 09:58	YSI EXO2	Joey Verdian	Sunny	R-IS-14-SC	8	12.402	10.54	98.6	21	0.028	6.57	0.92	13.1
5/24/2022 11:01	YSI EXO2	Joey Verdian	Sunny	R-IS-15-SC	0	16.11	10.09	102.5	26.3	0.032	7.11	0.14	19.5
5/24/2022 11:01	YSI EXO2	Joey Verdian	Sunny	R-IS-15-SC	1	15.937	10.09	102.1	26.1	0.032	7.1	0.17	19.5
5/24/2022 11:01	YSI EXO2	Joey Verdian	Sunny	R-IS-15-SC	2	15.342	10.13	101.1	25.8	0.032	7.09	0.21	19.5
5/24/2022 11:01	YSI EXO2	Joey Verdian	Sunny	R-IS-15-SC	3	15.201	10.14	101	25.7	0.032	7.07	0.23	19.5
5/24/2022 11:01	YSI EXO2	Joey Verdian	Sunny	R-IS-15-SC	4	15.007	10.12	100.4	25.6	0.032	7.06	0.26	19.5
5/24/2022 11:01	YSI EXO2	Joey Verdian	Sunny	R-IS-15-SC	5	14.921	10.12	100.1	25.5	0.032	7.05	0.24	19.5
5/24/2022 11:01	YSI EXO2	Joey Verdian	Sunny	R-IS-15-SC	6	14.233	10.17	99.3	25.2	0.032	7.04	0.51	19.5
5/24/2022 11:01	YSI EXO2	Joey Verdian	Sunny	R-IS-15-SC	7	13.995	10.21	99	25.1	0.032	7.03	0.51	19.5
5/24/2022 11:01	YSI EXO2	Joey Verdian	Sunny	R-IS-15-SC	8	13.792	10.23	98.8	25	0.032	6.99	0.5	19.5
5/24/2022 11:01	YSI EXO2	Joey Verdian	Sunny	R-IS-15-SC	9	13.659	10.24	98.6	25	0.032	7	0.6	19.5
5/24/2022 11:01	YSI EXO2	Joey Verdian	Sunny	R-IS-15-SC	10	13.543	10.27	98.6	25	0.032	6.99	0.71	19.5
5/24/2022 11:01	YSI EXO2	Joey Verdian	Sunny	R-IS-15-SC	11	13.498	10.3	98.8	25	0.032	6.99	0.65	19.5

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
5/24/2022 11:01	YSI EXO2	Joey Verdian	Sunny	R-IS-15-SC	12	13.456	10.28	98.6	24.9	0.032	6.99	0.95	19.5
5/24/2022 11:01	YSI EXO2	Joey Verdian	Sunny	R-IS-15-SC	13	13.455	10.29	98.7	24.9	0.032	6.97	0.9	19.5
5/24/2022 11:01	YSI EXO2	Joey Verdian	Sunny	R-IS-15-SC	14	13.369	10.25	98.1	24.6	0.032	6.97	0.67	19.5
5/24/2022 11:01	YSI EXO2	Joey Verdian	Sunny	R-IS-15-SC	15	13.238	10.2	97.3	24.5	0.032	6.95	0.56	19.5
5/24/2022 11:01	YSI EXO2	Joey Verdian	Sunny	R-IS-15-SC	16	13.221	10.2	97.2	24.5	0.032	6.93	0.69	19.5
5/24/2022 11:01	YSI EXO2	Joey Verdian	Sunny	R-IS-15-SC	17	13.206	10.19	97.1	24.4	0.032	6.91	0.76	19.5
5/24/2022 11:01	YSI EXO2	Joey Verdian	Sunny	R-IS-15-SC	18	13.159	10.18	97	24.4	0.032	6.91	0.71	19.5
5/24/2022 11:01	YSI EXO2	Joey Verdian	Sunny	R-IS-15-SC	19	13.135	10.18	96.9	24.4	0.032	6.88	0.65	19.5
5/25/2022 10:21	YSI EXO2	Esther Adelstein	Sunny	R-IS-18-RR	0	9.479	9.54	83.5	7.4	0.011	6.06	0.23	17.0
5/25/2022 10:21	YSI EXO2	Esther Adelstein	Sunny	R-IS-18-RR	1	8.398	9.7	82.4	7.1	0.011	6	0.25	17.0
5/25/2022 10:21	YSI EXO2	Esther Adelstein	Sunny	R-IS-18-RR	2	6.131	10.18	82	6.4	0.01	5.75	0.26	17.0
5/25/2022 10:21	YSI EXO2	Esther Adelstein	Sunny	R-IS-18-RR	3	6.086	10.22	82.3	6.3	0.01	5.64	0.3	17.0
5/26/2022 09:53	YSI EXO2	Esther Adelstein	Sunny	R-IS-19-BI	0	10.741	9.2	83	6.9	0.009	5.96	0.18	26.5
5/26/2022 09:53	YSI EXO2	Esther Adelstein	Sunny	R-IS-19-BI	1	10.58	9.22	82.8	6.9	0.01	5.81	0.17	26.5
5/26/2022 09:53	YSI EXO2	Esther Adelstein	Sunny	R-IS-19-BI	2	10.389	9.25	82.6	6.9	0.01	5.5	0.2	26.5
5/26/2022 09:53	YSI EXO2	Esther Adelstein	Sunny	R-IS-19-BI	3	10.299	9.25	82.6	6.8	0.01	5.53	0.22	26.5
5/26/2022 09:53	YSI EXO2	Esther Adelstein	Sunny	R-IS-19-BI	4	10.205	9.28	82.6	6.8	0.01	5.49	0.17	26.5
5/26/2022 09:53	YSI EXO2	Esther Adelstein	Sunny	R-IS-19-BI	5	10.235	9.26	82.5	6.8	9.01	5.53	0.19	26.5
5/26/2022 09:53	YSI EXO2	Esther Adelstein	Sunny	R-IS-19-BI	6	9.659	9.41	82.8	6.7	0.009	5.6	0.23	26.5
5/26/2022 09:53	YSI EXO2	Esther Adelstein	Sunny	R-IS-19-BI	7	9.25	9.55	83	6.6	0.009	5.6	0.22	26.5
5/26/2022 09:53	YSI EXO2	Esther Adelstein	Sunny	R-IS-19-BI	8	8.655	9.67	82.9	6.4	0.009	5.57	0.26	26.5
8/1/2022 10:04	YSI EXO2	Bethany Leach	Cloudy	R-IS-4-GC	0	18.424	8	85.2	10.9	0.012	6.62	0.08	25.5
8/1/2022 10:04	YSI EXO2	Bethany Leach	Cloudy	R-IS-4-GC	1	17.133	8.42	87.4	10.4	0.012	6.59	0.1	25.5
8/1/2022 10:04	YSI EXO2	Bethany Leach	Cloudy	R-IS-4-GC	2	16.105	8.56	86.9	9.9	0.012	6.55	0.16	25.5
8/1/2022 10:04	YSI EXO2	Bethany Leach	Cloudy	R-IS-4-GC	3	15.595	8.63	86.7	9.7	0.012	6.45	0.16	25.5
8/1/2022 10:04	YSI EXO2	Bethany Leach	Cloudy	R-IS-4-GC	4	15.369	8.61	86.1	9.6	0.012	6.35	0.18	25.5
8/1/2022 10:04	YSI EXO2	Bethany Leach	Cloudy	R-IS-4-GC	5	15.24	8.6	85.7	9.6	0.012	6.25	0.19	25.5
8/1/2022 10:04	YSI EXO2	Bethany Leach	Cloudy	R-IS-4-GC	6	15.13	8.59	85.4	9.6	0.012	6.24	0.18	25.5
8/1/2022 10:04	YSI EXO2	Bethany Leach	Cloudy	R-IS-4-GC	7	15.049	8.54	84.8	9.5	0.012	6.23	0.14	25.5
8/2/2022 10:18	YSI EXO2	Emily Applequist	Sunny, clear, warm	R-IS-13-CR	0	12.852	9.72	92.1	13	0.017	6.62	0.2	21.5
8/2/2022 10:18	YSI EXO2	Emily Applequist	Sunny, clear, warm	R-IS-13-CR	1	12.009	9.81	91.1	12.6	0.017	6.49	0.25	21.5
8/2/2022 10:18	YSI EXO2	Emily Applequist	Sunny, clear, warm	R-IS-13-CR	2	11.289	9.96	90.9	12.3	0.017	6.42	0.24	21.5

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
8/2/2022 10:18	YSI EXO2	Emily Applequist	Sunny, clear, warm	R-IS-13-CR	3	10.845	10.06	90.9	12	0.016	6.37	0.25	21.5
8/2/2022 10:18	YSI EXO2	Emily Applequist	Sunny, clear, warm	R-IS-13-CR	4	10.559	10.13	90.9	11.8	0.016	6.33	0.29	21.5
8/2/2022 10:18	YSI EXO2	Emily Applequist	Sunny, clear, warm	R-IS-13-CR	5	10.178	10.19	90.7	11.7	0.016	6.25	0.27	21.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	0	17.778	8.52	89.6	14.9	0.017	7.01	0.15	22.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	1	14.684	8.85	87.1	13.9	0.017	6.99	0.28	22.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	2	11.1	9.77	88.5	11.8	0.016	6.79	0.34	22.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	3	9.208	9.45	82.1	11.1	0.016	6.64	0.25	22.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	4	8.722	9.34	80.3	10.9	0.016	6.53	0.22	22.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	5	8.349	9.28	79.1	10.8	0.016	6.46	0.24	22.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	6	8.066	9.27	78.5	10.7	0.016	6.39	0.23	22.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	7	7.825	9.22	77.4	10.5	0.016	6.34	0.21	22.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	8	7.705	9.16	76.8	10.5	0.016	6.31	0.26	22.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	9	7.615	9.16	76.5	10.5	0.016	6.27	0.25	22.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	10	7.555	9.11	76.1	10.4	0.016	6.26	0.25	22.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	11	7.533	9.14	76.3	10.4	0.016	6.27	0.22	22.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	12	7.413	9.16	76.3	10.4	0.016	6.27	0.24	22.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	13	7.379	9.06	75.3	10.4	0.016	6.26	0.24	22.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	14	7.35	9.07	75.4	10.3	0.016	6.24	0.26	22.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	15	7.315	9.07	75.3	10.3	0.016	6.25	0.23	22.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	16	7.29	9.06	75.2	10.3	0.016	6.25	0.22	22.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	17	7.263	9.05	75	10.3	0.016	6.25	0.22	22.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	18	7.195	9.03	74.8	10.3	0.016	6.25	0.25	22.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	19	7.132	9.01	74.5	10.2	0.016	6.26	0.27	22.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	20	7.075	9.06	74.8	10.2	0.016	6.23	0.24	22.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	21	7.007	9.05	74.6	10.2	0.016	6.22	0.25	22.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	22	7.006	9.13	75.2	10.2	0.016	6.22	0.23	22.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	23	6.994	9.14	75.3	10.2	0.016	6.22	0.25	22.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	24	6.972	9.13	75.1	10.2	0.016	6.23	0.24	22.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	25	6.96	9.11	74.9	10.2	0.016	6.2	0.24	22.5
8/2/2022 14:00	YSI EXO2	Bethany Leach	Sunny hot	R-IS-12-JR	26	6.951	9.07	74.6	10.2	0.016	6.22	0.24	22.5
8/3/2022 09:12	YSI EXO2	Bethany Leach	Sunny, warm, clear	R-IS-14-SC	0	22.211	8.87	101.8	30.3	0.032	7.11	0.34	20
8/3/2022 09:12	YSI EXO2	Bethany Leach	Sunny, warm, clear	R-IS-14-SC	1	22.107	8.86	101.6	30.2	0.032	7.13	0.29	20
8/3/2022 09:12	YSI EXO2	Bethany Leach	Sunny, warm, clear	R-IS-14-SC	2	20.247	9.01	99.9	28.6	0.031	7	0.47	20
8/3/2022 09:12	YSI EXO2	Bethany Leach	Sunny, warm, clear	R-IS-14-SC	3	18.398	9.13	97.3	26.5	0.03	6.9	0.68	20
8/3/2022 09:12	YSI EXO2	Bethany Leach	Sunny, warm, clear	R-IS-14-SC	4	15.915	9.49	95.9	22.1	0.027	6.8	0.68	20

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
8/3/2022 09:12	YSI EXO2	Bethany Leach	Sunny, warm, clear	R-IS-14-SC	5	12.929	9.97	94.6	17.8	0.023	6.74	0.59	20
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	0	22.816	8.88	103.1	31	0.032	8.55	0.18	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	1	22.069	8.96	102.6	30.4	0.032	9.2	0.25	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	2	21.429	9.28	105.1	29.7	0.032	8.81	0.3	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	3	18.735	10.06	107.8	26.8	0.03	7.63	0.38	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	4	18	9.87	104.2	25.7	0.03	7.35	0.34	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	5	17.65	9.79	102.6	25.5	0.03	7.13	0.4	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	6	17.257	9.47	98.4	25.1	0.029	7	0.44	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	7	16.773	8.69	89.4	25.1	0.03	6.75	0.34	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	8	16.536	8.16	83.6	24.9	0.03	6.55	0.31	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	9	16.217	7.59	77.2	24.9	0.03	6.41	0.37	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	10	15.931	7.51	75.9	24.6	0.03	6.25	0.32	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	11	15.667	8.17	82.2	23.5	0.029	6.18	0.33	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	12	15.546	8.46	84.9	23	0.028	6.18	0.33	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	13	15.464	8.75	87.7	22.7	0.028	6.17	0.36	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	14	15.4	9.08	90.8	22.3	0.027	6.19	0.4	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	15	15.341	9.2	91.9	22	0.027	6.19	0.43	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	16	15.292	9.26	92.4	21.8	0.027	6.14	0.47	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	17	15.284	9.28	92.6	21.8	0.027	6.1	0.67	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	18	15.272	9.3	92.8	21.8	0.027	6.09	0.56	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	19	15.248	9.32	93	21.7	0.027	6.06	0.55	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	20	15.224	9.33	92.9	21.7	0.027	6.02	0.58	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	21	15.177	9.34	93	21.8	0.027	6	0.68	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	22	15.167	9.35	93	21.9	0.027	5.98	0.6	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	23	15.145	9.35	93	21.9	0.027	5.98	0.62	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	24	15.128	9.35	93	21.8	0.027	5.97	0.7	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	25	15.109	9.34	92.9	21.9	0.027	5.96	0.7	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	26	15.074	9.35	92.8	21.8	0.027	5.94	0.82	18.5

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	27	15.034	9.38	93.1	21.8	0.027	5.93	0.76	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	28	14.93	9.48	93.9	21.4	0.027	5.93	1.02	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	29	14.815	9.58	94.7	21	0.026	5.93	1.04	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	30	14.752	9.58	94.5	21	0.026	5.9	1.15	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	31	14.751	9.62	94.9	20.9	0.026	5.89	1.09	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	32	14.746	9.63	95	20.9	0.026	5.89	1.12	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	33	14.639	9.66	95.1	20.6	0.026	5.9	1.35	18.5
8/3/2022 10:38	YSI EXO2	Bethany Leach	Sunny, hot, clear	R-IS-15-SC	34	14.617	9.67	95.1	20.6	0.026	5.89	1.67	18.5
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	0	22.905	7.65	89.1	25.1	0.026	7.11	0.05	34.0
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	1	22.918	7.66	89.1	25.1	0.026	7.25	0.03	34.0
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	2	22.897	7.65	89	25.1	0.026	7.24	0.06	34.0
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	3	22.824	7.67	89.1	25.1	0.026	7.22	0.01	34.0
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	4	22.285	8.04	92.5	24.6	0.026	7.16	0.03	34.0
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	5	21.988	7.97	91.2	24.5	0.026	7.07	0.03	34.0
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	6	21.752	7.95	90.5	24.3	0.026	7.02	0.02	34.0
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	7	21.588	7.94	90.1	24.2	0.026	6.97	0.05	34.0
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	8	21.453	7.9	89.4	24.3	0.026	6.91	0.01	34.0
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	9	21.281	7.89	89.1	24.1	0.026	6.86	0.04	34.0
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	10	21.13	7.89	88.8	23.9	0.026	6.8	0.09	34.0
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	11	20.908	7.9	88.5	23.8	0.026	6.75	0.06	34.0
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	12	20.666	7.89	88	23.6	0.026	6.69	0.09	34.0
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	13	20.29	7.81	86.4	23.4	0.026	6.65	0.18	34.0
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	14	20.065	7.88	86.8	23.1	0.026	6.61	0.25	34.0
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	15	19.554	7.94	86.6	22.9	0.026	6.58	0.25	34.0
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	16	19.349	7.92	86	22.8	0.026	6.5	0.28	34.0
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	17	18.654	7.57	81	22.7	0.026	6.43	0.23	34.0
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	18	15.975	6.73	68.1	21.9	0.026	6.1	0.88	34.0
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	19	13.825	6.54	63.4	20.1	0.026	6	1.12	34.0

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8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	20	12.337	7.38	69.1	17.1	0.023	5.85	0.72	34.0
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	21	11.644	7.69	70.8	16	0.021	5.74	0.64	34.0
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	22	11.266	7.91	72.2	15.5	0.021	5.65	0.57	34.0
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	23	11.085	8	72.7	15.2	0.021	5.55	0.71	34.0
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	24	10.992	8.12	73.8	14.9	0.02	5.49	0.67	34.0
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	25	10.94	8.12	73.5	14.9	0.02	5.43	0.82	34.0
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	26	10.894	8.11	73.3	14.9	0.02	5.39	0.81	34.0
8/4/2022 08:28	YSI EXO2	Bethany Leach	Partly cloudy, warm	R-IS-20-BC	27	10.846	8.15	73.6	14.8	0.02	5.35	0.72	34.0
8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	0	21.95	6.8	77.8	10.3	0.011	2.5	0.06	28.5
8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	1	21.83	6.82	77.7	10.2	0.011	7.49	0.1	28.5
8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	2	21.82	6.82	77.7	10.2	0.011	7.24	0.02	28.5
8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	3	21.8	6.82	77.7	10.2	0.011	7.11	0.13	28.5
8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	4	21.8	6.82	77.7	10.2	0.011	6.9	0.11	28.5
8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	5	21.78	6.82	77.7	10.2	0.011	6.7	0.11	28.5
8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	6	21.76	6.82	77.7	10.2	0.011	6.6	0.11	28.5
8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	7	21.66	6.84	77.7	10.2	0.011	6.5	0.11	28.5
8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	8	19.11	7.72	83.5	9.3	0.01	6.37	0.16	28.5
8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	9	18.4	7.77	82.3	8.9	0.01	6.25	0.13	28.5
8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	10	17.2	7.84	80.8	8.6	0.01	6.17	0.13	28.5
8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	11	16.24	7.83	79.1	8.5	0.01	6.07	0.2	28.5
8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	12	15.53	7.74	77.3	8.4	0.01	5.88	0.21	28.5
8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	13	14.62	7.44	73.1	8.3	0.01	5.59	0.21	28.5
8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	14	14.51	7.35	71.7	8.3	0.01	5.44	0.22	28.5
8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	15	14.05	7.2	69.8	8.2	0.01	5.31	0.22	28.5
8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	16	13.9	7.09	68.5	8.2	0.01	5.22	0.28	28.5
8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	17	13.79	7	67.1	8.2	0.011	5.07	0.23	28.5
8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	18	13.51	6.74	64.4	8.2	0.011	4.93	0.26	28.5
8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	19	13.24	6.48	61.5	8.2	0.011	4.98	0.23	28.5

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8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	20	12.66	6.24	58.2	8.1	0.011	4.93	0.21	28.5
8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	21	11.94	6.03	55.6	8	0.011	4.79	0.22	28.5
8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	22	10.14	5.96	52.1	7.8	0.011	4.79	0.21	28.5
8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	23	8.99	5.63	48.2	7.7	0.011	4.68	0.32	28.5
8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	24	8.13	5.47	46.1	7.7	0.011	4.73	0.32	28.5
8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	25	7.84	5.34	44.9	7.6	0.011	4.62	0.34	28.5
8/15/2022 09:28	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-1-LL	26	7.45	4.91	41.3	7.9	0.012	4.64	0.32	28.5
8/15/2022 11:11	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-2-LL	0	21.76	6.94	79	10.1	0.11	7.4	0.04	33.5
8/15/2022 11:11	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-2-LL	1	21.66	6.94	78.8	10.1	0.011	7.3	0.04	33.5
8/15/2022 11:11	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-2-LL	2	21.61	6.93	78.8	10.1	0.011	6.8	0.05	33.5
8/15/2022 11:11	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-2-LL	3	21.58	6.94	7.87	10.1	0.011	6.17	0.06	33.5
8/15/2022 11:11	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-2-LL	4	21.66	6.94	78.6	10.1	0.011	5.71	0.04	33.5
8/15/2022 11:11	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-2-LL	5	21.53	6.93785	78.3	10	0.011	5.34	0.07	33.5
8/15/2022 11:11	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-2-LL	6	21.36	6.93	78.4	10	0.011	4.62	0.02	33.5
8/15/2022 11:11	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-2-LL	7	21.36	6.92	78.2	10	0.011	5.43	0.07	33.5
8/15/2022 11:11	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-2-LL	8	21.2	6.94	78	9.9	0.011	5.36	0.08	33.5
8/15/2022 11:11	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-2-LL	9	18.76	7.49	80.8	9.2	0.01	5.62	0.09	33.5
8/15/2022 11:11	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-2-LL	10	17.22	7.97	82.5	8.8	0.01	6	0.09	33.5
8/15/2022 11:11	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-2-LL	11	16.68	7.96	81.3	8.5	0.01	6.3	0.11	33.5
8/15/2022 11:11	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-2-LL	12	15.57	8.05	80.4	8.3	0.01	6.56	0.11	33.5
8/15/2022 11:11	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-2-LL	13	14.81	7.99	78.1	8.2	0.01	6.53	0.16	33.5
8/15/2022 11:11	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-2-LL	14	14.28	7.8	75.7	8.2	0.01	6.5	0.13	33.5
8/15/2022 11:11	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-2-LL	15	13.96	7.56	73	8.1	0.01	6.64	0.21	33.5
8/15/2022 11:11	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-2-LL	16	13.67	7.54	72.3	8.1	0.01	6.71	0.2	33.5
8/15/2022 11:11	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-2-LL	17	13.23	7.44	7.6	8	0.01	6.66	0.19	33.5
8/15/2022 11:11	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-2-LL	18	12.97	7.3	68.9	8	0.01	6.64	0.24	33.5
8/15/2022 11:11	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-2-LL	19	12.44	7.12	66.2	7.9	0.011	6.59	0.2	33.5
8/15/2022 11:11	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-2-LL	20	11.85	6.76	62.8	7.9	0.011	6.72	0.2	33.5

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
8/15/2022 11:11	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-2-LL	21	11.33	6.57	59.7	7.9	0.011	6.76	0.19	33.5
8/15/2022 11:11	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-2-LL	22	11.05	6.38	57.8	7.9	0.011	6.84	0.22	33.5
8/15/2022 11:11	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-2-LL	23	10.86	6.35	57.3	7.8	0.011	6.93	0.18	33.5
8/15/2022 11:11	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-2-LL	24	10.74	6.33	57	7.8	0.011	6.99	0.27	33.5
8/15/2022 12:23	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-3-LL	0	21.81	6.7	76.4	10.2	0.011	6.39	0.09	29.5
8/15/2022 12:23	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-3-LL	1	21.54	6.81	77.3	10	0.011	6.3	0.04	29.5
8/15/2022 12:23	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-3-LL	2	21.45	6.85	77.5	10	0.011	6.85	0.06	29.5
8/15/2022 12:23	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-3-LL	3	21.34	6.86	77.4	10	0.011	6.59	0.05	29.5
8/15/2022 12:23	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-3-LL	4	21.23	6.86	77.3	10	0.011	6.42	0.09	29.5
8/15/2022 12:23	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-3-LL	5	21.2	6.87	77.3	9.9	0.011	6.29	0.08	29.5
8/15/2022 12:23	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-3-LL	6	21.09	6.87	77.2	9.9	0.011	6.12	0.09	29.5
8/15/2022 12:23	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-3-LL	7	21.09	6.87	77.2	9.9	0.011	6.01	0.09	29.5
8/15/2022 12:23	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-3-LL	8	21.02	6.88	77.2	9.9	0.011	6.93	0.07	29.5
8/15/2022 12:23	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-3-LL	9	17.44	7.39	78.1	8.8	0.01	6.22	0.09	29.5
8/15/2022 12:23	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-3-LL	10	16.87	7.87	80.9	8.6	0.01	6.42	0.014	29.5
8/15/2022 12:23	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-3-LL	11	15.13	8.02	79.7	8.3	0.01	6.53	0.18	29.5
8/15/2022 12:23	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-3-LL	12	14.86	7.96	78.5	8.2	0.01	6.88	0.2	29.5
8/15/2022 12:23	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-3-LL	13	14.44	7.93	77.1	8.1	0.01	6.53	0.2	29.5
8/15/2022 12:23	YSI EXO2	Bruce Hitch	Sunny and warm	R-IS-3-LL	14	14.04	7.82	75.5	8.1	0.01	6.48	0.27	29.5
8/17/2022 11:03	YSI EXO2	Esther Adelstein	Warm overcast	R-IS-5-UVR	0	23.7	7.26	85.8	15.2	0.016	6.72	0.1	21.5
8/17/2022 11:03	YSI EXO2	Esther Adelstein	Warm overcast	R-IS-5-UVR	1	23.59	7.26	85.7	15.2	0.016	6.77	0.06	21.5
8/17/2022 11:03	YSI EXO2	Esther Adelstein	Warm overcast	R-IS-5-UVR	2	23.56	7.27	85.6	15.1	0.016	6.77	0.07	21.5
8/17/2022 11:03	YSI EXO2	Esther Adelstein	Warm overcast	R-IS-5-UVR	3	23.53	7.27	85.5	15.1	0.016	6.77	0.14	21.5
8/17/2022 11:03	YSI EXO2	Esther Adelstein	Warm overcast	R-IS-5-UVR	4	23.51	7.27	85.5	15.1	0.016	6.77	0.18	21.5
8/17/2022 11:03	YSI EXO2	Esther Adelstein	Warm overcast	R-IS-5-UVR	5	23.49	7.3	85.9	15.1	0.016	6.78	0.1	21.5
8/17/2022 11:03	YSI EXO2	Esther Adelstein	Warm overcast	R-IS-5-UVR	6	23.39	7.28	85.4	15.1	0.016	6.78	0.42	21.5
8/17/2022 11:03	YSI EXO2	Esther Adelstein	Warm overcast	R-IS-5-UVR	7	22.6	7.38	85.4	14.3	0.015	6.74	0.21	21.5
8/17/2022 11:03	YSI EXO2	Esther Adelstein	Warm overcast	R-IS-5-UVR	8	22.88	7.55	86.2	13.8	0.015	6.7	0.18	21.5

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
8/17/2022 11:03	YSI EXO2	Esther Adelstein	Warm overcast	R-IS-5-UVR	9	21.52	7.58	85.7	13.5	0.014	6.66	0.16	21.5
8/17/2022 12:05	YSI EXO2	Esther Adelstein	Overcast	R-IS-7-UVR	0	23.61	7.29	85.9	15.1	0.015	6.9	0.25	20.6
8/17/2022 12:05	YSI EXO2	Esther Adelstein	Overcast	R-IS-7-UVR	1	23.54	7.29	85.7	15.1	0.015	6.94	0.19	20.6
8/17/2022 12:05	YSI EXO2	Esther Adelstein	Overcast	R-IS-7-UVR	2	23.43	7.31	85.9	15	0.015	6.96	0.2	20.6
8/17/2022 12:05	YSI EXO2	Esther Adelstein	Overcast	R-IS-7-UVR	3	23.39	7.31	85.8	15	0.016	6.96	0.11	20.6
8/17/2022 12:05	YSI EXO2	Esther Adelstein	Overcast	R-IS-7-UVR	4	23.35	7.32	85.9	15	0.015	6.98	0.13	20.6
8/17/2022 12:05	YSI EXO2	Esther Adelstein	Overcast	R-IS-7-UVR	5	23.3	7.33	85.9	15	0.015	7	0.1	20.6
8/17/2022 12:05	YSI EXO2	Esther Adelstein	Overcast	R-IS-7-UVR	6	23.25	7.31	85.6	15	0.015	7	0.1	20.6
8/17/2022 12:05	YSI EXO2	Esther Adelstein	Overcast	R-IS-7-UVR	7	23.04	7.35	85.8	14.8	0.015	6.97	0.14	20.6
8/17/2022 12:05	YSI EXO2	Esther Adelstein	Overcast	R-IS-7-UVR	8	22.66	7.5	86.8	14.4	0.015	6.96	0.2	20.6
8/17/2022 12:05	YSI EXO2	Esther Adelstein	Overcast	R-IS-7-UVR	9	22.05	7.74	87.5	13.9	0.015	6.92	0.19	20.6
8/17/2022 12:05	YSI EXO2	Esther Adelstein	Overcast	R-IS-7-UVR	10	21.13	7.84	88.3	13.4	0.014	6.88	0.13	20.6
8/17/2022 12:05	YSI EXO2	Esther Adelstein	Overcast	R-IS-7-UVR	11	20.36	8.08	89.5	13.1	0.014	6.85	0.12	20.6
8/17/2022 12:05	YSI EXO2	Esther Adelstein	Overcast	R-IS-7-UVR	12	18.65	8.58	90.6	12.3	0.014	6.85	0.22	20.6
8/17/2022 12:05	YSI EXO2	Esther Adelstein	Overcast	R-IS-7-UVR	13	16.75	8.92	91.2	11.8	0.014	6.84	0.29	20.6
8/17/2022 12:05	YSI EXO2	Esther Adelstein	Overcast	R-IS-7-UVR	14	15.32	9.05	90.1	11.5	0.014	6.82	0.33	20.6
8/17/2022 12:05	YSI EXO2	Esther Adelstein	Overcast	R-IS-7-UVR	15	14.44	8.98	87.8	11.3	0.014	6.74	0.3	20.6
8/17/2022 12:05	YSI EXO2	Esther Adelstein	Overcast	R-IS-7-UVR	16	13.76	8.75	84.2	11.2	0.014	6.69	0.41	20.6
8/17/2022 12:05	YSI EXO2	Esther Adelstein	Overcast	R-IS-7-UVR	17	12.91	8.58	81	11	0.014	6.63	0.34	20.6
8/17/2022 12:05	YSI EXO2	Esther Adelstein	Overcast	R-IS-7-UVR	18	12.42	8.5	79.5	10.9	0.014	6.58	0.42	20.6
8/17/2022 12:05	YSI EXO2	Esther Adelstein	Overcast	R-IS-7-UVR	19	11.93	8.45	77.9	10.9	0.015	6.53	0.44	20.6
8/17/2022 12:05	YSI EXO2	Esther Adelstein	Overcast	R-IS-7-UVR	20	11.41	8.28	75.5	10.8	0.015	6.47	0.48	20.6
8/17/2022 12:05	YSI EXO2	Esther Adelstein	Overcast	R-IS-7-UVR	21	11.08	8.13	73.7	10.7	0.015	6.43	0.44	20.6
8/17/2022 12:05	YSI EXO2	Esther Adelstein	Overcast	R-IS-7-UVR	22	10.33	8.03	71.5	10.7	0.015	6.38	0.51	20.6
8/17/2022 12:05	YSI EXO2	Esther Adelstein	Overcast	R-IS-7-UVR	23	9.81	7.93	69.8	10.7	0.015	6.33	0.49	20.6
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	0	22.85	7.37	85.7	14.8	0.015	6.71	0.27	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	1	22.86	7.37	85.7	14.8	0.015	6.7	0.25	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	2	22.86	7.37	85.7	14.8	0.015	6.71	0.25	18.5

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8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	3	22.86	7.36	85.6	14.8	0.015	6.72	0.25	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	4	22.86	7.37	85.7	14.8	0.015	6.73	0.27	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	5	22.86	7.37	85.7	14.8	0.015	6.73	0.28	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	6	22.85	7.37	85.7	14.8	0.015	6.74	0.25	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	7	22.86	7.35	85.7	14.8	0.015	6.72	0.25	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	8	22.71	7.39	85.8	14.6	0.015	6.73	0.27	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	9	22.44	7.47	86.8	14.2	0.015	6.71	0.25	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	10	20.75	8.12	90.7	13.7	0.015	6.65	0.27	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	11	19.93	8.31	91.1	13	0.015	6.61	0.28	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	12	17.88	8.59	90.6	12.5	0.014	6.57	0.29	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	13	16.86	8.4	87.2	12.3	0.015	6.5	0.24	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	14	15.9	8.48	85.7	11.8	0.014	6.47	0.25	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	15	14.48	8.78	85.8	11.4	0.014	6.44	0.24	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	16	13.61	8.69	83.3	11.2	0.014	6.39	0.23	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	17	13.02	8.64	82	11	0.014	6.33	0.23	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	18	12.6	8.64	81.2	11	0.014	6.29	0.23	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	19	11.96	8.57	79.2	10.8	0.015	6.19	0.23	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	20	11.23	8.47	77	10.7	0.015	6.12	0.22	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	21	10.73	8.41	75.7	10.6	0.015	6.08	0.23	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	22	10.45	8.42	75.3	10.6	0.015	6.04	0.22	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	23	9.79	8.42	74.3	10.4	0.015	5.96	0.21	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	24	9.25	8.39	73	10.3	0.015	5.92	0.21	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	25	8.92	8.4	72.4	10.3	0.015	5.91	0.21	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	26	8.53	8.43	72.1	10.2	0.015	5.9	0.21	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	27	8.24	8.45	71.7	10.1	0.015	5.9	0.21	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	28	8.02	8.46	71.3	10.2	0.015	5.88	0.2	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	29	7.77	8.33	69.9	10.2	0.015	5.87	0.19	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	30	7.61	8.36	70	10.1	0.015	5.88	0.19	18.5

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	31	7.51	8.38	69.9	10.1	0.015	5.87	0.2	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	32	7.42	8.35	69.5	10.1	0.015	5.86	0.19	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	33	7.33	8.33	69.3	10.1	0.015	5.86	0.2	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	34	7.24	8.32	68.9	10.1	0.015	5.85	0.19	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	35	7.15	8.28	68.4	10.1	0.015	5.85	0.19	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	36	7.05	8.2	67.5	10.1	0.015	5.83	0.19	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	37	6.98	8.13	66.9	10.1	0.015	5.84	0.19	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	38	6.95	8.11	66.6	10.1	0.015	5.81	0.18	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	39	6.92	8.03	65.8	10.2	0.016	5.79	0.19	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	40	6.89	7.85	64.2	10.3	0.016	5.78	0.17	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	41	6.84	7.71	63.3	10.3	0.016	5.76	0.18	18.5
8/18/2022 08:02	YSI EXO2	Esther Adelstein	Sunny and windy	R-IS-6-UVR	42	6.79	7.72	63.2	10.3	0.016	5.76	0.18	18.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	0	22.71	7.5	86.9	15.1	0.16	6.76	0.3	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	1	22.87	7.43	86.4	15.4	0.016	6.88	0.32	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	2	22.85	7.43	86.3	14.9	0.016	6.95	0.32	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	3	22.88	7.41	86.2	14.9	0.015	6.99	0.32	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	4	22.88	7.4	86.1	14.8	0.015	7.02	0.33	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	5	22.88	7.39	85.9	14.8	0.015	7.04	0.33	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	6	22.88	7.4	86	14.8	0.015	7.05	0.33	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	7	22.86	7.4	86	14.8	0.015	7.06	0.34	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	8	22.85	7.4	86	14.8	0.015	7.08	0.33	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	9	22.82	7.4	85.9	14.7	0.015	7.08	0.33	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	10	21.62	7.93	90.2	13.6	0.015	7.08	0.34	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	11	19.56	8.71	94.9	13.2	0.015	7.01	0.33	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	12	7.94	8.94	94.3	12.4	0.014	7	0.29	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	13	17.44	8.96	93.7	12.2	0.014	6.99	0.32	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	14	16.03	9.05	91.3	11.7	0.014	6.93	0.32	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	15	14.69	9.06	88.6	11.3	0.014	6.94	0.31	25.5

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	16	13.77	8.93	85.3	11.2	0.014	6.88	0.31	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	17	13.18	8.78	83.3	11.1	0.014	6.83	0.31	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	18	12.42	8.72	81.5	10.9	0.015	6.78	0.3	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	19	11.85	8.65	79.9	10.9	0.014	6.74	0.31	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	20	11.36	8.54	77.9	11.1	0.015	6.69	0.31	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	21	10.94	8.4	76.2	11	0.014	6.64	0.3	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	22	10.09	8.39	74.5	10.9	0.015	6.53	0.31	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	23	9.86	8.36	73.8	10.7	0.015	6.52	0.29	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	24	9.46	8.4	73.4	10.7	0.015	6.5	0.29	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	25	9.2	8.38	72.8	10.7	0.025	6.49	0.28	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	26	8.83	8.42	72.5	10.5	0.015	6.48	0.29	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	27	8.46	8.48	72.5	10.4	0.015	6.47	0.29	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	28	8.16	8.55	72.4	10.4	0.015	6.47	0.29	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	29	7.9	85.7	72	10.4	0.016	6.45	0.28	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	30	7.69	8.55	71.6	10.4	0.015	6.45	0.28	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	31	7.55	8.62	72	10.3	0.015	6.45	0.27	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	32	7.47	8.66	72.2	10.3	0.015	6.45	0.28	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	33	7.33	8.68721	71.9	10.3	0.016	6.43	0.28	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	34	7.24	8.66	71.7	10.3	0.016	6.43	0.27	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	35	7.1	8.61	71	10.2	0.016	6.43	0.28	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	36	7.04	8.6	70.8	10.2	0.016	6.42	0.28	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	37	6.99	8.55	70.4	10.2	0.016	6.41	0.28	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	38	6.96	8.51	70	10.2	0.016	6.4	0.28	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	39	6.91	8.5	69.9	10.2	0.015	6.4	0.28	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	40	6.88	8.54	70.2	10.2	0.016	6.4	0.27	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	41	6.84	8.56	70.2	10.2	0.016	6.4	0.27	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	42	6.8	8.56	70.2	10.2	0.016	6.39	0.28	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	43	6.78	8.57	70.2	10.2	0.016	6.39	0.28	25.5

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	44	6.75	8.54	69.9	10.2	0.016	6.39	0.28	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	45	6.73	8.52	69.7	10.2	0.016	6.39	0.27	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	46	6.7	8.52	69.6	10.2	0.016	6.38	0.28	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	47	6.66	8.53	69.8	10.2	0.016	6.38	0.28	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	48	6.64	8.58	70	10.2	0.016	6.38	0.28	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	49	6.63	8.56	69.8	10.2	0.016	6.38	0.27	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	50	6.61	8.5	69.4	10.2	0.016	6.37	0.28	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	51	6.6	8.5	69.3	10.2	0.016	6.38	0.26	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	52	6.58	8.51	69.4	10.2	0.016	6.37	0.27	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	53	6.56	8.5	69.2	10.2	0.016	6.37	0.28	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	54	6.53	8.49	69.1	10.2	0.016	6.37	0.28	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	55	6.49	8.5	69.2	10.2	0.016	6.9	0.28	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	56	6.49	8.5	69.1	10.2	0.016	6.37	0.27	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	57	6.49	8.49	69	10.2	0.016	6.37	0.28	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	58	6.47	8.48	68.9	10.2	0.016	6.37	0.29	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	59	6.43	8.47	68.8	10.2	0.016	6.36	0.28	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	60	6.43	8.45	68.6	10.2	0.016	6.36	0.28	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	61	6.41	8.4	68.2	10.2	0.016	6.36	0.28	25.5
8/18/2022 09:17	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-8-UVR	62	6.4	8.39	68	10.2	0.016	6.35	0.28	25.5
8/22/2022 08:59	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-9-IHR	0	21.96	7.21	82.3	14.2	0.015	6.64	0.07	29
8/22/2022 08:59	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-9-IHR	1	21.98	7.2	82.3	14.2	0.015	6.57	0.02	29
8/22/2022 08:59	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-9-IHR	2	21.99	7.19	82.3	14.2	0.015	6.52	0.02	29
8/22/2022 08:59	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-9-IHR	3	21.98	7.19	82.2	14.2	0.015	6.51	0.01	29
8/22/2022 08:59	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-9-IHR	4	21.97	7.18	82.1	14.2	0.015	6.5	0.08	29
8/22/2022 08:59	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-9-IHR	5	21.97	7.91	82.2	14.2	0.015	6.51	0.04	29
8/22/2022 08:59	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-9-IHR	6	21.97	7.19	82.2	14.2	0.015	6.54	0.08	29
8/22/2022 08:59	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-9-IHR	7	21.9	7.21	82.3	14.1	0.015	6.58	0.05	29
8/22/2022 08:59	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-9-IHR	8	21.44	7.33	83.2	13.7	0.015	6.61	0.04	29

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
8/22/2022 08:59	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-9-IHR	9	20.6	7.72	86.1	13.3	0.015	6.6	0.04	29
8/22/2022 08:59	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-9-IHR	10	17.32	8.71	90.6	11.8	0.014	6.64	0.09	29
8/22/2022 08:59	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-9-IHR	11	15	9.04	89.6	11.4	0.014	6.62	0.57	29
8/22/2022 08:59	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-9-IHR	12	13.93	8.93	86.2	11.2	0.014	6.57	0.08	29
8/22/2022 08:59	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-9-IHR	13	12.37	8.34	77.4	11.1	0.015	6.46	0.16	29
8/22/2022 08:59	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-9-IHR	14	11.54	7.65	69.6	11	0.015	6.33	0.18	29
8/22/2022 08:59	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-9-IHR	15	10.94	7.29	65.9	10.8	0.015	6.24	0.14	29
8/22/2022 08:59	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-9-IHR	16	10.3	7.39	66	10.7	0.015	6.16	0.21	29
8/22/2022 08:59	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-9-IHR	17	9.45	7.31	63.5	10.6	0.015	5.94	0.22	29
8/22/2022 08:59	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-9-IHR	18	8.88	6.9	58.4	10.7	0.016	5.77	0.24	29
8/22/2022 08:59	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-9-IHR	19	8.37	6.41	54.3	10.8	0.016	6.15	0.26	29
8/22/2022 08:59	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-9-IHR	20	8.04	5.56	46.2	11.2	0.017	5.5	0.35	29
8/22/2022 08:59	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-9-IHR	21	7.75	4.92	40.9	11.3	0.017	5.44	0.35	29
8/22/2022 08:59	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-9-IHR	22	7.57	4.76	39.6	11.2	0.017	5.37	0.33	29
8/22/2022 08:59	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-9-IHR	23	7.44	4.56	37.6	11.3	0.017	5.3	0.33	29
8/22/2022 08:59	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-9-IHR	24	7.32	4.33	35.9	11.2	0.017	5.27	0.35	29
8/22/2022 08:59	YSI EXO2	Esther Adelstein	Sunny and mild	R-IS-9-IHR	25	7.29	4.28	35.5	11.3	0.017	5.25	0.51	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	0	22.01	7.14	81.6	14.1	0.015	6.93	0.04	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	1	21.9	7.18	82	14	0.015	6.98	0.07	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	2	21.82	7.22	82.2	14	0.015	7	0.08	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	3	21.78	7.23	82.3	14	0.015	6.99	0.05	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	4	21.74	7.23	82.3	14	0.015	7.02	0.02	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	5	21.69	7.24	82.2	14	0.015	7.02	0	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	6	21.67	7.23	82.2	14	0.015	7.03	0.01	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	7	21.65	7.23	82.1	14	0.015	7.04	0.01	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	8	21.64	7.23	82.2	14	0.015	7.04	0.01	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	9	21.46	7.26	82.9	13.5	0.015	7.05	0.02	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	10	16.37	8.92	91.6	11.6	0.014	7.05	0.04	29

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	11	13.67	9.24	89.2	11.1	0.014	6.98	0.15	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	12	13.3	9.03	85.9	11	0.014	6.91	0.16	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	13	12.45	8.69	81	10.9	0.014	6.81	0.16	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	14	11.68	8.34	76.2	10.8	0.014	6.69	0.2	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	15	10.91	7.96	71.6	10.7	0.015	6.57	0.22	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	16	10.32	7.73	68.4	10.6	0.015	6.46	0.31	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	17	9.42	7.45	64.8	10.7	0.015	6.33	0.3	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	18	8.9	7.26	62.5	10.6	0.015	6.25	0.23	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	19	8.37	7.1	60.1	10.6	0.016	6.13	0.27	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	20	7.95	6.95	58.5	10.6	0.016	6.07	0.22	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	21	6.67	6.91	57.5	10.6	0.016	6.02	0.32	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	22	7.51	6.62	55.1	10.6	0.016	5.98	0.26	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	23	7.4	6.45	53.7	10.7	0.016	5.92	0.24	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	24	7.32	6.44	53.5	10.7	0.016	5.83	0.25	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	25	7.26	6.5	54.1	10.6	0.016	5.75	0.29	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	26	7.21	6.55	54.2	10.6	0.016	5.66	0.29	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	27	7.18	6.53	54	10.5	0.016	5.64	0.31	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	28	7.14	6.58	54.5	10.5	0.016	5.61	0.3	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	29	7.12	6.54	53.9	10.5	0.016	5.63	0.31	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	30	7.11	6.41	52.9	10.5	0.016	5.6	0.33	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	31	7.09	6.29	51.5	10.6	0.016	5.51	0.32	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	32	7.05	5.77	43.5	10.8	0.016	5.44	0.38	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	33	7	4.94	40.5	10.9	0.017	5.4	0.41	29
8/22/2022 11:13	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-11-IHR	34	6.99	4.79	39.4	10.9	0.017	5.36	0.37	29
8/22/2022 13:02	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-10-IHR	0	22.53	7.18	82.9	14.3	0.015	7.03	0.08	29
8/22/2022 13:02	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-10-IHR	1	22.43	7.2	83	14.2	0.015	7.04	0.03	29
8/22/2022 13:02	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-10-IHR	2	22.27	7.18	82.5	14.1	0.015	7.04	0.06	29
8/22/2022 13:02	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-10-IHR	3	22.02	7.23	82.7	14.1	0.015	7.06	0.01	29

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
8/22/2022 13:02	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-10-IHR	4	21.9	7.23	82.6	14.1	0.015	7.07	0.04	29
8/22/2022 13:02	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-10-IHR	5	21.87	7.25	82.8	14	0.015	7.06	0.02	29
8/22/2022 13:02	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-10-IHR	6	21.83	7.25	82.7	14.1	0.015	7.08	0.08	29
8/22/2022 13:02	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-10-IHR	7	21.82	7.26	82.7	14	0.015	7.06	0.03	29
8/22/2022 13:02	YSI EXO2	Esther Adelstein	Sunny and warm	R-IS-10-IHR	8	21.8	7.28	8.3	14	0.015	7.07	0.03	29
8/23/2022 09:40	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-18-RR	0	20.57	6.54	72.7	17.3	0.019	6.64	4.77	9
8/23/2022 09:40	YSI EXO2	Esther Adelstein	Sunny warm	R-IS-18-RR	1	20.44	6.46	71.4	17.2	0.019	6.61	4.77	9
8/24/2022 09:28	YSI EXO2	Esther Adelstein	Sunny and breezy	R-IS-19-BI	0	21.63	6.79	77.1	11.9	0.013	6.88	0.11	24
8/24/2022 09:28	YSI EXO2	Esther Adelstein	Sunny and breezy	R-IS-19-BI	1	21.63	6.77	77	11.9	0.013	6.82	0.19	24
8/24/2022 09:28	YSI EXO2	Esther Adelstein	Sunny and breezy	R-IS-19-BI	2	21.62	6.79	77.1	11.9	0.013	6.79	0.17	24
8/24/2022 09:28	YSI EXO2	Esther Adelstein	Sunny and breezy	R-IS-19-BI	3	21.6	6.78	76.9	11.9	0.013	6.77	0.1	24
8/24/2022 09:28	YSI EXO2	Esther Adelstein	Sunny and breezy	R-IS-19-BI	4	21.51	6.75	76.5	11.9	0.013	6.75	0.2	24
8/24/2022 09:28	YSI EXO2	Esther Adelstein	Sunny and breezy	R-IS-19-BI	5	21.45	6.76	76.5	11.8	0.013	6.71	0.22	24
8/24/2022 09:28	YSI EXO2	Esther Adelstein	Sunny and breezy	R-IS-19-BI	6	20.93	6.74	75.5	11.3	0.012	6.61	0.14	24
8/24/2022 09:28	YSI EXO2	Esther Adelstein	Sunny and breezy	R-IS-19-BI	7	18.2	6.7	70.7	9.7	0.011	6.36	0.48	24
10/17/2022 09:28	YSI EXO2	Jakob Woodall	Clear	R-IS-12-JR	0	8.844	9.44	81.3	10.2	0.015	6.22	0.04	16.8
10/17/2022 09:28	YSI EXO2	Jakob Woodall	Clear	R-IS-12-JR	1	8.827	9.55	82.1	10.2	0.015	5.91	0.98	16.8
10/17/2022 09:28	YSI EXO2	Jakob Woodall	Clear	R-IS-12-JR	2	8.848	9.44	81.3	10.2	0.015	5.83	1.2	16.8
10/17/2022 09:28	YSI EXO2	Jakob Woodall	Clear	R-IS-12-JR	3	8.846	9.43	81.2	10.2	0.015	5.87	1.16	16.8
10/17/2022 09:28	YSI EXO2	Jakob Woodall	Clear	R-IS-12-JR	4	8.846	9.42	81.2	10.2	0.015	5.7	1.18	16.8
10/17/2022 09:28	YSI EXO2	Jakob Woodall	Clear	R-IS-12-JR	5	8.805	9.41	80.9	10.2	0.015	5.6	1.18	16.8
10/17/2022 09:28	YSI EXO2	Jakob Woodall	Clear	R-IS-12-JR	6	8.417	9.1	77.1	9.7	0.014	5.53	1.14	16.8
10/17/2022 09:28	YSI EXO2	Jakob Woodall	Clear	R-IS-12-JR	7	8.284	8.72	74	9.6	0.014	5.51	1.19	16.8
10/17/2022 09:28	YSI EXO2	Jakob Woodall	Clear	R-IS-12-JR	8	8.26	8.6	73.1	9.6	0.014	5.49	1.16	16.8
10/17/2022 09:28	YSI EXO2	Jakob Woodall	Clear	R-IS-12-JR	9	8.236	8.61	73.1	9.6	0.014	5.45	1.17	16.8
10/17/2022 09:28	YSI EXO2	Jakob Woodall	Clear	R-IS-12-JR	10	8.212	8.57	72.7	9.6	0.014	5.41	1.16	16.8
10/17/2022 09:28	YSI EXO2	Jakob Woodall	Clear	R-IS-12-JR	11	8.172	8.49	72	9.6	0.014	5.38	1.15	16.8
10/17/2022 09:28	YSI EXO2	Jakob Woodall	Clear	R-IS-12-JR	12	8.156	8.4	71.4	9.5	0.014	5.37	1.16	16.8

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10/17/2022 09:28	YSI EXO2	Jakob Woodall	Clear	R-IS-12-JR	13	8.124	8.61	72.9	9.5	0.014	5.44	1.15	16.8
10/17/2022 09:28	YSI EXO2	Jakob Woodall	Clear	R-IS-12-JR	14	8.112	8.51	72	9.5	0.014	5.41	1.18	16.8
10/17/2022 09:28	YSI EXO2	Jakob Woodall	Clear	R-IS-12-JR	15	8.097	8.48	71.8	9.5	0.014	5.41	1.15	16.8
10/17/2022 09:28	YSI EXO2	Jakob Woodall	Clear	R-IS-12-JR	16	8.088	8.46	71.6	9.5	0.014	5.38	1.12	16.8
10/17/2022 09:28	YSI EXO2	Jakob Woodall	Clear	R-IS-12-JR	17	8.091	8.46	71.6	9.5	0.014	5.36	1.14	16.8
10/17/2022 09:28	YSI EXO2	Jakob Woodall	Clear	R-IS-12-JR	18	8.067	8.45	71.4	9.6	0.014	5.35	1.13	16.8
10/17/2022 09:28	YSI EXO2	Jakob Woodall	Clear	R-IS-12-JR	19	8.053	8.47	71.6	9.6	0.014	5.35	1.15	16.8
10/17/2022 09:28	YSI EXO2	Jakob Woodall	Clear	R-IS-12-JR	20	8.014	8.53	72.1	9.8	0.014	5.35	1.14	16.8
10/17/2022 09:28	YSI EXO2	Jakob Woodall	Clear	R-IS-12-JR	21	8.038	8.63	72.9	9.9	0.015	5.36	1.16	16.8
10/17/2022 12:02	YSI EXO2	Jakob Woodall	Clear	R-IS-13-CR	0	8.929	10.83	93.6	10.3	0.015	6.67	0.02	22
10/17/2022 12:02	YSI EXO2	Jakob Woodall	Clear	R-IS-13-CR	1	8.807	10.91	94	10.1	0.015	6.65	0.06	22
10/17/2022 12:02	YSI EXO2	Jakob Woodall	Clear	R-IS-13-CR	2	8.769	10.96	94.3	10.1	0.015	6.61	0.07	22
10/17/2022 12:02	YSI EXO2	Jakob Woodall	Clear	R-IS-13-CR	3	8.718	10.97	94.3	10.1	0.015	6.58	0.04	22
10/17/2022 12:02	YSI EXO2	Jakob Woodall	Clear	R-IS-13-CR	4	8.643	10.96	93.9	10	0.014	6.56	0.02	22
10/17/2022 12:02	YSI EXO2	Jakob Woodall	Clear	R-IS-13-CR	5	8.547	10.97	93.8	9.9	0.014	6.52	0.01	22
10/18/2022 08:58	YSI EXO2	Jakob Woodall	Clear	R-IS-14-SC	0	13.876	9.85	95.3	19.9	0.025	6.33	-1.2	24
10/18/2022 08:58	YSI EXO2	Jakob Woodall	Clear	R-IS-14-SC	1	13.877	9.85	95.3	19.9	0.025	6.35	-1.1	24
10/18/2022 08:58	YSI EXO2	Jakob Woodall	Clear	R-IS-14-SC	2	13.356	10.02	96	19.8	0.025	6.34	-1.11	24
10/18/2022 08:58	YSI EXO2	Jakob Woodall	Clear	R-IS-14-SC	3	12.832	10.19	96.4	20.2	0.026	6.33	-1.1	24
10/18/2022 08:58	YSI EXO2	Jakob Woodall	Clear	R-IS-14-SC	4	11.67	10.56	97.3	20.8	0.028	6.32	-0.89	24
10/18/2022 08:58	YSI EXO2	Jakob Woodall	Clear	R-IS-14-SC	5	10.573	10.82	97.3	18	0.025	6.29	-0.86	24
10/18/2022 08:58	YSI EXO2	Jakob Woodall	Clear	R-IS-14-SC	6	9.836	10.97	96.9	15.5	0.022	6.25	-0.78	24
10/18/2022 08:58	YSI EXO2	Jakob Woodall	Clear	R-IS-14-SC	7	9.678	11.02	96.9	14.8	0.021	6.22	-0.69	24
10/18/2022 08:58	YSI EXO2	Jakob Woodall	Clear	R-IS-14-SC	8	9.577	11.04	96.9	14.5	0.021	6.16	-0.55	24
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	0	13.415	9.84	94.3	19.3	0.025	6.83	-1	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	1	13.404	9.85	94.3	19.3	0.025	6.82	-0.95	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	2	13.373	9.86	94.4	19.3	0.025	6.82	-0.89	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	3	13.236	9.86	94	19	0.025	6.81	-0.99	22.4

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10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	4	13.145	9.83	93.6	18.9	0.024	6.79	-0.88	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	5	12.841	9.81	92.7	18.5	0.024	6.77	-0.96	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	6	11.883	9.67	89.4	17.1	0.023	6.65	-0.77	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	7	11.623	9.66	88.9	17.2	0.023	6.6	-0.81	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	8	11.544	9.72	89.3	17.3	0.023	6.58	-0.94	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	9	11.496	9.77	89.6	17.3	0.023	6.57	-0.95	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	10	11.453	9.8	89.8	17.3	0.023	6.56	-0.85	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	11	11.395	9.82	90	17.5	0.024	6.55	-0.83	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	12	11.375	9.87	90.4	17.6	0.024	6.55	-0.92	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	13	11.325	9.97	91.1	17.6	0.024	6.55	-0.77	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	14	11.311	10.01	91.4	17.5	0.024	6.56	-0.74	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	15	11.263	10.03	91.5	17.5	0.024	6.55	-0.62	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	16	11.239	10.04	91.6	17.5	0.024	6.55	-0.68	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	17	11.229	10.06	91.7	17.5	0.024	6.54	-0.72	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	18	11.207	10.1	92.1	17.6	0.024	6.55	-0.7	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	19	11.181	10.15	92.4	17.6	0.924	6.55	-0.62	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	20	11.137	10.19	92.8	17.4	0.024	6.55	-0.61	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	21	11.11	10.22	93	17.3	0.024	6.55	-0.63	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	23	11.088	10.24	93.1	17.3	0.024	6.54	-0.71	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	23	11.045	10.31	93.6	17.4	0.024	6.54	-0.6	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	24	11.03	10.31	93.6	17.2	0.024	6.54	-0.51	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	25	10.994	10.33	93.7	17.3	0.024	6.53	-0.39	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	26	10.973	10.34	93.7	17.3	0.024	6.53	-0.22	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	27	10.963	10.34	93.7	17.4	0.024	6.53	-0.26	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	28	10.923	10.37	93.8	17.3	0.024	6.52	-0.27	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	29	10.884	10.39	94	17.3	0.024	6.53	-0.25	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	30	10.805	10.41	94	16.7	0.023	6.53	-0.39	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	31	10.753	10.44	94.2	16.6	0.023	6.53	-0.46	22.4

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10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	32	10.698	10.5	94.5	16.5	0.023	6.52	-0.37	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	33	10.669	10.52	94.8	16.4	0.023	6.48	-0.09	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	34	10.613	10.54	94.8	16.3	0.022	6.49	-0.18	22.4
10/18/2022 10:09	YSI EXO2	Jakob Woodall	Overcast	R-IS-15-SC	35	10.537	10.52	94.3	16.3	0.023	6.44	0.42	22.4
10/19/2022 09:30	YSI EXO2	Jakob Woodall	Clear	R-IS-4-GC	0	13.792	8.2	79.1	11.2	0.014	6.84	3.24	26
10/19/2022 09:30	YSI EXO2	Jakob Woodall	Clear	R-IS-4-GC	1	13.734	8.2	79.1	11.2	0.014	6.73	3.3	26
10/19/2022 09:30	YSI EXO2	Jakob Woodall	Clear	R-IS-4-GC	2	13.712	8.2	79.1	11.2	0.014	6.69	3.24	26
10/19/2022 09:30	YSI EXO2	Jakob Woodall	Clear	R-IS-4-GC	3	13.685	8.2	79.1	11.2	0.014	6.49	3.24	26
10/19/2022 09:30	YSI EXO2	Jakob Woodall	Clear	R-IS-4-GC	4	13.54	8.19	78.7	10.7	0.014	6.3	3.29	26
10/19/2022 09:30	YSI EXO2	Jakob Woodall	Clear	R-IS-4-GC	5	13.312	8.28	79.1	10.4	0.013	6.23	3.33	26
10/19/2022 09:30	YSI EXO2	Jakob Woodall	Clear	R-IS-4-GC	6	13.069	8.17	77.6	10.3	0.013	6.18	3.38	26
10/19/2022 09:30	YSI EXO2	Jakob Woodall	Clear	R-IS-4-GC	7	12.625	8.23	77.5	10	0.013	6.12	3.49	26
10/19/2022 12:29	YSI EXO2	Jakob Woodall	Clear	R-IS-20-BC	0	17.554	8.42	88.1	21.8	0.025	7.21	-0.82	22.5
10/19/2022 12:29	YSI EXO2	Jakob Woodall	Clear	R-IS-20-BC	1	16.682	8.39	86.2	21.3	0.025	7.2	-0.8	22.5
10/19/2022 12:29	YSI EXO2	Jakob Woodall	Clear	R-IS-20-BC	2	16.55	8.42	86.3	21.3	0.025	7.17	-0.83	22.5
10/19/2022 12:29	YSI EXO2	Jakob Woodall	Clear	R-IS-20-BC	3	16.503	8.44	86.4	21.3	0.025	7.17	-0.77	22.5
10/19/2022 12:29	YSI EXO2	Jakob Woodall	Clear	R-IS-20-BC	4	16.479	8.44	86.4	21.3	0.025	7.16	-0.74	22.5
10/19/2022 12:29	YSI EXO2	Jakob Woodall	Clear	R-IS-20-BC	5	16.462	8.44	86.3	21.3	0.025	7.14	-0.67	22.5
10/19/2022 12:29	YSI EXO2	Jakob Woodall	Clear	R-IS-20-BC	6	16.447	8.43	86.2	21.3	0.025	7.14	-0.75	22.5
10/19/2022 12:29	YSI EXO2	Jakob Woodall	Clear	R-IS-20-BC	7	16.439	8.42	86.1	21.3	0.025	7.13	-0.79	22.5
10/19/2022 12:29	YSI EXO2	Jakob Woodall	Clear	R-IS-20-BC	8	16.426	8.43	86.2	21.3	0.025	7.13	-0.75	22.5
10/19/2022 12:29	YSI EXO2	Jakob Woodall	Clear	R-IS-20-BC	9	16.417	8.44	86.3	21.3	0.025	7.13	-0.78	22.5
10/19/2022 12:29	YSI EXO2	Jakob Woodall	Clear	R-IS-20-BC	10	16.405	8.44	86.2	21.2	0.025	7.12	-0.69	22.5
10/19/2022 12:29	YSI EXO2	Jakob Woodall	Clear	R-IS-20-BC	11	16.391	8.42	86	21.2	0.025	7.11	-0.79	22.5
10/19/2022 12:29	YSI EXO2	Jakob Woodall	Clear	R-IS-20-BC	12	16.38	8.42	86	21.2	0.025	7.11	-0.67	22.5
10/19/2022 12:29	YSI EXO2	Jakob Woodall	Clear	R-IS-20-BC	13	16.34	8.39	85.6	21.2	0.025	7.1	-0.71	22.5
10/19/2022 12:29	YSI EXO2	Jakob Woodall	Clear	R-IS-20-BC	14	16.273	8.36	85.1	21.1	0.025	7.08	-0.77	22.5
10/19/2022 12:29	YSI EXO2	Jakob Woodall	Clear	R-IS-20-BC	15	16.181	8.41	85.5	21.1	0.025	7.07	-0.71	22.5

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
10/19/2022 12:29	YSI EXO2	Jakob Woodall	Clear	R-IS-20-BC	16	16.166	8.44	85.7	21.2	0.025	7.07	-0.57	22.5
10/19/2022 12:29	YSI EXO2	Jakob Woodall	Clear	R-IS-20-BC	17	16.143	8.44	85.7	21.1	0.025	7.07	-0.66	22.5
10/19/2022 12:29	YSI EXO2	Jakob Woodall	Clear	R-IS-20-BC	18	16.067	8.36	84.9	21	0.025	7.05	-0.62	22.5
10/19/2022 12:29	YSI EXO2	Jakob Woodall	Clear	R-IS-20-BC	19	16.009	8.35	84.6	20.9	0.025	7.02	-0.67	22.5
10/19/2022 12:29	YSI EXO2	Jakob Woodall	Clear	R-IS-20-BC	20	15.868	8.31	84	20.7	0.025	7	-0.64	22.5
10/19/2022 12:29	YSI EXO2	Jakob Woodall	Clear	R-IS-20-BC	21	15.284	8.17	81.5	19.9	0.024	6.93	-0.65	22.5
10/19/2022 12:29	YSI EXO2	Jakob Woodall	Clear	R-IS-20-BC	22	13.357	7.73	73.8	16.4	0.021	6.72	-0.44	22.5
10/19/2022 12:29	YSI EXO2	Jakob Woodall	Clear	R-IS-20-BC	23	12.84	7.91	74.9	15.7	0.02	6.6	-0.33	22.5
10/19/2022 12:29	YSI EXO2	Jakob Woodall	Clear	R-IS-20-BC	24	12.604	7.96	74.8	15.5	0.02	6.55	-0.31	22.5
10/19/2022 12:29	YSI EXO2	Jakob Woodall	Clear	R-IS-20-BC	25	12.444	7.98	74.8	15.3	0.02	6.51	-0.02	22.5
10/24/2022 08:45	YSI EXO2	Jakob Woodall	Clear	R-IS-1-LL	0	13.32	7.87	75.2	9.2	0.012	7.01	0.07	21.4
10/24/2022 08:45	YSI EXO2	Jakob Woodall	Clear	R-IS-1-LL	1	13.38	7.83	75	9.2	0.012	6.94	0.11	21.4
10/24/2022 08:45	YSI EXO2	Jakob Woodall	Clear	R-IS-1-LL	2	13.39	7.81	74.8	9.2	0.012	6.97	0.01	21.4
10/24/2022 08:45	YSI EXO2	Jakob Woodall	Clear	R-IS-1-LL	3	13.39	7.8	74.7	9.2	0.012	6.99	0.08	21.4
10/24/2022 08:45	YSI EXO2	Jakob Woodall	Clear	R-IS-1-LL	4	13.39	7.79	74.6	9.2	0.012	6.98	0.11	21.4
10/24/2022 08:45	YSI EXO2	Jakob Woodall	Clear	R-IS-1-LL	5	13.39	7.8	74.7	9.2	0.012	6.96	0.11	21.4
10/24/2022 08:45	YSI EXO2	Jakob Woodall	Clear	R-IS-1-LL	6	13.39	7.8	74.7	9.2	0.012	6.95	0.09	21.4
10/24/2022 08:45	YSI EXO2	Jakob Woodall	Clear	R-IS-1-LL	7	13.39	7.8	74.7	9.2	0.012	6.92	0.13	21.4
10/24/2022 08:45	YSI EXO2	Jakob Woodall	Clear	R-IS-1-LL	8	13.39	7.81	74.8	9.2	0.012	6.91	0.04	21.4
10/24/2022 08:45	YSI EXO2	Jakob Woodall	Clear	R-IS-1-LL	9	13.39	7.81	74.7	9.2	0.012	6.91	0.13	21.4
10/24/2022 08:45	YSI EXO2	Jakob Woodall	Clear	R-IS-1-LL	10	13.39	7.81	74.8	9.2	0.012	6.89	0.13	21.4
10/24/2022 08:45	YSI EXO2	Jakob Woodall	Clear	R-IS-1-LL	11	13.38	7.8	74.6	9.2	0.012	6.88	0.1	21.4
10/24/2022 08:45	YSI EXO2	Jakob Woodall	Clear	R-IS-1-LL	12	13.38	7.8	74.6	9.2	0.012	6.89	0.12	21.4
10/24/2022 08:45	YSI EXO2	Jakob Woodall	Clear	R-IS-1-LL	13	13.38	7.8	74.6	9.2	0.012	6.87	0.02	21.4
10/24/2022 08:45	YSI EXO2	Jakob Woodall	Clear	R-IS-1-LL	14	13.38	7.8	74.6	9.2	0.012	6.87	0.06	21.4
10/24/2022 08:45	YSI EXO2	Jakob Woodall	Clear	R-IS-1-LL	15	13.37	7.78	74.5	9.2	0.012	6.87	0.14	21.4
10/24/2022 08:45	YSI EXO2	Jakob Woodall	Clear	R-IS-1-LL	16	13.32	7.73	73.9	9.2	0.012	6.85	0.06	21.4
10/24/2022 08:45	YSI EXO2	Jakob Woodall	Clear	R-IS-1-LL	17	13.24	7.68	73.2	9.2	0.012	6.84	0.11	21.4

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
10/24/2022 08:45	YSI EXO2	Jakob Woodall	Clear	R-IS-1-LL	18	13.19	7.64	72.8	9.2	0.012	6.83	0.1	21.4
10/24/2022 08:45	YSI EXO2	Jakob Woodall	Clear	R-IS-1-LL	19	12.96	7.51	71	9.3	0.012	6.78	0.03	21.4
10/24/2022 08:45	YSI EXO2	Jakob Woodall	Clear	R-IS-1-LL	20	12.25	6.72	61.4	9.16	0.013	6.62	0.29	21.4
10/24/2022 08:45	YSI EXO2	Jakob Woodall	Clear	R-IS-1-LL	21	11.53	2.82	24	10.2	0.015	6.22	0.7	21.4
10/24/2022 08:45	YSI EXO2	Jakob Woodall	Clear	R-IS-1-LL	22	9.04	2.34	19.7	9.8	0.015	6.02	0.57	21.4
10/24/2022 08:45	YSI EXO2	Jakob Woodall	Clear	R-IS-1-LL	23	7.78	2.16	17.8	9.9	0.015	5.95	0.93	21.4
10/24/2022 10:06	YSI EXO2	Jakob Woodall	Clear	R-IS-2-LL	0	13.77	7.8	75.3	9.3	0.012	6.99	0.03	26
10/24/2022 10:06	YSI EXO2	Jakob Woodall	Clear	R-IS-2-LL	1	13.72	7.74	74.6	9.3	0.012	6.94	0.03	26
10/24/2022 10:06	YSI EXO2	Jakob Woodall	Clear	R-IS-2-LL	3	13.07	7.72	74.3	9.3	0.012	6.92	0.04	26
10/24/2022 10:06	YSI EXO2	Jakob Woodall	Clear	R-IS-2-LL	3	13.69	7.69	74.1	9.3	0.012	6.89	0.02	26
10/24/2022 10:06	YSI EXO2	Jakob Woodall	Clear	R-IS-2-LL	4	13.68	7.68	74	9.3	0.012	6.68	0.08	26
10/24/2022 10:06	YSI EXO2	Jakob Woodall	Clear	R-IS-2-LL	5	13.68	7.68	74	9.3	0.012	6.84	0	26
10/24/2022 10:06	YSI EXO2	Jakob Woodall	Clear	R-IS-2-LL	6	13.68	7.68	74	9.2	0.012	6.84	0.02	26
10/24/2022 10:06	YSI EXO2	Jakob Woodall	Clear	R-IS-2-LL	7	13.68	7.69	74.1	9.3	0.012	6.82	0.06	26
10/24/2022 10:06	YSI EXO2	Jakob Woodall	Clear	R-IS-2-LL	8	13.68	7.69	74.1	9.3	0.012	6.81	0.05	26
10/24/2022 10:06	YSI EXO2	Jakob Woodall	Clear	R-IS-2-LL	9	13.67	7.68	74	9.2	0.012	6.79	0.04	26
10/24/2022 10:06	YSI EXO2	Jakob Woodall	Clear	R-IS-2-LL	10	13.68	7.68	74	9.3	0.012	6.78	0.04	26
10/24/2022 10:06	YSI EXO2	Jakob Woodall	Clear	R-IS-2-LL	11	13.68	7.69	74	9.3	0.012	6.75	0.07	26
10/24/2022 10:06	YSI EXO2	Jakob Woodall	Clear	R-IS-2-LL	12	13.68	7.69	74	9.3	0.012	6.77	0.04	26
10/24/2022 10:06	YSI EXO2	Jakob Woodall	Clear	R-IS-2-LL	13	13.68	7.69	74.1	9.3	0.012	6.76	0.08	26
10/24/2022 10:34	YSI EXO2	Jakob Woodall	Clear	R-IS-3-LL	0	13.41	7.96	76.2	9.1	0.012	7	0.11	32
10/24/2022 10:34	YSI EXO2	Jakob Woodall	Clear	R-IS-3-LL	1	13.34	7.96	76.1	9.1	0.012	6.98	0.08	32
10/24/2022 10:34	YSI EXO2	Jakob Woodall	Clear	R-IS-3-LL	2	13.28	7.96	75.9	9.1	0.012	6.97	0.03	32
10/24/2022 10:34	YSI EXO2	Jakob Woodall	Clear	R-IS-3-LL	3	13.25	7.96	75.9	9.1	0.012	6.97	0.02	32
10/24/2022 10:34	YSI EXO2	Jakob Woodall	Clear	R-IS-3-LL	4	13.22	7.95	75.8	9.1	0.012	6.95	0.03	32
10/24/2022 10:34	YSI EXO2	Jakob Woodall	Clear	R-IS-3-LL	5	13.2	7.94	75.7	9.1	0.012	6.95	0.04	32
10/24/2022 10:34	YSI EXO2	Jakob Woodall	Clear	R-IS-3-LL	6	13.19	7.94	75.6	9.1	0.012	6.94	0.03	32
10/24/2022 10:34	YSI EXO2	Jakob Woodall	Clear	R-IS-3-LL	7	13.18	7.94	75.7	9.1	0.012	6.93	0.04	32

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
10/24/2022 10:34	YSI EXO2	Jakob Woodall	Clear	R-IS-3-LL	8	13.1	7.94	75.6	9.1	0.012	6.91	0.03	32
10/24/2022 10:34	YSI EXO2	Jakob Woodall	Clear	R-IS-3-LL	9	13.07	7.95	75.6	9.1	0.012	6.91	0.01	32
10/24/2022 12:46	YSI EXO2	Jakob Woodall	Clear	R-IS-5-UVR	0	16.71	7.82	80.4	13.9	0.017	7.17	0.14	22
10/24/2022 12:46	YSI EXO2	Jakob Woodall	Clear	R-IS-5-UVR	1	16.65	7.81	80.2	13.9	0.017	7.12	0.09	22
10/24/2022 12:46	YSI EXO2	Jakob Woodall	Clear	R-IS-5-UVR	2	16.33	7.86	80.4	13.9	0.017	7.01	0.07	22
10/24/2022 12:46	YSI EXO2	Jakob Woodall	Clear	R-IS-5-UVR	3	15.95	7.92	80.2	13.8	0.017	7.03	0.1	22
10/24/2022 12:46	YSI EXO2	Jakob Woodall	Clear	R-IS-5-UVR	4	15.9	7.92	80.1	13.8	0.017	7.01	0.06	22
10/24/2022 12:46	YSI EXO2	Jakob Woodall	Clear	R-IS-5-UVR	5	15.84	7.94	80.2	13.8	0.017	6.97	0.07	22
10/24/2022 12:46	YSI EXO2	Jakob Woodall	Clear	R-IS-5-UVR	6	15.75	7.96	80.3	13.7	0.017	6.96	0.04	22
10/24/2022 12:46	YSI EXO2	Jakob Woodall	Clear	R-IS-5-UVR	7	15.67	7.99	80.4	13.7	0.017	6.96	0.05	22
10/24/2022 12:46	YSI EXO2	Jakob Woodall	Clear	R-IS-5-UVR	8	15.55	7.99	80.2	13.7	0.017	6.96	0.07	22
10/24/2022 12:46	YSI EXO2	Jakob Woodall	Clear	R-IS-5-UVR	9	15.41	7.98	79.9	13.8	0.017	6.94	0.08	22
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	0	16.33	7.94	80.9	13.7	0.016	6.44	0.49	19.4
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	1	16.36	7.93	80.9	13.7	0.016	6.52	0.5	19.4
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	2	16.37	7.92	80.9	13.7	0.016	6.6	0.44	19.4
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	3	16.37	7.91	80.8	13.7	0.016	6.62	0.56	19.4
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	4	16.37	7.9	80.7	13.7	0.016	6.64	0.45	19.4
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	5	16.37	7.92	80.8	13.7	0.016	6.64	0.42	19.4
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	6	16.37	7.92	80.8	13.7	0.016	6.65	0.44	19.4
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	7	16.37	7.91	80.8	13.7	0.016	6.64	0.43	19.4
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	8	16.37	7.91	80.8	13.7	0.016	6.63	0.43	19.4
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	9	16.37	7.91	80.8	13.7	0.016	6.64	0.37	19.4
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	10	16.37	7.91	80.8	13.7	0.016	6.64	0.47	19.4
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	11	16.37	7.91	80.8	13.7	0.016	6.64	0.42	19.4
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	12	16.37	7.91	80.8	13.7	0.016	6.66	0.42	19.4
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	13	16.37	7.91	80.8	13.7	0.016	6.66	0.45	19.4
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	14	16.36	7.92	80.8	13.7	0.016	6.66	0.45	19.4
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	15	16.34	7.92	80.8	13.7	0.016	6.66	0.43	19.4

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	16	16.32	7.92	80.8	13.7	0.016	6.62	0.43	19.4
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	17	16.29	7.92	80.7	13.7	0.016	6.67	0.43	19.4
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	18	16.25	7.9	80.6	13.7	0.016	6.66	0.45	19.4
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	19	16.12	7.87	79.9	13.7	0.016	6.65	0.44	19.4
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	20	16.07	7.82	79.4	13.7	0.017	6.63	0.42	19.4
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	21	15.99	7.75	78.5	13.7	0.017	6.61	0.39	19.4
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	22	15.34	7.45	74.2	13.4	0.016	6.53	0.52	19.4
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	23	15.03	7.25	71.9	13.3	0.016	6.44	0.49	19.4
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	24	14.69	7.1	69.5	13	0.016	6.36	0.38	19.4
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	25	13.5	6.47	62	12.5	0.016	6.2	0.62	19.4
10/25/2022 08:16	YSI EXO2	Jakob Woodall	Cloudy	R-IS-7-UVR	26	13.25	6.2	59	12.6	0.016	6.12	0.71	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	0	16.21	8.08	82.1	13.6	0.016	6.59	0.21	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	1	16.31	8	81.5	13.6	0.016	6.61	0.09	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	2	16.33	7.99	81.5	13.6	0.016	6.63	0.06	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	3	16.34	7.98	81.4	13.6	0.016	6.7	0.02	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	4	16.34	7.97	81.3	13.6	0.016	6.75	0.03	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	5	16.34	7.98	81.4	13.6	0.016	6.76	0.12	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	6	16.34	7.98	81.4	13.6	0.016	6.78	0.06	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	7	16.35	7.96	81.3	13.6	0.016	6.78	0.07	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	8	16.35	7.97	81.3	13.6	0.016	6.78	0.11	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	9	16.35	7.97	81.3	13.6	0.016	6.77	0.11	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	10	16.35	7.97	81.4	13.6	0.016	6.77	0.12	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	11	16.35	7.97	81.4	13.6	0.016	6.77	0.03	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	12	16.35	7.97	81.4	13.6	0.016	6.77	0.04	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	13	16.35	7.97	81.3	13.6	0.016	6.77	0.09	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	14	16.35	7.97	81.4	13.6	0.016	6.77	0.12	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	15	16.35	7.97	81.4	13.6	0.016	6.76	0.06	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	16	16.35	7.97	81.4	13.6	0.016	6.77	0.07	19.4

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	17	16.35	7.97	81.4	13.6	0.016	6.77	0.04	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	18	16.35	7.97	81.4	13.6	0.016	6.77	0.03	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	19	16.35	7.97	81.4	13.6	0.016	6.77	0.04	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	20	16.35	7.97	81.4	13.6	0.016	6.77	0.05	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	21	16.34	7.97	81.4	13.6	0.016	6.77	0.05	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	22	15.34	7.43	74	15.4	0.016	6.65	0.07	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	23	14.54	7.16	70.2	12.8	0.016	6.52	0.02	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	24	14.03	7.09	68.7	12.7	0.016	6.42	0.02	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	25	13.75	7.09	68.5	12.5	0.016	6.35	0.02	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	26	13.48	7.25	69.6	12.3	0.016	6.31	0.06	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	27	13.27	7.28	69.5	12.2	0.016	6.27	0.01	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	28	12.88	7.28	68.8	12.1	0.016	6.23	0.15	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	29	12.59	7.22	67.8	12.1	0.016	6.2	0.05	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	30	12.37	7.12	66.4	12.1	0.016	6.17	0.12	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	31	12.11	6.99	64.8	12.1	0.016	6.14	0.14	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	32	11.55	6.84	62.5	12.1	0.016	6.1	0.14	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	33	11.11	6.61	60	12.1	0.016	6.05	0.22	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	34	10.85	6.52	58.8	12	0.017	6.03	0.2	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	35	10.68	6.44	57.9	12.1	0.017	5.99	0.29	19.4
10/25/2022 09:14	YSI EXO2	Jakob Woodall	Cloudy	R-IS-6-UVR	36	10.47	6.37	57	12	0.017	5.97	0.19	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	0	16.43	7.97	81.4	13.6	0.016	6.77	0.23	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	1	16.44	7.95	81.2	13.6	0.016	6.75	0.15	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	2	16.44	7.94	81.2	13.6	0.016	6.75	0.09	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	3	16.44	7.93	81.1	13.6	0.016	6.76	0.08	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	4	16.44	7.92	81	13.6	0.016	6.75	0.11	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	5	16.43	7.93	81	13.6	0.016	6.75	0.11	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	6	16.43	7.92	81	13.6	0.016	6.74	0.15	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	7	16.42	7.92	81	13.6	0.016	6.75	0.11	19.4

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	8	16.42	7.91	80.9	13.6	0.016	6.75	0.04	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	9	16.42	7.92	80.9	13.6	0.016	6.74	0.08	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	10	16.42	7.91	80.9	13.6	0.016	6.74	0.23	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	11	16.42	7.91	80.8	13.6	0.016	6.74	0.14	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	12	16.42	7.91	80.9	13.6	0.016	6.74	0.13	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	13	16.42	7.91	80.8	13.6	0.016	6.73	0.12	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	14	16.42	7.91	80.7	13.6	0.016	6.73	0.06	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	15	16.41	7.9	80.8	13.6	0.016	6.73	0.07	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	16	16.41	7.9	80.8	13.6	0.016	6.73	0.14	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	17	16.41	7.91	80.3	13.6	0.016	6.74	0.08	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	18	16.39	7.9	80.7	13.6	0.016	6.74	0.08	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	19	16.36	7.88	80.4	13.6	0.016	6.74	0.08	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	20	16.29	7.85	80	13.5	0.016	6.72	0.07	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	21	16.24	7.8	79.4	13.5	0.016	6.7	0.07	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	22	15.75	7.61	76.6	13.3	0.016	6.64	0.04	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	23	15.27	7.53	75.1	12.7	0.016	6.56	0.03	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	24	14.55	7.53	74	12.5	0.016	6.5	0.03	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	25	14.02	7.52	72.7	12.5	0.016	6.43	0.03	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	26	13.55	7.939	70.6	12.3	0.016	6.38	0.04	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	27	12.77	7.3	68.8	12.1	0.018	6.33	0.02	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	28	12.36	7.28	68	12	0.016	6.28	0.01	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	29	12.02	7.13	65.9	12.1	0.016	6.24	0.12	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	30	11.75	7.19	66.4	11.8	0.016	6.22	0.04	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	31	11.5	7.34	67.4	11.8	0.016	6.21	0.01	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	32	11.32	7.29	66.3	11.8	0.016	6.17	0.03	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	33	11.09	7.2	65.4	11.8	0.016	6.16	0.02	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	34	10.93	7.27	65.7	11.7	0.016	6.14	0.08	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	35	10.77	7.24	65.3	11.7	0.016	6.13	0.07	19.4

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	36	10.53	7.29	65.5	11.5	0.016	6.11	0.12	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	37	10.36	7.35	65.6	11.5	0.016	6.1	0.06	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	38	10.09	7.36	65.4	11.4	0.016	6.08	0.08	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	39	10.01	7.39	65.5	11.3	0.016	6.08	0.07	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	40	9.88	7.42	65.6	11.3	0.016	6.07	0.08	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	41	9.78	7.41	65.3	11.3	0.016	6.06	0.07	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	42	9.65	7.47	65.7	11.3	0.016	6.04	0.08	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	43	9.44	7.5	65.5	11.3	0.016	6.03	0.09	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	44	9.26	7.47	65	11.2	0.016	6.02	0.14	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	45	9.12	7.46	64.7	11.2	0.016	5.99	0.12	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	46	9.05	7.48	64.7	11.2	0.016	5.95	0.05	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	47	8.93	7.48	64.5	11.1	0.016	5.87	0.07	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	48	8.88	7.46	64.4	11.1	0.016	5.81	0.13	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	49	8.79	7.48	64.4	11.2	0.016	5.81	0.07	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	50	8.71	7.47	64.2	11.1	0.016	5.75	0.12	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	51	8.63	7.48	64.1	11.1	0.016	5.55	0.14	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	52	8.57	7.48	64	11.1	0.016	5.45	0.12	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	53	8.46	7.45	63.6	11.1	0.016	5.39	0.12	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	54	8.42	7.44	63.4	11	0.016	5.38	0.08	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	55	8.37	7.42	63	11.1	0.016	5.37	0.14	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	56	8.25	7.18	61	11.1	0.016	5.36	0.11	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	57	8.2	7.12	60.3	11.1	0.016	5.34	0.12	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	58	8.12	7	59.2	11.1	0.016	5.33	0.13	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	59	8.02	6.96	58.7	9.2	0.016	5.32	0.17	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	60	7.94	6.89	58.1	11.1	0.016	5.3	0.12	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	61	7.78	6.8	57.1	11.1	0.017	5.3	0.12	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	62	7.71	6.73	56.2	11.1	0.017	5.29	0.21	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	63	7.14	6.67	55.2	11	0.017	5.28	0.2	19.4

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	64	6.9	6.7	55.4	11.1	0.017	5.25	0.21	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	65	6.68	6.62	54.1	11	0.017	5.23	0.21	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	66	6.56	6.66	54.3	10.9	0.017	5.23	0.35	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	67	6.46	6.73	54.6	10.9	0.017	5.21	0.18	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	68	6.42	6.71	54.5	10.9	0.017	5.21	0.17	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	69	6.38	6.73	54.6	10.9	0.017	5.21	0.23	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	70	6.36	6.76	54.8	10.9	0.017	5.21	0.11	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	71	6.34	6.74	54.6	10.9	0.017	5.22	0.24	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	72	6.32	6.76	54.8	10.9	0.017	5.22	0.25	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	73	6.32	6.77	54.8	10.9	0.017	5.23	0.33	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	74	6.31	6.69	54.1	11	0.017	5.22	0.16	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	75	6.29	6.59	53.4	11	0.017	5.22	0.23	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	76	6.29	6.56	53.1	11	0.017	5.23	0.22	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	77	6.28	6.57	53.1	11	0.017	5.23	0.26	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	78	6.27	6.51	52.7	11	0.017	5.24	0.25	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	79	6.27	6.5	52.6	11	0.017	5.24	0.22	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	80	6.27	6.51	52.7	11	0.017	5.25	0.33	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	81	6.26	6.49	52.5	11.1	0.017	5.25	0.3	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	82	6.26	6.46	52.2	11.2	0.017	5.25	0.27	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	83	6.26	6.44	52.1	11.1	0.017	5.26	0.3	19.4
10/25/2022 10:06	YSI EXO2	Jakob Woodall	Cloudy	R-IS-8-UVR	84	6.26	6.43	51.9	11.4	0.018	5.26	0.83	19.4
10/26/2022 08:26	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	0	14.58	8.34	85.8	13.4	0.017	6.73	0.24	23.2
10/26/2022 08:26	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	1	14.72	8.19	80.8	13.5	0.017	6.85	0.1	23.2
10/26/2022 08:26	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	2	14.75	8.16	80.6	13.5	0.017	6.95	0.09	23.2
10/26/2022 08:26	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	3	14.76	8.16	80.4	13.5	0.017	7.03	0.21	23.2
10/26/2022 08:26	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	4	14.76	8.16	80.5	13.5	0.017	7.05	0.08	23.2
10/26/2022 08:26	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	5	14.76	8.14	80.4	13.5	0.017	7.03	0.07	23.2
10/26/2022 08:26	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	6	14.77	8.15	80.4	13.5	0.017	7.01	0.09	23.2

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
10/26/2022 08:26	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	7	13.77	8.14	80.4	13.5	0.017	7.01	0.11	23.2
10/26/2022 08:26	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	8	14.77	8.14	80.3	13.5	0.017	6.99	0.04	23.2
10/26/2022 08:26	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	9	14.76	8.14	80.3	13.5	0.017	6.99	0.07	23.2
10/26/2022 08:26	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	10	14.77	8.13	80.2	13.5	0.017	6.97	0.08	23.2
10/26/2022 08:26	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	11	14.76	8.12	80.2	13.5	0.017	6.97	0.11	23.2
10/26/2022 08:26	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	12	14.76	8.13	80.2	13.4	0.017	6.98	0.02	23.2
10/26/2022 08:26	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	13	14.75	8.12	80.1	13.4	0.017	6.96	0.13	23.2
10/26/2022 08:26	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	14	14.73	8.11	79.8	13.4	0.017	6.95	0.06	23.2
10/26/2022 08:26	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	15	12.66	5.89	53.8	12.7	0.017	6.56	0.2	23.2
10/26/2022 08:26	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	16	9.9	3.72	31.9	13.1	0.019	6.29	0.75	23.2
10/26/2022 08:26	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	17	9.14	2.42	20.5	13.3	0.019	6.1	0.8	23.2
10/26/2022 08:26	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	18	8.52	1.9	16.7	13.5	0.02	6.03	0.88	23.2
10/26/2022 08:26	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	19	8.09	1.39	11.3	13.9	0.021	5.97	1.12	23.2
10/26/2022 08:26	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	20	7.84	1.11	9.2	14.1	0.021	5.95	2.72	23.2
10/26/2022 08:26	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	21	7.74	1	8.4	14.1	0.021	5.93	1.21	23.2
10/26/2022 08:26	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	22	7.71	0.97	8.1	14.2	0.021	5.92	1.16	23.2
10/26/2022 09:17	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	0	14.65	8.21	80.7	13.3	0.017	6.77	0.05	23.2
10/26/2022 09:17	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	1	14.71	8.18	80.6	13.4	0.017	6.81	0.07	23.2
10/26/2022 09:17	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	2	14.72	8.17	80.5	13.4	0.017	6.85	0.11	23.2
10/26/2022 09:17	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	3	14.72	8.17	80.5	13.4	0.017	6.88	0.02	23.2
10/26/2022 09:17	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	4	14.73	8.17	80.5	13.3	0.017	6.91	0.19	23.2
10/26/2022 09:17	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	5	14.73	8.16	80.4	13.3	0.017	6.92	0.17	23.2
10/26/2022 09:17	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	6	14.73	8.14	80.3	13.3	0.017	6.93	0.17	23.2
10/26/2022 09:17	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	7	14.73	8.14	80.3	13.4	0.017	6.94	0.16	23.2
10/26/2022 09:17	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	8	14.73	8.14	80.3	13.3	0.017	6.94	0.2	23.2
10/26/2022 09:17	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	9	14.73	8.15	80.3	13.4	0.017	6.93	0.09	23.2
10/26/2022 09:17	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	10	14.73	8.14	80	13.4	0.017	6.94	0.08	23.2
10/26/2022 09:17	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	11	14.73	8.12	80	13.3	0.017	6.95	0.08	23.2

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
10/26/2022 09:17	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	12	14.72	8.12	80.1	13.3	0.017	6.95	0.11	23.2
10/26/2022 09:17	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	13	14.73	8.13	80.1	13.3	0.017	6.95	0.14	23.2
10/26/2022 09:17	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	14	14.71	8.12	79.9	13.3	0.017	6.95	0.06	23.2
10/26/2022 09:17	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	15	14.42	7.76	76.1	13.3	0.017	6.89	0.03	23.2
10/26/2022 09:17	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	16	11.35	6.26	56.5	12.3	0.017	6.65	0.06	23.2
10/26/2022 09:17	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	17	9.89	5.27	46.2	12.3	0.017	6.44	0.08	23.2
10/26/2022 09:17	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	18	8.89	4.32	37	12.3	0.018	6.26	0.16	23.2
10/26/2022 09:17	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	19	8.37	3.72	31	12.7	0.019	6.15	0.28	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	0	14.46	8.33	81.5	13.3	0.017	6.72	0.01	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	1	14.68	8.18	80.5	13.3	0.017	6.77	0.02	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	2	14.7	8.15	80.4	13.3	0.017	6.81	0.11	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	3	14.71	8.15	80.3	13.3	0.017	6.83	0.09	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	4	14.71	8.14	80.2	13.3	0.017	6.84	0.16	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	5	14.71	8.15	80.3	13.3	0.017	6.85	0.1	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	6	14.7	8.15	80.3	13.3	0.017	6.86	0.16	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	7	14.7	8.15	80.3	13.3	0.017	6.88	0.1	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	8	14.7	8.14	80.2	13.3	0.017	6.88	0.12	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	9	14.69	8.13	80.1	13.3	0.017	6.89	0.04	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	10	14.67	8.11	79.8	13.3	0.017	6.89	0.04	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	11	14.66	8.09	79.6	13.3	0.017	6.89	0.13	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	12	14.65	8.08	79.5	13.3	0.017	6.89	0.07	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	13	14.65	8.07	79.5	13.3	0.017	6.89	0.19	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	14	14.65	8.08	79.4	13.3	0.017	6.89	0.25	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	15	14.62	8.08	79.4	13.3	0.017	6.89	0.14	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	16	14.32	7.8	75	12.9	0.016	6.84	0.2	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	17	10.21	6.37	56	12	0.017	6.61	0.15	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	18	9.1	5.47	47.1	12	0.017	6.41	0.13	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	19	8.29	5.08	43	11.9	0.018	6.3	0.12	23.2

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	20	7.8	5.01	32	11.8	0.018	6.22	0.12	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	21	7.67	4.98	41.7	11.7	0.018	6.16	0.27	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	22	7.59	4.96	41.3	11.8	0.018	6.12	0.27	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	23	7.5	4.88	40.7	11.7	0.018	6.08	0.22	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	24	7.45	4.87	40.4	11.8	0.018	6.06	0.23	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	25	7.4	4.72	39.2	11.8	0.018	6.04	0.22	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	26	7.37	4.44	36.4	12.2	0.018	6.01	0.29	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	27	7.31	3.85	31.3	12.6	0.019	5.98	0.56	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	28	7.26	3.32	27	12.9	0.019	5.95	0.43	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	29	7.22	2.92	23.9	13.3	0.02	5.95	0.62	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	30	7.2	2.57	21	13.5	0.02	5.93	0.82	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	31	7.16	2.28	18.8	13.7	0.021	5.91	0.69	23.2
10/26/2022 10:01	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	32	7.15	2.04	16.5	14	0.021	5.92	0.89	23.2
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	1	11.96	8.65	80.2	18.9	0.025	6.8	3.04	21
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	2	11.958	8.64	80	18.9	0.025	6.8	3.02	21
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	3	11.955	8.64	80.1	18.9	0.025	6.8	3.09	21
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	4	11.933	8.64	80.1	18.9	0.025	6.8	2.92	21
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	5	11.924	8.64	80	18.9	0.025	6.8	2.95	21
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	6	11.919	8.64	80	18.9	0.025	6.81	2.95	21
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	7	11.919	8.64	80	18.9	0.025	6.82	3	21
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	8	11.917	8.64	79.9	18.9	0.025	6.82	3.02	21
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	9	11.916	8.64	79.9	18.9	0.25	6.82	2.98	21
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	10	11.916	8.63	80	18.9	0.025	6.82	2.92	21
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	11	11.916	8.63	80	18.9	0.025	6.82	2.92	21
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	12	11.908	8.63	79.9	18.9	0.025	6.84	3.02	21
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	13	11.901	8.63	79.9	18.9	0.025	6.83	2.99	21
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	14	11.897	8.63	79.9	18.9	0.025	6.3	2.92	21
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	15	11.897	8.63	79.9	18.9	0.025	6.83	3	21

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	16	11.836	8.66	80	18.9	0.025	6.82	3.11	21
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	17	11.811	8.66	80.1	18.8	0.025	6.81	3.25	21
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	18	11.795	8.67	80.1	18.8	0.025	6.81	3.14	21
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	19	11.77	8.66	80	18.8	0.025	6.81	3.37	21
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	20	11.74	8.68	80.1	18.8	0.025	6.81	3.3	21
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	21	11.735	8.7	80.2	18.8	0.025	6.81	3.14	21
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	22	11.717	8.71	80.3	18.8	0.025	6.8	3.11	21
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	23	11.688	8.71	80.3	18.8	0.025	6.81	3.29	21
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	24	11.684	8.72	80.3	18.8	0.025	6.1	3.27	21
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	25	11.679	8.72	80.3	18.8	0.025	6.81	3.33	21
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	26	11.637	8.7	80	18.8	0.025	6.8	3.48	21
11/10/2022 10:46	YSI EXO2	Bethany Leach	Sunny, clear	R-IS-20-BC	0	12.095	8.65	80.5	19	0.025	6.85	2.9	21
11/14/2022 08:28	YSI EXO2	Jakob Woodall	Clear	R-IS-5-UVR	0	11.53	8.52	78.2	11.8	0.016	7.25	0.06	18.4
11/14/2022 08:28	YSI EXO2	Jakob Woodall	Clear	R-IS-5-UVR	1	11.54	8.51	78.2	11.8	0.016	7.18	0.11	18.4
11/14/2022 08:28	YSI EXO2	Jakob Woodall	Clear	R-IS-5-UVR	2	11.53	8.51	78.2	11.8	0.016	7.14	0.11	18.4
11/14/2022 08:28	YSI EXO2	Jakob Woodall	Clear	R-IS-5-UVR	3	11.51	8.52	78.2	11.8	0.016	7.12	0.1	18.4
11/14/2022 08:28	YSI EXO2	Jakob Woodall	Clear	R-IS-5-UVR	4	11.42	8.53	78.1	11.8	0.016	7.09	0.14	18.4
11/14/2022 08:28	YSI EXO2	Jakob Woodall	Clear	R-IS-5-UVR	5	11.34	8.54	78.1	11.8	0.016	7.06	0.16	18.4
11/14/2022 08:28	YSI EXO2	Jakob Woodall	Clear	R-IS-5-UVR	6	11.25	8.54	77.9	11.7	0.016	7.04	0.11	18.4
11/14/2022 08:28	YSI EXO2	Jakob Woodall	Clear	R-IS-5-UVR	7	11.11	8.55	77.8	11.7	0.016	7.01	0.1	18.4
11/14/2022 08:28	YSI EXO2	Jakob Woodall	Clear	R-IS-5-UVR	8	10.89	8.59	77.7	11.6	0.016	6.98	0.11	18.4
11/14/2022 09:05	YSI EXO2	Jakob Woodall	Clear	R-IS-7-UVR	0	11.91	8.42	78	11.9	0.016	6.8	2.39	22
11/14/2022 09:05	YSI EXO2	Jakob Woodall	Clear	R-IS-7-UVR	1	11.96	8.4	77.8	12	0.016	6.91	2.37	22
11/14/2022 09:05	YSI EXO2	Jakob Woodall	Clear	R-IS-7-UVR	2	11.97	8.37	77.6	12	0.016	6.94	2.31	22
11/14/2022 09:05	YSI EXO2	Jakob Woodall	Clear	R-IS-7-UVR	3	11.97	8.37	77.6	12	0.016	6.94	2.32	22
11/14/2022 09:05	YSI EXO2	Jakob Woodall	Clear	R-IS-7-UVR	4	11.97	8.36	77.5	12	0.016	6.92	2.34	22
11/14/2022 09:05	YSI EXO2	Jakob Woodall	Clear	R-IS-7-UVR	5	11.97	8.36	77.5	12	0.016	6.92	2.27	22
11/14/2022 09:05	YSI EXO2	Jakob Woodall	Clear	R-IS-7-UVR	6	11.96	8.37	77.6	12	0.016	6.91	2.31	22

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
11/14/2022 09:05	YSI EXO2	Jakob Woodall	Clear	R-IS-7-UVR	7	11.97	8.36	77.5	11.9	0.016	6.9	2.27	22
11/14/2022 09:05	YSI EXO2	Jakob Woodall	Clear	R-IS-7-UVR	8	11.98	8.36	77.5	12	0.016	6.9	2.27	22
11/14/2022 09:05	YSI EXO2	Jakob Woodall	Clear	R-IS-7-UVR	9	11.96	8.37	77.4	12	0.016	6.89	2.27	22
11/14/2022 09:05	YSI EXO2	Jakob Woodall	Clear	R-IS-7-UVR	10	11.96	8.35	77.4	11.9	0.016	6.88	2.31	22
11/14/2022 09:05	YSI EXO2	Jakob Woodall	Clear	R-IS-7-UVR	11	11.96	8.35	77.5	12	0.016	6.88	2.29	22
11/14/2022 09:05	YSI EXO2	Jakob Woodall	Clear	R-IS-7-UVR	12	11.96	8.35	77.4	11.9	0.016	6.88	2.24	22
11/14/2022 09:05	YSI EXO2	Jakob Woodall	Clear	R-IS-7-UVR	13	11.96	8.35	77.4	11.9	0.016	6.88	2.25	22
11/14/2022 09:05	YSI EXO2	Jakob Woodall	Clear	R-IS-7-UVR	14	11.96	8.35	77.4	12	0.016	6.87	2.28	22
11/14/2022 09:05	YSI EXO2	Jakob Woodall	Clear	R-IS-7-UVR	15	11.96	8.35	77.4	12	0.016	6.87	2.27	22
11/14/2022 09:05	YSI EXO2	Jakob Woodall	Clear	R-IS-7-UVR	16	11.96	8.35	77.4	12	0.016	6.86	2.22	22
11/14/2022 09:05	YSI EXO2	Jakob Woodall	Clear	R-IS-7-UVR	17	11.96	8.35	77.4	11.9	0.016	6.86	2.22	22
11/14/2022 09:05	YSI EXO2	Jakob Woodall	Clear	R-IS-7-UVR	18	11.96	8.35	77.4	12	0.016	6.86	2.26	22
11/14/2022 09:05	YSI EXO2	Jakob Woodall	Clear	R-IS-7-UVR	19	11.96	8.35	77.4	11.9	0.016	6.86	2.23	22
11/14/2022 09:05	YSI EXO2	Jakob Woodall	Clear	R-IS-7-UVR	20	11.94	8.35	77.4	12	0.016	6.85	2.22	22
11/14/2022 09:05	YSI EXO2	Jakob Woodall	Clear	R-IS-7-UVR	21	11.93	8.35	77.5	11.9	0.016	6.86	2.27	22
11/14/2022 09:05	YSI EXO2	Jakob Woodall	Clear	R-IS-7-UVR	22	11.93	8.35	77.3	11.9	0.016	6.83	2.22	22
11/14/2022 09:05	YSI EXO2	Jakob Woodall	Clear	R-IS-7-UVR	23	11.96	8.36	77.3	11.9	0.016	6.84	2.22	22
11/14/2022 09:05	YSI EXO2	Jakob Woodall	Clear	R-IS-7-UVR	24	11.74	8.35	77	11.9	0.016	6.83	2.22	22
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	0	11.99	8.53	79	12	0.016	6.86	2	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	1	11.99	8.41	78	12	0.016	6.83	1.96	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	2	11.99	8.39	77.7	12	0.016	6.82	1.93	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	3	11.99	8.37	77.6	12	0.016	6.81	1.92	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	4	11.97	8.35	77.5	12	0.016	6.79	1.95	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	5	11.96	8.35	77.4	12	0.016	6.78	1.91	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	6	11.96	8.35	77.4	12	0.016	6.76	1.92	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	7	11.96	8.35	77.4	12	0.016	6.75	1.92	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	8	11.96	8.34	77.3	12	0.016	6.75	1.89	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	9	11.95	8.34	77.3	12	0.016	6.73	1.88	23.8

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	10	11.95	8.34	77.3	12	0.016	6.71	1.98	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	11	11.95	8.34	77.3	12	0.016	6.71	1.86	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	12	11.95	8.34	77.2	12	0.016	6.71	1.88	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	13	11.95	8.33	77.2	12	0.016	6.72	1.9	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	14	11.94	8.34	77.2	12	0.016	6.72	1.84	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	15	11.94	8.34	77.2	12	0.016	6.72	1.86	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	16	11.93	8.34	77.3	12	0.016	6.78	1.9	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	17	11.93	8.34	77.3	12	0.016	6.71	1.83	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	18	11.93	8.34	77.3	12	0.016	6.71	1.88	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	19	11.92	8.34	77.3	12	0.016	6.71	1.85	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	20	11.92	8.34	77.3	12	0.016	6.7	1.83	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	21	11.92	8.35	77.3	12	0.016	6.71	1.85	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	22	11.92	8.34	77.3	12	0.016	6.7	1.82	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	23	11.91	8.34	77.3	12	0.016	6.7	1.82	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	24	11.91	8.34	77.3	12	0.016	6.7	1.9	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	25	11.9	8.35	77.2	12	0.016	6.7	1.81	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	26	11.9	8.35	77.3	12	0.016	6.7	1.81	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	27	11.9	8.35	77.3	12	0.016	6.7	1.81	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	28	11.9	8.34	77.3	12	0.016	6.7	1.78	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	29	11.89	8.35	77.3	12	0.016	6.71	1.89	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	30	11.87	8.34	77.2	12	0.016	6.7	1.85	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	31	11.82	8.3	76.6	12	0.016	6.69	1.81	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	32	11.85	8.31	76.8	12	0.016	6.7	1.84	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	33	11.83	8.31	76.8	12	0.016	6.7	1.88	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	34	11.79	8.27	76.3	12	0.016	6.68	1.79	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	35	11.78	8.24	76	12	0.016	6.66	1.8	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	36	11.73	8.17	75.3	12	0.016	6.64	1.8	23.8
11/14/2022 09:46	YSI EXO2	Jakob Woodall	Clear	R-IS-6-UVR	37	11.69	8.01	74.4	12	0.016	6.62	1.82	23.8

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	0	12.1	8.25	76.7	12	0.016	6.75	1.8	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	1	12.08	8.12	75.5	12	0.016	6.71	1.81	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	2	12.05	8.1	75.3	12	0.016	6.68	1.78	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	3	12.01	8.7	75.1	11.9	0.016	6.7	1.84	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	4	12.02	8.07	75	11.9	0.016	6.65	1.79	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	5	12.02	8.07	74.9	11.9	0.016	6.63	1.72	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	6	12.02	8.07	74.8	11.9	0.016	6.62	1.72	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	7	12.01	8.06	74.8	12	0.016	6.62	1.71	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	8	12.01	8.05	74.8	11.9	0.016	6.6	1.72	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	9	12.01	8.06	74.8	11.9	0.016	6.6	1.77	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	10	12.01	8.05	74.8	11.9	0.016	6.6	1.77	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	11	12.01	8.05	74.7	11.9	0.016	6.59	1.67	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	12	12.01	8.05	74.7	11.9	0.016	6.57	1.72	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	13	12.01	8.05	74.8	11.9	0.016	6.55	1.75	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	14	12.01	8.06	74.8	11.9	0.016	6.54	1.68	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	15	12.01	8.06	74.8	11.9	0.016	6.54	1.74	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	16	12.01	8.06	74.8	12	0.016	6.55	1.7	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	17	12	8.05	74.7	12	0.016	6.55	1.71	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	18	12	8.04	74.6	12	0.016	6.55	1.7	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	19	12	8.04	74.5	11.9	0.016	6.55	1.73	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	20	12	8.04	74.6	11.9	0.016	6.54	1.7	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	21	12	8.04	74.7	11.9	0.016	6.54	1.77	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	22	12	8.04	74.6	11.9	0.016	6.55	1.7	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	23	11.99	8.05	74.5	11.9	0.016	6.55	1.71	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	24	11.98	8.02	74.4	12	0.016	6.54	1.66	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	25	11.96	8.01	74.2	12	0.016	6.54	1.72	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	26	11.96	7.99	74	11.9	0.016	6.54	1.64	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	27	11.96	7.98	73.9	11.9	0.016	6.53	1.66	24.2

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	28	11.95	7.95	73.7	12	0.016	6.52	1.52	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	29	11.94	7.93	73.5	11.9	0.016	6.51	1.71	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	30	11.93	7.93	73.5	11.9	0.016	6.52	1.71	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	31	11.91	7.9	73.1	11.9	0.016	6.51	1.67	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	32	11.9	7.86	72.8	11.9	0.016	6.51	1.66	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	33	11.81	7.82	72.1	11.9	0.016	6.48	1.66	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	34	11.66	7.73	71	12	0.016	6.46	1.62	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	35	11.61	7.61	70	12	0.016	6.43	1.62	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	36	11.53	7.61	69.7	11.7	0.016	6.4	1.62	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	37	11.44	7.46	68.1	11.6	0.016	6.36	1.59	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	38	11.3	7.22	65.8	11.6	0.016	6.3	1.57	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	39	11.17	7.11	64.5	11.5	0.016	6.27	1.62	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	40	10.64	7.1	63.8	11.4	0.016	6.24	1.62	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	41	10.44	7.09	63.4	11.4	0.016	6.22	1.63	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	42	10.18	7.1	63.2	11.3	0.016	6.21	1.62	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	43	9.95	7.18	63.5	11.2	0.016	6.2	1.63	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	44	9.85	7.19	63.4	11.2	0.016	6.2	1.69	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	45	9.77	7.19	63.3	11.2	0.016	6.19	1.68	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	46	9.69	7.19	63.2	11.2	0.016	6.19	1.66	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	47	9.58	7.22	63.4	11.1	0.016	6.19	1.69	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	48	9.49	7.21	63.1	11.1	0.016	6.18	1.71	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	49	9.42	7.17	62.6	11.1	0.016	6.18	1.68	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	50	9.3	7.16	62.4	11.1	0.016	6.18	1.67	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	51	9.25	7.12	61.9	11.1	0.016	6.16	1.69	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	52	9.2	7.01	61.4	11.1	0.016	6.15	1.74	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	53	9.12	7.03	61	11.1	0.016	6.14	1.73	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	54	9.03	6.98	60.4	11.1	0.016	6.13	1.68	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	55	8.93	6.89	59.4	11.2	0.016	6.11	1.77	24.2

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	56	8.8	6.71	57.5	11.2	0.016	6.07	1.72	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	57	8.66	6.58	56.1	11.2	0.016	6.05	1.7	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	58	8.57	6.44	55	11.2	0.016	6.03	1.75	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	59	8.44	6.35	54.1	11.2	0.016	5.92	1.78	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	60	8.35	6.26	53.2	11.2	0.016	5.9	1.78	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	61	8.23	6.19	52.4	11.1	0.016	5.84	1.76	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	62	7.97	6.12	51.5	11.1	0.016	5.77	1.75	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	63	7.7	6.11	51.2	11	0.016	5.75	1.77	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	64	7.4	6.14	51.1	11	0.017	5.76	1.83	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	65	7.07	6.2	51.2	10.9	0.017	5.7	1.78	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	66	6.85	6.32	51.9	10.8	0.017	5.62	1.84	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	67	6.71	6.36	52	10.8	0.017	5.49	1.79	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	68	6.61	6.38	52.2	10.8	0.017	5.46	1.82	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	69	6.53	6.45	52.5	10.8	0.017	5.45	1.85	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	70	6.46	6.45	52.4	10.8	0.017	5.44	1.85	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	71	6.42	6.46	52.5	10.8	0.017	5.45	1.83	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	72	6.41	6.47	52.5	10.7	0.017	5.45	1.83	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	73	6.39	6.48	52.3	10.8	0.017	5.46	1.82	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	74	6.37	6.43	52.1	10.8	0.017	5.5	1.89	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	75	6.37	6.35	51.3	10.9	0.017	5.49	1.94	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	76	6.35	6.26	50.8	10.9	0.017	5.52	1.88	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	77	6.34	6.28	50.9	10.8	0.017	5.55	1.84	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	78	6.32	6.29	51	10.9	0.017	5.54	1.99	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	79	6.31	6.27	50.8	10.9	0.017	5.54	1.92	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	80	6.3	6.21	50.2	11.1	0.017	5.51	1.91	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	81	6.29	6.1	49.4	11.1	0.017	5.54	1.91	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	82	6.29	6.07	49.1	11.2	0.017	5.51	1.9	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	83	6.28	6.02	48.6	11.3	0.018	5.48	1.9	24.2

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	84	6.28	5.91	47.4	11.3	0.018	5.49	1.94	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	85	6.27	5.88	47.6	11.3	0.018	5.43	1.92	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	86	6.27	5.83	47	11.5	0.018	5.5	1.97	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	87	6.26	5.66	47.5	11.8	0.018	5.52	2.06	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	88	6.26	5.46	44.1	12	0.019	5.52	2.11	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	89	6.26	5.35	43.2	12.1	0.019	5.51	2.13	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	90	6.26	5.27	42.5	12.2	0.019	5.53	2.17	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	91	6.26	5.21	42.1	12.3	0.019	5.53	2.1	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	92	6.26	5.13	41.4	12.7	0.02	5.54	2.23	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	93	6.26	5.02	40.6	12.7	0.02	5.55	2.26	24.2
11/14/2022 10:37	YSI EXO2	Jakob Woodall	Clear	R-IS-8-UVR	94	6.25	4.96	39.9	13.2	0.021	5.56	2.57	24.2
11/15/2022 09:32	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	0	9.53	8.88	77.7	12.4	0.018	7.2	0.2	19.6
11/15/2022 09:32	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	1	9.44	8.89	77.7	12.4	0.018	7.09	0.2	19.6
11/15/2022 09:32	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	2	9.44	8.87	77.5	12.4	0.018	7.06	0.25	19.6
11/15/2022 09:32	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	3	9.44	8.89	77.6	12.4	0.018	7.03	0.25	19.6
11/15/2022 09:32	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	4	9.41	8.89	77.7	12.4	0.018	6.99	0.22	19.6
11/15/2022 09:32	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	5	9.41	8.88	77.6	12.4	0.018	6.98	0.24	19.6
11/15/2022 09:32	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	6	9.41	8.87	77.5	12.4	0.018	6.95	0.29	19.6
11/15/2022 09:32	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	7	9.4	8.87	77.5	12.4	0.018	6.92	0.24	19.6
11/15/2022 09:32	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	8	9.4	8.87	77.4	12.4	0.018	6.92	0.25	19.6
11/15/2022 09:32	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	9	9.4	8.87	77.5	12.4	0.018	6.9	0.27	19.6
11/15/2022 09:32	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	10	9.39	8.87	77.5	12.4	0.018	6.89	0.19	19.6
11/15/2022 09:32	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	11	9.38	8.88	77.5	12.4	0.018	6.87	0.31	19.6
11/15/2022 09:32	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	12	9.37	8.89	77.6	12.4	0.018	6.87	0.24	19.6
11/15/2022 09:32	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	13	9.37	8.88	77.6	12.4	0.018	6.84	0.3	19.6
11/15/2022 09:32	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	14	9.37	8.89	77.6	12.4	0.018	6.82	0.27	19.6
11/15/2022 09:32	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	15	9.37	8.89	77.6	12.4	0.018	6.78	0.24	19.6
11/15/2022 09:32	YSI EXO2	Jakob Woodall	Clear	R-IS-9-IHR	16	9.37	8.89	77.6	12.4	0.018	6.76	0.29	19.6

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
11/15/2022 10:07	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	0	9.53	8.61	75.4	12.4	0.018	6.58	0.21	19.6
11/15/2022 10:07	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	1	9.5	8.6	75.3	12.4	0.018	6.55	0.22	19.6
11/15/2022 10:07	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	2	9.49	8.6	75.2	12.4	0.018	6.54	0.19	19.6
11/15/2022 10:07	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	3	9.46	8.6	75.2	12.4	0.018	6.54	0.27	19.6
11/15/2022 10:07	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	4	9.45	8.61	75.3	12.4	0.018	6.52	0.22	19.6
11/15/2022 10:07	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	5	9.45	8.61	75.3	12.4	0.018	6.49	0.22	19.6
11/15/2022 10:07	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	6	9.44	8.62	75.4	12.4	0.018	6.47	0.29	19.6
11/15/2022 10:07	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	7	9.44	8.62	75.4	12.4	0.018	6.48	0.32	19.6
11/15/2022 10:07	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	8	9.43	8.62	75.4	12.4	0.018	6.49	0.24	19.6
11/15/2022 10:07	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	9	9.43	8.62	75.3	12.4	0.018	6.48	0.23	19.6
11/15/2022 10:07	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	10	9.42	8.6	75.2	12.4	0.018	6.51	0.23	19.6
11/15/2022 10:07	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	11	9.42	8.61	75.3	12.4	0.018	6.48	0.19	19.6
11/15/2022 10:07	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	12	9.42	8.61	75.3	12.4	0.018	6.43	0.27	19.6
11/15/2022 10:07	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	13	9.42	8.6	75.2	12.4	0.018	6.4	0.24	19.6
11/15/2022 10:07	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	14	9.41	8.6	75.1	12.4	0.018	6.39	0.2	19.6
11/15/2022 10:07	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	15	9.41	8.59	75.1	12.4	0.018	6.34	0.23	19.6
11/15/2022 10:07	YSI EXO2	Jakob Woodall	Clear	R-IS-10-IHR	16	9.4	8.59	75	12.4	0.018	6.31	0.42	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	0	9.62	8.51	74.7	12.4	0.018	6.89	0.22	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	1	9.53	8.47	74.2	12.4	0.018	6.86	0.25	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	2	9.48	8.46	74	12.4	0.018	6.84	0.2	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	3	9.47	8.45	73.9	12.4	0.018	6.83	0.2	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	4	9.46	8.44	73.9	12.4	0.018	6.81	0.22	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	5	9.44	8.43	73.7	12.4	0.018	6.8	0.2	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	6	9.43	8.41	73.5	12.4	0.018	6.78	0.26	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	7	9.42	8.39	73.3	12.4	0.018	6.71	0.27	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	8	9.42	8.38	73.1	12.4	0.018	6.71	0.2	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	9	9.41	8.37	73.1	12.4	0.018	6.69	0.22	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	10	9.4	8.36	73	12.4	0.018	6.71	0.3	19.6

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	11	9.39	8.34	72.9	12.4	0.018	6.64	0.3	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	12	9.4	8.35	72.9	12.4	0.018	6.63	0.2	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	13	9.4	8.35	72.9	12.4	0.018	6.62	0.31	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	14	9.39	8.36	73	12.4	0.018	6.62	0.27	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	15	9.39	8.35	72.9	12.4	0.018	6.6	0.2	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	16	9.39	8.35	72.9	12.4	0.018	6.57	0.26	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	17	9.38	8.33	72.7	12.4	0.018	6.55	0.21	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	18	9.37	8.28	72.3	12.4	0.018	6.52	0.17	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	19	9.34	8.22	71.8	12.4	0.018	6.51	0.27	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	20	9.31	8.11	70.6	12.4	0.018	6.48	0.17	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	21	9.27	8.04	69.9	12.4	0.018	6.42	0.16	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	22	8.48	6.65	54.1	12.8	0.019	6.15	0.29	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	23	7.77	4.62	38.2	12.7	0.019	5.88	0.25	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	24	7.56	4.43	37	12.5	0.019	5.73	0.27	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	25	7.51	4.4	36.7	12.5	0.019	5.64	0.28	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	26	7.47	4.37	36	12.8	0.019	5.47	0.27	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	27	7.43	3.8	31.3	13	0.02	5.38	0.39	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	28	7.38	3.34	27.4	13.6	0.021	5.32	0.62	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	29	7.32	2.7	21.7	14.3	0.022	5.3	0.9	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	30	7.28	2.11	17.2	14.6	0.022	5.29	0.9	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	31	7.24	1.79	14.6	14.9	0.023	5.28	0.94	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	32	7.18	1.24	9.5	16.1	0.024	5.28	1.4	19.6
11/15/2022 10:58	YSI EXO2	Jakob Woodall	Clear	R-IS-11-IHR	33	7.14	0.72	5.6	16.8	0.025	5.28	1.85	19.6
11/16/2022 13:13	YSI EXO2	Jakob Woodall	Clear	R-IS-13-CR	0	7.14	11.96	98.9	11.3	0.017	6.95	0.25	19
11/16/2022 13:13	YSI EXO2	Jakob Woodall	Clear	R-IS-13-CR	1	6.93	11.95	98.4	11.3	0.017	6.78	0.35	19
11/16/2022 13:13	YSI EXO2	Jakob Woodall	Clear	R-IS-13-CR	2	6.94	11.98	98.6	11.3	0.017	6.71	0.34	19
11/16/2022 13:13	YSI EXO2	Jakob Woodall	Clear	R-IS-13-CR	3	6.84	11.96	98.1	11.3	0.017	6.66	0.34	19
11/16/2022 13:13	YSI EXO2	Jakob Woodall	Clear	R-IS-13-CR	4	6.7	11.95	97.7	11.3	0.017	6.61	0.31	19

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
11/16/2022 13:13	YSI EXO2	Jakob Woodall	Clear	R-IS-13-CR	5	6.58	11.95	97.5	11.2	0.017	6.56	0.47	19
11/17/2022 09:52	YSI EXO2	Jakob Woodall	Clear	R-IS-19-BI	0	2.59	10.7	78.6	8	0.014	7.03	0.47	15
11/17/2022 09:52	YSI EXO2	Jakob Woodall	Clear	R-IS-19-BI	1	2.99	10.71	79.5	8.1	0.014	6.94	0.55	15
11/17/2022 09:52	YSI EXO2	Jakob Woodall	Clear	R-IS-19-BI	2	3.07	10.67	79.4	8.2	0.014	6.85	0.55	15
11/22/2022 10:48	YSI EXO2	Jakob Woodall	Clear, cool	R-IS-14-SC	0	4.685	12.8	99.5	21.5	0.035	7.05	0.62	24.8
11/22/2022 10:48	YSI EXO2	Jakob Woodall	Clear, cool	R-IS-14-SC	1	4.694	12.85	99.9	21.5	0.035	6.97	0.73	24.8
11/22/2022 10:48	YSI EXO2	Jakob Woodall	Clear, cool	R-IS-14-SC	2	4.665	12.89	100.1	21.6	0.035	6.81	0.66	24.8
11/22/2022 10:48	YSI EXO2	Jakob Woodall	Clear, cool	R-IS-14-SC	3	4.656	12.92	100.3	21.7	0.035	6.77	0.74	24.8
11/22/2022 10:48	YSI EXO2	Jakob Woodall	Clear, cool	R-IS-14-SC	4	4.654	12.93	100.3	21.7	0.035	6.75	0.75	24.8
11/22/2022 10:48	YSI EXO2	Jakob Woodall	Clear, cool	R-IS-14-SC	5	4.65	12.93	100.3	21.8	0.036	6.75	0.65	24.8
11/22/2022 10:48	YSI EXO2	Jakob Woodall	Clear, cool	R-IS-14-SC	6	4.644	12.94	100.4	21.8	0.036	6.75	0.7	24.8
11/22/2022 10:48	YSI EXO2	Jakob Woodall	Clear, cool	R-IS-14-SC	7	4.638	12.95	100.4	21.9	0.036	6.69	0.87	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	0	7.845	10.83	91.1	21.1	0.031	6.95	-0.15	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	1	7.632	10.82	90.6	20.9	0.031	6.91	-0.05	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	2	7.558	10.83	90.5	20.9	0.031	6.87	-0.08	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	3	7.503	10.83	90.3	20.8	0.031	6.85	0.02	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	4	7.47	10.84	90.3	20.9	0.031	6.84	-0.07	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	5	7.465	10.84	90.3	20.8	0.031	6.83	-0.12	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	6	7.448	10.84	90.3	20.8	0.031	6.82	-0.11	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	7	7.44	10.84	90.3	20.8	0.031	6.81	-0.13	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	8	7.434	10.84	90.3	20.8	0.031	6.8	-0.11	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	9	7.431	10.85	90.3	20.8	0.031	6.78	-0.02	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	10	7.406	10.86	90.4	20.8	0.031	6.78	-0.1	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	11	7.398	10.86	90.4	20.8	0.031	6.76	-0.03	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	12	7.397	10.86	90.4	20.8	0.031	6.75	-0.12	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	13	7.381	10.86	90.3	20.9	0.031	6.75	-0.05	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	14	7.257	10.93	90.6	20.8	0.031	6.75	-0.06	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	15	6.989	11.13	91.6	20.4	0.031	6.73	0	24.8

Date and Time	Instrument Used	Survey Recorded By	Weather	SWS Site ID	Depth (m)	Temperature (°C)[1]	Dissolved Oxygen (mg/L)[1]	Dissolved Oxygen (%)[1]	Conductivity (µS/cm)[1]	Specific Conductance (mS/cm)[1]	pH (s.u.)[1]	Turbidity (NTU)[1]	Secchi Depth (ft)[1]
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	16	6.948	11.16	91.9	20.6	0.031	6.73	0	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	17	6.923	11.18	91.9	20.7	0.032	6.72	-0.04	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	18	6.68	11.2	92	20.6	0.032	6.73	0.02	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	19	6.852	11.22	92	20.6	0.032	6.72	-0.04	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	20	6.829	11.23	92.1	20.6	0.032	6.73	-0.05	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	21	6.805	11.24	92.1	20.5	0.031	6.72	0.03	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	22	6.873	11.25	92.1	20.5	0.031	6.72	-0.07	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	23	6.768	11.25	92.2	20.5	0.031	6.72	0.03	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	24	6.712	11.27	92.2	20.5	0.031	6.71	0.03	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	25	6.565	11.33	92.3	20.5	0.032	6.72	0.05	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	26	6.497	11.37	92.5	20.5	0.032	6.72	0.13	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	27	6.482	11.39	92.6	20.5	0.032	6.72	0.05	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	28	6.431	11.41	92.7	20.5	0.032	6.71	0.03	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	29	6.295	11.49	93	20.5	0.032	6.7	0.06	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	30	6.266	11.52	93.1	20.5	0.032	6.7	0.07	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	31	6.266	11.52	93.2	20.5	0.032	6.68	0	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	32	6.247	11.54	93.3	20.5	0.032	6.68	0.12	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	33	6.222	11.55	93.3	20.5	0.032	6.68	0.01	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	34	6.17	11.58	93.4	20.5	0.032	6.67	0.1	24.8
11/22/2022 11:44	YSI EXO2	Jakob Woodall	Cloudy and cold	R-IS-15-SC	35	6.132	11.58	93.4	20.5	0.032	6.67	0.2	24.8

[1] Data were transcribed from the YSI EXO2 to a tablet, including additional digits beyond the parameter method detection limit (MDL).

APPENDIX F
In situ Field Calibration Records

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Table F-1. *In situ* Field Pre-Sampling Calibration Records.

Date and Time	Instrument Used	Survey Recorded By	Weather	Standard Values									
				Specific Conductance (mS/cm @ 25°C)	Specific Conductance (mS/cm @ 25°C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH 4 (s.u.)	pH 7 (s.u.)	pH 10 (s.u.)	Turbidity (NTU)	Turbidity (NTU)	Barometric Pressure (mmHg)
2/15/2022 09:14	YSI EXO2	Eric Sommerauer	Clear, cold	1000	1413	87	8.5	4.00	7.00	10.00	0.0	12.4	663.8
2/16/2022 09:05	YSI EXO2	Eric Sommerauer	Clear	1000	1413	98	9.8	4.00	7.00	10.00	0.0	12.4	740.9
4/26/2022 07:30	YSI EXO2	Bruce Hitch	Clear, warm	1000	1413	95	8.8	4.00	7.00	10.00	--[1]	12.4	724.5
4/27/2022 06:45	YSI EXO2	Bruce Hitch	Clear, warm	1000	1413	93	8.6	4.00	7.00	10.00	--[1]	12.4	710.5
4/28/2022 07:15	YSI EXO2	Bruce Hitch	Warm, sunny	1000	1413	94	8.5	4.00	7.00	10.00	0.0	12.4	711.1
5/3/2022 07:22	YSI EXO2	Emily Applequist	Clear, cool	1000	1413	87	8.6	4.00	7.00	10.00	0.0	12.4	659.2
5/16/2022 06:36	YSI EXO2	Bruce Hitch	Clear, cool	1000	1413	88	7.71	4.00	7.00	10.00	0.0	12.4	665.9
5/17/2022 06:19	YSI EXO2	Bruce Hitch	Warm, sunny	1000	1413	88	7.69	4.00	7.00	10.00	0.0	12.4	665.9
5/18/2022 06:57	YSI EXO2	Bruce Hitch	Sunny	1000	1413	88	7.66	4.00	7.00	10.00	0.0	12.4	667.5
5/19/2022 05:56	YSI EXO2	Bruce Hitch	Early	1000	1413	88	7.44	4.00	7.00	10.00	0.0	12.4	665.9
5/23/2022 07:00	YSI EXO2	Emily Applequist	Clear, cool, calm	1000	1413	87	8.1	4.00	7.00	10.00	0.0	12.4	660.1
5/24/2022 06:48	YSI EXO2	Joey Verdian	Cool, sunny	1000	1413	90	8.12	4.00	7.00	10.00	0.0	12.4	682.5
5/25/2022 06:00	YSI EXO2	Esther Adelstein	Sunny	1000	1413	87	7.6	4.00	7.00	10.00	0.0	12.4	658.6
5/26/2022 06:05	YSI EXO2	Esther Adelstein	Sunny	1000	1413	87	7.4	4.00	7.00	10.00	0.0	12.7	657.8
8/1/2022 06:11	YSI EXO2	Emily Applequist	Cloudy	1000	1413	87	7.9	4.00	7.00	10.00	0.0	12.4	662.0
8/2/2022 06:15	YSI EXO2	Bethany Leach	Cool, clear	1000	1413	87	7.7	4.00	7.00	10.00	0.0	12.4	662.5
8/3/2022 06:09	YSI EXO2	Emily Applequist	Cool, calm, clear	1000	1413	88	7.3	4.00	7.00	10.00	0.0	12.4	667.1
8/4/2022 06:22	YSI EXO2	Emily Applequist	Cool, calm, partly cloudy	1000	1413	87	7.6	4.00	7.00	10.00	0.0	12.4	659.8
8/15/2022 05:30	YSI EXO2	Bruce Hitch	Sunny warm	1000	1413	87	5.7	4.00	7.00	10.00	0.0	12.4	605.7
8/16/2022 07:01	YSI EXO2	Bruce Hitch	Sunny	1000	1413	84	7.2	4.00	7.00	10.00	0.0	12.4	665.0
8/17/2022 09:25	YSI EXO2	Bruce Hitch	Sunny	1000	1413	88	7.6	4.00	7.00	10.00	0.0	12.4	666.6
8/18/2022 05:35	YSI EXO2	Bruce Hitch	Warm	1000	1413	89	7.6	4.00	7.00	10.00	0.0	12.4	666.6
8/22/2022 05:49	YSI EXO2	Bruce Hitch	Sunny	1000	1413	87	7.7	4.00	7.00	10.00	0.0	12.4	667.7
8/23/2022 05:21	YSI EXO2	Bruce Hitch	Clear, warm	1000	1413	87	7.7	4.00	7.00	10.00	0.0	12.4	667.4
8/24/2022 05:27	YSI EXO2	Bruce Hitch	Warm, sunny	1000	1413	87	7.8	4.00	7.00	10.00	0.0	12.4	663.8
8/25/2022 05:58	YSI EXO2	Bruce Hitch	Warm, clear	1000	1413	88	7.8	4.00	7.00	10.00	0.0	12.4	666.2
10/17/2022 06:04	YSI EXO2	Esther Adelstein	Dark	1000	1413	94	8.5	4.00	7.00	10.00	0.0	12.4	714.0
10/18/2022 05:40	YSI EXO2	Esther Adelstein	Dark	1000	1413	94	9.5	4.00	7.00	10.00	0.0	12.4	714.3
10/19/2022 05:31	YSI EXO2	Esther Adelstein	Dark	1000	1413	94	9.0	4.00	7.00	10.00	0.0	12.4	714.3
10/24/2022 05:41	YSI EXO2	Bruce Hitch	Cold, clear	1000	1413	89	8.0	4.00	7.00	10.00	0.0	12.4	668.8
10/25/2022 05:55	YSI EXO2	Bruce Hitch	Cold, clear	1000	1413	88	8.1	4.00	7.00	10.00	0.0	12.4	669.3
10/26/2022 05:53	YSI EXO2	Bruce Hitch	Cold, dark	1000	1413	88	8.1	4.00	7.00	10.00	0.0	12.4	666.5
11/2/2022 05:56	YSI EXO2	Bruce Hitch	Cold, clear	1000	1413	85	7.5	4.00	7.00	10.00	0.0	12.4	665.0
11/3/2022 05:47	YSI EXO2	Bruce Hitch	Dark, cold	1000	1413	95	8.7	4.00	7.00	10.00	0.0	12.4	665.5
11/7/2022 05:57	YSI EXO2	Esther Adelstein	Rainy	1000	1413	93	8.2	4.00	7.00	10.00	0.0	12.4	708.3
11/8/2022 06:25	YSI EXO2	Esther Adelstein	Rainy	1000	1413	92	8.2	4.00	7.00	10.00	0.0	12.4	702.3

Date and Time	Instrument Used	Survey Recorded By	Weather	Standard Values									
				Specific Conductance (mS/cm @ 25°C)	Specific Conductance (mS/cm @ 25°C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH 4 (s.u.)	pH 7 (s.u.)	pH 10 (s.u.)	Turbidity (NTU)	Turbidity (NTU)	Barometric Pressure (mmHg)
11/9/2022 06:53	YSI EXO2	Esther Adelstein	Rainy	1000	1413	94	8.6	4.00	7.00	10.00	0.0	12.4	710.6
11/10/2022 07:03	YSI EXO2	Esther Adelstein	Clear and cold	1000	1413	94	9.5	4.00	7.00	10.00	0.0	12.4	717.2
11/14/2022 06:08	YSI EXO2	Bruce Hitch	Cold, clear	1000	1413	91	8.2	4.00	7.00	10.00	0.0	12.4	667.4
11/15/2022 06:10	YSI EXO2	Bruce Hitch	Cold, clear	1000	1413	89	8.9	4.00	7.00	10.00	0.0	12.4	668.9
11/16/2022 05:50	YSI EXO2	Bruce Hitch	Cold, dark	1000	1413	90	8.5	4.00	7.00	10.00	0.0	12.4	672.4
11/17/2022 06:03	YSI EXO2	Bruce Hitch	Cold, dark	1000	1413	93	8.8	4.00	7.00	10.00	0.0	12.4	671.5
11/21/2022 07:13	YSI EXO2	Annabelle Howe	Cold, overcast	1000	1413	94	9.4	4.00	7.00	10.00	0.0	12.4	717.0
11/22/2022 08:02	YSI EXO2	Annabelle Howe	Cold, clear	1000	1413	94	9.6	4.00	7.00	10.00	0.0	12.4	716.3

[1] Value not recorded

Table F-1 (continued). ***In situ*** **Field Pre-Sampling Calibration Records.**

Date and Time	Instrument Used	Survey Recorded By	Weather	Temperature of Standard during Calibration (°C)								
				Specific Conductance (mS/cm @ 25°C)	Specific Conductance (mS/cm @ 25°C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH 4 (s.u.)	pH 7 (s.u.)	pH 10 (s.u.)	Turbidity (NTU)	Turbidity (NTU)
2/15/2022 09:14	YSI EXO2	Eric Sommerauer	Clear, cold	9.6	9.9	16.5	16.5	11.3	10.9	10.2	5.2	8.1
2/16/2022 09:05	YSI EXO2	Eric Sommerauer	Clear	14.0	13.5	15.2	15.2	15.0	14.7	14.5	12.7	12.0
4/26/2022 07:30	YSI EXO2	Bruce Hitch	Clear, warm	20.8	18.4	18.9	19.0	21.1	21.0	21.0	--[1]	19.9
4/27/2022 06:45	YSI EXO2	Bruce Hitch	Clear, warm	19.2	19.3	19.2	19.2	21.7	20.0	19.7	--[1]	18.5
4/28/2022 07:15	YSI EXO2	Bruce Hitch	Warm, sunny	18.5	18.1	20.2	20.2	18.5	18.4	18.2	20.2	19.3
5/3/2022 07:22	YSI EXO2	Emily Applequist	Clear, cool	12.3	12.9	15.6	15.6	12.8	13.1	12.9	11.6	12.2
5/16/2022 06:36	YSI EXO2	Bruce Hitch	Clear, cool	22.4	22.3	21.6	21.7	22.5	22.4	22.6	21.2	21.5
5/17/2022 06:19	YSI EXO2	Bruce Hitch	Warm, sunny	22.1	22.1	21.8	21.8	22.0	22.2	22.2	21.0	21.0
5/18/2022 06:57	YSI EXO2	Bruce Hitch	Sunny	22.7	22.7	22.1	22.1	22.7	22.8	22.8	21.7	21.7
5/19/2022 05:56	YSI EXO2	Bruce Hitch	Early	24.2	24.2	23.5	23.5	24.3	24.3	24.2	23.0	22.9
5/23/2022 07:00	YSI EXO2	Emily Applequist	Clear, cool, calm	19.5	19.4	18.7	18.7	19.7	19.8	19.9	17.6	17.8
5/24/2022 06:48	YSI EXO2	Joey Verdian	Cool, sunny	19.9	19.9	17.7	17.7	19.4	19.5	20.0	17.0	18.2
5/25/2022 06:00	YSI EXO2	Esther Adelstein	Sunny	21.5	22.2	21.4	21.4	22.9	22.5	21.8	19.8	19.7
5/26/2022 06:05	YSI EXO2	Esther Adelstein	Sunny	24.7	22.5	22.6	22.7	24.1	23.9	23.4	21.9	19.7
8/1/2022 06:11	YSI EXO2	Emily Applequist	Cloudy	24.9	23.9	24.3	19.9	24.7	24.9	25.1	23.4	23.8
8/2/2022 06:15	YSI EXO2	Bethany Leach	Cool, clear	21.4	20.8	21.3	21.3	23.6	23.7	23.7	21.3	21.0
8/3/2022 06:09	YSI EXO2	Emily Applequist	Cool, calm, clear	25.5	24.7	24.8	24.8	25.4	25.9	25.8	23.5	23.2
8/4/2022 06:22	YSI EXO2	Emily Applequist	Cool, calm, partly cloudy	25.2	24.6	21.7	21.7	25.7	25.5	24.8	11.8	21.9
8/15/2022 05:30	YSI EXO2	Bruce Hitch	Sunny warm	24.6	24.6	23.4	32.4	24.8	23.8	23.6	23.4	23.0
8/16/2022 07:01	YSI EXO2	Bruce Hitch	Sunny	23.1	23.1	22.8	22.8	23.4	23.4	23.4	22.5	22.5
8/17/2022 09:25	YSI EXO2	Bruce Hitch	Sunny	23.5	23.5	22.5	22.5	23.4	23.5	23.5	23.5	23.5
8/18/2022 05:35	YSI EXO2	Bruce Hitch	Warm	23.7	23.7	22.7	22.7	23.7	23.8	23.7	23.8	23.8
8/22/2022 05:49	YSI EXO2	Bruce Hitch	Sunny	24.4	23.8	21.4	21.4	24.3	24.7	22.8	23.1	22.9
8/23/2022 05:21	YSI EXO2	Bruce Hitch	Clear, warm	21.0	21.0	21.4	21.4	21.3	21.2	21.0	21.7	22.7
8/24/2022 05:27	YSI EXO2	Bruce Hitch	Warm, sunny	21.1	20.9	20.6	20.6	21.4	21.3	20.9	21.8	21.7
8/25/2022 05:58	YSI EXO2	Bruce Hitch	Warm, clear	21.5	21.5	21.2	21.2	21.7	21.6	21.1	23.1	21.9
10/17/2022 06:04	YSI EXO2	Esther Adelstein	Dark	17.8	17.6	20.3	20.3	18.8	20.4	18.7	19.7	20.0
10/18/2022 05:40	YSI EXO2	Esther Adelstein	Dark	17.6	17.9	16.1	15.4	18.5	17.9	17.9	17.8	16.8
10/19/2022 05:31	YSI EXO2	Esther Adelstein	Dark	17.7	17.6	17.2	17.2	18.3	17.5	17.8	18.2	18.1
10/24/2022 05:41	YSI EXO2	Bruce Hitch	Cold, clear	20.2	20.1	19.9	19.9	20.8	21.1	20.1	21.7	22.2
10/25/2022 05:55	YSI EXO2	Bruce Hitch	Cold, clear	20.3	20.3	19.6	19.6	20.4	20.4	20.5	20.4	20.3
10/26/2022 05:53	YSI EXO2	Bruce Hitch	Cold, dark	20.2	20.1	20.1	20.1	20.0	20.1	20.0	20.2	20.1
11/2/2022 05:56	YSI EXO2	Bruce Hitch	Cold, clear	19.9	19.4	19.1	19.1	20.0	19.4	20.0	20.1	20.2
11/3/2022 05:47	YSI EXO2	Bruce Hitch	Dark, cold	21.6	21.6	19.8	19.8	21.5	21.4	21.3	21.8	21.0
11/7/2022 05:57	YSI EXO2	Esther Adelstein	Rainy	19.8	19.8	21.5	21.5	19.9	19.7	19.7	19.8	19.7
11/8/2022 06:25	YSI EXO2	Esther Adelstein	Rainy	19.9	19.8	21.5	21.3	19.7	19.4	19.4	17.7	17.3

Date and Time	Instrument Used	Survey Recorded By	Weather	Temperature of Standard during Calibration (°C)								
				Specific Conductance (mS/cm @ 25°C)	Specific Conductance (mS/cm @ 25°C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH 4 (s.u.)	pH 7 (s.u.)	pH 10 (s.u.)	Turbidity (NTU)	Turbidity (NTU)
11/9/2022 06:53	YSI EXO2	Esther Adelstein	Rainy	18.5	19.4	19.4	19.3	18.6	18.6	18.6	18.5	18.5
11/10/2022 07:03	YSI EXO2	Esther Adelstein	Clear and cold	15.8	16.3	14.9	14.9	16.3	16.1	16.0	17.1	16.7
11/14/2022 06:08	YSI EXO2	Bruce Hitch	Cold, clear	21.3	21.1	20.5	20.5	19.8	20.1	20.4	20.5	20.4
11/15/2022 06:10	YSI EXO2	Bruce Hitch	Cold, clear	17.2	17.2	16.1	16.1	16.3	17.5	17.3	17.4	17.7
11/16/2022 05:50	YSI EXO2	Bruce Hitch	Cold, dark	19.7	19.7	18.7	18.7	19.3	19.7	19.0	20.0	20.0
11/17/2022 06:03	YSI EXO2	Bruce Hitch	Cold, dark	19.5	19.4	18.2	18.2	18.4	19.3	19.2	19.7	19.9
11/21/2022 07:13	YSI EXO2	Annabelle Howe	Cold, overcast	9.5	8.6	15.6	15.7	9.5	11.2	10.0	8.6	8.7
11/22/2022 08:02	YSI EXO2	Annabelle Howe	Cold, clear	15.5	15.5	14.7	14.7	15.6	15.5	15.5	15.5	15.9

[1] Value not recorded

Table F-1 (continued). *In situ* Field Pre-Sampling Calibration Records.

Date and Time	Instrument Used	Survey Recorded By	Weather	Pre-Calibration Value								
				Specific Conductance (mS/cm @ 25°C)	Specific Conductance (mS/cm @ 25°C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH 4 (s.u.)	pH 7 (s.u.)	pH 10 (s.u.)	Turbidity (NTU)	Turbidity (NTU)
2/15/2022 09:14	YSI EXO2	Eric Sommerauer	Clear, cold	1006	--[1]	80	--[1]	4.20	7.09	10.28	0.2	12.5
2/16/2022 09:05	YSI EXO2	Eric Sommerauer	Clear	992	--[1]	101	--[1]	3.98	6.99	10.14	0.1	12.4
4/26/2022 07:30	YSI EXO2	Bruce Hitch	Clear, warm	934	1322	95	8.8	3.93	6.94	10.06	--[1]	12.5
4/27/2022 06:45	YSI EXO2	Bruce Hitch	Clear, warm	1096	1727	95	8.8	4.16	7.11	10.09	--[1]	12.9
4/28/2022 07:15	YSI EXO2	Bruce Hitch	Warm, sunny	1139	1495	91	8.2	4.00	6.91	10.09	0.4	12.8
5/3/2022 07:22	YSI EXO2	Emily Applequist	Clear, cool	2162	1293	89	8.6	3.94	6.85	10.01	-0.5	12.2
5/16/2022 06:36	YSI EXO2	Bruce Hitch	Clear, cool	937	1057	86	7.7	4.16	7.09	10.15	-0.1	12.4
5/17/2022 06:19	YSI EXO2	Bruce Hitch	Warm, sunny	1434	1223	87	7.7	4.07	6.98	10.02	0.1	13.1
5/18/2022 06:57	YSI EXO2	Bruce Hitch	Sunny	1083	1320	84	7.7	4.04	6.96	10.00	0.0	12.9
5/19/2022 05:56	YSI EXO2	Bruce Hitch	Early	1155	1251	88	7.4	4.02	6.95	9.79	0.1	12.6
5/23/2022 07:00	YSI EXO2	Emily Applequist	Clear, cool, calm	1062	1359	87	8.1	4.18	7.27	10.54	0.0	9.9
5/24/2022 06:48	YSI EXO2	Joey Verdian	Cool, sunny	956	1407	85	8.1	3.86	6.82	9.90	0.0	12.8
5/25/2022 06:00	YSI EXO2	Esther Adelstein	Sunny	1050	1343	91	8.0	4.03	6.97	10.03	-0.2	12.2
5/26/2022 06:05	YSI EXO2	Esther Adelstein	Sunny	995	1402	86	7.4	4.12	7.01	10.05	0.0	12.5
8/1/2022 06:11	YSI EXO2	Emily Applequist	Cloudy	909	1406	87	7.9	3.91	6.87	9.98	0.0	12.0
8/2/2022 06:15	YSI EXO2	Bethany Leach	Cool, clear	1002	1298	87	7.7	4.14	7.09	10.13	0.1	14.5
8/3/2022 06:09	YSI EXO2	Emily Applequist	Cool, calm, clear	980	1452	87	7.2	4.44	7.18	10.19	0.0	13.5
8/4/2022 06:22	YSI EXO2	Emily Applequist	Cool, calm, partly cloudy	1039	1353	86	7.8	4.25	7.02	10.10	0.2	9.8
8/15/2022 05:30	YSI EXO2	Bruce Hitch	Sunny warm	1047	1338	87	5.7	9.84	12.64	10.81	-0.1	13.1
8/16/2022 07:01	YSI EXO2	Bruce Hitch	Sunny	1048	1311	84	7.3	4.34	7.03	10.02	0.3	12.7
8/17/2022 09:25	YSI EXO2	Bruce Hitch	Sunny	1083	1270	88	7.6	4.17	7.21	10.33	-11.7	6.5
8/18/2022 05:35	YSI EXO2	Bruce Hitch	Warm	1178	1208	89	7.6	3.94	6.91	9.97	10.0	17.3
8/22/2022 05:49	YSI EXO2	Bruce Hitch	Sunny	1051	1358	87	7.7	4.04	7.03	10.02	0.3	2.6
8/23/2022 05:21	YSI EXO2	Bruce Hitch	Clear, warm	1055	1257	87	7.7	4.06	7.03	10.04	1.1	13.9
8/24/2022 05:27	YSI EXO2	Bruce Hitch	Warm, sunny	1227	1158	87	7.8	3.93	6.94	10.06	2.0	11.6
8/25/2022 05:58	YSI EXO2	Bruce Hitch	Warm, clear	1338	1070	88	7.8	4.11	7.03	10.08	1.9	13.0
10/17/2022 06:04	YSI EXO2	Esther Adelstein	Dark	1048	1355	93	8.5	4.08	7.03	10.11	-1.0	32.8
10/18/2022 05:40	YSI EXO2	Esther Adelstein	Dark	963	1374	97	9.5	4.03	7.02	10.15	0.3	5.3
10/19/2022 05:31	YSI EXO2	Esther Adelstein	Dark	1021	1349	95	9.1	4.00	6.93	10.04	-0.1	12.5
10/24/2022 05:41	YSI EXO2	Bruce Hitch	Cold, clear	922	1327	88	8.0	4.00	6.98	10.08	0.6	25.1
10/25/2022 05:55	YSI EXO2	Bruce Hitch	Cold, clear	1069	1330	88	8.1	4.02	7.01	10.15	0.1	8.3
10/26/2022 05:53	YSI EXO2	Bruce Hitch	Cold, dark	1134	1232	88	8.0	3.91	6.89	10.02	0.2	9.8
11/2/2022 05:56	YSI EXO2	Bruce Hitch	Cold, clear	1139	1227	91	8.3	3.97	6.94	10.00	1.1	17.0
11/3/2022 05:47	YSI EXO2	Bruce Hitch	Dark, cold	1074	1377	95	8.6	4.06	6.99	10.03	2.0	10.2
11/7/2022 05:57	YSI EXO2	Esther Adelstein	Rainy	1112	1358	101	8.2	4.11	7.05	10.13	-1.4	17.6
11/8/2022 06:25	YSI EXO2	Esther Adelstein	Rainy	970	1398	90	8.2	3.89	6.89	10.01	-2.2	6.7

Date and Time	Instrument Used	Survey Recorded By	Weather	Pre-Calibration Value								
				Specific Conductance (mS/cm @ 25°C)	Specific Conductance (mS/cm @ 25°C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH 4 (s.u.)	pH 7 (s.u.)	pH 10 (s.u.)	Turbidity (NTU)	Turbidity (NTU)
11/9/2022 06:53	YSI EXO2	Esther Adelstein	Rainy	1020	1372	93	8.6	4.06	7.01	10.05	-0.2	12.8
11/10/2022 07:03	YSI EXO2	Esther Adelstein	Clear and cold	1009	1367	94	9.6	4.06	7.00	10.13	0.3	12.4
11/14/2022 06:08	YSI EXO2	Bruce Hitch	Cold, clear	958	1325	91	8.1	3.99	6.96	10.01	0.3	12.8
11/15/2022 06:10	YSI EXO2	Bruce Hitch	Cold, clear	1071	1216	91	8.9	4.05	6.97	10.07	0.0	10.0
11/16/2022 05:50	YSI EXO2	Bruce Hitch	Cold, dark	1093	1368	87	8.5	4.11	7.01	10.01	0.1	14.3
11/17/2022 06:03	YSI EXO2	Bruce Hitch	Cold, dark	1128	1239	96	9.0	4.02	6.95	10.07	0.0	9.0
11/21/2022 07:13	YSI EXO2	Annabelle Howe	Cold, overcast	1130	1405	100	9.4	3.91	6.90	10.03	0.5	11.4
11/22/2022 08:02	YSI EXO2	Annabelle Howe	Cold, clear	988	1427	95	9.5	4.10	7.29	10.22	-0.1	12.4

[1] Value not recorded

Table F-1 (continued). *In situ* Field Pre-Sampling Calibration Records.

Date and Time	Instrument Used	Survey Recorded By	Weather	Post-Calibration Value								
				Specific Conductance (mS/cm @ 25°C)	Specific Conductance (mS/cm @ 25°C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH 4 (s.u.)	pH 7 (s.u.)	pH 10 (s.u.)	Turbidity (NTU)	Turbidity (NTU)
2/15/2022 09:14	YSI EXO2	Eric Sommerauer	Clear, cold	1000	1397	87	8.6	4.00	7.06	10.19	0.0	12.4
2/16/2022 09:05	YSI EXO2	Eric Sommerauer	Clear	1000	1398	98	9.8	4.00	7.05	10.13	0.0	12.4
4/26/2022 07:30	YSI EXO2	Bruce Hitch	Clear, warm	1000	1413	95	8.8	4.00	7.00	10.00	--[1]	12.4
4/27/2022 06:45	YSI EXO2	Bruce Hitch	Clear, warm	1000	1413	94	8.7	4.00	7.00	10.00	--[1]	12.4
4/28/2022 07:15	YSI EXO2	Bruce Hitch	Warm, sunny	1000	1413	94	8.2	4.00	7.00	10.00	0.0	12.4
5/3/2022 07:22	YSI EXO2	Emily Applequist	Clear, cool	1000	1293	87	8.6	4.00	7.06	10.16	0.0	12.4
5/16/2022 06:36	YSI EXO2	Bruce Hitch	Clear, cool	1000	1413	88	7.7	4.00	7.00	10.00	0.0	12.4
5/17/2022 06:19	YSI EXO2	Bruce Hitch	Warm, sunny	1000	1413	88	7.7	4.00	7.00	10.00	0.0	12.4
5/18/2022 06:57	YSI EXO2	Bruce Hitch	Sunny	1000	1413	88	7.7	4.00	7.00	10.00	0.0	12.4
5/19/2022 05:56	YSI EXO2	Bruce Hitch	Early	1000	1413	88	7.4	4.00	7.00	10.00	0.0	12.4
5/23/2022 07:00	YSI EXO2	Emily Applequist	Clear, cool, calm	1000	1359	86	8.0	4.00	7.02	10.06	0.0	12.4
5/24/2022 06:48	YSI EXO2	Joey Verdian	Cool, sunny	1000	1407	90	8.5	4.00	7.02	10.06	0.0	12.4
5/25/2022 06:00	YSI EXO2	Esther Adelstein	Sunny	1000	1343	91	8.0	4.00	7.01	10.04	0.0	12.4
5/26/2022 06:05	YSI EXO2	Esther Adelstein	Sunny	1000	1402	87	7.4	4.00	7.00	10.02	0.0	12.4
8/1/2022 06:11	YSI EXO2	Emily Applequist	Cloudy	1000	1406	87	7.9	4.01	7.00	10.00	0.0	12.4
8/2/2022 06:15	YSI EXO2	Bethany Leach	Cool, clear	1002	1413	87	7.7	4.00	7.01	10.02	0.0	12.4
8/3/2022 06:09	YSI EXO2	Emily Applequist	Cool, calm, clear	980	1413	87	7.2	4.00	7.00	10.00	0.0	12.4
8/4/2022 06:22	YSI EXO2	Emily Applequist	Cool, calm, partly cloudy	1039	1413	86	7.6	4.00	7.00	10.00	0.0	12.4
8/15/2022 05:30	YSI EXO2	Bruce Hitch	Sunny warm	1000	1413	87	5.7	4.00	7.00	10.02	0.0	12.4
8/16/2022 07:01	YSI EXO2	Bruce Hitch	Sunny	1000	1413	84	7.2	4.00	7.00	10.00	0.0	12.4
8/17/2022 09:25	YSI EXO2	Bruce Hitch	Sunny	1000	1413	88	7.6	4.00	7.00	10.00	0.0	12.4
8/18/2022 05:35	YSI EXO2	Bruce Hitch	Warm	1000	1413	89	7.6	4.00	7.00	10.00	0.0	12.4
8/22/2022 05:49	YSI EXO2	Bruce Hitch	Sunny	1000	1413	87	7.7	4.00	7.00	10.00	0.0	12.4
8/23/2022 05:21	YSI EXO2	Bruce Hitch	Clear, warm	1000	1413	87	7.6	4.00	7.00	10.00	0.0	12.4
8/24/2022 05:27	YSI EXO2	Bruce Hitch	Warm, sunny	1000	1413	87	7.8	4.00	7.00	10.00	0.0	12.4
8/25/2022 05:58	YSI EXO2	Bruce Hitch	Warm, clear	1000	1413	88	7.8	4.00	7.00	10.00	0.0	12.4
10/17/2022 06:04	YSI EXO2	Esther Adelstein	Dark	1000	1355	94	8.5	4.00	7.02	10.07	0.0	12.4
10/18/2022 05:40	YSI EXO2	Esther Adelstein	Dark	1000	1374	94	9.5	4.00	7.03	10.09	0.0	12.4
10/19/2022 05:31	YSI EXO2	Esther Adelstein	Dark	1000	1349	94	9.1	4.00	7.03	10.09	0.0	12.4
10/24/2022 05:41	YSI EXO2	Bruce Hitch	Cold, clear	1000	1413	88	8.0	4.00	7.00	10.00	0.0	12.4
10/25/2022 05:55	YSI EXO2	Bruce Hitch	Cold, clear	1000	1413	88	8.1	4.00	7.00	10.00	0.0	12.4
10/26/2022 05:53	YSI EXO2	Bruce Hitch	Cold, dark	1000	1413	89	8.0	4.00	7.00	10.00	0.0	12.4
11/2/2022 05:56	YSI EXO2	Bruce Hitch	Cold, clear	1000	1413	91	8.4	4.00	7.00	10.00	0.0	12.4
11/3/2022 05:47	YSI EXO2	Bruce Hitch	Dark, cold	1000	1413	95	8.7	4.00	7.00	10.00	0.0	12.4
11/7/2022 05:57	YSI EXO2	Esther Adelstein	Rainy	1000	1358	93	8.2	4.00	7.02	10.06	0.0	12.4
11/8/2022 06:25	YSI EXO2	Esther Adelstein	Rainy	1000	1398	92	8.2	4.00	7.02	10.07	0.0	12.4

Date and Time	Instrument Used	Survey Recorded By	Weather	Post-Calibration Value								
				Specific Conductance (mS/cm @ 25°C)	Specific Conductance (mS/cm @ 25°C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH 4 (s.u.)	pH 7 (s.u.)	pH 10 (s.u.)	Turbidity (NTU)	Turbidity (NTU)
11/9/2022 06:53	YSI EXO2	Esther Adelstein	Rainy	1000	1372	94	8.6	4.00	7.03	10.08	0.0	12.4
11/10/2022 07:03	YSI EXO2	Esther Adelstein	Clear and cold	1000	1367	94	9.5	4.00	7.00	10.00	0.0	12.4
11/14/2022 06:08	YSI EXO2	Bruce Hitch	Cold, clear	1000	1413	91	8.2	4.00	7.00	10.00	0.0	12.4
11/15/2022 06:10	YSI EXO2	Bruce Hitch	Cold, clear	1000	1413	91	8.9	4.00	7.00	10.00	0.0	12.4
11/16/2022 05:50	YSI EXO2	Bruce Hitch	Cold, dark	1000	1413	87	8.8	4.00	7.00	10.06	0.0	12.4
11/17/2022 06:03	YSI EXO2	Bruce Hitch	Cold, dark	1000	1413	96	9.0	4.00	7.00	10.00	0.0	12.4
11/21/2022 07:13	YSI EXO2	Annabelle Howe	Cold, overcast	1000	1405	94	9.4	4.00	7.06	10.19	0.0	12.4
11/22/2022 08:02	YSI EXO2	Annabelle Howe	Cold, clear	1000	1427	94	9.5	4.00	7.04	10.12	0.0	12.4

[1] Value not recorded

Table F-2. Post-Sampling Calibration Standard Checks.

	Standard									Measured								
Date:	Specific Conductance (uS/cm @ 25°C):	Specific Conductance (uS/cm @ 25°C):	Dissolved Oxygen (%):	Dissolved Oxygen (mg/L):	pH 4 (s.u.):	pH 7 (s.u.):	pH 10 (s.u.):	Turbidity (NTU):	Turbidity (NTU):	Specific Conductance (uS/cm @ 25°C):	Specific Conductance (uS/cm @ 25°C):	Dissolved Oxygen (%):	Dissolved Oxygen (mg/L):	pH 4 (s.u.):	pH 7 (s.u.):	pH 10 (s.u.):	Turbidity (NTU):	Turbidity (NTU):
2/15/2022	1000	1413	100	10.2	4.00	7.00	10.00	0.0	12.4	1000	1387	103	10.4	3.91	6.92	10.08	0.0	12.3
2/16/2022	1000	1413	97	10.2	4.00	7.00	10.00	0.0	12.4	1002	1393	98	10.3	4.03	7.00	10.09	0.0	12.4
4/26/2022	1000	1413	94	7.8	4.00	7.00	10.00	0.0	12.4	999	1421	96	8.0	4.01	7.04	10.06	--[1]	12.5
4/27/2022	1000	1413	93	8.6	4.00	7.00	10.00	0.0	12.4	972	1418	91	8.3	4.08	6.98	10.02	0.0	12.6
4/28/2022	1000	1413	97	9.5	4.00	7.00	10.00	0.0	12.4	983	1376	96	9.4	4.05	6.73	10.06	0.5	11.8
5/3/2022	1000	1413	93	8.6	4.00	7.00	10.00	0.0	12	972	1418	91	8.3	4.08	6.98	10.02	0.0	12.6
5/16/2022	1000	1413	88	7.9	4.00	7.00	10.00	0.0	12.4	1013	1544	88	7.8	4.10	6.98	10.00	0.1	12.5
5/17/2022	1000	1413	84	7.4	4.00	7.00	10.00	0.0	12.4	1066	1396	84	7.4	4.05	6.97	10.06	0.1	11.8
5/18/2022	1000	1413	88	7.5	4.00	7.00	10.00	0.0	12.4	1068	1242	88	7.5	3.96	6.91	9.95	0.0	11.9
5/19/2022	1000	1413	74	7.1	4.00	7.00	10.00	0.0	12.4	965	1379	74	7.0	4.07	7.20	10.30	0.4	11.7
5/23/2022	1000	1413	83	6.9	4.00	7.00	10.00	0.0	12.4	1061	1350	84	7.1	3.88	6.78	9.84	0.0	12.3
5/24/2022	1000	1413	93	7.7	4.00	7.00	10.00	0.0	12.7	1040	--[2]	98	8.1	4.04	6.95	9.98	0.2	13.2
5/25/2022	1000	1413	93	7.1	4.00	7.00	10.00	0.0	12.7	990	1363	93	7.1	4.01	6.97	10.02	0.0	12.0
5/26/2022	1000	1413	100	8.1	4.00	7.00	10.00	0.0	12.7	1105	1440	100	8.2	3.99	6.96	9.99	0.1	12.1
8/1/2022	1000	1413	88	7.2	4.00	7.00	10.00	0.0	12.4	1046	1416	88	7.2	4.20	7.18	10.17	0.1	12.7
8/2/2022	1000	1413	88	7.1	4.00	7.00	10.00	0.0	12.4	1031	1415	88	7.2	4.16	7.08	10.15	0.0	12.2
8/3/2022	1000	1413	88	6.4	4.00	7.00	10.00	0.0	12.4	1030	1403	87	6.4	4.08	7.13	10.09	0.0	12.3
8/4/2022	1000	1413	99	7.2	4.00	7.00	10.00	0.0	12.4	1013	1421	98	7.2	4.13	7.14	10.12	0.1	12.5
8/15/2022	1000	1413	86	7.2	4.00	7.00	10.00	0.0	12.4	1013	1424	85	7.3	4.04	7.12	9.98	0.2	12.7
8/17/2022	1000	1413	89	7.6	4.00	7.00	10.00	0.0	12.4	1066	1439	89	7.6	3.96	6.90	9.95	0.5	12.6
8/18/2022	1000	1413	84	7.2	4.00	7.00	10.00	0.0	12.4	1024	1366	84	7.2	4.07	7.04	10.09	0.1	11.9
8/22/2022	1000	1413	87	7.9	4.00	7.00	10.00	0.0	12.4	1060	1395	87	7.6	4.07	7.01	9.96	0.2	11.3
8/23/2022	1000	1413	89	7.5	4.00	7.00	10.00	0.0	12.4	1057	1506	89	7.4	3.99	6.95	10.01	0.0	11.9
8/24/2022	1000	1413	88	7.5	4.00	7.00	10.00	0.0	12.4	1036	1485	88	7.5	4.10	7.00	10.03	0.0	11.4
8/25/2022	1000	1413	97	7.8	4.00	7.00	10.00	0.0	12.4	1095	1565	97	7.8	4.04	6.94	9.96	0.5	11.6
10/17/2022	1000	1413	94	7.9	4.00	7.00	10.00	0.0	12.4	1048	1362	96	8.1	4.09	6.96	10.03	0.2	12.8
10/18/2022	1000	1413	94	7.9	4.00	7.00	10.00	0.0	12.4	1027	1376	95	7.9	3.95	6.91	9.97	-0.9	12.9
10/19/2022	1000	1413	100	8.2	4.00	7.00	10.00	0.0	12.4	1027	1351	99	8.3	4.00	6.98	10.09	-0.9	13.0
10/24/2022	1000	1413	88	8.1	4.00	7.00	10.00	0.0	12.4	1081	1421	88	8.1	4.15	7.03	10.08	0.0	12.3
10/25/2022	1000	1413	87	7.7	4.00	7.00	10.00	0.0	12.4	1086	1392	88	8.1	3.97	6.89	9.93	0.2	12.0
10/27/2022	1000	1413	93	8.8	4.00	7.00	10.00	0.0	12.4	998	1364	91	9.2	3.95	6.94	10.05	0.1	13.1
11/2/2022	1000	1413	91	8.5	4.00	7.00	10.00	0.0	12.4	1078	1403	92	8.6	4.11	7.01	10.04	1.0	12.3
11/3/2022	1000	1413	100	9.9	4.00	7.00	10.00	0.0	12.4	1046	1469	100	9.9	4.14	6.98	10.08	0.9	12.6
11/7/2022	1000	1413	93	9.3	4.00	7.00	10.00	0.0	12.4	1076	1367	92	9.3	4.06	6.98	9.98	0.1	11.5
11/8/2022	1000	1413	92	9.1	4.00	7.00	10.00	0.0	12.4	1035	1405	94	9.1	4.07	6.99	10.05	0.3	12.3

Date:	Standard									Measured								
	Specific Conductance (uS/cm @ 25°C):	Specific Conductance (uS/cm @ 25°C):	Dissolved Oxygen (%):	Dissolved Oxygen (mg/L):	pH 4 (s.u.):	pH 7 (s.u.):	pH 10 (s.u.):	Turbidity (NTU):	Turbidity (NTU):	Specific Conductance (uS/cm @ 25°C):	Specific Conductance (uS/cm @ 25°C):	Dissolved Oxygen (%):	Dissolved Oxygen (mg/L):	pH 4 (s.u.):	pH 7 (s.u.):	pH 10 (s.u.):	Turbidity (NTU):	Turbidity (NTU):
11/9/2022	1000	1413	94	10.3	4.00	7.00	10.00	0.0	12.4	1040	1377	96	10.3	4.13	7.03	10.11	1.0	13.2
11/10/2022	1000	1413	94	10.5	4.00	7.00	10.00	0.0	12.4	1047	1375	96	10.4	4.05	6.97	10.08	0.2	13.7
11/14/2022	1000	1413	92	9.0	4.00	7.00	10.00	0.0	12.4	1040	1351	93	9.1	4.24	7.08	10.19	0.5	13.6
11/15/2022	1000	1413	92	8.4	4.00	7.00	10.00	0.0	12.4	1027	1565	93	8.4	4.11	6.97	9.99	0.1	13.9
11/16/2022	1000	1413	96	8.7	4.00	7.00	10.00	0.0	12.4	1094	1441	96	8.8	4.01	6.94	10.07	0.1	11.3
11/17/2022	1000	1413	102	9.5	4.00	7.00	10.00	0.0	12.4	1097	1383	106	9.9	4.05	6.98	10.05	0.4	12.0
11/21/2022	1000	1413	100	9.2	4.00	7.00	10.00	0.0	12.4	981	1376	95	9.3	4.24	7.28	10.40	0.1	12.1
11/22/2022	1000	1413	100	9.3	4.00	7.00	10.00	0.0	12.4	992	1406	101	9.4	4.18	7.10	10.19	-0.5	12.2

[1] Value not recorded.
[2] Measured value was recorded in error and not included in post-sampling calibration error and qualification checks. In all cases, specific conductance is a single-point calibration using the 1000 uS/cm standard; the 1413 uS/cm standard is used only as a check. In this case, the MQO code is based on the 1000 uS/cm standard only.

Table F-2. Post-Sampling Calibration Standard Checks.

	Error[1]									Codes[4]								
Date:	Specific Conductance (uS/cm @ 25°C):	Specific Conductance (uS/cm @ 25°C):	Dissolved Oxygen (%):	Dissolved Oxygen (mg/L):	pH 4 (s.u.):	pH 7 (s.u.):	pH 10 (s.u.):	Turbidity (NTU):	Turbidity (NTU):	Specific Conductance (uS/cm @ 25°C):	Specific Conductance (uS/cm @ 25°C):	Dissolved Oxygen (%):	Dissolved Oxygen (ug/L):	pH 4 (s.u.):	pH 7 (s.u.):	pH 10 (s.u.):	Turbidity (NTU):	Turbidity (NTU):
2/15/2022	0%	2%	3%	2%	0.09	0.08	0.08	0.02	0%	A	A	A	A	A	A	A	A	A
2/16/2022	0%	1%	1%	1%	0.03	0.00	0.09	0.02	0%	A	A	A	A	A	A	A	A	A
4/26/2022	0%	1%	2%	2%	0.01	0.04	0.06	--[2]	1%	A	A	A	A	A	A	A	--[2]	A
4/27/2022	3%	0%	2%	3%	0.08	0.02	0.02	0.04	1%	A	A	A	A	A	A	A	A	A
4/28/2022	2%	3%	1%	1%	0.05	0.27	0.06	0.50	5%	A	A	A	A	A	Q	A	A	A
5/3/2022	3%	0%	2%	3%	0.08	0.02	0.02	0.04	5%	A	A	A	A	A	A	A	A	A
5/16/2022	1%	9%	0%	0%	0.10	0.02	0.00	0.08	1%	A	Q	A	A	A	A	A	A	A
5/17/2022	7%	1%	0%	0%	0.05	0.03	0.06	0.05	5%	Q	A	A	A	A	A	A	A	A
5/18/2022	7%	12%	0%	0%	0.04	0.09	0.05	0.04	4%	Q	Q	A	A	A	A	A	A	A
5/19/2022	4%	2%	0%	1%	0.07	0.20	0.30	0.43	6%	A	A	A	A	A	A	Q	A	Q
5/23/2022	6%	4%	1%	3%	0.12	0.22	0.16	0.03	1%	Q	A	A	A	A	Q	A	A	A
5/24/2022	4%	--[3]	5%	5%	0.04	0.05	0.02	0.17	4%	A	--[3]	A	A	A	A	A	A	A
5/25/2022	1%	4%	0%	1%	0.01	0.03	0.02	0.02	5%	A	A	A	A	A	A	A	A	Q
5/26/2022	11%	2%	0%	1%	0.01	0.04	0.01	0.05	5%	Q	A	A	A	A	A	A	A	A
8/1/2022	5%	0%	1%	0%	0.20	0.18	0.17	0.12	2%	A	A	A	A	A	A	A	A	A
8/2/2022	3%	0%	0%	1%	0.16	0.08	0.15	0.03	2%	A	A	A	A	A	A	A	A	A
8/3/2022	3%	1%	0%	0%	0.08	0.13	0.09	0.01	1%	A	A	A	A	A	A	A	A	A
8/4/2022	1%	1%	1%	1%	0.13	0.14	0.12	0.11	1%	A	A	A	A	A	A	A	A	A
8/15/2022	1%	1%	1%	2%	0.04	0.12	0.02	0.24	2%	A	A	A	A	A	A	A	A	A
8/17/2022	7%	2%	1%	0%	0.04	0.10	0.05	0.46	2%	Q	A	A	A	A	A	A	A	A
8/18/2022	2%	3%	0%	1%	0.07	0.04	0.09	0.10	4%	A	A	A	A	A	A	A	A	A
8/22/2022	6%	1%	0%	4%	0.07	0.01	0.04	0.19	9%	Q	A	A	A	A	A	A	A	Q
8/23/2022	6%	7%	0%	1%	0.01	0.05	0.01	0.01	4%	Q	Q	A	A	A	A	A	A	A
8/24/2022	4%	5%	0%	0%	0.10	0.00	0.03	0.02	8%	A	Q	A	A	A	A	A	A	Q
8/25/2022	10%	11%	0%	1%	0.04	0.06	0.04	0.52	6%	Q	Q	A	A	A	A	A	A	Q
10/17/2022	5%	4%	2%	2%	0.09	0.04	0.03	0.17	3%	A	A	A	A	A	A	A	A	A
10/18/2022	3%	3%	1%	1%	0.05	0.09	0.03	0.88	4%	A	A	A	A	A	A	A	A	A
10/19/2022	3%	4%	1%	1%	0.00	0.02	0.09	0.87	5%	A	A	A	A	A	A	A	A	A
10/24/2022	8%	1%	0%	0%	0.15	0.03	0.08	0.03	1%	Q	A	A	A	A	A	A	A	A
10/25/2022	9%	1%	1%	6%	0.03	0.11	0.07	0.24	3%	Q	A	A	Q	A	A	A	A	A
10/27/2022	0%	3%	2%	5%	0.05	0.06	0.05	0.08	6%	A	A	A	A	A	A	A	A	Q
11/2/2022	8%	1%	0%	0%	0.11	0.01	0.04	1.02	1%	Q	A	A	A	A	A	A	Q	A
11/3/2022	5%	4%	0%	0%	0.14	0.02	0.08	0.88	2%	A	A	A	A	A	A	A	A	A
11/7/2022	8%	3%	1%	0%	0.06	0.02	0.02	0.09	7%	Q	A	A	A	A	A	A	A	Q
11/8/2022	4%	1%	2%	0%	0.07	0.01	0.05	0.30	0%	A	A	A	A	A	A	A	A	A

Date:	Error[1]									Codes[4]								
	Specific Conductance (uS/cm @ 25°C):	Specific Conductance (uS/cm @ 25°C):	Dissolved Oxygen (%):	Dissolved Oxygen (mg/L):	pH 4 (s.u.):	pH 7 (s.u.):	pH 10 (s.u.):	Turbidity (NTU):	Turbidity (NTU):	Specific Conductance (uS/cm @ 25°C):	Specific Conductance (uS/cm @ 25°C):	Dissolved Oxygen (%):	Dissolved Oxygen (ug/L):	pH 4 (s.u.):	pH 7 (s.u.):	pH 10 (s.u.):	Turbidity (NTU):	Turbidity (NTU):
11/9/2022	4%	3%	2%	0%	0.13	0.03	0.11	0.98	7%	A	A	A	A	A	A	A	A	Q
11/10/2022	5%	3%	2%	1%	0.05	0.03	0.08	0.19	11%	A	A	A	A	A	A	A	A	R
11/14/2022	4%	4%	0%	0%	0.24	0.08	0.19	0.51	10%	A	A	A	A	Q	A	A	A	Q
11/15/2022	3%	11%	1%	1%	0.11	0.03	0.01	0.09	12%	A	Q	A	A	A	A	A	A	R
11/16/2022	9%	2%	0%	1%	0.01	0.06	0.07	0.08	9%	Q	A	A	A	A	A	A	A	Q
11/17/2022	10%	2%	4%	4%	0.05	0.02	0.05	0.37	3%	Q	A	A	A	A	A	A	A	A
11/21/2022	2%	3%	5%	1%	0.24	0.28	0.40	0.05	2%	A	A	A	A	Q	Q	Q	A	A
11/22/2022	1%	0%	0%	1%	0.18	0.10	0.19	0.45	2%	A	A	A	A	A	A	A	A	A

[1] Error calculated as the absolute value of (Measured - Standard)/Standard for specific conductance, dissolved oxygen, and turbidity (where standard = 12.4 NTU). Error calculated as the absolute value of Measured - Standard for pH and turbidity (where standard = 0.0 NTU).
[2] Value not recorded.
[3] Measured value was recorded in error and not included in post-sampling calibration error and qualification checks. In all cases, specific conductance is a single-point calibration using the 1000 uS/cm standard; the 1413 uS/cm standard is used only as a check. In this case, the MQO code is based on the 1000 uS/cm standard only.
[4] Due to the inherent variation in deionized water turbidity, ±1 NTU on the deionized water post-sampling calibration check is considered acceptable.

APPENDIX G
Analytical Laboratory Chemistry Reports

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basic laboratory

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Redding, California 96001
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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.11/620.02

Lab No: 22D1067
Reported: 05/17/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22D1067, received on 04/27/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: IS-22-SFAR
Matrix / Type: Surface Water (Grab)
Lab ID: 22D1067-01
Sampled: 04/26/22 10:00
Received: 04/27/22 08:49

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.12	J	0.12	0.50	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.31		0.04	0.10	"	"	"	"
Lead	"	0.060		0.007	0.050	"	"	"	"
Mercury	ng/l	1.51		0.22	0.50	EPA 1631E	05/02/22	05/02/22	B2E0832 / DJC
Methyl Mercury as Mercury	"	0.042	J	0.017	0.050	EPA 1630	05/04/22	05/03/22	B2E0852 / EDM
Nickel	ug/l	0.21		0.02	0.10	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/10/22	05/03/22	B2D1479 / BDL
Zinc	"	0.46	J	0.12	0.50	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/06/22	05/06/22	B2E0974 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.26		0.04	0.10	"	05/14/22	05/13/22	B2E1175 / EDM
Lead	"	ND		0.007	0.050	"	05/06/22	05/06/22	B2E0974 / EDM
Nickel	"	0.14		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/10/22	05/10/22	B2E0880 / BDL
Zinc	"	0.21	J	0.12	0.50	EPA 1638	05/06/22	05/06/22	B2E0974 / EDM

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Analytical Report

Description: IS-21-SFAR
Matrix / Type: Surface Water (Grab)
Lab ID: 22D1067-02
Sampled: 04/26/22 11:36
Received: 04/27/22 08:49

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.14	J	0.12	0.50	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.37		0.04	0.10	"	"	"	"
Lead	"	0.050		0.007	0.050	"	"	"	"
Mercury	ng/l	1.08		0.22	0.50	EPA 1631E	05/02/22	05/02/22	B2E0832 / DJC
Methyl Mercury as Mercury	"	0.025	J	0.017	0.050	EPA 1630	05/04/22	05/03/22	B2E0852 / EDM
Nickel	ug/l	0.35		0.02	0.10	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/10/22	05/03/22	B2D1479 / BDL
Zinc	"	0.73		0.12	0.50	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/06/22	05/06/22	B2E0974 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.20		0.04	0.10	"	05/14/22	05/13/22	B2E1175 / EDM
Lead	"	ND		0.007	0.050	"	05/06/22	05/06/22	B2E0974 / EDM
Nickel	"	0.13		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/10/22	05/10/22	B2E0880 / BDL
Zinc	"	0.35	J	0.12	0.50	EPA 1638	05/06/22	05/06/22	B2E0974 / EDM

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Analytical Report

Description: IS-20-SFAR
Matrix / Type: Surface Water (Grab)
Lab ID: 22D1067-03
Sampled: 04/26/22 12:49
Received: 04/27/22 08:49

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.16	J	0.12	0.50	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.43		0.04	0.10	"	"	"	"
Lead	"	0.123		0.007	0.050	"	"	"	"
Mercury	ng/l	1.14		0.22	0.50	EPA 1631E	05/02/22	05/02/22	B2E0832 / DJC
Methyl Mercury as Mercury	"	0.031	J	0.017	0.050	EPA 1630	05/04/22	05/03/22	B2E0852 / EDM
Nickel	ug/l	0.40		0.02	0.10	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/10/22	05/03/22	B2D1479 / BDL
Zinc	"	1.08		0.12	0.50	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.12	J	0.12	0.50	"	05/06/22	05/06/22	B2E0974 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.20		0.04	0.10	"	05/14/22	05/13/22	B2E1175 / EDM
Lead	"	ND		0.007	0.050	"	05/06/22	05/06/22	B2E0974 / EDM
Nickel	"	0.12		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/10/22	05/10/22	B2E0880 / BDL
Zinc	"	0.27	J	0.12	0.50	EPA 1638	05/06/22	05/06/22	B2E0974 / EDM

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Analytical Report

Description: IS-18-SFAR
Matrix / Type: Surface Water (Grab)
Lab ID: 22D1067-04
Sampled: 04/26/22 14:30
Received: 04/27/22 08:49

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.15	J	0.12	0.50	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.36		0.04	0.10	"	"	"	"
Lead	"	0.038	J	0.007	0.050	"	"	"	"
Mercury	ng/l	1.06		0.22	0.50	EPA 1631E	05/02/22	05/02/22	B2E0832 / DJC
Methyl Mercury as Mercury	"	0.045	J	0.017	0.050	EPA 1630	05/11/22	05/10/22	B2E1059 / EDM
Nickel	ug/l	0.36		0.02	0.10	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/10/22	05/03/22	B2D1479 / BDL
Zinc	"	0.53		0.12	0.50	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.12	J	0.12	0.50	"	05/06/22	05/06/22	B2E0974 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.24		0.04	0.10	"	05/14/22	05/13/22	B2E1175 / EDM
Lead	"	ND		0.007	0.050	"	05/06/22	05/06/22	B2E0974 / EDM
Nickel	"	0.28		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/10/22	05/10/22	B2E0880 / BDL
Zinc	"	0.33	J	0.12	0.50	EPA 1638	05/06/22	05/06/22	B2E0974 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2D1479 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	209	2.0	ug/l	200		104	85-115			
Duplicate	Source: 22D1067-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22D1118-04									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22D1067-01									
Selenium	202	2.0	ug/l	200	ND	101	75-125			
Matrix Spike	Source: 22D1118-04									
Selenium	205	2.0	ug/l	200	ND	102	75-125			
Metals - Total	**Batch B2E0832 - BrCl Digestion**									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total **Batch B2E0832 - BrCl Digestion**										
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	9.30	0.50	ng/l	10.0		93.0	77-123			
Matrix Spike	Source: 22D1067-01									
Mercury	12.1	0.50	ng/l	10.0	1.51	106	71-125			
Matrix Spike	Source: 22D1158-01									
Mercury	10.9	0.50	ng/l	10.0	0.56	103	71-125			
Matrix Spike Dup	Source: 22D1067-01									
Mercury	11.5	0.50	ng/l	10.0	1.51	100	71-125	5.14	24	
Matrix Spike Dup	Source: 22D1158-01									
Mercury	11.0	0.50	ng/l	10.0	0.56	104	71-125	0.850	24	
Metals - Total **Batch B2E0852 - EPA 1630 Distillation (Modified)**										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.10	0.050	ng/l	2.00		105	67-133			
Matrix Spike	Source: 22D0903-01									
Methyl Mercury as Mercury	1.16	0.050	ng/l	1.00	ND	116	65-135			
Matrix Spike Dup	Source: 22D0903-01									
Methyl Mercury as Mercury	1.16	0.050	ng/l	1.00	ND	116	65-135	0.276	35	
Metals - Total **Batch B2E0945 - EPA 1638 - Closed Bottle Oven Digestion**										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2E0945 - EPA 1638 - Closed Bottle Oven Digestion**									
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.20	0.50	ug/l	1.25		95.9	50-150			
Cadmium	0.26	0.10	ug/l	0.250		103	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.127	0.050	ug/l	0.125		102	72-143			
Nickel	0.24	0.10	ug/l	0.250		96.4	68-134			
Zinc	1.27	0.50	ug/l	1.25		102	46-146			
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.3	50-150			
Cadmium	0.24	0.10	ug/l	0.250		95.5	84-113			
Copper	0.25	0.10	ug/l	0.250		98.4	51-145			
Lead	0.125	0.050	ug/l	0.125		99.8	72-143			
Nickel	0.25	0.10	ug/l	0.250		101	68-134			
Zinc	1.23	0.50	ug/l	1.25		98.3	46-146			
Matrix Spike	Source: 22D1067-01									
Arsenic	2.60	0.50	ug/l	2.50	0.12	98.9	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	99.4	84-113			
Copper	0.83	0.10	ug/l	0.500	0.31	104	51-145			
Lead	0.309	0.050	ug/l	0.250	0.060	99.4	72-143			
Nickel	0.73	0.10	ug/l	0.500	0.21	105	68-134			
Zinc	2.99	0.50	ug/l	2.50	0.46	101	46-146			
Matrix Spike	Source: 22D1158-03									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.74	0.10	ug/l	0.500	0.24	99.6	51-145			
Lead	0.298	0.050	ug/l	0.250	0.048	99.9	72-143			
Nickel	0.72	0.10	ug/l	0.500	0.21	101	68-134			
Zinc	3.39	0.50	ug/l	2.50	0.83	103	46-146			
Matrix Spike Dup	Source: 22D1067-01									
Arsenic	2.59	0.50	ug/l	2.50	0.12	98.5	50-150	0.327	20	
Cadmium	0.52	0.10	ug/l	0.500	ND	103	84-113	3.80	20	
Copper	0.84	0.10	ug/l	0.500	0.31	106	51-145	1.46	20	
Lead	0.317	0.050	ug/l	0.250	0.060	102	72-143	2.44	20	
Nickel	0.72	0.10	ug/l	0.500	0.21	103	68-134	1.85	20	
Zinc	2.90	0.50	ug/l	2.50	0.46	97.8	46-146	2.88	20	
Matrix Spike Dup	Source: 22D1158-03									
Arsenic	2.49	0.50	ug/l	2.50	ND	99.5	50-150	1.71	20	
Cadmium	0.47	0.10	ug/l	0.500	ND	94.5	84-113	6.76	20	
Copper	0.74	0.10	ug/l	0.500	0.24	99.8	51-145	0.177	20	
Lead	0.294	0.050	ug/l	0.250	0.048	98.4	72-143	1.26	20	
Nickel	0.71	0.10	ug/l	0.500	0.21	99.6	68-134	1.17	20	

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2E0945 - EPA 1638 - Closed Bottle Oven Digestion										
Zinc	3.30	0.50	ug/l	2.50	0.83	98.8	46-146	2.87	20	
Metals - Total Batch B2E1059 - EPA 1630 Distillation (Modified)										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.21	0.050	ng/l	2.00		110	67-133			
Matrix Spike	Source: 22D1067-04									
Methyl Mercury as Mercury	1.22	0.050	ng/l	1.00	0.045	118	65-135			
Matrix Spike Dup	Source: 22D1067-04									
Methyl Mercury as Mercury	1.24	0.050	ng/l	1.00	0.045	119	65-135	1.36	35	
Metals - Dissolved Batch B2E0880 - EPA 200.8 Diss										
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	195	2.0	ug/l	200		97.3	85-115			
Duplicate	Source: 22D1067-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22D1118-04									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22D1067-01									
Selenium	193	2.0	ug/l	200	ND	96.6	75-125			
Matrix Spike	Source: 22D1118-04									
Selenium	192	2.0	ug/l	200	ND	95.8	75-125			
Metals - Dissolved Batch B2E0974 - EPA 1638 - Dissolved										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	0.26	0.50	ug/l							QB-05, J
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved **Batch B2E0974 - EPA 1638 - Dissolved**										
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	0.27	0.50	ug/l							QB-05, J
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.28	0.10	ug/l	0.250		110	84-113			
Lead	0.126	0.050	ug/l	0.125		100	72-143			
Nickel	0.27	0.10	ug/l	0.250		106	68-134			
Zinc	1.48	0.50	ug/l	1.25		119	46-146			
LCS										
Arsenic	1.30	0.50	ug/l	1.25		104	50-150			
Cadmium	0.26	0.10	ug/l	0.250		104	84-113			
Lead	0.126	0.050	ug/l	0.125		100	72-143			
Nickel	0.28	0.10	ug/l	0.250		112	68-134			
Zinc	1.27	0.50	ug/l	1.25		101	46-146			
Matrix Spike	Source: 22D1067-01									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	101	84-113			
Lead	0.253	0.050	ug/l	0.250	ND	101	72-143			
Nickel	0.66	0.10	ug/l	0.500	0.14	104	68-134			
Zinc	2.60	0.50	ug/l	2.50	0.21	95.5	46-146			
Matrix Spike	Source: 22D1158-03									
Arsenic	2.51	0.50	ug/l	2.50	ND	100	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	100	84-113			
Lead	0.247	0.050	ug/l	0.250	ND	98.9	72-143			
Nickel	0.68	0.10	ug/l	0.500	0.16	105	68-134			
Zinc	3.03	0.50	ug/l	2.50	0.49	102	46-146			
Matrix Spike Dup	Source: 22D1067-01									
Arsenic	2.59	0.50	ug/l	2.50	ND	104	50-150	2.27	20	
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113	1.04	20	
Lead	0.259	0.050	ug/l	0.250	ND	103	72-143	2.29	20	
Nickel	0.66	0.10	ug/l	0.500	0.14	103	68-134	0.994	20	
Zinc	2.73	0.50	ug/l	2.50	0.21	101	46-146	4.83	20	
Matrix Spike Dup	Source: 22D1158-03									
Arsenic	2.54	0.50	ug/l	2.50	ND	102	50-150	1.43	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	101	84-113	0.180	20	
Lead	0.252	0.050	ug/l	0.250	ND	101	72-143	1.94	20	
Nickel	0.68	0.10	ug/l	0.500	0.16	106	68-134	0.732	20	
Zinc	3.05	0.50	ug/l	2.50	0.49	102	46-146	0.530	20	
Metals - Dissolved **Batch B2E1175 - EPA 1638 - Dissolved**										
Blank										
Copper	ND	0.10	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved **Batch B2E1175 - EPA 1638 - Dissolved**										
Blank										
Copper	ND	0.10	ug/l							
Blank										
Copper	ND	0.10	ug/l							
LCS										
Copper	0.26	0.10	ug/l	0.250		104	51-145			
LCS										
Copper	0.26	0.10	ug/l	0.250		104	51-145			
Matrix Spike	Source: 22E0270-01									
Copper	0.73	0.10	ug/l	0.500	0.21	104	51-145			
Matrix Spike	Source: 22E0386-04									
Copper	2.14	0.10	ug/l	0.500	1.65	98.7	51-145			
Matrix Spike Dup	Source: 22E0270-01									
Copper	0.74	0.10	ug/l	0.500	0.21	105	51-145	0.732	20	
Matrix Spike Dup	Source: 22E0386-04									
Copper	2.16	0.10	ug/l	0.500	1.65	102	51-145	0.868	20	

Notes and Definitions

QB-05	The method blank contains the analyte at a concentration level above the MDL, but below the MRL.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	CA-ELAP does not accredit this analyte or method as of December 2020. *(Newly released 2021 FOA tables may include this analyte or method.)*
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless samples are received on ice and collected on the same day as delivery. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

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Analytical Report

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen

Ricky Jensen, General Manager
Pace Analytical Services LLC - Redding CA
California ELAP Cert #1677 & 2718

22D1067

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

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LABORATORY WORK ORDER # 22D1067

PAGE 1 OF 1

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CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD CB 2022	750.11/620.02	

MAILING ADDRESS
279 Coustea Place, Suite 400
Davis, CA 95618

REPORT TO ☑ Email ☐ Mail Hardcopy

NAME / ATTENTION: Emily Applequist

PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED: ☑ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one) ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED		SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	T&D Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	4/26	10:00	AM PM	SW			RCS-22-SFAR		6	x	x	x	x	x
2	4/26	11:36	AM PM	"			RCS-21-SFAR		6	x	x	x	x	x
3	4/26	12:49	AM PM	"			RCS-20-SFAR		6	x	x	x	x	x
4	4/26	2:30	AM PM	↓			RCS-19-SFAR		6	x	x	x	x	x
			AM PM											
			AM PM											
			AM PM											
			AM PM											
			AM PM											
			AM PM											

SAMPLED BY: (please print)

RELINQUISHED DATE / TIME: AC, BH *

SAMPLING / ANALYSIS COMMENTS
*per bottles.
PO 4.27.22

(1) Total and Dissolved LL 1638 Metals

☑ **I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS.** (www.basiclab.com/terms)

NAME	SIGNATURE	DATE
BRUCE HAACH		4/26/2022

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
P Ocle	4.27.22 8:49	P Ocle	4.27.22 9:17

For Official Lab Comments Only

***SAMPLE TYPE CODES**

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 2201067

SHIPPING INFORMATION

Walk-In ☐
Courier ☐
FedEx ☑
UPS ☐
Other ☐

Cooler Present? Yes ☑ No ☐

Samples Received By: PSO Date: 4.27.22

	Yes	No
Samples received on ice?	☑	☐
Samples received the same day collected?	☐	☑

Ice type? ☑ Wet ☐ Blue ☐ Other _____

SAMPLE TEMPERATURES AT RECEIPT **Therm. ID (Circle one):** Therm-36 Therm-37 (Therm-59) Other: _____

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	5.8	-06		-11		-16	
-02	4.7	-07		-12		-17	
-03	3.0	-08		-13		-18	
-04	3.5	-09		-14		-19	
-05		-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: PSO Date: 4.27.22

	Yes	No	NA
Custody seals present?	☐	☐	☑
Samples in proper containers?	☑	☐	
Sample containers damaged?	☐	☑	
Sufficient sample volume for indicated tests?	☑	☐	
Samples received within holding times?	☑	☐	
Are VOA vials free of headspace?	☐	☐	☑
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☑

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☑	☐	☐
Preserved in the lab?	☑	☐	☐

Lab Preservation Date & Time 4.27.22 9:03

☐ H2SO4 (ID_____) ☑ HNO3 (ID 2B14036) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑
Are proper preservation lables present?	☑	☐	☐

By:_____ Meter ID:_____

Preservation checked at Lab? Date & Time 4.27.22 9:05 Test Strip (ID ~~12~~ 1H20019)

Preservation and Preservation Checks performed by: PSO PSO 4.27.22

COMMENTS, DISCREPANCEIS, ANOMALIES

_____

_____

_____

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02 UARP

Lab No: 22D1118
Reported: 05/13/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22D1118, received on 04/28/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: IS-19-SFAR
Matrix / Type: Surface Water (Grab)
Lab ID: 22D1118-01
Sampled: 04/27/22 10:00
Received: 04/28/22 09:32

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.14	J	0.12	0.50	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.26		0.04	0.10	"	"	"	"
Lead	"	0.038	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.87		0.22	0.50	EPA 1631E	05/02/22	05/02/22	B2E0832 / DJC
Methyl Mercury as Mercury	"	0.033	J	0.017	0.050	EPA 1630	05/11/22	05/10/22	B2E1059 / EDM
Nickel	ug/l	0.11		0.02	0.10	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/10/22	05/03/22	B2D1479 / BDL
Zinc	"	0.46	J	0.12	0.50	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.13	J	0.12	0.50	"	05/06/22	05/06/22	B2E0974 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.21		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.08	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/10/22	05/10/22	B2E0880 / BDL
Zinc	"	0.27	J	0.12	0.50	EPA 1638	05/06/22	05/06/22	B2E0974 / EDM

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Analytical Report

Description: IS-17-BC
Matrix / Type: Surface Water (Grab)
Lab ID: 22D1118-02
Sampled: 04/27/22 12:00
Received: 04/28/22 09:32

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.14		0.04	0.10	"	"	"	"
Lead	"	0.042	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.69		0.22	0.50	EPA 1631E	05/02/22	05/02/22	B2E0832 / DJC
Methyl Mercury as Mercury	"	0.027	J	0.017	0.050	EPA 1630	05/11/22	05/10/22	B2E1059 / EDM
Nickel	ug/l	0.15		0.02	0.10	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/10/22	05/06/22	B2E0903 / BDL
Zinc	"	0.34	J	0.12	0.50	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/06/22	05/06/22	B2E0974 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.11		0.04	0.10	"	"	"	"
Lead	"	0.009	J	0.007	0.050	"	"	"	"
Nickel	"	0.11		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/10/22	05/10/22	B2E0880 / BDL
Zinc	"	0.51		0.12	0.50	EPA 1638	05/06/22	05/06/22	B2E0974 / EDM

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Analytical Report

Description: IS-16-SFAR
Matrix / Type: Surface Water (Grab)
Lab ID: 22D1118-03
Sampled: 04/27/22 14:15
Received: 04/28/22 09:32

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.28		0.04	0.10	"	"	"	"
Lead	"	0.088		0.007	0.050	"	"	"	"
Mercury	ng/l	5.33		0.22	0.50	EPA 1631E	05/02/22	05/02/22	B2E0832 / DJC
Methyl Mercury as Mercury	"	0.028	J	0.017	0.050	EPA 1630	05/11/22	05/10/22	B2E1059 / EDM
Nickel	ug/l	0.14		0.02	0.10	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/10/22	05/03/22	B2D1479 / BDL
Zinc	"	0.57		0.12	0.50	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/06/22	05/06/22	B2E0974 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.19		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.11		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/10/22	05/10/22	B2E0880 / BDL
Zinc	"	0.19	J	0.12	0.50	EPA 1638	05/06/22	05/06/22	B2E0974 / EDM

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Analytical Report

Description: IS-15-SFAR
Matrix / Type: Surface Water (Grab)
Lab ID: 22D1118-04
Sampled: 04/27/22 13:00
Received: 04/28/22 09:32

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.16	J	0.12	0.50	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.38		0.04	0.10	"	"	"	"
Lead	"	0.173		0.007	0.050	"	"	"	"
Mercury	ng/l	1.64		0.22	0.50	EPA 1631E	05/02/22	05/02/22	B2E0832 / DJC
Methyl Mercury as Mercury	"	0.047	J	0.017	0.050	EPA 1630	05/11/22	05/10/22	B2E1059 / EDM
Nickel	ug/l	0.11		0.02	0.10	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/10/22	05/03/22	B2D1479 / BDL
Zinc	"	1.14		0.12	0.50	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.15	J	0.12	0.50	"	05/06/22	05/06/22	B2E0974 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.19		0.04	0.10	"	"	"	"
Lead	"	0.008	J	0.007	0.050	"	"	"	"
Nickel	"	0.05	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/10/22	05/10/22	B2E0880 / BDL
Zinc	"	0.38	J	0.12	0.50	EPA 1638	05/06/22	05/06/22	B2E0974 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2D1479 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	209	2.0	ug/l	200		104	85-115			
Duplicate	Source: 22D1067-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22D1118-04									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22D1067-01									
Selenium	202	2.0	ug/l	200	ND	101	75-125			
Matrix Spike	Source: 22D1118-04									
Selenium	205	2.0	ug/l	200	ND	102	75-125			
Metals - Total	**Batch B2E0832 - BrCl Digestion**									

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2E0832 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	9.30	0.50	ng/l	10.0		93.0	77-123			
Matrix Spike	Source: 22D1067-01									
Mercury	12.1	0.50	ng/l	10.0	1.51	106	71-125			
Matrix Spike	Source: 22D1158-01									
Mercury	10.9	0.50	ng/l	10.0	0.56	103	71-125			
Matrix Spike Dup	Source: 22D1067-01									
Mercury	11.5	0.50	ng/l	10.0	1.51	100	71-125	5.14	24	
Matrix Spike Dup	Source: 22D1158-01									
Mercury	11.0	0.50	ng/l	10.0	0.56	104	71-125	0.850	24	
Metals - Total	**Batch B2E0903 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	210	2.0	ug/l	200		105	85-115			
Duplicate	Source: 22E0186-04									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22E0164-02									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22E0186-04									
Selenium	195	2.0	ug/l	200	ND	97.7	75-125			
Matrix Spike	Source: 22E0164-02									
Selenium	201	2.0	ug/l	200	ND	101	75-125			
Metals - Total	**Batch B2E0945 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total **Batch B2E0945 - EPA 1638 - Closed Bottle Oven Digestion**										
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.20	0.50	ug/l	1.25		95.9	50-150			
Cadmium	0.26	0.10	ug/l	0.250		103	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.127	0.050	ug/l	0.125		102	72-143			
Nickel	0.24	0.10	ug/l	0.250		96.4	68-134			
Zinc	1.27	0.50	ug/l	1.25		102	46-146			
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.3	50-150			
Cadmium	0.24	0.10	ug/l	0.250		95.5	84-113			
Copper	0.25	0.10	ug/l	0.250		98.4	51-145			
Lead	0.125	0.050	ug/l	0.125		99.8	72-143			
Nickel	0.25	0.10	ug/l	0.250		101	68-134			
Zinc	1.23	0.50	ug/l	1.25		98.3	46-146			
Matrix Spike	Source: 22D1067-01									
Arsenic	2.60	0.50	ug/l	2.50	0.12	98.9	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	99.4	84-113			
Copper	0.83	0.10	ug/l	0.500	0.31	104	51-145			
Lead	0.309	0.050	ug/l	0.250	0.060	99.4	72-143			
Nickel	0.73	0.10	ug/l	0.500	0.21	105	68-134			
Zinc	2.99	0.50	ug/l	2.50	0.46	101	46-146			
Matrix Spike	Source: 22D1158-03									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.74	0.10	ug/l	0.500	0.24	99.6	51-145			
Lead	0.298	0.050	ug/l	0.250	0.048	99.9	72-143			
Nickel	0.72	0.10	ug/l	0.500	0.21	101	68-134			
Zinc	3.39	0.50	ug/l	2.50	0.83	103	46-146			
Matrix Spike Dup	Source: 22D1067-01									
Arsenic	2.59	0.50	ug/l	2.50	0.12	98.5	50-150	0.327	20	
Cadmium	0.52	0.10	ug/l	0.500	ND	103	84-113	3.80	20	
Copper	0.84	0.10	ug/l	0.500	0.31	106	51-145	1.46	20	
Lead	0.317	0.050	ug/l	0.250	0.060	102	72-143	2.44	20	
Nickel	0.72	0.10	ug/l	0.500	0.21	103	68-134	1.85	20	
Zinc	2.90	0.50	ug/l	2.50	0.46	97.8	46-146	2.88	20	
Matrix Spike Dup	Source: 22D1158-03									
Arsenic	2.49	0.50	ug/l	2.50	ND	99.5	50-150	1.71	20	
Cadmium	0.47	0.10	ug/l	0.500	ND	94.5	84-113	6.76	20	
Copper	0.74	0.10	ug/l	0.500	0.24	99.8	51-145	0.177	20	
Lead	0.294	0.050	ug/l	0.250	0.048	98.4	72-143	1.26	20	
Nickel	0.71	0.10	ug/l	0.500	0.21	99.6	68-134	1.17	20	

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2E0945 - EPA 1638 - Closed Bottle Oven Digestion										
Zinc	3.30	0.50	ug/l	2.50	0.83	98.8	46-146	2.87	20	
Metals - Total Batch B2E1059 - EPA 1630 Distillation (Modified)										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.21	0.050	ng/l	2.00		110	67-133			
Matrix Spike	Source: 22D1067-04									
Methyl Mercury as Mercury	1.22	0.050	ng/l	1.00	0.045	118	65-135			
Matrix Spike Dup	Source: 22D1067-04									
Methyl Mercury as Mercury	1.24	0.050	ng/l	1.00	0.045	119	65-135	1.36	35	
Metals - Dissolved Batch B2E0880 - EPA 200.8 Diss										
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	195	2.0	ug/l	200		97.3	85-115			
Duplicate	Source: 22D1067-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22D1118-04									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22D1067-01									
Selenium	193	2.0	ug/l	200	ND	96.6	75-125			
Matrix Spike	Source: 22D1118-04									
Selenium	192	2.0	ug/l	200	ND	95.8	75-125			
Metals - Dissolved Batch B2E0974 - EPA 1638 - Dissolved										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	0.26	0.50	ug/l							QB-05, J
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved **Batch B2E0974 - EPA 1638 - Dissolved**										
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	0.27	0.50	ug/l							QB-05, J
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.28	0.10	ug/l	0.250		110	84-113			
Copper	0.26	0.10	ug/l	0.250		105	51-145			
Lead	0.126	0.050	ug/l	0.125		100	72-143			
Nickel	0.27	0.10	ug/l	0.250		106	68-134			
Zinc	1.48	0.50	ug/l	1.25		119	46-146			
LCS										
Arsenic	1.30	0.50	ug/l	1.25		104	50-150			
Cadmium	0.26	0.10	ug/l	0.250		104	84-113			
Copper	0.26	0.10	ug/l	0.250		104	51-145			
Lead	0.126	0.050	ug/l	0.125		100	72-143			
Nickel	0.28	0.10	ug/l	0.250		112	68-134			
Zinc	1.27	0.50	ug/l	1.25		101	46-146			
Matrix Spike	Source: 22D1067-01									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	101	84-113			
Lead	0.253	0.050	ug/l	0.250	ND	101	72-143			
Nickel	0.66	0.10	ug/l	0.500	0.14	104	68-134			
Zinc	2.60	0.50	ug/l	2.50	0.21	95.5	46-146			
Matrix Spike	Source: 22D1158-03									
Arsenic	2.51	0.50	ug/l	2.50	ND	100	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	100	84-113			
Copper	0.64	0.10	ug/l	0.500	0.16	97.3	51-145			
Lead	0.247	0.050	ug/l	0.250	ND	98.9	72-143			
Nickel	0.68	0.10	ug/l	0.500	0.16	105	68-134			
Zinc	3.03	0.50	ug/l	2.50	0.49	102	46-146			
Matrix Spike Dup	Source: 22D1067-01									
Arsenic	2.59	0.50	ug/l	2.50	ND	104	50-150	2.27	20	
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113	1.04	20	
Lead	0.259	0.050	ug/l	0.250	ND	103	72-143	2.29	20	
Nickel	0.66	0.10	ug/l	0.500	0.14	103	68-134	0.994	20	
Zinc	2.73	0.50	ug/l	2.50	0.21	101	46-146	4.83	20	
Matrix Spike Dup	Source: 22D1158-03									
Arsenic	2.54	0.50	ug/l	2.50	ND	102	50-150	1.43	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	101	84-113	0.180	20	
Copper	0.67	0.10	ug/l	0.500	0.16	102	51-145	3.84	20	
Lead	0.252	0.050	ug/l	0.250	ND	101	72-143	1.94	20	
Nickel	0.68	0.10	ug/l	0.500	0.16	106	68-134	0.732	20	
Zinc	3.05	0.50	ug/l	2.50	0.49	102	46-146	0.530	20	

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Analytical Report

Notes and Definitions

QB-05	The method blank contains the analyte at a concentration level above the MDL, but below the MRL.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	CA-ELAP does not accredit this analyte or method as of December 2020. *(Newly released 2021 FOA tables may include this analyte or method.)*
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless samples are received on ice and collected on the same day as delivery. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen

Ricky Jensen, General Manager
Pace Analytical Services LLC - Redding CA
California ELAP Cert #1677 & 2718

22D1118

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494
☐ 3860 Morrow Lane, Suite F Chico, CA 95928 (530) 894-8966 FAX: (530) 894-5143

LABORATORY WORK ORDER # 22D1118
PAGE 1 OF 1

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS
279 Coustea Place, Suite 400
Davis, CA 95618

REPORT TO ☒ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED
☒ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one) ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	T&D Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	4/27/22	10:00 AM PM	SW		X	IS-19-SEAR		6	X	X	X	X	X
2	4/27/22	12:00 AM PM			X	IS-17-BC		6	X	X	X	X	X
3	4/27/22	14:15 AM PM			X	IS-16-SEAR		6	X	X	X	X	X
4	4/27/22	13:00 AM PM			X	IS-15-SEAR		6	X	X	X	X	X
		AM PM											
		AM PM											
		AM PM											
		AM PM											
		AM PM											
		AM PM											

ANALYSES REQUESTED

SAMPLED BY: (please print) BRUCE HITCH

RELINQUISHED DATE / TIME:

SAMPLING / ANALYSIS COMMENTS
(1) Total and Dissolved LL 1638 Metals

☑ **I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS.** (www.basiclab.com/terms)

NAME	SIGNATURE	DATE
BRUCE HITCH		4/27/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
Rachel Hamill	4.28.22 0932	Rachel Hamill	4.28.22 1128

For Official Lab Comments Only

***SAMPLE TYPE CODES**

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22D1118

SHIPPING INFORMATION

Walk-In ☐
Courier ☐
FedEx ☑
UPS ☐
Other ☐

Cooler Present? Yes ☑ No ☐

Samples Received By: RH Date: 4.28.22

	Yes	No
Samples received on ice?	☑	☐
Samples received the same day collected?	☐	☑

Ice type? ☑ Wet ☐ Blue ☐ Other _____

SAMPLE TEMPERATURES AT RECEIPT **Therm. ID (Circle one):** Therm-36 Therm-37 (Therm-59) Other: _____

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	3.5	-06		-11		-16	
-02	4.2	-07		-12		-17	
-03	3.7	-08		-13		-18	
-04	2.8	-09		-14		-19	
-05		-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: RH Date: 4.28.22

	Yes	No	NA	
Custody seals present?	☐	☐	☑	
Samples in proper containers?	☑	☑ RH 4.28.22	☐	22D1118-03 recieved LL Mercury in 500mL HCL Bottle
Sample containers damaged?	☐	☑	☐	
Sufficient sample volume for indicated tests?	☑	☐	☐	
Samples received within holding times?	☑	☐	☐	
Are VOA vials free of headspace?	☐	☐	☑	
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☑	

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☐	☑	☐
Preserved in the lab?	☑	☐	☐

Lab Preservation Date & Time 4.28.22 1116

☐ H2SO4 (ID_____) ☑ HNO3 (ID 2B14036) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑
Are proper preservation lables present?	☑	☐	☐

By:_____ Meter ID:_____

Preservation checked at Lab? Date & Time 4.28.22 1117 Test Strip (ID 1H20019)

Preservation and Preservation Checks performed by: RH

COMMENTS, DISCREPANCEIS, ANOMALIES

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.01

Lab No: 22D1158
Reported: 05/19/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22D1158, received on 04/29/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: IS-11-SFSCD
Matrix / Type: Surface Water (Grab)
Lab ID: 22D1158-01
Sampled: 04/28/22 12:30
Received: 04/29/22 08:35

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.13		0.04	0.10	"	"	"	"
Lead	"	0.020	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.56		0.22	0.50	EPA 1631E	05/02/22	05/02/22	B2E0832 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	05/11/22	05/10/22	B2E1059 / EDM
Nickel	ug/l	0.08	J	0.02	0.10	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/10/22	05/03/22	B2D1479 / BDL
Zinc	"	0.43	J	0.12	0.50	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/06/22	05/06/22	B2E0974 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.10		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.06	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/10/22	05/10/22	B2E0880 / BDL
Zinc	"	0.16	J	0.12	0.50	EPA 1638	05/06/22	05/06/22	B2E0974 / EDM

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Analytical Report

Description: IS-11-SFSC
Matrix / Type: Surface Water (Grab)
Lab ID: 22D1158-02
Sampled: 04/28/22 12:30
Received: 04/29/22 08:35

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.21		0.04	0.10	"	"	"	"
Lead	"	0.018	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.63		0.22	0.50	EPA 1631E	05/02/22	05/02/22	B2E0832 / DJC
Methyl Mercury as Mercury	"	0.017	J	0.017	0.050	EPA 1630	05/11/22	05/10/22	B2E1059 / EDM
Nickel	ug/l	0.08	J	0.02	0.10	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/10/22	05/03/22	B2D1479 / BDL
Zinc	"	0.62		0.12	0.50	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/06/22	05/06/22	B2E0974 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.10	J	0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.06	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/10/22	05/10/22	B2E0880 / BDL
Zinc	"	0.27	J	0.12	0.50	EPA 1638	05/06/22	05/06/22	B2E0974 / EDM

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Analytical Report

Description: IS-13-SC
Matrix / Type: Surface Water (Grab)
Lab ID: 22D1158-03
Sampled: 04/28/22 11:30
Received: 04/29/22 08:35

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.24		0.04	0.10	"	"	"	"
Lead	"	0.048	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.42	J	0.22	0.50	EPA 1631E	05/02/22	05/02/22	B2E0832 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	05/18/22	05/17/22	B2E1255 / EDM
Nickel	ug/l	0.21		0.02	0.10	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/10/22	05/03/22	B2D1479 / BDL
Zinc	"	0.83		0.12	0.50	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/06/22	05/06/22	B2E0974 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.16		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.16		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/10/22	05/10/22	B2E0880 / BDL
Zinc	"	0.49	J	0.12	0.50	EPA 1638	05/06/22	05/06/22	B2E0974 / EDM

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Analytical Report

Description: IS-14-SC
Matrix / Type: Surface Water (Grab)
Lab ID: 22D1158-04
Sampled: 04/28/22 10:30
Received: 04/29/22 08:35

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.20		0.04	0.10	"	"	"	"
Lead	"	0.009	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.43	J	0.22	0.50	EPA 1631E	05/02/22	05/02/22	B2E0832 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	05/18/22	05/17/22	B2E1255 / EDM
Nickel	ug/l	0.08	J	0.02	0.10	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/10/22	05/03/22	B2D1479 / BDL
Zinc	"	0.24	J	0.12	0.50	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/06/22	05/06/22	B2E0974 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.20		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.10		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/10/22	05/10/22	B2E0880 / BDL
Zinc	"	0.35	J	0.12	0.50	EPA 1638	05/06/22	05/06/22	B2E0974 / EDM

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Analytical Report

Description: IS-12-SC
Matrix / Type: Surface Water (Grab)
Lab ID: 22D1158-05
Sampled: 04/28/22 13:45
Received: 04/29/22 08:35

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.21		0.04	0.10	"	"	"	"
Lead	"	0.009	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.63		0.22	0.50	EPA 1631E	05/02/22	05/02/22	B2E0832 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	05/18/22	05/17/22	B2E1255 / EDM
Nickel	ug/l	0.14		0.02	0.10	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/10/22	05/03/22	B2D1479 / BDL
Zinc	"	0.27	J	0.12	0.50	EPA 1638	05/06/22	05/05/22	B2E0945 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/06/22	05/06/22	B2E0974 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.14		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.06	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/10/22	05/10/22	B2E0880 / BDL
Zinc	"	0.27	J	0.12	0.50	EPA 1638	05/06/22	05/06/22	B2E0974 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2D1479 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	209	2.0	ug/l	200		104	85-115			
Duplicate	Source: 22D1067-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22D1118-04									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22D1067-01									
Selenium	202	2.0	ug/l	200	ND	101	75-125			
Matrix Spike	Source: 22D1118-04									
Selenium	205	2.0	ug/l	200	ND	102	75-125			
Metals - Total	**Batch B2E0832 - BrCl Digestion**									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2E0832 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	9.30	0.50	ng/l	10.0		93.0	77-123			
Matrix Spike	Source: 22D1067-01									
Mercury	12.1	0.50	ng/l	10.0	1.51	106	71-125			
Matrix Spike	Source: 22D1158-01									
Mercury	10.9	0.50	ng/l	10.0	0.56	103	71-125			
Matrix Spike Dup	Source: 22D1067-01									
Mercury	11.5	0.50	ng/l	10.0	1.51	100	71-125	5.14	24	
Matrix Spike Dup	Source: 22D1158-01									
Mercury	11.0	0.50	ng/l	10.0	0.56	104	71-125	0.850	24	
Metals - Total	**Batch B2E0945 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.20	0.50	ug/l	1.25		95.9	50-150			
Cadmium	0.26	0.10	ug/l	0.250		103	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.127	0.050	ug/l	0.125		102	72-143			
Nickel	0.24	0.10	ug/l	0.250		96.4	68-134			
Zinc	1.27	0.50	ug/l	1.25		102	46-146			

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total **Batch B2E0945 - EPA 1638 - Closed Bottle Oven Digestion**										
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.3	50-150			
Cadmium	0.24	0.10	ug/l	0.250		95.5	84-113			
Copper	0.25	0.10	ug/l	0.250		98.4	51-145			
Lead	0.125	0.050	ug/l	0.125		99.8	72-143			
Nickel	0.25	0.10	ug/l	0.250		101	68-134			
Zinc	1.23	0.50	ug/l	1.25		98.3	46-146			
Matrix Spike	Source: 22D1067-01									
Arsenic	2.60	0.50	ug/l	2.50	0.12	98.9	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	99.4	84-113			
Copper	0.83	0.10	ug/l	0.500	0.31	104	51-145			
Lead	0.309	0.050	ug/l	0.250	0.060	99.4	72-143			
Nickel	0.73	0.10	ug/l	0.500	0.21	105	68-134			
Zinc	2.99	0.50	ug/l	2.50	0.46	101	46-146			
Matrix Spike	Source: 22D1158-03									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.74	0.10	ug/l	0.500	0.24	99.6	51-145			
Lead	0.298	0.050	ug/l	0.250	0.048	99.9	72-143			
Nickel	0.72	0.10	ug/l	0.500	0.21	101	68-134			
Zinc	3.39	0.50	ug/l	2.50	0.83	103	46-146			
Matrix Spike Dup	Source: 22D1067-01									
Arsenic	2.59	0.50	ug/l	2.50	0.12	98.5	50-150	0.327	20	
Cadmium	0.52	0.10	ug/l	0.500	ND	103	84-113	3.80	20	
Copper	0.84	0.10	ug/l	0.500	0.31	106	51-145	1.46	20	
Lead	0.317	0.050	ug/l	0.250	0.060	102	72-143	2.44	20	
Nickel	0.72	0.10	ug/l	0.500	0.21	103	68-134	1.85	20	
Zinc	2.90	0.50	ug/l	2.50	0.46	97.8	46-146	2.88	20	
Matrix Spike Dup	Source: 22D1158-03									
Arsenic	2.49	0.50	ug/l	2.50	ND	99.5	50-150	1.71	20	
Cadmium	0.47	0.10	ug/l	0.500	ND	94.5	84-113	6.76	20	
Copper	0.74	0.10	ug/l	0.500	0.24	99.8	51-145	0.177	20	
Lead	0.294	0.050	ug/l	0.250	0.048	98.4	72-143	1.26	20	
Nickel	0.71	0.10	ug/l	0.500	0.21	99.6	68-134	1.17	20	
Zinc	3.30	0.50	ug/l	2.50	0.83	98.8	46-146	2.87	20	
Metals - Total **Batch B2E1059 - EPA 1630 Distillation (Modified)**										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.21	0.050	ng/l	2.00		110	67-133			
Matrix Spike	Source: 22D1067-04									
Methyl Mercury as Mercury	1.22	0.050	ng/l	1.00	0.045	118	65-135			
Matrix Spike Dup	Source: 22D1067-04									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2E1059 - EPA 1630 Distillation (Modified)										
Methyl Mercury as Mercury	1.24	0.050	ng/l	1.00	0.045	119	65-135	1.36	35	
Metals - Total Batch B2E1255 - EPA 1630 Distillation (Modified)										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.01	0.050	ng/l	2.00		101	67-133			
Matrix Spike	Source: 22D1158-03									
Methyl Mercury as Mercury	1.12	0.050	ng/l	1.00	ND	112	65-135			
Matrix Spike	Source: 22E0270-04									
Methyl Mercury as Mercury	1.26	0.050	ng/l	1.00	0.019	124	65-135			
Matrix Spike Dup	Source: 22D1158-03									
Methyl Mercury as Mercury	1.03	0.050	ng/l	1.00	ND	103	65-135	8.30	35	
Matrix Spike Dup	Source: 22E0270-04									
Methyl Mercury as Mercury	1.18	0.050	ng/l	1.00	0.019	116	65-135	6.64	35	
Metals - Dissolved Batch B2E0880 - EPA 200.8 Diss										
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	195	2.0	ug/l	200		97.3	85-115			
Duplicate	Source: 22D1067-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22D1118-04									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22D1067-01									
Selenium	193	2.0	ug/l	200	ND	96.6	75-125			
Matrix Spike	Source: 22D1118-04									
Selenium	192	2.0	ug/l	200	ND	95.8	75-125			
Metals - Dissolved Batch B2E0974 - EPA 1638 - Dissolved										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved **Batch B2E0974 - EPA 1638 - Dissolved**										
Nickel	ND	0.10	ug/l							
Zinc	0.26	0.50	ug/l							QB-05, J
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	0.27	0.50	ug/l							QB-05, J
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.28	0.10	ug/l	0.250		110	84-113			
Copper	0.26	0.10	ug/l	0.250		105	51-145			
Lead	0.126	0.050	ug/l	0.125		100	72-143			
Nickel	0.27	0.10	ug/l	0.250		106	68-134			
Zinc	1.48	0.50	ug/l	1.25		119	46-146			
LCS										
Arsenic	1.30	0.50	ug/l	1.25		104	50-150			
Cadmium	0.26	0.10	ug/l	0.250		104	84-113			
Copper	0.26	0.10	ug/l	0.250		104	51-145			
Lead	0.126	0.050	ug/l	0.125		100	72-143			
Nickel	0.28	0.10	ug/l	0.250		112	68-134			
Zinc	1.27	0.50	ug/l	1.25		101	46-146			
Matrix Spike	Source: 22D1067-01									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	101	84-113			
Lead	0.253	0.050	ug/l	0.250	ND	101	72-143			
Nickel	0.66	0.10	ug/l	0.500	0.14	104	68-134			
Zinc	2.60	0.50	ug/l	2.50	0.21	95.5	46-146			
Matrix Spike	Source: 22D1158-03									
Arsenic	2.51	0.50	ug/l	2.50	ND	100	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	100	84-113			
Copper	0.64	0.10	ug/l	0.500	0.16	97.3	51-145			
Lead	0.247	0.050	ug/l	0.250	ND	98.9	72-143			
Nickel	0.68	0.10	ug/l	0.500	0.16	105	68-134			
Zinc	3.03	0.50	ug/l	2.50	0.49	102	46-146			
Matrix Spike Dup	Source: 22D1067-01									
Arsenic	2.59	0.50	ug/l	2.50	ND	104	50-150	2.27	20	
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113	1.04	20	
Lead	0.259	0.050	ug/l	0.250	ND	103	72-143	2.29	20	
Nickel	0.66	0.10	ug/l	0.500	0.14	103	68-134	0.994	20	
Zinc	2.73	0.50	ug/l	2.50	0.21	101	46-146	4.83	20	
Matrix Spike Dup	Source: 22D1158-03									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved **Batch B2E0974 - EPA 1638 - Dissolved**										
Arsenic	2.54	0.50	ug/l	2.50	ND	102	50-150	1.43	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	101	84-113	0.180	20	
Copper	0.67	0.10	ug/l	0.500	0.16	102	51-145	3.84	20	
Lead	0.252	0.050	ug/l	0.250	ND	101	72-143	1.94	20	
Nickel	0.68	0.10	ug/l	0.500	0.16	106	68-134	0.732	20	
Zinc	3.05	0.50	ug/l	2.50	0.49	102	46-146	0.530	20	

Notes and Definitions

QB-05	The method blank contains the analyte at a concentration level above the MDL, but below the MRL.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	CA-ELAP does not accredit this analyte or method as of December 2020. *(Newly released 2021 FOA tables may include this analyte or method.)*
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless samples are received on ice and collected on the same day as delivery. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

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Analytical Report

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen

Ricky Jensen, General Manager
Pace Analytical Services LLC - Redding CA
California ELAP Cert #1677 & 2718

22D1158

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

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LABORATORY WORK ORDER # 22D1158
PAGE 1 OF 1

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
STILLWATER SCIENCES	SMUD 2022	750.10/062201	

MAILING ADDRESS: 279 COUSTEAU PLACE, SUITE 400, DAVIS, CA 95618

REPORT TO ☑ Email ☐ Mail Hardcopy
NAME / ATTENTION: EMILY APPLEQUIST
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED: ☒ Standard ☐ Rush _____

INVOICE TO: same
EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory
QC Reported? (check one): ☐ None ☑ STD ☐ Other
Do you require Electronic Data Deliverables (EDD)? ☐ Yes ☑ No What Type?

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED		SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	T&D Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	4/28/22	12:30	AM (PM)	SW			IS-11-SFSCD		6	X	X	X	X	X
2	4/28/22	12:30	AM (PM)				IS-11-SFSC		6	X	X	X	X	X
3	4/28/22	11:30	(AM) PM				IS-13-SC		6	X	X	X	X	X
4	4/28/22	10:30	(AM) PM				IS-14-SC		6	X	X	X	X	X
5	4/28/22	13:45	AM (PM)	↓			IS-12-SC		6	X	X	X	X	X
			AM PM											
			AM PM											
			AM PM											
			AM PM											
			AM PM											

SAMPLED BY: (please print) BH/EA*

RELINQUISHED DATE / TIME:

SAMPLING / ANALYSIS COMMENTS
*per bottle RH

(1) Total and Dissolved LL 1638 Metals

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME: BRUCE HITCH
SIGNATURE: [signature]
DATE: 4/28/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
[signature]	4.29.22 0835	[signature]	4.29.22 0902

For Official Lab Comments Only

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22D1158

SHIPPING INFORMATION

Walk-In ☐
Courier ☐
FedEx ☑
UPS ☐
Other ☐

Cooler Present? Yes ☑ No ☐

Samples Received By: RH Date: 4.29.22

	Yes	No
Samples received on ice?	☑	☐
Samples received the same day collected?	☐	☑

Ice type? ☑ Wet ☐ Blue ☐ Other _____

SAMPLE TEMPERATURES AT RECEIPT Therm. ID (Circle one): Therm-36 Therm-37 (Therm-59) Other: _____

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	4.5	-06		-11		-16	
-02	3.5	-07		-12		-17	
-03	4.4	-08		-13		-18	
-04	4.3	-09		-14		-19	
-05	4.5	-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: RH Date: 4.29.22

	Yes	No	NA
Custody seals present?	☐	☐	☑
Samples in proper containers?	☑	☐	
Sample containers damaged?	☐	☑	
Sufficient sample volume for indicated tests?	☑	☐	
Samples received within holding times?	☑	☐	
Are VOA vials free of headspace?	☐	☐	☑
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☑

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☐	☑	☐
Preserved in the lab?	☑	☐	☐

Lab Preservation Date & Time 4.29.22 0859

☐ H2SO4 (ID_____) ☑ HNO3 (ID 2B14036) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☐
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☐
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☐
Are proper preservation lables present?	☑	☐	☐

By:_____ Meter ID:_____

Preservation checked at Lab? Date & Time 4.29.22 0900 Test Strip (ID 1H20019)

Preservation and Preservation Checks performed by: RH

COMMENTS, DISCREPANCEIS, ANOMALIES

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

May 03, 2022

CLS Work Order #: 22D1538
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 04/26/22 18:01. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

05/03/22 14:48

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1538
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-22-SFAR (22D1538-01) Water Sampled: 04/26/22 10:00 Received: 04/26/22 18:01										
Ammonia as N	**0.043**	0.025	0.10	mg/L	1	2203478	04/29/22	04/29/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**18**	0.50	5.0	"	"	2203389	04/27/22	04/27/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**1.8**	0.026	0.50	"	"	2203363	04/27/22	04/27/22	EPA 300.0	
Cyanide (total)	**0.0026**	0.0012	0.0050	"	"	2203431	04/28/22	04/28/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2203392	04/27/22	04/28/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2203389	04/27/22	04/27/22	SM2320B	
Nitrate/Nitrite as N	**0.20**	0.055	0.40	"	"	2203363	04/27/22	04/27/22	EPA 300.0	J
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2203382	04/27/22	04/27/22	SM4500-P E	
Sulfate as SO4	**1.6**	0.038	0.50	"	"	2203363	04/27/22	04/27/22	EPA 300.0	
Total Alkalinity	**18**	1.0	5.0	"	"	2203389	04/27/22	04/27/22	SM2320B	
Total Dissolved Solids	**46**	5.0	10	"	"	2203410	04/27/22	04/29/22	SM2540C	
Total Hardness as CaCO3	**14**	0.19	1.0	"	"	2203385	04/27/22	04/29/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.074**	0.040	0.20	"	"	2203525	05/02/22	05/02/22	SM4500-NH3F-1997	J
Total Organic Carbon	**2.5**	0.54	1.0	"	"	2203365	04/27/22	04/27/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2203381	04/27/22	04/27/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2203479	04/29/22	05/02/22	SM2540D	
IS-21-SFAR (22D1538-02) Water Sampled: 04/26/22 11:36 Received: 04/26/22 18:01										
Ammonia as N	ND	0.025	0.10	mg/L	1	2203478	04/29/22	04/29/22	SM4500-NH3F-1997	
Bicarbonate as CaCO3	**14**	0.50	5.0	"	"	2203389	04/27/22	04/27/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**1.5**	0.026	0.50	"	"	2203363	04/27/22	04/27/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2203431	04/28/22	04/28/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2203392	04/27/22	04/28/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2203389	04/27/22	04/27/22	SM2320B	
Nitrate/Nitrite as N	**0.14**	0.055	0.40	"	"	2203363	04/27/22	04/27/22	EPA 300.0	J
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2203382	04/27/22	04/27/22	SM4500-P E	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1538
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-21-SFAR (22D1538-02) Water Sampled: 04/26/22 11:36 Received: 04/26/22 18:01										
Sulfate as SO4	**1.2**	0.038	0.50	mg/L	1	2203363	04/27/22	04/27/22	EPA 300.0	
Total Alkalinity	**14**	1.0	5.0	"	"	2203389	04/27/22	04/27/22	SM2320B	
Total Dissolved Solids	**44**	5.0	10	"	"	2203410	04/27/22	04/29/22	SM2540C	
Total Hardness as CaCO3	**13**	0.19	1.0	"	"	2203385	04/27/22	04/29/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.049**	0.040	0.20	"	"	2203525	05/02/22	05/02/22	SM4500-NH3F-1997	J
Total Organic Carbon	**2.1**	0.54	1.0	"	"	2203365	04/27/22	04/27/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2203381	04/27/22	04/27/22	SM4500-P E	
Total Suspended Solids	**4.2**	2.0	5.0	"	"	2203479	04/29/22	05/02/22	SM2540D	J
IS-20-SFAR (22D1538-03) Water Sampled: 04/26/22 12:45 Received: 04/26/22 18:01										
Ammonia as N	ND	0.025	0.10	mg/L	1	2203478	04/29/22	04/29/22	SM4500-NH3F-1997	
Bicarbonate as CaCO3	**17**	0.50	5.0	"	"	2203389	04/27/22	04/27/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**1.4**	0.026	0.50	"	"	2203363	04/27/22	04/27/22	EPA 300.0	
Cyanide (total)	**0.0023**	0.0012	0.0050	"	"	2203431	04/28/22	04/28/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2203392	04/27/22	04/28/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2203389	04/27/22	04/27/22	SM2320B	
Nitrate/Nitrite as N	**0.14**	0.055	0.40	"	"	2203363	04/27/22	04/27/22	EPA 300.0	J
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2203382	04/27/22	04/27/22	SM4500-P E	
Sulfate as SO4	**1.1**	0.038	0.50	"	"	2203363	04/27/22	04/27/22	EPA 300.0	
Total Alkalinity	**17**	1.0	5.0	"	"	2203389	04/27/22	04/27/22	SM2320B	
Total Dissolved Solids	**34**	5.0	10	"	"	2203410	04/27/22	04/29/22	SM2540C	
Total Hardness as CaCO3	**14**	0.19	1.0	"	"	2203385	04/27/22	04/29/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.079**	0.040	0.20	"	"	2203525	05/02/22	05/02/22	SM4500-NH3F-1997	J
Total Organic Carbon	**2.2**	0.54	1.0	"	"	2203365	04/27/22	04/27/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2203381	04/27/22	04/27/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2203479	04/29/22	05/02/22	SM2540D	

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2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1538
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-18-SFAR (22D1538-04) Water Sampled: 04/26/22 14:30 Received: 04/26/22 18:01										
Ammonia as N	ND	0.025	0.10	mg/L	1	2203478	04/29/22	04/29/22	SM4500-NH3F-1997	
Bicarbonate as CaCO3	**19**	0.50	5.0	"	"	2203389	04/27/22	04/27/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**1.5**	0.026	0.50	"	"	2203363	04/27/22	04/27/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2203431	04/28/22	04/28/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2203392	04/27/22	04/28/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2203389	04/27/22	04/27/22	SM2320B	
Nitrate/Nitrite as N	**0.12**	0.055	0.40	"	"	2203363	04/27/22	04/27/22	EPA 300.0	J
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2203382	04/27/22	04/27/22	SM4500-P E	
Sulfate as SO4	**1.8**	0.038	0.50	"	"	2203363	04/27/22	04/27/22	EPA 300.0	
Total Alkalinity	**19**	1.0	5.0	"	"	2203389	04/27/22	04/27/22	SM2320B	
Total Dissolved Solids	**39**	5.0	10	"	"	2203410	04/27/22	04/29/22	SM2540C	
Total Hardness as CaCO3	**18**	0.19	1.0	"	"	2203385	04/27/22	04/29/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.072**	0.040	0.20	"	"	2203525	05/02/22	05/02/22	SM4500-NH3F-1997	J
Total Organic Carbon	**2.0**	0.54	1.0	"	"	2203365	04/27/22	04/27/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2203381	04/27/22	04/27/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2203479	04/29/22	05/02/22	SM2540D	

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Project: SMUD In situ & Chemistry Monitoring
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Project Manager: Emily Applequist

CLS Work Order #: 22D1538
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-22-SFAR (22D1538-01) Water Sampled: 04/26/22 10:00 Received: 04/26/22 18:01										
Diesel	ND	0.0021	0.050	mg/L	1	2203436	04/28/22	04/29/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*97 %*	*65-135*		"	"	"	"	
IS-21-SFAR (22D1538-02) Water Sampled: 04/26/22 11:36 Received: 04/26/22 18:01										
Diesel	ND	0.0021	0.050	mg/L	1	2203436	04/28/22	04/29/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*103 %*	*65-135*		"	"	"	"	
IS-20-SFAR (22D1538-03) Water Sampled: 04/26/22 12:45 Received: 04/26/22 18:01										
Diesel	ND	0.0021	0.050	mg/L	1	2203436	04/28/22	04/29/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*104 %*	*65-135*		"	"	"	"	
IS-18-SFAR (22D1538-04) Water Sampled: 04/26/22 14:30 Received: 04/26/22 18:01										
Diesel	ND	0.0021	0.050	mg/L	1	2203436	04/28/22	04/29/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22D1538**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-18-SFAR (22D1538-04) Water Sampled: 04/26/22 14:30 Received: 04/26/22 18:01										
Surrogate: o-Terphenyl			*91 %*		*65-135*	*2203436*	"	*04/29/22*	*EPA 8015M*	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1538
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-22-SFAR (22D1538-01) Water Sampled: 04/26/22 10:00 Received: 04/26/22 18:01										
Aluminum	**71**	1.6	20	µg/L	1	2203384	04/27/22	04/29/22	EPA 200.8	
Barium	**14**	0.14	5.0	"	"	"	"	04/27/22	"	
Calcium	**3800**	27	1000	"	"	2203385	04/27/22	04/29/22	EPA 200.7	
Iron	**120**	9.1	100	"	"	"	"	"	"	
Magnesium	**1100**	21	1000	"	"	"	"	"	"	
Manganese	**15**	0.050	2.0	"	"	2203384	04/27/22	04/27/22	EPA 200.8	
Potassium	**1300**	61	1000	"	"	2203385	04/27/22	04/29/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2203384	04/27/22	04/27/22	EPA 200.8	
Sodium	**2900**	34	1000	"	"	2203385	04/27/22	04/29/22	EPA 200.7	
IS-21-SFAR (22D1538-02) Water Sampled: 04/26/22 11:36 Received: 04/26/22 18:01										
Aluminum	**63**	1.6	20	µg/L	1	2203384	04/27/22	04/29/22	EPA 200.8	
Barium	**13**	0.14	5.0	"	"	"	"	04/27/22	"	
Calcium	**3700**	27	1000	"	"	2203385	04/27/22	04/29/22	EPA 200.7	
Iron	**75**	9.1	100	"	"	"	"	"	"	J
Magnesium	**1000**	21	1000	"	"	"	"	"	"	
Manganese	**11**	0.050	2.0	"	"	2203384	04/27/22	04/27/22	EPA 200.8	
Potassium	**1100**	61	1000	"	"	2203385	04/27/22	04/29/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2203384	04/27/22	04/27/22	EPA 200.8	
Sodium	**2600**	34	1000	"	"	2203385	04/27/22	04/29/22	EPA 200.7	
IS-20-SFAR (22D1538-03) Water Sampled: 04/26/22 12:45 Received: 04/26/22 18:01										
Aluminum	**66**	1.6	20	µg/L	1	2203384	04/27/22	04/29/22	EPA 200.8	
Barium	**14**	0.14	5.0	"	"	"	"	04/27/22	"	
Calcium	**4000**	27	1000	"	"	2203385	04/27/22	04/29/22	EPA 200.7	
Iron	**88**	9.1	100	"	"	"	"	"	"	J
Magnesium	**980**	21	1000	"	"	"	"	"	"	J
Manganese	**13**	0.050	2.0	"	"	2203384	04/27/22	04/27/22	EPA 200.8	
Potassium	**1100**	61	1000	"	"	2203385	04/27/22	04/29/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2203384	04/27/22	04/27/22	EPA 200.8	
Sodium	**2500**	34	1000	"	"	2203385	04/27/22	04/29/22	EPA 200.7	

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22D1538
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-18-SFAR (22D1538-04) Water	**Sampled: 04/26/22 14:30**		**Received: 04/26/22 18:01**							
Aluminum	**58**	1.6	20	µg/L	1	2203384	04/27/22	04/29/22	EPA 200.8	
Barium	**14**	0.14	5.0	"	"	"	"	04/27/22	"	
Calcium	**4600**	27	1000	"	"	2203385	04/27/22	04/29/22	EPA 200.7	
Iron	**94**	9.1	100	"	"	"	"	"	"	J
Magnesium	**1600**	21	1000	"	"	"	"	"	"	
Manganese	**10**	0.050	2.0	"	"	2203384	04/27/22	04/27/22	EPA 200.8	
Potassium	**1300**	61	1000	"	"	2203385	04/27/22	04/29/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2203384	04/27/22	04/27/22	EPA 200.8	
Sodium	**3100**	34	1000	"	"	2203385	04/27/22	04/29/22	EPA 200.7	

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Stillwater Sciences
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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
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CLS Work Order #: 22D1538
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-22-SFAR (22D1538-01) Water	**Sampled: 04/26/22 10:00**		**Received: 04/26/22 18:01**							
Aluminum	**71**	0.52	20	µg/L	1	2203471	04/29/22	04/29/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2203542	05/02/22	05/03/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2203471	04/29/22	04/29/22	EPA 200.8	
IS-21-SFAR (22D1538-02) Water	**Sampled: 04/26/22 11:36**		**Received: 04/26/22 18:01**							
Aluminum	**63**	0.52	20	µg/L	1	2203471	04/29/22	04/29/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2203542	05/02/22	05/03/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2203471	04/29/22	04/29/22	EPA 200.8	
IS-20-SFAR (22D1538-03) Water	**Sampled: 04/26/22 12:45**		**Received: 04/26/22 18:01**							
Aluminum	**66**	0.52	20	µg/L	1	2203471	04/29/22	04/29/22	EPA 200.8	
Iron	**20**	6.8	100	"	"	2203542	05/02/22	05/03/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2203471	04/29/22	04/29/22	EPA 200.8	
IS-18-SFAR (22D1538-04) Water	**Sampled: 04/26/22 14:30**		**Received: 04/26/22 18:01**							
Aluminum	**58**	0.52	20	µg/L	1	2203471	04/29/22	04/29/22	EPA 200.8	
Iron	**12**	6.8	100	"	"	2203542	05/02/22	05/03/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2203471	04/29/22	04/29/22	EPA 200.8	

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CLS Work Order #: 22D1538
COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-22-SFAR (22D1538-01) Water	**Sampled: 04/26/22 10:00**		**Received: 04/26/22 18:01**							
Gasoline	ND	10	50	µg/L	1	2203352	04/28/22	04/29/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*85 %*	*65-135*		"	"	"	"	
IS-21-SFAR (22D1538-02) Water	**Sampled: 04/26/22 11:36**		**Received: 04/26/22 18:01**							
Gasoline	ND	10	50	µg/L	1	2203352	04/28/22	04/29/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*86 %*	*65-135*		"	"	"	"	
IS-20-SFAR (22D1538-03) Water	**Sampled: 04/26/22 12:45**		**Received: 04/26/22 18:01**							
Gasoline	ND	10	50	µg/L	1	2203352	04/28/22	04/29/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*91 %*	*65-135*		"	"	"	"	
IS-18-SFAR (22D1538-04) Water	**Sampled: 04/26/22 14:30**		**Received: 04/26/22 18:01**							
Gasoline	ND	10	50	µg/L	1	2203352	04/28/22	04/30/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*92 %*	*65-135*		"	"	"	"	

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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1538
COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-22-SFAR (22D1538-01) Water	**Sampled: 04/26/22 10:00**		**Received: 04/26/22 18:01**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2203458	04/28/22	04/28/22	EPA 8260B	
Surrogate: Toluene-d8			*94 %*	*72-125*		"	"	"	"	
IS-21-SFAR (22D1538-02) Water	**Sampled: 04/26/22 11:36**		**Received: 04/26/22 18:01**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2203458	04/28/22	04/28/22	EPA 8260B	
Surrogate: Toluene-d8			*95 %*	*72-125*		"	"	"	"	
IS-20-SFAR (22D1538-03) Water	**Sampled: 04/26/22 12:45**		**Received: 04/26/22 18:01**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2203458	04/28/22	04/28/22	EPA 8260B	
Surrogate: Toluene-d8			*93 %*	*72-125*		"	"	"	"	
IS-18-SFAR (22D1538-04) Water	**Sampled: 04/26/22 14:30**		**Received: 04/26/22 18:01**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2203458	04/28/22	04/28/22	EPA 8260B	
Surrogate: Toluene-d8			*94 %*	*72-125*		"	"	"	"	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203363 - General Prep											
Blank (2203363-BLK1)					Prepared & Analyzed: 04/27/22						
Sulfate as SO4	0.131	0.038	0.50	mg/L							J
Chloride	0.274	0.026	0.50	"							J
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2203363-BS1)					Prepared & Analyzed: 04/27/22						
Sulfate as SO4	4.71	0.038	0.50	mg/L	5.00		94	80-120			
Chloride	4.64	0.026	0.50	"	5.00		93	80-120			
Nitrate/Nitrite as N	3.89	0.055	0.40	"	4.00		97	80-120			
LCS Dup (2203363-BSD1)					Prepared & Analyzed: 04/27/22						
Sulfate as SO4	4.78	0.038	0.50	mg/L	5.00		96	80-120	2	20	
Chloride	4.70	0.026	0.50	"	5.00		94	80-120	1	20	
Nitrate/Nitrite as N	3.96	0.055	0.40	"	4.00		99	80-120	2	20	
Matrix Spike (2203363-MS1)			**Source: 22D1482-02**		Prepared & Analyzed: 04/27/22						
Sulfate as SO4	5.70	0.038	0.50	mg/L	5.00	0.906	96	80-120			
Chloride	14.3	0.026	0.50	"	5.00	9.34	99	80-120			
Nitrate/Nitrite as N	4.44	0.055	0.40	"	4.00	0.469	99	80-120			
Matrix Spike Dup (2203363-MSD1)			**Source: 22D1482-02**		Prepared & Analyzed: 04/27/22						
Sulfate as SO4	5.74	0.038	0.50	mg/L	5.00	0.906	97	80-120	0.8	20	
Chloride	14.3	0.026	0.50	"	5.00	9.34	100	80-120	0.3	20	
Nitrate/Nitrite as N	4.48	0.055	0.40	"	4.00	0.469	100	80-120	0.9	20	
Batch 2203365 - General Prep											
Blank (2203365-BLK1)					Prepared & Analyzed: 04/27/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203365 - General Prep											
LCS (2203365-BS1)					Prepared & Analyzed: 04/27/22						
Total Organic Carbon	10.5	0.54	1.0	mg/L	10.0		105	75-125			
LCS Dup (2203365-BSD1)					Prepared & Analyzed: 04/27/22						
Total Organic Carbon	10.4	0.54	1.0	mg/L	10.0		104	75-125	1	25	
Matrix Spike (2203365-MS1)			**Source: 22D1538-04**		Prepared & Analyzed: 04/27/22						
Total Organic Carbon	12.7	0.54	1.0	mg/L	10.0	2.03	107	75-125			
Matrix Spike Dup (2203365-MSD1)			**Source: 22D1538-04**		Prepared & Analyzed: 04/27/22						
Total Organic Carbon	12.8	0.54	1.0	mg/L	10.0	2.03	108	75-125	0.9	25	
Batch 2203381 - General Prep											
Blank (2203381-BLK1)					Prepared & Analyzed: 04/27/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2203381-BS1)					Prepared & Analyzed: 04/27/22						
Total Phosphorus as P	0.295	0.023	0.050	mg/L	0.300		98	80-120			
LCS Dup (2203381-BSD1)					Prepared & Analyzed: 04/27/22						
Total Phosphorus as P	0.292	0.023	0.050	mg/L	0.300		97	80-120	1	25	
Matrix Spike (2203381-MS1)			**Source: 22D1343-02**		Prepared & Analyzed: 04/27/22						
Total Phosphorus as P	0.348	0.023	0.050	mg/L	0.300	0.0580	97	75-125			
Matrix Spike Dup (2203381-MSD1)			**Source: 22D1343-02**		Prepared & Analyzed: 04/27/22						
Total Phosphorus as P	0.351	0.023	0.050	mg/L	0.300	0.0580	98	75-125	0.9	30	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203382 - General Preparation											
Blank (2203382-BLK1)					Prepared & Analyzed: 04/27/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							
LCS (2203382-BS1)					Prepared & Analyzed: 04/27/22						
Orthophosphate as PO4	0.884	0.0051	0.15	mg/L	0.918		96	80-120			
LCS Dup (2203382-BSD1)					Prepared & Analyzed: 04/27/22						
Orthophosphate as PO4	0.855	0.0051	0.15	mg/L	0.918		93	80-120	3	20	
Matrix Spike (2203382-MS1)			**Source: 22D1538-01**		Prepared & Analyzed: 04/27/22						
Orthophosphate as PO4	0.868	0.0051	0.15	mg/L	0.918	ND	95	75-125			
Matrix Spike Dup (2203382-MSD1)			**Source: 22D1538-01**		Prepared & Analyzed: 04/27/22						
Orthophosphate as PO4	0.847	0.0051	0.15	mg/L	0.918	ND	92	75-125	2	25	
Batch 2203385 - EPA 200 Series											
Blank (2203385-BLK1)					Prepared & Analyzed: 04/27/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2203385-BS1)					Prepared & Analyzed: 04/27/22						
Total Hardness as CaCO3	33.4	0.19	1.0	mg/L	33.1		101	85-115			
Matrix Spike (2203385-MS1)			**Source: 22D1469-01**		Prepared & Analyzed: 04/27/22						
Total Hardness as CaCO3	127	0.19	1.0	mg/L	33.1	113	43	70-130			QM-7
Matrix Spike (2203385-MS2)			**Source: 22D1538-04**		Prepared: 04/27/22 Analyzed: 04/29/22						
Total Hardness as CaCO3	56.7	0.19	1.0	mg/L	33.1	18.1	117	70-130			

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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203389 - General Prep											
Blank (2203389-BLK1)					Prepared & Analyzed: 04/27/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Duplicate (2203389-DUP1)				**Source: 22D1482-02**	Prepared & Analyzed: 04/27/22						
Total Alkalinity	32.8	1.0	5.0	mg/L		37.4			13	20	
Bicarbonate as CaCO3	32.8	0.50	5.0	"		37.4			13	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Batch 2203392 - Solvent Extract											
Blank (2203392-BLK1)					Prepared: 04/27/22 Analyzed: 04/28/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2203392-BS1)					Prepared: 04/27/22 Analyzed: 04/28/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.7	1.0	5.0	mg/L	40.0		99	78-114			
LCS Dup (2203392-BSD1)					Prepared: 04/27/22 Analyzed: 04/28/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.5	1.0	5.0	mg/L	40.0		99	78-114	0.5	18	
Batch 2203410 - General Preparation											
Blank (2203410-BLK1)					Prepared: 04/27/22 Analyzed: 04/29/22						
Total Dissolved Solids	ND	5.0	10	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203410 - General Preparation											
Duplicate (2203410-DUP1)			**Source: 22D1342-01**		Prepared: 04/27/22 Analyzed: 04/29/22						
Total Dissolved Solids	190	5.0	10	mg/L		182			4	20	
Batch 2203431 - General Prep											
Blank (2203431-BLK1)					Prepared & Analyzed: 04/28/22						
Cyanide (total)	ND	0.0012	0.0050	mg/L							
LCS (2203431-BS1)					Prepared & Analyzed: 04/28/22						
Cyanide (total)	0.102	0.0012	0.0050	mg/L	0.100		102	75-125			
LCS Dup (2203431-BSD1)					Prepared & Analyzed: 04/28/22						
Cyanide (total)	0.103	0.0012	0.0050	mg/L	0.100		103	75-125	1	25	
Matrix Spike (2203431-MS1)			**Source: 22D1171-03**		Prepared & Analyzed: 04/28/22						
Cyanide (total)	0.0862	0.0012	0.0050	mg/L	0.100	ND	86	75-125			
Matrix Spike Dup (2203431-MSD1)			**Source: 22D1171-03**		Prepared & Analyzed: 04/28/22						
Cyanide (total)	0.0862	0.0012	0.0050	mg/L	0.100	ND	86	75-125	0	25	
Batch 2203478 - General Preparation											
Blank (2203478-BLK1)					Prepared & Analyzed: 04/29/22						
Ammonia as N	ND	0.025	0.10	mg/L							
LCS (2203478-BS1)					Prepared & Analyzed: 04/29/22						
Ammonia as N	0.455	0.025	0.10	mg/L	0.500		91	80-120			

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203478 - General Preparation											
LCS Dup (2203478-BSD1)					Prepared & Analyzed: 04/29/22						
Ammonia as N	0.463	0.025	0.10	mg/L	0.500		93	80-120	2	25	
Matrix Spike (2203478-MS1)			**Source: 22D1509-03**		Prepared & Analyzed: 04/29/22						
Ammonia as N	0.578	0.025	0.10	mg/L	0.500	0.119	92	75-125			
Matrix Spike Dup (2203478-MSD1)			**Source: 22D1509-03**		Prepared & Analyzed: 04/29/22						
Ammonia as N	0.581	0.025	0.10	mg/L	0.500	0.119	92	75-125	0.5	25	
Batch 2203479 - General Preparation											
Duplicate (2203479-DUP1)			**Source: 22D1509-02**		Prepared: 04/29/22 Analyzed: 05/02/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	
Batch 2203525 - General Preparation											
Blank (2203525-BLK1)					Prepared & Analyzed: 05/02/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2203525-BS1)					Prepared & Analyzed: 05/02/22						
Total Kjeldahl Nitrogen	0.444	0.040	0.20	mg/L	0.500		89	80-120			
LCS Dup (2203525-BSD1)					Prepared & Analyzed: 05/02/22						
Total Kjeldahl Nitrogen	0.450	0.040	0.20	mg/L	0.500		90	80-120	1	20	
Matrix Spike (2203525-MS1)			**Source: 22D1538-01**		Prepared & Analyzed: 05/02/22						
Total Kjeldahl Nitrogen	0.517	0.040	0.20	mg/L	0.500	0.0740	89	75-125			

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203525 - General Preparation											
Matrix Spike Dup (2203525-MSD1)			**Source: 22D1538-01**		Prepared & Analyzed: 05/02/22						
Total Kjeldahl Nitrogen	0.488	0.040	0.20	mg/L	0.500	0.0740	83	75-125	6	25	

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Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203436 - EPA 3510B GCNV											
Blank (2203436-BLK1)					Prepared: 04/28/22 Analyzed: 04/29/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Surrogate: o-Terphenyl	*0.0267*			*"*	*0.0250*		*107*	*65-135*			
LCS (2203436-BS1)					Prepared: 04/28/22 Analyzed: 04/29/22						
Diesel	1.74	0.0021	0.050	mg/L	2.50		70	65-135			
Surrogate: o-Terphenyl	*0.0311*			*"*	*0.0250*		*124*	*65-135*			
LCS Dup (2203436-BSD1)					Prepared: 04/28/22 Analyzed: 04/29/22						
Diesel	2.01	0.0021	0.050	mg/L	2.50		81	65-135	15	30	
Surrogate: o-Terphenyl	*0.0247*			*"*	*0.0250*		*99*	*65-135*			
Matrix Spike (2203436-MS1)			**Source: 22D1506-01**		Prepared: 04/28/22 Analyzed: 04/29/22						
Diesel	1.71	0.0021	0.050	mg/L	2.50	ND	69	46-137			
Surrogate: o-Terphenyl	*0.0237*			*"*	*0.0250*		*95*	*65-135*			
Matrix Spike Dup (2203436-MSD1)			**Source: 22D1506-01**		Prepared: 04/28/22 Analyzed: 04/29/22						
Diesel	1.67	0.0021	0.050	mg/L	2.50	ND	67	46-137	3	30	
Surrogate: o-Terphenyl	*0.0220*			*"*	*0.0250*		*88*	*65-135*			

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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203384 - EPA 200 Series											
Blank (2203384-BLK1)					Prepared: 04/27/22 Analyzed: 04/29/22						
Aluminum	ND	1.6	20	µg/L							
Barium	ND	0.14	5.0	"							
Manganese	0.387	0.050	2.0	"							J
Silver	ND	0.070	0.50	"							
LCS (2203384-BS1)					Prepared: 04/27/22 Analyzed: 04/29/22						
Aluminum	485	1.6	20	µg/L	500		97	85-115			
Barium	99.6	0.14	5.0	"	100		100	85-115			
Manganese	96.8	0.050	2.0	"	100		97	85-115			
Silver	100	0.070	0.50	"	100		100	85-115			
Matrix Spike (2203384-MS1)			**Source: 22D1469-01**		Prepared: 04/27/22 Analyzed: 04/29/22						
Aluminum	487	1.6	20	µg/L	500	7.58	96	70-130			
Barium	188	0.14	5.0	"	100	82.2	106	70-130			
Manganese	95.8	0.050	2.0	"	100	0.982	95	70-130			
Silver	101	0.070	0.50	"	100	ND	101	70-130			
Batch 2203385 - EPA 200 Series											
Blank (2203385-BLK1)					Prepared & Analyzed: 04/27/22						
Boron	ND	5.3	50	µg/L							
Calcium	ND	27	1000	"							
Iron	ND	9.1	100	"							
Magnesium	ND	21	1000	"							
Potassium	111	61	1000	"							J
Sodium	ND	34	1000	"							

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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203385 - EPA 200 Series											
LCS (2203385-BS1)					Prepared & Analyzed: 04/27/22						
Boron	438	5.3	50	µg/L	500		88	85-115			
Calcium	5230	27	1000	"	5000		105	85-115			
Iron	481	9.1	100	"	500		96	85-115			
Magnesium	4940	21	1000	"	5000		99	85-115			
Potassium	5350	61	1000	"	5000		107	85-115			
Sodium	5030	34	1000	"	5000		101	85-115			
Matrix Spike (2203385-MS1)				**Source: 22D1469-01**	Prepared & Analyzed: 04/27/22						
Boron	552	5.3	50	µg/L	500	130	84	70-130			
Calcium	30000	27	1000	"	5000	29600	9	70-130			QM-4X
Iron	464	9.1	100	"	500	34.0	86	70-130			
Magnesium	12700	21	1000	"	5000	9480	64	70-130			QM-7
Potassium	7450	61	1000	"	5000	3320	83	70-130			
Sodium	38300	34	1000	"	5000	38400	NR	70-130			QM-4X
Matrix Spike (2203385-MS2)				**Source: 22D1538-04**	Prepared: 04/27/22 Analyzed: 04/29/22						
Boron	522	5.3	50	µg/L	500	ND	104	70-130			
Calcium	10600	27	1000	"	5000	4580	121	70-130			
Iron	665	9.1	100	"	500	94.4	114	70-130			
Magnesium	7320	21	1000	"	5000	1620	114	70-130			
Potassium	7410	61	1000	"	5000	1320	122	70-130			
Sodium	8770	34	1000	"	5000	3060	114	70-130			

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CLS Work Order #: 22D1538
COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203471 - EPA 200 No Digestion											
Blank (2203471-BLK1)					Prepared & Analyzed: 04/29/22						
Aluminum	ND	0.52	20	µg/L							
Silver	0.802	0.15	0.50	"							QB-2
LCS (2203471-BS1)					Prepared & Analyzed: 04/29/22						
Aluminum	438	0.52	20	µg/L	500		88	85-115			
Silver	90.6	0.15	0.50	"	100		91	85-115			
Matrix Spike (2203471-MS1)			**Source: 22D1538-04**		Prepared & Analyzed: 04/29/22						
Aluminum	470	0.52	20	µg/L	500	57.8	82	70-130			
Silver	94.7	0.15	0.50	"	100	ND	95	70-130			
Batch 2203542 - EPA 200 No Digestion											
Blank (2203542-BLK1)					Prepared: 05/02/22 Analyzed: 05/03/22						
Iron	ND	6.8	100	µg/L							
LCS (2203542-BS1)					Prepared: 05/02/22 Analyzed: 05/03/22						
Iron	497	6.8	100	µg/L	500		99	85-115			
Matrix Spike (2203542-MS1)			**Source: 22D1515-01**		Prepared: 05/02/22 Analyzed: 05/03/22						
Iron	495	6.8	100	µg/L	500		99	70-130			
Matrix Spike (2203542-MS2)			**Source: 22D1581-01**		Prepared: 05/02/22 Analyzed: 05/03/22						
Iron	508	6.8	100	µg/L	500		102	70-130			

05/03/22 14:48

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1538
COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203352 - EPA 5030 Water GC											
Blank (2203352-BLK1)					Prepared: 04/28/22 Analyzed: 04/29/22						
JP-4	ND		50	µg/L							
Gasoline	ND	10	50	"							
Surrogate: o-Chlorotoluene (Gas)	*18.0*			"	*20.0*		*90*	*65-135*			
LCS (2203352-BS1)					Prepared: 04/28/22 Analyzed: 04/29/22						
Gasoline	497	10	50	µg/L	500		99	70-130			
Surrogate: o-Chlorotoluene (Gas)	*19.9*			"	*20.0*		*100*	*65-135*			
LCS Dup (2203352-BSD1)					Prepared: 04/28/22 Analyzed: 04/29/22						
Gasoline	537	10	50	µg/L	500		107	70-130	8	30	
Surrogate: o-Chlorotoluene (Gas)	*18.9*			"	*20.0*		*94*	*65-135*			
Matrix Spike (2203352-MS1)			**Source: 22D1581-01**		Prepared: 04/28/22 Analyzed: 04/29/22						
Gasoline	480	10	50	µg/L	500	ND	96	68-132			
Surrogate: o-Chlorotoluene (Gas)	*19.8*			"	*20.0*		*99*	*65-135*			
Matrix Spike Dup (2203352-MSD1)			**Source: 22D1581-01**		Prepared: 04/28/22 Analyzed: 04/29/22						
Gasoline	471	10	50	µg/L	500	ND	94	68-132	2	32	
Surrogate: o-Chlorotoluene (Gas)	*18.7*			"	*20.0*		*93*	*65-135*			

05/03/22 14:48

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1538
COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203458 - EPA 5030 Water MS											
Blank (2203458-BLK1)					Prepared & Analyzed: 04/28/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Surrogate: Toluene-d8	*9.42*			"	*10.0*		*94*	*72-125*			
LCS (2203458-BS1)					Prepared & Analyzed: 04/28/22						
Methyl tert-butyl ether	18.7	0.095	0.50	µg/L	20.0		94	52-130			
Surrogate: Toluene-d8	*10.4*			"	*10.0*		*104*	*72-125*			
LCS Dup (2203458-BSD1)					Prepared & Analyzed: 04/28/22						
Methyl tert-butyl ether	17.1	0.095	0.50	µg/L	20.0		85	52-130	9	30	
Surrogate: Toluene-d8	*9.72*			"	*10.0*		*97*	*72-125*			
Matrix Spike (2203458-MS1)			**Source: 22D1538-01**		Prepared & Analyzed: 04/28/22						
Methyl tert-butyl ether	19.9	0.095	0.50	µg/L	20.0	ND	99	52-140			
Surrogate: Toluene-d8	*9.91*			"	*10.0*		*99*	*72-125*			
Matrix Spike Dup (2203458-MSD1)			**Source: 22D1538-01**		Prepared & Analyzed: 04/28/22						
Methyl tert-butyl ether	20.1	0.095	0.50	µg/L	20.0	ND	100	52-140	0.9	30	
Surrogate: Toluene-d8	*9.87*			"	*10.0*		*99*	*72-125*			

05/03/22 14:48

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22D1538**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
QB-2	The analyte was detected in the method blank or calibration verfication blank. A re-analysis was not performed since all sample results for the analyte are ND.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 221538 (1 of 2)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in CB reaches.

Site Location Chili Bar Sites

Client Job Number
750.11 Task 0620.01

Destination Laboratory
Rancho Cordova

[X] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [X] NO [ ]

GLOBAL ID:

FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	Cl, SO4	TSS, TDS, Hardness, Alkalinity, NO2-N, NO3-N, Diss Metals,	CrVI - EPA 218.6	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
4/26	10:00	IS-22-SFAR		Surface water			6	X	X	X	X	X	X	X					X	
4/26	11:36	IS-21-SFAR		Surface water			6	X	X	X	X	X	X	X					X	
4/26	12:45	IS-20-SFAR		Surface water			6	X	X	X	X	X	X	X					X	
4/26	2:30	IS-18-SFAR		Surface water			6	X	X	X	X	X	X	X					X	
				Surface water			6												X	
				Surface water			6												X	
				Surface water			6												X	INVOICE TO:
				Surface water			6												X	Stillwater Sciences
				Surface water			6												X	Same as above
				Surface water			6												X	
				Surface water			6												X	**Project No. 750.11 Task 0620.01**
				Surface water			6												X	QUOTE#

ANALYSIS REQUESTED

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (2) HNO_3 (3) = COLD (4)= H2SO4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Adam Cohen/Stillwater Sci	4/26 4:01		

RECEIVED AT LAB BY: DATE/TIME: 4/26/12 1807

CONDITIONS/COMMENTS:

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER AIR BILL #

9.1 / 8.4

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 122538 (2 of 2)

Report To:

Stillwater Sciences
279 Cousteau Place, Suite 400
Davis, CA 95816

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in CB reaches.

Site Location Chili Bar Sites

Client Job Number
750.11 Task 0620.01

Destination Laboratory
Rancho Cordova

[X] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

ANALYSIS REQUESTED

PRESERVATIVES ▼

Oil & Grease

GEOTRACKER

EDF REPORT YES [X] NO [ ]

GLOBAL ID.

FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	Oil & Grease	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
4/26	10:00	IS-22-SFAR		Surface water			6	X				X	
4/26	11:30	IS-21-SFAR		Surface water			6	X				X	
4/26	12:45	BS-20-SFAR		Surface water			6	X				X	
4/26	2:30	IS-18-SFAR		Surface water			6	X				X	
				Surface water			6					X	
				Surface water			6					X	
				Surface water			6					X	INVOICE TO:
				Surface water			6					X	Stillwater Sciences
				Surface water			6					X	Same as above
				Surface water			6					X	
				Surface water			6					X	**Project No. 750.11 Task 0620.01**
				Surface water			6					X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Adam Cohen/SFStillwater Sci	6:01 4/26		

RECEIVED AT LAB BY: **DATE/TIME:** 4/26/12 1801 **CONDITIONS/COMMENTS:** 9.1 / 8.4

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER _____ **AIR BILL #** _____

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

May 04, 2022

CLS Work Order #: 22D1581
COC #:

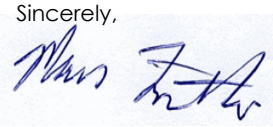
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 04/27/22 16:35. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

05/04/22 15:20

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1581
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-19-SFAR (22D1581-01) Water Sampled: 04/27/22 10:00 Received: 04/27/22 16:35										
Ammonia as N	**0.040**	0.025	0.10	mg/L	1	2203478	04/29/22	04/29/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**12**	0.50	5.0	"	"	2203473	04/29/22	04/29/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**1.5**	0.026	0.50	"	"	2203414	04/28/22	04/28/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2203431	04/28/22	04/28/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2203440	04/28/22	04/29/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2203473	04/29/22	04/29/22	SM2320B	
Nitrate/Nitrite as N	**0.15**	0.055	0.40	"	"	2203414	04/28/22	04/28/22	EPA 300.0	J
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2203450	04/29/22	04/29/22	SM4500-P E	
Sulfate as SO4	**1.2**	0.038	0.50	"	"	2203414	04/28/22	04/28/22	EPA 300.0	
Total Alkalinity	**12**	1.0	5.0	"	"	2203473	04/29/22	04/29/22	SM2320B	
Total Dissolved Solids	**33**	5.0	10	"	"	2203540	05/02/22	05/03/22	SM2540C	
Total Hardness as CaCO3	**12**	0.19	1.0	"	"	2203427	04/28/22	04/29/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.24**	0.040	0.20	"	"	2203525	05/02/22	05/02/22	SM4500-NH3F-1997	
Total Organic Carbon	**2.1**	0.54	1.0	"	"	2203502	05/02/22	05/02/22	SM5310B	
Total Phosphorus as P	**0.026**	0.023	0.050	"	"	2203532	05/02/22	05/02/22	SM4500-P E	J
Total Suspended Solids	**4.0**	2.0	5.0	"	"	2203527	05/02/22	05/03/22	SM2540D	J
IS-17-SFAR (22D1581-02) Water Sampled: 04/27/22 12:00 Received: 04/27/22 16:35										
Ammonia as N	ND	0.025	0.10	mg/L	1	2203478	04/29/22	04/29/22	SM4500-NH3F-1997	
Bicarbonate as CaCO3	ND	0.50	5.0	"	"	2203473	04/29/22	04/29/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.85**	0.026	0.50	"	"	2203414	04/28/22	04/28/22	EPA 300.0	
Cyanide (total)	**0.0019**	0.0012	0.0050	"	"	2203431	04/28/22	04/28/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2203440	04/28/22	04/29/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2203473	04/29/22	04/29/22	SM2320B	
Nitrate/Nitrite as N	**0.065**	0.055	0.40	"	"	2203414	04/28/22	04/28/22	EPA 300.0	J
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2203450	04/29/22	04/29/22	SM4500-P E	

05/04/22 15:20

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1581
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-17-SFAR (22D1581-02) Water	**Sampled: 04/27/22 12:00**		**Received: 04/27/22 16:35**							
Sulfate as SO4	**0.50**	0.038	0.50	mg/L	1	2203414	04/28/22	04/28/22	EPA 300.0	
Total Alkalinity	ND	1.0	5.0	"	"	2203473	04/29/22	04/29/22	SM2320B	
Total Dissolved Solids	**17**	5.0	10	"	"	2203540	05/02/22	05/03/22	SM2540C	
Total Hardness as CaCO3	**8.3**	0.19	1.0	"	"	2203427	04/28/22	04/29/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.31**	0.040	0.20	"	"	2203525	05/02/22	05/02/22	SM4500-NH3F-1997	
Total Organic Carbon	**1.2**	0.54	1.0	"	"	2203502	05/02/22	05/02/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2203532	05/02/22	05/02/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2203527	05/02/22	05/03/22	SM2540D	
IS-16-SFAR (22D1581-03) Water	**Sampled: 04/27/22 14:15**		**Received: 04/27/22 16:35**							
Ammonia as N	ND	0.025	0.10	mg/L	1	2203478	04/29/22	04/29/22	SM4500-NH3F-1997	
Bicarbonate as CaCO3	**12**	0.50	5.0	"	"	2203473	04/29/22	04/29/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**1.2**	0.026	0.50	"	"	2203414	04/28/22	04/28/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2203431	04/28/22	04/28/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2203440	04/28/22	04/29/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2203473	04/29/22	04/29/22	SM2320B	
Nitrate/Nitrite as N	**0.13**	0.055	0.40	"	"	2203414	04/28/22	04/28/22	EPA 300.0	J
Orthophosphate as PO4	**0.0060**	0.0051	0.15	"	"	2203450	04/29/22	04/29/22	SM4500-P E	J
Sulfate as SO4	**0.95**	0.038	0.50	"	"	2203414	04/28/22	04/28/22	EPA 300.0	
Total Alkalinity	**12**	1.0	5.0	"	"	2203473	04/29/22	04/29/22	SM2320B	
Total Dissolved Solids	**27**	5.0	10	"	"	2203540	05/02/22	05/03/22	SM2540C	
Total Hardness as CaCO3	**9.8**	0.19	1.0	"	"	2203427	04/28/22	04/29/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.21**	0.040	0.20	"	"	2203525	05/02/22	05/02/22	SM4500-NH3F-1997	
Total Organic Carbon	**2.1**	0.54	1.0	"	"	2203502	05/02/22	05/02/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2203532	05/02/22	05/02/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2203527	05/02/22	05/03/22	SM2540D	

05/04/22 15:20

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1581
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-15-SFAR (22D1581-04) Water	**Sampled: 04/27/22 13:00**		**Received: 04/27/22 16:35**							
Ammonia as N	**0.036**	0.025	0.10	mg/L	1	2203478	04/29/22	04/29/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**15**	0.50	5.0	"	"	2203473	04/29/22	04/29/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**1.9**	0.026	0.50	"	"	2203414	04/28/22	04/28/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2203431	04/28/22	04/28/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2203440	04/28/22	04/29/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2203473	04/29/22	04/29/22	SM2320B	
Nitrate/Nitrite as N	**0.19**	0.055	0.40	"	"	2203414	04/28/22	04/28/22	EPA 300.0	J
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2203450	04/29/22	04/29/22	SM4500-P E	
Sulfate as SO4	**1.7**	0.038	0.50	"	"	2203414	04/28/22	04/28/22	EPA 300.0	
Total Alkalinity	**15**	1.0	5.0	"	"	2203473	04/29/22	04/29/22	SM2320B	
Total Dissolved Solids	**46**	5.0	10	"	"	2203540	05/02/22	05/03/22	SM2540C	
Total Hardness as CaCO3	**15**	0.19	1.0	"	"	2203427	04/28/22	04/28/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.078**	0.040	0.20	"	"	2203525	05/02/22	05/02/22	SM4500-NH3F-1997	J
Total Organic Carbon	**2.4**	0.54	1.0	"	"	2203502	05/02/22	05/02/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2203532	05/02/22	05/02/22	SM4500-P E	
Total Suspended Solids	**6.7**	2.0	5.0	"	"	2203527	05/02/22	05/03/22	SM2540D	

05/04/22 15:20

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1581
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-19-SFAR (22D1581-01) Water Sampled: 04/27/22 10:00 Received: 04/27/22 16:35										
Diesel	ND	0.0021	0.050	mg/L	1	2203436	04/28/22	04/29/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*115 %*	*65-135*		"	"	"	"	
IS-17-SFAR (22D1581-02) Water Sampled: 04/27/22 12:00 Received: 04/27/22 16:35										
Diesel	ND	0.0021	0.050	mg/L	1	2203436	04/28/22	04/29/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
JP-5/JP-8	ND	0.020	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*107 %*	*65-135*		"	"	"	"	
IS-16-SFAR (22D1581-03) Water Sampled: 04/27/22 14:15 Received: 04/27/22 16:35										
Diesel	ND	0.0021	0.050	mg/L	1	2203436	04/28/22	04/29/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*114 %*	*65-135*		"	"	"	"	
IS-15-SFAR (22D1581-04) Water Sampled: 04/27/22 13:00 Received: 04/27/22 16:35										
Diesel	ND	0.0021	0.050	mg/L	1	2203436	04/28/22	04/29/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 620.01	**CLS Work Order #: 22D1581**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-15-SFAR (22D1581-04) Water Sampled: 04/27/22 13:00 Received: 04/27/22 16:35										
Motor Oil	ND	0.0091	0.050	mg/L	1	2203436	"	04/29/22	EPA 8015M	
Surrogate: o-Terphenyl			*130 %*	*65-135*		"	"	"	"	

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2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1581
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-19-SFAR (22D1581-01) Water	**Sampled: 04/27/22 10:00**		**Received: 04/27/22 16:35**							
Aluminum	**80**	1.6	20	µg/L	1	2203428	04/28/22	04/28/22	EPA 200.8	
Barium	**15**	0.14	5.0	"	"	"	"	"	"	
Calcium	**3400**	27	1000	"	"	2203427	04/28/22	04/29/22	EPA 200.7	
Iron	**150**	9.1	100	"	"	"	"	"	"	
Magnesium	**850**	21	1000	"	"	"	"	"	"	J
Manganese	**28**	0.050	2.0	"	"	2203428	04/28/22	04/28/22	EPA 200.8	
Potassium	**2000**	61	1000	"	"	2203427	04/28/22	04/29/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2203428	04/28/22	04/28/22	EPA 200.8	
Sodium	**3700**	34	1000	"	"	2203427	04/28/22	04/29/22	EPA 200.7	
IS-17-SFAR (22D1581-02) Water	**Sampled: 04/27/22 12:00**		**Received: 04/27/22 16:35**							
Aluminum	**53**	1.6	20	µg/L	1	2203428	04/28/22	04/28/22	EPA 200.8	
Barium	**13**	0.14	5.0	"	"	"	"	"	"	
Calcium	**2100**	27	1000	"	"	2203427	04/28/22	04/29/22	EPA 200.7	
Iron	**87**	9.1	100	"	"	"	"	"	"	J
Magnesium	**750**	21	1000	"	"	"	"	"	"	J
Manganese	**24**	0.050	2.0	"	"	2203428	04/28/22	04/28/22	EPA 200.8	
Potassium	**1100**	61	1000	"	"	2203427	04/28/22	04/29/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2203428	04/28/22	04/28/22	EPA 200.8	
Sodium	**2300**	34	1000	"	"	2203427	04/28/22	04/29/22	EPA 200.7	
IS-16-SFAR (22D1581-03) Water	**Sampled: 04/27/22 14:15**		**Received: 04/27/22 16:35**							
Aluminum	**81**	1.6	20	µg/L	1	2203428	04/28/22	04/28/22	EPA 200.8	
Barium	**14**	0.14	5.0	"	"	"	"	"	"	
Calcium	**2800**	27	1000	"	"	2203427	04/28/22	04/29/22	EPA 200.7	
Iron	**73**	9.1	100	"	"	"	"	"	"	J
Magnesium	**690**	21	1000	"	"	"	"	"	"	J
Manganese	**9.7**	0.050	2.0	"	"	2203428	04/28/22	04/28/22	EPA 200.8	
Potassium	**1200**	61	1000	"	"	2203427	04/28/22	04/29/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2203428	04/28/22	04/28/22	EPA 200.8	
Sodium	**2600**	34	1000	"	"	2203427	04/28/22	04/29/22	EPA 200.7	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1581
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-15-SFAR (22D1581-04) Water	**Sampled: 04/27/22 13:00**		**Received: 04/27/22 16:35**							
Aluminum	**630**	1.6	20	µg/L	1	2203428	04/28/22	04/28/22	EPA 200.8	
Barium	**43**	0.14	5.0	"	"	"	"	"	"	
Calcium	**4300**	27	1000	"	"	2203427	04/28/22	04/28/22	EPA 200.7	
Iron	**140**	9.1	100	"	"	"	"	"	"	
Magnesium	**1000**	21	1000	"	"	"	"	"	"	
Manganese	**46**	0.050	2.0	"	"	2203428	04/28/22	04/28/22	EPA 200.8	
Potassium	**740**	61	1000	"	"	2203427	04/28/22	04/28/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2203428	04/28/22	04/28/22	EPA 200.8	
Sodium	**2800**	34	1000	"	"	2203427	04/28/22	04/28/22	EPA 200.7	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1581
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-19-SFAR (22D1581-01) Water	**Sampled: 04/27/22 10:00**		**Received: 04/27/22 16:35**							
Aluminum	**9.8**	0.52	20	µg/L	1	2203471	04/29/22	04/29/22	EPA 200.8	J
Iron	**8.1**	6.8	100	"	"	2203542	05/02/22	05/02/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2203471	04/29/22	04/29/22	EPA 200.8	
IS-17-SFAR (22D1581-02) Water	**Sampled: 04/27/22 12:00**		**Received: 04/27/22 16:35**							
Aluminum	**4.2**	0.52	20	µg/L	1	2203471	04/29/22	04/29/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2203542	05/02/22	05/02/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2203471	04/29/22	04/29/22	EPA 200.8	
IS-16-SFAR (22D1581-03) Water	**Sampled: 04/27/22 14:15**		**Received: 04/27/22 16:35**							
Aluminum	**12**	0.52	20	µg/L	1	2203471	04/29/22	04/29/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2203542	05/02/22	05/02/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2203471	04/29/22	04/29/22	EPA 200.8	
IS-15-SFAR (22D1581-04) Water	**Sampled: 04/27/22 13:00**		**Received: 04/27/22 16:35**							
Aluminum	**20**	0.52	20	µg/L	1	2203471	04/29/22	04/29/22	EPA 200.8	
Iron	**9.2**	6.8	100	"	"	2203542	05/02/22	05/02/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2203471	04/29/22	04/29/22	EPA 200.8	

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Project Manager: Emily Applequist

CLS Work Order #: 22D1581
COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-19-SFAR (22D1581-01) Water	**Sampled: 04/27/22 10:00**		**Received: 04/27/22 16:35**							
Gasoline	ND	10	50	µg/L	1	2203352	04/28/22	04/30/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*85 %*	*65-135*		"	"	"	"	
IS-17-SFAR (22D1581-02) Water	**Sampled: 04/27/22 12:00**		**Received: 04/27/22 16:35**							
Gasoline	ND	10	50	µg/L	1	2203352	04/28/22	04/30/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*87 %*	*65-135*		"	"	"	"	
IS-16-SFAR (22D1581-03) Water	**Sampled: 04/27/22 14:15**		**Received: 04/27/22 16:35**							
Gasoline	ND	10	50	µg/L	1	2203352	04/28/22	04/30/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*89 %*	*65-135*		"	"	"	"	
IS-15-SFAR (22D1581-04) Water	**Sampled: 04/27/22 13:00**		**Received: 04/27/22 16:35**							
Gasoline	ND	10	50	µg/L	1	2203352	04/28/22	04/30/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*88 %*	*65-135*		"	"	"	"	

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CLS Work Order #: 22D1581
COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-19-SFAR (22D1581-01) Water	**Sampled: 04/27/22 10:00**		**Received: 04/27/22 16:35**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2203458	04/28/22	04/28/22	EPA 8260B	
Surrogate: Toluene-d8			*94 %*		*72-125*		"	"	"	"
IS-17-SFAR (22D1581-02) Water	**Sampled: 04/27/22 12:00**		**Received: 04/27/22 16:35**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2203458	04/28/22	04/28/22	EPA 8260B	
Surrogate: Toluene-d8			*94 %*		*72-125*		"	"	"	"
IS-16-SFAR (22D1581-03) Water	**Sampled: 04/27/22 14:15**		**Received: 04/27/22 16:35**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2203458	04/28/22	04/28/22	EPA 8260B	
Surrogate: Toluene-d8			*94 %*		*72-125*		"	"	"	"
IS-15-SFAR (22D1581-04) Water	**Sampled: 04/27/22 13:00**		**Received: 04/27/22 16:35**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2203458	04/28/22	04/28/22	EPA 8260B	
Surrogate: Toluene-d8			*94 %*		*72-125*		"	"	"	"

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Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1581
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203414 - General Prep											
Blank (2203414-BLK1)					Prepared & Analyzed: 04/28/22						
Sulfate as SO4	ND	0.038	0.50	mg/L							
Chloride	0.274	0.026	0.50	"							J
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2203414-BS1)					Prepared & Analyzed: 04/28/22						
Chloride	4.71	0.026	0.50	mg/L	5.00		94	80-120			
Sulfate as SO4	4.81	0.038	0.50	"	5.00		96	80-120			
Nitrate/Nitrite as N	3.92	0.055	0.40	"	4.00		98	80-120			
LCS Dup (2203414-BSD1)					Prepared & Analyzed: 04/28/22						
Chloride	4.86	0.026	0.50	mg/L	5.00		97	80-120	3	20	
Sulfate as SO4	4.97	0.038	0.50	"	5.00		99	80-120	3	20	
Nitrate/Nitrite as N	4.06	0.055	0.40	"	4.00		101	80-120	4	20	
Matrix Spike (2203414-MS1)			**Source: 22D1581-01**		Prepared & Analyzed: 04/28/22						
Chloride	6.03	0.026	0.50	mg/L	5.00	1.47	91	80-120			
Sulfate as SO4	5.95	0.038	0.50	"	5.00	1.16	96	80-120			
Nitrate/Nitrite as N	4.02	0.055	0.40	"	4.00	0.151	97	80-120			
Matrix Spike Dup (2203414-MSD1)			**Source: 22D1581-01**		Prepared & Analyzed: 04/28/22						
Chloride	6.07	0.026	0.50	mg/L	5.00	1.47	92	80-120	0.8	20	
Sulfate as SO4	6.00	0.038	0.50	"	5.00	1.16	97	80-120	0.8	20	
Nitrate/Nitrite as N	4.06	0.055	0.40	"	4.00	0.151	98	80-120	1	20	
Batch 2203427 - EPA 200 Series											
Blank (2203427-BLK1)					Prepared & Analyzed: 04/28/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203427 - EPA 200 Series											
LCS (2203427-BS1)					Prepared & Analyzed: 04/28/22						
Total Hardness as CaCO3	34.7	0.19	1.0	mg/L	33.1		105	85-115			
Matrix Spike (2203427-MS1)			**Source: 22D1569-01**		Prepared & Analyzed: 04/28/22						
Total Hardness as CaCO3	52.9	0.19	1.0	mg/L	33.1	19.5	101	70-130			
Matrix Spike (2203427-MS2)			**Source: 22D1581-04**		Prepared & Analyzed: 04/28/22						
Total Hardness as CaCO3	46.6	0.19	1.0	mg/L	33.1	15.2	95	70-130			
Batch 2203431 - General Prep											
Blank (2203431-BLK1)					Prepared & Analyzed: 04/28/22						
Cyanide (total)	ND	0.0012	0.0050	mg/L							
LCS (2203431-BS1)					Prepared & Analyzed: 04/28/22						
Cyanide (total)	0.102	0.0012	0.0050	mg/L	0.100		102	75-125			
LCS Dup (2203431-BSD1)					Prepared & Analyzed: 04/28/22						
Cyanide (total)	0.103	0.0012	0.0050	mg/L	0.100		103	75-125	1	25	
Matrix Spike (2203431-MS1)			**Source: 22D1171-03**		Prepared & Analyzed: 04/28/22						
Cyanide (total)	0.0862	0.0012	0.0050	mg/L	0.100	ND	86	75-125			
Matrix Spike Dup (2203431-MSD1)			**Source: 22D1171-03**		Prepared & Analyzed: 04/28/22						
Cyanide (total)	0.0862	0.0012	0.0050	mg/L	0.100	ND	86	75-125	0	25	
Batch 2203440 - Solvent Extract											
Blank (2203440-BLK1)					Prepared: 04/28/22 Analyzed: 04/29/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							

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CLS Work Order #: 22D1581
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203440 - Solvent Extract											
LCS (2203440-BS1)					Prepared: 04/28/22 Analyzed: 04/29/22						
Hexane Extractable Material (HEM, Oil & Grease)	40.2	1.0	5.0	mg/L	40.0		101	78-114			
LCS Dup (2203440-BSD1)					Prepared: 04/28/22 Analyzed: 04/29/22						
Hexane Extractable Material (HEM, Oil & Grease)	40.0	1.0	5.0	mg/L	40.0		100	78-114	0.5	18	
Batch 2203450 - General Prep											
Blank (2203450-BLK1)					Prepared & Analyzed: 04/29/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							
LCS (2203450-BS1)					Prepared & Analyzed: 04/29/22						
Orthophosphate as PO4	0.884	0.0051	0.15	mg/L	0.918		96	80-120			
LCS Dup (2203450-BSD1)					Prepared & Analyzed: 04/29/22						
Orthophosphate as PO4	0.900	0.0051	0.15	mg/L	0.918		98	80-120	2	20	
Matrix Spike (2203450-MS1)			**Source: 22D1581-01**		Prepared & Analyzed: 04/29/22						
Orthophosphate as PO4	0.900	0.0051	0.15	mg/L	0.918	ND	98	75-125			
Matrix Spike Dup (2203450-MSD1)			**Source: 22D1581-01**		Prepared & Analyzed: 04/29/22						
Orthophosphate as PO4	0.778	0.0051	0.15	mg/L	0.918	ND	85	75-125	15	25	
Batch 2203473 - General Preparation											
Blank (2203473-BLK1)					Prepared & Analyzed: 04/29/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							

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COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203473 - General Preparation											
Duplicate (2203473-DUP1)			**Source: 22D1554-02**		Prepared & Analyzed: 04/29/22						
Total Alkalinity	10.6	1.0	5.0	mg/L		11.6			9	20	
Bicarbonate as CaCO3	10.6	0.50	5.0	"		11.6			9	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Batch 2203478 - General Preparation											
Blank (2203478-BLK1)					Prepared & Analyzed: 04/29/22						
Ammonia as N	ND	0.025	0.10	mg/L							
LCS (2203478-BS1)					Prepared & Analyzed: 04/29/22						
Ammonia as N	0.455	0.025	0.10	mg/L	0.500		91	80-120			
LCS Dup (2203478-BSD1)					Prepared & Analyzed: 04/29/22						
Ammonia as N	0.463	0.025	0.10	mg/L	0.500		93	80-120	2	25	
Matrix Spike (2203478-MS1)			**Source: 22D1509-03**		Prepared & Analyzed: 04/29/22						
Ammonia as N	0.578	0.025	0.10	mg/L	0.500	0.119	92	75-125			
Matrix Spike Dup (2203478-MSD1)			**Source: 22D1509-03**		Prepared & Analyzed: 04/29/22						
Ammonia as N	0.581	0.025	0.10	mg/L	0.500	0.119	92	75-125	0.5	25	
Batch 2203502 - General Prep											
Blank (2203502-BLK1)					Prepared & Analyzed: 05/02/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							

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CLS Work Order #: 22D1581
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203502 - General Prep											
LCS (2203502-BS1)					Prepared & Analyzed: 05/02/22						
Total Organic Carbon	10.5	0.54	1.0	mg/L	10.0		105	75-125			
LCS Dup (2203502-BSD1)					Prepared & Analyzed: 05/02/22						
Total Organic Carbon	10.6	0.54	1.0	mg/L	10.0		106	75-125	1	25	
Matrix Spike (2203502-MS1)			**Source: 22D1624-01**		Prepared & Analyzed: 05/02/22						
Total Organic Carbon	10.7	0.54	1.0	mg/L	10.0	ND	107	75-125			
Matrix Spike Dup (2203502-MSD1)			**Source: 22D1624-01**		Prepared & Analyzed: 05/02/22						
Total Organic Carbon	10.3	0.54	1.0	mg/L	10.0	ND	103	75-125	3	25	
Batch 2203525 - General Preparation											
Blank (2203525-BLK1)					Prepared & Analyzed: 05/02/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2203525-BS1)					Prepared & Analyzed: 05/02/22						
Total Kjeldahl Nitrogen	0.444	0.040	0.20	mg/L	0.500		89	80-120			
LCS Dup (2203525-BSD1)					Prepared & Analyzed: 05/02/22						
Total Kjeldahl Nitrogen	0.450	0.040	0.20	mg/L	0.500		90	80-120	1	20	
Matrix Spike (2203525-MS1)			**Source: 22D1538-01**		Prepared & Analyzed: 05/02/22						
Total Kjeldahl Nitrogen	0.517	0.040	0.20	mg/L	0.500	0.0740	89	75-125			
Matrix Spike Dup (2203525-MSD1)			**Source: 22D1538-01**		Prepared & Analyzed: 05/02/22						
Total Kjeldahl Nitrogen	0.488	0.040	0.20	mg/L	0.500	0.0740	83	75-125	6	25	

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Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1581
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203527 - General Preparation											
Duplicate (2203527-DUP1)			**Source: 22D1568-02**		Prepared: 05/02/22 Analyzed: 05/03/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	
Batch 2203532 - General Prep											
Blank (2203532-BLK1)					Prepared & Analyzed: 05/02/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2203532-BS1)					Prepared & Analyzed: 05/02/22						
Total Phosphorus as P	0.287	0.023	0.050	mg/L	0.300		96	80-120			
LCS Dup (2203532-BSD1)					Prepared & Analyzed: 05/02/22						
Total Phosphorus as P	0.289	0.023	0.050	mg/L	0.300		96	80-120	0.5	25	
Matrix Spike (2203532-MS1)			**Source: 22D1581-01**		Prepared & Analyzed: 05/02/22						
Total Phosphorus as P	0.352	0.023	0.050	mg/L	0.300	0.0264	109	75-125			
Matrix Spike Dup (2203532-MSD1)			**Source: 22D1581-01**		Prepared & Analyzed: 05/02/22						
Total Phosphorus as P	0.305	0.023	0.050	mg/L	0.300	0.0264	93	75-125	14	30	
Batch 2203540 - General Preparation											
Blank (2203540-BLK1)					Prepared: 05/02/22 Analyzed: 05/03/22						
Total Dissolved Solids	ND	5.0	10	mg/L							
Duplicate (2203540-DUP1)			**Source: 22D1581-01**		Prepared: 05/02/22 Analyzed: 05/03/22						
Total Dissolved Solids	35.0	5.0	10	mg/L		33.0			6	20	

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CLS Work Order #: 22D1581
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203436 - EPA 3510B GCNV											
Blank (2203436-BLK1)					Prepared: 04/28/22 Analyzed: 04/29/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Surrogate: o-Terphenyl	*0.0267*			*"*	*0.0250*		*107*	*65-135*			
LCS (2203436-BS1)					Prepared: 04/28/22 Analyzed: 04/29/22						
Diesel	1.74	0.0021	0.050	mg/L	2.50		70	65-135			
Surrogate: o-Terphenyl	*0.0311*			*"*	*0.0250*		*124*	*65-135*			
LCS Dup (2203436-BSD1)					Prepared: 04/28/22 Analyzed: 04/29/22						
Diesel	2.01	0.0021	0.050	mg/L	2.50		81	65-135	15	30	
Surrogate: o-Terphenyl	*0.0247*			*"*	*0.0250*		*99*	*65-135*			
Matrix Spike (2203436-MS1)			**Source: 22D1506-01**		Prepared: 04/28/22 Analyzed: 04/29/22						
Diesel	1.71	0.0021	0.050	mg/L	2.50	ND	69	46-137			
Surrogate: o-Terphenyl	*0.0237*			*"*	*0.0250*		*95*	*65-135*			
Matrix Spike Dup (2203436-MSD1)			**Source: 22D1506-01**		Prepared: 04/28/22 Analyzed: 04/29/22						
Diesel	1.67	0.0021	0.050	mg/L	2.50	ND	67	46-137	3	30	
Surrogate: o-Terphenyl	*0.0220*			*"*	*0.0250*		*88*	*65-135*			

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CLS Work Order #: 22D1581
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203427 - EPA 200 Series											
Blank (2203427-BLK1)					Prepared & Analyzed: 04/28/22						
Calcium	ND	27	1000	µg/L							
Iron	13.4	9.1	100	"							J
Magnesium	ND	21	1000	"							
Potassium	ND	61	1000	"							
Sodium	49.1	34	1000	"							J
LCS (2203427-BS1)					Prepared & Analyzed: 04/28/22						
Calcium	5100	27	1000	µg/L	5000		102	85-115			
Iron	508	9.1	100	"	500		102	85-115			
Magnesium	5320	21	1000	"	5000		106	85-115			
Potassium	4880	61	1000	"	5000		98	85-115			
Sodium	5220	34	1000	"	5000		104	85-115			
Matrix Spike (2203427-MS1)			**Source: 22D1569-01**		Prepared & Analyzed: 04/28/22						
Calcium	9290	27	1000	µg/L	5000	4180	102	70-130			
Iron	1970	9.1	100	"	500	1350	123	70-130			
Magnesium	7210	21	1000	"	5000	2190	100	70-130			
Potassium	5900	61	1000	"	5000	872	101	70-130			
Sodium	129000	34	1000	"	5000	120000	188	70-130			QM-7
Matrix Spike (2203427-MS2)			**Source: 22D1581-04**		Prepared & Analyzed: 04/28/22						
Calcium	8670	27	1000	µg/L	5000	4340	87	70-130			
Iron	599	9.1	100	"	500	135	93	70-130			
Magnesium	6050	21	1000	"	5000	1040	100	70-130			
Potassium	5120	61	1000	"	5000	737	88	70-130			
Sodium	7540	34	1000	"	5000	2830	94	70-130			

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COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203428 - EPA 200 Series											
Blank (2203428-BLK1)					Prepared & Analyzed: 04/28/22						
Aluminum	1.93	1.6	20	µg/L							J
Antimony	ND	0.34	6.0	"							
Arsenic	0.578	0.45	2.0	"							J
Barium	ND	0.14	5.0	"							
Beryllium	ND	0.31	1.0	"							
Boron	50.8	4.1	20	"							QB-1
Cadmium	ND	0.17	0.50	"							
Chromium	0.430	0.14	1.0	"							J
Cobalt	ND	0.060	2.0	"							
Copper	0.185	0.090	2.0	"							J
Iron	45.8	3.8	20	"							QB-1
Lead	0.571	0.020	5.0	"							J
Manganese	0.346	0.050	2.0	"							J
Molybdenum	6.35	0.11	2.0	"							QB-2
Nickel	ND	0.13	2.0	"							
Selenium	1.15	0.75	5.0	"							J
Silver	0.106	0.070	0.50	"							J
Strontium	ND	0.070	20	"							
Thallium	ND	0.030	1.0	"							
Tin	ND	10	10	"							
Titanium	ND	10	10	"							
Vanadium	0.370	0.070	3.0	"							J
Zinc	ND	0.27	10	"							
Calcium	ND	200	200	"							
Magnesium	ND	200	200	"							
Potassium	ND	200	200	"							
Sodium	ND	200	200	"							

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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203428 - EPA 200 Series											
LCS (2203428-BS1)					Prepared & Analyzed: 04/28/22						
Aluminum	483	1.6	20	µg/L	500		97	85-115			
Antimony	92.5	0.34	6.0	"	100		92	85-115			
Arsenic	93.9	0.45	2.0	"	100		94	85-115			
Barium	96.8	0.14	5.0	"	100		97	85-115			
Beryllium	97.4	0.31	1.0	"	100		97	85-115			
Boron	524	4.1	20	"	500		105	85-115			
Cadmium	95.0	0.17	0.50	"	100		95	85-115			
Chromium	95.9	0.14	1.0	"	100		96	85-115			
Cobalt	98.0	0.060	2.0	"	100		98	85-115			
Copper	96.1	0.090	2.0	"	100		96	85-115			
Iron	568	3.8	20	"	500		114	85-115			
Lead	92.8	0.020	5.0	"	100		93	85-115			
Manganese	95.4	0.050	2.0	"	100		95	85-115			
Molybdenum	99.5	0.11	2.0	"	100		100	85-115			
Nickel	95.8	0.13	2.0	"	100		96	85-115			
Selenium	114	0.75	5.0	"	100		114	85-115			
Silver	99.8	0.070	0.50	"	100		100	85-115			
Thallium	94.5	0.030	1.0	"	100		95	85-115			
Vanadium	96.5	0.070	3.0	"	100		97	85-115			
Zinc	94.0	0.27	10	"	100		94	85-115			
Calcium	1120	200	200	"	1000		112	85-115			
Magnesium	1130	200	200	"	1000		113	85-115			
Potassium	1170	200	200	"	1000		117	85-115			QM-1
Sodium	1150	200	200	"	1000		115	85-115			
Matrix Spike (2203428-MS1)				**Source: 22D1569-02**	Prepared & Analyzed: 04/28/22						
Aluminum	570	1.6	20	µg/L	500	88.5	96	70-130			
Antimony	94.3	0.34	6.0	"	100	ND	94	70-130			
Arsenic	98.6	0.45	2.0	"	100	7.99	91	70-130			
Barium	119	0.14	5.0	"	100	18.6	100	70-130			
Beryllium	99.0	0.31	1.0	"	100	ND	99	70-130			
Boron	1780	4.1	20	"	500	1250	106	70-130			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203428 - EPA 200 Series											
Matrix Spike (2203428-MS1)			**Source: 22D1569-02**	Prepared & Analyzed: 04/28/22							
Cadmium	97.0	0.17	0.50	µg/L	100	ND	97	70-130			
Chromium	92.5	0.14	1.0	"	100	0.898	92	70-130			
Cobalt	95.7	0.060	2.0	"	100	ND	96	70-130			
Copper	98.7	0.090	2.0	"	100	3.95	95	70-130			
Iron	1300	3.8	20	"	500	792	101	70-130			
Lead	93.4	0.020	5.0	"	100	0.260	93	70-130			
Manganese	102	0.050	2.0	"	100	9.96	92	70-130			
Molybdenum	104	0.11	2.0	"	100	9.55	95	70-130			
Nickel	92.9	0.13	2.0	"	100	0.466	92	70-130			
Selenium	101	0.75	5.0	"	100	ND	101	70-130			
Silver	99.2	0.070	0.50	"	100	ND	99	70-130			
Thallium	94.1	0.030	1.0	"	100	ND	94	70-130			
Vanadium	97.6	0.070	3.0	"	100	ND	98	70-130			
Zinc	93.0	0.27	10	"	100	0.554	92	70-130			
Calcium	5940	200	200	"	1000	4940	100	70-130			
Magnesium	3220	200	200	"	1000	2240	98	70-130			
Potassium	2050	200	200	"	1000	1090	97	70-130			
Sodium	137000	200	200	"	1000	139000	NR	70-130			QM-5
Matrix Spike (2203428-MS2)			**Source: 22D1581-04**	Prepared & Analyzed: 04/28/22							
Aluminum	681	1.6	20	µg/L	500	628	11	70-130			QM-7
Antimony	95.4	0.34	6.0	"	100	ND	95	70-130			
Arsenic	93.1	0.45	2.0	"	100	0.916	92	70-130			
Barium	119	0.14	5.0	"	100	43.3	75	70-130			
Beryllium	97.0	0.31	1.0	"	100	ND	97	70-130			
Boron	611	4.1	20	"	500	41.0	114	70-130			
Cadmium	97.0	0.17	0.50	"	100	ND	97	70-130			
Chromium	95.5	0.14	1.0	"	100	43.5	52	70-130			QM-5
Cobalt	97.8	0.060	2.0	"	100	0.778	97	70-130			
Copper	96.2	0.090	2.0	"	100	2.84	93	70-130			
Iron	660	3.8	20	"	500	524	27	70-130			QM-5
Lead	93.9	0.020	5.0	"	100	0.460	93	70-130			

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COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203428 - EPA 200 Series											
Matrix Spike (2203428-MS2)			**Source: 22D1581-04**	Prepared & Analyzed: 04/28/22							
Manganese	116	0.050	2.0	µg/L	100	45.9	70	70-130			
Molybdenum	96.9	0.11	2.0	"	100	0.489	96	70-130			
Nickel	95.0	0.13	2.0	"	100	1.26	94	70-130			
Selenium	101	0.75	5.0	"	100	ND	101	70-130			
Silver	101	0.070	0.50	"	100	ND	101	70-130			
Thallium	95.1	0.030	1.0	"	100	ND	95	70-130			
Vanadium	101	0.070	3.0	"	100	2.53	98	70-130			
Zinc	94.1	0.27	10	"	100	3.19	91	70-130			
Calcium	5510	200	200	"	1000	6390	NR	70-130			QM-5
Magnesium	2010	200	200	"	1000	2460	NR	70-130			QM-5
Potassium	1960	200	200	"	1000	1040	92	70-130			
Sodium	3820	200	200	"	1000	3190	63	70-130			QM-5

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CLS Work Order #: 22D1581
COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203471 - EPA 200 No Digestion											
Blank (2203471-BLK1)					Prepared & Analyzed: 04/29/22						
Aluminum	ND	0.52	20	µg/L							
Silver	0.802	0.15	0.50	"							QB-2
LCS (2203471-BS1)					Prepared & Analyzed: 04/29/22						
Aluminum	438	0.52	20	µg/L	500		88	85-115			
Silver	90.6	0.15	0.50	"	100		91	85-115			
Matrix Spike (2203471-MS1)			**Source: 22D1538-04**		Prepared & Analyzed: 04/29/22						
Aluminum	470	0.52	20	µg/L	500	57.8	82	70-130			
Silver	94.7	0.15	0.50	"	100	ND	95	70-130			
Batch 2203542 - EPA 200 No Digestion											
Blank (2203542-BLK1)					Prepared: 05/02/22 Analyzed: 05/03/22						
Iron	ND	6.8	100	µg/L							
LCS (2203542-BS1)					Prepared: 05/02/22 Analyzed: 05/03/22						
Iron	497	6.8	100	µg/L	500		99	85-115			
Matrix Spike (2203542-MS1)			**Source: 22D1515-01**		Prepared: 05/02/22 Analyzed: 05/03/22						
Iron	495	6.8	100	µg/L	500	8.61	97	70-130			
Matrix Spike (2203542-MS2)			**Source: 22D1581-01**		Prepared: 05/02/22 Analyzed: 05/03/22						
Iron	508	6.8	100	µg/L	500	8.06	100	70-130			

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22D1581
COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203352 - EPA 5030 Water GC											
Blank (2203352-BLK1)					Prepared: 04/28/22 Analyzed: 04/29/22						
JP-4	ND		50	µg/L							
Gasoline	ND	10	50	"							
Surrogate: o-Chlorotoluene (Gas)	*18.0*			*"*	*20.0*		*90*	*65-135*			
LCS (2203352-BS1)					Prepared: 04/28/22 Analyzed: 04/29/22						
Gasoline	497	10	50	µg/L	500		99	70-130			
Surrogate: o-Chlorotoluene (Gas)	*19.9*			*"*	*20.0*		*100*	*65-135*			
LCS Dup (2203352-BSD1)					Prepared: 04/28/22 Analyzed: 04/29/22						
Gasoline	537	10	50	µg/L	500		107	70-130	8	30	
Surrogate: o-Chlorotoluene (Gas)	*18.9*			*"*	*20.0*		*94*	*65-135*			
Matrix Spike (2203352-MS1)			**Source: 22D1581-01**		Prepared: 04/28/22 Analyzed: 04/29/22						
Gasoline	480	10	50	µg/L	500	ND	96	68-132			
Surrogate: o-Chlorotoluene (Gas)	*19.8*			*"*	*20.0*		*99*	*65-135*			
Matrix Spike Dup (2203352-MSD1)			**Source: 22D1581-01**		Prepared: 04/28/22 Analyzed: 04/29/22						
Gasoline	471	10	50	µg/L	500	ND	94	68-132	2	32	
Surrogate: o-Chlorotoluene (Gas)	*18.7*			*"*	*20.0*		*93*	*65-135*			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203458 - EPA 5030 Water MS											
Blank (2203458-BLK1)					Prepared & Analyzed: 04/28/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Surrogate: Toluene-d8	*9.42*			"	*10.0*		*94*	*72-125*			
LCS (2203458-BS1)					Prepared & Analyzed: 04/28/22						
Methyl tert-butyl ether	18.7	0.095	0.50	µg/L	20.0		94	52-130			
Surrogate: Toluene-d8	*10.4*			"	*10.0*		*104*	*72-125*			
LCS Dup (2203458-BSD1)					Prepared & Analyzed: 04/28/22						
Methyl tert-butyl ether	17.1	0.095	0.50	µg/L	20.0		85	52-130	9	30	
Surrogate: Toluene-d8	*9.72*			"	*10.0*		*97*	*72-125*			
Matrix Spike (2203458-MS1)			**Source: 22D1538-01**		Prepared & Analyzed: 04/28/22						
Methyl tert-butyl ether	19.9	0.095	0.50	µg/L	20.0	ND	99	52-140			
Surrogate: Toluene-d8	*9.91*			"	*10.0*		*99*	*72-125*			
Matrix Spike Dup (2203458-MSD1)			**Source: 22D1538-01**		Prepared & Analyzed: 04/28/22						
Methyl tert-butyl ether	20.1	0.095	0.50	µg/L	20.0	ND	100	52-140	0.9	30	
Surrogate: Toluene-d8	*9.87*			"	*10.0*		*99*	*72-125*			

05/04/22 15:20

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 620.01	**CLS Work Order #: 22D1581**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
QM-5	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
QM-1	The spike recovery was outside acceptance limits for the LCS or LCSD. The batch was accepted based on acceptable MS/MSD recoveries & RPD's.
QB-2	The analyte was detected in the method blank or calibration verfication blank. A re-analysis was not performed since all sample results for the analyte are ND.
QB-1	The method blank or calibration verfication blank contains analyte at a concentration above the MRL; however, concentration is less than 10% of the sample result, which is negligible according to method criteria.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 221581 (1 of 2)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches.

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[X] **CLS** (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] **OTHER**

GEOTRACKER

EDF REPORT YES [X] NO [ ]

GLOBAL ID

FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES ▼	ANALYSIS REQUESTED: TSS, TDS, Hardness, Alkalinity, NO2-N, NO3-N, Diss Metals, Cl, SO4	[redacted]	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS: 1	2	3	5	SPECIAL INSTRUCTIONS
4/26/22	10:00	IS-19 - SEAR		Surface water			6	X	X	X	X	X	X	X				X	
4/27/22	12:00	IS-17 - BC		Surface water			6	X		X	X	X	X	X				X	
4/27/22	14:15	IS-16 - SEAR		Surface water			6	X		X	X	X	X	X				X	
4/27/22	13:00	IS-15 - SEAR		Surface water			6	X		X	X	X	X	X				X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	INVOICE TO:
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	**Project No. 750.10 Task 0620.01**
				Surface water			6											X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H2SO4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	STILLWATER SCIENCES	4/27/22 16:35		

RECEIVED AT LAB BY: **DATE/TIME:** 4/27/22 1635 **CONDITIONS/COMMENTS:** 9.1/8.4

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER _____ AIR BILL # _____

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 221531 (2 of 2)

Report To:	Client Job Number: 750.10 Task 0620.01	ANALYSIS REQUESTED	GEOTRACKER
Stillwater Sciences 279 Cousteau Place, Suite 400 Davis, CA 95816	Destination Laboratory: Rancho Cordova [X] CLS (916) 638-7301 3249 Fitzgerald Road Rancho Cordova, CA 95742 www.californialab.com [ ] OTHER	PRESERVATIVES: Oil & Grease	EDF REPORT YES [X] NO [ ] GLOBAL ID:
Project Manager: Emily Applequist eapplequist@stillwatersci.com Project Name: SMUD In situ & Chemistry Monitoring Sampled By: Job Description: Monitor water chemistry in UARP reaches. Site Location: Upper American River Project Sites			FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	Oil & Grease	TURNAROUND TIME IN DAYS: 1	2	3	5	SPECIAL INSTRUCTIONS
4/27/22	10:00	IS-19-SEAR		Surface water			6	Y				X	
4/27/22	12:00	IS-17-SEAR BK		Surface water			6	X				X	
4/27/22	14:15	IS-16-SEAR		Surface water			6	X				X	
4/27/22	15:00	IS-15-SEAR		Surface water			6	Y				X	
				Surface water			6					X	
				Surface water			6					X	
				Surface water			6					X	
				Surface water			6					X	INVOICE TO:
				Surface water			6					X	Stillwater Sciences
				Surface water			6					X	Same as above
				Surface water			6					X	
				Surface water			6					X	**Project No. 750.10 Task 0620.01**
				Surface water			6					X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (2) HNO_3 (3) = COLD (4)= H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	STILLWATER SCIENCES	4/27/22 11:35		

RECEIVED AT LAB BY: DATE/TIME: 4/28/22 1535 CONDITIONS/COMMENTS: 9.1/8.4

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER AIR BILL #

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

May 05, 2022

CLS Work Order #: 22D1678
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 04/28/22 16:40. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

05/05/22 16:07

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1678
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-11-SFSCD (22D1678-01) Water	**Sampled: 04/28/22 12:30**		**Received: 04/28/22 16:40**							
Ammonia as N	**0.028**	0.025	0.10	mg/L	1	2203565	05/03/22	05/03/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**8.0**	0.50	5.0	"	"	2203484	04/29/22	04/29/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.55**	0.026	0.50	"	"	2203449	04/29/22	04/29/22	EPA 300.0	
Cyanide (total)	**0.0026**	0.0012	0.0050	"	"	2203564	05/03/22	05/03/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2203616	05/04/22	05/05/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2203484	04/29/22	04/29/22	SM2320B	
Nitrate/Nitrite as N	**0.096**	0.055	0.40	"	"	2203449	04/29/22	04/29/22	EPA 300.0	J
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2203450	04/29/22	04/29/22	SM4500-P E	
Sulfate as SO4	**0.47**	0.038	0.50	"	"	2203449	04/29/22	04/29/22	EPA 300.0	J
Total Alkalinity	**8.0**	1.0	5.0	"	"	2203484	04/29/22	04/29/22	SM2320B	
Total Dissolved Solids	**19**	5.0	10	"	"	2203540	05/02/22	05/03/22	SM2540C	
Total Hardness as CaCO3	**6.4**	0.19	1.0	"	"	2203453	04/29/22	05/02/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.097**	0.040	0.20	"	"	2203576	05/03/22	05/03/22	SM4500-NH3F-1997	J
Total Organic Carbon	**1.6**	0.54	1.0	"	"	2203502	05/02/22	05/02/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2203532	05/02/22	05/02/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2203578	05/03/22	05/04/22	SM2540D	
IS-11-SFSC (22D1678-02) Water	**Sampled: 04/28/22 12:30**		**Received: 04/28/22 16:40**							
Ammonia as N	**0.036**	0.025	0.10	mg/L	1	2203565	05/03/22	05/03/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**8.0**	0.50	5.0	"	"	2203484	04/29/22	04/29/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.55**	0.026	0.50	"	"	2203449	04/29/22	04/29/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2203564	05/03/22	05/03/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2203616	05/04/22	05/05/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2203484	04/29/22	04/29/22	SM2320B	
Nitrate/Nitrite as N	**0.096**	0.055	0.40	"	"	2203449	04/29/22	04/29/22	EPA 300.0	J
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2203450	04/29/22	04/29/22	SM4500-P E	

05/05/22 16:07

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1678
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-11-SFSC (22D1678-02) Water Sampled: 04/28/22 12:30 Received: 04/28/22 16:40										
Sulfate as SO4	**0.48**	0.038	0.50	mg/L	1	2203449	04/29/22	04/29/22	EPA 300.0	J
Total Alkalinity	**8.0**	1.0	5.0	"	"	2203484	04/29/22	04/29/22	SM2320B	
Total Dissolved Solids	**17**	5.0	10	"	"	2203540	05/02/22	05/03/22	SM2540C	
Total Hardness as CaCO3	**6.3**	0.19	1.0	"	"	2203453	04/29/22	05/02/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.11**	0.040	0.20	"	"	2203576	05/03/22	05/03/22	SM4500-NH3F-1997	J
Total Organic Carbon	**1.8**	0.54	1.0	"	"	2203502	05/02/22	05/02/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2203532	05/02/22	05/02/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2203578	05/03/22	05/04/22	SM2540D	
IS-13-SC (22D1678-03) Water Sampled: 04/28/22 11:30 Received: 04/28/22 16:40										
Ammonia as N	**0.031**	0.025	0.10	mg/L	1	2203565	05/03/22	05/03/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**8.6**	0.50	5.0	"	"	2203484	04/29/22	04/29/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.68**	0.026	0.50	"	"	2203449	04/29/22	04/29/22	EPA 300.0	
Cyanide (total)	**0.0023**	0.0012	0.0050	"	"	2203564	05/03/22	05/03/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2203616	05/04/22	05/05/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2203484	04/29/22	04/29/22	SM2320B	
Nitrate/Nitrite as N	**0.12**	0.055	0.40	"	"	2203449	04/29/22	04/29/22	EPA 300.0	J
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2203450	04/29/22	04/29/22	SM4500-P E	
Sulfate as SO4	**1.1**	0.038	0.50	"	"	2203449	04/29/22	04/29/22	EPA 300.0	
Total Alkalinity	**8.6**	1.0	5.0	"	"	2203484	04/29/22	04/29/22	SM2320B	
Total Dissolved Solids	**24**	5.0	10	"	"	2203540	05/02/22	05/03/22	SM2540C	
Total Hardness as CaCO3	**7.3**	0.19	1.0	"	"	2203453	04/29/22	05/02/22	EPA 200.7	
Total Kjeldahl Nitrogen	ND	0.040	0.20	"	"	2203576	05/03/22	05/03/22	SM4500-NH3F-1997	
Total Organic Carbon	**1.2**	0.54	1.0	"	"	2203502	05/02/22	05/02/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2203532	05/02/22	05/02/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2203578	05/03/22	05/04/22	SM2540D	

05/05/22 16:07

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1678
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-12-SC (22D1678-04) Water Sampled: 04/28/22 13:45 Received: 04/28/22 16:40										
Ammonia as N	**0.033**	0.025	0.10	mg/L	1	2203565	05/03/22	05/03/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**7.0**	0.50	5.0	"	"	2203484	04/29/22	04/29/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.56**	0.026	0.50	"	"	2203449	04/29/22	04/29/22	EPA 300.0	
Cyanide (total)	**0.0026**	0.0012	0.0050	"	"	2203564	05/03/22	05/03/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2203616	05/04/22	05/05/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2203484	04/29/22	04/29/22	SM2320B	
Nitrate/Nitrite as N	**0.092**	0.055	0.40	"	"	2203449	04/29/22	04/29/22	EPA 300.0	J
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2203450	04/29/22	04/29/22	SM4500-P E	
Sulfate as SO4	**0.46**	0.038	0.50	"	"	2203449	04/29/22	04/29/22	EPA 300.0	J
Total Alkalinity	**7.0**	1.0	5.0	"	"	2203484	04/29/22	04/29/22	SM2320B	
Total Dissolved Solids	**21**	5.0	10	"	"	2203540	05/02/22	05/03/22	SM2540C	
Total Hardness as CaCO3	**5.1**	0.19	1.0	"	"	2203453	04/29/22	05/02/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.070**	0.040	0.20	"	"	2203576	05/03/22	05/03/22	SM4500-NH3F-1997	J
Total Organic Carbon	**2.2**	0.54	1.0	"	"	2203502	05/02/22	05/02/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2203532	05/02/22	05/02/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2203578	05/03/22	05/04/22	SM2540D	
IS-14-SC (22D1678-05) Water Sampled: 04/28/22 10:30 Received: 04/28/22 16:40										
Ammonia as N	ND	0.025	0.10	mg/L	1	2203565	05/03/22	05/03/22	SM4500-NH3F-1997	
Bicarbonate as CaCO3	**11**	0.50	5.0	"	"	2203484	04/29/22	04/29/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.64**	0.026	0.50	"	"	2203449	04/29/22	04/29/22	EPA 300.0	
Cyanide (total)	**0.0023**	0.0012	0.0050	"	"	2203564	05/03/22	05/03/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2203616	05/04/22	05/05/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2203484	04/29/22	04/29/22	SM2320B	
Nitrate/Nitrite as N	**0.067**	0.055	0.40	"	"	2203449	04/29/22	04/29/22	EPA 300.0	J
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2203450	04/29/22	04/29/22	SM4500-P E	

05/05/22 16:07

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1678
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-14-SC (22D1678-05) Water Sampled: 04/28/22 10:30 Received: 04/28/22 16:40										
Sulfate as SO4	**0.51**	0.038	0.50	mg/L	1	2203449	04/29/22	04/29/22	EPA 300.0	
Total Alkalinity	**11**	1.0	5.0	"	"	2203484	04/29/22	04/29/22	SM2320B	
Total Dissolved Solids	**30**	5.0	10	"	"	2203540	05/02/22	05/03/22	SM2540C	
Total Hardness as CaCO3	**8.2**	0.19	1.0	"	"	2203453	04/29/22	05/02/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.065**	0.040	0.20	"	"	2203576	05/03/22	05/03/22	SM4500-NH3F-1997	J
Total Organic Carbon	**1.5**	0.54	1.0	"	"	2203502	05/02/22	05/02/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2203532	05/02/22	05/02/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2203578	05/03/22	05/04/22	SM2540D	

05/05/22 16:07

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1678
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-11-SFSCD (22D1678-01) Water Sampled: 04/28/22 12:30 Received: 04/28/22 16:40										
Diesel	ND	0.0021	0.050	mg/L	1	2203436	04/29/22	04/29/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*138 %*	*65-135*		"	"	"	"	*QS-4*
IS-11-SFSC (22D1678-02) Water Sampled: 04/28/22 12:30 Received: 04/28/22 16:40										
Diesel	ND	0.0021	0.050	mg/L	1	2203436	04/29/22	04/29/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*67 %*	*65-135*		"	"	"	"	
IS-13-SC (22D1678-03) Water Sampled: 04/28/22 11:30 Received: 04/28/22 16:40										
Diesel	ND	0.0021	0.050	mg/L	1	2203436	04/29/22	04/29/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*78 %*	*65-135*		"	"	"	"	
IS-12-SC (22D1678-04) Water Sampled: 04/28/22 13:45 Received: 04/28/22 16:40										
Diesel	ND	0.0021	0.050	mg/L	1	2203436	04/29/22	04/29/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 620.01	**CLS Work Order #: 22D1678**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-12-SC (22D1678-04) Water Sampled: 04/28/22 13:45 Received: 04/28/22 16:40										
Surrogate: o-Terphenyl			*72 %*	*65-135*		*2203436*	"	*04/29/22*	*EPA 8015M*	
IS-14-SC (22D1678-05) Water Sampled: 04/28/22 10:30 Received: 04/28/22 16:40										
Diesel	ND	0.0021	0.050	mg/L	1	2203436	04/29/22	04/29/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*82 %*	*65-135*		*"*	"	*"*	*"*	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1678
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-11-SFSCD (22D1678-01) Water Sampled: 04/28/22 12:30 Received: 04/28/22 16:40										
Aluminum	**16**	1.6	20	µg/L	1	2203456	04/29/22	05/02/22	EPA 200.8	J
Barium	**10**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1800**	27	1000	"	"	2203453	04/29/22	05/02/22	EPA 200.7	
Iron	**45**	9.1	100	"	"	"	"	"	"	J
Magnesium	**450**	21	1000	"	"	"	"	"	"	J
Manganese	**8.9**	0.050	2.0	"	"	2203456	04/29/22	05/02/22	EPA 200.8	
Potassium	**560**	61	1000	"	"	2203453	04/29/22	05/02/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2203456	04/29/22	05/02/22	EPA 200.8	
Sodium	**1300**	34	1000	"	"	2203453	04/29/22	05/02/22	EPA 200.7	
IS-11-SFSC (22D1678-02) Water Sampled: 04/28/22 12:30 Received: 04/28/22 16:40										
Aluminum	**25**	1.6	20	µg/L	1	2203456	04/29/22	05/02/22	EPA 200.8	
Barium	**12**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1800**	27	1000	"	"	2203453	04/29/22	05/02/22	EPA 200.7	
Iron	**31**	9.1	100	"	"	"	"	"	"	J
Magnesium	**430**	21	1000	"	"	"	"	"	"	J
Manganese	**9.4**	0.050	2.0	"	"	2203456	04/29/22	05/02/22	EPA 200.8	
Potassium	**510**	61	1000	"	"	2203453	04/29/22	05/02/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2203456	04/29/22	05/02/22	EPA 200.8	
Sodium	**1100**	34	1000	"	"	2203453	04/29/22	05/02/22	EPA 200.7	
IS-13-SC (22D1678-03) Water Sampled: 04/28/22 11:30 Received: 04/28/22 16:40										
Aluminum	**72**	1.6	20	µg/L	1	2203456	04/29/22	05/02/22	EPA 200.8	
Barium	**14**	0.14	5.0	"	"	"	"	"	"	
Calcium	**2100**	27	1000	"	"	2203453	04/29/22	05/02/22	EPA 200.7	
Iron	**89**	9.1	100	"	"	"	"	"	"	J
Magnesium	**530**	21	1000	"	"	"	"	"	"	J
Manganese	**11**	0.050	2.0	"	"	2203456	04/29/22	05/02/22	EPA 200.8	
Potassium	**370**	61	1000	"	"	2203453	04/29/22	05/02/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2203456	04/29/22	05/02/22	EPA 200.8	
Sodium	**1400**	34	1000	"	"	2203453	04/29/22	05/02/22	EPA 200.7	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1678
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-12-SC (22D1678-04) Water Sampled: 04/28/22 13:45 Received: 04/28/22 16:40										
Aluminum	**2.5**	1.6	20	µg/L	1	2203456	04/29/22	05/02/22	EPA 200.8	J
Barium	**7.5**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1500**	27	1000	"	"	2203453	04/29/22	05/02/22	EPA 200.7	
Iron	**47**	9.1	100	"	"	"	"	"	"	J
Magnesium	**330**	21	1000	"	"	"	"	"	"	J
Manganese	**6.3**	0.050	2.0	"	"	2203456	04/29/22	05/02/22	EPA 200.8	
Potassium	**570**	61	1000	"	"	2203453	04/29/22	05/02/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2203456	04/29/22	05/02/22	EPA 200.8	
Sodium	**860**	34	1000	"	"	2203453	04/29/22	05/02/22	EPA 200.7	J
IS-14-SC (22D1678-05) Water Sampled: 04/28/22 10:30 Received: 04/28/22 16:40										
Aluminum	**12**	1.6	20	µg/L	1	2203456	04/29/22	05/02/22	EPA 200.8	J
Barium	**12**	0.14	5.0	"	"	"	"	"	"	
Calcium	**2300**	27	1000	"	"	2203453	04/29/22	05/02/22	EPA 200.7	
Iron	**37**	9.1	100	"	"	"	"	"	"	J
Magnesium	**590**	21	1000	"	"	"	"	"	"	J
Manganese	**3.4**	0.050	2.0	"	"	2203456	04/29/22	05/02/22	EPA 200.8	
Potassium	**560**	61	1000	"	"	2203453	04/29/22	05/02/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2203456	04/29/22	05/02/22	EPA 200.8	
Sodium	**1100**	34	1000	"	"	2203453	04/29/22	05/02/22	EPA 200.7	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1678
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-11-SFSCD (22D1678-01) Water Sampled: 04/28/22 12:30 Received: 04/28/22 16:40										
Aluminum	ND	0.52	20	µg/L	1	2203522	05/02/22	05/02/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2203542	05/02/22	05/02/22	EPA 200.7	
Silver	**0.44**	0.15	0.50	"	"	2203522	05/02/22	05/02/22	EPA 200.8	J
IS-11-SFSC (22D1678-02) Water Sampled: 04/28/22 12:30 Received: 04/28/22 16:40										
Aluminum	ND	0.52	20	µg/L	1	2203522	05/02/22	05/02/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2203542	05/02/22	05/02/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2203522	05/02/22	05/02/22	EPA 200.8	
IS-13-SC (22D1678-03) Water Sampled: 04/28/22 11:30 Received: 04/28/22 16:40										
Aluminum	ND	0.52	20	µg/L	1	2203522	05/02/22	05/02/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2203542	05/02/22	05/02/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2203522	05/02/22	05/02/22	EPA 200.8	
IS-12-SC (22D1678-04) Water Sampled: 04/28/22 13:45 Received: 04/28/22 16:40										
Aluminum	ND	0.52	20	µg/L	1	2203522	05/02/22	05/02/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2203542	05/02/22	05/02/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2203522	05/02/22	05/02/22	EPA 200.8	
IS-14-SC (22D1678-05) Water Sampled: 04/28/22 10:30 Received: 04/28/22 16:40										
Aluminum	ND	0.52	20	µg/L	1	2203522	05/02/22	05/02/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2203542	05/02/22	05/02/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2203522	05/02/22	05/02/22	EPA 200.8	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 620.01	**CLS Work Order #: 22D1678**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-11-SFSCD (22D1678-01) Water Sampled: 04/28/22 12:30 Received: 04/28/22 16:40										
Gasoline	ND	10	50	µg/L	1	2203579	05/03/22	05/03/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*89 %*	*65-135*		"	"	"	"	
IS-11-SFSC (22D1678-02) Water Sampled: 04/28/22 12:30 Received: 04/28/22 16:40										
Gasoline	ND	10	50	µg/L	1	2203579	05/03/22	05/03/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*89 %*	*65-135*		"	"	"	"	
IS-13-SC (22D1678-03) Water Sampled: 04/28/22 11:30 Received: 04/28/22 16:40										
Gasoline	ND	10	50	µg/L	1	2203579	05/03/22	05/03/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*89 %*	*65-135*		"	"	"	"	
IS-12-SC (22D1678-04) Water Sampled: 04/28/22 13:45 Received: 04/28/22 16:40										
Gasoline	ND	10	50	µg/L	1	2203579	05/03/22	05/03/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*85 %*	*65-135*		"	"	"	"	
IS-14-SC (22D1678-05) Water Sampled: 04/28/22 10:30 Received: 04/28/22 16:40										
Gasoline	ND	10	50	µg/L	1	2203579	05/03/22	05/03/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*92 %*	*65-135*		"	"	"	"	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1678
COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-11-SFSCD (22D1678-01) Water Sampled: 04/28/22 12:30 Received: 04/28/22 16:40										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2203554	05/02/22	05/02/22	EPA 8260B	
Surrogate: Toluene-d8			*95 %*		*72-125*		"	"	"	"
IS-11-SFSC (22D1678-02) Water Sampled: 04/28/22 12:30 Received: 04/28/22 16:40										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2203554	05/02/22	05/02/22	EPA 8260B	
Surrogate: Toluene-d8			*95 %*		*72-125*		"	"	"	"
IS-13-SC (22D1678-03) Water Sampled: 04/28/22 11:30 Received: 04/28/22 16:40										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2203554	05/02/22	05/02/22	EPA 8260B	
Surrogate: Toluene-d8			*95 %*		*72-125*		"	"	"	"
IS-12-SC (22D1678-04) Water Sampled: 04/28/22 13:45 Received: 04/28/22 16:40										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2203554	05/02/22	05/02/22	EPA 8260B	
Surrogate: Toluene-d8			*95 %*		*72-125*		"	"	"	"
IS-14-SC (22D1678-05) Water Sampled: 04/28/22 10:30 Received: 04/28/22 16:40										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2203554	05/02/22	05/02/22	EPA 8260B	
Surrogate: Toluene-d8			*96 %*		*72-125*		"	"	"	"

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2855 Telegraph Ave., Suite 400
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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1678
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203449 - General Prep											
Blank (2203449-BLK1)					Prepared & Analyzed: 04/29/22						
Chloride	0.286	0.026	0.50	mg/L							J
Sulfate as SO4	ND	0.038	0.50	"							
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2203449-BS1)					Prepared & Analyzed: 04/29/22						
Sulfate as SO4	4.72	0.038	0.50	mg/L	5.00		94	80-120			
Chloride	4.51	0.026	0.50	"	5.00		90	80-120			
Nitrate/Nitrite as N	3.86	0.055	0.40	"	4.00		97	80-120			
LCS Dup (2203449-BSD1)					Prepared & Analyzed: 04/29/22						
Sulfate as SO4	4.76	0.038	0.50	mg/L	5.00		95	80-120	0.9	20	
Chloride	4.55	0.026	0.50	"	5.00		91	80-120	0.8	20	
Nitrate/Nitrite as N	3.89	0.055	0.40	"	4.00		97	80-120	0.8	20	
Matrix Spike (2203449-MS1)			**Source: 22D1665-01**		Prepared: 04/29/22 Analyzed: 05/02/22						
Chloride	9.59	0.026	0.50	mg/L	5.00	4.42	103	80-120			
Sulfate as SO4	7.49	0.038	0.50	"	5.00	2.60	98	80-120			
Nitrate/Nitrite as N	3.94	0.055	0.40	"	4.00	0.103	96	80-120			
Matrix Spike Dup (2203449-MSD1)			**Source: 22D1665-01**		Prepared: 04/29/22 Analyzed: 05/02/22						
Chloride	9.75	0.026	0.50	mg/L	5.00	4.42	107	80-120	2	20	
Sulfate as SO4	7.65	0.038	0.50	"	5.00	2.60	101	80-120	2	20	
Nitrate/Nitrite as N	4.06	0.055	0.40	"	4.00	0.103	99	80-120	3	20	
Batch 2203450 - General Prep											
Blank (2203450-BLK1)					Prepared & Analyzed: 04/29/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							

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Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1678
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203450 - General Prep											
LCS (2203450-BS1)					Prepared & Analyzed: 04/29/22						
Orthophosphate as PO4	0.884	0.0051	0.15	mg/L	0.918		96	80-120			
LCS Dup (2203450-BSD1)					Prepared & Analyzed: 04/29/22						
Orthophosphate as PO4	0.900	0.0051	0.15	mg/L	0.918		98	80-120	2	20	
Matrix Spike (2203450-MS1)			**Source: 22D1581-01**		Prepared & Analyzed: 04/29/22						
Orthophosphate as PO4	0.900	0.0051	0.15	mg/L	0.918	ND	98	75-125			
Matrix Spike Dup (2203450-MSD1)			**Source: 22D1581-01**		Prepared & Analyzed: 04/29/22						
Orthophosphate as PO4	0.778	0.0051	0.15	mg/L	0.918	ND	85	75-125	15	25	
Batch 2203453 - EPA 200 Series											
Blank (2203453-BLK1)					Prepared: 04/29/22 Analyzed: 05/02/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2203453-BS1)					Prepared: 04/29/22 Analyzed: 05/02/22						
Total Hardness as CaCO3	34.0	0.19	1.0	mg/L	33.1		103	85-115			
Matrix Spike (2203453-MS1)			**Source: 22D1560-01**		Prepared: 04/29/22 Analyzed: 05/02/22						
Total Hardness as CaCO3	88.2	9.7	50	mg/L	33.1	52.0	109	70-130			
Matrix Spike (2203453-MS2)			**Source: 22D1678-05**		Prepared: 04/29/22 Analyzed: 05/02/22						
Total Hardness as CaCO3	41.5	0.19	1.0	mg/L	33.1	8.16	101	70-130			
Batch 2203484 - General Preparation											
Blank (2203484-BLK1)					Prepared & Analyzed: 04/29/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1678
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203484 - General Preparation											
Duplicate (2203484-DUP1)			**Source: 22D1678-02**		Prepared & Analyzed: 04/29/22						
Total Alkalinity	8.20	1.0	5.0	mg/L		8.00			2	20	
Bicarbonate as CaCO3	8.20	0.50	5.0	"		8.00			2	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Batch 2203502 - General Prep											
Blank (2203502-BLK1)					Prepared & Analyzed: 05/02/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							
LCS (2203502-BS1)					Prepared & Analyzed: 05/02/22						
Total Organic Carbon	10.5	0.54	1.0	mg/L	10.0		105	75-125			
LCS Dup (2203502-BSD1)					Prepared & Analyzed: 05/02/22						
Total Organic Carbon	10.6	0.54	1.0	mg/L	10.0		106	75-125	1	25	
Matrix Spike (2203502-MS1)			**Source: 22D1624-01**		Prepared & Analyzed: 05/02/22						
Total Organic Carbon	10.7	0.54	1.0	mg/L	10.0	ND	107	75-125			
Matrix Spike Dup (2203502-MSD1)			**Source: 22D1624-01**		Prepared & Analyzed: 05/02/22						
Total Organic Carbon	10.3	0.54	1.0	mg/L	10.0	ND	103	75-125	3	25	
Batch 2203532 - General Prep											
Blank (2203532-BLK1)					Prepared & Analyzed: 05/02/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 620.01	**CLS Work Order #: 22D1678**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203532 - General Prep											
LCS (2203532-BS1)					Prepared & Analyzed: 05/02/22						
Total Phosphorus as P	0.287	0.023	0.050	mg/L	0.300		96	80-120			
LCS Dup (2203532-BSD1)					Prepared & Analyzed: 05/02/22						
Total Phosphorus as P	0.289	0.023	0.050	mg/L	0.300		96	80-120	0.5	25	
Matrix Spike (2203532-MS1)			**Source: 22D1581-01**		Prepared & Analyzed: 05/02/22						
Total Phosphorus as P	0.352	0.023	0.050	mg/L	0.300	0.0264	109	75-125			
Matrix Spike Dup (2203532-MSD1)			**Source: 22D1581-01**		Prepared & Analyzed: 05/02/22						
Total Phosphorus as P	0.305	0.023	0.050	mg/L	0.300	0.0264	93	75-125	14	30	
Batch 2203540 - General Preparation											
Blank (2203540-BLK1)					Prepared: 05/02/22 Analyzed: 05/03/22						
Total Dissolved Solids	ND	5.0	10	mg/L							
Duplicate (2203540-DUP1)			**Source: 22D1581-01**		Prepared: 05/02/22 Analyzed: 05/03/22						
Total Dissolved Solids	35.0	5.0	10	mg/L		33.0			6	20	
Batch 2203564 - General Preparation											
Blank (2203564-BLK1)					Prepared & Analyzed: 05/03/22						
Cyanide (total)	0.00230	0.0012	0.0050	mg/L							J
LCS (2203564-BS1)					Prepared & Analyzed: 05/03/22						
Cyanide (total)	0.0865	0.0012	0.0050	mg/L	0.100		87	75-125			

05/05/22 16:07

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1678
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203564 - General Preparation											
LCS Dup (2203564-BSD1)					Prepared & Analyzed: 05/03/22						
Cyanide (total)	0.0887	0.0012	0.0050	mg/L	0.100		89	75-125	3	25	
Matrix Spike (2203564-MS1)			**Source: 22D1678-01**		Prepared & Analyzed: 05/03/22						
Cyanide (total)	0.0817	0.0012	0.0050	mg/L	0.100	0.00260	79	75-125			
Matrix Spike Dup (2203564-MSD1)			**Source: 22D1678-01**		Prepared & Analyzed: 05/03/22						
Cyanide (total)	0.0780	0.0012	0.0050	mg/L	0.100	0.00260	75	75-125	5	25	
Batch 2203565 - General Preparation											
Blank (2203565-BLK1)					Prepared & Analyzed: 05/03/22						
Ammonia as N	ND	0.025	0.10	mg/L							
LCS (2203565-BS1)					Prepared & Analyzed: 05/03/22						
Ammonia as N	0.539	0.025	0.10	mg/L	0.500		108	80-120			
LCS Dup (2203565-BSD1)					Prepared & Analyzed: 05/03/22						
Ammonia as N	0.546	0.025	0.10	mg/L	0.500		109	80-120	1	25	
Matrix Spike (2203565-MS1)			**Source: 22D1620-01**		Prepared & Analyzed: 05/03/22						
Ammonia as N	0.548	0.025	0.10	mg/L	0.500	0.0510	99	75-125			
Matrix Spike Dup (2203565-MSD1)			**Source: 22D1620-01**		Prepared & Analyzed: 05/03/22						
Ammonia as N	0.538	0.025	0.10	mg/L	0.500	0.0510	97	75-125	2	25	
Batch 2203576 - General Preparation											
Blank (2203576-BLK1)					Prepared & Analyzed: 05/03/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							

05/05/22 16:07

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2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1678
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203576 - General Preparation											
LCS (2203576-BS1)					Prepared & Analyzed: 05/03/22						
Total Kjeldahl Nitrogen	0.496	0.040	0.20	mg/L	0.500		99	80-120			
LCS Dup (2203576-BSD1)					Prepared & Analyzed: 05/03/22						
Total Kjeldahl Nitrogen	0.514	0.040	0.20	mg/L	0.500		103	80-120	4	20	
Matrix Spike (2203576-MS1)			**Source: 22D1624-01**		Prepared & Analyzed: 05/03/22						
Total Kjeldahl Nitrogen	0.480	0.040	0.20	mg/L	0.500	0.109	74	75-125			QM-7
Matrix Spike Dup (2203576-MSD1)			**Source: 22D1624-01**		Prepared & Analyzed: 05/03/22						
Total Kjeldahl Nitrogen	0.476	0.040	0.20	mg/L	0.500	0.109	73	75-125	0.8	25	QM-7
Batch 2203578 - General Preparation											
Duplicate (2203578-DUP1)			**Source: 22D1676-02**		Prepared: 05/03/22 Analyzed: 05/04/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	
Batch 2203616 - Solvent Extract											
Blank (2203616-BLK1)					Prepared: 05/04/22 Analyzed: 05/05/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2203616-BS1)					Prepared: 05/04/22 Analyzed: 05/05/22						
Hexane Extractable Material (HEM, Oil & Grease)	35.3	1.0	5.0	mg/L	40.0		88	78-114			
LCS Dup (2203616-BSD1)					Prepared: 05/04/22 Analyzed: 05/05/22						
Hexane Extractable Material (HEM, Oil & Grease)	38.0	1.0	5.0	mg/L	40.0		95	78-114	7	18	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1678
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203436 - EPA 3510B GCNV											
Blank (2203436-BLK1)					Prepared: 04/28/22 Analyzed: 04/29/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Surrogate: o-Terphenyl	*0.0267*			*"*	*0.0250*		*107*	*65-135*			
LCS (2203436-BS1)					Prepared: 04/28/22 Analyzed: 04/29/22						
Diesel	1.74	0.0021	0.050	mg/L	2.50		70	65-135			
Surrogate: o-Terphenyl	*0.0311*			*"*	*0.0250*		*124*	*65-135*			
LCS Dup (2203436-BSD1)					Prepared: 04/28/22 Analyzed: 04/29/22						
Diesel	2.01	0.0021	0.050	mg/L	2.50		81	65-135	15	30	
Surrogate: o-Terphenyl	*0.0247*			*"*	*0.0250*		*99*	*65-135*			
Matrix Spike (2203436-MS1)			**Source: 22D1506-01**		Prepared: 04/28/22 Analyzed: 04/29/22						
Diesel	1.71	0.0021	0.050	mg/L	2.50	ND	69	46-137			
Surrogate: o-Terphenyl	*0.0237*			*"*	*0.0250*		*95*	*65-135*			
Matrix Spike Dup (2203436-MSD1)			**Source: 22D1506-01**		Prepared: 04/28/22 Analyzed: 04/29/22						
Diesel	1.67	0.0021	0.050	mg/L	2.50	ND	67	46-137	3	30	
Surrogate: o-Terphenyl	*0.0220*			*"*	*0.0250*		*88*	*65-135*			

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1678
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203453 - EPA 200 Series											
Blank (2203453-BLK1)					Prepared: 04/29/22 Analyzed: 05/02/22						
Calcium	33.2	27	1000	µg/L							J
Iron	ND	9.1	100	"							
Magnesium	ND	21	1000	"							
Potassium	98.1	61	1000	"							J
Sodium	ND	34	1000	"							
LCS (2203453-BS1)					Prepared: 04/29/22 Analyzed: 05/02/22						
Calcium	5200	27	1000	µg/L	5000		104	85-115			
Iron	510	9.1	100	"	500		102	85-115			
Magnesium	5110	21	1000	"	5000		102	85-115			
Potassium	4910	61	1000	"	5000		98	85-115			
Sodium	4890	34	1000	"	5000		98	85-115			
Matrix Spike (2203453-MS1)			**Source: 22D1560-01**		Prepared & Analyzed: 04/29/22						
Calcium	18700	27	1000	µg/L	5000	14900	76	70-130			
Iron	3130	9.1	100	"	500	2850	57	70-130			QM-4X
Magnesium	7300	21	1000	"	5000	2930	87	70-130			
Potassium	2180000	3000	50000	"	5000	2060000	NR	70-130			QM-4X
Sodium	1940000	1700	50000	"	5000	1860000	NR	70-130			QM-4X
Matrix Spike (2203453-MS2)			**Source: 22D1678-05**		Prepared: 04/29/22 Analyzed: 05/02/22						
Calcium	7380	27	1000	µg/L	5000	2290	102	70-130			
Iron	531	9.1	100	"	500	37.4	99	70-130			
Magnesium	5600	21	1000	"	5000	591	100	70-130			
Potassium	5400	61	1000	"	5000	564	97	70-130			
Sodium	6130	34	1000	"	5000	1110	100	70-130			

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1678
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203456 - EPA 200 Series											
Blank (2203456-BLK1)					Prepared: 04/29/22 Analyzed: 05/02/22						
Aluminum	ND	1.6	20	µg/L							
Barium	ND	0.14	5.0	"							
Manganese	ND	0.050	2.0	"							
Silver	ND	0.070	0.50	"							
LCS (2203456-BS1)					Prepared: 04/29/22 Analyzed: 05/02/22						
Aluminum	459	1.6	20	µg/L	500		92	85-115			
Barium	93.5	0.14	5.0	"	100		94	85-115			
Manganese	91.7	0.050	2.0	"	100		92	85-115			
Silver	96.0	0.070	0.50	"	100		96	85-115			
Matrix Spike (2203456-MS1)			**Source: 22D1678-05**		Prepared: 04/29/22 Analyzed: 05/02/22						
Aluminum	490	1.6	20	µg/L	500	12.3	96	70-130			
Barium	108	0.14	5.0	"	100	12.3	96	70-130			
Manganese	94.7	0.050	2.0	"	100	3.38	91	70-130			
Silver	98.5	0.070	0.50	"	100	ND	98	70-130			

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1678
COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203522 - EPA 200 No Digestion											
Blank (2203522-BLK1)					Prepared & Analyzed: 05/02/22						
Aluminum	ND	0.52	20	µg/L							
Antimony	ND	0.57	6.0	"							
Silver	ND	0.15	0.50	"							
LCS (2203522-BS1)					Prepared & Analyzed: 05/02/22						
Aluminum	449	0.52	20	µg/L	500		90	85-115			
Antimony	77.0	0.57	6.0	"	100		77	85-115			QM-1
Silver	91.9	0.15	0.50	"	100		92	85-115			
Matrix Spike (2203522-MS1)			**Source: 22D1609-04**		Prepared & Analyzed: 05/02/22						
Aluminum	482	0.52	20	µg/L	500	10.2	94	70-130			
Antimony	78.8	0.57	6.0	"	100	ND	79	70-130			
Silver	70.7	0.15	0.50	"	100	ND	71	70-130			
Batch 2203542 - EPA 200 No Digestion											
Blank (2203542-BLK1)					Prepared: 05/02/22 Analyzed: 05/03/22						
Iron	ND	6.8	100	µg/L							
LCS (2203542-BS1)					Prepared: 05/02/22 Analyzed: 05/03/22						
Iron	497	6.8	100	µg/L	500		99	85-115			
Matrix Spike (2203542-MS1)			**Source: 22D1515-01**		Prepared: 05/02/22 Analyzed: 05/03/22						
Iron	495	6.8	100	µg/L	500	8.61	97	70-130			
Matrix Spike (2203542-MS2)			**Source: 22D1581-01**		Prepared: 05/02/22 Analyzed: 05/03/22						
Iron	508	6.8	100	µg/L	500	8.06	100	70-130			

05/05/22 16:07

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1678
COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203579 - EPA 5030 Water GC											
Blank (2203579-BLK1)					Prepared & Analyzed: 05/03/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*18.6*			"	*20.0*		*93*	*65-135*			
LCS (2203579-BS1)					Prepared & Analyzed: 05/03/22						
Gasoline	499	10	50	µg/L	500		100	70-130			
Surrogate: o-Chlorotoluene (Gas)	*17.3*			"	*20.0*		*86*	*65-135*			
LCS Dup (2203579-BSD1)					Prepared & Analyzed: 05/03/22						
Gasoline	476	10	50	µg/L	500		95	70-130	5	30	
Surrogate: o-Chlorotoluene (Gas)	*17.1*			"	*20.0*		*86*	*65-135*			
Matrix Spike (2203579-MS1)			**Source: 22D1678-01**		Prepared & Analyzed: 05/03/22						
Gasoline	517	10	50	µg/L	500	ND	103	68-132			
Surrogate: o-Chlorotoluene (Gas)	*16.8*			"	*20.0*		*84*	*65-135*			
Matrix Spike Dup (2203579-MSD1)			**Source: 22D1678-01**		Prepared & Analyzed: 05/03/22						
Gasoline	475	10	50	µg/L	500	ND	95	68-132	9	32	
Surrogate: o-Chlorotoluene (Gas)	*18.0*			"	*20.0*		*90*	*65-135*			

05/05/22 16:07

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 620.01
Project Manager: Emily Applequist

CLS Work Order #: 22D1678
COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203554 - EPA 5030 Water MS											
Blank (2203554-BLK1)					Prepared & Analyzed: 05/02/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Benzene	ND	0.11	0.50	"							
Toluene	ND	0.11	0.50	"							
Ethylbenzene	ND	0.10	0.50	"							
Xylenes (total)	ND	0.33	1.0	"							
Surrogate: Toluene-d8	*9.44*			*"*	*10.0*		*94*	*72-125*			
LCS (2203554-BS1)					Prepared & Analyzed: 05/02/22						
Methyl tert-butyl ether	16.1	0.095	0.50	µg/L	20.0		80	52-130			
Benzene	17.3	0.11	0.50	"	20.0		86	52-130			
Surrogate: Toluene-d8	*10.0*			*"*	*10.0*		*100*	*72-125*			
LCS Dup (2203554-BSD1)					Prepared & Analyzed: 05/02/22						
Methyl tert-butyl ether	16.7	0.095	0.50	µg/L	20.0		83	52-130	4	30	
Benzene	18.3	0.11	0.50	"	20.0		92	52-130	6	30	
Surrogate: Toluene-d8	*9.97*			*"*	*10.0*		*100*	*72-125*			
Matrix Spike (2203554-MS1)			**Source: 22D1678-05**		Prepared & Analyzed: 05/02/22						
Methyl tert-butyl ether	16.8	0.095	0.50	µg/L	20.0	ND	84	52-140			
Benzene	18.7	0.11	0.50	"	20.0	ND	93	52-140			
Surrogate: Toluene-d8	*9.92*			*"*	*10.0*		*99*	*72-125*			
Matrix Spike Dup (2203554-MSD1)			**Source: 22D1678-05**		Prepared & Analyzed: 05/02/22						
Methyl tert-butyl ether	16.4	0.095	0.50	µg/L	20.0	ND	82	52-140	2	30	
Benzene	19.3	0.11	0.50	"	20.0	ND	97	52-140	3	30	
Surrogate: Toluene-d8	*9.82*			*"*	*10.0*		*98*	*72-125*			

05/05/22 16:07

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 620.01	**CLS Work Order #: 22D1678**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QS-4	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
QM-1	The spike recovery was outside acceptance limits for the LCS or LCSD. The batch was accepted based on acceptable MS/MSD recoveries & RPD's.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22D1678 (1 of 2)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches.

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[X] **CLS** (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] **OTHER**

GEOTRACKER

EDF REPORT YES [X] NO [ ]

GLOBAL ID

FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	ANALYSIS REQUESTED: TSS, TDS, Hardness, Alkalinity, NO2-N, NO3-N, Diss Metals, Cl, SO4	CrVI - EPA 218.6	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS: 1	2	3	5	SPECIAL INSTRUCTIONS
4/18/22	12:30	IS-11-SESCD		Surface water			6	X		X	X	X	X					X	
4/20/22	12:30	IS-11-SESC		Surface water			6	X		X	X	X	X					X	
4/26/22	11:30	IS-13-SC		Surface water			6	X		X	X	X	X					X	
4/20/22	13:45	IS-12-SC		Surface water			6	X		X	X	X	X					X	
4/26/22	10:30	IS-14-SC		Surface water			6	X		X	X	X	X					X	
				Surface water			6											X	
				Surface water			6											X	INVOICE TO:
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	**Project No. 750.10 Task 0620.01**
				Surface water			6											X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	STILLWATER SCIENCES	4/23/22 16:40		

RECEIVED AT LAB BY: DATE/TIME: 4/28/22 1654 **CONDITIONS/COMMENTS:** 2.1 / 17.4

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER AIR BILL #

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22D1678 (2 of 2)

Report To:	Client Job Number: 750.10 Task 0620.01	ANALYSIS REQUESTED	GEOTRACKER
Stillwater Sciences 279 Cousteau Place, Suite 400 Davis, CA 95816	Destination Laboratory: Rancho Cordova		EDF REPORT YES [X] NO [ ]
Project Manager: Emily Applequist eapplequist@stillwatersci.com	[X] CLS (916) 638-7301 3249 Fitzgerald Road Rancho Cordova, CA 95742 www.californialab.com		GLOBAL ID:
Project Name: SMUD In situ & Chemistry Monitoring	[ ] OTHER		FIELD CONDITIONS:
Sampled By:			
Job Description: Monitor water chemistry in UARP reaches.			
Site Location: Upper American River Project Sites			

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	Oil & Grease	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
4/28/22	12:30	IS-11.5FSC D		Surface water			6	X				X	
4/28/22	12:30	IS-11.5FSC		Surface water			6	X				X	
4/28/22	11:80	IS-13.5C		Surface water			6	X				X	
4/28/22	13:45	IS-12.5C		Surface water			6	X				X	
4/28/22	10:30	IS-14.5C		Surface water			6	X				X	
				Surface water			6					X	
				Surface water			6					X	INVOICE TO:
				Surface water			6					X	Stillwater Sciences
				Surface water			6					X	Same as above
				Surface water			6					X	
				Surface water			6					X	**Project No. 750.10 Task 0620.01**
				Surface water			6					X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	STILLWATER SCIENCES	4/28/22 1640		

RECEIVED AT LAB BY: DATE/TIME: 4/28/22 1639 CONDITIONS/COMMENTS: 8.1

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER AIR BILL #

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

May 11, 2022

CLS Work Order #: 22E0159
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 05/03/22 16:40. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

05/11/22 11:47

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E0159
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-4-GC (22E0159-01) Water Sampled: 05/03/22 13:45 Received: 05/03/22 16:40										
Ammonia as N	**0.028**	0.025	0.10	mg/L	1	2203668	05/05/22	05/05/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**3.8**	0.50	5.0	"	"	2203638	05/04/22	05/04/22	SM2320B	J
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.46**	0.026	0.50	"	"	2203593	05/04/22	05/04/22	EPA 300.0	J
Cyanide (total)	**0.0026**	0.0012	0.0050	"	"	2203721	05/06/22	05/06/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2203700	05/06/22	05/09/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2203638	05/04/22	05/04/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2203593	05/04/22	05/04/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2203631	05/04/22	05/04/22	SM4500-P E	
Sulfate as SO4	**0.58**	0.038	0.50	"	"	2203593	05/04/22	05/04/22	EPA 300.0	
Total Alkalinity	**3.8**	1.0	5.0	"	"	2203638	05/04/22	05/04/22	SM2320B	J
Total Dissolved Solids	**17**	5.0	10	"	"	2203688	05/05/22	05/06/22	SM2540C	
Total Hardness as CaCO3	**3.4**	0.19	1.0	"	"	2203678	05/05/22	05/06/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.16**	0.040	0.20	"	"	2203697	05/06/22	05/06/22	SM4500-NH3F-1997	J
Total Organic Carbon	**2.0**	0.54	1.0	"	"	2203649	05/05/22	05/05/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2203680	05/05/22	05/05/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2203623	05/04/22	05/06/22	SM2540D	
IS-5-GC (22E0159-02) Water Sampled: 05/03/22 09:40 Received: 05/03/22 16:40										
Ammonia as N	**0.053**	0.025	0.10	mg/L	1	2203668	05/05/22	05/05/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**4.8**	0.50	5.0	"	"	2203638	05/04/22	05/04/22	SM2320B	J
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.62**	0.026	0.50	"	"	2203593	05/04/22	05/04/22	EPA 300.0	
Cyanide (total)	**0.0023**	0.0012	0.0050	"	"	2203721	05/06/22	05/06/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2203700	05/06/22	05/09/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2203638	05/04/22	05/04/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2203593	05/04/22	05/04/22	EPA 300.0	
Orthophosphate as PO4	**0.059**	0.0051	0.15	"	"	2203631	05/04/22	05/04/22	SM4500-P E	J

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E0159
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-5-GC (22E0159-02) Water Sampled: 05/03/22 09:40 Received: 05/03/22 16:40										
Sulfate as SO4	**0.52**	0.038	0.50	mg/L	1	2203593	05/04/22	05/04/22	EPA 300.0	
Total Alkalinity	**4.8**	1.0	5.0	"	"	2203638	05/04/22	05/04/22	SM2320B	J
Total Dissolved Solids	**15**	5.0	10	"	"	2203688	05/05/22	05/06/22	SM2540C	
Total Hardness as CaCO3	**3.8**	0.19	1.0	"	"	2203678	05/05/22	05/06/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.11**	0.040	0.20	"	"	2203697	05/06/22	05/06/22	SM4500-NH3F-1997	J
Total Organic Carbon	**2.8**	0.54	1.0	"	"	2203649	05/05/22	05/05/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2203680	05/05/22	05/05/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2203623	05/04/22	05/06/22	SM2540D	
IS-6-GC (22E0159-03) Water Sampled: 05/03/22 10:00 Received: 05/03/22 16:40										
Ammonia as N	**0.043**	0.025	0.10	mg/L	1	2203668	05/05/22	05/05/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**4.6**	0.50	5.0	"	"	2203638	05/04/22	05/04/22	SM2320B	J
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.62**	0.026	0.50	"	"	2203593	05/04/22	05/04/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2203721	05/06/22	05/06/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2203700	05/06/22	05/09/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2203638	05/04/22	05/04/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2203593	05/04/22	05/04/22	EPA 300.0	
Orthophosphate as PO4	**0.11**	0.0051	0.15	"	"	2203631	05/04/22	05/04/22	SM4500-P E	J
Sulfate as SO4	**0.63**	0.038	0.50	"	"	2203593	05/04/22	05/04/22	EPA 300.0	
Total Alkalinity	**4.6**	1.0	5.0	"	"	2203638	05/04/22	05/04/22	SM2320B	J
Total Dissolved Solids	**21**	5.0	10	"	"	2203688	05/05/22	05/06/22	SM2540C	
Total Hardness as CaCO3	**3.9**	0.19	1.0	"	"	2203678	05/05/22	05/06/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.090**	0.040	0.20	"	"	2203697	05/06/22	05/06/22	SM4500-NH3F-1997	J
Total Organic Carbon	**3.2**	0.54	1.0	"	"	2203649	05/05/22	05/05/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2203680	05/05/22	05/05/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2203623	05/04/22	05/06/22	SM2540D	

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Project Manager: Emily Applequist

CLS Work Order #: 22E0159
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-7-SFRR (22E0159-04) Water Sampled: 05/03/22 11:45 Received: 05/03/22 16:40										
Ammonia as N	**0.037**	0.025	0.10	mg/L	1	2203668	05/05/22	05/05/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**4.6**	0.50	5.0	"	"	2203638	05/04/22	05/04/22	SM2320B	J
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.59**	0.026	0.50	"	"	2203593	05/04/22	05/04/22	EPA 300.0	
Cyanide (total)	**0.0019**	0.0012	0.0050	"	"	2203721	05/06/22	05/06/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2203700	05/06/22	05/09/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2203638	05/04/22	05/04/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2203593	05/04/22	05/04/22	EPA 300.0	
Orthophosphate as PO4	**0.022**	0.0051	0.15	"	"	2203631	05/04/22	05/04/22	SM4500-P E	J
Sulfate as SO4	**0.54**	0.038	0.50	"	"	2203593	05/04/22	05/04/22	EPA 300.0	
Total Alkalinity	**4.6**	1.0	5.0	"	"	2203638	05/04/22	05/04/22	SM2320B	J
Total Dissolved Solids	**17**	5.0	10	"	"	2203688	05/05/22	05/06/22	SM2540C	
Total Hardness as CaCO3	**5.0**	0.19	1.0	"	"	2203678	05/05/22	05/06/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.11**	0.040	0.20	"	"	2203697	05/06/22	05/06/22	SM4500-NH3F-1997	J
Total Organic Carbon	**2.7**	0.54	1.0	"	"	2203649	05/05/22	05/05/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2203680	05/05/22	05/05/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2203623	05/04/22	05/06/22	SM2540D	
IS-8-SFRR (22E0159-05) Water Sampled: 05/03/22 12:20 Received: 05/03/22 16:40										
Ammonia as N	**0.026**	0.025	0.10	mg/L	1	2203668	05/05/22	05/05/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**6.2**	0.50	5.0	"	"	2203638	05/04/22	05/04/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.57**	0.026	0.50	"	"	2203593	05/04/22	05/04/22	EPA 300.0	
Cyanide (total)	**0.0019**	0.0012	0.0050	"	"	2203721	05/06/22	05/06/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2203700	05/06/22	05/09/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2203638	05/04/22	05/04/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2203593	05/04/22	05/04/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2203631	05/04/22	05/04/22	SM4500-P E	

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COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-8-SFRR (22E0159-05) Water Sampled: 05/03/22 12:20 Received: 05/03/22 16:40										
Sulfate as SO4	**0.43**	0.038	0.50	mg/L	1	2203593	05/04/22	05/04/22	EPA 300.0	J
Total Alkalinity	**6.2**	1.0	5.0	"	"	2203638	05/04/22	05/04/22	SM2320B	
Total Dissolved Solids	**28**	5.0	10	"	"	2203688	05/05/22	05/06/22	SM2540C	
Total Hardness as CaCO3	**4.7**	0.19	1.0	"	"	2203678	05/05/22	05/06/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.13**	0.040	0.20	"	"	2203697	05/06/22	05/06/22	SM4500-NH3F-1997	J
Total Organic Carbon	**2.7**	0.54	1.0	"	"	2203649	05/05/22	05/05/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2203680	05/05/22	05/05/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2203623	05/04/22	05/06/22	SM2540D	
IS-9-GCC (22E0159-06) Water Sampled: 05/03/22 11:00 Received: 05/03/22 16:40										
Ammonia as N	**0.052**	0.025	0.10	mg/L	1	2203668	05/05/22	05/05/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**5.6**	0.50	5.0	"	"	2203638	05/04/22	05/04/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.60**	0.026	0.50	"	"	2203593	05/04/22	05/04/22	EPA 300.0	
Cyanide (total)	**0.0019**	0.0012	0.0050	"	"	2203721	05/06/22	05/06/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2203700	05/06/22	05/09/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2203638	05/04/22	05/04/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2203593	05/04/22	05/04/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2203631	05/04/22	05/04/22	SM4500-P E	
Sulfate as SO4	**0.49**	0.038	0.50	"	"	2203593	05/04/22	05/04/22	EPA 300.0	J
Total Alkalinity	**5.6**	1.0	5.0	"	"	2203638	05/04/22	05/04/22	SM2320B	
Total Dissolved Solids	**24**	5.0	10	"	"	2203688	05/05/22	05/06/22	SM2540C	
Total Hardness as CaCO3	**4.2**	0.19	1.0	"	"	2203678	05/05/22	05/06/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.11**	0.040	0.20	"	"	2203697	05/06/22	05/06/22	SM4500-NH3F-1997	J
Total Organic Carbon	**2.7**	0.54	1.0	"	"	2203649	05/05/22	05/05/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2203680	05/05/22	05/05/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2203623	05/04/22	05/06/22	SM2540D	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E0159
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-4-GC (22E0159-01) Water Sampled: 05/03/22 13:45 Received: 05/03/22 16:40										
Diesel	ND	0.0021	0.050	mg/L	1	2203613	05/04/22	05/04/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*99 %*	*65-135*		"	"	"	"	
IS-5-GC (22E0159-02) Water Sampled: 05/03/22 09:40 Received: 05/03/22 16:40										
Diesel	ND	0.0021	0.050	mg/L	1	2203613	05/04/22	05/04/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*91 %*	*65-135*		"	"	"	"	
IS-6-GC (22E0159-03) Water Sampled: 05/03/22 10:00 Received: 05/03/22 16:40										
Diesel	ND	0.0021	0.050	mg/L	1	2203613	05/04/22	05/04/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*88 %*	*65-135*		"	"	"	"	
IS-7-SFRR (22E0159-04) Water Sampled: 05/03/22 11:45 Received: 05/03/22 16:40										
Diesel	ND	0.0021	0.050	mg/L	1	2203613	05/04/22	05/04/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E0159**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-7-SFRR (22E0159-04) Water Sampled: 05/03/22 11:45 Received: 05/03/22 16:40										
Surrogate: o-Terphenyl			*118 %*	*65-135*		*2203613*	"	*05/04/22*	*EPA 8015M*	
IS-8-SFRR (22E0159-05) Water Sampled: 05/03/22 12:20 Received: 05/03/22 16:40										
Diesel	ND	0.0021	0.050	mg/L	1	2203613	05/04/22	05/04/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*102 %*	*65-135*		*"*	*"*	*"*	*"*	
IS-9-GCC (22E0159-06) Water Sampled: 05/03/22 11:00 Received: 05/03/22 16:40										
Diesel	ND	0.0021	0.050	mg/L	1	2203613	05/04/22	05/04/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*96 %*	*65-135*		*"*	*"*	*"*	*"*	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E0159
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-4-GC (22E0159-01) Water Sampled: 05/03/22 13:45 Received: 05/03/22 16:40										
Aluminum	**26**	1.6	20	µg/L	1	2203698	05/06/22	05/09/22	EPA 200.8	
Barium	**3.0**	0.14	5.0	"	"	"	"	"	"	J
Calcium	**1200**	27	1000	"	"	2203678	05/05/22	05/06/22	EPA 200.7	
Iron	ND	9.1	100	"	"	"	"	05/09/22	"	
Magnesium	**130**	21	1000	"	"	"	"	05/06/22	"	J
Manganese	**4.8**	0.050	2.0	"	"	2203698	05/06/22	05/09/22	EPA 200.8	
Potassium	ND	61	1000	"	"	2203678	05/05/22	05/09/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2203698	05/06/22	05/09/22	EPA 200.8	
Sodium	**820**	34	1000	"	"	2203678	05/05/22	05/06/22	EPA 200.7	J
IS-5-GC (22E0159-02) Water Sampled: 05/03/22 09:40 Received: 05/03/22 16:40										
Aluminum	**42**	1.6	20	µg/L	1	2203698	05/06/22	05/09/22	EPA 200.8	
Barium	**5.7**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1000**	27	1000	"	"	2203678	05/05/22	05/06/22	EPA 200.7	
Iron	**14**	9.1	100	"	"	"	"	05/09/22	"	J
Magnesium	**300**	21	1000	"	"	"	"	05/06/22	"	J
Manganese	**4.2**	0.050	2.0	"	"	2203698	05/06/22	05/09/22	EPA 200.8	
Potassium	ND	61	1000	"	"	2203678	05/05/22	05/09/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2203698	05/06/22	05/09/22	EPA 200.8	
Sodium	**1100**	34	1000	"	"	2203678	05/05/22	05/06/22	EPA 200.7	
IS-6-GC (22E0159-03) Water Sampled: 05/03/22 10:00 Received: 05/03/22 16:40										
Aluminum	**45**	1.6	20	µg/L	1	2203698	05/06/22	05/09/22	EPA 200.8	
Barium	**5.6**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1100**	27	1000	"	"	2203678	05/05/22	05/06/22	EPA 200.7	
Iron	**13**	9.1	100	"	"	"	"	05/09/22	"	J
Magnesium	**300**	21	1000	"	"	"	"	05/06/22	"	J
Manganese	**4.8**	0.050	2.0	"	"	2203698	05/06/22	05/09/22	EPA 200.8	
Potassium	ND	61	1000	"	"	2203678	05/05/22	05/09/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2203698	05/06/22	05/09/22	EPA 200.8	
Sodium	**1100**	34	1000	"	"	2203678	05/05/22	05/06/22	EPA 200.7	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E0159
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-7-SFRR (22E0159-04) Water Sampled: 05/03/22 11:45 Received: 05/03/22 16:40										
Aluminum	**39**	1.6	20	µg/L	1	2203698	05/06/22	05/09/22	EPA 200.8	
Barium	**5.2**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1400**	27	1000	"	"	2203678	05/05/22	05/06/22	EPA 200.7	
Iron	**13**	9.1	100	"	"	"	"	05/10/22	"	J
Magnesium	**390**	21	1000	"	"	"	"	05/06/22	"	J
Manganese	**1.9**	0.050	2.0	"	"	2203698	05/06/22	05/09/22	EPA 200.8	J
Potassium	ND	61	1000	"	"	2203678	05/05/22	05/10/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2203698	05/06/22	05/09/22	EPA 200.8	
Sodium	**1200**	34	1000	"	"	2203678	05/05/22	05/06/22	EPA 200.7	
IS-8-SFRR (22E0159-05) Water Sampled: 05/03/22 12:20 Received: 05/03/22 16:40										
Aluminum	**44**	1.6	20	µg/L	1	2203698	05/06/22	05/09/22	EPA 200.8	
Barium	**5.5**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1300**	27	1000	"	"	2203678	05/05/22	05/06/22	EPA 200.7	
Iron	**39**	9.1	100	"	"	"	"	05/10/22	"	J
Magnesium	**350**	21	1000	"	"	"	"	05/06/22	"	J
Manganese	**2.7**	0.050	2.0	"	"	2203698	05/06/22	05/09/22	EPA 200.8	
Potassium	ND	61	1000	"	"	2203678	05/05/22	05/10/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2203698	05/06/22	05/09/22	EPA 200.8	
Sodium	**1200**	34	1000	"	"	2203678	05/05/22	05/06/22	EPA 200.7	
IS-9-GCC (22E0159-06) Water Sampled: 05/03/22 11:00 Received: 05/03/22 16:40										
Aluminum	**44**	1.6	20	µg/L	1	2203698	05/06/22	05/09/22	EPA 200.8	
Barium	**5.8**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1200**	27	1000	"	"	2203678	05/05/22	05/06/22	EPA 200.7	
Iron	**24**	9.1	100	"	"	"	"	05/10/22	"	J
Magnesium	**300**	21	1000	"	"	"	"	05/06/22	"	J
Manganese	**3.6**	0.050	2.0	"	"	2203698	05/06/22	05/09/22	EPA 200.8	
Potassium	**1100**	61	1000	"	"	2203678	05/05/22	05/10/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2203698	05/06/22	05/09/22	EPA 200.8	
Sodium	**1100**	34	1000	"	"	2203678	05/05/22	05/06/22	EPA 200.7	

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Stillwater Sciences
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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E0159
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-4-GC (22E0159-01) Water Sampled: 05/03/22 13:45 Received: 05/03/22 16:40										
Aluminum	**7.8**	0.52	20	µg/L	1	2203730	05/06/22	05/09/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2203779	05/09/22	05/09/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2203730	05/06/22	05/09/22	EPA 200.8	
IS-5-GC (22E0159-02) Water Sampled: 05/03/22 09:40 Received: 05/03/22 16:40										
Aluminum	**13**	0.52	20	µg/L	1	2203730	05/06/22	05/09/22	EPA 200.8	J
Iron	**14**	6.8	100	"	"	2203779	05/09/22	05/09/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2203730	05/06/22	05/09/22	EPA 200.8	
IS-6-GC (22E0159-03) Water Sampled: 05/03/22 10:00 Received: 05/03/22 16:40										
Aluminum	**12**	0.52	20	µg/L	1	2203730	05/06/22	05/09/22	EPA 200.8	J
Iron	**13**	6.8	100	"	"	2203779	05/09/22	05/09/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2203730	05/06/22	05/09/22	EPA 200.8	
IS-7-SFRR (22E0159-04) Water Sampled: 05/03/22 11:45 Received: 05/03/22 16:40										
Aluminum	**11**	0.52	20	µg/L	1	2203730	05/06/22	05/09/22	EPA 200.8	J
Iron	**13**	6.8	100	"	"	2203779	05/09/22	05/10/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2203730	05/06/22	05/09/22	EPA 200.8	
IS-8-SFRR (22E0159-05) Water Sampled: 05/03/22 12:20 Received: 05/03/22 16:40										
Aluminum	**7.2**	0.52	20	µg/L	1	2203730	05/06/22	05/09/22	EPA 200.8	J
Iron	**39**	6.8	100	"	"	2203779	05/09/22	05/10/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2203730	05/06/22	05/09/22	EPA 200.8	
IS-9-GCC (22E0159-06) Water Sampled: 05/03/22 11:00 Received: 05/03/22 16:40										
Aluminum	**10**	0.52	20	µg/L	1	2203730	05/06/22	05/09/22	EPA 200.8	J
Iron	**24**	6.8	100	"	"	2203779	05/09/22	05/10/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2203730	05/06/22	05/09/22	EPA 200.8	

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Project: SMUD In situ & Chemistry Monitoring
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Project Manager: Emily Applequist

CLS Work Order #: 22E0159
COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-4-GC (22E0159-01) Water Sampled: 05/03/22 13:45 Received: 05/03/22 16:40										
Gasoline	ND	10	50	µg/L	1	2203633	05/04/22	05/04/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*92 %*		*65-135*		"	"	"	"
IS-5-GC (22E0159-02) Water Sampled: 05/03/22 09:40 Received: 05/03/22 16:40										
Gasoline	ND	10	50	µg/L	1	2203633	05/04/22	05/04/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*90 %*		*65-135*		"	"	"	"
IS-6-GC (22E0159-03) Water Sampled: 05/03/22 10:00 Received: 05/03/22 16:40										
Gasoline	ND	10	50	µg/L	1	2203633	05/04/22	05/04/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*87 %*		*65-135*		"	"	"	"
IS-7-SFRR (22E0159-04) Water Sampled: 05/03/22 11:45 Received: 05/03/22 16:40										
Gasoline	ND	10	50	µg/L	1	2203633	05/04/22	05/04/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*93 %*		*65-135*		"	"	"	"
IS-8-SFRR (22E0159-05) Water Sampled: 05/03/22 12:20 Received: 05/03/22 16:40										
Gasoline	ND	10	50	µg/L	1	2203633	05/04/22	05/04/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*91 %*		*65-135*		"	"	"	"
IS-9-GCC (22E0159-06) Water Sampled: 05/03/22 11:00 Received: 05/03/22 16:40										
Gasoline	ND	10	50	µg/L	1	2203633	05/04/22	05/04/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*94 %*		*65-135*		"	"	"	"

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Project: SMUD In situ & Chemistry Monitoring
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Project Manager: Emily Applequist

CLS Work Order #: 22E0159
COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-4-GC (22E0159-01) Water Sampled: 05/03/22 13:45 Received: 05/03/22 16:40										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2203642	05/04/22	05/04/22	EPA 8260B	
Surrogate: Toluene-d8			*97 %*		*72-125*		"	"	"	"
IS-5-GC (22E0159-02) Water Sampled: 05/03/22 09:40 Received: 05/03/22 16:40										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2203642	05/04/22	05/04/22	EPA 8260B	
Surrogate: Toluene-d8			*96 %*		*72-125*		"	"	"	"
IS-6-GC (22E0159-03) Water Sampled: 05/03/22 10:00 Received: 05/03/22 16:40										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2203642	05/04/22	05/04/22	EPA 8260B	
Surrogate: Toluene-d8			*97 %*		*72-125*		"	"	"	"
IS-7-SFRR (22E0159-04) Water Sampled: 05/03/22 11:45 Received: 05/03/22 16:40										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2203642	05/04/22	05/04/22	EPA 8260B	
Surrogate: Toluene-d8			*96 %*		*72-125*		"	"	"	"
IS-8-SFRR (22E0159-05) Water Sampled: 05/03/22 12:20 Received: 05/03/22 16:40										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2203642	05/04/22	05/04/22	EPA 8260B	
Surrogate: Toluene-d8			*98 %*		*72-125*		"	"	"	"
IS-9-GCC (22E0159-06) Water Sampled: 05/03/22 11:00 Received: 05/03/22 16:40										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2203642	05/04/22	05/04/22	EPA 8260B	
Surrogate: Toluene-d8			*96 %*		*72-125*		"	"	"	"

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E0159
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203593 - General Preparation											
Blank (2203593-BLK1)					Prepared & Analyzed: 05/04/22						
Chloride	0.280	0.026	0.50	mg/L							J
Sulfate as SO4	0.130	0.038	0.50	"							J
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2203593-BS1)					Prepared & Analyzed: 05/04/22						
Sulfate as SO4	4.76	0.038	0.50	mg/L	5.00		95	80-120			
Chloride	4.56	0.026	0.50	"	5.00		91	80-120			
Nitrate/Nitrite as N	3.91	0.055	0.40	"	4.00		98	80-120			
LCS Dup (2203593-BSD1)					Prepared & Analyzed: 05/04/22						
Chloride	4.72	0.026	0.50	mg/L	5.00		94	80-120	3	20	
Sulfate as SO4	4.91	0.038	0.50	"	5.00		98	80-120	3	20	
Nitrate/Nitrite as N	4.02	0.055	0.40	"	4.00		101	80-120	3	20	
Matrix Spike (2203593-MS1)			**Source: 22E0159-01**		Prepared & Analyzed: 05/04/22						
Chloride	5.04	0.026	0.50	mg/L	5.00	0.460	92	80-120			
Sulfate as SO4	5.25	0.038	0.50	"	5.00	0.585	93	80-120			
Nitrate/Nitrite as N	3.96	0.055	0.40	"	4.00	ND	99	80-120			
Matrix Spike Dup (2203593-MSD1)			**Source: 22E0159-01**		Prepared & Analyzed: 05/04/22						
Chloride	5.14	0.026	0.50	mg/L	5.00	0.460	94	80-120	2	20	
Sulfate as SO4	5.32	0.038	0.50	"	5.00	0.585	95	80-120	1	20	
Nitrate/Nitrite as N	4.05	0.055	0.40	"	4.00	ND	101	80-120	2	20	
Batch 2203623 - General Preparation											
Duplicate (2203623-DUP1)			**Source: 22E0067-02**		Prepared: 05/04/22 Analyzed: 05/06/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	

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COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203631 - General Preparation											
Blank (2203631-BLK1)					Prepared & Analyzed: 05/04/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							
LCS (2203631-BS1)					Prepared & Analyzed: 05/04/22						
Orthophosphate as PO4	0.896	0.0051	0.15	mg/L	0.918		98	80-120			
LCS Dup (2203631-BSD1)					Prepared & Analyzed: 05/04/22						
Orthophosphate as PO4	0.917	0.0051	0.15	mg/L	0.918		100	80-120	2	20	
Matrix Spike (2203631-MS1)			**Source: 22E0159-01**		Prepared & Analyzed: 05/04/22						
Orthophosphate as PO4	0.753	0.0051	0.15	mg/L	0.918	ND	82	75-125			
Matrix Spike Dup (2203631-MSD1)			**Source: 22E0159-01**		Prepared & Analyzed: 05/04/22						
Orthophosphate as PO4	0.884	0.0051	0.15	mg/L	0.918	ND	96	75-125	16	25	
Batch 2203638 - General Preparation											
Blank (2203638-BLK1)					Prepared & Analyzed: 05/04/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Duplicate (2203638-DUP1)			**Source: 22D1722-01**		Prepared & Analyzed: 05/04/22						
Total Alkalinity	79.4	1.0	5.0	mg/L		80.8			2	20	
Bicarbonate as CaCO3	79.4	0.50	5.0	"		80.8			2	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203649 - General Preparation											
Blank (2203649-BLK1)					Prepared & Analyzed: 05/05/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							
LCS (2203649-BS1)					Prepared & Analyzed: 05/05/22						
Total Organic Carbon	10.5	0.54	1.0	mg/L	10.0		105	75-125			
LCS Dup (2203649-BSD1)					Prepared & Analyzed: 05/05/22						
Total Organic Carbon	10.7	0.54	1.0	mg/L	10.0		107	75-125	2	25	
Matrix Spike (2203649-MS1)			**Source: 22E0159-06**		Prepared: 05/05/22 Analyzed: 05/06/22						
Total Organic Carbon	13.3	0.54	1.0	mg/L	10.0	2.66	106	75-125			
Matrix Spike Dup (2203649-MSD1)			**Source: 22E0159-06**		Prepared: 05/05/22 Analyzed: 05/06/22						
Total Organic Carbon	13.0	0.54	1.0	mg/L	10.0	2.66	104	75-125	2	25	
Batch 2203668 - General Preparation											
Blank (2203668-BLK1)					Prepared & Analyzed: 05/05/22						
Ammonia as N	ND	0.025	0.10	mg/L							
LCS (2203668-BS1)					Prepared & Analyzed: 05/05/22						
Ammonia as N	0.502	0.025	0.10	mg/L	0.500		100	80-120			
LCS Dup (2203668-BSD1)					Prepared & Analyzed: 05/05/22						
Ammonia as N	0.507	0.025	0.10	mg/L	0.500		101	80-120	1	25	
Matrix Spike (2203668-MS1)			**Source: 22E0067-02**		Prepared & Analyzed: 05/05/22						
Ammonia as N	0.567	0.025	0.10	mg/L	0.500	0.0590	102	75-125			

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CLS Work Order #: 22E0159
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203668 - General Preparation											
Matrix Spike Dup (2203668-MSD1)			**Source: 22E0067-02**		Prepared & Analyzed: 05/05/22						
Ammonia as N	0.539	0.025	0.10	mg/L	0.500	0.0590	96	75-125	5	25	
Batch 2203678 - EPA 200 Series											
Blank (2203678-BLK1)					Prepared: 05/05/22 Analyzed: 05/06/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2203678-BS1)					Prepared: 05/05/22 Analyzed: 05/06/22						
Total Hardness as CaCO3	34.4	0.19	1.0	mg/L	33.1		104	85-115			
Matrix Spike (2203678-MS1)			**Source: 22E0121-01**		Prepared: 05/05/22 Analyzed: 05/06/22						
Total Hardness as CaCO3	114	0.19	1.0	mg/L	33.1	82.0	96	70-130			
Matrix Spike (2203678-MS2)			**Source: 22E0234-02**		Prepared: 05/05/22 Analyzed: 05/06/22						
Total Hardness as CaCO3	108	0.19	1.0	mg/L	33.1	78.7	88	70-130			
Batch 2203680 - General Preparation											
Blank (2203680-BLK1)					Prepared & Analyzed: 05/05/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2203680-BS1)					Prepared & Analyzed: 05/05/22						
Total Phosphorus as P	0.264	0.023	0.050	mg/L	0.300		88	80-120			
LCS Dup (2203680-BSD1)					Prepared & Analyzed: 05/05/22						
Total Phosphorus as P	0.273	0.023	0.050	mg/L	0.300		91	80-120	3	25	

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CLS Work Order #: 22E0159
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203680 - General Preparation											
Matrix Spike (2203680-MS1)			**Source: 22E0159-01**		Prepared & Analyzed: 05/05/22						
Total Phosphorus as P	0.300	0.023	0.050	mg/L	0.300	ND	100	75-125			
Matrix Spike Dup (2203680-MSD1)			**Source: 22E0159-01**		Prepared & Analyzed: 05/05/22						
Total Phosphorus as P	0.316	0.023	0.050	mg/L	0.300	ND	105	75-125	5	30	
Batch 2203688 - General Preparation											
Blank (2203688-BLK1)					Prepared: 05/05/22 Analyzed: 05/06/22						
Total Dissolved Solids	ND	5.0	10	mg/L							
Duplicate (2203688-DUP1)			**Source: 22E0265-01**		Prepared: 05/05/22 Analyzed: 05/06/22						
Total Dissolved Solids	105	5.0	10	mg/L		102			3	20	
Batch 2203697 - General Preparation											
Blank (2203697-BLK1)					Prepared & Analyzed: 05/06/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2203697-BS1)					Prepared & Analyzed: 05/06/22						
Total Kjeldahl Nitrogen	0.435	0.040	0.20	mg/L	0.500		87	80-120			
LCS Dup (2203697-BSD1)					Prepared & Analyzed: 05/06/22						
Total Kjeldahl Nitrogen	0.473	0.040	0.20	mg/L	0.500		95	80-120	8	20	
Matrix Spike (2203697-MS1)			**Source: 22E0188-01**		Prepared & Analyzed: 05/06/22						
Total Kjeldahl Nitrogen	17.8	0.80	4.0	mg/L	10.0	16.6	12	75-125			QM-7

05/11/22 11:47

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E0159
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203697 - General Preparation											
Matrix Spike Dup (2203697-MSD1)			**Source: 22E0188-01**		Prepared & Analyzed: 05/06/22						
Total Kjeldahl Nitrogen	17.9	0.80	4.0	mg/L	10.0	16.6	13	75-125	0.2	25	QM-7
Batch 2203700 - Solvent Extract											
Blank (2203700-BLK1)					Prepared: 05/06/22 Analyzed: 05/09/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2203700-BS1)					Prepared: 05/06/22 Analyzed: 05/09/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.1	1.0	5.0	mg/L	40.0		98	78-114			
LCS Dup (2203700-BSD1)					Prepared: 05/06/22 Analyzed: 05/09/22						
Hexane Extractable Material (HEM, Oil & Grease)	38.9	1.0	5.0	mg/L	40.0		97	78-114	0.5	18	
Batch 2203721 - General Prep											
Blank (2203721-BLK1)					Prepared & Analyzed: 05/06/22						
Cyanide (total)	ND	0.0012	0.0050	mg/L							
LCS (2203721-BS1)					Prepared & Analyzed: 05/06/22						
Cyanide (total)	0.0765	0.0012	0.0050	mg/L	0.100		77	75-125			
LCS Dup (2203721-BSD1)					Prepared & Analyzed: 05/06/22						
Cyanide (total)	0.0795	0.0012	0.0050	mg/L	0.100		80	75-125	4	25	
Matrix Spike (2203721-MS1)			**Source: 22E0129-01**		Prepared & Analyzed: 05/06/22						
Cyanide (total)	0.0969	0.0012	0.0050	mg/L	0.100	0.00230	95	75-125			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E0159**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203721 - General Prep											
Matrix Spike Dup (2203721-MSD1)			**Source: 22E0129-01**		Prepared & Analyzed: 05/06/22						
Cyanide (total)	0.0962	0.0012	0.0050	mg/L	0.100	0.00230	94	75-125	0.7	25	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E0159
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203613 - EPA 3510B GCNV											
Blank (2203613-BLK1)					Prepared & Analyzed: 05/04/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Surrogate: o-Terphenyl	*0.0307*			*"*	*0.0250*		*123*	*65-135*			
LCS (2203613-BS1)					Prepared & Analyzed: 05/04/22						
Diesel	1.70	0.0021	0.050	mg/L	2.50		68	65-135			
Surrogate: o-Terphenyl	*0.0255*			*"*	*0.0250*		*102*	*65-135*			
LCS Dup (2203613-BSD1)					Prepared & Analyzed: 05/04/22						
Diesel	1.70	0.0021	0.050	mg/L	2.50		68	65-135	0.03	30	
Surrogate: o-Terphenyl	*0.0225*			*"*	*0.0250*		*90*	*65-135*			
Matrix Spike (2203613-MS1)			**Source: 22D1707-03**		Prepared & Analyzed: 05/04/22						
Diesel	1.63	0.0021	0.050	mg/L	2.50	ND	65	46-137			
Surrogate: o-Terphenyl	*0.0284*			*"*	*0.0250*		*114*	*65-135*			
Matrix Spike Dup (2203613-MSD1)			**Source: 22D1707-03**		Prepared & Analyzed: 05/04/22						
Diesel	1.85	0.0021	0.050	mg/L	2.50	ND	74	46-137	12	30	
Surrogate: o-Terphenyl	*0.0282*			*"*	*0.0250*		*113*	*65-135*			

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E0159
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203678 - EPA 200 Series											
Blank (2203678-BLK1)					Prepared: 05/05/22 Analyzed: 05/06/22						
Boron	ND	5.3	50	µg/L							
Calcium	ND	27	1000	"							
Chromium	ND	6.1	10	"							
Iron	16.0	9.1	100	"							J
Magnesium	ND	21	1000	"							
Manganese	ND	0.92	10	"							
Potassium	ND	61	1000	"							
Sodium	757	34	1000	"							J
LCS (2203678-BS1)					Prepared: 05/05/22 Analyzed: 05/06/22						
Boron	479	5.3	50	µg/L	500		96	85-115			
Calcium	5150	27	1000	"	5000		103	85-115			
Chromium	522	6.1	10	"	500		104	85-115			
Iron	500	9.1	100	"	500		100	85-115			
Magnesium	5230	21	1000	"	5000		105	85-115			
Manganese	507	0.92	10	"	500		101	85-115			
Potassium	5140	61	1000	"	5000		103	85-115			
Sodium	5110	34	1000	"	5000		102	85-115			
Matrix Spike (2203678-MS1)			**Source: 22E0121-01**		Prepared: 05/05/22 Analyzed: 05/06/22						
Boron	494	5.3	50	µg/L	500	43.1	90	70-130			
Calcium	25800	27	1000	"	5000	20900	97	70-130			
Chromium	508	6.1	10	"	500	ND	102	70-130			
Iron	490	9.1	100	"	500	15.9	95	70-130			
Magnesium	12000	21	1000	"	5000	7210	95	70-130			
Manganese	459	0.92	10	"	500	ND	92	70-130			
Potassium	6720	61	1000	"	5000	1870	97	70-130			
Sodium	35700	34	1000	"	5000	32400	66	70-130			QM-4X

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E0159**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203678 - EPA 200 Series											
Matrix Spike (2203678-MS2)			**Source: 22E0234-02**		Prepared: 05/05/22 Analyzed: 05/06/22						
Boron	1360	5.3	50	µg/L	500	974	76	70-130			
Calcium	23900	27	1000	"	5000	19700	84	70-130			
Chromium	486	6.1	10	"	500	ND	97	70-130			
Iron	484	9.1	100	"	500	25.1	92	70-130			
Magnesium	11700	21	1000	"	5000	7130	91	70-130			
Manganese	433	0.92	10	"	500	ND	87	70-130			
Potassium	22000	61	1000	"	5000	16000	119	70-130			
Sodium	118000	34	1000	"	5000	118000	NR	70-130			QM-4X
Batch 2203698 - EPA 200 Series											
Blank (2203698-BLK1)					Prepared: 05/06/22 Analyzed: 05/09/22						
Aluminum	ND	1.6	20	µg/L							
Barium	ND	0.14	5.0	"							
Manganese	0.972	0.050	2.0	"							J
Silver	ND	0.070	0.50	"							
LCS (2203698-BS1)					Prepared: 05/06/22 Analyzed: 05/09/22						
Aluminum	471	1.6	20	µg/L	500		94	85-115			
Barium	94.6	0.14	5.0	"	100		95	85-115			
Manganese	93.0	0.050	2.0	"	100		93	85-115			
Silver	98.7	0.070	0.50	"	100		99	85-115			
Matrix Spike (2203698-MS1)			**Source: 22E0159-01**		Prepared: 05/06/22 Analyzed: 05/09/22						
Aluminum	496	1.6	20	µg/L	500	25.9	94	70-130			
Barium	98.9	0.14	5.0	"	100	2.98	96	70-130			
Manganese	94.1	0.050	2.0	"	100	4.75	89	70-130			
Silver	98.9	0.070	0.50	"	100	ND	99	70-130			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E0159**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203698 - EPA 200 Series											
Matrix Spike (2203698-MS2)			**Source: 22E0306-01**		Prepared: 05/06/22	Analyzed: 05/09/22					
Aluminum	905	1.6	20	µg/L	500	431	95	70-130			
Barium	122	0.14	5.0	"	100	25.4	97	70-130			
Manganese	152	0.050	2.0	"	100	58.3	94	70-130			
Silver	96.8	0.070	0.50	"	100	ND	97	70-130			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E0159**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203730 - EPA 200 No Digestion											
Blank (2203730-BLK1)					Prepared: 05/06/22 Analyzed: 05/09/22						
Aluminum	ND	0.52	20	µg/L							
Antimony	ND	0.57	6.0	"							
Silver	ND	0.15	0.50	"							
LCS (2203730-BS1)					Prepared: 05/06/22 Analyzed: 05/09/22						
Aluminum	476	0.52	20	µg/L	500		95	85-115			
Antimony	84.7	0.57	6.0	"	100		85	85-115			
Silver	98.5	0.15	0.50	"	100		98	85-115			
Matrix Spike (2203730-MS1)			**Source: 22E0159-01**		Prepared: 05/06/22 Analyzed: 05/09/22						
Aluminum	474	0.52	20	µg/L	500	7.76	93	70-130			
Antimony	82.3	0.57	6.0	"	100	ND	82	70-130			
Silver	97.4	0.15	0.50	"	100	ND	97	70-130			
Batch 2203779 - EPA 200 No Digestion											
Blank (2203779-BLK1)					Prepared & Analyzed: 05/09/22						
Iron	11.4	6.8	100	µg/L							J
LCS (2203779-BS1)					Prepared & Analyzed: 05/09/22						
Iron	479	6.8	100	µg/L	500		96	85-115			
Matrix Spike (2203779-MS1)			**Source: 22E0129-01**		Prepared & Analyzed: 05/09/22						
Iron	465	6.8	100	µg/L	500	ND	93	70-130			
Matrix Spike (2203779-MS2)			**Source: 22E0243-01**		Prepared: 05/09/22 Analyzed: 05/10/22						
Iron	482	6.8	100	µg/L	500	ND	96	70-130			

05/11/22 11:47

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E0159**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203633 - EPA 5030 Water GC											
Blank (2203633-BLK1)					Prepared & Analyzed: 05/04/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*18.2*			"	*20.0*		*91*	*65-135*			
LCS (2203633-BS1)					Prepared & Analyzed: 05/04/22						
Gasoline	579	10	50	µg/L	500		116	70-130			
Surrogate: o-Chlorotoluene (Gas)	*18.6*			"	*20.0*		*93*	*65-135*			
LCS Dup (2203633-BSD1)					Prepared & Analyzed: 05/04/22						
Gasoline	511	10	50	µg/L	500		102	70-130	13	30	
Surrogate: o-Chlorotoluene (Gas)	*17.3*			"	*20.0*		*87*	*65-135*			
Matrix Spike (2203633-MS1)			**Source: 22E0159-01**		Prepared & Analyzed: 05/04/22						
Gasoline	308	10	50	µg/L	500	ND	62	68-132			QM-5
Surrogate: o-Chlorotoluene (Gas)	*17.4*			"	*20.0*		*87*	*65-135*			
Matrix Spike Dup (2203633-MSD1)			**Source: 22E0159-01**		Prepared & Analyzed: 05/04/22						
Gasoline	334	10	50	µg/L	500	ND	67	68-132	8	32	QM-5
Surrogate: o-Chlorotoluene (Gas)	*20.2*			"	*20.0*		*101*	*65-135*			

05/11/22 11:47

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E0159
COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2203642 - EPA 5030 Water MS											
Blank (2203642-BLK1)					Prepared & Analyzed: 05/04/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Surrogate: Toluene-d8	*9.64*			"	*10.0*		*96*	*72-125*			
LCS (2203642-BS1)					Prepared & Analyzed: 05/04/22						
Methyl tert-butyl ether	21.9	0.095	0.50	µg/L	20.0		109	52-130			
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			
LCS Dup (2203642-BSD1)					Prepared & Analyzed: 05/04/22						
Methyl tert-butyl ether	23.1	0.095	0.50	µg/L	20.0		116	52-130	6	30	
Surrogate: Toluene-d8	*10.0*			"	*10.0*		*100*	*72-125*			
Matrix Spike (2203642-MS1)			**Source: 22E0191-01**		Prepared & Analyzed: 05/04/22						
Methyl tert-butyl ether	20.3	0.095	0.50	µg/L	20.0	ND	102	52-140			
Surrogate: Toluene-d8	*10.2*			"	*10.0*		*102*	*72-125*			
Matrix Spike Dup (2203642-MSD1)			**Source: 22E0191-01**		Prepared & Analyzed: 05/04/22						
Methyl tert-butyl ether	22.0	0.095	0.50	µg/L	20.0	ND	110	52-140	8	30	
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			

05/11/22 11:47

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E0159**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
QM-5	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22E0159 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches.

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[X] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [X] NO [ ]

GLOBAL ID.

FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	ANALYSIS REQUESTED: TSS, TDS, Hardness, Alkalinity, NO2-N, NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS: 1	2	3	5	SPECIAL INSTRUCTIONS
5/3/22	1345	15-4-GC		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
5/3/22	0940	15-5-GC		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
5/3/22	1000	15-6-GC		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
5/3/22	1145	15-7-SFRR		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
5/3/22	1220	15-8-SFRR		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
5/3/22	1100	15-9-GCC		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
				Surface water			6											X	INVOICE TO:
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	**Project No. 750.10 Task 0620.01**
				Surface water			6											X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (2) HNO_3 (3) = COLD (4)= H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
[signature]	Esther Hollstein / Stillwater	5/3/22 1641		

RECEIVED AT LAB BY: [signature] DATE/TIME: 5/3/22 1640 CONDITIONS/COMMENTS: 1-4/0.7

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER _____ AIR BILL # _____

basic laboratory

2218 Railroad Avenue
Redding, California 96001
voice 530.243.7234
fax 530.243.7494

3860 Morrow Lane, Suite F
Chico, California 95928
voice 530.894.8966
fax 530.894.5143

Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02 UARP

Lab No: 22E0270
Reported: 05/19/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22E0270, received on 05/05/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: IS-4-GC
Matrix / Type: Surface Water (Grab)
Lab ID: 22E0270-01
Sampled: 05/03/22 13:45
Received: 05/05/22 10:05

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/13/22	05/12/22	B2E1136 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.26		0.04	0.10	"	"	"	"
Lead	"	0.012	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.91		0.22	0.50	EPA 1631E	05/07/22	05/07/22	B2E1015 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	05/18/22	05/17/22	B2E1255 / EDM
Nickel	ug/l	0.25		0.02	0.10	EPA 1638	05/13/22	05/12/22	B2E1136 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/11/22	05/10/22	B2E1042 / EDM
Zinc	"	1.42		0.12	0.50	EPA 1638	05/13/22	05/12/22	B2E1136 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/14/22	05/13/22	B2E1175 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.21		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.22		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/11/22	05/11/22	B2E1112 / EDM
Zinc	"	1.08		0.12	0.50	EPA 1638	05/14/22	05/13/22	B2E1175 / EDM

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Analytical Report

Description: IS-5-GC
Matrix / Type: Surface Water (Grab)
Lab ID: 22E0270-02
Sampled: 05/03/22 09:40
Received: 05/05/22 10:05

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/13/22	05/12/22	B2E1136 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.22		0.04	0.10	"	"	"	"
Lead	"	0.019	J	0.007	0.050	"	"	"	"
Mercury	ng/l	1.02		0.22	0.50	EPA 1631E	05/07/22	05/07/22	B2E1015 / DJC
Methyl Mercury as Mercury	"	0.023	J	0.017	0.050	EPA 1630	05/18/22	05/17/22	B2E1255 / EDM
Nickel	ug/l	0.28		0.02	0.10	EPA 1638	05/13/22	05/12/22	B2E1136 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/11/22	05/10/22	B2E1042 / EDM
Zinc	"	0.98		0.12	0.50	EPA 1638	05/13/22	05/12/22	B2E1136 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/14/22	05/13/22	B2E1175 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.21		0.04	0.10	"	"	"	"
Lead	"	0.007	J	0.007	0.050	"	"	"	"
Nickel	"	0.26		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/11/22	05/11/22	B2E1112 / EDM
Zinc	"	0.84		0.12	0.50	EPA 1638	05/14/22	05/13/22	B2E1175 / EDM

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Analytical Report

Description: IS-6-GC
Matrix / Type: Surface Water (Grab)
Lab ID: 22E0270-03
Sampled: 05/03/22 10:00
Received: 05/05/22 10:05

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/13/22	05/12/22	B2E1136 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.22		0.04	0.10	"	"	"	"
Lead	"	0.019	J	0.007	0.050	"	"	"	"
Mercury	ng/l	1.64		0.22	0.50	EPA 1631E	05/07/22	05/07/22	B2E1015 / DJC
Methyl Mercury as Mercury	"	0.021	J	0.017	0.050	EPA 1630	05/18/22	05/17/22	B2E1255 / EDM
Nickel	ug/l	0.28		0.02	0.10	EPA 1638	05/13/22	05/12/22	B2E1136 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/11/22	05/10/22	B2E1042 / EDM
Zinc	"	1.53		0.12	0.50	EPA 1638	05/13/22	05/12/22	B2E1136 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/14/22	05/13/22	B2E1175 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.21		0.04	0.10	"	"	"	"
Lead	"	0.008	J	0.007	0.050	"	"	"	"
Nickel	"	0.26		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/11/22	05/11/22	B2E1112 / EDM
Zinc	"	0.68		0.12	0.50	EPA 1638	05/14/22	05/13/22	B2E1175 / EDM

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Analytical Report

Description: IS-7-SFRR
Matrix / Type: Surface Water (Grab)
Lab ID: 22E0270-04
Sampled: 05/03/22 11:45
Received: 05/05/22 10:05

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/13/22	05/12/22	B2E1136 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.21		0.04	0.10	"	"	"	"
Lead	"	0.012	J	0.007	0.050	"	"	"	"
Mercury	ng/l	1.11		0.22	0.50	EPA 1631E	05/07/22	05/07/22	B2E1015 / DJC
Methyl Mercury as Mercury	"	0.019	J	0.017	0.050	EPA 1630	05/18/22	05/17/22	B2E1255 / EDM
Nickel	ug/l	0.18		0.02	0.10	EPA 1638	05/13/22	05/12/22	B2E1136 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/11/22	05/10/22	B2E1042 / EDM
Zinc	"	0.72		0.12	0.50	EPA 1638	05/13/22	05/12/22	B2E1136 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/14/22	05/13/22	B2E1175 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.18		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.18		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/11/22	05/11/22	B2E1112 / EDM
Zinc	"	0.47	J	0.12	0.50	EPA 1638	05/14/22	05/13/22	B2E1175 / EDM

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Analytical Report

Description: IS-8-SFRR
Matrix / Type: Surface Water (Grab)
Lab ID: 22E0270-05
Sampled: 05/03/22 12:20
Received: 05/05/22 10:05

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/13/22	05/12/22	B2E1136 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.21		0.04	0.10	"	"	"	"
Lead	"	0.014	J	0.007	0.050	"	"	"	"
Mercury	ng/l	1.14		0.22	0.50	EPA 1631E	05/07/22	05/07/22	B2E1015 / DJC
Methyl Mercury as Mercury	"	0.031	J	0.017	0.050	EPA 1630	05/18/22	05/17/22	B2E1255 / EDM
Nickel	ug/l	0.19		0.02	0.10	EPA 1638	05/13/22	05/12/22	B2E1136 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/11/22	05/10/22	B2E1042 / EDM
Zinc	"	0.56		0.12	0.50	EPA 1638	05/13/22	05/12/22	B2E1136 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/14/22	05/13/22	B2E1175 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.19		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.18		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/11/22	05/11/22	B2E1112 / EDM
Zinc	"	0.38	J	0.12	0.50	EPA 1638	05/14/22	05/13/22	B2E1175 / EDM

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Analytical Report

Description: IS-9-GCC
Matrix / Type: Surface Water (Grab)
Lab ID: 22E0270-06
Sampled: 05/03/22 11:00
Received: 05/05/22 10:05

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/13/22	05/12/22	B2E1136 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.21		0.04	0.10	"	"	"	"
Lead	"	0.016	J	0.007	0.050	"	"	"	"
Mercury	ng/l	1.23		0.22	0.50	EPA 1631E	05/07/22	05/07/22	B2E1015 / DJC
Methyl Mercury as Mercury	"	0.024	J	0.017	0.050	EPA 1630	05/18/22	05/17/22	B2E1255 / EDM
Nickel	ug/l	0.26		0.02	0.10	EPA 1638	05/13/22	05/12/22	B2E1136 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/11/22	05/10/22	B2E1042 / EDM
Zinc	"	0.85		0.12	0.50	EPA 1638	05/13/22	05/12/22	B2E1136 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/14/22	05/13/22	B2E1175 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.20		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.24		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/11/22	05/11/22	B2E1112 / EDM
Zinc	"	0.61		0.12	0.50	EPA 1638	05/14/22	05/13/22	B2E1175 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total **Batch B2E1015 - BrCl Digestion**										
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	9.87	0.50	ng/l	10.0		98.7	77-123			
Matrix Spike	Source: 22E0026-01									
Mercury	10.5	0.50	ng/l	10.0	ND	105	71-125			
Matrix Spike	Source: 22E0270-06									
Mercury	11.6	0.50	ng/l	10.0	1.23	103	71-125			
Matrix Spike Dup	Source: 22E0026-01									
Mercury	9.82	0.50	ng/l	10.0	ND	98.2	71-125	6.94	24	

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2E1015 - BrCl Digestion										
Matrix Spike Dup	Source: 22E0270-06									
Mercury	11.6	0.50	ng/l	10.0	1.23	104	71-125	0.224	24	
Metals - Total Batch B2E1042 - EPA 200.8 Total										
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	208	2.0	ug/l	200		104	85-115			
Duplicate	Source: 22E0208-01									
Selenium	0.8	2.0	ug/l		0.7			10.6	20	J
Duplicate	Source: 22E0270-03									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22E0208-01									
Selenium	193	2.0	ug/l	200	0.7	95.9	75-125			
Matrix Spike	Source: 22E0270-03									
Selenium	208	2.0	ug/l	200	ND	104	75-125			
Metals - Total Batch B2E1136 - EPA 1638 - Closed Bottle Oven Digestion										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total **Batch B2E1136 - EPA 1638 - Closed Bottle Oven Digestion**										
Arsenic	1.16	0.50	ug/l	1.25		93.1	50-150			
Cadmium	0.25	0.10	ug/l	0.250		101	84-113			
Copper	0.24	0.10	ug/l	0.250		96.9	51-145			
Lead	0.131	0.050	ug/l	0.125		105	72-143			
Nickel	0.25	0.10	ug/l	0.250		101	68-134			
Zinc	1.29	0.50	ug/l	1.25		103	46-146			
LCS										
Arsenic	1.21	0.50	ug/l	1.25		96.8	50-150			
Cadmium	0.25	0.10	ug/l	0.250		99.5	84-113			
Copper	0.25	0.10	ug/l	0.250		100	51-145			
Lead	0.123	0.050	ug/l	0.125		98.7	72-143			
Nickel	0.26	0.10	ug/l	0.250		102	68-134			
Zinc	1.23	0.50	ug/l	1.25		98.7	46-146			
Matrix Spike	Source: 22E0270-01									
Arsenic	2.52	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.78	0.10	ug/l	0.500	0.26	104	51-145			
Lead	0.258	0.050	ug/l	0.250	0.012	98.5	72-143			
Nickel	0.76	0.10	ug/l	0.500	0.25	102	68-134			
Zinc	3.97	0.50	ug/l	2.50	1.42	102	46-146			
Matrix Spike	Source: 22E0386-01									
Arsenic	3.95	0.50	ug/l	2.50	1.43	101	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113			
Copper	3.64	0.10	ug/l	0.500	3.21	85.3	51-145			
Lead	0.380	0.050	ug/l	0.250	0.124	102	72-143			
Nickel	1.99	0.10	ug/l	0.500	1.52	94.6	68-134			
Zinc	37.1	0.50	ug/l	2.50	35.1	78.3	46-146			
Matrix Spike Dup	Source: 22E0270-01									
Arsenic	2.51	0.50	ug/l	2.50	ND	101	50-150	0.228	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.7	84-113	1.20	20	
Copper	0.76	0.10	ug/l	0.500	0.26	99.9	51-145	2.52	20	
Lead	0.259	0.050	ug/l	0.250	0.012	98.7	72-143	0.224	20	
Nickel	0.73	0.10	ug/l	0.500	0.25	95.4	68-134	4.38	20	
Zinc	3.88	0.50	ug/l	2.50	1.42	98.3	46-146	2.31	20	
Matrix Spike Dup	Source: 22E0386-01									
Arsenic	3.81	0.50	ug/l	2.50	1.43	95.2	50-150	3.60	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	97.8	84-113	3.74	20	
Copper	3.69	0.10	ug/l	0.500	3.21	96.2	51-145	1.48	20	
Lead	0.372	0.050	ug/l	0.250	0.124	99.2	72-143	2.21	20	
Nickel	1.97	0.10	ug/l	0.500	1.52	88.9	68-134	1.44	20	
Zinc	36.9	0.50	ug/l	2.50	35.1	73.0	46-146	0.357	20	
Metals - Total **Batch B2E1255 - EPA 1630 Distillation (Modified)**										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2E1255 - EPA 1630 Distillation (Modified)										
LCS										
Methyl Mercury as Mercury	2.01	0.050	ng/l	2.00		101	67-133			
Matrix Spike	Source: 22D1158-03									
Methyl Mercury as Mercury	1.12	0.050	ng/l	1.00	ND	112	65-135			
Matrix Spike	Source: 22E0270-04									
Methyl Mercury as Mercury	1.26	0.050	ng/l	1.00	0.019	124	65-135			
Matrix Spike Dup	Source: 22D1158-03									
Methyl Mercury as Mercury	1.03	0.050	ng/l	1.00	ND	103	65-135	8.30	35	
Matrix Spike Dup	Source: 22E0270-04									
Methyl Mercury as Mercury	1.18	0.050	ng/l	1.00	0.019	116	65-135	6.64	35	
Metals - Dissolved Batch B2E1112 - EPA 200.8 Diss										
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	212	2.0	ug/l	200		106	85-115			
Duplicate	Source: 22E0218-02									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22E0270-05									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22E0218-02									
Selenium	214	2.0	ug/l	200	ND	107	75-125			
Matrix Spike	Source: 22E0270-05									
Selenium	209	2.0	ug/l	200	ND	105	75-125			
Metals - Dissolved Batch B2E1175 - EPA 1638 - Dissolved										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	0.15	0.50	ug/l							QB-05, J
Blank										
Arsenic	ND	0.50	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved	**Batch B2E1175 - EPA 1638 - Dissolved**									
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.26	0.10	ug/l	0.250		102	84-113			
Copper	0.26	0.10	ug/l	0.250		104	51-145			
Lead	0.132	0.050	ug/l	0.125		106	72-143			
Nickel	0.25	0.10	ug/l	0.250		101	68-134			
Zinc	1.30	0.50	ug/l	1.25		104	46-146			
LCS										
Arsenic	1.26	0.50	ug/l	1.25		101	50-150			
Cadmium	0.26	0.10	ug/l	0.250		103	84-113			
Copper	0.26	0.10	ug/l	0.250		104	51-145			
Lead	0.133	0.050	ug/l	0.125		107	72-143			
Nickel	0.27	0.10	ug/l	0.250		107	68-134			
Zinc	1.28	0.50	ug/l	1.25		102	46-146			
Matrix Spike	Source: 22E0270-01									
Arsenic	2.64	0.50	ug/l	2.50	ND	105	50-150			
Cadmium	0.53	0.10	ug/l	0.500	ND	105	84-113			
Copper	0.73	0.10	ug/l	0.500	0.21	104	51-145			
Lead	0.264	0.050	ug/l	0.250	ND	106	72-143			
Nickel	0.73	0.10	ug/l	0.500	0.22	101	68-134			
Zinc	3.57	0.50	ug/l	2.50	1.08	99.4	46-146			
Matrix Spike	Source: 22E0386-04									
Arsenic	4.27	0.50	ug/l	2.50	1.68	103	50-150			
Cadmium	0.53	0.10	ug/l	0.500	ND	105	84-113			
Copper	2.14	0.10	ug/l	0.500	1.65	98.7	51-145			
Lead	0.272	0.050	ug/l	0.250	ND	109	72-143			
Nickel	1.09	0.10	ug/l	0.500	0.56	106	68-134			
Zinc	3.05	0.50	ug/l	2.50	0.59	98.5	46-146			
Matrix Spike Dup	Source: 22E0270-01									
Arsenic	2.67	0.50	ug/l	2.50	ND	107	50-150	1.17	20	
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113	3.73	20	
Copper	0.74	0.10	ug/l	0.500	0.21	105	51-145	0.732	20	
Lead	0.263	0.050	ug/l	0.250	ND	105	72-143	0.392	20	
Nickel	0.75	0.10	ug/l	0.500	0.22	105	68-134	2.63	20	
Zinc	3.68	0.50	ug/l	2.50	1.08	104	46-146	3.00	20	
Matrix Spike Dup	Source: 22E0386-04									
Arsenic	4.38	0.50	ug/l	2.50	1.68	108	50-150	2.75	20	
Cadmium	0.53	0.10	ug/l	0.500	ND	105	84-113	0.0261	20	
Copper	2.16	0.10	ug/l	0.500	1.65	102	51-145	0.868	20	
Lead	0.266	0.050	ug/l	0.250	ND	106	72-143	2.20	20	
Nickel	1.06	0.10	ug/l	0.500	0.56	99.7	68-134	2.98	20	
Zinc	3.05	0.50	ug/l	2.50	0.59	98.4	46-146	0.154	20	

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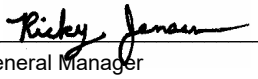
Notes and Definitions

QB-05	The method blank contains the analyte at a concentration level above the MDL, but below the MRL.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	CA-ELAP does not accredit this analyte or method as of December 2020. *(Newly released 2021 FOA tables may include this analyte or method.)*
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless samples are received on ice and collected on the same day as delivery. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: 
Ricky Jensen, General Manager
Pace Analytical Services LLC - Redding CA
California ELAP Cert #1677 & 2718

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

22E0270
1

LABORATORY WORK ORDER # 22E0270

PAGE 1 OF 1

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CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS
279 Coustea Place, Suite 400
Davis, CA 95618

REPORT TO ☑ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED: ☑ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one): ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED		SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	ANALYSES REQUESTED: T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	5/3/22	1345	AM (PM)	SW		✓	15-4-GC		6	✓	✓	✓	✓	✓	✓
2	5/3/22	0940	(AM) PM	SW		✓	15-5-GC		6	✓	✓	✓	✓	✓	✓
3	5/3/22	1000	(AM) PM	SW		✓	15-6-GC		6	✓	✓	✓	✓	✓	✓
4	5/3/22	1145	(AM) PM	SW		✓	15-7-SFRR		6	✓	✓	✓	✓	✓	✓
5	5/3/22	1220	AM (PM)	SW		✓	15-8-SFRR		6	✓	✓	✓	✓	✓	✓
6	5/3/22	1100	(AM) PM	SW		✓	15-9-GCC		6	✓	✓	✓	✓	✓	✓
			AM PM												
			AM PM												
			AM PM												
			AM PM												

SAMPLED BY: (please print) EHA, ERA[2]

RELINQUISHED DATE / TIME:

SAMPLING / ANALYSIS COMMENTS 5.5.22
2 Per bottles ~~5.5.22~~ 5.5.22 (1) Total and Dissolved LL 1638 Metals

☑ **I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS.** (www.basiclab.com/terms)

NAME	SIGNATURE	DATE
Emily Applequist		5/3/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
			5/3/22 / 15:45
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
	5.5.22 10:05		5.5.22 16:32

For Official Lab Comments Only

***SAMPLE TYPE CODES**

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22E0270

SHIPPING INFORMATION

Walk-In ☐
Courier ☐
FedEx ☑
UPS ☐
Other ☐

Cooler Present? Yes ☑ No ☐

Samples Received By: SMC Date: 5.5.22

	Yes	No
Samples received on ice?	☑	☐
Samples received the same day collected?	☐	☑

Ice type? ☑ Wet ☐ Blue ☐ Other melted

SAMPLE TEMPERATURES AT RECEIPT Therm. ID (Circle one): (Therm-36) Therm-37 Therm-59 Other: _____

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	5.8	-06	6.0	-11		-16	
-02	6.8	-07		-12		-17	
-03	10.0	-08		-13		-18	
-04	7.3	-09		-14		-19	
-05	7.0	-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: SMC Date: 5.5.22

	Yes	No	NA	
Custody seals present?	☐	☐	☑	
Samples in proper containers?	☑	☐		
Sample containers damaged?	☑	☑		-03 LL Hg received broken *
Sufficient sample volume for indicated tests?	☑	☐		
Samples received within holding times?	☑	☐		
Are VOA vials free of headspace?	☐	☐	☑	
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☑	

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☑	☐	☐
Preserved in the lab?	☑	☐	☐

Lab Preservation Date & Time 5.5.22 1115

☐ H2SO4 (ID_____) ☑ HNO3 (ID 21B14036) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑ By:_____ Meter ID:_____
Are proper preservation lables present?	☑	☐	☐

Preservation checked at Lab? Date & Time 5.5.22 1118 Test Strip (ID 1H20019)

Preservation and Preservation Checks performed by: RH

COMMENTS, DISCREPANCEIS, ANOMALIES

*Analyst subsampled from Methyl Hg for LL Hg SMC 5.5.22

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02 UARP

Lab No: 22E0814
Reported: 05/31/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22E0814, received on 05/17/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: R-IS-9-IHR
Matrix / Type: Surface Water (Grab)
Lab ID: 22E0814-01
Sampled: 05/16/22 10:30
Received: 05/17/22 10:10

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.15		0.04	0.10	"	"	"	"
Lead	"	0.013	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.63		0.22	0.50	EPA 1631E	05/24/22	05/24/22	B2E1387 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	05/25/22	05/24/22	B2E1425 / EDM
Nickel	ug/l	0.05	J	0.02	0.10	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/23/22	B2E1370 / BDL
Zinc	"	0.20	J	0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/27/22	05/27/22	B2E1504 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.13		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.04	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/25/22	B2E1442 / BDL
Zinc	"	0.20	J	0.12	0.50	EPA 1638	05/27/22	05/27/22	B2E1504 / EDM

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Analytical Report

Description: R-IS-11-IHR-B
Matrix / Type: Surface Water (Grab)
Lab ID: 22E0814-02
Sampled: 05/16/22 12:30
Received: 05/17/22 10:10

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.15		0.04	0.10	"	"	"	"
Lead	"	0.016	J	0.007	0.050	"	"	"	"
Mercury	ng/l	1.61		0.22	0.50	EPA 1631E	05/24/22	05/24/22	B2E1387 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	05/25/22	05/24/22	B2E1425 / EDM
Nickel	ug/l	0.09	J	0.02	0.10	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/24/22	B2E1427 / BDL
Zinc	"	0.64		0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/27/22	05/27/22	B2E1504 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.13		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.07	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/25/22	B2E1442 / BDL
Zinc	"	0.55		0.12	0.50	EPA 1638	05/27/22	05/27/22	B2E1504 / EDM

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Analytical Report

Description: R-IS-10-IHR
Matrix / Type: Surface Water (Grab)
Lab ID: 22E0814-03
Sampled: 05/16/22 11:20
Received: 05/17/22 10:10

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.16		0.04	0.10	"	"	"	"
Lead	"	0.017	J	0.007	0.050	"	"	"	"
Mercury	ng/l	1.06		0.22	0.50	EPA 1631E	05/24/22	05/24/22	B2E1387 / DJC
Methyl Mercury as Mercury	"	0.028	J	0.017	0.050	EPA 1630	05/25/22	05/24/22	B2E1425 / EDM
Nickel	ug/l	0.05	J	0.02	0.10	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/24/22	B2E1427 / BDL
Zinc	"	0.51		0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/27/22	05/27/22	B2E1504 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.13		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.04	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/25/22	B2E1442 / BDL
Zinc	"	0.31	J	0.12	0.50	EPA 1638	05/27/22	05/27/22	B2E1504 / EDM

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Analytical Report

Description: R-IS-11-IHR
Matrix / Type: Surface Water (Grab)
Lab ID: 22E0814-04
Sampled: 05/16/22 11:00
Received: 05/17/22 10:10

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.17		0.04	0.10	"	"	"	"
Lead	"	0.018	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.99		0.22	0.50	EPA 1631E	05/24/22	05/24/22	B2E1387 / DJC
Methyl Mercury as Mercury	"	0.047	J	0.017	0.050	EPA 1630	05/25/22	05/24/22	B2E1425 / EDM
Nickel	ug/l	0.08	J	0.02	0.10	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/24/22	B2E1427 / BDL
Zinc	"	1.24		0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/27/22	05/27/22	B2E1504 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.13		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.04	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/25/22	B2E1442 / BDL
Zinc	"	0.15	J	0.12	0.50	EPA 1638	05/27/22	05/27/22	B2E1504 / EDM

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Analytical Report

Description: IS-10-SFSC
Matrix / Type: Surface Water (Grab)
Lab ID: 22E0814-05
Sampled: 05/16/22 14:00
Received: 05/17/22 10:10

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.14		0.04	0.10	"	"	"	"
Lead	"	0.014	J	0.007	0.050	"	"	"	"
Mercury	ng/l	3.35		0.22	0.50	EPA 1631E	05/24/22	05/24/22	B2E1387 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	05/25/22	05/24/22	B2E1425 / EDM
Nickel	ug/l	0.04	J	0.02	0.10	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/23/22	B2E1370 / BDL
Zinc	"	0.27	J	0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/27/22	05/27/22	B2E1504 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.14		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.03	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/25/22	B2E1442 / BDL
Zinc	"	0.15	J	0.12	0.50	EPA 1638	05/27/22	05/27/22	B2E1504 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2E1370 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	205	2.0	ug/l	200		102	85-115			
Duplicate	Source: 22E0814-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22E0953-05									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22E0814-01									
Selenium	203	2.0	ug/l	200	ND	102	75-125			
Matrix Spike	Source: 22E0953-05									
Selenium	205	2.0	ug/l	200	ND	103	75-125			
Metals - Total	**Batch B2E1387 - BrCl Digestion**									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total **Batch B2E1387 - BrCl Digestion**										
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	10.1	0.50	ng/l	10.0		101	77-123			
Matrix Spike	Source: 22E0814-01									
Mercury	10.9	0.50	ng/l	10.0	0.63	103	71-125			
Matrix Spike	Source: 22E0904-03									
Mercury	11.7	0.50	ng/l	10.0	0.67	111	71-125			
Matrix Spike Dup	Source: 22E0814-01									
Mercury	12.9	0.50	ng/l	10.0	0.63	123	71-125	16.7	24	
Matrix Spike Dup	Source: 22E0904-03									
Mercury	10.6	0.50	ng/l	10.0	0.67	99.1	71-125	10.4	24	
Metals - Total **Batch B2E1425 - EPA 1630 Distillation (Modified)**										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.09	0.050	ng/l	2.00		104	67-133			
Matrix Spike	Source: 22E0615-01									
Methyl Mercury as Mercury	1.09	0.050	ng/l	1.00	ND	109	65-135			
Matrix Spike	Source: 22E0904-03									
Methyl Mercury as Mercury	1.16	0.050	ng/l	1.00	ND	116	65-135			
Matrix Spike Dup	Source: 22E0615-01									
Methyl Mercury as Mercury	1.18	0.050	ng/l	1.00	ND	118	65-135	7.48	35	
Matrix Spike Dup	Source: 22E0904-03									
Methyl Mercury as Mercury	1.14	0.050	ng/l	1.00	ND	114	65-135	1.83	35	
Metals - Total **Batch B2E1427 - EPA 200.8 Total**										
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	206	2.0	ug/l	200		103	85-115			
Duplicate	Source: 22E0814-02									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2E1427 - EPA 200.8 Total										
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22E0814-02									
Selenium	200	2.0	ug/l	200	ND	100	75-125			
Metals - Total Batch B2E1480 - EPA 1638 - Closed Bottle Oven Digestion										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.5	50-150			
Cadmium	0.25	0.10	ug/l	0.250		98.9	84-113			
Copper	0.26	0.10	ug/l	0.250		103	51-145			
Lead	0.121	0.050	ug/l	0.125		97.0	72-143			
Nickel	0.25	0.10	ug/l	0.250		101	68-134			
Zinc	1.32	0.50	ug/l	1.25		105	46-146			
LCS										
Arsenic	1.24	0.50	ug/l	1.25		98.9	50-150			
Cadmium	0.25	0.10	ug/l	0.250		99.0	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.119	0.050	ug/l	0.125		95.3	72-143			
Nickel	0.25	0.10	ug/l	0.250		98.3	68-134			
Zinc	1.16	0.50	ug/l	1.25		93.0	46-146			
Matrix Spike	Source: 22E0814-01									
Arsenic	2.50	0.50	ug/l	2.50	ND	100	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	99.3	84-113			

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total **Batch B2E1480 - EPA 1638 - Closed Bottle Oven Digestion**										
Copper	0.65	0.10	ug/l	0.500	0.15	101	51-145			
Lead	0.258	0.050	ug/l	0.250	0.013	98.0	72-143			
Nickel	0.53	0.10	ug/l	0.500	0.05	95.7	68-134			
Zinc	2.61	0.50	ug/l	2.50	0.20	96.5	46-146			
Matrix Spike	Source: 22E0953-03									
Arsenic	2.50	0.50	ug/l	2.50	ND	100	50-150			
Cadmium	0.49	0.10	ug/l	0.500	ND	97.7	84-113			
Copper	0.70	0.10	ug/l	0.500	0.20	101	51-145			
Lead	0.246	0.050	ug/l	0.250	ND	98.5	72-143			
Nickel	0.60	0.10	ug/l	0.500	0.11	98.5	68-134			
Zinc	2.54	0.50	ug/l	2.50	0.13	96.2	46-146			
Matrix Spike Dup	Source: 22E0814-01									
Arsenic	2.46	0.50	ug/l	2.50	ND	98.5	50-150	1.64	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	101	84-113	1.42	20	
Copper	0.64	0.10	ug/l	0.500	0.15	97.3	51-145	2.73	20	
Lead	0.258	0.050	ug/l	0.250	0.013	98.1	72-143	0.0826	20	
Nickel	0.55	0.10	ug/l	0.500	0.05	98.5	68-134	2.64	20	
Zinc	2.65	0.50	ug/l	2.50	0.20	97.8	46-146	1.21	20	
Matrix Spike Dup	Source: 22E0953-03									
Arsenic	2.49	0.50	ug/l	2.50	ND	99.5	50-150	0.641	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	97.7	84-113	0.0802	20	
Copper	0.70	0.10	ug/l	0.500	0.20	101	51-145	0.186	20	
Lead	0.253	0.050	ug/l	0.250	ND	101	72-143	2.62	20	
Nickel	0.60	0.10	ug/l	0.500	0.11	98.0	68-134	0.345	20	
Zinc	2.67	0.50	ug/l	2.50	0.13	101	46-146	4.97	20	
Metals - Dissolved **Batch B2E1442 - EPA 200.8 Diss**										
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	188	2.0	ug/l	200		93.8	85-115			
Duplicate	Source: 22E0814-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22E1060-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22E0814-01									
Selenium	189	2.0	ug/l	200	ND	94.3	75-125			
Matrix Spike	Source: 22E1060-01									
Selenium	190	2.0	ug/l	200	ND	94.8	75-125			
Metals - Dissolved **Batch B2E1504 - EPA 1638 - Dissolved**										

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved	**Batch B2E1504 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.27	0.50	ug/l	1.25		102	50-150			
Cadmium	0.26	0.10	ug/l	0.250		103	84-113			
Copper	0.27	0.10	ug/l	0.250		107	51-145			
Lead	0.128	0.050	ug/l	0.125		103	72-143			
Nickel	0.26	0.10	ug/l	0.250		104	68-134			
Zinc	1.28	0.50	ug/l	1.25		102	46-146			
LCS										
Arsenic	1.28	0.50	ug/l	1.25		102	50-150			
Cadmium	0.26	0.10	ug/l	0.250		102	84-113			
Copper	0.27	0.10	ug/l	0.250		106	51-145			
Lead	0.127	0.050	ug/l	0.125		101	72-143			
Nickel	0.27	0.10	ug/l	0.250		108	68-134			
Zinc	1.38	0.50	ug/l	1.25		110	46-146			
Matrix Spike	Source: 22E0814-01									
Arsenic	2.65	0.50	ug/l	2.50	ND	106	50-150			
Cadmium	0.52	0.10	ug/l	0.500	ND	104	84-113			
Copper	0.65	0.10	ug/l	0.500	0.13	104	51-145			
Lead	0.252	0.050	ug/l	0.250	ND	101	72-143			
Nickel	0.53	0.10	ug/l	0.500	0.04	98.5	68-134			
Zinc	2.78	0.50	ug/l	2.50	0.20	104	46-146			
Matrix Spike	Source: 22E0953-03									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved **Batch B2E1504 - EPA 1638 - Dissolved**										
Arsenic	2.68	0.50	ug/l	2.50	ND	107	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.70	0.10	ug/l	0.500	0.16	109	51-145			
Lead	0.253	0.050	ug/l	0.250	ND	101	72-143			
Nickel	0.62	0.10	ug/l	0.500	0.09	105	68-134			
Zinc	2.80	0.50	ug/l	2.50	0.17	105	46-146			
Matrix Spike Dup	Source: 22E0814-01									
Arsenic	2.59	0.50	ug/l	2.50	ND	103	50-150	2.54	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.0	84-113	4.71	20	
Copper	0.65	0.10	ug/l	0.500	0.13	105	51-145	0.384	20	
Lead	0.260	0.050	ug/l	0.250	ND	104	72-143	2.82	20	
Nickel	0.58	0.10	ug/l	0.500	0.04	107	68-134	8.09	20	
Zinc	2.76	0.50	ug/l	2.50	0.20	103	46-146	0.852	20	
Matrix Spike Dup	Source: 22E0953-03									
Arsenic	2.64	0.50	ug/l	2.50	ND	105	50-150	1.67	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.3	84-113	1.86	20	
Copper	0.70	0.10	ug/l	0.500	0.16	109	51-145	0.260	20	
Lead	0.256	0.050	ug/l	0.250	ND	103	72-143	1.34	20	
Nickel	0.62	0.10	ug/l	0.500	0.09	105	68-134	0.471	20	
Zinc	2.85	0.50	ug/l	2.50	0.17	107	46-146	1.85	20	

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	CA-ELAP does not accredit this analyte or method as of December 2020. *(Newly released 2021 FOA tables may include this analyte or method.)*
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless samples are received on ice and collected on the same day as delivery. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

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Analytical Report

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen

Ricky Jensen, General Manager
Pace Analytical Services LLC - Redding CA
California ELAP Cert #1677 & 2718

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

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LABORATORY WORK ORDER # 22E0814
PAGE 1 OF 1

basic laboratory

CLIENT NAME: Stillwater Sciences
PROJECT NAME: SMUD UARP 2022
PROJECT / PO #: 750.10/620.02
PWS # (If Applicable):

MAILING ADDRESS: 279 Coustea Place, Suite 400, Davis, CA 95618

REPORT TO ☑ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED: ☒ Standard ☐ Rush _____

INVOICE TO: same
EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#:
☑ Regulatory ☐ Non-Regulatory
QC Reported? (check one): ☐ None ☑ STD ☐ Other
Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	ANALYSES REQUESTED: T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	5.16	10:30 AM PM	SW			R.IS.9.IHR		6	X	X	X	X	X	X
2	5.16	12:30 AM PM				R.IS.11.IHR-B		6	X	X	X	X	X	X
3	5.16	11:20 AM PM				R.IS.10.IHR		6	X	X	X	X	X	X
4	5.16	11:00 AM PM				R.IS.11.IHR		6	X	X	X	X	X	X
5	5.16	2:00 AM PM				~~R~~.IS.~~11~~.SFSC 10#		6	X	X	X	X	X	X
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												

SAMPLED BY: (please print) BRUCE HITCH
RELINQUISHED DATE / TIME:

SAMPLING / ANALYSIS COMMENTS
*Per Email from Stillwater. (1) Total and Dissolved LL 1638 Metals
BB 5/18/22

☐ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME: BRUCE HITCH
SIGNATURE: [signature]
DATE: 5.16.22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
[signature]	5/17/22 1010	[signature]	5/18/22 1703

For Official Lab Comments Only

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22E0814

SHIPPING INFORMATION

Walk-In ☐
Courier ☐
FedEx ☒
UPS ☐
Other ☐

Cooler Present? Yes ☑ No ☐

Samples Received By: RBB Date: 5/17/22

	Yes	No
Samples received on ice?	☒	☐
Samples received the same day collected?	☐	☒

Ice type? ☒ Wet ☐ Blue ☐ Other _____

Melted

SAMPLE TEMPERATURES AT RECEIPT **Therm. ID (Circle one):** Therm-36 Therm-37 (Therm-59) Other: _____

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	7.5	-06		-11		-16	
-02	7.3	-07		-12		-17	
-03	9.5	-08		-13		-18	
-04	11.0	-09		-14		-19	
-05	11.5	-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: RBB Date: 5/17/22

	Yes	No	NA
Custody seals present?	☐	☐	☒
Samples in proper containers?	☒	☐	
Sample containers damaged?	☐	☒	
Sufficient sample volume for indicated tests?	☒	☐	
Samples received within holding times?	☒	☐	
Are VOA vials free of headspace?	☐	☐	☒
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☒

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☒	☐	☐
Preserved in the lab?	☒	☐	☐

Lab Preservation Date & Time 5-17-22 1147

☐ H2SO4 (ID_____) ☒ HNO3 (ID 2B14036) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☒
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☒	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☒
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☒
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☒
Are proper preservation lables present?	☒	☐	☐

By:_____ Meter ID:_____

Preservation checked at Lab? Date & Time 5.17.22 1149 Test Strip (ID 1H20019)

Preservation and Preservation Checks performed by: RH

COMMENTS, DISCREPANCEIS, ANOMALIES

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02 UARP

Lab No: 22E0904
Reported: 06/22/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22E0904, received on 05/18/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: IS-1-CC
Matrix / Type: Surface Water (Grab)
Lab ID: 22E0904-01
Sampled: 05/17/22 10:30
Received: 05/18/22 11:24

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.19		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Mercury	ng/l	0.88		0.22	0.50	EPA 1631E	05/24/22	05/24/22	B2E1387 / DJC
Methyl Mercury as Mercury	"	0.020	J	0.017	0.050	EPA 1630	05/25/22	05/24/22	B2E1425 / EDM
Nickel	ug/l	0.08	J	0.02	0.10	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/24/22	05/19/22	B2E1301 / BDL
Zinc	"	0.31	J	0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/27/22	05/27/22	B2E1504 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.18		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.07	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/24/22	05/24/22	B2E1393 / BDL
Zinc	"	0.35	J	0.12	0.50	EPA 1638	05/27/22	05/27/22	B2E1504 / EDM

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Analytical Report

Description: IS-2-CC
Matrix / Type: Surface Water (Grab)
Lab ID: 22E0904-02
Sampled: 05/17/22 11:30
Received: 05/18/22 11:24

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.20		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Mercury	ng/l	0.75		0.22	0.50	EPA 1631E	05/24/22	05/24/22	B2E1387 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	05/25/22	05/24/22	B2E1425 / EDM
Nickel	ug/l	0.09	J	0.02	0.10	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/24/22	05/19/22	B2E1301 / BDL
Zinc	"	0.30	CONF, J	0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/27/22	05/27/22	B2E1504 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.16		0.04	0.10	"	06/21/22	06/21/22	B2F1381 / EDM
Lead	"	ND		0.007	0.050	"	05/27/22	05/27/22	B2E1504 / EDM
Nickel	"	0.08	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/24/22	05/24/22	B2E1393 / BDL
Zinc	"	0.99	CONF	0.12	0.50	EPA 1638	05/27/22	05/27/22	B2E1504 / EDM

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Analytical Report

Description: IS-3-CC
Matrix / Type: Surface Water (Grab)
Lab ID: 22E0904-03
Sampled: 05/17/22 12:00
Received: 05/18/22 11:24

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.22		0.04	0.10	"	"	"	"
Lead	"	0.007	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.67		0.22	0.50	EPA 1631E	05/24/22	05/24/22	B2E1387 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	05/25/22	05/24/22	B2E1425 / EDM
Nickel	ug/l	0.08	J	0.02	0.10	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/24/22	05/19/22	B2E1301 / BDL
Zinc	"	0.29	J	0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/27/22	05/27/22	B2E1504 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.18		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.08	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/24/22	05/24/22	B2E1393 / BDL
Zinc	"	0.28	J	0.12	0.50	EPA 1638	05/27/22	05/27/22	B2E1504 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2E1301 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	209	2.0	ug/l	200		105	85-115			
Duplicate	Source: 22E0849-02									
Selenium	0.4	2.0	ug/l		ND			200	20	QR-04, J
Duplicate	Source: 22E0900-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22E0849-02									
Selenium	197	2.0	ug/l	200	ND	98.3	75-125			
Matrix Spike	Source: 22E0900-01									
Selenium	205	2.0	ug/l	200	ND	102	75-125			
Metals - Total	**Batch B2E1387 - BrCl Digestion**									

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total **Batch B2E1387 - BrCl Digestion**										
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	10.1	0.50	ng/l	10.0		101	77-123			
Matrix Spike	Source: 22E0814-01									
Mercury	10.9	0.50	ng/l	10.0	0.63	103	71-125			
Matrix Spike	Source: 22E0904-03									
Mercury	11.7	0.50	ng/l	10.0	0.67	111	71-125			
Matrix Spike Dup	Source: 22E0814-01									
Mercury	12.9	0.50	ng/l	10.0	0.63	123	71-125	16.7	24	
Matrix Spike Dup	Source: 22E0904-03									
Mercury	10.6	0.50	ng/l	10.0	0.67	99.1	71-125	10.4	24	
Metals - Total **Batch B2E1425 - EPA 1630 Distillation (Modified)**										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.09	0.050	ng/l	2.00		104	67-133			
Matrix Spike	Source: 22E0615-01									
Methyl Mercury as Mercury	1.09	0.050	ng/l	1.00	ND	109	65-135			
Matrix Spike	Source: 22E0904-03									
Methyl Mercury as Mercury	1.16	0.050	ng/l	1.00	ND	116	65-135			
Matrix Spike Dup	Source: 22E0615-01									
Methyl Mercury as Mercury	1.18	0.050	ng/l	1.00	ND	118	65-135	7.48	35	
Matrix Spike Dup	Source: 22E0904-03									
Methyl Mercury as Mercury	1.14	0.050	ng/l	1.00	ND	114	65-135	1.83	35	
Metals - Total **Batch B2E1480 - EPA 1638 - Closed Bottle Oven Digestion**										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2E1480 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.5	50-150			
Cadmium	0.25	0.10	ug/l	0.250		98.9	84-113			
Copper	0.26	0.10	ug/l	0.250		103	51-145			
Lead	0.121	0.050	ug/l	0.125		97.0	72-143			
Nickel	0.25	0.10	ug/l	0.250		101	68-134			
Zinc	1.32	0.50	ug/l	1.25		105	46-146			
LCS										
Arsenic	1.24	0.50	ug/l	1.25		98.9	50-150			
Cadmium	0.25	0.10	ug/l	0.250		99.0	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.119	0.050	ug/l	0.125		95.3	72-143			
Nickel	0.25	0.10	ug/l	0.250		98.3	68-134			
Zinc	1.16	0.50	ug/l	1.25		93.0	46-146			
Matrix Spike	Source: 22E0814-01									
Arsenic	2.50	0.50	ug/l	2.50	ND	100	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	99.3	84-113			
Copper	0.65	0.10	ug/l	0.500	0.15	101	51-145			
Lead	0.258	0.050	ug/l	0.250	0.013	98.0	72-143			
Nickel	0.53	0.10	ug/l	0.500	0.05	95.7	68-134			
Zinc	2.61	0.50	ug/l	2.50	0.20	96.5	46-146			
Matrix Spike	Source: 22E0953-03									
Arsenic	2.50	0.50	ug/l	2.50	ND	100	50-150			
Cadmium	0.49	0.10	ug/l	0.500	ND	97.7	84-113			
Copper	0.70	0.10	ug/l	0.500	0.20	101	51-145			
Lead	0.246	0.050	ug/l	0.250	ND	98.5	72-143			
Nickel	0.60	0.10	ug/l	0.500	0.11	98.5	68-134			
Zinc	2.54	0.50	ug/l	2.50	0.13	96.2	46-146			
Matrix Spike Dup	Source: 22E0814-01									

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2E1480 - EPA 1638 - Closed Bottle Oven Digestion										
Arsenic	2.46	0.50	ug/l	2.50	ND	98.5	50-150	1.64	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	101	84-113	1.42	20	
Copper	0.64	0.10	ug/l	0.500	0.15	97.3	51-145	2.73	20	
Lead	0.258	0.050	ug/l	0.250	0.013	98.1	72-143	0.0826	20	
Nickel	0.55	0.10	ug/l	0.500	0.05	98.5	68-134	2.64	20	
Zinc	2.65	0.50	ug/l	2.50	0.20	97.8	46-146	1.21	20	
Matrix Spike Dup	Source: 22E0953-03									
Arsenic	2.49	0.50	ug/l	2.50	ND	99.5	50-150	0.641	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	97.7	84-113	0.0802	20	
Copper	0.70	0.10	ug/l	0.500	0.20	101	51-145	0.186	20	
Lead	0.253	0.050	ug/l	0.250	ND	101	72-143	2.62	20	
Nickel	0.60	0.10	ug/l	0.500	0.11	98.0	68-134	0.345	20	
Zinc	2.67	0.50	ug/l	2.50	0.13	101	46-146	4.97	20	
Metals - Dissolved Batch B2E1393 - EPA 200.8 Diss										
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	190	2.0	ug/l	200		94.8	85-115			
Duplicate	Source: 22E0774-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22E0774-01									
Selenium	190	2.0	ug/l	200	ND	94.9	75-125			
Metals - Dissolved Batch B2E1504 - EPA 1638 - Dissolved										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved	**Batch B2E1504 - EPA 1638 - Dissolved**									
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.27	0.50	ug/l	1.25		102	50-150			
Cadmium	0.26	0.10	ug/l	0.250		103	84-113			
Copper	0.27	0.10	ug/l	0.250		107	51-145			
Lead	0.128	0.050	ug/l	0.125		103	72-143			
Nickel	0.26	0.10	ug/l	0.250		104	68-134			
Zinc	1.28	0.50	ug/l	1.25		102	46-146			
LCS										
Arsenic	1.28	0.50	ug/l	1.25		102	50-150			
Cadmium	0.26	0.10	ug/l	0.250		102	84-113			
Copper	0.27	0.10	ug/l	0.250		106	51-145			
Lead	0.127	0.050	ug/l	0.125		101	72-143			
Nickel	0.27	0.10	ug/l	0.250		108	68-134			
Zinc	1.38	0.50	ug/l	1.25		110	46-146			
Matrix Spike	Source: 22E0814-01									
Arsenic	2.65	0.50	ug/l	2.50	ND	106	50-150			
Cadmium	0.52	0.10	ug/l	0.500	ND	104	84-113			
Copper	0.65	0.10	ug/l	0.500	0.13	104	51-145			
Lead	0.252	0.050	ug/l	0.250	ND	101	72-143			
Nickel	0.53	0.10	ug/l	0.500	0.04	98.5	68-134			
Zinc	2.78	0.50	ug/l	2.50	0.20	104	46-146			
Matrix Spike	Source: 22E0953-03									
Arsenic	2.68	0.50	ug/l	2.50	ND	107	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.70	0.10	ug/l	0.500	0.16	109	51-145			
Lead	0.253	0.050	ug/l	0.250	ND	101	72-143			
Nickel	0.62	0.10	ug/l	0.500	0.09	105	68-134			
Zinc	2.80	0.50	ug/l	2.50	0.17	105	46-146			
Matrix Spike Dup	Source: 22E0814-01									
Arsenic	2.59	0.50	ug/l	2.50	ND	103	50-150	2.54	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.0	84-113	4.71	20	
Copper	0.65	0.10	ug/l	0.500	0.13	105	51-145	0.384	20	
Lead	0.260	0.050	ug/l	0.250	ND	104	72-143	2.82	20	
Nickel	0.58	0.10	ug/l	0.500	0.04	107	68-134	8.09	20	
Zinc	2.76	0.50	ug/l	2.50	0.20	103	46-146	0.852	20	
Matrix Spike Dup	Source: 22E0953-03									
Arsenic	2.64	0.50	ug/l	2.50	ND	105	50-150	1.67	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.3	84-113	1.86	20	
Copper	0.70	0.10	ug/l	0.500	0.16	109	51-145	0.260	20	
Lead	0.256	0.050	ug/l	0.250	ND	103	72-143	1.34	20	
Nickel	0.62	0.10	ug/l	0.500	0.09	105	68-134	0.471	20	
Zinc	2.85	0.50	ug/l	2.50	0.17	107	46-146	1.85	20	
Metals - Dissolved	**Batch B2F1381 - EPA 1638 - Dissolved**									
Blank										

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved **Batch B2F1381 - EPA 1638 - Dissolved**										
Copper	ND	0.10	ug/l							
Blank										
Copper	ND	0.10	ug/l							
LCS										
Copper	0.28	0.10	ug/l	0.250		112	51-145			
Matrix Spike	Source: 22F0523-02									
Copper	1.91	0.10	ug/l	0.500	1.42	97.9	51-145			
Matrix Spike Dup	Source: 22F0523-02									
Copper	1.91	0.10	ug/l	0.500	1.42	98.8	51-145	0.229	20	

Notes and Definitions

QR-04	Duplicate results are within one reporting limit and pass all necessary QC criteria.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
CONF	Sample was re-analyzed and confirmed.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	CA-ELAP does not accredit this analyte or method as of December 2020. *(Newly released 2021 FOA tables may include this analyte or method.)*
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless samples are received on ice and collected on the same day as delivery. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

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3860 Morrow Lane, Suite F
Chico, California 95928

voice 530.894.8966
fax 530.894.5143

Analytical Report

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen

Ricky Jensen, General Manager
Pace Analytical Services LLC - Redding CA
California ELAP Cert #1677 & 2718

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494
☐ 3860 Morrow Lane, Suite F Chico, CA 95928 (530) 894-8966 FAX: (530) 894-5143

LABORATORY WORK ORDER # 22E0904
PAGE 1 OF 1

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS
279 Coustea Place, Suite 400
Davis, CA 95618

REPORT TO ☑ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED
☑ Standard ☐ Rush _____

INVOICE TO: same
EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one) ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED		SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	5.17	10:30	AM PM	SW		/	IS-1-LL		6	x	x	x	x	x	x
2	5.17	11:30	AM PM	↓		/	IS-2-LL		6	x	x	x	x	x	x
3	5.17	12:00	AM PM	↓		/	IS-3-LL		6	x	x	x	x	x	x
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												

SAMPLED BY: (please print) Bruce Hitch / Adam Cohen *

RELINQUISHED DATE / TIME: 5.17.22

SAMPLING / ANALYSIS COMMENTS

(1) Total and Dissolved LL 1638 Metals
*per email RH 5.18.22

☐ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME	SIGNATURE	DATE
BRUCE HITCH		5.17.22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
	5.18.22 1124		5.18.22 1225

For Official Lab Comments Only

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

FRM-002.1 - Chain of Custody (rev 1.1)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22E0904

SHIPPING INFORMATION

Walk-In ☐
Courier ☐
FedEx ☑
UPS ☐
Other ☐

Cooler Present? Yes ☑ No ☐

Samples Received By: RH Date: 5.18.22

	Yes	No
Samples received on ice?	☑	☐
Samples received the same day collected?	☐	☑

Ice type? ☑ Wet ☐ Blue ☐ Other _____

SAMPLE TEMPERATURES AT RECEIPT Therm. ID (Circle one): Therm-36 Therm-37 (Therm-59) Other: _____

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	8.5	-06		-11		-16	
-02	5.7	-07		-12		-17	
-03	7.4	-08		-13		-18	
-04		-09		-14		-19	
-05		-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: RH Date: 5.18.22

	Yes	No	NA
Custody seals present?	☐	☐	☑
Samples in proper containers?	☑	☐	
Sample containers damaged?	☐	☑	
Sufficient sample volume for indicated tests?	☑	☐	
Samples received within holding times?	☑	☐	
Are VOA vials free of headspace?	☐	☐	☑
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☑

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☑	☐	☐
Preserved in the lab?	☑	☐	☐

Lab Preservation Date & Time 5.18.22 1142

☐ H2SO4 (ID_____) ☑ HNO3 (ID 2B14036) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑
Are proper preservation lables present?	☑	☐	☐

By:_____ Meter ID:_____

Preservation checked at Lab? Date & Time 5.18.22 1143 Test Strip (ID 1H20019)

Preservation and Preservation Checks performed by: RH

COMMENTS, DISCREPANCEIS, ANOMALIES

Rachel Howell

From: Emily Applequist <eapplequist@stillwatersci.com>
Sent: Wednesday, May 18, 2022 12:23 PM
To: Rachel Howell
Subject: RE: SMUD UARP 2022 5/18/2022

CAUTION: This email originated from outside Pace Analytical. Do not click links or open attachments unless you recognize the sender and know the content is safe.
Hi Rachel,

Thanks for reaching out. These sites were sampled by Bruce Hitch and Adam Cohen.

Emily Applequist
Environmental Scientist, Stillwater Sciences
office 530-756-7550 x382
eapplequist@stillwatersci.com

From: Rachel Howell <Rachel.Howell@pacelabs.com>
Sent: Wednesday, May 18, 2022 11:48 AM
To: Emily Applequist <eapplequist@stillwatersci.com>
Subject: SMUD UARP 2022 5/18/2022
Importance: High

Good Afternoon Emily,
We received the chain of custody for the samples taken on 5/17/22, however there is no name for the sampled by. I was hoping if you could email me back and inform me on who took the samples.
Thank you!

Rachel Howell
Client Services Tech
(530) 243-7234 | ex206 Direct | pacelabs.com

Pace Analytical Services, LLC - Redding, CA

PROCESS PAYMENTS ONLINE – click on the link below
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A 2.5% surcharge may be added to your credit card payment. Debit and ACH/e-checks incur no additional fees.

basic laboratory

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02 UARP

Lab No: 22E0953
Reported: 06/06/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22E0953, received on 05/19/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: IS-5-UVR
Matrix / Type: Surface Water (Grab)
Lab ID: 22E0953-01
Sampled: 05/18/22 10:00
Received: 05/19/22 11:20

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.19		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Mercury	ng/l	0.69		0.22	0.50	EPA 1631E	05/29/22	05/29/22	B2E1547 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	05/25/22	05/24/22	B2E1425 / EDM
Nickel	ug/l	0.10		0.02	0.10	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/23/22	B2E1370 / BDL
Zinc	"	0.26	J	0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/27/22	05/27/22	B2E1504 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.17		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.11		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/25/22	B2E1442 / BDL
Zinc	"	0.56		0.12	0.50	EPA 1638	05/27/22	05/27/22	B2E1504 / EDM

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Analytical Report

Description: IS-6-UVR
Matrix / Type: Surface Water (Grab)
Lab ID: 22E0953-02
Sampled: 05/18/22 12:15
Received: 05/19/22 11:20

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.20		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Mercury	ng/l	0.84		0.22	0.50	EPA 1631E	05/29/22	05/29/22	B2E1547 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	05/25/22	05/24/22	B2E1425 / EDM
Nickel	ug/l	0.11		0.02	0.10	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/23/22	B2E1370 / BDL
Zinc	"	0.36	J	0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/27/22	05/27/22	B2E1504 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.17		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.09	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/25/22	B2E1442 / BDL
Zinc	"	0.26	J	0.12	0.50	EPA 1638	05/27/22	05/27/22	B2E1504 / EDM

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Analytical Report

Description: IS-7-UVR
Matrix / Type: Surface Water (Grab)
Lab ID: 22E0953-03
Sampled: 05/18/22 11:00
Received: 05/19/22 11:20

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.20		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Mercury	ng/l	0.78		0.22	0.50	EPA 1631E	05/29/22	05/29/22	B2E1547 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	06/03/22	06/02/22	B2F0883 / EDM
Nickel	ug/l	0.11		0.02	0.10	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/23/22	B2E1370 / BDL
Zinc	"	0.13	J	0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/27/22	05/27/22	B2E1504 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.16		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.09	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/25/22	B2E1442 / BDL
Zinc	"	0.17	J	0.12	0.50	EPA 1638	05/27/22	05/27/22	B2E1504 / EDM

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Analytical Report

Description: IS-6-UVR-B
Matrix / Type: Surface Water (Grab)
Lab ID: 22E0953-04
Sampled: 05/18/22 12:30
Received: 05/19/22 11:20

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.21		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Mercury	ng/l	0.60		0.22	0.50	EPA 1631E	05/29/22	05/29/22	B2E1547 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	06/03/22	06/02/22	B2F0883 / EDM
Nickel	ug/l	0.11		0.02	0.10	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/23/22	B2E1370 / BDL
Zinc	"	0.32	J	0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/27/22	05/27/22	B2E1504 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.18		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.09	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/25/22	B2E1442 / BDL
Zinc	"	0.38	J	0.12	0.50	EPA 1638	05/27/22	05/27/22	B2E1504 / EDM

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Analytical Report

Description: IS-8-UVR
Matrix / Type: Surface Water (Grab)
Lab ID: 22E0953-05
Sampled: 05/18/22 13:30
Received: 05/19/22 11:20

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.19		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Mercury	ng/l	0.54		0.22	0.50	EPA 1631E	05/29/22	05/29/22	B2E1547 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	06/03/22	06/02/22	B2F0883 / EDM
Nickel	ug/l	0.11		0.02	0.10	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/23/22	B2E1370 / BDL
Zinc	"	0.16	J	0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/27/22	05/27/22	B2E1504 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.17		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.09	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/25/22	B2E1442 / BDL
Zinc	"	ND		0.12	0.50	EPA 1638	05/27/22	05/27/22	B2E1504 / EDM

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Analytical Report

Description: IS-8-UVR-B
Matrix / Type: Surface Water (Grab)
Lab ID: 22E0953-06
Sampled: 05/18/22 14:30
Received: 05/19/22 11:20

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.20		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Mercury	ng/l	0.76		0.22	0.50	EPA 1631E	05/29/22	05/29/22	B2E1547 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	06/03/22	06/02/22	B2F0883 / EDM
Nickel	ug/l	0.09	J	0.02	0.10	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/23/22	B2E1370 / BDL
Zinc	"	0.31	J	0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/27/22	05/27/22	B2E1504 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.19		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.09	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/25/22	B2E1442 / BDL
Zinc	"	0.25	J	0.12	0.50	EPA 1638	05/27/22	05/27/22	B2E1504 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2E1370 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	205	2.0	ug/l	200		102	85-115			
Duplicate	Source: 22E0814-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22E0953-05									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22E0814-01									
Selenium	203	2.0	ug/l	200	ND	102	75-125			
Matrix Spike	Source: 22E0953-05									
Selenium	205	2.0	ug/l	200	ND	103	75-125			
Metals - Total	**Batch B2E1425 - EPA 1630 Distillation (Modified)**									

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2E1425 - EPA 1630 Distillation (Modified)**									
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.09	0.050	ng/l	2.00		104	67-133			
Matrix Spike	Source: 22E0615-01									
Methyl Mercury as Mercury	1.09	0.050	ng/l	1.00	ND	109	65-135			
Matrix Spike	Source: 22E0904-03									
Methyl Mercury as Mercury	1.16	0.050	ng/l	1.00	ND	116	65-135			
Matrix Spike Dup	Source: 22E0615-01									
Methyl Mercury as Mercury	1.18	0.050	ng/l	1.00	ND	118	65-135	7.48	35	
Matrix Spike Dup	Source: 22E0904-03									
Methyl Mercury as Mercury	1.14	0.050	ng/l	1.00	ND	114	65-135	1.83	35	
Metals - Total	**Batch B2E1480 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2E1480 - EPA 1638 - Closed Bottle Oven Digestion**									
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.5	50-150			
Cadmium	0.25	0.10	ug/l	0.250		98.9	84-113			
Copper	0.26	0.10	ug/l	0.250		103	51-145			
Lead	0.121	0.050	ug/l	0.125		97.0	72-143			
Nickel	0.25	0.10	ug/l	0.250		101	68-134			
Zinc	1.32	0.50	ug/l	1.25		105	46-146			
LCS										
Arsenic	1.24	0.50	ug/l	1.25		98.9	50-150			
Cadmium	0.25	0.10	ug/l	0.250		99.0	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.119	0.050	ug/l	0.125		95.3	72-143			
Nickel	0.25	0.10	ug/l	0.250		98.3	68-134			
Zinc	1.16	0.50	ug/l	1.25		93.0	46-146			
Matrix Spike	Source: 22E0814-01									
Arsenic	2.50	0.50	ug/l	2.50	ND	100	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	99.3	84-113			
Copper	0.65	0.10	ug/l	0.500	0.15	101	51-145			
Lead	0.258	0.050	ug/l	0.250	0.013	98.0	72-143			
Nickel	0.53	0.10	ug/l	0.500	0.05	95.7	68-134			
Zinc	2.61	0.50	ug/l	2.50	0.20	96.5	46-146			
Matrix Spike	Source: 22E0953-03									
Arsenic	2.50	0.50	ug/l	2.50	ND	100	50-150			
Cadmium	0.49	0.10	ug/l	0.500	ND	97.7	84-113			
Copper	0.70	0.10	ug/l	0.500	0.20	101	51-145			
Lead	0.246	0.050	ug/l	0.250	ND	98.5	72-143			
Nickel	0.60	0.10	ug/l	0.500	0.11	98.5	68-134			
Zinc	2.54	0.50	ug/l	2.50	0.13	96.2	46-146			
Matrix Spike Dup	Source: 22E0814-01									
Arsenic	2.46	0.50	ug/l	2.50	ND	98.5	50-150	1.64	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	101	84-113	1.42	20	
Copper	0.64	0.10	ug/l	0.500	0.15	97.3	51-145	2.73	20	
Lead	0.258	0.050	ug/l	0.250	0.013	98.1	72-143	0.0826	20	
Nickel	0.55	0.10	ug/l	0.500	0.05	98.5	68-134	2.64	20	
Zinc	2.65	0.50	ug/l	2.50	0.20	97.8	46-146	1.21	20	
Matrix Spike Dup	Source: 22E0953-03									
Arsenic	2.49	0.50	ug/l	2.50	ND	99.5	50-150	0.641	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	97.7	84-113	0.0802	20	
Copper	0.70	0.10	ug/l	0.500	0.20	101	51-145	0.186	20	
Lead	0.253	0.050	ug/l	0.250	ND	101	72-143	2.62	20	
Nickel	0.60	0.10	ug/l	0.500	0.11	98.0	68-134	0.345	20	
Zinc	2.67	0.50	ug/l	2.50	0.13	101	46-146	4.97	20	
Metals - Total	**Batch B2E1547 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2E1547 - BrCl Digestion										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	9.89	0.50	ng/l	10.0		98.9	77-123			
Matrix Spike	Source: 22E0953-01									
Mercury	10.9	0.50	ng/l	10.0	0.69	102	71-125			
Matrix Spike	Source: 22E1030-01									
Mercury	10.1	0.50	ng/l	10.0	ND	101	71-125			
Matrix Spike Dup	Source: 22E0953-01									
Mercury	11.1	0.50	ng/l	10.0	0.69	104	71-125	1.96	24	
Matrix Spike Dup	Source: 22E1030-01									
Mercury	10.1	0.50	ng/l	10.0	ND	101	71-125	0.693	24	
Metals - Total Batch B2F0883 - EPA 1630 Distillation (Modified)										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.31	0.050	ng/l	2.00		116	67-133			
Matrix Spike	Source: 22E0953-03									
Methyl Mercury as Mercury	1.18	0.050	ng/l	1.00	ND	118	65-135			
Matrix Spike	Source: 22E1167-01									
Methyl Mercury as Mercury	1.17	0.050	ng/l	1.00	0.026	114	65-135			
Matrix Spike Dup	Source: 22E0953-03									
Methyl Mercury as Mercury	0.936	0.050	ng/l	1.00	ND	93.6	65-135	22.6	35	
Matrix Spike Dup	Source: 22E1167-01									
Methyl Mercury as Mercury	1.04	0.050	ng/l	1.00	0.026	101	65-135	11.6	35	
Metals - Dissolved Batch B2E1442 - EPA 200.8 Diss										
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	188	2.0	ug/l	200		93.8	85-115			

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved Batch B2E1442 - EPA 200.8 Diss										
Duplicate	Source: 22E0814-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22E1060-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22E0814-01									
Selenium	189	2.0	ug/l	200	ND	94.3	75-125			
Matrix Spike	Source: 22E1060-01									
Selenium	190	2.0	ug/l	200	ND	94.8	75-125			
Metals - Dissolved Batch B2E1504 - EPA 1638 - Dissolved										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.27	0.50	ug/l	1.25		102	50-150			
Cadmium	0.26	0.10	ug/l	0.250		103	84-113			
Copper	0.27	0.10	ug/l	0.250		107	51-145			
Lead	0.128	0.050	ug/l	0.125		103	72-143			
Nickel	0.26	0.10	ug/l	0.250		104	68-134			
Zinc	1.28	0.50	ug/l	1.25		102	46-146			
LCS										
Arsenic	1.28	0.50	ug/l	1.25		102	50-150			
Cadmium	0.26	0.10	ug/l	0.250		102	84-113			

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved **Batch B2E1504 - EPA 1638 - Dissolved**										
Copper	0.27	0.10	ug/l	0.250		106	51-145			
Lead	0.127	0.050	ug/l	0.125		101	72-143			
Nickel	0.27	0.10	ug/l	0.250		108	68-134			
Zinc	1.38	0.50	ug/l	1.25		110	46-146			
Matrix Spike	Source: 22E0814-01									
Arsenic	2.65	0.50	ug/l	2.50	ND	106	50-150			
Cadmium	0.52	0.10	ug/l	0.500	ND	104	84-113			
Copper	0.65	0.10	ug/l	0.500	0.13	104	51-145			
Lead	0.252	0.050	ug/l	0.250	ND	101	72-143			
Nickel	0.53	0.10	ug/l	0.500	0.04	98.5	68-134			
Zinc	2.78	0.50	ug/l	2.50	0.20	104	46-146			
Matrix Spike	Source: 22E0953-03									
Arsenic	2.68	0.50	ug/l	2.50	ND	107	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.70	0.10	ug/l	0.500	0.16	109	51-145			
Lead	0.253	0.050	ug/l	0.250	ND	101	72-143			
Nickel	0.62	0.10	ug/l	0.500	0.09	105	68-134			
Zinc	2.80	0.50	ug/l	2.50	0.17	105	46-146			
Matrix Spike Dup	Source: 22E0814-01									
Arsenic	2.59	0.50	ug/l	2.50	ND	103	50-150	2.54	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.0	84-113	4.71	20	
Copper	0.65	0.10	ug/l	0.500	0.13	105	51-145	0.384	20	
Lead	0.260	0.050	ug/l	0.250	ND	104	72-143	2.82	20	
Nickel	0.58	0.10	ug/l	0.500	0.04	107	68-134	8.09	20	
Zinc	2.76	0.50	ug/l	2.50	0.20	103	46-146	0.852	20	
Matrix Spike Dup	Source: 22E0953-03									
Arsenic	2.64	0.50	ug/l	2.50	ND	105	50-150	1.67	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.3	84-113	1.86	20	
Copper	0.70	0.10	ug/l	0.500	0.16	109	51-145	0.260	20	
Lead	0.256	0.050	ug/l	0.250	ND	103	72-143	1.34	20	
Nickel	0.62	0.10	ug/l	0.500	0.09	105	68-134	0.471	20	
Zinc	2.85	0.50	ug/l	2.50	0.17	107	46-146	1.85	20	

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	CA-ELAP does not accredit this analyte or method as of December 2020. *(Newly released 2021 FOA tables may include this analyte or method.)*
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless samples are received on ice and collected on the same day as delivery. Regulating agencies may invalidate results if temperature requirements are not met.

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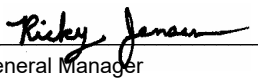
Note 2 According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: 
Ricky Jensen, General Manager
Pace Analytical Services LLC - Redding CA
California ELAP Cert #1677 & 2718

22E0953

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494
☐ 3860 Morrow Lane, Suite F Chico, CA 95928 (530) 894-8966 FAX: (530) 894-5143

LABORATORY WORK ORDER # 22E0953
PAGE 1 OF 1

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS
279 Coustea Place, Suite 400
Davis, CA 95618

REPORT TO ☑ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED
☒ Standard ☐ Rush _____

INVOICE TO: same
EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one): ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	5.18	10:00 AM PM	SW			IS.5.UVR'		6	X	X	X	X	X	X
2	5.18	12:15 AM PM	SW			IS.6.UVR'		6	X	X	X	X	X	X
3	5.18	11:00 AM PM				IS.7-UVR'		6	X	X	X	X	X	X
4	5.18	12:30 AM PM				IS.6.UVR-B		6	X	X	X	X	X	X
5	5.18	1:30 AM PM				IS.8.UVR.		6	X	X	X	X	X	X
6	5.18	2:30 AM PM				IS.8.UVR.S		6	X	X	X	X	X	X
		AM PM												
		AM PM												
		AM PM												
		AM PM												

SAMPLED BY: (please print) Cohen/Hitch

RELINQUISHED DATE / TIME:

SAMPLING / ANALYSIS COMMENTS
1 UVR per Stillwater email. 3B5120122 Sampled by per email
(1) Total and Dissolved LL 1638 Metals

☐ **I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS.** (www.basiclab.com/terms)

NAME BRUCE HITCH **SIGNATURE** [signature] **DATE** 5.18.22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB [signature]	DATE/TIME 5/19/22 1120	LOGGED BY LAB [signature]	DATE/TIME 5/20/22 1121

For Official Lab Comments Only

***SAMPLE TYPE CODES**

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22E0953

SHIPPING INFORMATION

Walk-In ☐
Courier ☐
FedEx ☑
UPS ☐
Other ☐

Cooler Present? Yes ☑ No ☐

Samples Received By: BB Date: 5/19/22

	Yes	No
Samples received on ice?	☒	☐
Samples received the same day collected?	☐	☑

Ice type? ☑ Wet ☐ Blue ☐ Other Melted

SAMPLE TEMPERATURES AT RECEIPT Therm. ID (Circle one): Therm-36 Therm-37 (Therm-59) Other: _____

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	4.5	-06	10.9	-11		-16	
-02	13.9	-07		-12		-17	
-03	9.4	-08		-13		-18	
-04	9.3	-09		-14		-19	
-05	8.7	-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: BB Date: 5/19/22

	Yes	No	NA	
Custody seals present?	☐	☐	☑	
Samples in proper containers?	☑	☐		
Sample containers damaged?	☐	☑		
Sufficient sample volume for indicated tests?	☑	☐		
Samples received within holding times?	☑	☐		
Are VOA vials free of headspace?	☐	☐	☑	
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☒	

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☒	☐	☐
Preserved in the lab?	☑	☐	☐

Lab Preservation Date & Time 5/19/22 1316

☐ H2SO4 (ID_____) ☒ HNO3 (ID 2B14D36) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☒
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☒	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☒
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑
Are proper preservation lables present?	☒	☐	☐

By:_____ Meter ID:_____

Preservation checked at Lab? Date & Time 5/19/22 1328 Test Strip (ID 1H20019)

Preservation and Preservation Checks performed by: BB

COMMENTS, DISCREPANCEIS, ANOMALIES

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

May 31, 2022

CLS Work Order #: 22E0999
COC #:

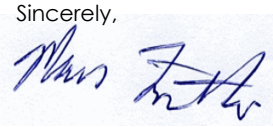
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 05/16/22 16:34. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

05/31/22 11:55

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E0999
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-9-IHR (22E0999-01) Water Sampled: 05/16/22 10:30 Received: 05/16/22 16:34										
Ammonia as N	**0.062**	0.025	0.10	mg/L	1	2204064	05/17/22	05/17/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**5.8**	0.50	5.0	"	"	2204061	05/17/22	05/17/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	05/17/22	"	
Chloride	**0.58**	0.026	0.50	"	"	2204033	05/17/22	05/17/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2204056	05/17/22	05/17/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2204178	05/20/22	05/23/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2204061	05/17/22	05/17/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2204033	05/17/22	05/17/22	EPA 300.0	
Orthophosphate as PO4	**0.039**	0.0051	0.15	"	"	2204029	05/16/22	05/17/22	SM4500-P E	J
Sulfate as SO4	**0.73**	0.038	0.50	"	"	2204033	05/17/22	05/17/22	EPA 300.0	
Total Alkalinity	**5.8**	1.0	5.0	"	"	2204061	05/17/22	05/17/22	SM2320B	
Total Dissolved Solids	**22**	5.0	10	"	"	2204067	05/17/22	05/18/22	SM2540C	
Total Hardness as CaCO3	**4.6**	0.19	1.0	"	"	2204043	05/17/22	05/18/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.16**	0.040	0.20	"	"	2204107	05/18/22	05/18/22	SM4500-NH3F-1997	J
Total Organic Carbon	**3.0**	0.54	1.0	"	"	2204036	05/17/22	05/17/22	SM5310B	
Total Phosphorus as P	ND		5.0	µg/Wipe	"	2204094	05/18/22	05/18/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	mg/L	"	2204102	05/18/22	05/18/22	SM2540D	
R-IS-11-IHR-B (22E0999-02) Water Sampled: 05/16/22 12:30 Received: 05/16/22 16:34										
Ammonia as N	**0.068**	0.025	0.10	mg/L	1	2204064	05/17/22	05/17/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**5.2**	0.50	5.0	"	"	2204061	05/17/22	05/17/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.54**	0.026	0.50	"	"	2204033	05/17/22	05/17/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2204056	05/17/22	05/17/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2204178	05/20/22	05/23/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2204061	05/17/22	05/17/22	SM2320B	
Nitrate/Nitrite as N	**0.18**	0.055	0.40	"	"	2204033	05/17/22	05/17/22	EPA 300.0	J
Orthophosphate as PO4	**0.047**	0.0051	0.15	"	"	2204029	05/16/22	05/17/22	SM4500-P E	J

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E0999
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-11-IHR-B (22E0999-02) Water	**Sampled: 05/16/22 12:30**		**Received: 05/16/22 16:34**							
Sulfate as SO4	**0.83**	0.038	0.50	mg/L	1	2204033	05/17/22	05/17/22	EPA 300.0	
Total Alkalinity	**5.2**	1.0	5.0	"	"	2204061	05/17/22	05/17/22	SM2320B	
Total Dissolved Solids	**27**	5.0	10	"	"	2204067	05/17/22	05/18/22	SM2540C	
Total Hardness as CaCO3	**4.7**	0.19	1.0	"	"	2204043	05/17/22	05/18/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.12**	0.040	0.20	"	"	2204107	05/18/22	05/18/22	SM4500-NH3F-1997	J
Total Organic Carbon	**2.3**	0.54	1.0	"	"	2204036	05/17/22	05/17/22	SM5310B	
Total Phosphorus as P	**0.025**		5.0	µg/Wipe	"	2204094	05/18/22	05/18/22	SM4500-P E	J
Total Suspended Solids	ND	2.0	5.0	mg/L	"	2204102	05/18/22	05/18/22	SM2540D	
R-IS-10-IHR (22E0999-03) Water	**Sampled: 05/16/22 11:20**		**Received: 05/16/22 16:34**							
Ammonia as N	**0.056**	0.025	0.10	mg/L	1	2204064	05/17/22	05/17/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**5.6**	0.50	5.0	"	"	2204061	05/17/22	05/17/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.99**	0.026	0.50	"	"	2204033	05/17/22	05/17/22	EPA 300.0	
Cyanide (total)	**0.0019**	0.0012	0.0050	"	"	2204056	05/17/22	05/17/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2204178	05/20/22	05/23/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2204061	05/17/22	05/17/22	SM2320B	
Nitrate/Nitrite as N	**0.16**	0.055	0.40	"	"	2204033	05/17/22	05/17/22	EPA 300.0	J
Orthophosphate as PO4	**0.030**	0.0051	0.15	"	"	2204029	05/16/22	05/17/22	SM4500-P E	J
Sulfate as SO4	**1.1**	0.038	0.50	"	"	2204033	05/17/22	05/17/22	EPA 300.0	
Total Alkalinity	**5.6**	1.0	5.0	"	"	2204061	05/17/22	05/17/22	SM2320B	
Total Dissolved Solids	**28**	5.0	10	"	"	2204067	05/17/22	05/18/22	SM2540C	
Total Hardness as CaCO3	**4.8**	0.19	1.0	"	"	2204043	05/17/22	05/18/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.22**	0.040	0.20	"	"	2204107	05/18/22	05/18/22	SM4500-NH3F-1997	
Total Organic Carbon	**3.5**	0.54	1.0	"	"	2204036	05/17/22	05/17/22	SM5310B	
Total Phosphorus as P	**0.17**		5.0	µg/Wipe	"	2204094	05/18/22	05/18/22	SM4500-P E	J
Total Suspended Solids	ND	2.0	5.0	mg/L	"	2204102	05/18/22	05/18/22	SM2540D	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E0999
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-11-IHR (22E0999-04) Water Sampled: 05/16/22 11:00 Received: 05/16/22 16:34										
Ammonia as N	**0.034**	0.025	0.10	mg/L	1	2204064	05/17/22	05/17/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**6.0**	0.50	5.0	"	"	2204061	05/17/22	05/17/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.86**	0.026	0.50	"	"	2204033	05/17/22	05/17/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2204056	05/17/22	05/17/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2204178	05/20/22	05/23/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2204061	05/17/22	05/17/22	SM2320B	
Nitrate/Nitrite as N	**0.16**	0.055	0.40	"	"	2204033	05/17/22	05/17/22	EPA 300.0	J
Orthophosphate as PO4	**0.018**	0.0051	0.15	"	"	2204029	05/16/22	05/17/22	SM4500-P E	J
Sulfate as SO4	**1.1**	0.038	0.50	"	"	2204033	05/17/22	05/17/22	EPA 300.0	
Total Alkalinity	**6.0**	1.0	5.0	"	"	2204061	05/17/22	05/17/22	SM2320B	
Total Dissolved Solids	**24**	5.0	10	"	"	2204067	05/17/22	05/18/22	SM2540C	
Total Hardness as CaCO3	**4.7**	0.19	1.0	"	"	2204043	05/17/22	05/18/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.31**	0.040	0.20	"	"	2204107	05/18/22	05/18/22	SM4500-NH3F-1997	
Total Organic Carbon	**3.6**	0.54	1.0	"	"	2204036	05/17/22	05/17/22	SM5310B	
Total Phosphorus as P	**0.025**		5.0	µg/Wipe	"	2204094	05/18/22	05/18/22	SM4500-P E	J
Total Suspended Solids	ND	2.0	5.0	mg/L	"	2204102	05/18/22	05/18/22	SM2540D	
IS-10-SFSC (22E0999-05) Water Sampled: 05/16/22 14:00 Received: 05/16/22 16:34										
Ammonia as N	**0.038**	0.025	0.10	mg/L	1	2204064	05/17/22	05/17/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**6.0**	0.50	5.0	"	"	2204061	05/17/22	05/17/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.54**	0.026	0.50	"	"	2204033	05/17/22	05/17/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2204056	05/17/22	05/17/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2204178	05/20/22	05/23/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2204061	05/17/22	05/17/22	SM2320B	
Nitrate/Nitrite as N	**0.086**	0.055	0.40	"	"	2204033	05/17/22	05/17/22	EPA 300.0	J
Orthophosphate as PO4	**0.047**	0.0051	0.15	"	"	2204029	05/16/22	05/17/22	SM4500-P E	J

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E0999
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-10-SFSC (22E0999-05) Water	**Sampled: 05/16/22 14:00**		**Received: 05/16/22 16:34**							
Sulfate as SO4	**0.84**	0.038	0.50	mg/L	1	2204033	05/17/22	05/17/22	EPA 300.0	
Total Alkalinity	**6.0**	1.0	5.0	"	"	2204061	05/17/22	05/17/22	SM2320B	
Total Dissolved Solids	**19**	5.0	10	"	"	2204067	05/17/22	05/18/22	SM2540C	
Total Hardness as CaCO3	**4.8**	0.19	1.0	"	"	2204043	05/17/22	05/18/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.10**	0.040	0.20	"	"	2204107	05/18/22	05/18/22	SM4500-NH3F-1997	J
Total Organic Carbon	**2.6**	0.54	1.0	"	"	2204036	05/17/22	05/17/22	SM5310B	
Total Phosphorus as P	**0.31**		5.0	µg/Wipe	"	2204094	05/18/22	05/18/22	SM4500-P E	J
Total Suspended Solids	ND	2.0	5.0	mg/L	"	2204102	05/18/22	05/18/22	SM2540D	

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Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E0999
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-9-IHR (22E0999-01) Water Sampled: 05/16/22 10:30 Received: 05/16/22 16:34										
Diesel	ND	0.0021	0.050	mg/L	1	2204109	05/18/22	05/19/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*146 %*	*65-135*		"	"	"	"	*QS-4*
R-IS-11-IHR-B (22E0999-02) Water Sampled: 05/16/22 12:30 Received: 05/16/22 16:34										
Diesel	ND	0.0021	0.050	mg/L	1	2204109	05/18/22	05/19/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*123 %*	*65-135*		"	"	"	"	
R-IS-10-IHR (22E0999-03) Water Sampled: 05/16/22 11:20 Received: 05/16/22 16:34										
Diesel	ND	0.0021	0.050	mg/L	1	2204109	05/18/22	05/19/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*118 %*	*65-135*		"	"	"	"	
R-IS-11-IHR (22E0999-04) Water Sampled: 05/16/22 11:00 Received: 05/16/22 16:34										
Diesel	ND	0.0021	0.050	mg/L	1	2204109	05/18/22	05/19/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E0999**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-11-IHR (22E0999-04) Water Sampled: 05/16/22 11:00 Received: 05/16/22 16:34										
Surrogate: o-Terphenyl			*121 %*	*65-135*		*2204109*	"	*05/19/22*	*EPA 8015M*	
IS-10-SFSC (22E0999-05) Water Sampled: 05/16/22 14:00 Received: 05/16/22 16:34										
Diesel	ND	0.0021	0.050	mg/L	1	2204109	05/18/22	05/19/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*111 %*	*65-135*		*"*	*"*	*"*	*"*	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E0999
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-9-IHR (22E0999-01) Water Sampled: 05/16/22 10:30 Received: 05/16/22 16:34										
Aluminum	**60**	1.6	20	µg/L	1	2204038	05/17/22	05/17/22	EPA 200.8	
Barium	**6.3**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1400**	27	1000	"	"	2204043	05/17/22	05/18/22	EPA 200.7	
Iron	**48**	9.1	100	"	"	"	"	"	"	J
Magnesium	**260**	21	1000	"	"	"	"	"	"	J
Manganese	**2.8**	0.050	2.0	"	"	2204038	05/17/22	05/17/22	EPA 200.8	
Potassium	**1000**	61	1000	"	"	2204043	05/17/22	05/18/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2204038	05/17/22	05/17/22	EPA 200.8	
Sodium	**1100**	34	1000	"	"	2204043	05/17/22	05/18/22	EPA 200.7	
R-IS-11-IHR-B (22E0999-02) Water Sampled: 05/16/22 12:30 Received: 05/16/22 16:34										
Aluminum	**29**	1.6	20	µg/L	1	2204038	05/17/22	05/17/22	EPA 200.8	
Barium	**7.1**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1400**	27	1000	"	"	2204043	05/17/22	05/18/22	EPA 200.7	
Iron	**29**	9.1	100	"	"	"	"	"	"	J
Magnesium	**270**	21	1000	"	"	"	"	"	"	J
Manganese	**5.2**	0.050	2.0	"	"	2204038	05/17/22	05/17/22	EPA 200.8	
Potassium	**530**	61	1000	"	"	2204043	05/17/22	05/18/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2204038	05/17/22	05/17/22	EPA 200.8	
Sodium	**1100**	34	1000	"	"	2204043	05/17/22	05/18/22	EPA 200.7	
R-IS-10-IHR (22E0999-03) Water Sampled: 05/16/22 11:20 Received: 05/16/22 16:34										
Aluminum	**63**	1.6	20	µg/L	1	2204038	05/17/22	05/17/22	EPA 200.8	
Barium	**6.5**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1500**	27	1000	"	"	2204043	05/17/22	05/18/22	EPA 200.7	
Iron	**32**	9.1	100	"	"	"	"	"	"	J
Magnesium	**280**	21	1000	"	"	"	"	"	"	J
Manganese	**2.9**	0.050	2.0	"	"	2204038	05/17/22	05/17/22	EPA 200.8	
Potassium	**960**	61	1000	"	"	2204043	05/17/22	05/18/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2204038	05/17/22	05/17/22	EPA 200.8	
Sodium	**1100**	34	1000	"	"	2204043	05/17/22	05/18/22	EPA 200.7	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E0999
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-11-IHR (22E0999-04) Water Sampled: 05/16/22 11:00 Received: 05/16/22 16:34										
Aluminum	**63**	1.6	20	µg/L	1	2204038	05/17/22	05/17/22	EPA 200.8	
Barium	**6.7**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1400**	27	1000	"	"	2204043	05/17/22	05/18/22	EPA 200.7	
Iron	**48**	9.1	100	"	"	"	"	"	"	J
Magnesium	**270**	21	1000	"	"	"	"	"	"	J
Manganese	**3.3**	0.050	2.0	"	"	2204038	05/17/22	05/17/22	EPA 200.8	
Potassium	**790**	61	1000	"	"	2204043	05/17/22	05/18/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2204038	05/17/22	05/17/22	EPA 200.8	
Sodium	**1100**	34	1000	"	"	2204043	05/17/22	05/18/22	EPA 200.7	
IS-10-SFSC (22E0999-05) Water Sampled: 05/16/22 14:00 Received: 05/16/22 16:34										
Aluminum	**33**	1.6	20	µg/L	1	2204038	05/17/22	05/17/22	EPA 200.8	
Barium	**7.2**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1500**	27	1000	"	"	2204043	05/17/22	05/18/22	EPA 200.7	
Iron	**190**	9.1	100	"	"	"	"	"	"	
Magnesium	**270**	21	1000	"	"	"	"	"	"	J
Manganese	**6.2**	0.050	2.0	"	"	2204038	05/17/22	05/17/22	EPA 200.8	
Potassium	**1200**	61	1000	"	"	2204043	05/17/22	05/18/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2204038	05/17/22	05/17/22	EPA 200.8	
Sodium	**1100**	34	1000	"	"	2204043	05/17/22	05/18/22	EPA 200.7	

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Project Manager: Emily Applequist

CLS Work Order #: 22E0999
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-9-IHR (22E0999-01) Water Sampled: 05/16/22 10:30 Received: 05/16/22 16:34										
Aluminum	**21**	0.52	20	µg/L	1	2204433	05/27/22	05/27/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2204128	05/19/22	05/19/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2204433	05/27/22	05/27/22	EPA 200.8	
R-IS-11-IHR-B (22E0999-02) Water Sampled: 05/16/22 12:30 Received: 05/16/22 16:34										
Aluminum	**10**	0.52	20	µg/L	1	2204433	05/27/22	05/27/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2204128	05/19/22	05/19/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2204433	05/27/22	05/27/22	EPA 200.8	
R-IS-10-IHR (22E0999-03) Water Sampled: 05/16/22 11:20 Received: 05/16/22 16:34										
Aluminum	**19**	0.52	20	µg/L	1	2204433	05/27/22	05/27/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2204128	05/19/22	05/19/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2204433	05/27/22	05/27/22	EPA 200.8	
R-IS-11-IHR (22E0999-04) Water Sampled: 05/16/22 11:00 Received: 05/16/22 16:34										
Aluminum	**17**	0.52	20	µg/L	1	2204433	05/27/22	05/27/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2204128	05/19/22	05/19/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2204433	05/27/22	05/27/22	EPA 200.8	
IS-10-SFSC (22E0999-05) Water Sampled: 05/16/22 14:00 Received: 05/16/22 16:34										
Aluminum	**9.6**	0.52	20	µg/L	1	2204433	05/27/22	05/27/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2204128	05/19/22	05/19/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2204433	05/27/22	05/27/22	EPA 200.8	

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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E0999
COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-9-IHR (22E0999-01) Water Sampled: 05/16/22 10:30 Received: 05/16/22 16:34										
Gasoline	ND	10	50	µg/L	1	2204125	05/19/22	05/19/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*92 %*		*65-135*		"	"	"	"
R-IS-11-IHR-B (22E0999-02) Water Sampled: 05/16/22 12:30 Received: 05/16/22 16:34										
Gasoline	ND	10	50	µg/L	1	2204125	05/19/22	05/19/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*95 %*		*65-135*		"	"	"	"
R-IS-10-IHR (22E0999-03) Water Sampled: 05/16/22 11:20 Received: 05/16/22 16:34										
Gasoline	ND	10	50	µg/L	1	2204125	05/19/22	05/19/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*94 %*		*65-135*		"	"	"	"
R-IS-11-IHR (22E0999-04) Water Sampled: 05/16/22 11:00 Received: 05/16/22 16:34										
Gasoline	ND	10	50	µg/L	1	2204125	05/19/22	05/19/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*92 %*		*65-135*		"	"	"	"
IS-10-SFSC (22E0999-05) Water Sampled: 05/16/22 14:00 Received: 05/16/22 16:34										
Gasoline	ND	10	50	µg/L	1	2204125	05/19/22	05/19/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*91 %*		*65-135*		"	"	"	"

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CLS Work Order #: 22E0999
COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-9-IHR (22E0999-01) Water Sampled: 05/16/22 10:30 Received: 05/16/22 16:34										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2204112	05/18/22	05/18/22	EPA 8260B	
Surrogate: Toluene-d8			*97 %*		*72-125*		"	"	"	"
R-IS-11-IHR-B (22E0999-02) Water Sampled: 05/16/22 12:30 Received: 05/16/22 16:34										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2204112	05/18/22	05/18/22	EPA 8260B	
Surrogate: Toluene-d8			*96 %*		*72-125*		"	"	"	"
R-IS-10-IHR (22E0999-03) Water Sampled: 05/16/22 11:20 Received: 05/16/22 16:34										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2204112	05/18/22	05/18/22	EPA 8260B	
Surrogate: Toluene-d8			*96 %*		*72-125*		"	"	"	"
R-IS-11-IHR (22E0999-04) Water Sampled: 05/16/22 11:00 Received: 05/16/22 16:34										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2204112	05/18/22	05/18/22	EPA 8260B	
Surrogate: Toluene-d8			*98 %*		*72-125*		"	"	"	"
IS-10-SFSC (22E0999-05) Water Sampled: 05/16/22 14:00 Received: 05/16/22 16:34										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2204112	05/18/22	05/18/22	EPA 8260B	
Surrogate: Toluene-d8			*96 %*		*72-125*		"	"	"	"

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Project Manager: Emily Applequist

CLS Work Order #: 22E0999
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204029 - General Preparation											
Blank (2204029-BLK1)					Prepared: 05/16/22 Analyzed: 05/17/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							
LCS (2204029-BS1)					Prepared: 05/16/22 Analyzed: 05/17/22						
Orthophosphate as PO4	0.908	0.0051	0.15	mg/L	0.918		99	80-120			
LCS Dup (2204029-BSD1)					Prepared: 05/16/22 Analyzed: 05/17/22						
Orthophosphate as PO4	0.855	0.0051	0.15	mg/L	0.918		93	80-120	6	20	
Matrix Spike (2204029-MS1)			**Source: 22E0973-01**		Prepared: 05/16/22 Analyzed: 05/17/22						
Orthophosphate as PO4	0.876	0.0051	0.15	mg/L	0.918	0.0100	94	75-125			
Matrix Spike Dup (2204029-MSD1)			**Source: 22E0973-01**		Prepared: 05/16/22 Analyzed: 05/17/22						
Orthophosphate as PO4	0.802	0.0051	0.15	mg/L	0.918	0.0100	86	75-125	9	25	
Batch 2204033 - General Prep											
Blank (2204033-BLK1)					Prepared & Analyzed: 05/17/22						
Sulfate as SO4	0.141	0.038	0.50	mg/L							J
Chloride	0.303	0.026	0.50	"							J
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2204033-BS1)					Prepared & Analyzed: 05/17/22						
Sulfate as SO4	4.80	0.038	0.50	mg/L	5.00		96	80-120			
Chloride	4.75	0.026	0.50	"	5.00		95	80-120			
Nitrate/Nitrite as N	3.97	0.055	0.40	"	4.00		99	80-120			
LCS Dup (2204033-BSD1)					Prepared & Analyzed: 05/17/22						
Chloride	4.62	0.026	0.50	mg/L	5.00		92	80-120	3	20	
Sulfate as SO4	4.70	0.038	0.50	"	5.00		94	80-120	2	20	
Nitrate/Nitrite as N	3.86	0.055	0.40	"	4.00		97	80-120	3	20	

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CLS Work Order #: 22E0999
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204033 - General Prep											
Matrix Spike (2204033-MS1)			**Source: 22E0999-01**		Prepared & Analyzed: 05/17/22						
Chloride	5.14	0.026	0.50	mg/L	5.00	0.582	91	80-120			
Sulfate as SO4	5.49	0.038	0.50	"	5.00	0.726	95	80-120			
Nitrate/Nitrite as N	3.98	0.055	0.40	"	4.00	ND	99	80-120			
Matrix Spike Dup (2204033-MSD1)			**Source: 22E0999-01**		Prepared & Analyzed: 05/17/22						
Chloride	5.11	0.026	0.50	mg/L	5.00	0.582	90	80-120	0.7	20	
Sulfate as SO4	5.45	0.038	0.50	"	5.00	0.726	95	80-120	0.7	20	
Nitrate/Nitrite as N	3.95	0.055	0.40	"	4.00	ND	99	80-120	0.6	20	
Batch 2204036 - General Prep											
Blank (2204036-BLK1)					Prepared & Analyzed: 05/17/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							
LCS (2204036-BS1)					Prepared & Analyzed: 05/17/22						
Total Organic Carbon	10.2	0.54	1.0	mg/L	10.0		102	75-125			
LCS Dup (2204036-BSD1)					Prepared & Analyzed: 05/17/22						
Total Organic Carbon	10.3	0.54	1.0	mg/L	10.0		103	75-125	1	25	
Matrix Spike (2204036-MS1)			**Source: 22E0806-01**		Prepared & Analyzed: 05/17/22						
Total Organic Carbon	12.8	0.54	1.0	mg/L	10.0	1.96	108	75-125			
Matrix Spike Dup (2204036-MSD1)			**Source: 22E0806-01**		Prepared & Analyzed: 05/17/22						
Total Organic Carbon	12.6	0.54	1.0	mg/L	10.0	1.96	106	75-125	1	25	

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CLS Work Order #: 22E0999
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204043 - EPA 200 Series											
Blank (2204043-BLK1)					Prepared: 05/17/22 Analyzed: 05/18/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2204043-BS1)					Prepared: 05/17/22 Analyzed: 05/18/22						
Total Hardness as CaCO3	34.4	0.19	1.0	mg/L	33.1		104	85-115			
Matrix Spike (2204043-MS1)			**Source: 22E0680-01**		Prepared: 05/17/22 Analyzed: 05/18/22						
Total Hardness as CaCO3	39.1	0.19	1.0	mg/L	33.1	5.06	103	70-130			
Matrix Spike (2204043-MS2)			**Source: 22E0999-05**		Prepared: 05/17/22 Analyzed: 05/18/22						
Total Hardness as CaCO3	38.7	0.19	1.0	mg/L	33.1	4.75	103	70-130			
Batch 2204056 - General Prep											
Blank (2204056-BLK1)					Prepared & Analyzed: 05/17/22						
Cyanide (total)	ND	0.0012	0.0050	mg/L							
LCS (2204056-BS1)					Prepared & Analyzed: 05/17/22						
Cyanide (total)	0.0802	0.0012	0.0050	mg/L	0.100		80	75-125			
LCS Dup (2204056-BSD1)					Prepared & Analyzed: 05/17/22						
Cyanide (total)	0.0832	0.0012	0.0050	mg/L	0.100		83	75-125	4	25	
Matrix Spike (2204056-MS1)			**Source: 22E0999-01**		Prepared & Analyzed: 05/17/22						
Cyanide (total)	0.0810	0.0012	0.0050	mg/L	0.100	ND	81	75-125			
Matrix Spike Dup (2204056-MSD1)			**Source: 22E0999-01**		Prepared & Analyzed: 05/17/22						
Cyanide (total)	0.0839	0.0012	0.0050	mg/L	0.100	ND	84	75-125	4	25	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204061 - General Preparation											
Blank (2204061-BLK1)					Prepared & Analyzed: 05/17/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Duplicate (2204061-DUP1)			**Source: 22E0973-01**		Prepared & Analyzed: 05/17/22						
Total Alkalinity	25.6	1.0	5.0	mg/L		26.0			2	20	
Bicarbonate as CaCO3	25.6	0.50	5.0	"		26.0			2	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Batch 2204064 - General Preparation											
Blank (2204064-BLK1)					Prepared & Analyzed: 05/17/22						
Ammonia as N	ND	0.025	0.10	mg/L							
LCS (2204064-BS1)					Prepared & Analyzed: 05/17/22						
Ammonia as N	0.511	0.025	0.10	mg/L	0.500		102	80-120			
LCS Dup (2204064-BSD1)					Prepared & Analyzed: 05/17/22						
Ammonia as N	0.518	0.025	0.10	mg/L	0.500		104	80-120	1	25	
Matrix Spike (2204064-MS1)			**Source: 22E1008-02**		Prepared & Analyzed: 05/17/22						
Ammonia as N	0.721	0.025	0.10	mg/L	0.500	0.195	105	75-125			
Matrix Spike Dup (2204064-MSD1)			**Source: 22E1008-02**		Prepared & Analyzed: 05/17/22						
Ammonia as N	0.716	0.025	0.10	mg/L	0.500	0.195	104	75-125	0.7	25	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204067 - General Preparation											
Blank (2204067-BLK1)					Prepared: 05/17/22 Analyzed: 05/18/22						
Total Dissolved Solids	ND	5.0	10	mg/L							
Duplicate (2204067-DUP1)			**Source: 22E0780-01**		Prepared: 05/17/22 Analyzed: 05/18/22						
Total Dissolved Solids	183	5.0	10	mg/L		188			3	20	
Batch 2204094 - General Preparation											
Blank (2204094-BLK1)					Prepared & Analyzed: 05/18/22						
Total Phosphorus as P	ND		5.0	µg/Wipe							
LCS (2204094-BS1)					Prepared & Analyzed: 05/18/22						
Total Phosphorus as P	15.0		5.0	µg/Wipe	15.0		100	75-125			
LCS Dup (2204094-BSD1)					Prepared & Analyzed: 05/18/22						
Total Phosphorus as P	14.3		5.0	µg/Wipe	15.0		95	75-125	4	25	
Matrix Spike (2204094-MS1)			**Source: 22E0999-01**		Prepared & Analyzed: 05/18/22						
Total Phosphorus as P	14.5		5.0	µg/Wipe	15.0	ND	97	75-125			
Matrix Spike Dup (2204094-MSD1)			**Source: 22E0999-01**		Prepared & Analyzed: 05/18/22						
Total Phosphorus as P	14.3		5.0	µg/Wipe	15.0	ND	95	75-125	2	30	
Batch 2204102 - General Preparation											
Blank (2204102-BLK1)					Prepared & Analyzed: 05/18/22						
Total Suspended Solids	ND	2.0	5.0	mg/L							

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CLS Work Order #: 22E0999
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204102 - General Preparation											
Duplicate (2204102-DUP1)			**Source: 22E0984-02**		Prepared & Analyzed: 05/18/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	
Batch 2204107 - General Preparation											
Blank (2204107-BLK1)					Prepared & Analyzed: 05/18/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2204107-BS1)					Prepared & Analyzed: 05/18/22						
Total Kjeldahl Nitrogen	0.421	0.040	0.20	mg/L	0.500		84	80-120			
LCS Dup (2204107-BSD1)					Prepared & Analyzed: 05/18/22						
Total Kjeldahl Nitrogen	0.446	0.040	0.20	mg/L	0.500		89	80-120	6	20	
Matrix Spike (2204107-MS1)			**Source: 22E0999-01**		Prepared & Analyzed: 05/18/22						
Total Kjeldahl Nitrogen	0.614	0.040	0.20	mg/L	0.500	0.160	91	75-125			
Matrix Spike Dup (2204107-MSD1)			**Source: 22E0999-01**		Prepared & Analyzed: 05/18/22						
Total Kjeldahl Nitrogen	0.605	0.040	0.20	mg/L	0.500	0.160	89	75-125	1	25	
Batch 2204178 - Solvent Extract											
Blank (2204178-BLK1)					Prepared: 05/20/22 Analyzed: 05/23/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2204178-BS1)					Prepared: 05/20/22 Analyzed: 05/23/22						
Hexane Extractable Material (HEM, Oil & Grease)	38.9	1.0	5.0	mg/L	40.0		97	78-114			

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COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204178 - Solvent Extract											
LCS Dup (2204178-BSD1)					Prepared: 05/20/22 Analyzed: 05/23/22						
Hexane Extractable Material (HEM, Oil & Grease)	38.4	1.0	5.0	mg/L	40.0		96	78-114	1	18	

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CLS Work Order #: 22E0999
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204109 - EPA 3510B GCNV											
Blank (2204109-BLK1)					Prepared: 05/18/22 Analyzed: 05/19/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Hydraulic Oil	ND	0.030	0.050	"							
Mineral Oil	ND	0.020	0.050	"							
Kerosene	ND	0.0036	0.050	"							
Surrogate: o-Terphenyl	*0.0306*			"	*0.0250*		*123*	*65-135*			
LCS (2204109-BS1)					Prepared: 05/18/22 Analyzed: 05/19/22						
Diesel	2.15	0.0021	0.050	mg/L	2.50		86	65-135			
Surrogate: o-Terphenyl	*0.0239*			"	*0.0250*		*96*	*65-135*			
LCS Dup (2204109-BSD1)					Prepared: 05/18/22 Analyzed: 05/19/22						
Diesel	2.23	0.0021	0.050	mg/L	2.50		89	65-135	4	30	
Surrogate: o-Terphenyl	*0.0227*			"	*0.0250*		*91*	*65-135*			
Matrix Spike (2204109-MS1)			**Source: 22E0890-01**		Prepared: 05/18/22 Analyzed: 05/19/22						
Diesel	2.62	0.0021	0.050	mg/L	2.50	ND	105	46-137			
Surrogate: o-Terphenyl	*0.0261*			"	*0.0250*		*104*	*65-135*			
Matrix Spike Dup (2204109-MSD1)			**Source: 22E0890-01**		Prepared: 05/18/22 Analyzed: 05/19/22						
Diesel	2.36	0.0021	0.050	mg/L	2.50	ND	95	46-137	10	30	
Surrogate: o-Terphenyl	*0.0246*			"	*0.0250*		*98*	*65-135*			

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COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204038 - EPA 200 Series											
Blank (2204038-BLK1)					Prepared & Analyzed: 05/17/22						
Aluminum	ND	1.6	20	µg/L							
Barium	ND	0.14	5.0	"							
Manganese	ND	0.050	2.0	"							
Silver	ND	0.070	0.50	"							
LCS (2204038-BS1)					Prepared & Analyzed: 05/17/22						
Aluminum	492	1.6	20	µg/L	500		98	85-115			
Barium	101	0.14	5.0	"	100		101	85-115			
Manganese	96.2	0.050	2.0	"	100		96	85-115			
Silver	102	0.070	0.50	"	100		102	85-115			
Matrix Spike (2204038-MS1)			**Source: 22E0793-01**		Prepared & Analyzed: 05/17/22						
Aluminum	500	1.6	20	µg/L	500	ND	100	70-130			
Barium	134	0.14	5.0	"	100	30.3	104	70-130			
Manganese	96.7	0.050	2.0	"	100	0.217	96	70-130			
Silver	105	0.070	0.50	"	100	ND	105	70-130			
Matrix Spike (2204038-MS2)			**Source: 22E0963-01**		Prepared & Analyzed: 05/17/22						
Aluminum	488	1.6	20	µg/L	500	ND	98	70-130			
Barium	128	0.14	5.0	"	100	23.7	105	70-130			
Manganese	103	0.050	2.0	"	100	9.71	93	70-130			
Silver	101	0.070	0.50	"	100	ND	101	70-130			
Batch 2204043 - EPA 200 Series											
Blank (2204043-BLK1)					Prepared: 05/17/22 Analyzed: 05/18/22						
Aluminum	ND	17	50	µg/L							
Calcium	ND	27	1000	"							
Iron	13.4	9.1	100	"							J
Magnesium	ND	21	1000	"							
Potassium	1220	61	1000	"							
Sodium	64.0	34	1000	"							J
Zinc	2.16	1.7	20	"							J

05/31/22 11:55

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E0999
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204043 - EPA 200 Series											
LCS (2204043-BS1)					Prepared: 05/17/22 Analyzed: 05/18/22						
Aluminum	4980	17	50	µg/L	5000		100	85-115			
Calcium	5290	27	1000	"	5000		106	85-115			
Iron	532	9.1	100	"	500		106	85-115			
Magnesium	5140	21	1000	"	5000		103	85-115			
Potassium	6520	61	1000	"	5000		130	85-115			QM-1
Sodium	5320	34	1000	"	5000		106	85-115			
Zinc	502	1.7	20	"	500		100	85-115			
Matrix Spike (2204043-MS1)			**Source: 22E0680-01**		Prepared: 05/17/22 Analyzed: 05/18/22						
Aluminum	5010	17	50	µg/L	5000	95.6	98	70-130			
Calcium	6730	27	1000	"	5000	1550	103	70-130			
Iron	615	9.1	100	"	500	95.1	104	70-130			
Magnesium	5410	21	1000	"	5000	285	102	70-130			
Potassium	6870	61	1000	"	5000	1530	107	70-130			
Sodium	5970	34	1000	"	5000	960	100	70-130			
Zinc	3960	1.7	20	"	500	3410	108	70-130			
Matrix Spike (2204043-MS2)			**Source: 22E0999-05**		Prepared: 05/17/22 Analyzed: 05/18/22						
Aluminum	5000	17	50	µg/L	5000	63.4	99	70-130			
Calcium	6690	27	1000	"	5000	1450	105	70-130			
Iron	552	9.1	100	"	500	186	73	70-130			
Magnesium	5340	21	1000	"	5000	273	101	70-130			
Potassium	5970	61	1000	"	5000	1170	96	70-130			
Sodium	6150	34	1000	"	5000	1080	101	70-130			
Zinc	507	1.7	20	"	500	ND	101	70-130			

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E0999
COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204128 - EPA 200 No Digestion											
Blank (2204128-BLK1)					Prepared & Analyzed: 05/19/22						
Iron	13.4	6.8	100	µg/L							J
LCS (2204128-BS1)					Prepared & Analyzed: 05/19/22						
Iron	452	6.8	100	µg/L	500		90	85-115			
Matrix Spike (2204128-MS1)			**Source: 22E0999-01**		Prepared & Analyzed: 05/19/22						
Iron	442	6.8	100	µg/L	500	ND	88	70-130			
Batch 2204433 - EPA 200 No Digestion											
Blank (2204433-BLK1)					Prepared & Analyzed: 05/27/22						
Aluminum	ND	0.52	20	µg/L							
Silver	ND	0.15	0.50	"							
LCS (2204433-BS1)					Prepared & Analyzed: 05/27/22						
Aluminum	467	0.52	20	µg/L	500		93	85-115			
Silver	95.9	0.15	0.50	"	100		96	85-115			
Matrix Spike (2204433-MS1)			**Source: 22E0999-01**		Prepared & Analyzed: 05/27/22						
Aluminum	502	0.52	20	µg/L	500	21.4	96	70-130			
Silver	95.3	0.15	0.50	"	100	ND	95	70-130			
Matrix Spike (2204433-MS2)			**Source: 22E1403-03**		Prepared & Analyzed: 05/27/22						
Aluminum	463	0.52	20	µg/L	500	ND	93	70-130			
Silver	94.7	0.15	0.50	"	100	ND	95	70-130			

05/31/22 11:55

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E0999
COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204125 - EPA 5030 Water GC											
Blank (2204125-BLK1)					Prepared & Analyzed: 05/19/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*17.7*			"	*20.0*		*88*	*65-135*			
LCS (2204125-BS1)					Prepared & Analyzed: 05/19/22						
Gasoline	560	10	50	µg/L	500		112	70-130			
Surrogate: o-Chlorotoluene (Gas)	*20.3*			"	*20.0*		*101*	*65-135*			
LCS Dup (2204125-BSD1)					Prepared & Analyzed: 05/19/22						
Gasoline	429	10	50	µg/L	500		86	70-130	26	30	
Surrogate: o-Chlorotoluene (Gas)	*18.3*			"	*20.0*		*91*	*65-135*			
Matrix Spike (2204125-MS1)			**Source: 22E0999-01**		Prepared & Analyzed: 05/19/22						
Gasoline	530	10	50	µg/L	500	ND	106	68-132			
Surrogate: o-Chlorotoluene (Gas)	*20.2*			"	*20.0*		*101*	*65-135*			
Matrix Spike Dup (2204125-MSD1)			**Source: 22E0999-01**		Prepared & Analyzed: 05/19/22						
Gasoline	525	10	50	µg/L	500	ND	105	68-132	0.9	32	
Surrogate: o-Chlorotoluene (Gas)	*20.0*			"	*20.0*		*100*	*65-135*			

05/31/22 11:55

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E0999**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204112 - EPA 5030 Water MS											
Blank (2204112-BLK1)					Prepared & Analyzed: 05/18/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Surrogate: Toluene-d8	*9.72*			"	*10.0*		*97*	*72-125*			
LCS (2204112-BS1)					Prepared & Analyzed: 05/18/22						
Methyl tert-butyl ether	19.3	0.095	0.50	µg/L	20.0		97	52-130			
Surrogate: Toluene-d8	*10.3*			"	*10.0*		*103*	*72-125*			
LCS Dup (2204112-BSD1)					Prepared & Analyzed: 05/18/22						
Methyl tert-butyl ether	22.5	0.095	0.50	µg/L	20.0		113	52-130	15	30	
Surrogate: Toluene-d8	*10.2*			"	*10.0*		*102*	*72-125*			
Matrix Spike (2204112-MS1)			**Source: 22E1045-01**		Prepared & Analyzed: 05/18/22						
Methyl tert-butyl ether	20.7	0.095	0.50	µg/L	20.0	ND	103	52-140			
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			
Matrix Spike Dup (2204112-MSD1)			**Source: 22E1045-01**		Prepared & Analyzed: 05/18/22						
Methyl tert-butyl ether	24.6	0.095	0.50	µg/L	20.0	ND	123	52-140	17	30	
Surrogate: Toluene-d8	*10.0*			"	*10.0*		*100*	*72-125*			

05/31/22 11:55

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E0999**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QS-4	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QM-1	The spike recovery was outside acceptance limits for the LCS or LCSD. The batch was accepted based on acceptable MS/MSD recoveries & RPD's.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22E0999 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches.

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[X] **CLS** (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] **OTHER**

GEOTRACKER

EDF REPORT YES [X] NO [ ]

GLOBAL ID.

FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	ANALYSIS REQUESTED: Cl, SO4	TSS, TDS, Hardness, Alkalinity, NO2-N, NO3-N, Diss Metals,	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS: 1	2	3	5	SPECIAL INSTRUCTIONS
5/16	10:30	R-IS-9-IHR		Surface water			6	x	x	x	x	x	x	x	x				x	
5/16	12:30	R-IS-11-IHR-B		Surface water			6	x	x	x	x	x	x	x	x				x	
5/16	11:20	R-IS-10-IHR		Surface water			6	x	x	x	x	x	x	x	x				x	
5/16	11:00	R-IS-11-IHR		Surface water			6	x	x	x	x	x	x	x	x				x	
5/16	2:00	IS-11-SESC		Surface water			6	x	x	x	x	x	x	x	x				x	
				Surface water			6												x	
				Surface water			6												x	INVOICE TO:
				Surface water			6												x	Stillwater Sciences
				Surface water			6												x	Same as above
				Surface water			6												x	
				Surface water			6												x	**Project No. 750.10 Task 0620.01**
				Surface water			6												x	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H2SO4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Adam Cohen/Stillwater	5/16 9:37		

RECEIVED AT LAB BY: **DATE/TIME:** 05/16/22 1634 **CONDITIONS/COMMENTS:** 14.0/16.8

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER _____ **AIR BILL #** _____

basic laboratory

2218 Railroad Avenue
Redding, California 96001
voice 530.243.7234
fax 530.243.7494

3860 Morrow Lane, Suite F
Chico, California 95928
voice 530.894.8966
fax 530.894.5143

Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02 UARP

Lab No: 22E1007
Reported: 06/06/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22E1007, received on 05/20/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: IS-4-GC
Matrix / Type: Surface Water (Grab)
Lab ID: 22E1007-01
Sampled: 05/19/22 09:15
Received: 05/20/22 10:43

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.21		0.04	0.10	"	"	"	"
Lead	"	0.016	J	0.007	0.050	"	"	"	"
Mercury	ng/l	1.00		0.22	0.50	EPA 1631E	05/29/22	05/29/22	B2E1547 / DJC
Methyl Mercury as Mercury	"	0.023	J	0.017	0.050	EPA 1630	06/03/22	06/02/22	B2F0883 / EDM
Nickel	ug/l	0.24		0.02	0.10	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/23/22	B2E1370 / BDL
Zinc	"	0.73		0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/27/22	05/27/22	B2E1504 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.21		0.04	0.10	"	"	"	"
Lead	"	0.009	J	0.007	0.050	"	"	"	"
Nickel	"	0.22		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/25/22	B2E1442 / BDL
Zinc	"	0.63		0.12	0.50	EPA 1638	05/27/22	05/27/22	B2E1504 / EDM

basic laboratory

2218 Railroad Avenue
Redding, California 96001
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fax 530.894.5143

Analytical Report

Description: IS-20-BC
Matrix / Type: Surface Water (Grab)
Lab ID: 22E1007-02
Sampled: 05/19/22 12:00
Received: 05/20/22 10:43

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.08	J	0.04	0.10	"	"	"	"
Lead	"	0.014	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.29	J	0.22	0.50	EPA 1631E	05/29/22	05/29/22	B2E1547 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	06/03/22	06/02/22	B2F0883 / EDM
Nickel	ug/l	0.13		0.02	0.10	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/23/22	B2E1370 / BDL
Zinc	"	0.42	J	0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/27/22	05/27/22	B2E1504 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.05	J	0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.10	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/25/22	B2E1442 / BDL
Zinc	"	0.34	J	0.12	0.50	EPA 1638	05/27/22	05/27/22	B2E1504 / EDM

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Analytical Report

Description: IS-20-BC-FB
Matrix / Type: Surface Water (Grab)
Lab ID: 22E1007-03
Sampled: 05/19/22 12:30
Received: 05/20/22 10:43

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	ND		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Mercury	ng/l	ND		0.22	0.50	EPA 1631E	05/29/22	05/29/22	B2E1547 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	06/03/22	06/02/22	B2F0883 / EDM
Nickel	ug/l	ND		0.02	0.10	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/23/22	B2E1370 / BDL
Zinc	"	ND		0.12	0.50	EPA 1638	05/27/22	05/26/22	B2E1480 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	05/27/22	05/27/22	B2E1504 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	ND		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	ND		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/25/22	05/25/22	B2E1442 / BDL
Zinc	"	ND		0.12	0.50	EPA 1638	05/27/22	05/27/22	B2E1504 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2E1370 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	205	2.0	ug/l	200		102	85-115			
Duplicate	Source: 22E0814-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22E0953-05									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22E0814-01									
Selenium	203	2.0	ug/l	200	ND	102	75-125			
Matrix Spike	Source: 22E0953-05									
Selenium	205	2.0	ug/l	200	ND	103	75-125			
Metals - Total	**Batch B2E1480 - EPA 1638 - Closed Bottle Oven Digestion**									

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2E1480 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.5	50-150			
Cadmium	0.25	0.10	ug/l	0.250		98.9	84-113			
Copper	0.26	0.10	ug/l	0.250		103	51-145			
Lead	0.121	0.050	ug/l	0.125		97.0	72-143			
Nickel	0.25	0.10	ug/l	0.250		101	68-134			
Zinc	1.32	0.50	ug/l	1.25		105	46-146			
LCS										
Arsenic	1.24	0.50	ug/l	1.25		98.9	50-150			
Cadmium	0.25	0.10	ug/l	0.250		99.0	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.119	0.050	ug/l	0.125		95.3	72-143			
Nickel	0.25	0.10	ug/l	0.250		98.3	68-134			
Zinc	1.16	0.50	ug/l	1.25		93.0	46-146			
Matrix Spike	Source: 22E0814-01									
Arsenic	2.50	0.50	ug/l	2.50	ND	100	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	99.3	84-113			
Copper	0.65	0.10	ug/l	0.500	0.15	101	51-145			
Lead	0.258	0.050	ug/l	0.250	0.013	98.0	72-143			
Nickel	0.53	0.10	ug/l	0.500	0.05	95.7	68-134			
Zinc	2.61	0.50	ug/l	2.50	0.20	96.5	46-146			
Matrix Spike	Source: 22E0953-03									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total **Batch B2E1480 - EPA 1638 - Closed Bottle Oven Digestion**										
Arsenic	2.50	0.50	ug/l	2.50	ND	100	50-150			
Cadmium	0.49	0.10	ug/l	0.500	ND	97.7	84-113			
Copper	0.70	0.10	ug/l	0.500	0.20	101	51-145			
Lead	0.246	0.050	ug/l	0.250	ND	98.5	72-143			
Nickel	0.60	0.10	ug/l	0.500	0.11	98.5	68-134			
Zinc	2.54	0.50	ug/l	2.50	0.13	96.2	46-146			
Matrix Spike Dup	Source: 22E0814-01									
Arsenic	2.46	0.50	ug/l	2.50	ND	98.5	50-150	1.64	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	101	84-113	1.42	20	
Copper	0.64	0.10	ug/l	0.500	0.15	97.3	51-145	2.73	20	
Lead	0.258	0.050	ug/l	0.250	0.013	98.1	72-143	0.0826	20	
Nickel	0.55	0.10	ug/l	0.500	0.05	98.5	68-134	2.64	20	
Zinc	2.65	0.50	ug/l	2.50	0.20	97.8	46-146	1.21	20	
Matrix Spike Dup	Source: 22E0953-03									
Arsenic	2.49	0.50	ug/l	2.50	ND	99.5	50-150	0.641	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	97.7	84-113	0.0802	20	
Copper	0.70	0.10	ug/l	0.500	0.20	101	51-145	0.186	20	
Lead	0.253	0.050	ug/l	0.250	ND	101	72-143	2.62	20	
Nickel	0.60	0.10	ug/l	0.500	0.11	98.0	68-134	0.345	20	
Zinc	2.67	0.50	ug/l	2.50	0.13	101	46-146	4.97	20	
Metals - Total **Batch B2E1547 - BrCl Digestion**										
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	9.89	0.50	ng/l	10.0		98.9	77-123			
Matrix Spike	Source: 22E0953-01									
Mercury	10.9	0.50	ng/l	10.0	0.69	102	71-125			
Matrix Spike	Source: 22E1030-01									
Mercury	10.1	0.50	ng/l	10.0	ND	101	71-125			
Matrix Spike Dup	Source: 22E0953-01									
Mercury	11.1	0.50	ng/l	10.0	0.69	104	71-125	1.96	24	
Matrix Spike Dup	Source: 22E1030-01									
Mercury	10.1	0.50	ng/l	10.0	ND	101	71-125	0.693	24	
Metals - Total **Batch B2F0883 - EPA 1630 Distillation (Modified)**										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2F0883 - EPA 1630 Distillation (Modified)										
LCS										
Methyl Mercury as Mercury	2.31	0.050	ng/l	2.00		116	67-133			
Matrix Spike	Source: 22E0953-03									
Methyl Mercury as Mercury	1.18	0.050	ng/l	1.00	ND	118	65-135			
Matrix Spike	Source: 22E1167-01									
Methyl Mercury as Mercury	1.17	0.050	ng/l	1.00	0.026	114	65-135			
Matrix Spike Dup	Source: 22E0953-03									
Methyl Mercury as Mercury	0.936	0.050	ng/l	1.00	ND	93.6	65-135	22.6	35	
Matrix Spike Dup	Source: 22E1167-01									
Methyl Mercury as Mercury	1.04	0.050	ng/l	1.00	0.026	101	65-135	11.6	35	
Metals - Dissolved Batch B2E1442 - EPA 200.8 Diss										
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	188	2.0	ug/l	200		93.8	85-115			
Duplicate	Source: 22E0814-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22E1060-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22E0814-01									
Selenium	189	2.0	ug/l	200	ND	94.3	75-125			
Matrix Spike	Source: 22E1060-01									
Selenium	190	2.0	ug/l	200	ND	94.8	75-125			
Metals - Dissolved Batch B2E1504 - EPA 1638 - Dissolved										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved **Batch B2E1504 - EPA 1638 - Dissolved**										
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.27	0.50	ug/l	1.25		102	50-150			
Cadmium	0.26	0.10	ug/l	0.250		103	84-113			
Copper	0.27	0.10	ug/l	0.250		107	51-145			
Lead	0.128	0.050	ug/l	0.125		103	72-143			
Nickel	0.26	0.10	ug/l	0.250		104	68-134			
Zinc	1.28	0.50	ug/l	1.25		102	46-146			
LCS										
Arsenic	1.28	0.50	ug/l	1.25		102	50-150			
Cadmium	0.26	0.10	ug/l	0.250		102	84-113			
Copper	0.27	0.10	ug/l	0.250		106	51-145			
Lead	0.127	0.050	ug/l	0.125		101	72-143			
Nickel	0.27	0.10	ug/l	0.250		108	68-134			
Zinc	1.38	0.50	ug/l	1.25		110	46-146			
Matrix Spike	Source: 22E0814-01									
Arsenic	2.65	0.50	ug/l	2.50	ND	106	50-150			
Cadmium	0.52	0.10	ug/l	0.500	ND	104	84-113			
Copper	0.65	0.10	ug/l	0.500	0.13	104	51-145			
Lead	0.252	0.050	ug/l	0.250	ND	101	72-143			
Nickel	0.53	0.10	ug/l	0.500	0.04	98.5	68-134			
Zinc	2.78	0.50	ug/l	2.50	0.20	104	46-146			
Matrix Spike	Source: 22E0953-03									
Arsenic	2.68	0.50	ug/l	2.50	ND	107	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.70	0.10	ug/l	0.500	0.16	109	51-145			
Lead	0.253	0.050	ug/l	0.250	ND	101	72-143			
Nickel	0.62	0.10	ug/l	0.500	0.09	105	68-134			
Zinc	2.80	0.50	ug/l	2.50	0.17	105	46-146			
Matrix Spike Dup	Source: 22E0814-01									
Arsenic	2.59	0.50	ug/l	2.50	ND	103	50-150	2.54	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.0	84-113	4.71	20	
Copper	0.65	0.10	ug/l	0.500	0.13	105	51-145	0.384	20	
Lead	0.260	0.050	ug/l	0.250	ND	104	72-143	2.82	20	
Nickel	0.58	0.10	ug/l	0.500	0.04	107	68-134	8.09	20	

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved **Batch B2E1504 - EPA 1638 - Dissolved**										
Zinc	2.76	0.50	ug/l	2.50	0.20	103	46-146	0.852	20	
Matrix Spike Dup	Source: 22E0953-03									
Arsenic	2.64	0.50	ug/l	2.50	ND	105	50-150	1.67	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.3	84-113	1.86	20	
Copper	0.70	0.10	ug/l	0.500	0.16	109	51-145	0.260	20	
Lead	0.256	0.050	ug/l	0.250	ND	103	72-143	1.34	20	
Nickel	0.62	0.10	ug/l	0.500	0.09	105	68-134	0.471	20	
Zinc	2.85	0.50	ug/l	2.50	0.17	107	46-146	1.85	20	

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	CA-ELAP does not accredit this analyte or method as of December 2020. *(Newly released 2021 FOA tables may include this analyte or method.)*
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless samples are received on ice and collected on the same day as delivery. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

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Analytical Report

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen

Ricky Jensen, General Manager
Pace Analytical Services LLC - Redding CA
California ELAP Cert #1677 & 2718

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

22E1007 1

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494
☐ 3860 Morrow Lane, Suite F Chico, CA 95928 (530) 894-8966 FAX: (530) 894-5143

LABORATORY WORK ORDER # 22E1007
PAGE 1 OF 1

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS: 279 Coustea Place, Suite 400, Davis, CA 95618

REPORT TO ☒ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED: ☒ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one): ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	5.19	9:15 AM PM	SW			IS.4.GC		6	x	x	x	x	x	x
2	5.19	12:00 AM PM	↓			IS.20.BC		6	x	x	x	x	x	x
3	5.19	12:30 AM PM	↓			IS.20.BC.FB		6	x	x	x	x	x	x
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												

SAMPLED BY: (please print) Bruce Hitch / Adam Cohen *

RELINQUISHED DATE / TIME: 5.20.22

SAMPLING / ANALYSIS COMMENTS: *per email RH 5.20.22 attached

(1) Total and Dissolved LL 1638 Metals

☐ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME BRUCE HITCH SIGNATURE DATE 5.19.22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
Rachel Hunt	5.20.22 1043	Rachel Hunt	5.20.22 1144

For Official Lab Comments Only

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

FRM-002.1 - Chain of Custody (rev 1.1)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22E1007

SHIPPING INFORMATION

Walk-In ☐
Courier ☐
FedEx ☑
UPS ☐
Other ☐

Cooler Present? Yes ☑ No ☐

Samples Received By: RH Date: 5.20.22

	Yes	No	
Samples received on ice?	☑	☐	Ice type? ☑ Wet ☐ Blue ☐ Other
Samples received the same day collected?	☐	☑	

SAMPLE TEMPERATURES AT RECEIPT Therm. ID (Circle one): (Therm-36) Therm-37 Therm-59 Other:

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	8.9	-06		-11		-16	
-02	5.7	-07		-12		-17	
-03	9.5	-08		-13		-18	
-04		-09		-14		-19	
-05		-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: RH Date: 5.20.22 RH 5-20-22

	Yes	No	NA
Custody seals present?	☐	☐	☑
Samples in proper containers?	☑	☐	
Sample containers damaged?	☐	☑	
Sufficient sample volume for indicated tests?	☑	☐	
Samples received within holding times?	☑	☐	
Are VOA vials free of headspace?	☐	☐	☑
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☑

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☑	☐	☐
Preserved in the lab?	☑	☐	☐

Lab Preservation Date & Time 5.20.22 1110 RH 5.20.22

☐ H2SO4 (ID_____) ☐ HNO3 (ID 2B14036) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☐
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☐
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☐
Are proper preservation lables present?	☑	☐	☐

By:_____ Meter ID:_____

Preservation checked at Lab? Date & Time 5.20.22 1111 Test Strip (ID 1H20019)

Preservation and Preservation Checks performed by: RH

COMMENTS, DISCREPANCEIS, ANOMALIES

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

June 01, 2022

CLS Work Order #: 22E1066
COC #:

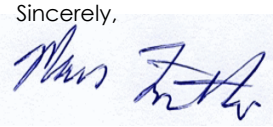
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 05/17/22 16:03. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

06/01/22 12:20

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1066
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-1-LL (22E1066-01) Water Sampled: 05/17/22 10:30 Received: 05/17/22 16:03										
Ammonia as N	**0.046**	0.025	0.10	mg/L	1	2204224	05/23/22	05/23/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**3.6**	0.50	5.0	"	"	2204154	05/19/22	05/19/22	SM2320B	J
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.40**	0.026	0.50	"	"	2204076	05/18/22	05/18/22	EPA 300.0	J
Cyanide (total)	**0.0030**	0.0012	0.0050	"	"	2204322	05/25/22	05/25/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2204230	05/23/22	05/25/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2204154	05/19/22	05/19/22	SM2320B	
Nitrate/Nitrite as N	**0.064**	0.055	0.40	"	"	2204076	05/18/22	05/18/22	EPA 300.0	J
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2204093	05/18/22	05/18/22	SM4500-P E	
Sulfate as SO4	**0.55**	0.038	0.50	"	"	2204076	05/18/22	05/18/22	EPA 300.0	
Total Alkalinity	**3.6**	1.0	5.0	"	"	2204154	05/19/22	05/19/22	SM2320B	J
Total Dissolved Solids	**8.0**	5.0	10	"	"	2204191	05/20/22	05/23/22	SM2540C	J
Total Hardness as CaCO3	**3.2**	0.19	1.0	"	"	2204128	05/19/22	05/20/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.22**	0.040	0.20	"	"	2204177	05/20/22	05/20/22	SM4500-NH3F-1997	
Total Organic Carbon	**2.1**	0.54	1.0	"	"	2204244	05/24/22	05/24/22	SM5310B	
Total Phosphorus as P	**0.31**		5.0	µg/Wipe	"	2204094	05/18/22	05/18/22	SM4500-P E	J
Total Suspended Solids	ND	2.0	5.0	mg/L	"	2204102	05/18/22	05/18/22	SM2540D	
IS-2-LL (22E1066-02) Water Sampled: 05/17/22 11:30 Received: 05/17/22 16:03										
Ammonia as N	**0.17**	0.025	0.10	mg/L	1	2204224	05/23/22	05/23/22	SM4500-NH3F-1997	
Bicarbonate as CaCO3	**2.4**	0.50	5.0	"	"	2204154	05/19/22	05/19/22	SM2320B	J
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.57**	0.026	0.50	"	"	2204076	05/18/22	05/18/22	EPA 300.0	
Cyanide (total)	**0.0026**	0.0012	0.0050	"	"	2204322	05/25/22	05/25/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2204230	05/23/22	05/25/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2204154	05/19/22	05/19/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2204076	05/18/22	05/18/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2204093	05/18/22	05/18/22	SM4500-P E	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1066
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-2-LL (22E1066-02) Water Sampled: 05/17/22 11:30 Received: 05/17/22 16:03										
Sulfate as SO4	**0.54**	0.038	0.50	mg/L	1	2204076	05/18/22	05/18/22	EPA 300.0	
Total Alkalinity	**2.4**	1.0	5.0	"	"	2204154	05/19/22	05/19/22	SM2320B	J
Total Dissolved Solids	**6.0**	5.0	10	"	"	2204191	05/20/22	05/23/22	SM2540C	J
Total Hardness as CaCO3	**3.5**	0.19	1.0	"	"	2204128	05/19/22	05/20/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.11**	0.040	0.20	"	"	2204177	05/20/22	05/20/22	SM4500-NH3F-1997	J
Total Organic Carbon	**1.9**	0.54	1.0	"	"	2204244	05/24/22	05/24/22	SM5310B	
Total Phosphorus as P	**0.17**		5.0	µg/Wipe	"	2204094	05/18/22	05/18/22	SM4500-P E	J
Total Suspended Solids	ND	2.0	5.0	mg/L	"	2204102	05/18/22	05/18/22	SM2540D	
IS-3-LL (22E1066-03) Water Sampled: 05/17/22 12:00 Received: 05/17/22 16:03										
Ammonia as N	**0.038**	0.025	0.10	mg/L	1	2204224	05/23/22	05/23/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**4.2**	0.50	5.0	"	"	2204154	05/19/22	05/19/22	SM2320B	J
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.41**	0.026	0.50	"	"	2204076	05/18/22	05/18/22	EPA 300.0	J
Cyanide (total)	**0.0019**	0.0012	0.0050	"	"	2204322	05/25/22	05/25/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2204230	05/23/22	05/25/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2204154	05/19/22	05/19/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2204076	05/18/22	05/18/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2204093	05/18/22	05/18/22	SM4500-P E	
Sulfate as SO4	**0.54**	0.038	0.50	"	"	2204076	05/18/22	05/18/22	EPA 300.0	
Total Alkalinity	**4.2**	1.0	5.0	"	"	2204154	05/19/22	05/19/22	SM2320B	J
Total Dissolved Solids	**6.0**	5.0	10	"	"	2204191	05/20/22	05/23/22	SM2540C	J
Total Hardness as CaCO3	**3.5**	0.19	1.0	"	"	2204128	05/19/22	05/20/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.13**	0.040	0.20	"	"	2204177	05/20/22	05/20/22	SM4500-NH3F-1997	J
Total Organic Carbon	**2.0**	0.54	1.0	"	"	2204244	05/24/22	05/24/22	SM5310B	
Total Phosphorus as P	ND		5.0	µg/Wipe	"	2204094	05/18/22	05/18/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	mg/L	"	2204102	05/18/22	05/18/22	SM2540D	

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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1066
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-1-LL (22E1066-01) Water Sampled: 05/17/22 10:30 Received: 05/17/22 16:03										
Diesel	ND	0.0021	0.050	mg/L	1	2204109	05/18/22	05/19/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*134 %*	*65-135*		"	"	"	"	
IS-2-LL (22E1066-02) Water Sampled: 05/17/22 11:30 Received: 05/17/22 16:03										
Diesel	ND	0.0021	0.050	mg/L	1	2204109	05/18/22	05/19/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*120 %*	*65-135*		"	"	"	"	
IS-3-LL (22E1066-03) Water Sampled: 05/17/22 12:00 Received: 05/17/22 16:03										
Diesel	ND	0.0021	0.050	mg/L	1	2204109	05/18/22	05/19/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*108 %*	*65-135*		"	"	"	"	

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22E1066
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-1-LL (22E1066-01) Water Sampled: 05/17/22 10:30 Received: 05/17/22 16:03										
Aluminum	**36**	1.6	20	µg/L	1	2204124	05/19/22	05/19/22	EPA 200.8	
Barium	**3.1**	0.14	5.0	"	"	"	"	"	"	J
Calcium	**1100**	27	1000	"	"	2204132	05/19/22	05/20/22	EPA 200.7	
Iron	**21**	9.1	100	"	"	"	"	"	"	J
Magnesium	**110**	21	1000	"	"	"	"	"	"	J
Manganese	**3.6**	0.050	2.0	"	"	2204124	05/19/22	05/19/22	EPA 200.8	
Potassium	**530**	61	1000	"	"	2204132	05/19/22	05/20/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2204124	05/19/22	05/19/22	EPA 200.8	
Sodium	**510**	34	1000	"	"	2204132	05/19/22	05/20/22	EPA 200.7	J
IS-2-LL (22E1066-02) Water Sampled: 05/17/22 11:30 Received: 05/17/22 16:03										
Aluminum	**30**	1.6	20	µg/L	1	2204124	05/19/22	05/19/22	EPA 200.8	
Barium	**3.2**	0.14	5.0	"	"	"	"	"	"	J
Calcium	**1200**	27	1000	"	"	2204132	05/19/22	05/20/22	EPA 200.7	
Iron	**72**	9.1	100	"	"	"	"	"	"	J
Magnesium	**130**	21	1000	"	"	"	"	"	"	J
Manganese	**4.1**	0.050	2.0	"	"	2204124	05/19/22	05/19/22	EPA 200.8	
Potassium	**650**	61	1000	"	"	2204132	05/19/22	05/20/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2204124	05/19/22	05/19/22	EPA 200.8	
Sodium	**520**	34	1000	"	"	2204132	05/19/22	05/20/22	EPA 200.7	J
IS-3-LL (22E1066-03) Water Sampled: 05/17/22 12:00 Received: 05/17/22 16:03										
Aluminum	**26**	1.6	20	µg/L	1	2204124	05/19/22	05/19/22	EPA 200.8	
Barium	**3.2**	0.14	5.0	"	"	"	"	"	"	J
Calcium	**1200**	27	1000	"	"	2204132	05/19/22	05/20/22	EPA 200.7	
Iron	**24**	9.1	100	"	"	"	"	"	"	J
Magnesium	**130**	21	1000	"	"	"	"	"	"	J
Manganese	**4.4**	0.050	2.0	"	"	2204124	05/19/22	05/19/22	EPA 200.8	
Potassium	**730**	61	1000	"	"	2204132	05/19/22	05/20/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2204124	05/19/22	05/19/22	EPA 200.8	
Sodium	**510**	34	1000	"	"	2204132	05/19/22	05/20/22	EPA 200.7	J

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1066**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-1-LL (22E1066-01) Water Sampled: 05/17/22 10:30 Received: 05/17/22 16:03										
Aluminum	**12**	0.52	20	µg/L	1	2204433	05/27/22	05/27/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2204128	05/19/22	05/19/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2204433	05/27/22	05/27/22	EPA 200.8	
IS-2-LL (22E1066-02) Water Sampled: 05/17/22 11:30 Received: 05/17/22 16:03										
Aluminum	**8.8**	0.52	20	µg/L	1	2204433	05/27/22	05/27/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2204128	05/19/22	05/19/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2204433	05/27/22	05/27/22	EPA 200.8	
IS-3-LL (22E1066-03) Water Sampled: 05/17/22 12:00 Received: 05/17/22 16:03										
Aluminum	**9.4**	0.52	20	µg/L	1	2204433	05/27/22	05/27/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2204128	05/19/22	05/19/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2204433	05/27/22	05/27/22	EPA 200.8	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1066**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-1-LL (22E1066-01) Water Sampled: 05/17/22 10:30 Received: 05/17/22 16:03										
Gasoline	ND	10	50	µg/L	1	2204125	05/19/22	05/19/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*90 %*		*65-135*		"	"	"	"
IS-2-LL (22E1066-02) Water Sampled: 05/17/22 11:30 Received: 05/17/22 16:03										
Gasoline	ND	10	50	µg/L	1	2204125	05/19/22	05/19/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*92 %*		*65-135*		"	"	"	"
IS-3-LL (22E1066-03) Water Sampled: 05/17/22 12:00 Received: 05/17/22 16:03										
Gasoline	ND	10	50	µg/L	1	2204125	05/19/22	05/19/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*92 %*		*65-135*		"	"	"	"

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Stillwater Sciences
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Project: SMUD In situ & Chemistry Monitoring
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Project Manager: Emily Applequist

CLS Work Order #: 22E1066
COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-1-LL (22E1066-01) Water Sampled: 05/17/22 10:30 Received: 05/17/22 16:03										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2204112	05/18/22	05/18/22	EPA 8260B	
Surrogate: Toluene-d8			*97 %*	*72-125*		"	"	"	"	
IS-2-LL (22E1066-02) Water Sampled: 05/17/22 11:30 Received: 05/17/22 16:03										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2204112	05/18/22	05/18/22	EPA 8260B	
Surrogate: Toluene-d8			*95 %*	*72-125*		"	"	"	"	
IS-3-LL (22E1066-03) Water Sampled: 05/17/22 12:00 Received: 05/17/22 16:03										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2204112	05/18/22	05/18/22	EPA 8260B	
Surrogate: Toluene-d8			*97 %*	*72-125*		"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1066**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204076 - General Prep											
Blank (2204076-BLK1)					Prepared & Analyzed: 05/18/22						
Sulfate as SO4	0.145	0.038	0.50	mg/L							J
Chloride	0.287	0.026	0.50	"							J
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2204076-BS1)					Prepared & Analyzed: 05/18/22						
Chloride	4.64	0.026	0.50	mg/L	5.00		93	80-120			
Sulfate as SO4	4.73	0.038	0.50	"	5.00		95	80-120			
Nitrate/Nitrite as N	3.88	0.055	0.40	"	4.00		97	80-120			
Matrix Spike (2204076-MS1)			**Source: 22E1055-01**		Prepared & Analyzed: 05/18/22						
Chloride	15.7	0.026	0.50	mg/L	5.00	10.8	98	80-120			
Sulfate as SO4	28.3	0.038	0.50	"	5.00	23.8	90	80-120			
Nitrate/Nitrite as N	4.01	0.055	0.40	"	4.00	ND	100	80-120			
Matrix Spike Dup (2204076-MSD1)			**Source: 22E1055-01**		Prepared & Analyzed: 05/18/22						
Chloride	15.6	0.026	0.50	mg/L	5.00	10.8	96	80-120	0.7	20	
Sulfate as SO4	28.2	0.038	0.50	"	5.00	23.8	88	80-120	0.3	20	
Nitrate/Nitrite as N	3.91	0.055	0.40	"	4.00	ND	98	80-120	3	20	
Batch 2204093 - General Preparation											
Blank (2204093-BLK1)					Prepared & Analyzed: 05/18/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							
LCS (2204093-BS1)					Prepared & Analyzed: 05/18/22						
Orthophosphate as PO4	0.896	0.0051	0.15	mg/L	0.918		98	80-120			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204093 - General Preparation											
LCS Dup (2204093-BSD1)					Prepared & Analyzed: 05/18/22						
Orthophosphate as PO4	0.864	0.0051	0.15	mg/L	0.918		94	80-120	4	20	
Matrix Spike (2204093-MS1)			**Source: 22E1066-01**		Prepared & Analyzed: 05/18/22						
Orthophosphate as PO4	0.810	0.0051	0.15	mg/L	0.918	ND	88	75-125			
Matrix Spike Dup (2204093-MSD1)			**Source: 22E1066-01**		Prepared & Analyzed: 05/18/22						
Orthophosphate as PO4	0.798	0.0051	0.15	mg/L	0.918	ND	87	75-125	2	25	
Batch 2204094 - General Preparation											
Blank (2204094-BLK1)					Prepared & Analyzed: 05/18/22						
Total Phosphorus as P	ND		5.0	µg/Wipe							
LCS (2204094-BS1)					Prepared & Analyzed: 05/18/22						
Total Phosphorus as P	15.0		5.0	µg/Wipe	15.0		100	75-125			
LCS Dup (2204094-BSD1)					Prepared & Analyzed: 05/18/22						
Total Phosphorus as P	14.3		5.0	µg/Wipe	15.0		95	75-125	4	25	
Matrix Spike (2204094-MS1)			**Source: 22E0999-01**		Prepared & Analyzed: 05/18/22						
Total Phosphorus as P	14.5		5.0	µg/Wipe	15.0	ND	97	75-125			
Matrix Spike Dup (2204094-MSD1)			**Source: 22E0999-01**		Prepared & Analyzed: 05/18/22						
Total Phosphorus as P	14.3		5.0	µg/Wipe	15.0	ND	95	75-125	2	30	
Batch 2204102 - General Preparation											
Blank (2204102-BLK1)					Prepared & Analyzed: 05/18/22						
Total Suspended Solids	ND	2.0	5.0	mg/L							

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COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204102 - General Preparation											
Duplicate (2204102-DUP1)			**Source: 22E0984-02**		Prepared & Analyzed: 05/18/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	
Batch 2204128 - EPA 200 No Digestion											
Blank (2204128-BLK1)					Prepared & Analyzed: 05/19/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2204128-BS1)					Prepared & Analyzed: 05/19/22						
Total Hardness as CaCO3	32.0	0.19	1.0	mg/L	33.1		97	85-115			
Matrix Spike (2204128-MS1)			**Source: 22E0999-01**		Prepared & Analyzed: 05/19/22						
Total Hardness as CaCO3	35.5	0.19	1.0	mg/L	33.1	4.62	93	70-130			
Batch 2204154 - General Preparation											
Blank (2204154-BLK1)					Prepared & Analyzed: 05/19/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Duplicate (2204154-DUP1)			**Source: 22E1066-01**		Prepared & Analyzed: 05/19/22						
Total Alkalinity	3.80	1.0	5.0	mg/L		3.60			5	20	J
Bicarbonate as CaCO3	3.80	0.50	5.0	"		3.60			5	20	J
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	

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CLS Work Order #: 22E1066
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204177 - General Preparation											
Blank (2204177-BLK1)					Prepared & Analyzed: 05/20/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2204177-BS1)					Prepared & Analyzed: 05/20/22						
Total Kjeldahl Nitrogen	0.481	0.040	0.20	mg/L	0.500		96	80-120			
LCS Dup (2204177-BSD1)					Prepared & Analyzed: 05/20/22						
Total Kjeldahl Nitrogen	0.464	0.040	0.20	mg/L	0.500		93	80-120	4	20	
Matrix Spike (2204177-MS1)			**Source: 22E1155-01**		Prepared & Analyzed: 05/20/22						
Total Kjeldahl Nitrogen	0.506	0.040	0.20	mg/L	0.500	0.0570	90	75-125			
Matrix Spike Dup (2204177-MSD1)			**Source: 22E1155-01**		Prepared & Analyzed: 05/20/22						
Total Kjeldahl Nitrogen	0.521	0.040	0.20	mg/L	0.500	0.0570	93	75-125	3	25	
Batch 2204191 - General Preparation											
Duplicate (2204191-DUP1)			**Source: 22E1066-01**		Prepared: 05/20/22 Analyzed: 05/23/22						
Total Dissolved Solids	9.00	5.0	10	mg/L		8.00			12	20	J
Batch 2204224 - General Preparation											
Blank (2204224-BLK1)					Prepared & Analyzed: 05/23/22						
Ammonia as N	ND	0.025	0.10	mg/L							
LCS (2204224-BS1)					Prepared & Analyzed: 05/23/22						
Ammonia as N	0.504	0.025	0.10	mg/L	0.500		101	80-120			

06/01/22 12:20

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1066
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204224 - General Preparation											
LCS Dup (2204224-BSD1)					Prepared & Analyzed: 05/23/22						
Ammonia as N	0.510	0.025	0.10	mg/L	0.500		102	80-120	1	25	
Matrix Spike (2204224-MS1)			**Source: 22E1227-01**		Prepared & Analyzed: 05/23/22						
Ammonia as N	0.551	0.025	0.10	mg/L	0.500	0.0670	97	75-125			
Matrix Spike Dup (2204224-MSD1)			**Source: 22E1227-01**		Prepared & Analyzed: 05/23/22						
Ammonia as N	0.520	0.025	0.10	mg/L	0.500	0.0670	91	75-125	6	25	
Batch 2204230 - Solvent Extract											
Blank (2204230-BLK1)					Prepared: 05/23/22 Analyzed: 05/25/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2204230-BS1)					Prepared: 05/23/22 Analyzed: 05/25/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.4	1.0	5.0	mg/L	40.0		99	78-114			
LCS Dup (2204230-BSD1)					Prepared: 05/23/22 Analyzed: 05/25/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.2	1.0	5.0	mg/L	40.0		98	78-114	0.5	18	
Batch 2204244 - General Preparation											
Blank (2204244-BLK1)					Prepared & Analyzed: 05/24/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							
LCS (2204244-BS1)					Prepared & Analyzed: 05/24/22						
Total Organic Carbon	10.4	0.54	1.0	mg/L	10.0		104	75-125			

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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1066
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204244 - General Preparation											
LCS Dup (2204244-BSD1)					Prepared & Analyzed: 05/24/22						
Total Organic Carbon	10.6	0.54	1.0	mg/L	10.0		106	75-125	2	25	
Matrix Spike (2204244-MS1)			**Source: 22E1066-01**		Prepared & Analyzed: 05/24/22						
Total Organic Carbon	12.5	0.54	1.0	mg/L	10.0	2.11	104	75-125			
Matrix Spike Dup (2204244-MSD1)			**Source: 22E1066-01**		Prepared & Analyzed: 05/24/22						
Total Organic Carbon	12.3	0.54	1.0	mg/L	10.0	2.11	102	75-125	1	25	
Batch 2204322 - General Prep											
Blank (2204322-BLK1)					Prepared & Analyzed: 05/25/22						
Cyanide (total)	0.00230	0.0012	0.0050	mg/L							J
LCS (2204322-BS1)					Prepared & Analyzed: 05/25/22						
Cyanide (total)	0.0847	0.0012	0.0050	mg/L	0.100		85	75-125			
LCS Dup (2204322-BSD1)					Prepared & Analyzed: 05/25/22						
Cyanide (total)	0.0824	0.0012	0.0050	mg/L	0.100		82	75-125	3	25	
Matrix Spike (2204322-MS1)			**Source: 22E1066-01**		Prepared & Analyzed: 05/25/22						
Cyanide (total)	0.0765	0.0012	0.0050	mg/L	0.100	0.00300	74	75-125			QM-7
Matrix Spike Dup (2204322-MSD1)			**Source: 22E1066-01**		Prepared & Analyzed: 05/25/22						
Cyanide (total)	0.0865	0.0012	0.0050	mg/L	0.100	0.00300	84	75-125	12	25	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1066
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204109 - EPA 3510B GCNV											
Blank (2204109-BLK1)					Prepared: 05/18/22 Analyzed: 05/19/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Hydraulic Oil	ND	0.030	0.050	"							
Mineral Oil	ND	0.020	0.050	"							
Kerosene	ND	0.0036	0.050	"							
Surrogate: o-Terphenyl	*0.0306*			"	*0.0250*		*123*	*65-135*			
LCS (2204109-BS1)					Prepared: 05/18/22 Analyzed: 05/19/22						
Diesel	2.15	0.0021	0.050	mg/L	2.50		86	65-135			
Surrogate: o-Terphenyl	*0.0239*			"	*0.0250*		*96*	*65-135*			
LCS Dup (2204109-BSD1)					Prepared: 05/18/22 Analyzed: 05/19/22						
Diesel	2.23	0.0021	0.050	mg/L	2.50		89	65-135	4	30	
Surrogate: o-Terphenyl	*0.0227*			"	*0.0250*		*91*	*65-135*			
Matrix Spike (2204109-MS1)			**Source: 22E0890-01**		Prepared: 05/18/22 Analyzed: 05/19/22						
Diesel	2.62	0.0021	0.050	mg/L	2.50	ND	105	46-137			
Surrogate: o-Terphenyl	*0.0261*			"	*0.0250*		*104*	*65-135*			
Matrix Spike Dup (2204109-MSD1)			**Source: 22E0890-01**		Prepared: 05/18/22 Analyzed: 05/19/22						
Diesel	2.36	0.0021	0.050	mg/L	2.50	ND	95	46-137	10	30	
Surrogate: o-Terphenyl	*0.0246*			"	*0.0250*		*98*	*65-135*			

06/01/22 12:20

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1066**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204124 - EPA 200 Series											
Blank (2204124-BLK1)					Prepared & Analyzed: 05/19/22						
Aluminum	ND	1.6	20	µg/L							
Barium	ND	0.14	5.0	"							
Manganese	0.139	0.050	2.0	"							J
Silver	ND	0.070	0.50	"							
LCS (2204124-BS1)					Prepared & Analyzed: 05/19/22						
Aluminum	458	1.6	20	µg/L	500		92	85-115			
Barium	98.2	0.14	5.0	"	100		98	85-115			
Manganese	95.7	0.050	2.0	"	100		96	85-115			
Silver	100	0.070	0.50	"	100		100	85-115			
Matrix Spike (2204124-MS1)			**Source: 22E1110-01**		Prepared & Analyzed: 05/19/22						
Aluminum	473	1.6	20	µg/L	500	ND	95	70-130			
Barium	160	0.14	5.0	"	100	57.2	103	70-130			
Manganese	92.6	0.050	2.0	"	100	0.127	92	70-130			
Silver	102	0.070	0.50	"	100	ND	102	70-130			
Matrix Spike (2204124-MS2)			**Source: 22E1180-06**		Prepared & Analyzed: 05/19/22						
Aluminum	475	1.6	20	µg/L	500	15.3	92	70-130			
Barium	105	0.14	5.0	"	100	5.59	99	70-130			
Manganese	100	0.050	2.0	"	100	8.84	91	70-130			
Silver	99.2	0.070	0.50	"	100	ND	99	70-130			
Batch 2204132 - EPA 200 Series											
Blank (2204132-BLK1)					Prepared: 05/19/22 Analyzed: 05/20/22						
Calcium	ND	27	1000	µg/L							
Iron	ND	9.1	100	"							
Magnesium	ND	21	1000	"							
Potassium	355	61	1000	"							J
Sodium	ND	34	1000	"							

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1066
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204132 - EPA 200 Series											
LCS (2204132-BS1)					Prepared: 05/19/22 Analyzed: 05/20/22						
Calcium	4910	27	1000	µg/L	5000		98	85-115			
Iron	478	9.1	100	"	500		96	85-115			
Magnesium	4900	21	1000	"	5000		98	85-115			
Potassium	5360	61	1000	"	5000		107	85-115			
Sodium	4950	34	1000	"	5000		99	85-115			
Matrix Spike (2204132-MS1)			**Source: 22E1045-01**		Prepared: 05/19/22 Analyzed: 05/20/22						
Calcium	39300	27	1000	µg/L	5000	37000	47	70-130			QM-5
Iron	462	9.1	100	"	500	15.6	89	70-130			
Magnesium	50400	21	1000	"	5000	46700	74	70-130			
Potassium	6940	61	1000	"	5000	1870	101	70-130			
Sodium	42900	34	1000	"	5000	40400	50	70-130			QM-5
Matrix Spike (2204132-MS2)			**Source: 22E1110-01**		Prepared: 05/19/22 Analyzed: 05/20/22						
Calcium	24800	27	1000	µg/L	5000	20600	84	70-130			
Iron	487	9.1	100	"	500	ND	97	70-130			
Magnesium	16700	21	1000	"	5000	11700	99	70-130			
Potassium	9240	61	1000	"	5000	5920	66	70-130			QM-5
Sodium	20400	34	1000	"	5000	15700	94	70-130			

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1066
COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204128 - EPA 200 No Digestion											
Blank (2204128-BLK1)					Prepared & Analyzed: 05/19/22						
Iron	13.4	6.8	100	µg/L							J
LCS (2204128-BS1)					Prepared & Analyzed: 05/19/22						
Iron	452	6.8	100	µg/L	500		90	85-115			
Matrix Spike (2204128-MS1)			**Source: 22E0999-01**		Prepared & Analyzed: 05/19/22						
Iron	442	6.8	100	µg/L	500	ND	88	70-130			
Batch 2204433 - EPA 200 No Digestion											
Blank (2204433-BLK1)					Prepared & Analyzed: 05/27/22						
Aluminum	ND	0.52	20	µg/L							
Silver	ND	0.15	0.50	"							
LCS (2204433-BS1)					Prepared & Analyzed: 05/27/22						
Aluminum	467	0.52	20	µg/L	500		93	85-115			
Silver	95.9	0.15	0.50	"	100		96	85-115			
Matrix Spike (2204433-MS1)			**Source: 22E0999-01**		Prepared & Analyzed: 05/27/22						
Aluminum	502	0.52	20	µg/L	500	21.4	96	70-130			
Silver	95.3	0.15	0.50	"	100	ND	95	70-130			
Matrix Spike (2204433-MS2)			**Source: 22E1403-03**		Prepared & Analyzed: 05/27/22						
Aluminum	463	0.52	20	µg/L	500	ND	93	70-130			
Silver	94.7	0.15	0.50	"	100	ND	95	70-130			

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1066
COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204125 - EPA 5030 Water GC											
Blank (2204125-BLK1)					Prepared & Analyzed: 05/19/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*17.7*			"	*20.0*		*88*	*65-135*			
LCS (2204125-BS1)					Prepared & Analyzed: 05/19/22						
Gasoline	560	10	50	µg/L	500		112	70-130			
Surrogate: o-Chlorotoluene (Gas)	*20.3*			"	*20.0*		*101*	*65-135*			
LCS Dup (2204125-BSD1)					Prepared & Analyzed: 05/19/22						
Gasoline	429	10	50	µg/L	500		86	70-130	26	30	
Surrogate: o-Chlorotoluene (Gas)	*18.3*			"	*20.0*		*91*	*65-135*			
Matrix Spike (2204125-MS1)			**Source: 22E0999-01**		Prepared & Analyzed: 05/19/22						
Gasoline	530	10	50	µg/L	500	ND	106	68-132			
Surrogate: o-Chlorotoluene (Gas)	*20.2*			"	*20.0*		*101*	*65-135*			
Matrix Spike Dup (2204125-MSD1)			**Source: 22E0999-01**		Prepared & Analyzed: 05/19/22						
Gasoline	525	10	50	µg/L	500	ND	105	68-132	0.9	32	
Surrogate: o-Chlorotoluene (Gas)	*20.0*			"	*20.0*		*100*	*65-135*			

06/01/22 12:20

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1066
COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204112 - EPA 5030 Water MS											
Blank (2204112-BLK1)					Prepared & Analyzed: 05/18/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Surrogate: Toluene-d8	*9.72*			"	*10.0*		*97*	*72-125*			
LCS (2204112-BS1)					Prepared & Analyzed: 05/18/22						
Methyl tert-butyl ether	19.3	0.095	0.50	µg/L	20.0		97	52-130			
Surrogate: Toluene-d8	*10.3*			"	*10.0*		*103*	*72-125*			
LCS Dup (2204112-BSD1)					Prepared & Analyzed: 05/18/22						
Methyl tert-butyl ether	22.5	0.095	0.50	µg/L	20.0		113	52-130	15	30	
Surrogate: Toluene-d8	*10.2*			"	*10.0*		*102*	*72-125*			
Matrix Spike (2204112-MS1)			**Source: 22E1045-01**		Prepared & Analyzed: 05/18/22						
Methyl tert-butyl ether	20.7	0.095	0.50	µg/L	20.0	ND	103	52-140			
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			
Matrix Spike Dup (2204112-MSD1)			**Source: 22E1045-01**		Prepared & Analyzed: 05/18/22						
Methyl tert-butyl ether	24.6	0.095	0.50	µg/L	20.0	ND	123	52-140	17	30	
Surrogate: Toluene-d8	*10.0*			"	*10.0*		*100*	*72-125*			

06/01/22 12:20

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1066**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
QM-5	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 226046 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[X] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [X] NO [ ]

GLOBAL ID

FIELD CONDITIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	Cl, SO4	TSS, TDS, Hardness, Alkalinity, NO2-N, NO3-N, Diss Metals,	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS 1	2	3	10	SPECIAL INSTRUCTIONS
5.17	10:30	IS-1-LL		Surface water			6	X	X	X	X	X	X	X					X	
5.17	11:30	IS-2-LL		Surface water			6	X	X	X	X	X	X	X					X	
5.17	12:00	IS-3-LL		Surface water			6	X	X	X	X	X	X	X					X	
				Surface water			6												X	
				Surface water			6												X	
				Surface water			6												X	
				Surface water			6												X	
				Surface water			6												X	INVOICE TO:
				Surface water			6												X	Stillwater Sciences
				Surface water			6												X	Same as above
				Surface water			6												X	
				Surface water			6												X	**Project No. 750.10 Task 0620.01**
				Surface water			6												X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H_2SO_4 (5) NH_2/NH_4 (6) NAOH

16:03

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	STILLWATER SCIENCES	5-17-22		

RECEIVED AT LAB BY: DATE/TIME: 5/17/22 1603 CONDITIONS/COMMENTS: 5.3/4.6

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER AIR BILL #

basic laboratory

2218 Railroad Avenue
Redding, California 96001
voice 530.243.7234
fax 530.243.7494

3860 Morrow Lane, Suite F
Chico, California 95928
voice 530.894.8966
fax 530.894.5143

Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02

Lab No: 22E1088
Reported: 06/13/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22E1088, received on 05/24/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: UARP-R-15-13-CR
Matrix / Type: Surface Water (Grab)
Lab ID: 22E1088-01
Sampled: 05/23/22 10:00
Received: 05/24/22 08:50

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	06/08/22	06/07/22	B2F0988 / edm
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.21		0.04	0.10	"	"	"	"
Lead	"	0.047	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.56		0.22	0.50	EPA 1631E	05/29/22	05/29/22	B2E1548 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	06/03/22	06/02/22	B2F0883 / EDM
Nickel	ug/l	0.11		0.02	0.10	EPA 1638	06/08/22	06/07/22	B2F0988 / edm
Selenium	"	ND		0.3	2.0	EPA 200.8	05/28/22	05/25/22	B2E1447 / edm
Zinc	"	0.31	J	0.12	0.50	EPA 1638	06/08/22	06/07/22	B2F0988 / edm

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	06/08/22	06/08/22	B2F1027 / edm
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.17		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.08	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/28/22	05/28/22	B2E1546 / edm
Zinc	"	0.29	J	0.12	0.50	EPA 1638	06/08/22	06/08/22	B2F1027 / edm

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Analytical Report

Description: UARP-R-15-12-JR
Matrix / Type: Surface Water (Grab)
Lab ID: 22E1088-02
Sampled: 05/23/22 12:00
Received: 05/24/22 08:50

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	06/08/22	06/07/22	B2F0988 / edm
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.16		0.04	0.10	"	"	"	"
Lead	"	0.018	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.49	J	0.22	0.50	EPA 1631E	05/29/22	05/29/22	B2E1548 / DJC
Methyl Mercury as Mercury	"	0.020	J	0.017	0.050	EPA 1630	06/03/22	06/02/22	B2F0883 / EDM
Nickel	ug/l	0.07	J	0.02	0.10	EPA 1638	06/08/22	06/07/22	B2F0988 / edm
Selenium	"	ND		0.3	2.0	EPA 200.8	05/28/22	05/25/22	B2E1447 / edm
Zinc	"	0.19	J	0.12	0.50	EPA 1638	06/08/22	06/07/22	B2F0988 / edm

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	06/08/22	06/08/22	B2F1027 / edm
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.14		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.05	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/28/22	05/28/22	B2E1546 / edm
Zinc	"	0.46	J	0.12	0.50	EPA 1638	06/08/22	06/08/22	B2F1027 / edm

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Analytical Report

Description: R-15-16-EBR
Matrix / Type: Surface Water (Grab)
Lab ID: 22E1088-03
Sampled: 05/23/22 13:30
Received: 05/24/22 08:50

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	06/08/22	06/07/22	B2F0988 / edm
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.19		0.04	0.10	"	"	"	"
Lead	"	0.028	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.27	J	0.22	0.50	EPA 1631E	05/29/22	05/29/22	B2E1548 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	06/03/22	06/02/22	B2F0883 / EDM
Nickel	ug/l	ND		0.02	0.10	EPA 1638	06/08/22	06/07/22	B2F0988 / edm
Selenium	"	ND		0.3	2.0	EPA 200.8	05/28/22	05/25/22	B2E1447 / edm
Zinc	"	2.08		0.12	0.50	EPA 1638	06/08/22	06/07/22	B2F0988 / edm

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	06/08/22	06/08/22	B2F1027 / edm
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.05	J	0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	ND		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	05/28/22	05/28/22	B2E1546 / edm
Zinc	"	0.66		0.12	0.50	EPA 1638	06/08/22	06/08/22	B2F1027 / edm

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2E1447 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	207	2.0	ug/l	200		103	85-115			
Duplicate	Source: 22E1088-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22E1088-01									
Selenium	209	2.0	ug/l	200	ND	104	75-125			
Metals - Total	**Batch B2E1548 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2E1548 - BrCl Digestion										
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	8.87	0.50	ng/l	10.0		88.7	77-123			
Matrix Spike	Source: 22E1088-03									
Mercury	9.85	0.50	ng/l	10.0	0.27	95.8	71-125			
Matrix Spike Dup	Source: 22E1088-03									
Mercury	9.70	0.50	ng/l	10.0	0.27	94.3	71-125	1.57	24	
Metals - Total Batch B2F0883 - EPA 1630 Distillation (Modified)										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.31	0.050	ng/l	2.00		116	67-133			
Matrix Spike	Source: 22E0953-03									
Methyl Mercury as Mercury	1.18	0.050	ng/l	1.00	ND	118	65-135			
Matrix Spike	Source: 22E1167-01									
Methyl Mercury as Mercury	1.17	0.050	ng/l	1.00	0.026	114	65-135			
Matrix Spike Dup	Source: 22E0953-03									
Methyl Mercury as Mercury	0.936	0.050	ng/l	1.00	ND	93.6	65-135	22.6	35	
Matrix Spike Dup	Source: 22E1167-01									
Methyl Mercury as Mercury	1.04	0.050	ng/l	1.00	0.026	101	65-135	11.6	35	
Metals - Total Batch B2F0988 - EPA 1638 - Closed Bottle Oven Digestion										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2F0988 - EPA 1638 - Closed Bottle Oven Digestion**									
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.25	0.50	ug/l	1.25		99.7	50-150			
Cadmium	0.25	0.10	ug/l	0.250		100	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.131	0.050	ug/l	0.125		105	72-143			
Nickel	0.24	0.10	ug/l	0.250		94.7	68-134			
Zinc	1.25	0.50	ug/l	1.25		99.7	46-146			
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.26	0.10	ug/l	0.250		105	84-113			
Copper	0.26	0.10	ug/l	0.250		103	51-145			
Lead	0.125	0.050	ug/l	0.125		100	72-143			
Nickel	0.24	0.10	ug/l	0.250		95.2	68-134			
Zinc	1.25	0.50	ug/l	1.25		99.9	46-146			
Matrix Spike	Source: 22E1088-01									
Arsenic	2.50	0.50	ug/l	2.50	ND	100	50-150			
Cadmium	0.53	0.10	ug/l	0.500	ND	106	84-113			
Copper	0.70	0.10	ug/l	0.500	0.21	99.8	51-145			
Lead	0.297	0.050	ug/l	0.250	0.047	99.8	72-143			
Nickel	0.60	0.10	ug/l	0.500	0.11	98.6	68-134			
Zinc	2.89	0.50	ug/l	2.50	0.31	103	46-146			
Matrix Spike	Source: 22E1247-02									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.1	84-113			
Copper	0.66	0.10	ug/l	0.500	0.16	99.8	51-145			
Lead	0.259	0.050	ug/l	0.250	0.014	97.8	72-143			
Nickel	0.58	0.10	ug/l	0.500	0.06	104	68-134			
Zinc	2.69	0.50	ug/l	2.50	0.29	96.2	46-146			
Matrix Spike Dup	Source: 22E1088-01									
Arsenic	2.58	0.50	ug/l	2.50	ND	103	50-150	3.00	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	98.9	84-113	6.65	20	
Copper	0.71	0.10	ug/l	0.500	0.21	101	51-145	0.757	20	
Lead	0.295	0.050	ug/l	0.250	0.047	99.0	72-143	0.694	20	
Nickel	0.62	0.10	ug/l	0.500	0.11	103	68-134	3.26	20	
Zinc	2.81	0.50	ug/l	2.50	0.31	99.9	46-146	2.90	20	
Matrix Spike Dup	Source: 22E1247-02									
Arsenic	2.58	0.50	ug/l	2.50	ND	103	50-150	1.73	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	98.7	84-113	2.64	20	
Copper	0.65	0.10	ug/l	0.500	0.16	97.4	51-145	1.81	20	

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2F0988 - EPA 1638 - Closed Bottle Oven Digestion										
Lead	0.255	0.050	ug/l	0.250	0.014	96.3	72-143	1.46	20	
Nickel	0.55	0.10	ug/l	0.500	0.06	98.8	68-134	4.29	20	
Zinc	2.77	0.50	ug/l	2.50	0.29	99.2	46-146	2.76	20	
Metals - Dissolved Batch B2E1546 - EPA 200.8 Diss										
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	208	2.0	ug/l	200		104	85-115			
Duplicate Source: 22E1088-01										
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike Source: 22E1088-01										
Selenium	209	2.0	ug/l	200	ND	104	75-125			
Metals - Dissolved Batch B2F1027 - EPA 1638 - Dissolved										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.28	0.50	ug/l	1.25		102	50-150			
Cadmium	0.25	0.10	ug/l	0.250		98.8	84-113			
Copper	0.26	0.10	ug/l	0.250		105	51-145			
Lead	0.130	0.050	ug/l	0.125		104	72-143			
Nickel	0.24	0.10	ug/l	0.250		95.2	68-134			

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved **Batch B2F1027 - EPA 1638 - Dissolved**										
Zinc	1.30	0.50	ug/l	1.25		104	46-146			
LCS										
Arsenic	1.28	0.50	ug/l	1.25		102	50-150			
Cadmium	0.26	0.10	ug/l	0.250		102	84-113			
Copper	0.26	0.10	ug/l	0.250		104	51-145			
Lead	0.129	0.050	ug/l	0.125		104	72-143			
Nickel	0.24	0.10	ug/l	0.250		94.7	68-134			
Zinc	1.31	0.50	ug/l	1.25		105	46-146			
Matrix Spike	Source: 22E1088-01									
Arsenic	2.55	0.50	ug/l	2.50	ND	102	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113			
Copper	0.69	0.10	ug/l	0.500	0.17	104	51-145			
Lead	0.248	0.050	ug/l	0.250	ND	99.1	72-143			
Nickel	0.59	0.10	ug/l	0.500	0.08	101	68-134			
Zinc	2.87	0.50	ug/l	2.50	0.29	103	46-146			
Matrix Spike	Source: 22E1247-02									
Arsenic	2.82	0.50	ug/l	2.50	ND	113	50-150			
Cadmium	0.52	0.10	ug/l	0.500	ND	104	84-113			
Copper	0.68	0.10	ug/l	0.500	0.15	105	51-145			
Lead	0.260	0.050	ug/l	0.250	ND	104	72-143			
Nickel	0.58	0.10	ug/l	0.500	0.05	105	68-134			
Zinc	2.94	0.50	ug/l	2.50	0.30	106	46-146			
Matrix Spike Dup	Source: 22E1088-01									
Arsenic	2.55	0.50	ug/l	2.50	ND	102	50-150	0.00740	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	98.4	84-113	3.45	20	
Copper	0.69	0.10	ug/l	0.500	0.17	103	51-145	1.09	20	
Lead	0.258	0.050	ug/l	0.250	ND	103	72-143	4.01	20	
Nickel	0.60	0.10	ug/l	0.500	0.08	102	68-134	0.819	20	
Zinc	2.83	0.50	ug/l	2.50	0.29	101	46-146	1.55	20	
Matrix Spike Dup	Source: 22E1247-02									
Arsenic	2.74	0.50	ug/l	2.50	ND	109	50-150	3.03	20	
Cadmium	0.52	0.10	ug/l	0.500	ND	103	84-113	0.363	20	
Copper	0.69	0.10	ug/l	0.500	0.15	109	51-145	2.61	20	
Lead	0.258	0.050	ug/l	0.250	ND	103	72-143	0.446	20	
Nickel	0.55	0.10	ug/l	0.500	0.05	99.1	68-134	5.53	20	
Zinc	2.89	0.50	ug/l	2.50	0.30	103	46-146	1.85	20	

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	CA-ELAP does not accredit this analyte or method as of December 2020. *(Newly released 2021 FOA tables may include this analyte or method.)*

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Analytical Report

Note 1 Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless samples are received on ice and collected on the same day as delivery. Regulating agencies may invalidate results if temperature requirements are not met.

Note 2 According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen

Ricky Jensen, General Manager
Pace Analytical Services LLC - Redding CA
California ELAP Cert #1677 & 2718

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

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LABORATORY WORK ORDER # 22E1088

PAGE 1 OF 1

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CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS: 279 Coustea Place, Suite 400, Davis, CA 95618

REPORT TO ☒ Email ☐ Mail Hardcopy

NAME / ATTENTION: Emily Applequist

PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED: ☒ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one): ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED		SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	5/23/22	10:00	(AM) PM	SW		✓	UARP-R-15-13-CR		✓	✓	✓	✓	✓	✓	✓
2	5/23/22	12:00	AM (PM)	SW		✓	UARP-R-15-12-JR		✓	✓	✓	✓	✓	✓	✓
3	5/23/22	13:30	AM (PM)	SW		✓	R-15-16-EBR		✓	✓	✓	✓	✓	✓	✓
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												

SAMPLED BY: (please print) EHA/JPV*

RELINQUISHED DATE / TIME: 5.23.22

SAMPLING / ANALYSIS COMMENTS

*per bottles RH 5.24.22) Total and Dissolved LL 1638 Metals

☐ **I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS.** (www.basiclab.com/terms)

NAME Joey Verdian **SIGNATURE** Joey Verdian **DATE** 5/23/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
		Joey Verdian	5/23/22
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
Rachel Hull	5.24.22 0850	Rachel Hull	5.24.22 1000

For Official Lab Comments Only

***SAMPLE TYPE CODES**

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22E1088

SHIPPING INFORMATION

Walk-In ☐
Courier ☐
FedEx ☒
UPS ☐
Other ☐

Cooler Present? Yes ☒ No ☐

Samples Received By: RH Date: 5·24·22

	Yes	No
Samples received on ice?	☒	☐
Samples received the same day collected?	☐	☒

Ice type? ☒ Wet ☐ Blue ☐ Other _____

melted

SAMPLE TEMPERATURES AT RECEIPT Therm. ID (Circle one): (Therm-36) Therm-37 Therm-59 Other: _____

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	3.2	-06		-11		-16	
-02	3.3	-07		-12		-17	
-03	5.3	-08		-13		-18	
-04		-09		-14		-19	
-05		-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: RH Date: 5·24·22

	Yes	No	NA
Custody seals present?	☐	☐	☒
Samples in proper containers?	☒	☐	
Sample containers damaged?	☐	☒	
Sufficient sample volume for indicated tests?	☒	☐	
Samples received within holding times?	☒	☐	
Are VOA vials free of headspace?	☐	☐	☒
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☒

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field? RH 5·24·22	☒	☒	☐
Preserved in the lab?	☒	☐	☐

Lab Preservation Date & Time 5·24·22 0900

☐ H2SO4 (ID_____) ☒ HNO3 (ID 2B140360) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☒
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☒	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☐
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☐
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☐
Are proper preservation lables present?	☒	☐	☐

By:_____ Meter ID:_____

Preservation checked at Lab? Date & Time 5·24·22 0901 Test Strip (ID 1H20019)

Preservation and Preservation Checks performed by: RH

COMMENTS, DISCREPANCEIS, ANOMALIES

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02 UARP

Lab No: 22E1167
Reported: 06/13/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22E1167, received on 05/25/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: R-15-14-SC
Matrix / Type: Surface Water (Grab)
Lab ID: 22E1167-01
Sampled: 05/24/22 10:00
Received: 05/25/22 11:50

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.14	J	0.12	0.50	EPA 1638	06/08/22	06/07/22	B2F0988 / edm
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.27		0.04	0.10	"	"	"	"
Lead	"	0.033	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.62		0.22	0.50	EPA 1631E	05/29/22	05/29/22	B2E1548 / DJC
Methyl Mercury as Mercury	"	0.026	J	0.017	0.050	EPA 1630	06/03/22	06/02/22	B2F0883 / EDM
Nickel	ug/l	0.06	J	0.02	0.10	EPA 1638	06/08/22	06/07/22	B2F0988 / edm
Selenium	"	ND		0.3	2.0	EPA 200.8	06/02/22	05/27/22	B2E1495 / BDL
Zinc	"	1.12		0.12	0.50	EPA 1638	06/08/22	06/07/22	B2F0988 / edm

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.13	J	0.12	0.50	"	06/08/22	06/08/22	B2F1027 / edm
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.20		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.04	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	06/02/22	06/01/22	B2F0854 / BDL
Zinc	"	0.59		0.12	0.50	EPA 1638	06/08/22	06/08/22	B2F1027 / edm

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Analytical Report

Description: R-15-15-SC
Matrix / Type: Surface Water (Grab)
Lab ID: 22E1167-02
Sampled: 05/24/22 10:00
Received: 05/25/22 11:50

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.14	J	0.12	0.50	EPA 1638	06/08/22	06/07/22	B2F0988 / edm
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.23		0.04	0.10	"	"	"	"
Lead	"	0.016	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.50		0.22	0.50	EPA 1631E	05/29/22	05/29/22	B2E1548 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	06/03/22	06/02/22	B2F0883 / EDM
Nickel	ug/l	0.06	J	0.02	0.10	EPA 1638	06/08/22	06/07/22	B2F0988 / edm
Selenium	"	ND		0.3	2.0	EPA 200.8	06/02/22	05/27/22	B2E1495 / BDL
Zinc	"	0.81		0.12	0.50	EPA 1638	06/08/22	06/07/22	B2F0988 / edm

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.14	J	0.12	0.50	"	06/08/22	06/08/22	B2F1027 / edm
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.20		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.07	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	06/02/22	06/01/22	B2F0854 / BDL
Zinc	"	1.05		0.12	0.50	EPA 1638	06/08/22	06/08/22	B2F1027 / edm

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Analytical Report

Description: R-15-16-CB
Matrix / Type: Surface Water (Grab)
Lab ID: 22E1167-03
Sampled: 05/24/22 13:45
Received: 05/25/22 11:50

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.18	J	0.12	0.50	EPA 1638	06/08/22	06/07/22	B2F0988 / edm
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.27		0.04	0.10	"	"	"	"
Lead	"	0.037	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.67		0.22	0.50	EPA 1631E	05/29/22	05/29/22	B2E1548 / DJC
Methyl Mercury as Mercury	"	0.118		0.017	0.050	EPA 1630	06/03/22	06/02/22	B2F0883 / EDM
Nickel	ug/l	0.10		0.02	0.10	EPA 1638	06/08/22	06/07/22	B2F0988 / edm
Selenium	"	ND		0.3	2.0	EPA 200.8	06/02/22	05/27/22	B2E1495 / BDL
Zinc	"	1.21		0.12	0.50	EPA 1638	06/08/22	06/07/22	B2F0988 / edm

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.15	J	0.12	0.50	"	06/08/22	06/08/22	B2F1027 / edm
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.27		0.04	0.10	"	"	"	"
Lead	"	0.014	J	0.007	0.050	"	"	"	"
Nickel	"	0.09	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	06/02/22	06/01/22	B2F0854 / BDL
Zinc	"	0.55		0.12	0.50	EPA 1638	06/08/22	06/08/22	B2F1027 / edm

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Analytical Report

Description: R-15-17-CB
Matrix / Type: Surface Water (Grab)
Lab ID: 22E1167-04
Sampled: 05/24/22 14:15
Received: 05/25/22 11:50

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.18	J	0.12	0.50	EPA 1638	06/08/22	06/07/22	B2F0988 / edm
Cadmium	"	0.04	J	0.02	0.10	"	"	"	"
Copper	"	0.29		0.04	0.10	"	"	"	"
Lead	"	0.040	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.73		0.22	0.50	EPA 1631E	05/29/22	05/29/22	B2E1548 / DJC
Methyl Mercury as Mercury	"	0.029	J	0.017	0.050	EPA 1630	06/10/22	06/09/22	B2F1060 / EDM
Nickel	ug/l	0.10		0.02	0.10	EPA 1638	06/08/22	06/07/22	B2F0988 / edm
Selenium	"	ND		0.3	2.0	EPA 200.8	06/02/22	05/27/22	B2E1495 / BDL
Zinc	"	6.89		0.12	0.50	EPA 1638	06/08/22	06/07/22	B2F0988 / edm

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.13	J	0.12	0.50	"	06/08/22	06/08/22	B2F1027 / edm
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.21		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.07	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	06/02/22	06/01/22	B2F0854 / BDL
Zinc	"	0.68		0.12	0.50	EPA 1638	06/08/22	06/08/22	B2F1027 / edm

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2E1495 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	204	2.0	ug/l	200		102	85-115			
Duplicate	Source: 22E1167-02									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22E1181-06									
Selenium	ND	20.0	ug/l		ND				20	
Matrix Spike	Source: 22E1167-02									
Selenium	199	2.0	ug/l	200	ND	99.3	75-125			
Matrix Spike	Source: 22E1181-06									
Selenium	207	20.0	ug/l	200	ND	104	75-125			
Metals - Total	**Batch B2E1548 - BrCl Digestion**									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total **Batch B2E1548 - BrCl Digestion**										
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	8.87	0.50	ng/l	10.0		88.7	77-123			
Matrix Spike	Source: 22E1088-03									
Mercury	9.85	0.50	ng/l	10.0	0.27	95.8	71-125			
Matrix Spike Dup	Source: 22E1088-03									
Mercury	9.70	0.50	ng/l	10.0	0.27	94.3	71-125	1.57	24	
Metals - Total **Batch B2F0883 - EPA 1630 Distillation (Modified)**										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.31	0.050	ng/l	2.00		116	67-133			
Matrix Spike	Source: 22E0953-03									
Methyl Mercury as Mercury	1.18	0.050	ng/l	1.00	ND	118	65-135			
Matrix Spike	Source: 22E1167-01									
Methyl Mercury as Mercury	1.17	0.050	ng/l	1.00	0.026	114	65-135			
Matrix Spike Dup	Source: 22E0953-03									
Methyl Mercury as Mercury	0.936	0.050	ng/l	1.00	ND	93.6	65-135	22.6	35	
Matrix Spike Dup	Source: 22E1167-01									
Methyl Mercury as Mercury	1.04	0.050	ng/l	1.00	0.026	101	65-135	11.6	35	
Metals - Total **Batch B2F0988 - EPA 1638 - Closed Bottle Oven Digestion**										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total **Batch B2F0988 - EPA 1638 - Closed Bottle Oven Digestion**										
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.25	0.50	ug/l	1.25		99.7	50-150			
Cadmium	0.25	0.10	ug/l	0.250		100	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.131	0.050	ug/l	0.125		105	72-143			
Nickel	0.24	0.10	ug/l	0.250		94.7	68-134			
Zinc	1.25	0.50	ug/l	1.25		99.7	46-146			
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.26	0.10	ug/l	0.250		105	84-113			
Copper	0.26	0.10	ug/l	0.250		103	51-145			
Lead	0.125	0.050	ug/l	0.125		100	72-143			
Nickel	0.24	0.10	ug/l	0.250		95.2	68-134			
Zinc	1.25	0.50	ug/l	1.25		99.9	46-146			
Matrix Spike	Source: 22E1088-01									
Arsenic	2.50	0.50	ug/l	2.50	ND	100	50-150			
Cadmium	0.53	0.10	ug/l	0.500	ND	106	84-113			
Copper	0.70	0.10	ug/l	0.500	0.21	99.8	51-145			
Lead	0.297	0.050	ug/l	0.250	0.047	99.8	72-143			
Nickel	0.60	0.10	ug/l	0.500	0.11	98.6	68-134			
Zinc	2.89	0.50	ug/l	2.50	0.31	103	46-146			
Matrix Spike	Source: 22E1247-02									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.1	84-113			
Copper	0.66	0.10	ug/l	0.500	0.16	99.8	51-145			
Lead	0.259	0.050	ug/l	0.250	0.014	97.8	72-143			
Nickel	0.58	0.10	ug/l	0.500	0.06	104	68-134			
Zinc	2.69	0.50	ug/l	2.50	0.29	96.2	46-146			
Matrix Spike Dup	Source: 22E1088-01									
Arsenic	2.58	0.50	ug/l	2.50	ND	103	50-150	3.00	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	98.9	84-113	6.65	20	
Copper	0.71	0.10	ug/l	0.500	0.21	101	51-145	0.757	20	
Lead	0.295	0.050	ug/l	0.250	0.047	99.0	72-143	0.694	20	
Nickel	0.62	0.10	ug/l	0.500	0.11	103	68-134	3.26	20	

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total **Batch B2F0988 - EPA 1638 - Closed Bottle Oven Digestion**										
Zinc	2.81	0.50	ug/l	2.50	0.31	99.9	46-146	2.90	20	
Matrix Spike Dup	Source: 22E1247-02									
Arsenic	2.58	0.50	ug/l	2.50	ND	103	50-150	1.73	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	98.7	84-113	2.64	20	
Copper	0.65	0.10	ug/l	0.500	0.16	97.4	51-145	1.81	20	
Lead	0.255	0.050	ug/l	0.250	0.014	96.3	72-143	1.46	20	
Nickel	0.55	0.10	ug/l	0.500	0.06	98.8	68-134	4.29	20	
Zinc	2.77	0.50	ug/l	2.50	0.29	99.2	46-146	2.76	20	
Metals - Total **Batch B2F1060 - EPA 1630 Distillation (Modified)**										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	1.41	0.050	ng/l	2.00		70.6	67-133			
Matrix Spike	Source: 22E1167-04									
Methyl Mercury as Mercury	1.03	0.050	ng/l	1.00	0.029	100	65-135			
Matrix Spike Dup	Source: 22E1167-04									
Methyl Mercury as Mercury	0.982	0.050	ng/l	1.00	0.029	95.3	65-135	4.68	35	
Metals - Dissolved **Batch B2F0854 - EPA 200.8 Diss**										
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	181	2.0	ug/l	200		90.6	85-115			
Duplicate	Source: 22E1167-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22E1181-04									
Selenium	ND	10.0	ug/l		ND				20	
Matrix Spike	Source: 22E1167-01									
Selenium	179	2.0	ug/l	200	ND	89.6	75-125			
Matrix Spike	Source: 22E1181-04									
Selenium	982	10.0	ug/l	1000	ND	98.2	75-125			
Metals - Dissolved **Batch B2F1027 - EPA 1638 - Dissolved**										

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved	**Batch B2F1027 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.28	0.50	ug/l	1.25		102	50-150			
Cadmium	0.25	0.10	ug/l	0.250		98.8	84-113			
Copper	0.26	0.10	ug/l	0.250		105	51-145			
Lead	0.130	0.050	ug/l	0.125		104	72-143			
Nickel	0.24	0.10	ug/l	0.250		95.2	68-134			
Zinc	1.30	0.50	ug/l	1.25		104	46-146			
LCS										
Arsenic	1.28	0.50	ug/l	1.25		102	50-150			
Cadmium	0.26	0.10	ug/l	0.250		102	84-113			
Copper	0.26	0.10	ug/l	0.250		104	51-145			
Lead	0.129	0.050	ug/l	0.125		104	72-143			
Nickel	0.24	0.10	ug/l	0.250		94.7	68-134			
Zinc	1.31	0.50	ug/l	1.25		105	46-146			
Matrix Spike	Source: 22E1088-01									
Arsenic	2.55	0.50	ug/l	2.50	ND	102	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113			
Copper	0.69	0.10	ug/l	0.500	0.17	104	51-145			
Lead	0.248	0.050	ug/l	0.250	ND	99.1	72-143			
Nickel	0.59	0.10	ug/l	0.500	0.08	101	68-134			
Zinc	2.87	0.50	ug/l	2.50	0.29	103	46-146			
Matrix Spike	Source: 22E1247-02									

basic laboratory
2218 Railroad Avenue
Redding, California 96001
voice 530.243.7234
fax 530.243.7494

3860 Morrow Lane, Suite F
Chico, California 95928
voice 530.894.8966
fax 530.894.5143

Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved **Batch B2F1027 - EPA 1638 - Dissolved**										
Arsenic	2.82	0.50	ug/l	2.50	ND	113	50-150			
Cadmium	0.52	0.10	ug/l	0.500	ND	104	84-113			
Copper	0.68	0.10	ug/l	0.500	0.15	105	51-145			
Lead	0.260	0.050	ug/l	0.250	ND	104	72-143			
Nickel	0.58	0.10	ug/l	0.500	0.05	105	68-134			
Zinc	2.94	0.50	ug/l	2.50	0.30	106	46-146			
Matrix Spike Dup	Source: 22E1088-01									
Arsenic	2.55	0.50	ug/l	2.50	ND	102	50-150	0.00740	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	98.4	84-113	3.45	20	
Copper	0.69	0.10	ug/l	0.500	0.17	103	51-145	1.09	20	
Lead	0.258	0.050	ug/l	0.250	ND	103	72-143	4.01	20	
Nickel	0.60	0.10	ug/l	0.500	0.08	102	68-134	0.819	20	
Zinc	2.83	0.50	ug/l	2.50	0.29	101	46-146	1.55	20	
Matrix Spike Dup	Source: 22E1247-02									
Arsenic	2.74	0.50	ug/l	2.50	ND	109	50-150	3.03	20	
Cadmium	0.52	0.10	ug/l	0.500	ND	103	84-113	0.363	20	
Copper	0.69	0.10	ug/l	0.500	0.15	109	51-145	2.61	20	
Lead	0.258	0.050	ug/l	0.250	ND	103	72-143	0.446	20	
Nickel	0.55	0.10	ug/l	0.500	0.05	99.1	68-134	5.53	20	
Zinc	2.89	0.50	ug/l	2.50	0.30	103	46-146	1.85	20	

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	CA-ELAP does not accredit this analyte or method as of December 2020. *(Newly released 2021 FOA tables may include this analyte or method.)*
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless samples are received on ice and collected on the same day as delivery. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

basic laboratory

2218 Railroad Avenue
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3860 Morrow Lane, Suite F
Chico, California 95928
voice 530.894.8966
fax 530.894.5143

Analytical Report

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen

Ricky Jensen, General Manager
Pace Analytical Services LLC - Redding CA
California ELAP Cert #1677 & 2718

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494
☐ 3860 Morrow Lane, Suite F Chico, CA 95928 (530) 894-8966 FAX: (530) 894-5143

LABORATORY WORK ORDER # 22E1167
PAGE 1 OF 1

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS
279 Coustea Place, Suite 400
Davis, CA 95618

REPORT TO ☑ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED
☑ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one) ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED		SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	ANALYSES REQUESTED: T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	5/24/22	10:00	AM PM	SW			R-15-14-SC		6	✓	✓	✓	✓	✓	✓
2	5/24/22	10:00	AM PM				R-15-15-SC		6	✓	✓	✓	✓	✓	✓
3	5/24/22	13:45	AM PM				R-15-16-CB		6	✓	✓	✓	✓	✓	✓
4	5/24/22	14:85	AM PM				R-15-17-CB		6	✓	✓	✓	✓	✓	✓
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												

SAMPLED BY: (please print) *

RELINQUISHED DATE / TIME:

SAMPLING / ANALYSIS COMMENTS
(1) Total and Dissolved LL 1638 Metals
*Per bottle sampled by JPV & EPA 5/25/22

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME Joey Verdian SIGNATURE Joey Verdian DATE 5/24/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
		Joey Verdian Stillwater Sciences	5/24/22 16:00
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
Rachel Krull	5-25-22 1150		5/26/22 0842

For Official Lab Comments Only

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22E1167

SHIPPING INFORMATION

Walk-In ☐
Courier ☐
FedEx ☑
UPS ☐
Other ☐

Cooler Present? Yes ☑ No ☐

Samples Received By: BM Date: 5/25/22

	Yes	No
Samples received on ice?	☒	☐
Samples received the same day collected?	☐	☑

Ice type? ☒ Wet ☐ Blue ☐ Other _____

SAMPLE TEMPERATURES AT RECEIPT **Therm. ID (Circle one):** (Therm-36) Therm-37 Therm-59 Other: _____

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	7.4	-06		-11		-16	
-02	5.6	-07		-12		-17	
-03	11.4	-08		-13		-18	
-04	8.9	-09		-14		-19	
-05		-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: BM Date: 5/25/22

	Yes	No	NA
Custody seals present?	☐	☐	☑
Samples in proper containers?	☒	☐	
Sample containers damaged?	☐	☒	
Sufficient sample volume for indicated tests?	☑	☐	
Samples received within holding times?	☑	☐	
Are VOA vials free of headspace?	☐	☐	☑
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☑

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☑	☐	☐
Preserved in the lab?	☒	☐	☐

Lab Preservation Date & Time 5/25/22 1515

☐ H2SO4 (ID_____) ☑ HNO3 (ID 2B140364) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑
Are proper preservation lables present?	☑	☐	☐

By:_____ Meter ID:_____

Preservation checked at Lab? Date & Time 5/25/22 1517 Test Strip (ID 1H20019)

Preservation and Preservation Checks performed by: BM

COMMENTS, DISCREPANCEIS, ANOMALIES

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

June 02, 2022

CLS Work Order #: 22E1180
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 05/18/22 17:48. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

06/02/22 12:29

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1180
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-5-UVR (22E1180-01) Water Sampled: 05/18/22 10:00 Received: 05/18/22 17:48										
Ammonia as N	**0.087**	0.025	0.10	mg/L	1	2204224	05/23/22	05/23/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**6.4**	0.50	5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.54**	0.026	0.50	"	"	2204115	05/19/22	05/19/22	EPA 300.0	
Cyanide (total)	**0.0023**	0.0012	0.0050	"	"	2204367	05/26/22	05/26/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2204230	05/23/22	05/25/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2204115	05/19/22	05/19/22	EPA 300.0	
Orthophosphate as PO4	**0.014**	0.0051	0.15	"	"	2204141	05/19/22	05/19/22	SM4500-P E	J
Sulfate as SO4	**0.37**	0.038	0.50	"	"	2204115	05/19/22	05/19/22	EPA 300.0	J
Total Alkalinity	**6.4**	1.0	5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Total Dissolved Solids	**15**	5.0	10	"	"	2204301	05/25/22	05/27/22	SM2540C	
Total Hardness as CaCO3	**4.5**	0.19	1.0	"	"	2204161	05/20/22	05/23/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.15**	0.040	0.20	"	"	2204259	05/24/22	05/24/22	SM4500-NH3F-1997	J
Total Organic Carbon	**2.7**	0.54	1.0	"	"	2204244	05/24/22	05/24/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2204233	05/23/22	05/23/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2204271	05/24/22	05/25/22	SM2540D	
IS-6-UVR (22E1180-02) Water Sampled: 05/18/22 12:15 Received: 05/18/22 17:48										
Ammonia as N	**0.093**	0.025	0.10	mg/L	1	2204224	05/23/22	05/23/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**6.6**	0.50	5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.56**	0.026	0.50	"	"	2204115	05/19/22	05/19/22	EPA 300.0	
Cyanide (total)	**0.0019**	0.0012	0.0050	"	"	2204367	05/26/22	05/26/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2204230	05/23/22	05/25/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2204115	05/19/22	05/19/22	EPA 300.0	
Orthophosphate as PO4	**0.030**	0.0051	0.15	"	"	2204141	05/19/22	05/19/22	SM4500-P E	J

06/02/22 12:29

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1180
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-6-UVR (22E1180-02) Water Sampled: 05/18/22 12:15 Received: 05/18/22 17:48										
Sulfate as SO4	**0.39**	0.038	0.50	mg/L	1	2204115	05/19/22	05/19/22	EPA 300.0	J
Total Alkalinity	**6.6**	1.0	5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Total Dissolved Solids	**16**	5.0	10	"	"	2204301	05/25/22	05/27/22	SM2540C	
Total Hardness as CaCO3	**4.8**	0.19	1.0	"	"	2204161	05/20/22	05/23/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.18**	0.040	0.20	"	"	2204259	05/24/22	05/24/22	SM4500-NH3F-1997	J
Total Organic Carbon	**2.6**	0.54	1.0	"	"	2204244	05/24/22	05/24/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2204233	05/23/22	05/23/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2204271	05/24/22	05/25/22	SM2540D	
IS-7-UVR (22E1180-03) Water Sampled: 05/18/22 11:00 Received: 05/18/22 17:48										
Ammonia as N	**0.050**	0.025	0.10	mg/L	1	2204224	05/23/22	05/23/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**5.6**	0.50	5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.80**	0.026	0.50	"	"	2204115	05/19/22	05/19/22	EPA 300.0	
Cyanide (total)	**0.0023**	0.0012	0.0050	"	"	2204367	05/26/22	05/26/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2204230	05/23/22	05/25/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2204115	05/19/22	05/19/22	EPA 300.0	
Orthophosphate as PO4	**0.010**	0.0051	0.15	"	"	2204141	05/19/22	05/19/22	SM4500-P E	J
Sulfate as SO4	**0.63**	0.038	0.50	"	"	2204115	05/19/22	05/19/22	EPA 300.0	
Total Alkalinity	**5.6**	1.0	5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Total Dissolved Solids	**14**	5.0	10	"	"	2204301	05/25/22	05/27/22	SM2540C	
Total Hardness as CaCO3	**4.9**	0.19	1.0	"	"	2204161	05/20/22	05/23/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.18**	0.040	0.20	"	"	2204259	05/24/22	05/24/22	SM4500-NH3F-1997	J
Total Organic Carbon	**2.7**	0.54	1.0	"	"	2204244	05/24/22	05/24/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2204233	05/23/22	05/23/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2204271	05/24/22	05/25/22	SM2540D	

06/02/22 12:29

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1180
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-6-UVR-B (22E1180-04) Water Sampled: 05/18/22 12:30 Received: 05/18/22 17:48										
Ammonia as N	**0.047**	0.025	0.10	mg/L	1	2204224	05/23/22	05/23/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**6.8**	0.50	5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.58**	0.026	0.50	"	"	2204115	05/19/22	05/19/22	EPA 300.0	
Cyanide (total)	**0.0026**	0.0012	0.0050	"	"	2204367	05/26/22	05/26/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2204230	05/23/22	05/25/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Nitrate/Nitrite as N	**0.066**	0.055	0.40	"	"	2204115	05/19/22	05/19/22	EPA 300.0	J
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2204141	05/19/22	05/19/22	SM4500-P E	
Sulfate as SO4	**0.49**	0.038	0.50	"	"	2204115	05/19/22	05/19/22	EPA 300.0	J
Total Alkalinity	**6.8**	1.0	5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Total Dissolved Solids	**8.0**	5.0	10	"	"	2204301	05/25/22	05/27/22	SM2540C	J
Total Hardness as CaCO3	**4.8**	0.19	1.0	"	"	2204161	05/20/22	05/23/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.10**	0.040	0.20	"	"	2204259	05/24/22	05/24/22	SM4500-NH3F-1997	J
Total Organic Carbon	**2.3**	0.54	1.0	"	"	2204244	05/24/22	05/24/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2204233	05/23/22	05/23/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2204271	05/24/22	05/25/22	SM2540D	
IS-8-UVR (22E1180-05) Water Sampled: 05/18/22 13:30 Received: 05/18/22 17:48										
Ammonia as N	**0.052**	0.025	0.10	mg/L	1	2204224	05/23/22	05/23/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**6.2**	0.50	5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.54**	0.026	0.50	"	"	2204115	05/19/22	05/19/22	EPA 300.0	
Cyanide (total)	**0.0034**	0.0012	0.0050	"	"	2204367	05/26/22	05/26/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2204230	05/23/22	05/25/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2204115	05/19/22	05/19/22	EPA 300.0	
Orthophosphate as PO4	**0.034**	0.0051	0.15	"	"	2204141	05/19/22	05/19/22	SM4500-P E	J

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1180
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-8-UVR (22E1180-05) Water Sampled: 05/18/22 13:30 Received: 05/18/22 17:48										
Sulfate as SO4	**0.37**	0.038	0.50	mg/L	1	2204115	05/19/22	05/19/22	EPA 300.0	J
Total Alkalinity	**6.2**	1.0	5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Total Dissolved Solids	**6.0**	5.0	10	"	"	2204301	05/25/22	05/27/22	SM2540C	J
Total Hardness as CaCO3	**4.7**	0.19	1.0	"	"	2204161	05/20/22	05/23/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.14**	0.040	0.20	"	"	2204259	05/24/22	05/24/22	SM4500-NH3F-1997	J
Total Organic Carbon	**2.6**	0.54	1.0	"	"	2204244	05/24/22	05/24/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2204233	05/23/22	05/23/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2204271	05/24/22	05/25/22	SM2540D	
IS-8-UVR-B (22E1180-06) Water Sampled: 05/18/22 14:30 Received: 05/18/22 17:48										
Ammonia as N	**0.056**	0.025	0.10	mg/L	1	2204224	05/23/22	05/23/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**6.8**	0.50	5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.58**	0.026	0.50	"	"	2204115	05/19/22	05/19/22	EPA 300.0	
Cyanide (total)	**0.0019**	0.0012	0.0050	"	"	2204367	05/26/22	05/26/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2204230	05/23/22	05/25/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Nitrate/Nitrite as N	**0.070**	0.055	0.40	"	"	2204115	05/19/22	05/19/22	EPA 300.0	J
Orthophosphate as PO4	**0.014**	0.0051	0.15	"	"	2204141	05/19/22	05/19/22	SM4500-P E	J
Sulfate as SO4	**0.46**	0.038	0.50	"	"	2204115	05/19/22	05/19/22	EPA 300.0	J
Total Alkalinity	**6.8**	1.0	5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Total Dissolved Solids	**10**	5.0	10	"	"	2204301	05/25/22	05/27/22	SM2540C	
Total Hardness as CaCO3	**4.7**	0.19	1.0	"	"	2204161	05/20/22	05/23/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.18**	0.040	0.20	"	"	2204259	05/24/22	05/24/22	SM4500-NH3F-1997	J
Total Organic Carbon	**2.1**	0.54	1.0	"	"	2204244	05/24/22	05/24/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2204233	05/23/22	05/23/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2204271	05/24/22	05/25/22	SM2540D	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1180**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-5-UVR (22E1180-01) Water Sampled: 05/18/22 10:00 Received: 05/18/22 17:48										
Diesel	ND	0.0021	0.050	mg/L	1	2204109	05/19/22	05/19/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*131 %*	*65-135*		"	"	"	"	
IS-6-UVR (22E1180-02) Water Sampled: 05/18/22 12:15 Received: 05/18/22 17:48										
Diesel	ND	0.0021	0.050	mg/L	1	2204109	05/19/22	05/19/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*101 %*	*65-135*		"	"	"	"	
IS-7-UVR (22E1180-03) Water Sampled: 05/18/22 11:00 Received: 05/18/22 17:48										
Diesel	ND	0.0021	0.050	mg/L	1	2204109	05/19/22	05/19/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
JP-5/JP-8	ND	0.020	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*95 %*	*65-135*		"	"	"	"	
IS-6-UVR-B (22E1180-04) Water Sampled: 05/18/22 12:30 Received: 05/18/22 17:48										
Diesel	ND	0.0021	0.050	mg/L	1	2204109	05/19/22	05/19/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	

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Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1180
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-6-UVR-B (22E1180-04) Water Sampled: 05/18/22 12:30 Received: 05/18/22 17:48										
Motor Oil	ND	0.0091	0.050	mg/L	1	2204109	"	05/19/22	EPA 8015M	
Surrogate: o-Terphenyl			*91 %*	*65-135*		"	"	"	"	
IS-8-UVR (22E1180-05) Water Sampled: 05/18/22 13:30 Received: 05/18/22 17:48										
Diesel	ND	0.0021	0.050	mg/L	1	2204109	05/19/22	05/19/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*96 %*	*65-135*		"	"	"	"	
IS-8-UVR-B (22E1180-06) Water Sampled: 05/18/22 14:30 Received: 05/18/22 17:48										
Diesel	ND	0.0021	0.050	mg/L	1	2204109	05/19/22	05/19/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*98 %*	*65-135*		"	"	"	"	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1180
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-5-UVR (22E1180-01) Water Sampled: 05/18/22 10:00 Received: 05/18/22 17:48										
Aluminum	**34**	1.6	20	µg/L	1	2204124	05/19/22	05/19/22	EPA 200.8	
Barium	**5.2**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1200**	27	1000	"	"	2204161	05/20/22	05/23/22	EPA 200.7	
Iron	**17**	9.1	100	"	"	"	"	"	"	J
Magnesium	**320**	21	1000	"	"	"	"	"	"	J
Manganese	**1.2**	0.050	2.0	"	"	2204124	05/19/22	05/19/22	EPA 200.8	J
Potassium	**400**	61	1000	"	"	2204161	05/20/22	05/24/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2204124	05/19/22	05/19/22	EPA 200.8	
Sodium	**2400**	34	1000	"	"	2204161	05/20/22	05/23/22	EPA 200.7	
IS-6-UVR (22E1180-02) Water Sampled: 05/18/22 12:15 Received: 05/18/22 17:48										
Aluminum	**33**	1.6	20	µg/L	1	2204124	05/19/22	05/19/22	EPA 200.8	
Barium	**5.3**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1200**	27	1000	"	"	2204161	05/20/22	05/23/22	EPA 200.7	
Iron	**12**	9.1	100	"	"	"	"	"	"	J
Magnesium	**310**	21	1000	"	"	"	"	"	"	J
Manganese	**1.0**	0.050	2.0	"	"	2204124	05/19/22	05/19/22	EPA 200.8	J
Potassium	**520**	61	1000	"	"	2204161	05/20/22	05/24/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2204124	05/19/22	05/19/22	EPA 200.8	
Sodium	**1600**	34	1000	"	"	2204161	05/20/22	05/23/22	EPA 200.7	
IS-7-UVR (22E1180-03) Water Sampled: 05/18/22 11:00 Received: 05/18/22 17:48										
Aluminum	**33**	1.6	20	µg/L	1	2204124	05/19/22	05/19/22	EPA 200.8	
Barium	**5.4**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1200**	27	1000	"	"	2204161	05/20/22	05/23/22	EPA 200.7	
Iron	**54**	9.1	100	"	"	"	"	"	"	J
Magnesium	**320**	21	1000	"	"	"	"	"	"	J
Manganese	**1.2**	0.050	2.0	"	"	2204124	05/19/22	05/19/22	EPA 200.8	J
Potassium	**370**	61	1000	"	"	2204161	05/20/22	05/24/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2204124	05/19/22	05/19/22	EPA 200.8	
Sodium	**1500**	34	1000	"	"	2204161	05/20/22	05/23/22	EPA 200.7	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
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CLS Work Order #: 22E1180
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-6-UVR-B (22E1180-04) Water Sampled: 05/18/22 12:30 Received: 05/18/22 17:48										
Aluminum	**19**	1.6	20	µg/L	1	2204124	05/19/22	05/19/22	EPA 200.8	J
Barium	**5.6**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1200**	27	1000	"	"	2204161	05/20/22	05/23/22	EPA 200.7	
Iron	**22**	9.1	100	"	"	"	"	"	"	J
Magnesium	**300**	21	1000	"	"	"	"	"	"	J
Manganese	**3.5**	0.050	2.0	"	"	2204124	05/19/22	05/19/22	EPA 200.8	
Potassium	**650**	61	1000	"	"	2204161	05/20/22	05/24/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2204124	05/19/22	05/19/22	EPA 200.8	
Sodium	**1400**	34	1000	"	"	2204161	05/20/22	05/23/22	EPA 200.7	
IS-8-UVR (22E1180-05) Water Sampled: 05/18/22 13:30 Received: 05/18/22 17:48										
Aluminum	**32**	1.6	20	µg/L	1	2204124	05/19/22	05/19/22	EPA 200.8	
Barium	**5.3**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1200**	27	1000	"	"	2204161	05/20/22	05/23/22	EPA 200.7	
Iron	**15**	9.1	100	"	"	"	"	"	"	J
Magnesium	**310**	21	1000	"	"	"	"	"	"	J
Manganese	**1.2**	0.050	2.0	"	"	2204124	05/19/22	05/19/22	EPA 200.8	J
Potassium	**620**	61	1000	"	"	2204161	05/20/22	05/24/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2204124	05/19/22	05/19/22	EPA 200.8	
Sodium	**1400**	34	1000	"	"	2204161	05/20/22	05/23/22	EPA 200.7	
IS-8-UVR-B (22E1180-06) Water Sampled: 05/18/22 14:30 Received: 05/18/22 17:48										
Aluminum	**15**	1.6	20	µg/L	1	2204124	05/19/22	05/19/22	EPA 200.8	J
Barium	**5.6**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1300**	27	1000	"	"	2204161	05/20/22	05/23/22	EPA 200.7	
Iron	**37**	9.1	100	"	"	"	"	"	"	J
Magnesium	**310**	21	1000	"	"	"	"	"	"	J
Manganese	**8.8**	0.050	2.0	"	"	2204124	05/19/22	05/19/22	EPA 200.8	
Potassium	**320**	61	1000	"	"	2204161	05/20/22	05/24/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2204124	05/19/22	05/19/22	EPA 200.8	
Sodium	**1300**	34	1000	"	"	2204161	05/20/22	05/23/22	EPA 200.7	

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Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1180
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-5-UVR (22E1180-01) Water Sampled: 05/18/22 10:00 Received: 05/18/22 17:48										
Aluminum	**17**	0.52	20	µg/L	1	2204465	05/31/22	05/31/22	EPA 200.8	J
Antimony	ND	0.57	6.0	"	"	"	"	06/01/22	"	
Arsenic	ND	0.27	2.0	"	"	"	"	"	"	
Barium	**5.0**	0.37	5.0	"	"	"	"	"	"	
Beryllium	ND	0.26	1.0	"	"	"	"	"	"	
Boron	**19**	4.1	20	"	"	"	"	"	"	J
Cadmium	ND	0.17	0.50	"	"	"	"	"	"	
Chromium	ND	0.28	1.0	"	"	"	"	"	"	
Cobalt	ND	0.11	2.0	"	"	"	"	"	"	
Copper	ND	0.26	2.0	"	"	"	"	"	"	
Iron	**23**	6.8	100	"	"	2204166	05/20/22	05/24/22	EPA 200.7	J
Iron	ND	5.5	20	"	"	2204465	05/31/22	06/01/22	EPA 200.8	
Lead	ND	0.23	5.0	"	"	"	"	"	"	
Manganese	**0.88**	0.16	2.0	"	"	"	"	"	"	J
Mercury	ND	1.0	1.0	"	"	"	"	"	"	
Molybdenum	**1.2**	0.55	2.0	"	"	"	"	"	"	J
Nickel	ND	0.22	2.0	"	"	"	"	"	"	
Phosphorus	ND	42	100	"	"	"	"	"	"	
Selenium	ND	1.1	5.0	"	"	"	"	"	"	
Silica (SiO2)	ND	150	500	"	"	"	"	"	"	
Silicon	ND	69	100	"	"	"	"	"	"	
Silver	ND	0.15	0.50	"	"	"	"	"	"	
Strontium	ND	20	20	"	"	"	"	"	"	
Thallium	ND	0.11	1.0	"	"	"	"	"	"	
Tin	ND	10	10	"	"	"	"	"	"	
Tungsten	ND	10	10	"	"	"	"	"	"	
Uranium	ND	2.0	5.0	"	"	"	"	"	"	
Vanadium	ND	0.44	3.0	"	"	"	"	"	"	
Zinc	**1.3**	0.65	10	"	"	"	"	"	"	J

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1180
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-6-UVR (22E1180-02) Water Sampled: 05/18/22 12:15 Received: 05/18/22 17:48										
Aluminum	**14**	0.52	20	µg/L	1	2204465	05/31/22	05/31/22	EPA 200.8	J
Antimony	**0.79**	0.57	6.0	"	"	"	"	06/01/22	"	J
Arsenic	**0.37**	0.27	2.0	"	"	"	"	"	"	J
Barium	**5.5**	0.37	5.0	"	"	"	"	"	"	
Beryllium	ND	0.26	1.0	"	"	"	"	"	"	
Boron	**57**	4.1	20	"	"	"	"	"	"	
Cadmium	ND	0.17	0.50	"	"	"	"	"	"	
Chromium	ND	0.28	1.0	"	"	"	"	"	"	
Cobalt	ND	0.11	2.0	"	"	"	"	"	"	
Copper	ND	0.26	2.0	"	"	"	"	"	"	
Iron	ND	6.8	100	"	"	2204166	05/20/22	05/24/22	EPA 200.7	
Iron	ND	5.5	20	"	"	2204465	05/31/22	06/01/22	EPA 200.8	
Lead	ND	0.23	5.0	"	"	"	"	"	"	
Manganese	**0.92**	0.16	2.0	"	"	"	"	"	"	J
Mercury	ND	1.0	1.0	"	"	"	"	"	"	
Molybdenum	**2.0**	0.55	2.0	"	"	"	"	"	"	
Nickel	ND	0.22	2.0	"	"	"	"	"	"	
Phosphorus	ND	42	100	"	"	"	"	"	"	
Selenium	ND	1.1	5.0	"	"	"	"	"	"	
Silica (SiO2)	ND	150	500	"	"	"	"	"	"	
Silicon	ND	69	100	"	"	"	"	"	"	
Silver	ND	0.15	0.50	"	"	"	"	"	"	
Strontium	ND	20	20	"	"	"	"	"	"	
Thallium	ND	0.11	1.0	"	"	"	"	"	"	
Tin	ND	10	10	"	"	"	"	"	"	
Tungsten	ND	10	10	"	"	"	"	"	"	
Uranium	ND	2.0	5.0	"	"	"	"	"	"	
Vanadium	ND	0.44	3.0	"	"	"	"	"	"	
Zinc	**1.6**	0.65	10	"	"	"	"	"	"	J

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COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-7-UVR (22E1180-03) Water Sampled: 05/18/22 11:00 Received: 05/18/22 17:48										
Aluminum	**13**	0.52	20	µg/L	1	2204465	05/31/22	05/31/22	EPA 200.8	J
Antimony	ND	0.57	6.0	"	"	"	"	06/01/22	"	
Arsenic	ND	0.27	2.0	"	"	"	"	"	"	
Barium	**5.4**	0.37	5.0	"	"	"	"	"	"	
Beryllium	ND	0.26	1.0	"	"	"	"	"	"	
Boron	**28**	4.1	20	"	"	"	"	"	"	
Cadmium	ND	0.17	0.50	"	"	"	"	"	"	
Chromium	ND	0.28	1.0	"	"	"	"	"	"	
Cobalt	ND	0.11	2.0	"	"	"	"	"	"	
Copper	ND	0.26	2.0	"	"	"	"	"	"	
Iron	**64**	6.8	100	"	"	2204166	05/20/22	05/24/22	EPA 200.7	J
Iron	ND	5.5	20	"	"	2204465	05/31/22	06/01/22	EPA 200.8	
Lead	ND	0.23	5.0	"	"	"	"	"	"	
Manganese	**1.1**	0.16	2.0	"	"	"	"	"	"	J
Mercury	ND	1.0	1.0	"	"	"	"	"	"	
Molybdenum	**0.80**	0.55	2.0	"	"	"	"	"	"	J
Nickel	ND	0.22	2.0	"	"	"	"	"	"	
Phosphorus	ND	42	100	"	"	"	"	"	"	
Selenium	ND	1.1	5.0	"	"	"	"	"	"	
Silica (SiO2)	ND	150	500	"	"	"	"	"	"	
Silicon	ND	69	100	"	"	"	"	"	"	
Silver	ND	0.15	0.50	"	"	"	"	"	"	
Strontium	ND	20	20	"	"	"	"	"	"	
Thallium	ND	0.11	1.0	"	"	"	"	"	"	
Tin	ND	10	10	"	"	"	"	"	"	
Tungsten	ND	10	10	"	"	"	"	"	"	
Uranium	ND	2.0	5.0	"	"	"	"	"	"	
Vanadium	ND	0.44	3.0	"	"	"	"	"	"	
Zinc	**0.89**	0.65	10	"	"	"	"	"	"	J

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1180
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-6-UVR-B (22E1180-04) Water	**Sampled: 05/18/22 12:30**		**Received: 05/18/22 17:48**							
Aluminum	**2.8**	0.52	20	µg/L	1	2204465	05/31/22	05/31/22	EPA 200.8	J
Antimony	ND	0.57	6.0	"	"	"	"	06/01/22	"	
Arsenic	ND	0.27	2.0	"	"	"	"	"	"	
Barium	**6.1**	0.37	5.0	"	"	"	"	"	"	
Beryllium	ND	0.26	1.0	"	"	"	"	"	"	
Boron	**19**	4.1	20	"	"	"	"	"	"	J
Cadmium	ND	0.17	0.50	"	"	"	"	"	"	
Chromium	ND	0.28	1.0	"	"	"	"	"	"	
Cobalt	ND	0.11	2.0	"	"	"	"	"	"	
Copper	ND	0.26	2.0	"	"	"	"	"	"	
Iron	ND	6.8	100	"	"	2204166	05/20/22	05/24/22	EPA 200.7	
Iron	ND	5.5	20	"	"	2204465	05/31/22	06/01/22	EPA 200.8	
Lead	ND	0.23	5.0	"	"	"	"	"	"	
Manganese	**0.89**	0.16	2.0	"	"	"	"	"	"	J
Mercury	ND	1.0	1.0	"	"	"	"	"	"	
Molybdenum	ND	0.55	2.0	"	"	"	"	"	"	
Nickel	ND	0.22	2.0	"	"	"	"	"	"	
Phosphorus	ND	42	100	"	"	"	"	"	"	
Selenium	ND	1.1	5.0	"	"	"	"	"	"	
Silica (SiO2)	ND	150	500	"	"	"	"	"	"	
Silicon	ND	69	100	"	"	"	"	"	"	
Silver	ND	0.15	0.50	"	"	"	"	"	"	
Strontium	ND	20	20	"	"	"	"	"	"	
Thallium	ND	0.11	1.0	"	"	"	"	"	"	
Tin	ND	10	10	"	"	"	"	"	"	
Tungsten	ND	10	10	"	"	"	"	"	"	
Uranium	ND	2.0	5.0	"	"	"	"	"	"	
Vanadium	ND	0.44	3.0	"	"	"	"	"	"	
Zinc	**1.4**	0.65	10	"	"	"	"	"	"	J

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1180**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-8-UVR (22E1180-05) Water Sampled: 05/18/22 13:30 Received: 05/18/22 17:48										
Aluminum	**14**	0.52	20	µg/L	1	2204465	05/31/22	05/31/22	EPA 200.8	J
Antimony	ND	0.57	6.0	"	"	"	"	06/01/22	"	
Arsenic	ND	0.27	2.0	"	"	"	"	"	"	
Barium	**5.3**	0.37	5.0	"	"	"	"	"	"	
Beryllium	ND	0.26	1.0	"	"	"	"	"	"	
Boron	**14**	4.1	20	"	"	"	"	"	"	J
Cadmium	ND	0.17	0.50	"	"	"	"	"	"	
Chromium	ND	0.28	1.0	"	"	"	"	"	"	
Cobalt	ND	0.11	2.0	"	"	"	"	"	"	
Copper	ND	0.26	2.0	"	"	"	"	"	"	
Iron	**14**	6.8	100	"	"	2204166	05/20/22	05/24/22	EPA 200.7	J
Iron	ND	5.5	20	"	"	2204465	05/31/22	06/01/22	EPA 200.8	
Lead	ND	0.23	5.0	"	"	"	"	"	"	
Manganese	**0.87**	0.16	2.0	"	"	"	"	"	"	J
Mercury	ND	1.0	1.0	"	"	"	"	"	"	
Molybdenum	ND	0.55	2.0	"	"	"	"	"	"	
Nickel	ND	0.22	2.0	"	"	"	"	"	"	
Phosphorus	ND	42	100	"	"	"	"	"	"	
Selenium	ND	1.1	5.0	"	"	"	"	"	"	
Silica (SiO2)	ND	150	500	"	"	"	"	"	"	
Silicon	ND	69	100	"	"	"	"	"	"	
Silver	ND	0.15	0.50	"	"	"	"	"	"	
Strontium	ND	20	20	"	"	"	"	"	"	
Thallium	ND	0.11	1.0	"	"	"	"	"	"	
Tin	ND	10	10	"	"	"	"	"	"	
Tungsten	ND	10	10	"	"	"	"	"	"	
Uranium	ND	2.0	5.0	"	"	"	"	"	"	
Vanadium	ND	0.44	3.0	"	"	"	"	"	"	
Zinc	ND	0.65	10	"	"	"	"	"	"	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1180
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-8-UVR-B (22E1180-06) Water	**Sampled: 05/18/22 14:30**	**Received: 05/18/22 17:48**								
Aluminum	**4.3**	0.52	20	µg/L	1	2204465	05/31/22	05/31/22	EPA 200.8	J
Antimony	ND	0.57	6.0	"	"	"	"	06/01/22	"	
Arsenic	ND	0.27	2.0	"	"	"	"	"	"	
Barium	**5.7**	0.37	5.0	"	"	"	"	"	"	
Beryllium	ND	0.26	1.0	"	"	"	"	"	"	
Boron	**13**	4.1	20	"	"	"	"	"	"	J
Cadmium	ND	0.17	0.50	"	"	"	"	"	"	
Chromium	ND	0.28	1.0	"	"	"	"	"	"	
Cobalt	ND	0.11	2.0	"	"	"	"	"	"	
Copper	ND	0.26	2.0	"	"	"	"	"	"	
Iron	ND	6.8	100	"	"	2204166	05/20/22	05/24/22	EPA 200.7	
Iron	ND	5.5	20	"	"	2204465	05/31/22	06/01/22	EPA 200.8	
Lead	ND	0.23	5.0	"	"	"	"	"	"	
Manganese	**4.8**	0.16	2.0	"	"	"	"	"	"	
Mercury	ND	1.0	1.0	"	"	"	"	"	"	
Molybdenum	ND	0.55	2.0	"	"	"	"	"	"	
Nickel	ND	0.22	2.0	"	"	"	"	"	"	
Phosphorus	ND	42	100	"	"	"	"	"	"	
Selenium	ND	1.1	5.0	"	"	"	"	"	"	
Silica (SiO2)	ND	150	500	"	"	"	"	"	"	
Silicon	ND	69	100	"	"	"	"	"	"	
Silver	ND	0.15	0.50	"	"	"	"	"	"	
Strontium	ND	20	20	"	"	"	"	"	"	
Thallium	ND	0.11	1.0	"	"	"	"	"	"	
Tin	ND	10	10	"	"	"	"	"	"	
Tungsten	ND	10	10	"	"	"	"	"	"	
Uranium	ND	2.0	5.0	"	"	"	"	"	"	
Vanadium	ND	0.44	3.0	"	"	"	"	"	"	
Zinc	**0.74**	0.65	10	"	"	"	"	"	"	J

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1180**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-5-UVR (22E1180-01) Water Sampled: 05/18/22 10:00 Received: 05/18/22 17:48										
Gasoline	ND	10	50	µg/L	1	2204125	05/19/22	05/19/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*94 %*		*65-135*		"	"	"	"
IS-6-UVR (22E1180-02) Water Sampled: 05/18/22 12:15 Received: 05/18/22 17:48										
Gasoline	ND	10	50	µg/L	1	2204125	05/19/22	05/19/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*92 %*		*65-135*		"	"	"	"
IS-7-UVR (22E1180-03) Water Sampled: 05/18/22 11:00 Received: 05/18/22 17:48										
Gasoline	ND	10	50	µg/L	1	2204125	05/19/22	05/19/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*91 %*		*65-135*		"	"	"	"
IS-6-UVR-B (22E1180-04) Water Sampled: 05/18/22 12:30 Received: 05/18/22 17:48										
Gasoline	ND	10	50	µg/L	1	2204125	05/19/22	05/19/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*91 %*		*65-135*		"	"	"	"
IS-8-UVR (22E1180-05) Water Sampled: 05/18/22 13:30 Received: 05/18/22 17:48										
Gasoline	ND	10	50	µg/L	1	2204125	05/19/22	05/19/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*99 %*		*65-135*		"	"	"	"
IS-8-UVR-B (22E1180-06) Water Sampled: 05/18/22 14:30 Received: 05/18/22 17:48										
Gasoline	ND	10	50	µg/L	1	2204125	05/19/22	05/19/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*91 %*		*65-135*		"	"	"	"

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1180
COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-5-UVR (22E1180-01) Water Sampled: 05/18/22 10:00 Received: 05/18/22 17:48										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2204158	05/19/22	05/19/22	EPA 8260B	
Surrogate: Toluene-d8			*95 %*		*72-125*		"	"	"	"
IS-6-UVR (22E1180-02) Water Sampled: 05/18/22 12:15 Received: 05/18/22 17:48										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2204158	05/19/22	05/19/22	EPA 8260B	
Surrogate: Toluene-d8			*96 %*		*72-125*		"	"	"	"
IS-7-UVR (22E1180-03) Water Sampled: 05/18/22 11:00 Received: 05/18/22 17:48										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2204158	05/19/22	05/19/22	EPA 8260B	
Surrogate: Toluene-d8			*96 %*		*72-125*		"	"	"	"
IS-6-UVR-B (22E1180-04) Water Sampled: 05/18/22 12:30 Received: 05/18/22 17:48										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2204158	05/19/22	05/19/22	EPA 8260B	
Surrogate: Toluene-d8			*97 %*		*72-125*		"	"	"	"
IS-8-UVR (22E1180-05) Water Sampled: 05/18/22 13:30 Received: 05/18/22 17:48										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2204158	05/19/22	05/19/22	EPA 8260B	
Surrogate: Toluene-d8			*96 %*		*72-125*		"	"	"	"
IS-8-UVR-B (22E1180-06) Water Sampled: 05/18/22 14:30 Received: 05/18/22 17:48										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2204158	05/19/22	05/19/22	EPA 8260B	
Surrogate: Toluene-d8			*96 %*		*72-125*		"	"	"	"

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1180**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204115 - General Prep											
Blank (2204115-BLK1)					Prepared & Analyzed: 05/19/22						
Chloride	0.294	0.026	0.50	mg/L							J
Sulfate as SO4	0.147	0.038	0.50	"							J
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2204115-BS1)					Prepared & Analyzed: 05/19/22						
Chloride	4.63	0.026	0.50	mg/L	5.00		93	80-120			
Sulfate as SO4	4.72	0.038	0.50	"	5.00		94	80-120			
Nitrate/Nitrite as N	3.86	0.055	0.40	"	4.00		97	80-120			
LCS Dup (2204115-BSD1)					Prepared & Analyzed: 05/19/22						
Sulfate as SO4	4.71	0.038	0.50	mg/L	5.00		94	80-120	0.2	20	
Chloride	4.62	0.026	0.50	"	5.00		92	80-120	0.1	20	
Nitrate/Nitrite as N	3.87	0.055	0.40	"	4.00		97	80-120	0.05	20	
Matrix Spike (2204115-MS1)			**Source: 22E1180-01**		Prepared & Analyzed: 05/19/22						
Sulfate as SO4	4.99	0.038	0.50	mg/L	5.00	0.369	92	80-120			
Chloride	4.97	0.026	0.50	"	5.00	0.545	88	80-120			
Nitrate/Nitrite as N	3.86	0.055	0.40	"	4.00	ND	97	80-120			
Matrix Spike Dup (2204115-MSD1)			**Source: 22E1180-01**		Prepared & Analyzed: 05/19/22						
Sulfate as SO4	5.09	0.038	0.50	mg/L	5.00	0.369	94	80-120	2	20	
Chloride	5.06	0.026	0.50	"	5.00	0.545	90	80-120	2	20	
Nitrate/Nitrite as N	3.96	0.055	0.40	"	4.00	ND	99	80-120	3	20	
Batch 2204141 - General Preparation											
Blank (2204141-BLK1)					Prepared & Analyzed: 05/19/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							

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Stillwater Sciences
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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1180
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204141 - General Preparation											
LCS (2204141-BS1)					Prepared & Analyzed: 05/19/22						
Orthophosphate as PO4	0.876	0.0051	0.15	mg/L	0.918		95	80-120			
LCS Dup (2204141-BSD1)					Prepared & Analyzed: 05/19/22						
Orthophosphate as PO4	0.859	0.0051	0.15	mg/L	0.918		94	80-120	2	20	
Matrix Spike (2204141-MS1)			**Source: 22E1180-01**		Prepared & Analyzed: 05/19/22						
Orthophosphate as PO4	0.827	0.0051	0.15	mg/L	0.918	0.0140	89	75-125			
Matrix Spike Dup (2204141-MSD1)			**Source: 22E1180-01**		Prepared & Analyzed: 05/19/22						
Orthophosphate as PO4	0.827	0.0051	0.15	mg/L	0.918	0.0140	89	75-125	0	25	
Batch 2204161 - EPA 200 Series											
Blank (2204161-BLK1)					Prepared: 05/20/22 Analyzed: 05/23/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2204161-BS1)					Prepared: 05/20/22 Analyzed: 05/23/22						
Total Hardness as CaCO3	34.8	0.19	1.0	mg/L	33.1		105	85-115			
Matrix Spike (2204161-MS1)			**Source: 22E1180-01**		Prepared: 05/20/22 Analyzed: 05/23/22						
Total Hardness as CaCO3	38.3	0.19	1.0	mg/L	33.1	4.49	102	70-130			
Matrix Spike (2204161-MS2)			**Source: 22E1270-05**		Prepared: 05/20/22 Analyzed: 05/23/22						
Total Hardness as CaCO3	31.7	0.19	1.0	mg/L	33.1	0.318	95	70-130			
Batch 2204196 - General Preparation											
Blank (2204196-BLK1)					Prepared & Analyzed: 05/20/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							

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Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1180
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204196 - General Preparation											
Blank (2204196-BLK2)					Prepared & Analyzed: 05/20/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Duplicate (2204196-DUP1)				**Source: 22E1180-01**	Prepared & Analyzed: 05/20/22						
Total Alkalinity	6.20	1.0	5.0	mg/L		6.40			3	20	
Bicarbonate as CaCO3	6.20	0.50	5.0	"		6.40			3	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Duplicate (2204196-DUP2)				**Source: 22E1281-05**	Prepared & Analyzed: 05/20/22						
Total Alkalinity	15.5	1.0	5.0	mg/L		16.0			3	20	
Bicarbonate as CaCO3	15.5	0.50	5.0	"		16.0			3	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Batch 2204224 - General Preparation											
Blank (2204224-BLK1)					Prepared & Analyzed: 05/23/22						
Ammonia as N	ND	0.025	0.10	mg/L							
LCS (2204224-BS1)					Prepared & Analyzed: 05/23/22						
Ammonia as N	0.504	0.025	0.10	mg/L	0.500		101	80-120			
LCS Dup (2204224-BSD1)					Prepared & Analyzed: 05/23/22						
Ammonia as N	0.510	0.025	0.10	mg/L	0.500		102	80-120	1	25	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1180**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204224 - General Preparation											
Matrix Spike (2204224-MS1)			**Source: 22E1227-01**		Prepared & Analyzed: 05/23/22						
Ammonia as N	0.551	0.025	0.10	mg/L	0.500	0.0670	97	75-125			
Matrix Spike Dup (2204224-MSD1)			**Source: 22E1227-01**		Prepared & Analyzed: 05/23/22						
Ammonia as N	0.520	0.025	0.10	mg/L	0.500	0.0670	91	75-125	6	25	
Batch 2204230 - Solvent Extract											
Blank (2204230-BLK1)					Prepared: 05/23/22 Analyzed: 05/25/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2204230-BS1)					Prepared: 05/23/22 Analyzed: 05/25/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.4	1.0	5.0	mg/L	40.0		99	78-114			
LCS Dup (2204230-BSD1)					Prepared: 05/23/22 Analyzed: 05/25/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.2	1.0	5.0	mg/L	40.0		98	78-114	0.5	18	
Batch 2204233 - General Preparation											
Blank (2204233-BLK1)					Prepared & Analyzed: 05/23/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2204233-BS1)					Prepared & Analyzed: 05/23/22						
Total Phosphorus as P	0.311	0.023	0.050	mg/L	0.300		104	80-120			
LCS Dup (2204233-BSD1)					Prepared & Analyzed: 05/23/22						
Total Phosphorus as P	0.305	0.023	0.050	mg/L	0.300		102	80-120	2	25	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1180**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204233 - General Preparation											
Matrix Spike (2204233-MS1)			**Source: 22E1271-01**		Prepared & Analyzed: 05/23/22						
Total Phosphorus as P	0.316	0.023	0.050	mg/L	0.300	0.0336	94	75-125			
Matrix Spike Dup (2204233-MSD1)			**Source: 22E1271-01**		Prepared & Analyzed: 05/23/22						
Total Phosphorus as P	0.318	0.023	0.050	mg/L	0.300	0.0336	95	75-125	0.4	30	
Batch 2204244 - General Preparation											
Blank (2204244-BLK1)					Prepared & Analyzed: 05/24/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							
LCS (2204244-BS1)					Prepared & Analyzed: 05/24/22						
Total Organic Carbon	10.4	0.54	1.0	mg/L	10.0		104	75-125			
LCS Dup (2204244-BSD1)					Prepared & Analyzed: 05/24/22						
Total Organic Carbon	10.6	0.54	1.0	mg/L	10.0		106	75-125	2	25	
Matrix Spike (2204244-MS1)			**Source: 22E1066-01**		Prepared & Analyzed: 05/24/22						
Total Organic Carbon	12.5	0.54	1.0	mg/L	10.0	2.11	104	75-125			
Matrix Spike Dup (2204244-MSD1)			**Source: 22E1066-01**		Prepared & Analyzed: 05/24/22						
Total Organic Carbon	12.3	0.54	1.0	mg/L	10.0	2.11	102	75-125	1	25	
Batch 2204259 - General Preparation											
Blank (2204259-BLK1)					Prepared & Analyzed: 05/24/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
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CLS Work Order #: 22E1180
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204259 - General Preparation											
LCS (2204259-BS1)					Prepared & Analyzed: 05/24/22						
Total Kjeldahl Nitrogen	0.462	0.040	0.20	mg/L	0.500		92	80-120			
LCS Dup (2204259-BSD1)					Prepared & Analyzed: 05/24/22						
Total Kjeldahl Nitrogen	0.472	0.040	0.20	mg/L	0.500		94	80-120	2	20	
Matrix Spike (2204259-MS1)			**Source: 22E1230-01**		Prepared & Analyzed: 05/24/22						
Total Kjeldahl Nitrogen	0.387	0.040	0.20	mg/L	0.500	0.0780	62	75-125			QM-7
Matrix Spike Dup (2204259-MSD1)			**Source: 22E1230-01**		Prepared & Analyzed: 05/24/22						
Total Kjeldahl Nitrogen	0.369	0.040	0.20	mg/L	0.500	0.0780	58	75-125	5	25	QM-7
Batch 2204271 - General Preparation											
Duplicate (2204271-DUP1)			**Source: 22E1148-02**		Prepared: 05/24/22 Analyzed: 05/25/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	
Batch 2204301 - General Preparation											
Blank (2204301-BLK1)					Prepared: 05/25/22 Analyzed: 05/27/22						
Total Dissolved Solids	ND	5.0	10	mg/L							
Duplicate (2204301-DUP1)			**Source: 22E1180-01**		Prepared: 05/25/22 Analyzed: 05/27/22						
Total Dissolved Solids	14.0	5.0	10	mg/L		15.0			7	20	
Batch 2204367 - General Preparation											
Blank (2204367-BLK1)					Prepared & Analyzed: 05/26/22						
Cyanide (total)	ND	0.0012	0.0050	mg/L							

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1180
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204367 - General Preparation											
LCS (2204367-BS1)					Prepared & Analyzed: 05/26/22						
Cyanide (total)	0.0780	0.0012	0.0050	mg/L	0.100		78	75-125			
LCS Dup (2204367-BSD1)					Prepared & Analyzed: 05/26/22						
Cyanide (total)	0.0817	0.0012	0.0050	mg/L	0.100		82	75-125	5	25	
Matrix Spike (2204367-MS1)			**Source: 22E1180-01**		Prepared & Analyzed: 05/26/22						
Cyanide (total)	0.0925	0.0012	0.0050	mg/L	0.100	0.00230	90	75-125			
Matrix Spike Dup (2204367-MSD1)			**Source: 22E1180-01**		Prepared & Analyzed: 05/26/22						
Cyanide (total)	0.0939	0.0012	0.0050	mg/L	0.100	0.00230	92	75-125	2	25	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1180**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204109 - EPA 3510B GCNV											
Blank (2204109-BLK1)					Prepared: 05/18/22 Analyzed: 05/19/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Hydraulic Oil	ND	0.030	0.050	"							
Mineral Oil	ND	0.020	0.050	"							
Kerosene	ND	0.0036	0.050	"							
Surrogate: o-Terphenyl	*0.0306*			"	*0.0250*		*123*	*65-135*			
LCS (2204109-BS1)					Prepared: 05/18/22 Analyzed: 05/19/22						
Diesel	2.15	0.0021	0.050	mg/L	2.50		86	65-135			
Surrogate: o-Terphenyl	*0.0239*			"	*0.0250*		*96*	*65-135*			
LCS Dup (2204109-BSD1)					Prepared: 05/18/22 Analyzed: 05/19/22						
Diesel	2.23	0.0021	0.050	mg/L	2.50		89	65-135	4	30	
Surrogate: o-Terphenyl	*0.0227*			"	*0.0250*		*91*	*65-135*			
Matrix Spike (2204109-MS1)			**Source: 22E0890-01**		Prepared: 05/18/22 Analyzed: 05/19/22						
Diesel	2.62	0.0021	0.050	mg/L	2.50	ND	105	46-137			
Surrogate: o-Terphenyl	*0.0261*			"	*0.0250*		*104*	*65-135*			
Matrix Spike Dup (2204109-MSD1)			**Source: 22E0890-01**		Prepared: 05/18/22 Analyzed: 05/19/22						
Diesel	2.36	0.0021	0.050	mg/L	2.50	ND	95	46-137	10	30	
Surrogate: o-Terphenyl	*0.0246*			"	*0.0250*		*98*	*65-135*			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204124 - EPA 200 Series											
Blank (2204124-BLK1)					Prepared & Analyzed: 05/19/22						
Aluminum	ND	1.6	20	µg/L							
Barium	ND	0.14	5.0	"							
Manganese	0.139	0.050	2.0	"							J
Silver	ND	0.070	0.50	"							
LCS (2204124-BS1)					Prepared & Analyzed: 05/19/22						
Aluminum	458	1.6	20	µg/L	500		92	85-115			
Barium	98.2	0.14	5.0	"	100		98	85-115			
Manganese	95.7	0.050	2.0	"	100		96	85-115			
Silver	100	0.070	0.50	"	100		100	85-115			
Matrix Spike (2204124-MS1)			**Source: 22E1110-01**		Prepared & Analyzed: 05/19/22						
Aluminum	473	1.6	20	µg/L	500	ND	95	70-130			
Barium	160	0.14	5.0	"	100	57.2	103	70-130			
Manganese	92.6	0.050	2.0	"	100	0.127	92	70-130			
Silver	102	0.070	0.50	"	100	ND	102	70-130			
Matrix Spike (2204124-MS2)			**Source: 22E1180-06**		Prepared & Analyzed: 05/19/22						
Aluminum	475	1.6	20	µg/L	500	15.3	92	70-130			
Barium	105	0.14	5.0	"	100	5.59	99	70-130			
Manganese	100	0.050	2.0	"	100	8.84	91	70-130			
Silver	99.2	0.070	0.50	"	100	ND	99	70-130			
Batch 2204161 - EPA 200 Series											
Blank (2204161-BLK1)					Prepared: 05/20/22 Analyzed: 05/23/22						
Boron	ND	5.3	50	µg/L							
Calcium	ND	27	1000	"							
Iron	17.4	9.1	100	"							J
Magnesium	ND	21	1000	"							
Potassium	449	61	1000	"							J
Sodium	ND	34	1000	"							

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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1180
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204161 - EPA 200 Series											
LCS (2204161-BS1)					Prepared: 05/20/22 Analyzed: 05/23/22						
Boron	510	5.3	50	µg/L	500		102	85-115			
Calcium	5520	27	1000	"	5000		110	85-115			
Iron	582	9.1	100	"	500		116	85-115			QM-1
Magnesium	5090	21	1000	"	5000		102	85-115			
Potassium	5530	61	1000	"	5000		111	85-115			
Sodium	5310	34	1000	"	5000		106	85-115			
Matrix Spike (2204161-MS1)			**Source: 22E1180-01**		Prepared: 05/20/22 Analyzed: 05/23/22						
Boron	496	5.3	50	µg/L	500	14.3	96	70-130			
Calcium	5610	27	1000	"	5000	1240	87	70-130			
Iron	497	9.1	100	"	500	16.8	96	70-130			
Magnesium	5490	21	1000	"	5000	316	103	70-130			
Potassium	5490	61	1000	"	5000	402	102	70-130			
Sodium	5780	34	1000	"	5000	2380	68	70-130			QM-5
Matrix Spike (2204161-MS2)			**Source: 22E1270-05**		Prepared: 05/20/22 Analyzed: 05/23/22						
Boron	810	5.3	50	µg/L	500	320	98	70-130			
Calcium	4760	27	1000	"	5000	67.5	94	70-130			
Iron	681	9.1	100	"	500	218	93	70-130			
Magnesium	4810	21	1000	"	5000	36.2	95	70-130			
Potassium	26700	61	1000	"	5000	21500	103	70-130			
Sodium	511000	34	1000	"	5000	573000	NR	70-130			QM-5

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Stillwater Sciences
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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1180
COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204166 - EPA 200 No Digestion											
Blank (2204166-BLK1)					Prepared: 05/20/22 Analyzed: 05/24/22						
Iron	ND	6.8	100	µg/L							
LCS (2204166-BS1)					Prepared: 05/20/22 Analyzed: 05/24/22						
Iron	492	6.8	100	µg/L	500		98	85-115			
Matrix Spike (2204166-MS1)			**Source: 22E1177-01**		Prepared: 05/20/22 Analyzed: 05/24/22						
Iron	493	6.8	100	µg/L	500	22.0	94	70-130			
Matrix Spike (2204166-MS2)			**Source: 22E1180-01**		Prepared: 05/20/22 Analyzed: 05/24/22						
Iron	515	6.8	100	µg/L	500	23.1	98	70-130			
Batch 2204465 - EPA 200 No Digestion											
Blank (2204465-BLK1)					Prepared & Analyzed: 05/31/22						
Aluminum	ND	0.52	20	µg/L							
Silver	ND	0.15	0.50	"							
LCS (2204465-BS1)					Prepared & Analyzed: 05/31/22						
Aluminum	431	0.52	20	µg/L	500		86	85-115			
Silver	87.7	0.15	0.50	"	100		88	85-115			
Matrix Spike (2204465-MS1)			**Source: 22E1180-01**		Prepared & Analyzed: 05/31/22						
Aluminum	459	0.52	20	µg/L	500	17.0	88	70-130			
Antimony	84.0	0.57	6.0	"	100	ND	84	70-130			
Arsenic	95.1	0.27	2.0	"	100	ND	95	70-130			
Barium	104	0.37	5.0	"	100	5.03	99	70-130			
Beryllium	94.1	0.26	1.0	"	100	ND	94	70-130			
Cadmium	97.1	0.17	0.50	"	100	ND	97	70-130			
Chromium	95.8	0.28	1.0	"	100	ND	96	70-130			
Cobalt	99.1	0.11	2.0	"	100	ND	99	70-130			
Copper	97.5	0.26	2.0	"	100	ND	98	70-130			
Iron	505	5.5	20	"	500	ND	101	70-130			
Lead	92.1	0.23	5.0	"	100	ND	92	70-130			
Manganese	96.6	0.16	2.0	"	100	0.880	96	70-130			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1180**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204465 - EPA 200 No Digestion											
Matrix Spike (2204465-MS1)			**Source: 22E1180-01**		Prepared: 05/31/22 Analyzed: 06/01/22						
Molybdenum	88.7	0.55	2.0	µg/L	100	1.24	87	70-130			
Nickel	96.4	0.22	2.0	"	100	ND	96	70-130			
Selenium	98.7	1.1	5.0	"	100	ND	99	70-130			
Silver	100	0.15	0.50	"	100	ND	100	70-130			
Phosphorus	ND	42	100	"		ND		70-130			
Strontium	ND	20	20	"	100	ND		70-130			
Thallium	95.9	0.11	1.0	"	100	ND	96	70-130			
Silicon	ND	69	100	"		ND		70-130			
Vanadium	97.9	0.44	3.0	"	100	ND	98	70-130			
Silica (SiO2)	ND	150	500	"		ND		70-130			
Boron	454	4.1	20	"	500	19.0	87	70-130			
Zinc	96.7	0.65	10	"	100	1.31	95	70-130			
Tungsten	ND	10	10	"		ND		70-130			
Mercury	ND	1.0	1.0	"		ND		70-130			
Uranium	ND	2.0	5.0	"	100	ND		70-130			
Tin	ND	10	10	"	100	ND		70-130			
Matrix Spike (2204465-MS2)			**Source: 22E1254-01**		Prepared & Analyzed: 05/31/22						
Aluminum	447	0.52	20	µg/L	500	12.2	87	70-130			
Antimony	83.2	0.57	6.0	"	100	ND	83	70-130			
Arsenic	94.0	0.27	2.0	"	100	ND	94	70-130			
Barium	104	0.37	5.0	"	100	6.24	97	70-130			
Beryllium	91.5	0.26	1.0	"	100	ND	91	70-130			
Cadmium	96.5	0.17	0.50	"	100	ND	96	70-130			
Chromium	96.4	0.28	1.0	"	100	ND	96	70-130			
Cobalt	98.8	0.11	2.0	"	100	ND	99	70-130			
Copper	98.5	0.26	2.0	"	100	ND	98	70-130			
Iron	532	5.5	20	"	500	16.8	103	70-130			
Lead	91.3	0.23	5.0	"	100	ND	91	70-130			
Manganese	101	0.16	2.0	"	100	4.62	96	70-130			
Molybdenum	87.5	0.55	2.0	"	100	ND	88	70-130			
Nickel	96.8	0.22	2.0	"	100	ND	97	70-130			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204465 - EPA 200 No Digestion											
Matrix Spike (2204465-MS2)			**Source: 22E1254-01**		Prepared: 05/31/22	Analyzed: 06/01/22					
Selenium	97.9	1.1	5.0	µg/L	100	ND	98	70-130			
Silver	99.7	0.15	0.50	"	100	ND	100	70-130			
Strontium	ND	20	20	"	100	ND		70-130			
Phosphorus	ND	42	100	"		ND		70-130			
Silicon	ND	69	100	"		ND		70-130			
Thallium	95.5	0.11	1.0	"	100	ND	95	70-130			
Vanadium	98.3	0.44	3.0	"	100	ND	98	70-130			
Silica (SiO2)	ND	150	500	"		ND		70-130			
Zinc	98.6	0.65	10	"	100	1.18	97	70-130			
Boron	439	4.1	20	"	500	12.1	85	70-130			
Tungsten	ND	10	10	"		ND		70-130			
Mercury	ND	1.0	1.0	"		ND		70-130			
Uranium	ND	2.0	5.0	"	100	ND		70-130			
Tin	ND	10	10	"	100	ND		70-130			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1180**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204125 - EPA 5030 Water GC											
Blank (2204125-BLK1)					Prepared & Analyzed: 05/19/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*17.7*			"	*20.0*		*88*	*65-135*			
LCS (2204125-BS1)					Prepared & Analyzed: 05/19/22						
Gasoline	560	10	50	µg/L	500		112	70-130			
Surrogate: o-Chlorotoluene (Gas)	*20.3*			"	*20.0*		*101*	*65-135*			
LCS Dup (2204125-BSD1)					Prepared & Analyzed: 05/19/22						
Gasoline	429	10	50	µg/L	500		86	70-130	26	30	
Surrogate: o-Chlorotoluene (Gas)	*18.3*			"	*20.0*		*91*	*65-135*			
Matrix Spike (2204125-MS1)			**Source: 22E0999-01**		Prepared & Analyzed: 05/19/22						
Gasoline	530	10	50	µg/L	500	ND	106	68-132			
Surrogate: o-Chlorotoluene (Gas)	*20.2*			"	*20.0*		*101*	*65-135*			
Matrix Spike Dup (2204125-MSD1)			**Source: 22E0999-01**		Prepared & Analyzed: 05/19/22						
Gasoline	525	10	50	µg/L	500	ND	105	68-132	0.9	32	
Surrogate: o-Chlorotoluene (Gas)	*20.0*			"	*20.0*		*100*	*65-135*			

06/02/22 12:29

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1180**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204158 - EPA 5030 Water MS											
Blank (2204158-BLK1)					Prepared & Analyzed: 05/19/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Surrogate: Toluene-d8	*9.64*			"	*10.0*		*96*	*72-125*			
LCS (2204158-BS1)					Prepared & Analyzed: 05/19/22						
Methyl tert-butyl ether	20.2	0.095	0.50	µg/L	20.0		101	52-130			
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			
LCS Dup (2204158-BSD1)					Prepared & Analyzed: 05/19/22						
Methyl tert-butyl ether	20.9	0.095	0.50	µg/L	20.0		105	52-130	3	30	
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			
Matrix Spike (2204158-MS1)			**Source: 22E1180-01**		Prepared & Analyzed: 05/19/22						
Methyl tert-butyl ether	18.6	0.095	0.50	µg/L	20.0	ND	93	52-140			
Surrogate: Toluene-d8	*10.3*			"	*10.0*		*103*	*72-125*			
Matrix Spike Dup (2204158-MSD1)			**Source: 22E1180-01**		Prepared & Analyzed: 05/19/22						
Methyl tert-butyl ether	19.6	0.095	0.50	µg/L	20.0	ND	98	52-140	5	30	
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			

06/02/22 12:29

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1180**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
QM-5	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
QM-1	The spike recovery was outside acceptance limits for the LCS or LCSD. The batch was accepted based on acceptable MS/MSD recoveries & RPD's.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22E480 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches.

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[X] **CLS** (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] **OTHER**

GEOTRACKER

EDF REPORT YES [X] NO [ ]

GLOBAL ID.

FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	ANALYSIS REQUESTED: TSS, TDS, Hardness, Alkalinity, NO2-N, NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS: 1	2	3	5	SPECIAL INSTRUCTIONS
5.18	10:00	IS.5.UVR		Surface water			6	X	X	X	X	X	X	X				X	
5.18	12:15	IS.6.UVR		Surface water			6	X	X	X	X	X	X	X				X	
5.18	11:00	IS.7.UVR		Surface water			6	X	X	X	X	X	X	X				X	
5.18	12:30	IS.6.UVR.B		Surface water			6	X	X	X	X	X	X	X				X	
5.18	1:30	IS.8.UVR		Surface water			6	X	X	X	X	X	X	X				X	
5.18	2:30	IS.8.UVR.B		Surface water			6	X	X	X	X	X	X	X				X	
				Surface water			6											X	INVOICE TO:
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	**Project No. 750.10 Task 0620.01**
				Surface water			6											X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (2) HNO_3 (3) = COLD (4)= H2SO4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Adam Cohen/Stillwater	7:48 5/18		

RECEIVED AT LAB BY: **DATE/TIME:** 5/18/22 1748 **CONDITIONS/COMMENTS:** 3.1/2.4

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER _____ **AIR BILL #** _____

basic laboratory

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02 UARP

Lab No: 22E1208
Reported: 06/20/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22E1208, received on 05/26/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: R-IS-18-RR-TOP
Matrix / Type: Surface Water (Grab)
Lab ID: 22E1208-01
Sampled: 05/25/22 10:50
Received: 05/26/22 09:33

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	06/08/22	06/07/22	B2F0988 / edm
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.17		0.04	0.10	"	"	"	"
Lead	"	0.010	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.92		0.22	0.50	EPA 1631E	06/16/22	06/16/22	B2F1260 / EDM
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	06/10/22	06/09/22	B2F1060 / EDM
Nickel	ug/l	0.08	J	0.02	0.10	EPA 1638	06/08/22	06/07/22	B2F0988 / edm
Selenium	"	ND		0.3	2.0	EPA 200.8	06/02/22	05/31/22	B2E1551 / BDL
Zinc	"	0.36	J	0.12	0.50	EPA 1638	06/08/22	06/07/22	B2F0988 / edm

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.12	J	0.12	0.50	"	06/08/22	06/08/22	B2F1027 / edm
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.16		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.07	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	06/02/22	06/01/22	B2F0854 / BDL
Zinc	"	0.31	J	0.12	0.50	EPA 1638	06/08/22	06/08/22	B2F1027 / edm

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Analytical Report

Description: IS-1-RR
Matrix / Type: Surface Water (Grab)
Lab ID: 22E1208-02
Sampled: 05/25/22 11:50
Received: 05/26/22 09:33

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.20	J	0.12	0.50	EPA 1638	06/08/22	06/07/22	B2F0988 / edm
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.24		0.04	0.10	"	"	"	"
Lead	"	0.025	J	0.007	0.050	"	"	"	"
Mercury	ng/l	1.31		0.22	0.50	EPA 1631E	06/16/22	06/16/22	B2F1260 / EDM
Methyl Mercury as Mercury	"	0.027	J	0.017	0.050	EPA 1630	06/10/22	06/09/22	B2F1060 / EDM
Nickel	ug/l	0.09	J	0.02	0.10	EPA 1638	06/08/22	06/07/22	B2F0988 / edm
Selenium	"	ND		0.3	2.0	EPA 200.8	06/02/22	05/31/22	B2E1551 / BDL
Zinc	"	0.64		0.12	0.50	EPA 1638	06/08/22	06/07/22	B2F0988 / edm

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.13	J	0.12	0.50	"	06/08/22	06/08/22	B2F1027 / edm
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.19		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.07	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	06/02/22	06/01/22	B2F0854 / BDL
Zinc	"	0.57		0.12	0.50	EPA 1638	06/08/22	06/08/22	B2F1027 / edm

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2E1551 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	204	2.0	ug/l	200		102	85-115			
Duplicate	Source: 22E1208-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22E1208-01									
Selenium	202	2.0	ug/l	200	ND	101	75-125			
Metals - Total	**Batch B2F0988 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2F0988 - EPA 1638 - Closed Bottle Oven Digestion**									
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.25	0.50	ug/l	1.25		99.7	50-150			
Cadmium	0.25	0.10	ug/l	0.250		100	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.131	0.050	ug/l	0.125		105	72-143			
Nickel	0.24	0.10	ug/l	0.250		94.7	68-134			
Zinc	1.25	0.50	ug/l	1.25		99.7	46-146			
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.26	0.10	ug/l	0.250		105	84-113			
Copper	0.26	0.10	ug/l	0.250		103	51-145			
Lead	0.125	0.050	ug/l	0.125		100	72-143			
Nickel	0.24	0.10	ug/l	0.250		95.2	68-134			
Zinc	1.25	0.50	ug/l	1.25		99.9	46-146			
Matrix Spike	Source: 22E1088-01									
Arsenic	2.50	0.50	ug/l	2.50	ND	100	50-150			
Cadmium	0.53	0.10	ug/l	0.500	ND	106	84-113			
Copper	0.70	0.10	ug/l	0.500	0.21	99.8	51-145			
Lead	0.297	0.050	ug/l	0.250	0.047	99.8	72-143			
Nickel	0.60	0.10	ug/l	0.500	0.11	98.6	68-134			
Zinc	2.89	0.50	ug/l	2.50	0.31	103	46-146			
Matrix Spike	Source: 22E1247-02									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.1	84-113			
Copper	0.66	0.10	ug/l	0.500	0.16	99.8	51-145			
Lead	0.259	0.050	ug/l	0.250	0.014	97.8	72-143			
Nickel	0.58	0.10	ug/l	0.500	0.06	104	68-134			
Zinc	2.69	0.50	ug/l	2.50	0.29	96.2	46-146			

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2F0988 - EPA 1638 - Closed Bottle Oven Digestion										
Matrix Spike Dup	Source: 22E1088-01									
Arsenic	2.58	0.50	ug/l	2.50	ND	103	50-150	3.00	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	98.9	84-113	6.65	20	
Copper	0.71	0.10	ug/l	0.500	0.21	101	51-145	0.757	20	
Lead	0.295	0.050	ug/l	0.250	0.047	99.0	72-143	0.694	20	
Nickel	0.62	0.10	ug/l	0.500	0.11	103	68-134	3.26	20	
Zinc	2.81	0.50	ug/l	2.50	0.31	99.9	46-146	2.90	20	
Matrix Spike Dup	Source: 22E1247-02									
Arsenic	2.58	0.50	ug/l	2.50	ND	103	50-150	1.73	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	98.7	84-113	2.64	20	
Copper	0.65	0.10	ug/l	0.500	0.16	97.4	51-145	1.81	20	
Lead	0.255	0.050	ug/l	0.250	0.014	96.3	72-143	1.46	20	
Nickel	0.55	0.10	ug/l	0.500	0.06	98.8	68-134	4.29	20	
Zinc	2.77	0.50	ug/l	2.50	0.29	99.2	46-146	2.76	20	
Metals - Total Batch B2F1060 - EPA 1630 Distillation (Modified)										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	1.41	0.050	ng/l	2.00		70.6	67-133			
Matrix Spike	Source: 22E1167-04									
Methyl Mercury as Mercury	1.03	0.050	ng/l	1.00	0.029	100	65-135			
Matrix Spike Dup	Source: 22E1167-04									
Methyl Mercury as Mercury	0.982	0.050	ng/l	1.00	0.029	95.3	65-135	4.68	35	
Metals - Total Batch B2F1260 - BrCl Digestion										
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	0.23	0.50	ng/l							J
LCS										
Mercury	8.74	0.50	ng/l	10.0		87.4	77-123			
Matrix Spike	Source: 22E1208-01									
Mercury	9.61	0.50	ng/l	10.0	0.92	87.0	71-125			
Matrix Spike	Source: 22F0114-01									
Mercury	7.94	0.50	ng/l	10.0	0.36	75.8	71-125			
Matrix Spike Dup	Source: 22E1208-01									
Mercury	9.63	0.50	ng/l	10.0	0.92	87.1	71-125	0.187	24	

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2F1260 - BrCl Digestion										
Matrix Spike Dup	Source: 22F0114-01									
Mercury	8.85	0.50	ng/l	10.0	0.36	85.0	71-125	10.9	24	
Metals - Dissolved Batch B2F0854 - EPA 200.8 Diss										
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	181	2.0	ug/l	200		90.6	85-115			
Duplicate	Source: 22E1167-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22E1181-04									
Selenium	ND	10.0	ug/l		ND				20	
Matrix Spike	Source: 22E1167-01									
Selenium	179	2.0	ug/l	200	ND	89.6	75-125			
Matrix Spike	Source: 22E1181-04									
Selenium	982	10.0	ug/l	1000	ND	98.2	75-125			
Metals - Dissolved Batch B2F1027 - EPA 1638 - Dissolved										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved	**Batch B2F1027 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.28	0.50	ug/l	1.25		102	50-150			
Cadmium	0.25	0.10	ug/l	0.250		98.8	84-113			
Copper	0.26	0.10	ug/l	0.250		105	51-145			
Lead	0.130	0.050	ug/l	0.125		104	72-143			
Nickel	0.24	0.10	ug/l	0.250		95.2	68-134			
Zinc	1.30	0.50	ug/l	1.25		104	46-146			
LCS										
Arsenic	1.28	0.50	ug/l	1.25		102	50-150			
Cadmium	0.26	0.10	ug/l	0.250		102	84-113			
Copper	0.26	0.10	ug/l	0.250		104	51-145			
Lead	0.129	0.050	ug/l	0.125		104	72-143			
Nickel	0.24	0.10	ug/l	0.250		94.7	68-134			
Zinc	1.31	0.50	ug/l	1.25		105	46-146			
Matrix Spike	Source: 22E1088-01									
Arsenic	2.55	0.50	ug/l	2.50	ND	102	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113			
Copper	0.69	0.10	ug/l	0.500	0.17	104	51-145			
Lead	0.248	0.050	ug/l	0.250	ND	99.1	72-143			
Nickel	0.59	0.10	ug/l	0.500	0.08	101	68-134			
Zinc	2.87	0.50	ug/l	2.50	0.29	103	46-146			
Matrix Spike	Source: 22E1247-02									
Arsenic	2.82	0.50	ug/l	2.50	ND	113	50-150			
Cadmium	0.52	0.10	ug/l	0.500	ND	104	84-113			
Copper	0.68	0.10	ug/l	0.500	0.15	105	51-145			
Lead	0.260	0.050	ug/l	0.250	ND	104	72-143			
Nickel	0.58	0.10	ug/l	0.500	0.05	105	68-134			
Zinc	2.94	0.50	ug/l	2.50	0.30	106	46-146			
Matrix Spike Dup	Source: 22E1088-01									
Arsenic	2.55	0.50	ug/l	2.50	ND	102	50-150	0.00740	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	98.4	84-113	3.45	20	
Copper	0.69	0.10	ug/l	0.500	0.17	103	51-145	1.09	20	
Lead	0.258	0.050	ug/l	0.250	ND	103	72-143	4.01	20	
Nickel	0.60	0.10	ug/l	0.500	0.08	102	68-134	0.819	20	
Zinc	2.83	0.50	ug/l	2.50	0.29	101	46-146	1.55	20	
Matrix Spike Dup	Source: 22E1247-02									
Arsenic	2.74	0.50	ug/l	2.50	ND	109	50-150	3.03	20	
Cadmium	0.52	0.10	ug/l	0.500	ND	103	84-113	0.363	20	
Copper	0.69	0.10	ug/l	0.500	0.15	109	51-145	2.61	20	
Lead	0.258	0.050	ug/l	0.250	ND	103	72-143	0.446	20	
Nickel	0.55	0.10	ug/l	0.500	0.05	99.1	68-134	5.53	20	
Zinc	2.89	0.50	ug/l	2.50	0.30	103	46-146	1.85	20	

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Analytical Report

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	CA-ELAP does not accredit this analyte or method as of December 2020. *(Newly released 2021 FOA tables may include this analyte or method.)*
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless samples are received on ice and collected on the same day as delivery. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen

Ricky Jensen, General Manager
Pace Analytical Services LLC - Redding CA
California ELAP Cert #1677 & 2718

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

22E1208

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494
☐ 3860 Morrow Lane, Suite F Chico, CA 95928 (530) 894-8966 FAX: (530) 894-5143

LABORATORY WORK ORDER # 22E1208
PAGE 1 OF 1

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CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS
279 Coustea Place, Suite 400
Davis, CA 95618

REPORT TO ☐ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED
☑ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one) ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED		SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	5/25/22	10:50	AM PM	SW		✓	R-IS-18-RR-Top		6	✓	✓	✓	✓	✓	✓
2	5/25/22	11:50	AM PM	SW		✓	IS-1-RR		6	✓	✓	✓	✓	✓	✓
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												

SAMPLED BY: (please print) Joey Verdian

RELINQUISHED DATE / TIME: 5/25/2022 1610D

SAMPLING / ANALYSIS COMMENTS
(1) Total and Dissolved LL 1638 Metals

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME: Joey Verdian SIGNATURE: Joey Verdian DATE: 5/25/2022

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
		Joey Verdian	5/25/2022 1610D
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
SMM	5.26.22 09:33	SMM	5.26.22 15:12

For Official Lab Comments Only

*SAMPLE TYPE CODES
DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water
SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22E1208

SHIPPING INFORMATION

Walk-In ☐
Courier ☐
FedEx ☑
UPS ☐
Other ☐

Cooler Present? Yes ☑ No ☐

Samples Received By: JMM Date: 5.26.22

	Yes	No
Samples received on ice?	☑	☐
Samples received the same day collected?	☐	☑

Ice type? ☑ Wet ☐ Blue ☐ Other _____

SAMPLE TEMPERATURES AT RECEIPT Therm. ID (Circle one): (Therm-36) Therm-37 Therm-59 Other: _____

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	0.9	-06		-11		-16	
-02	2.8	-07		-12		-17	
-03		-08		-13		-18	
-04		-09		-14		-19	
-05		-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: JMM Date: 5.26.22

	Yes	No	NA	
Custody seals present?	☐	☐	☑	
Samples in proper containers?	☑	☐		
Sample containers damaged?	☐	☑		
Sufficient sample volume for indicated tests?	☑	☐		
Samples received within holding times?	☑	☐		
Are VOA vials free of headspace?	☐	☐	☑	
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☑	

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☑	☐	☐
Preserved in the lab? JMM 5.26.22	☑	☑	☐

Lab Preservation Date & Time 5.26.22 09:35

☐ H2SO4 (ID_____) ☑ HNO3 (ID 2B140360) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑ By:_____ Meter ID:_____
Are proper preservation lables present?	☑	☐	☐

Preservation checked at Lab? Date & Time 5.26.22 09:35 Test Strip (ID 1H20019)

Preservation and Preservation Checks performed by: JMM

COMMENTS, DISCREPANCEIS, ANOMALIES

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02 UARP

Lab No: 22E1247
Reported: 06/20/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22E1247, received on 05/27/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: R-IS-19-BI
Matrix / Type: Surface Water (Grab)
Lab ID: 22E1247-01
Sampled: 05/26/22 10:20
Received: 05/27/22 08:28

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	06/08/22	06/07/22	B2F0988 / edm
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.21		0.04	0.10	"	"	"	"
Lead	"	0.014	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.98		0.22	0.50	EPA 1631E	06/16/22	06/16/22	B2F1260 / EDM
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	06/10/22	06/09/22	B2F1060 / EDM
Nickel	ug/l	0.07	J	0.02	0.10	EPA 1638	06/08/22	06/07/22	B2F0988 / edm
Selenium	"	ND		0.3	2.0	EPA 200.8	06/02/22	05/31/22	B2E1551 / BDL
Zinc	"	1.13		0.12	0.50	EPA 1638	06/08/22	06/07/22	B2F0988 / edm

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	06/08/22	06/08/22	B2F1027 / edm
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.18		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.07	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	06/02/22	06/01/22	B2F0854 / BDL
Zinc	"	1.33		0.12	0.50	EPA 1638	06/08/22	06/08/22	B2F1027 / edm

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Analytical Report

Description: IS-3-LRR
Matrix / Type: Surface Water (Grab)
Lab ID: 22E1247-02
Sampled: 05/26/22 11:10
Received: 05/27/22 08:28

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	06/08/22	06/07/22	B2F0988 / edm
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.16		0.04	0.10	"	"	"	"
Lead	"	0.014	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.97		0.22	0.50	EPA 1631E	06/16/22	06/16/22	B2F1260 / EDM
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	06/10/22	06/09/22	B2F1060 / EDM
Nickel	ug/l	0.06	J	0.02	0.10	EPA 1638	06/08/22	06/07/22	B2F0988 / edm
Selenium	"	ND		0.3	2.0	EPA 200.8	06/02/22	05/31/22	B2E1551 / BDL
Zinc	"	0.29	J	0.12	0.50	EPA 1638	06/08/22	06/07/22	B2F0988 / edm

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	06/08/22	06/08/22	B2F1027 / edm
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.15		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.05	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	06/02/22	06/01/22	B2F0854 / BDL
Zinc	"	0.30	J	0.12	0.50	EPA 1638	06/08/22	06/08/22	B2F1027 / edm

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Analytical Report

Description: IS-2-LRR
Matrix / Type: Surface Water (Grab)
Lab ID: 22E1247-03
Sampled: 05/26/22 12:30
Received: 05/27/22 08:28

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	06/08/22	06/07/22	B2F0988 / edm
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.17		0.04	0.10	"	"	"	"
Lead	"	0.017	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.99		0.22	0.50	EPA 1631E	06/16/22	06/16/22	B2F1260 / EDM
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	06/10/22	06/09/22	B2F1060 / EDM
Nickel	ug/l	0.07	J	0.02	0.10	EPA 1638	06/08/22	06/07/22	B2F0988 / edm
Selenium	"	ND		0.3	2.0	EPA 200.8	06/02/22	05/31/22	B2E1551 / BDL
Zinc	"	0.53		0.12	0.50	EPA 1638	06/08/22	06/07/22	B2F0988 / edm

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	06/08/22	06/08/22	B2F1027 / edm
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.16		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.07	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	06/02/22	06/01/22	B2F0854 / BDL
Zinc	"	0.52		0.12	0.50	EPA 1638	06/08/22	06/08/22	B2F1027 / edm

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2E1551 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	204	2.0	ug/l	200		102	85-115			
Duplicate	Source: 22E1208-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22E1208-01									
Selenium	202	2.0	ug/l	200	ND	101	75-125			
Metals - Total	**Batch B2F0988 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2F0988 - EPA 1638 - Closed Bottle Oven Digestion**									
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.25	0.50	ug/l	1.25		99.7	50-150			
Cadmium	0.25	0.10	ug/l	0.250		100	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.131	0.050	ug/l	0.125		105	72-143			
Nickel	0.24	0.10	ug/l	0.250		94.7	68-134			
Zinc	1.25	0.50	ug/l	1.25		99.7	46-146			
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.26	0.10	ug/l	0.250		105	84-113			
Copper	0.26	0.10	ug/l	0.250		103	51-145			
Lead	0.125	0.050	ug/l	0.125		100	72-143			
Nickel	0.24	0.10	ug/l	0.250		95.2	68-134			
Zinc	1.25	0.50	ug/l	1.25		99.9	46-146			
Matrix Spike	Source: 22E1088-01									
Arsenic	2.50	0.50	ug/l	2.50	ND	100	50-150			
Cadmium	0.53	0.10	ug/l	0.500	ND	106	84-113			
Copper	0.70	0.10	ug/l	0.500	0.21	99.8	51-145			
Lead	0.297	0.050	ug/l	0.250	0.047	99.8	72-143			
Nickel	0.60	0.10	ug/l	0.500	0.11	98.6	68-134			
Zinc	2.89	0.50	ug/l	2.50	0.31	103	46-146			
Matrix Spike	Source: 22E1247-02									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.1	84-113			
Copper	0.66	0.10	ug/l	0.500	0.16	99.8	51-145			
Lead	0.259	0.050	ug/l	0.250	0.014	97.8	72-143			
Nickel	0.58	0.10	ug/l	0.500	0.06	104	68-134			
Zinc	2.69	0.50	ug/l	2.50	0.29	96.2	46-146			

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2F0988 - EPA 1638 - Closed Bottle Oven Digestion										
Matrix Spike Dup	Source: 22E1088-01									
Arsenic	2.58	0.50	ug/l	2.50	ND	103	50-150	3.00	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	98.9	84-113	6.65	20	
Copper	0.71	0.10	ug/l	0.500	0.21	101	51-145	0.757	20	
Lead	0.295	0.050	ug/l	0.250	0.047	99.0	72-143	0.694	20	
Nickel	0.62	0.10	ug/l	0.500	0.11	103	68-134	3.26	20	
Zinc	2.81	0.50	ug/l	2.50	0.31	99.9	46-146	2.90	20	
Matrix Spike Dup	Source: 22E1247-02									
Arsenic	2.58	0.50	ug/l	2.50	ND	103	50-150	1.73	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	98.7	84-113	2.64	20	
Copper	0.65	0.10	ug/l	0.500	0.16	97.4	51-145	1.81	20	
Lead	0.255	0.050	ug/l	0.250	0.014	96.3	72-143	1.46	20	
Nickel	0.55	0.10	ug/l	0.500	0.06	98.8	68-134	4.29	20	
Zinc	2.77	0.50	ug/l	2.50	0.29	99.2	46-146	2.76	20	
Metals - Total Batch B2F1060 - EPA 1630 Distillation (Modified)										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	1.41	0.050	ng/l	2.00		70.6	67-133			
Matrix Spike	Source: 22E1167-04									
Methyl Mercury as Mercury	1.03	0.050	ng/l	1.00	0.029	100	65-135			
Matrix Spike Dup	Source: 22E1167-04									
Methyl Mercury as Mercury	0.982	0.050	ng/l	1.00	0.029	95.3	65-135	4.68	35	
Metals - Total Batch B2F1260 - BrCl Digestion										
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	0.23	0.50	ng/l							J
LCS										
Mercury	8.74	0.50	ng/l	10.0		87.4	77-123			
Matrix Spike	Source: 22E1208-01									
Mercury	9.61	0.50	ng/l	10.0	0.92	87.0	71-125			
Matrix Spike	Source: 22F0114-01									
Mercury	7.94	0.50	ng/l	10.0	0.36	75.8	71-125			
Matrix Spike Dup	Source: 22E1208-01									
Mercury	9.63	0.50	ng/l	10.0	0.92	87.1	71-125	0.187	24	

basic laboratory
2218 Railroad Avenue
Redding, California 96001
voice 530.243.7234
fax 530.243.7494

3860 Morrow Lane, Suite F
Chico, California 95928
voice 530.894.8966
fax 530.894.5143

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2F1260 - BrCl Digestion										
Matrix Spike Dup	Source: 22F0114-01									
Mercury	8.85	0.50	ng/l	10.0	0.36	85.0	71-125	10.9	24	
Metals - Dissolved Batch B2F0854 - EPA 200.8 Diss										
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	181	2.0	ug/l	200		90.6	85-115			
Duplicate	Source: 22E1167-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22E1181-04									
Selenium	ND	10.0	ug/l		ND				20	
Matrix Spike	Source: 22E1167-01									
Selenium	179	2.0	ug/l	200	ND	89.6	75-125			
Matrix Spike	Source: 22E1181-04									
Selenium	982	10.0	ug/l	1000	ND	98.2	75-125			
Metals - Dissolved Batch B2F1027 - EPA 1638 - Dissolved										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved **Batch B2F1027 - EPA 1638 - Dissolved**										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.28	0.50	ug/l	1.25		102	50-150			
Cadmium	0.25	0.10	ug/l	0.250		98.8	84-113			
Copper	0.26	0.10	ug/l	0.250		105	51-145			
Lead	0.130	0.050	ug/l	0.125		104	72-143			
Nickel	0.24	0.10	ug/l	0.250		95.2	68-134			
Zinc	1.30	0.50	ug/l	1.25		104	46-146			
LCS										
Arsenic	1.28	0.50	ug/l	1.25		102	50-150			
Cadmium	0.26	0.10	ug/l	0.250		102	84-113			
Copper	0.26	0.10	ug/l	0.250		104	51-145			
Lead	0.129	0.050	ug/l	0.125		104	72-143			
Nickel	0.24	0.10	ug/l	0.250		94.7	68-134			
Zinc	1.31	0.50	ug/l	1.25		105	46-146			
Matrix Spike	Source: 22E1088-01									
Arsenic	2.55	0.50	ug/l	2.50	ND	102	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113			
Copper	0.69	0.10	ug/l	0.500	0.17	104	51-145			
Lead	0.248	0.050	ug/l	0.250	ND	99.1	72-143			
Nickel	0.59	0.10	ug/l	0.500	0.08	101	68-134			
Zinc	2.87	0.50	ug/l	2.50	0.29	103	46-146			
Matrix Spike	Source: 22E1247-02									
Arsenic	2.82	0.50	ug/l	2.50	ND	113	50-150			
Cadmium	0.52	0.10	ug/l	0.500	ND	104	84-113			
Copper	0.68	0.10	ug/l	0.500	0.15	105	51-145			
Lead	0.260	0.050	ug/l	0.250	ND	104	72-143			
Nickel	0.58	0.10	ug/l	0.500	0.05	105	68-134			
Zinc	2.94	0.50	ug/l	2.50	0.30	106	46-146			
Matrix Spike Dup	Source: 22E1088-01									
Arsenic	2.55	0.50	ug/l	2.50	ND	102	50-150	0.00740	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	98.4	84-113	3.45	20	
Copper	0.69	0.10	ug/l	0.500	0.17	103	51-145	1.09	20	
Lead	0.258	0.050	ug/l	0.250	ND	103	72-143	4.01	20	
Nickel	0.60	0.10	ug/l	0.500	0.08	102	68-134	0.819	20	
Zinc	2.83	0.50	ug/l	2.50	0.29	101	46-146	1.55	20	
Matrix Spike Dup	Source: 22E1247-02									
Arsenic	2.74	0.50	ug/l	2.50	ND	109	50-150	3.03	20	
Cadmium	0.52	0.10	ug/l	0.500	ND	103	84-113	0.363	20	
Copper	0.69	0.10	ug/l	0.500	0.15	109	51-145	2.61	20	
Lead	0.258	0.050	ug/l	0.250	ND	103	72-143	0.446	20	
Nickel	0.55	0.10	ug/l	0.500	0.05	99.1	68-134	5.53	20	
Zinc	2.89	0.50	ug/l	2.50	0.30	103	46-146	1.85	20	

basic laboratory

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Analytical Report

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	CA-ELAP does not accredit this analyte or method as of December 2020. *(Newly released 2021 FOA tables may include this analyte or method.)*
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless samples are received on ice and collected on the same day as delivery. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen

Ricky Jensen, General Manager
Pace Analytical Services LLC - Redding CA
California ELAP Cert #1677 & 2718

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494
☐ 3860 Morrow Lane, Suite F Chico, CA 95928 (530) 894-8966 FAX: (530) 894-5143

LABORATORY WORK ORDER # 22E1247

PAGE 1 OF 1

basic laboratory

CLIENT NAME: Stillwater Sciences

PROJECT NAME: SMUD UARP 2022

PROJECT / PO #: 750.10/620.02

PWS # (If Applicable):

MAILING ADDRESS: 279 Coustea Place, Suite 400, Davis, CA 95618

REPORT TO ☑ Email ☐ Mail Hardcopy

NAME / ATTENTION: Emily Applequist

PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED ☑ Standard ☐ Rush

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#:

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one) ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED		SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	5/26/22	10:20	AM PM	SW		✓	R-IS-19-BI		6	✓	✓	✓	✓	✓	✓
2	5/26/22	11:10	AM PM	SW		✓	IS-3-LRR		6	✓	✓	✓	✓	✓	✓
3	5/26/22	12:30	AM PM	SW		✓	IS-2-LRR		6	✓	✓	✓	✓	✓	✓
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												

ANALYSES REQUESTED

SAMPLED BY: (please print) Joey Verdian

RELINQUISHED DATE / TIME: 5/26/22 13:30

SAMPLING / ANALYSIS COMMENTS: (1) Total and Dissolved LL 1638 Metals

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME Joey Verdian SIGNATURE Joey Verdian DATE 5/26/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
		Joey Verdian	5/26/22 13:30
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
RB	5/27/22 0828	Rachel Kuntz	5.27.22 1038

For Official Lab Comments Only

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

FRM-002.1 - Chain of Custody (rev 1.1)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22E1247

SHIPPING INFORMATION			
Walk-In	☐		
Courier	☐		
FedEx	☑		
UPS	☐	Cooler Present?	Yes ☑ No ☐
Other	☐		

Samples Received By: RH Date: 5.26.22 (27) KH 5.27.22

	Yes	No
Samples received on ice?	☑	☐
Samples received the same day collected?	☐	☑

Ice type? ☑ Wet ☐ Blue ☐ Other melted

SAMPLE TEMPERATURES AT RECEIPT Therm. ID (Circle one): Therm-36 Therm-37 (Therm-59) Other: _____

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	2.4	-06		-11		-16	
-02	3.5	-07		-12		-17	
-03	3.8	-08		-13		-18	
-04		-09		-14		-19	
-05		-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: RH Date: 5.27.22

	Yes	No	NA	
Custody seals present?	☐	☐	☒	
Samples in proper containers?	☒	☐		
Sample containers damaged?	☐	☒		
Sufficient sample volume for indicated tests?	☒	☐		
Samples received within holding times?	☒	☐		
Are VOA vials free of headspace?	☐	☐	☒	
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☒	

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☐	☑	☐
Preserved in the lab?	☑	☐	☐

Lab Preservation Date & Time 5.27.22 0842

☐ H2SO4 (ID_____) ☑ HNO3 (ID 2B14036) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☐
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☐
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☐ By:_____ Meter ID:_____
Are proper preservation lables present?	☑	☐	☐

Preservation checked at Lab? Date & Time 5.27.22 0844 Test Strip (ID 1H20019)

Preservation and Preservation Checks performed by: RH

COMMENTS, DISCREPANCEIS, ANOMALIES

_____

_____

_____

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

June 06, 2022

CLS Work Order #: 22E1254
COC #:

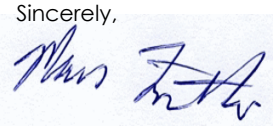
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 05/19/22 15:23. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

06/06/22 12:43

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1254
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-4-GC (22E1254-01) Surface Water	**Sampled: 05/19/22 09:15**		**Received: 05/19/22 15:23**							
Ammonia as N	ND		0.10	mg/L	1	2204323	05/25/22	05/25/22	SM4500-NH3F-1997	
Bicarbonate as CaCO3	**5.4**		5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Carbonate as CaCO3	ND		5.0	"	"	"	"	"	"	
Chloride	**0.62**		0.50	"	"	2204157	05/20/22	05/20/22	EPA 300.0	
Cyanide (total)	ND		0.0050	"	"	2204322	05/25/22	05/25/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND		5.0	"	"	2204384	05/26/22	05/31/22	EPA 1664B	
Hydroxide as CaCO3	ND		5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Nitrate/Nitrite as N	ND		0.40	"	"	2204157	05/20/22	05/20/22	EPA 300.0	
Orthophosphate as PO4	ND		0.15	"	"	2204174	05/20/22	05/20/22	SM4500-P E	
Sulfate as SO4	ND		0.50	"	"	2204157	05/20/22	05/20/22	EPA 300.0	
Total Alkalinity	**5.4**		5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Total Dissolved Solids	**18**		10	"	"	2204301	05/25/22	05/27/22	SM2540C	
Total Hardness as CaCO3	**4.1**		1.0	"	"	2204263	05/24/22	05/25/22	EPA 200.7	
Total Kjeldahl Nitrogen	ND		0.20	"	"	2204348	05/25/22	05/25/22	SM4500-NH3F-1997	
Total Organic Carbon	**2.3**		1.0	"	"	2204244	05/24/22	05/24/22	SM5310B	
Total Phosphorus as P	ND		0.050	"	"	2204233	05/23/22	05/23/22	SM4500-P E	
Total Suspended Solids	ND		5.0	"	"	2204271	05/24/22	05/25/22	SM2540D	
IS-20-BC (22E1254-02) Surface Water	**Sampled: 05/19/22 12:00**		**Received: 05/19/22 15:23**							
Ammonia as N	ND		0.10	mg/L	1	2204323	05/25/22	05/25/22	SM4500-NH3F-1997	
Bicarbonate as CaCO3	**9.8**		5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Carbonate as CaCO3	ND		5.0	"	"	"	"	"	"	
Chloride	**0.96**		0.50	"	"	2204157	05/20/22	05/20/22	EPA 300.0	
Cyanide (total)	ND		0.0050	"	"	2204322	05/25/22	05/25/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND		5.0	"	"	2204384	05/26/22	05/31/22	EPA 1664B	
Hydroxide as CaCO3	ND		5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Nitrate/Nitrite as N	ND		0.40	"	"	2204157	05/20/22	05/20/22	EPA 300.0	
Orthophosphate as PO4	ND		0.15	"	"	2204174	05/20/22	05/20/22	SM4500-P E	

06/06/22 12:43

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1254
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-20-BC (22E1254-02) Surface Water	**Sampled: 05/19/22 12:00**		**Received: 05/19/22 15:23**							
Sulfate as SO4	ND		0.50	mg/L	1	2204157	05/20/22	05/20/22	EPA 300.0	
Total Alkalinity	**9.8**		5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Total Dissolved Solids	**15**		10	"	"	2204301	05/25/22	05/27/22	SM2540C	
Total Hardness as CaCO3	**7.9**		1.0	"	"	2204263	05/24/22	05/25/22	EPA 200.7	
Total Kjeldahl Nitrogen	ND		0.20	"	"	2204348	05/25/22	05/25/22	SM4500-NH3F-1997	
Total Organic Carbon	**1.4**		1.0	"	"	2204244	05/24/22	05/24/22	SM5310B	
Total Phosphorus as P	ND		0.050	"	"	2204233	05/23/22	05/23/22	SM4500-P E	
Total Suspended Solids	ND		5.0	"	"	2204271	05/24/22	05/25/22	SM2540D	
IS-20-BC-FB (22E1254-03) Surface Water	**Sampled: 05/19/22 12:30**		**Received: 05/19/22 15:23**							
Ammonia as N	ND		0.10	mg/L	1	2204323	05/25/22	05/25/22	SM4500-NH3F-1997	
Bicarbonate as CaCO3	ND		5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Carbonate as CaCO3	ND		5.0	"	"	"	"	"	"	
Chloride	ND		0.50	"	"	2204157	05/20/22	05/20/22	EPA 300.0	
Cyanide (total)	ND		0.0050	"	"	2204322	05/25/22	05/25/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND		5.0	"	"	2204384	05/26/22	05/31/22	EPA 1664B	
Hydroxide as CaCO3	ND		5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Nitrate/Nitrite as N	ND		0.40	"	"	2204157	05/20/22	05/20/22	EPA 300.0	
Orthophosphate as PO4	ND		0.15	"	"	2204174	05/20/22	05/20/22	SM4500-P E	
Sulfate as SO4	ND		0.50	"	"	2204157	05/20/22	05/20/22	EPA 300.0	
Total Alkalinity	ND		5.0	"	"	2204196	05/20/22	05/20/22	SM2320B	
Total Dissolved Solids	ND		10	"	"	2204301	05/25/22	05/27/22	SM2540C	
Total Hardness as CaCO3	ND		1.0	"	"	2204263	05/24/22	05/25/22	EPA 200.7	
Total Kjeldahl Nitrogen	ND		0.20	"	"	2204348	05/25/22	05/25/22	SM4500-NH3F-1997	
Total Organic Carbon	ND		1.0	"	"	2204244	05/24/22	05/24/22	SM5310B	
Total Phosphorus as P	ND		0.050	"	"	2204233	05/23/22	05/23/22	SM4500-P E	
Total Suspended Solids	ND		5.0	"	"	2204271	05/24/22	05/25/22	SM2540D	

06/06/22 12:43

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1254
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-4-GC (22E1254-01) Surface Water Sampled: 05/19/22 09:15 Received: 05/19/22 15:23										
Diesel	ND		0.050	mg/L	1	2204281	05/24/22	05/24/22	EPA 8015M	
Hydraulic Oil	ND		0.050	"	"	"	"	"	"	
Kerosene	ND		0.050	"	"	"	"	"	"	
Mineral Oil	ND		0.050	"	"	"	"	"	"	
Motor Oil	ND		0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*91 %*	*65-135*		"	"	"	"	
IS-20-BC (22E1254-02) Surface Water Sampled: 05/19/22 12:00 Received: 05/19/22 15:23										
Diesel	ND		0.050	mg/L	1	2204281	05/24/22	05/24/22	EPA 8015M	
Hydraulic Oil	ND		0.050	"	"	"	"	"	"	
Kerosene	ND		0.050	"	"	"	"	"	"	
Mineral Oil	ND		0.050	"	"	"	"	"	"	
Motor Oil	ND		0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*102 %*	*65-135*		"	"	"	"	
IS-20-BC-FB (22E1254-03) Surface Water Sampled: 05/19/22 12:30 Received: 05/19/22 15:23										
Diesel	ND		0.050	mg/L	1	2204281	05/24/22	05/24/22	EPA 8015M	
Hydraulic Oil	ND		0.050	"	"	"	"	"	"	
Kerosene	ND		0.050	"	"	"	"	"	"	
Mineral Oil	ND		0.050	"	"	"	"	"	"	
Motor Oil	ND		0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*112 %*	*65-135*		"	"	"	"	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1254
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-4-GC (22E1254-01) Surface Water Sampled: 05/19/22 09:15 Received: 05/19/22 15:23										
Aluminum	**37**		20	µg/L	1	2204262	05/24/22	05/25/22	EPA 200.8	
Barium	**6.0**		5.0	"	"	"	"	"	"	
Calcium	**1200**		1000	"	"	2204263	05/24/22	05/25/22	EPA 200.7	
Iron	ND		100	"	"	"	"	"	"	
Magnesium	ND		1000	"	"	"	"	"	"	
Manganese	**5.0**		2.0	"	"	2204262	05/24/22	05/25/22	EPA 200.8	
Potassium	ND		1000	"	"	2204263	05/24/22	05/25/22	EPA 200.7	
Silver	ND		0.50	"	"	2204262	05/24/22	05/25/22	EPA 200.8	
Sodium	**1000**		1000	"	"	2204263	05/24/22	05/25/22	EPA 200.7	
IS-20-BC (22E1254-02) Surface Water Sampled: 05/19/22 12:00 Received: 05/19/22 15:23										
Aluminum	ND		20	µg/L	1	2204262	05/24/22	05/25/22	EPA 200.8	
Barium	**12**		5.0	"	"	"	"	"	"	
Calcium	**2000**		1000	"	"	2204263	05/24/22	05/25/22	EPA 200.7	
Iron	ND		100	"	"	"	"	"	"	
Magnesium	ND		1000	"	"	"	"	"	"	
Manganese	**2.2**		2.0	"	"	2204262	05/24/22	05/25/22	EPA 200.8	
Potassium	ND		1000	"	"	2204263	05/24/22	05/25/22	EPA 200.7	
Silver	ND		0.50	"	"	2204262	05/24/22	05/25/22	EPA 200.8	
Sodium	**1500**		1000	"	"	2204263	05/24/22	05/25/22	EPA 200.7	
IS-20-BC-FB (22E1254-03) Surface Water Sampled: 05/19/22 12:30 Received: 05/19/22 15:23										
Aluminum	ND		20	µg/L	1	2204262	05/24/22	05/25/22	EPA 200.8	
Barium	ND		5.0	"	"	"	"	"	"	
Calcium	ND		1000	"	"	2204263	05/24/22	05/25/22	EPA 200.7	
Iron	ND		100	"	"	"	"	"	"	
Magnesium	ND		1000	"	"	"	"	"	"	
Manganese	ND		2.0	"	"	2204262	05/24/22	05/25/22	EPA 200.8	
Potassium	ND		1000	"	"	2204263	05/24/22	05/25/22	EPA 200.7	
Silver	ND		0.50	"	"	2204262	05/24/22	05/25/22	EPA 200.8	
Sodium	ND		1000	"	"	2204263	05/24/22	05/25/22	EPA 200.7	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1254**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-4-GC (22E1254-01) Surface Water Sampled: 05/19/22 09:15 Received: 05/19/22 15:23										
Aluminum	ND		20	µg/L	1	2204465	05/31/22	05/31/22	EPA 200.8	
Iron	ND		100	"	"	2204225	05/23/22	05/23/22	EPA 200.7	
Silver	ND		0.50	"	"	2204465	05/31/22	06/01/22	EPA 200.8	
IS-20-BC (22E1254-02) Surface Water Sampled: 05/19/22 12:00 Received: 05/19/22 15:23										
Aluminum	ND		20	µg/L	1	2204465	05/31/22	05/31/22	EPA 200.8	
Iron	ND		100	"	"	2204225	05/23/22	05/23/22	EPA 200.7	
Silver	ND		0.50	"	"	2204465	05/31/22	06/01/22	EPA 200.8	
IS-20-BC-FB (22E1254-03) Surface Water Sampled: 05/19/22 12:30 Received: 05/19/22 15:23										
Aluminum	ND		20	µg/L	1	2204465	05/31/22	05/31/22	EPA 200.8	
Iron	ND		100	"	"	2204225	05/23/22	05/23/22	EPA 200.7	
Silver	ND		0.50	"	"	2204465	05/31/22	06/01/22	EPA 200.8	

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22E1254
COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-4-GC (22E1254-01) Surface Water Sampled: 05/19/22 09:15 Received: 05/19/22 15:23										
Gasoline	ND		50	µg/L	1	2204231	05/23/22	05/23/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*108 %*		*65-135*		"	"	"	"
IS-20-BC (22E1254-02) Surface Water Sampled: 05/19/22 12:00 Received: 05/19/22 15:23										
Gasoline	ND		50	µg/L	1	2204231	05/23/22	05/23/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*97 %*		*65-135*		"	"	"	"
IS-20-BC-FB (22E1254-03) Surface Water Sampled: 05/19/22 12:30 Received: 05/19/22 15:23										
Gasoline	ND		50	µg/L	1	2204231	05/23/22	05/23/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*99 %*		*65-135*		"	"	"	"

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CLS Work Order #: 22E1254
COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-4-GC (22E1254-01) Surface Water Sampled: 05/19/22 09:15 Received: 05/19/22 15:23										
Methyl tert-butyl ether	ND		0.50	µg/L	1	2204219	05/20/22	05/20/22	EPA 8260B	
Surrogate: Toluene-d8			*96 %*	*72-125*		"	"	"	"	
IS-20-BC (22E1254-02) Surface Water Sampled: 05/19/22 12:00 Received: 05/19/22 15:23										
Methyl tert-butyl ether	ND		0.50	µg/L	1	2204219	05/20/22	05/20/22	EPA 8260B	
Surrogate: Toluene-d8			*96 %*	*72-125*		"	"	"	"	
IS-20-BC-FB (22E1254-03) Surface Water Sampled: 05/19/22 12:30 Received: 05/19/22 15:23										
Methyl tert-butyl ether	ND		0.50	µg/L	1	2204219	05/20/22	05/20/22	EPA 8260B	
Surrogate: Toluene-d8			*95 %*	*72-125*		"	"	"	"	

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Project Manager: Emily Applequist

CLS Work Order #: 22E1254
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204157 - General Prep											
Blank (2204157-BLK1)					Prepared & Analyzed: 05/20/22						
Chloride	ND		0.50	mg/L							
Sulfate as SO4	ND		0.50	"							
Nitrate/Nitrite as N	ND		0.40	"							
LCS (2204157-BS1)					Prepared & Analyzed: 05/20/22						
Chloride	4.66		0.50	mg/L	5.00		93	80-120			
Sulfate as SO4	4.75		0.50	"	5.00		95	80-120			
Nitrate/Nitrite as N	3.84		0.40	"	4.00		96	80-120			
LCS Dup (2204157-BSD1)					Prepared & Analyzed: 05/20/22						
Chloride	4.67		0.50	mg/L	5.00		93	80-120	0.3	20	
Sulfate as SO4	4.79		0.50	"	5.00		96	80-120	0.7	20	
Nitrate/Nitrite as N	3.91		0.40	"	4.00		98	80-120	2	20	
Matrix Spike (2204157-MS1)			**Source: 22E1239-01**		Prepared & Analyzed: 05/20/22						
Sulfate as SO4	12.0		0.50	mg/L	5.00	6.69	105	80-120			
Chloride	35.0		0.50	"	5.00	31.2	76	80-120			QM-4X
Nitrate/Nitrite as N	7.54		0.40	"	4.00	3.57	99	80-120			
Matrix Spike Dup (2204157-MSD1)			**Source: 22E1239-01**		Prepared & Analyzed: 05/20/22						
Sulfate as SO4	11.7		0.50	mg/L	5.00	6.69	101	80-120	2	20	
Chloride	34.9		0.50	"	5.00	31.2	73	80-120	0.4	20	QM-4X
Nitrate/Nitrite as N	7.40		0.40	"	4.00	3.57	96	80-120	2	20	
Batch 2204174 - General Preparation											
Blank (2204174-BLK1)					Prepared & Analyzed: 05/20/22						
Orthophosphate as PO4	ND		0.15	mg/L							

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CLS Work Order #: 22E1254
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204174 - General Preparation											
LCS (2204174-BS1)					Prepared & Analyzed: 05/20/22						
Orthophosphate as PO4	0.839		0.15	mg/L	0.918		91	80-120			
LCS Dup (2204174-BSD1)					Prepared & Analyzed: 05/20/22						
Orthophosphate as PO4	0.847		0.15	mg/L	0.918		92	80-120	0.9	20	
Matrix Spike (2204174-MS1)			**Source: 22E1250-01**		Prepared & Analyzed: 05/20/22						
Orthophosphate as PO4	1.52		0.15	mg/L	0.918	0.819	76	75-125			
Matrix Spike Dup (2204174-MSD1)			**Source: 22E1250-01**		Prepared & Analyzed: 05/20/22						
Orthophosphate as PO4	1.53		0.15	mg/L	0.918	0.819	77	75-125	0.8	25	
Batch 2204196 - General Preparation											
Blank (2204196-BLK1)					Prepared & Analyzed: 05/20/22						
Total Alkalinity	ND		5.0	mg/L							
Bicarbonate as CaCO3	ND		5.0	"							
Carbonate as CaCO3	ND		5.0	"							
Hydroxide as CaCO3	ND		5.0	"							
Blank (2204196-BLK2)					Prepared & Analyzed: 05/20/22						
Total Alkalinity	ND		5.0	mg/L							
Bicarbonate as CaCO3	ND		5.0	"							
Carbonate as CaCO3	ND		5.0	"							
Hydroxide as CaCO3	ND		5.0	"							
Duplicate (2204196-DUP1)			**Source: 22E1180-01**		Prepared & Analyzed: 05/20/22						
Total Alkalinity	6.20		5.0	mg/L		6.40			3	20	
Bicarbonate as CaCO3	6.20		5.0	"		6.40			3	20	
Carbonate as CaCO3	ND		5.0	"		ND				20	
Hydroxide as CaCO3	ND		5.0	"		ND				20	

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Project: SMUD In situ & Chemistry Monitoring
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Project Manager: Emily Applequist

CLS Work Order #: 22E1254
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204196 - General Preparation											
Duplicate (2204196-DUP2)			**Source: 22E1281-05**		Prepared & Analyzed: 05/20/22						
Total Alkalinity	15.5		5.0	mg/L		16.0			3	20	
Bicarbonate as CaCO3	15.5		5.0	"		16.0			3	20	
Carbonate as CaCO3	ND		5.0	"		ND				20	
Hydroxide as CaCO3	ND		5.0	"		ND				20	
Batch 2204233 - General Preparation											
Blank (2204233-BLK1)					Prepared & Analyzed: 05/23/22						
Total Phosphorus as P	ND		0.050	mg/L							
LCS (2204233-BS1)					Prepared & Analyzed: 05/23/22						
Total Phosphorus as P	0.311		0.050	mg/L	0.300		104	80-120			
LCS Dup (2204233-BSD1)					Prepared & Analyzed: 05/23/22						
Total Phosphorus as P	0.305		0.050	mg/L	0.300		102	80-120	2	25	
Matrix Spike (2204233-MS1)			**Source: 22E1271-01**		Prepared & Analyzed: 05/23/22						
Total Phosphorus as P	0.316		0.050	mg/L	0.300	0.0336	94	75-125			
Matrix Spike Dup (2204233-MSD1)			**Source: 22E1271-01**		Prepared & Analyzed: 05/23/22						
Total Phosphorus as P	0.318		0.050	mg/L	0.300	0.0336	95	75-125	0.4	30	
Batch 2204244 - General Preparation											
Blank (2204244-BLK1)					Prepared & Analyzed: 05/24/22						
Total Organic Carbon	ND		1.0	mg/L							

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CLS Work Order #: 22E1254
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204244 - General Preparation											
LCS (2204244-BS1)					Prepared & Analyzed: 05/24/22						
Total Organic Carbon	10.4		1.0	mg/L	10.0		104	75-125			
LCS Dup (2204244-BSD1)					Prepared & Analyzed: 05/24/22						
Total Organic Carbon	10.6		1.0	mg/L	10.0		106	75-125	2	25	
Matrix Spike (2204244-MS1)			**Source: 22E1066-01**		Prepared & Analyzed: 05/24/22						
Total Organic Carbon	12.5		1.0	mg/L	10.0	2.11	104	75-125			
Matrix Spike Dup (2204244-MSD1)			**Source: 22E1066-01**		Prepared & Analyzed: 05/24/22						
Total Organic Carbon	12.3		1.0	mg/L	10.0	2.11	102	75-125	1	25	
Batch 2204263 - EPA 200 Series											
Blank (2204263-BLK1)					Prepared: 05/24/22 Analyzed: 05/25/22						
Total Hardness as CaCO3	ND		1.0	mg/L							
LCS (2204263-BS1)					Prepared: 05/24/22 Analyzed: 05/25/22						
Total Hardness as CaCO3	34.0		1.0	mg/L	33.1		103	85-115			
Matrix Spike (2204263-MS1)			**Source: 22E1391-01**		Prepared: 05/24/22 Analyzed: 05/25/22						
Total Hardness as CaCO3	40.4		1.0	mg/L	33.1	5.40	106	70-130			
Matrix Spike (2204263-MS2)			**Source: 22E1404-01**		Prepared: 05/24/22 Analyzed: 05/25/22						
Total Hardness as CaCO3	59.5		1.0	mg/L	33.1	27.6	96	70-130			
Batch 2204271 - General Preparation											
Duplicate (2204271-DUP1)			**Source: 22E1148-02**		Prepared: 05/24/22 Analyzed: 05/25/22						
Total Suspended Solids	ND		5.0	mg/L		ND				20	

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COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204301 - General Preparation											
Blank (2204301-BLK1)					Prepared: 05/25/22 Analyzed: 05/27/22						
Total Dissolved Solids	ND		10	mg/L							
Duplicate (2204301-DUP1)			**Source: 22E1180-01**		Prepared: 05/25/22 Analyzed: 05/27/22						
Total Dissolved Solids	14.0		10	mg/L		15.0			7	20	
Batch 2204322 - General Prep											
Blank (2204322-BLK1)					Prepared & Analyzed: 05/25/22						
Cyanide (total)	ND		0.0050	mg/L							
LCS (2204322-BS1)					Prepared & Analyzed: 05/25/22						
Cyanide (total)	0.0847		0.0050	mg/L	0.100		85	75-125			
LCS Dup (2204322-BSD1)					Prepared & Analyzed: 05/25/22						
Cyanide (total)	0.0824		0.0050	mg/L	0.100		82	75-125	3	25	
Matrix Spike (2204322-MS1)			**Source: 22E1066-01**		Prepared & Analyzed: 05/25/22						
Cyanide (total)	0.0765		0.0050	mg/L	0.100	0.00300	74	75-125			QM-7
Matrix Spike Dup (2204322-MSD1)			**Source: 22E1066-01**		Prepared & Analyzed: 05/25/22						
Cyanide (total)	0.0865		0.0050	mg/L	0.100	0.00300	84	75-125	12	25	
Batch 2204323 - General Preparation											
Blank (2204323-BLK1)					Prepared & Analyzed: 05/25/22						
Ammonia as N	ND		0.10	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204323 - General Preparation											
LCS (2204323-BS1)					Prepared & Analyzed: 05/25/22						
Ammonia as N	0.511		0.10	mg/L	0.500		102	80-120			
LCS Dup (2204323-BSD1)					Prepared & Analyzed: 05/25/22						
Ammonia as N	0.500		0.10	mg/L	0.500		100	80-120	2	25	
Matrix Spike (2204323-MS1)			**Source: 22E1405-02**		Prepared & Analyzed: 05/25/22						
Ammonia as N	0.621		0.10	mg/L	0.500	0.148	95	75-125			
Matrix Spike Dup (2204323-MSD1)			**Source: 22E1405-02**		Prepared & Analyzed: 05/25/22						
Ammonia as N	0.612		0.10	mg/L	0.500	0.148	93	75-125	1	25	
Batch 2204348 - General Preparation											
Blank (2204348-BLK1)					Prepared & Analyzed: 05/25/22						
Total Kjeldahl Nitrogen	ND		0.20	mg/L							
LCS (2204348-BS1)					Prepared & Analyzed: 05/25/22						
Total Kjeldahl Nitrogen	0.416		0.20	mg/L	0.500		83	80-120			
LCS Dup (2204348-BSD1)					Prepared & Analyzed: 05/25/22						
Total Kjeldahl Nitrogen	0.418		0.20	mg/L	0.500		84	80-120	0.5	20	
Matrix Spike (2204348-MS1)			**Source: 22E1403-01**		Prepared & Analyzed: 05/25/22						
Total Kjeldahl Nitrogen	0.367		0.20	mg/L	0.500	0.0930	55	75-125			QM-7
Matrix Spike Dup (2204348-MSD1)			**Source: 22E1403-01**		Prepared & Analyzed: 05/25/22						
Total Kjeldahl Nitrogen	0.372		0.20	mg/L	0.500	0.0930	56	75-125	1	25	QM-7

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COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204384 - Solvent Extract											
Blank (2204384-BLK1)					Prepared: 05/26/22 Analyzed: 05/31/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND		5.0	mg/L							
LCS (2204384-BS1)					Prepared: 05/26/22 Analyzed: 05/31/22						
Hexane Extractable Material (HEM, Oil & Grease)	37.3		5.0	mg/L	40.0		93	78-114			
LCS Dup (2204384-BSD1)					Prepared: 05/26/22 Analyzed: 05/31/22						
Hexane Extractable Material (HEM, Oil & Grease)	37.1		5.0	mg/L	40.0		93	78-114	0.5	18	

06/06/22 12:43

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1254
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204281 - EPA 3510B GCNV											
Blank (2204281-BLK1)					Prepared & Analyzed: 05/24/22						
Diesel	ND		0.050	mg/L							
Motor Oil	ND		0.050	"							
Surrogate: o-Terphenyl	*0.0242*			*"*	*0.0250*		*97*	*65-135*			
LCS (2204281-BS1)					Prepared & Analyzed: 05/24/22						
Diesel	1.81		0.050	mg/L	2.50		72	65-135			
Surrogate: o-Terphenyl	*0.0172*			*"*	*0.0250*		*69*	*65-135*			
LCS Dup (2204281-BSD1)					Prepared & Analyzed: 05/24/22						
Diesel	1.83		0.050	mg/L	2.50		73	65-135	1	30	
Surrogate: o-Terphenyl	*0.0233*			*"*	*0.0250*		*93*	*65-135*			
Matrix Spike (2204281-MS1)			**Source: 22E1228-01**		Prepared & Analyzed: 05/24/22						
Diesel	2.36		0.050	mg/L	2.50	ND	94	46-137			
Surrogate: o-Terphenyl	*0.0238*			*"*	*0.0250*		*95*	*65-135*			
Matrix Spike Dup (2204281-MSD1)			**Source: 22E1228-01**		Prepared & Analyzed: 05/24/22						
Diesel	2.26		0.050	mg/L	2.50	ND	90	46-137	5	30	
Surrogate: o-Terphenyl	*0.0220*			*"*	*0.0250*		*88*	*65-135*			

06/06/22 12:43

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1254
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204262 - EPA 200 Series											
Blank (2204262-BLK1)					Prepared: 05/24/22 Analyzed: 05/31/22						
Aluminum	ND		20	µg/L							
Barium	ND		5.0	"							
Manganese	ND		2.0	"							
Silver	ND		0.50	"							
LCS (2204262-BS1)					Prepared: 05/24/22 Analyzed: 05/25/22						
Aluminum	489		20	µg/L	500		98	85-115			
Barium	102		5.0	"	100		102	85-115			
Manganese	99.6		2.0	"	100		100	85-115			
Silver	101		0.50	"	100		101	85-115			
Matrix Spike (2204262-MS1)			**Source: 22E1365-01**		Prepared: 05/24/22 Analyzed: 05/25/22						
Aluminum	532		20	µg/L	500	ND	106	70-130			
Barium	230		5.0	"	100	109	121	70-130			
Manganese	103		2.0	"	100	2.30	100	70-130			
Silver	111		0.50	"	100	ND	111	70-130			
Matrix Spike (2204262-MS2)			**Source: 22E1404-03**		Prepared: 05/24/22 Analyzed: 05/25/22						
Aluminum	495		20	µg/L	500	9.62	97	70-130			
Barium	114		5.0	"	100	13.9	100	70-130			
Manganese	94.8		2.0	"	100	0.376	94	70-130			
Silver	102		0.50	"	100	ND	102	70-130			
Batch 2204263 - EPA 200 Series											
Blank (2204263-BLK1)					Prepared: 05/24/22 Analyzed: 05/25/22						
Calcium	ND		1000	µg/L							
Iron	ND		100	"							
Magnesium	ND		1000	"							
Potassium	ND		1000	"							
Sodium	ND		1000	"							

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Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1254
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204263 - EPA 200 Series											
LCS (2204263-BS1)					Prepared: 05/24/22 Analyzed: 05/25/22						
Calcium	4830		1000	µg/L	5000		97	85-115			
Iron	485		100	"	500		97	85-115			
Magnesium	5310		1000	"	5000		106	85-115			
Potassium	5010		1000	"	5000		100	85-115			
Sodium	4980		1000	"	5000		100	85-115			
Matrix Spike (2204263-MS1)			**Source: 22E1391-01**		Prepared: 05/24/22 Analyzed: 05/25/22						
Calcium	6830		1000	µg/L	5000	1520	106	70-130			
Iron	2610		100	"	500	ND	522	70-130			QM-4X
Magnesium	5650		1000	"	5000	391	105	70-130			
Potassium	5660		1000	"	5000	ND	113	70-130			
Sodium	9760		1000	"	5000	4660	102	70-130			
Matrix Spike (2204263-MS2)			**Source: 22E1404-01**		Prepared: 05/24/22 Analyzed: 05/25/22						
Calcium	12000		1000	µg/L	5000	7490	90	70-130			
Iron	475		100	"	500	ND	95	70-130			
Magnesium	7160		1000	"	5000	2150	100	70-130			
Potassium	5490		1000	"	5000	571	98	70-130			
Sodium	9170		1000	"	5000	4510	93	70-130			

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Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1254
COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204225 - EPA 200 No Digestion											
Blank (2204225-BLK1)					Prepared & Analyzed: 05/23/22						
Iron	ND		100	µg/L							
LCS (2204225-BS1)					Prepared & Analyzed: 05/23/22						
Iron	464		100	µg/L	500		93	85-115			
Matrix Spike (2204225-MS1)			**Source: 22E1254-01**		Prepared & Analyzed: 05/23/22						
Iron	501		100	µg/L	500	ND	100	70-130			
Batch 2204465 - EPA 200 No Digestion											
Blank (2204465-BLK1)					Prepared & Analyzed: 05/31/22						
Aluminum	ND		20	µg/L							
Silver	ND		0.50	"							
LCS (2204465-BS1)					Prepared & Analyzed: 05/31/22						
Aluminum	431		20	µg/L	500		86	85-115			
Silver	87.7		0.50	"	100		88	85-115			
Matrix Spike (2204465-MS1)			**Source: 22E1180-01**		Prepared & Analyzed: 05/31/22						
Aluminum	459		20	µg/L	500	17.0	88	70-130			
Silver	100		0.50	"	100	ND	100	70-130			
Matrix Spike (2204465-MS2)			**Source: 22E1254-01**		Prepared & Analyzed: 05/31/22						
Aluminum	447		20	µg/L	500	12.2	87	70-130			
Silver	99.7		0.50	"	100	ND	100	70-130			

06/06/22 12:43

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1254**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204231 - EPA 5030 Water GC											
Blank (2204231-BLK1)					Prepared & Analyzed: 05/23/22						
Gasoline	ND		50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*19.6*			*"*	*20.0*		*98*	*65-135*			
LCS (2204231-BS1)					Prepared & Analyzed: 05/23/22						
Gasoline	435		50	µg/L	500		87	70-130			
Surrogate: o-Chlorotoluene (Gas)	*20.4*			*"*	*20.0*		*102*	*65-135*			
LCS Dup (2204231-BSD1)					Prepared & Analyzed: 05/23/22						
Gasoline	463		50	µg/L	500		93	70-130	6	30	
Surrogate: o-Chlorotoluene (Gas)	*22.5*			*"*	*20.0*		*112*	*65-135*			
Matrix Spike (2204231-MS1)			**Source: 22E1228-01**		Prepared & Analyzed: 05/23/22						
Gasoline	510		50	µg/L	500	ND	102	68-132			
Surrogate: o-Chlorotoluene (Gas)	*21.0*			*"*	*20.0*		*105*	*65-135*			
Matrix Spike Dup (2204231-MSD1)			**Source: 22E1228-01**		Prepared & Analyzed: 05/23/22						
Gasoline	428		50	µg/L	500	ND	86	68-132	17	32	
Surrogate: o-Chlorotoluene (Gas)	*23.5*			*"*	*20.0*		*117*	*65-135*			

06/06/22 12:43

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1254
COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204219 - EPA 5030 Water MS											
Blank (2204219-BLK1)					Prepared & Analyzed: 05/20/22						
Di-isopropyl ether	ND		0.50	µg/L							
Ethyl tert-butyl ether	ND		0.50	"							
Methyl tert-butyl ether	ND		0.50	"							
tert-Amyl methyl ether	ND		0.50	"							
tert-Butyl alcohol	ND		5.0	"							
Surrogate: Toluene-d8	*9.59*			*"*	*10.0*		*96*	*72-125*			
LCS (2204219-BS1)					Prepared & Analyzed: 05/20/22						
Methyl tert-butyl ether	20.5		0.50	µg/L	20.0		103	52-130			
Surrogate: Toluene-d8	*10.3*			*"*	*10.0*		*103*	*72-125*			
LCS Dup (2204219-BSD1)					Prepared & Analyzed: 05/20/22						
Methyl tert-butyl ether	21.1		0.50	µg/L	20.0		105	52-130	3	30	
Surrogate: Toluene-d8	*9.98*			*"*	*10.0*		*100*	*72-125*			
Matrix Spike (2204219-MS1)			**Source: 22E1270-05**		Prepared & Analyzed: 05/20/22						
Methyl tert-butyl ether	25.2		0.50	µg/L	20.0	ND	126	52-140			
Surrogate: Toluene-d8	*10.0*			*"*	*10.0*		*100*	*72-125*			
Matrix Spike Dup (2204219-MSD1)			**Source: 22E1270-05**		Prepared & Analyzed: 05/20/22						
Methyl tert-butyl ether	26.9		0.50	µg/L	20.0	ND	135	52-140	7	30	
Surrogate: Toluene-d8	*10.0*			*"*	*10.0*		*100*	*72-125*			

06/06/22 12:43

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1254**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 226252 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[x] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [x] NO [ ]

GLOBAL ID

FIELD CONDITIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	ANALYSIS REQUESTED: TSS, TDS, Hardness, Alkalinity, NO2-N, NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS: 1	2	3	5	SPECIAL INSTRUCTIONS
5.19	9:15	IS.4.QC		Surface water			6	X	X	X	X	X	X	X				X	
5.19	12:00	IS.20.BC		Surface water			6	X	X	X	X	X	X	X				X	
5.19	10:30	IS.20.BC-FB		Surface water			6	X	X	X	X	X	X	X				X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	INVOICE TO:
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	Project No. 750.10 Task 0620.01
				Surface water			6											X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Adam Cohen / Stillwater	3:23 PM 5/19		

RECEIVED AT LAB BY: DATE/TIME: 5/19/22 1523 CONDITIONS/COMMENTS: 0.8/0.1

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER AIR BILL #

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

June 02, 2022

CLS Work Order #: 22E1403
COC #:

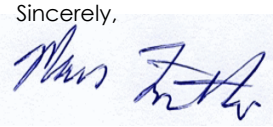
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 05/23/22 16:20. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

06/02/22 12:56

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1403
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
UARP - R-15-13-CR (22E1403-01) Surface Water	**Sampled: 05/23/22 10:00**		**Received: 05/23/22 16:20**							
Ammonia as N	**0.033**	0.025	0.10	mg/L	1	2204323	05/25/22	05/25/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**6.4**	0.50	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.60**	0.026	0.50	"	"	2204241	05/24/22	05/24/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2204322	05/25/22	05/25/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2204324	05/25/22	05/26/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	
Nitrate/Nitrite as N	**0.071**	0.055	0.40	"	"	2204241	05/24/22	05/24/22	EPA 300.0	J
Orthophosphate as PO4	**0.014**	0.0051	0.15	"	"	2204268	05/24/22	05/24/22	SM4500-P E	J
Sulfate as SO4	**0.60**	0.038	0.50	"	"	2204241	05/24/22	05/24/22	EPA 300.0	
Total Alkalinity	**6.4**	1.0	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	
Total Dissolved Solids	**24**	5.0	10	"	"	2204283	05/24/22	05/26/22	SM2540C	
Total Hardness as CaCO3	**5.2**	0.19	1.0	"	"	2204263	05/24/22	06/01/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.093**	0.040	0.20	"	"	2204348	05/25/22	05/25/22	SM4500-NH3F-1997	J
Total Organic Carbon	**1.9**	0.54	1.0	"	"	2204244	05/24/22	05/24/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2204341	05/25/22	05/25/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2204377	05/26/22	05/27/22	SM2540D	
UARP -R-15-12-JR (22E1403-02) Water	**Sampled: 05/23/22 12:00**		**Received: 05/23/22 16:20**							
Ammonia as N	**0.028**	0.025	0.10	mg/L	1	2204323	05/25/22	05/25/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**7.2**	0.50	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.86**	0.026	0.50	"	"	2204241	05/24/22	05/24/22	EPA 300.0	
Cyanide (total)	**0.0023**	0.0012	0.0050	"	"	2204322	05/25/22	05/25/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2204324	05/25/22	05/26/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	
Nitrate/Nitrite as N	**0.087**	0.055	0.40	"	"	2204241	05/24/22	05/24/22	EPA 300.0	J
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2204268	05/24/22	05/24/22	SM4500-P E	

06/02/22 12:56

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1403
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
UARP -R-15-12-JR (22E1403-02) Water	**Sampled: 05/23/22 12:00**		**Received: 05/23/22 16:20**							
Sulfate as SO4	**0.76**	0.038	0.50	mg/L	1	2204241	05/24/22	05/24/22	EPA 300.0	
Total Alkalinity	**7.2**	1.0	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	
Total Dissolved Solids	**24**	5.0	10	"	"	2204283	05/24/22	05/26/22	SM2540C	
Total Hardness as CaCO3	**4.9**	0.19	1.0	"	"	2204263	05/24/22	06/01/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.092**	0.040	0.20	"	"	2204348	05/25/22	05/25/22	SM4500-NH3F-1997	J
Total Organic Carbon	**2.3**	0.54	1.0	"	"	2204244	05/24/22	05/24/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2204341	05/25/22	05/25/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2204377	05/26/22	05/27/22	SM2540D	
R-15-16-EBR (22E1403-03) Water	**Sampled: 05/23/22 13:30**		**Received: 05/23/22 16:20**							
Ammonia as N	**0.026**	0.025	0.10	mg/L	1	2204323	05/25/22	05/25/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	ND	0.50	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**5.5**	0.026	0.50	"	"	2204241	05/24/22	05/24/22	EPA 300.0	
Cyanide (total)	**0.0023**	0.0012	0.0050	"	"	2204322	05/25/22	05/25/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2204324	05/25/22	05/26/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2204241	05/24/22	05/24/22	EPA 300.0	
Orthophosphate as PO4	**0.018**	0.0051	0.15	"	"	2204268	05/24/22	05/24/22	SM4500-P E	J
Sulfate as SO4	ND	0.038	0.50	"	"	2204241	05/24/22	05/24/22	EPA 300.0	
Total Alkalinity	ND	1.0	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	
Total Dissolved Solids	**10**	5.0	10	"	"	2204283	05/24/22	05/26/22	SM2540C	
Total Hardness as CaCO3	ND	0.19	1.0	"	"	2204263	05/24/22	06/01/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.12**	0.040	0.20	"	"	2204348	05/25/22	05/25/22	SM4500-NH3F-1997	J
Total Organic Carbon	ND	0.54	1.0	"	"	2204244	05/24/22	05/24/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2204341	05/25/22	05/25/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2204377	05/26/22	05/27/22	SM2540D	

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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1403
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
UARP - R-15-13-CR (22E1403-01) Surface Water Sampled: 05/23/22 10:00 Received: 05/23/22 16:20										
Diesel	ND	0.0021	0.050	mg/L	1	2204281	05/24/22	05/24/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*77 %*	*65-135*		"	"	"	"	
UARP -R-15-12-JR (22E1403-02) Water Sampled: 05/23/22 12:00 Received: 05/23/22 16:20										
Diesel	ND	0.0021	0.050	mg/L	1	2204281	05/24/22	05/24/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*113 %*	*65-135*		"	"	"	"	
R-15-16-EBR (22E1403-03) Water Sampled: 05/23/22 13:30 Received: 05/23/22 16:20										
Diesel	**0.24**	0.0021	0.050	mg/L	1	2204281	05/24/22	05/24/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	**0.062**	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*128 %*	*65-135*		"	"	"	"	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1403
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
UARP - R-15-13-CR (22E1403-01) Surface Water	**Sampled: 05/23/22 10:00**		**Received: 05/23/22 16:20**							
Aluminum	**17**	1.6	20	µg/L	1	2204262	05/24/22	05/25/22	EPA 200.8	J
Antimony	ND	0.34	6.0	"	"	"	"	"	"	
Arsenic	ND	0.45	2.0	"	"	"	"	"	"	
Barium	**8.2**	0.14	5.0	"	"	"	"	"	"	
Beryllium	ND	0.31	1.0	"	"	"	"	"	"	
Boron	**60**	4.1	20	"	"	"	"	"	"	
Cadmium	ND	0.17	0.50	"	"	"	"	"	"	
Calcium	**1500**	27	1000	"	"	2204263	05/24/22	06/01/22	EPA 200.7	
Calcium	**1500**	200	200	"	"	2204262	05/24/22	05/25/22	EPA 200.8	
Chromium	**0.27**	0.14	1.0	"	"	"	"	"	"	J
Cobalt	ND	0.060	2.0	"	"	"	"	"	"	
Copper	**0.29**	0.090	2.0	"	"	"	"	"	"	J
Iron	**20**	3.8	20	"	"	"	"	"	"	
Iron	**25**	9.1	100	"	"	2204263	05/24/22	06/01/22	EPA 200.7	J
Lead	ND	0.020	5.0	"	"	2204262	05/24/22	05/25/22	EPA 200.8	
Magnesium	**370**	21	1000	"	"	2204263	05/24/22	05/25/22	EPA 200.7	J
Magnesium	**360**	200	200	"	"	2204262	05/24/22	05/25/22	EPA 200.8	
Manganese	**4.8**	0.050	2.0	"	"	"	"	"	"	
Molybdenum	ND	0.11	2.0	"	"	"	"	"	"	
Nickel	**0.24**	0.13	2.0	"	"	"	"	"	"	J
Potassium	**2800**	61	1000	"	"	2204263	05/24/22	06/01/22	EPA 200.7	
Potassium	**370**	200	200	"	"	2204262	05/24/22	05/25/22	EPA 200.8	
Selenium	ND	0.75	5.0	"	"	"	"	"	"	
Silica (SiO2)	ND	150	500	"	"	"	"	"	"	
Silver	ND	0.070	0.50	"	"	"	"	"	"	
Sodium	**1100**	34	1000	"	"	2204263	05/24/22	05/25/22	EPA 200.7	
Sodium	**1100**	200	200	"	"	2204262	05/24/22	05/25/22	EPA 200.8	
Strontium	**16**	0.070	20	"	"	"	"	"	"	J
Thallium	ND	0.030	1.0	"	"	"	"	"	"	
Tin	ND	10	10	"	"	"	"	"	"	
Titanium	ND	10	10	"	"	"	"	"	"	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1403
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
UARP - R-15-13-CR (22E1403-01) Surface Water	**Sampled: 05/23/22 10:00**		**Received: 05/23/22 16:20**							
Vanadium	ND	0.070	3.0	µg/L	1	2204262	"	05/25/22	EPA 200.8	
Zinc	ND	0.27	10	"	"	"	"	"	"	
UARP -R-15-12-JR (22E1403-02) Water	**Sampled: 05/23/22 12:00**		**Received: 05/23/22 16:20**							
Aluminum	**30**	1.6	20	µg/L	1	2204262	05/24/22	05/25/22	EPA 200.8	
Antimony	ND	0.34	6.0	"	"	"	"	"	"	
Arsenic	ND	0.45	2.0	"	"	"	"	"	"	
Barium	**7.8**	0.14	5.0	"	"	"	"	"	"	
Beryllium	ND	0.31	1.0	"	"	"	"	"	"	
Boron	**33**	4.1	20	"	"	"	"	"	"	
Cadmium	ND	0.17	0.50	"	"	"	"	"	"	
Calcium	**1500**	27	1000	"	"	2204263	05/24/22	06/01/22	EPA 200.7	
Calcium	**1600**	200	200	"	"	2204262	05/24/22	05/25/22	EPA 200.8	
Chromium	**0.33**	0.14	1.0	"	"	"	"	"	"	J
Cobalt	ND	0.060	2.0	"	"	"	"	"	"	
Copper	**0.21**	0.090	2.0	"	"	"	"	"	"	J
Iron	**36**	3.8	20	"	"	"	"	"	"	
Iron	**36**	9.1	100	"	"	2204263	05/24/22	06/01/22	EPA 200.7	J
Lead	ND	0.020	5.0	"	"	2204262	05/24/22	05/25/22	EPA 200.8	
Magnesium	**300**	21	1000	"	"	2204263	05/24/22	05/25/22	EPA 200.7	J
Magnesium	**300**	200	200	"	"	2204262	05/24/22	05/25/22	EPA 200.8	
Manganese	**12**	0.050	2.0	"	"	"	"	"	"	
Molybdenum	ND	0.11	2.0	"	"	"	"	"	"	
Nickel	ND	0.13	2.0	"	"	"	"	"	"	
Potassium	**2300**	61	1000	"	"	2204263	05/24/22	06/01/22	EPA 200.7	
Potassium	**450**	200	200	"	"	2204262	05/24/22	05/25/22	EPA 200.8	
Selenium	ND	0.75	5.0	"	"	"	"	"	"	
Silica (SiO2)	ND	150	500	"	"	"	"	"	"	
Silver	ND	0.070	0.50	"	"	"	"	"	"	
Sodium	**1100**	34	1000	"	"	2204263	05/24/22	05/25/22	EPA 200.7	
Sodium	**1100**	200	200	"	"	2204262	05/24/22	05/25/22	EPA 200.8	

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Stillwater Sciences
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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1403
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
UARP -R-15-12-JR (22E1403-02) Water	**Sampled: 05/23/22 12:00**		**Received: 05/23/22 16:20**							
Strontium	**18**	0.070	20	µg/L	1	2204262	"	05/25/22	EPA 200.8	J
Thallium	ND	0.030	1.0	"	"	"	"	"	"	
Tin	ND	10	10	"	"	"	"	"	"	
Titanium	ND	10	10	"	"	"	"	"	"	
Vanadium	**0.21**	0.070	3.0	"	"	"	"	"	"	J
Zinc	ND	0.27	10	"	"	"	"	"	"	
R-15-16-EBR (22E1403-03) Water	**Sampled: 05/23/22 13:30**		**Received: 05/23/22 16:20**							
Aluminum	ND	1.6	20	µg/L	1	2204262	05/24/22	05/25/22	EPA 200.8	
Antimony	ND	0.34	6.0	"	"	"	"	"	"	
Arsenic	ND	0.45	2.0	"	"	"	"	"	"	
Barium	ND	0.14	5.0	"	"	"	"	"	"	
Beryllium	ND	0.31	1.0	"	"	"	"	"	"	
Boron	**19**	4.1	20	"	"	"	"	"	"	J
Cadmium	ND	0.17	0.50	"	"	"	"	"	"	
Calcium	ND	27	1000	"	"	2204263	05/24/22	06/01/22	EPA 200.7	
Calcium	ND	200	200	"	"	2204262	05/24/22	05/25/22	EPA 200.8	
Chromium	**0.35**	0.14	1.0	"	"	"	"	"	"	J
Cobalt	ND	0.060	2.0	"	"	"	"	"	"	
Copper	ND	0.090	2.0	"	"	"	"	"	"	
Iron	ND	3.8	20	"	"	"	"	"	"	
Iron	ND	9.1	100	"	"	2204263	05/24/22	06/01/22	EPA 200.7	
Lead	ND	0.020	5.0	"	"	2204262	05/24/22	05/25/22	EPA 200.8	
Magnesium	ND	21	1000	"	"	2204263	05/24/22	05/25/22	EPA 200.7	
Magnesium	ND	200	200	"	"	2204262	05/24/22	05/25/22	EPA 200.8	
Manganese	**0.052**	0.050	2.0	"	"	"	"	"	"	J
Molybdenum	ND	0.11	2.0	"	"	"	"	"	"	
Nickel	ND	0.13	2.0	"	"	"	"	"	"	
Potassium	**550**	61	1000	"	"	2204263	05/24/22	06/01/22	EPA 200.7	J
Potassium	ND	200	200	"	"	2204262	05/24/22	05/25/22	EPA 200.8	
Selenium	ND	0.75	5.0	"	"	"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1403**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-15-16-EBR (22E1403-03) Water Sampled: 05/23/22 13:30 Received: 05/23/22 16:20										
Silica (SiO2)	ND	150	500	µg/L	1	2204262	"	05/25/22	EPA 200.8	
Silver	ND	0.070	0.50	"	"	"	"	"	"	
Sodium	ND	34	1000	"	"	2204263	05/24/22	05/25/22	EPA 200.7	
Sodium	ND	200	200	"	"	2204262	05/24/22	05/25/22	EPA 200.8	
Strontium	ND	0.070	20	"	"	"	"	"	"	
Thallium	ND	0.030	1.0	"	"	"	"	"	"	
Tin	ND	10	10	"	"	"	"	"	"	
Titanium	ND	10	10	"	"	"	"	"	"	
Vanadium	ND	0.070	3.0	"	"	"	"	"	"	
Zinc	ND	0.27	10	"	"	"	"	"	"	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1403
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
UARP - R-15-13-CR (22E1403-01) Surface Water Sampled: 05/23/22 10:00 Received: 05/23/22 16:20										
Aluminum	**5.6**	0.52	20	µg/L	1	2204433	05/27/22	05/27/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2204320	05/25/22	05/31/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2204433	05/27/22	05/27/22	EPA 200.8	
UARP -R-15-12-JR (22E1403-02) Water Sampled: 05/23/22 12:00 Received: 05/23/22 16:20										
Aluminum	**6.9**	0.52	20	µg/L	1	2204433	05/27/22	05/27/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2204320	05/25/22	05/31/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2204433	05/27/22	05/27/22	EPA 200.8	
R-15-16-EBR (22E1403-03) Water Sampled: 05/23/22 13:30 Received: 05/23/22 16:20										
Aluminum	ND	0.52	20	µg/L	1	2204433	05/27/22	05/27/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2204320	05/25/22	05/31/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2204433	05/27/22	05/27/22	EPA 200.8	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1403**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
UARP - R-15-13-CR (22E1403-01) Surface Water Sampled: 05/23/22 10:00 Received: 05/23/22 16:20										
Gasoline	ND	10	50	µg/L	1	2204332	05/25/22	05/25/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*104 %*	*65-135*		"	"	"	"	
UARP -R-15-12-JR (22E1403-02) Water Sampled: 05/23/22 12:00 Received: 05/23/22 16:20										
Gasoline	ND	10	50	µg/L	1	2204332	05/25/22	05/25/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*103 %*	*65-135*		"	"	"	"	
R-15-16-EBR (22E1403-03) Water Sampled: 05/23/22 13:30 Received: 05/23/22 16:20										
Gasoline	ND	10	50	µg/L	1	2204332	05/25/22	05/25/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*107 %*	*65-135*		"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1403**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
UARP - R-15-13-CR (22E1403-01) Surface Water Sampled: 05/23/22 10:00 Received: 05/23/22 16:20										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2204300	05/24/22	05/24/22	EPA 8260B	
Surrogate: Toluene-d8			*97 %*	*72-125*		"	"	"	"	
UARP -R-15-12-JR (22E1403-02) Water Sampled: 05/23/22 12:00 Received: 05/23/22 16:20										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2204300	05/24/22	05/24/22	EPA 8260B	
Surrogate: Toluene-d8			*97 %*	*72-125*		"	"	"	"	
R-15-16-EBR (22E1403-03) Water Sampled: 05/23/22 13:30 Received: 05/23/22 16:20										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2204300	05/24/22	05/24/22	EPA 8260B	
Surrogate: Toluene-d8			*97 %*	*72-125*		"	"	"	"	

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Project: SMUD In situ & Chemistry Monitoring
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Project Manager: Emily Applequist

CLS Work Order #: 22E1403
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204241 - General Prep											
Blank (2204241-BLK1)					Prepared & Analyzed: 05/24/22						
Sulfate as SO4	ND	0.038	0.50	mg/L							
Chloride	0.282	0.026	0.50	"							J
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2204241-BS1)					Prepared & Analyzed: 05/24/22						
Sulfate as SO4	4.86	0.038	0.50	mg/L	5.00		97	80-120			
Chloride	4.73	0.026	0.50	"	5.00		95	80-120			
Nitrate/Nitrite as N	3.97	0.055	0.40	"	4.00		99	80-120			
LCS Dup (2204241-BSD1)					Prepared & Analyzed: 05/24/22						
Sulfate as SO4	4.75	0.038	0.50	mg/L	5.00		95	80-120	2	20	
Chloride	4.66	0.026	0.50	"	5.00		93	80-120	1	20	
Nitrate/Nitrite as N	3.88	0.055	0.40	"	4.00		97	80-120	2	20	
Matrix Spike (2204241-MS1)			**Source: 22E1403-01**		Prepared & Analyzed: 05/24/22						
Chloride	5.25	0.026	0.50	mg/L	5.00	0.605	93	80-120			
Sulfate as SO4	5.48	0.038	0.50	"	5.00	0.597	98	80-120			
Nitrate/Nitrite as N	4.08	0.055	0.40	"	4.00	0.0714	100	80-120			
Matrix Spike Dup (2204241-MSD1)			**Source: 22E1403-01**		Prepared & Analyzed: 05/24/22						
Sulfate as SO4	5.47	0.038	0.50	mg/L	5.00	0.597	97	80-120	0.1	20	
Chloride	5.25	0.026	0.50	"	5.00	0.605	93	80-120	0.1	20	
Nitrate/Nitrite as N	4.10	0.055	0.40	"	4.00	0.0714	101	80-120	0.5	20	
Batch 2204244 - General Preparation											
Blank (2204244-BLK1)					Prepared & Analyzed: 05/24/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							

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Project Manager: Emily Applequist

CLS Work Order #: 22E1403
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204244 - General Preparation											
LCS (2204244-BS1)					Prepared & Analyzed: 05/24/22						
Total Organic Carbon	10.4	0.54	1.0	mg/L	10.0		104	75-125			
LCS Dup (2204244-BSD1)					Prepared & Analyzed: 05/24/22						
Total Organic Carbon	10.6	0.54	1.0	mg/L	10.0		106	75-125	2	25	
Matrix Spike (2204244-MS1)			**Source: 22E1066-01**		Prepared & Analyzed: 05/24/22						
Total Organic Carbon	12.5	0.54	1.0	mg/L	10.0	2.11	104	75-125			
Matrix Spike Dup (2204244-MSD1)			**Source: 22E1066-01**		Prepared & Analyzed: 05/24/22						
Total Organic Carbon	12.3	0.54	1.0	mg/L	10.0	2.11	102	75-125	1	25	
Batch 2204263 - EPA 200 Series											
Blank (2204263-BLK1)					Prepared: 05/24/22 Analyzed: 05/25/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2204263-BS1)					Prepared: 05/24/22 Analyzed: 05/25/22						
Total Hardness as CaCO3	34.0	0.19	1.0	mg/L	33.1		103	85-115			
Matrix Spike (2204263-MS1)			**Source: 22E1391-01**		Prepared: 05/24/22 Analyzed: 05/25/22						
Total Hardness as CaCO3	40.4	0.19	1.0	mg/L	33.1	5.40	106	70-130			
Matrix Spike (2204263-MS2)			**Source: 22E1404-01**		Prepared: 05/24/22 Analyzed: 05/25/22						
Total Hardness as CaCO3	59.5	0.19	1.0	mg/L	33.1	27.6	96	70-130			
Batch 2204268 - General Preparation											
Blank (2204268-BLK1)					Prepared & Analyzed: 05/24/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204268 - General Preparation											
LCS (2204268-BS1)					Prepared & Analyzed: 05/24/22						
Orthophosphate as PO4	0.855	0.0051	0.15	mg/L	0.918		93	80-120			
LCS Dup (2204268-BSD1)					Prepared & Analyzed: 05/24/22						
Orthophosphate as PO4	0.831	0.0051	0.15	mg/L	0.918		91	80-120	3	20	
Matrix Spike (2204268-MS1)			**Source: 22E1403-01**		Prepared & Analyzed: 05/24/22						
Orthophosphate as PO4	0.786	0.0051	0.15	mg/L	0.918	0.0140	84	75-125			
Matrix Spike Dup (2204268-MSD1)			**Source: 22E1403-01**		Prepared & Analyzed: 05/24/22						
Orthophosphate as PO4	0.778	0.0051	0.15	mg/L	0.918	0.0140	83	75-125	1	25	
Batch 2204283 - General Preparation											
Blank (2204283-BLK1)					Prepared: 05/24/22 Analyzed: 05/26/22						
Total Dissolved Solids	ND	5.0	10	mg/L							
Duplicate (2204283-DUP1)			**Source: 22E1281-09**		Prepared: 05/24/22 Analyzed: 05/26/22						
Total Dissolved Solids	822	5.0	10	mg/L		820			0.2	20	
Batch 2204322 - General Prep											
Blank (2204322-BLK1)					Prepared & Analyzed: 05/25/22						
Cyanide (total)	0.00230	0.0012	0.0050	mg/L							J
LCS (2204322-BS1)					Prepared & Analyzed: 05/25/22						
Cyanide (total)	0.0847	0.0012	0.0050	mg/L	0.100		85	75-125			

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1403
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204322 - General Prep											
LCS Dup (2204322-BSD1)					Prepared & Analyzed: 05/25/22						
Cyanide (total)	0.0824	0.0012	0.0050	mg/L	0.100		82	75-125	3	25	
Matrix Spike (2204322-MS1)			**Source: 22E1066-01**		Prepared & Analyzed: 05/25/22						
Cyanide (total)	0.0765	0.0012	0.0050	mg/L	0.100	0.00300	74	75-125			QM-7
Matrix Spike Dup (2204322-MSD1)			**Source: 22E1066-01**		Prepared & Analyzed: 05/25/22						
Cyanide (total)	0.0865	0.0012	0.0050	mg/L	0.100	0.00300	84	75-125	12	25	
Batch 2204323 - General Preparation											
Blank (2204323-BLK1)					Prepared & Analyzed: 05/25/22						
Ammonia as N	ND	0.025	0.10	mg/L							
LCS (2204323-BS1)					Prepared & Analyzed: 05/25/22						
Ammonia as N	0.511	0.025	0.10	mg/L	0.500		102	80-120			
LCS Dup (2204323-BSD1)					Prepared & Analyzed: 05/25/22						
Ammonia as N	0.500	0.025	0.10	mg/L	0.500		100	80-120	2	25	
Matrix Spike (2204323-MS1)			**Source: 22E1405-02**		Prepared & Analyzed: 05/25/22						
Ammonia as N	0.621	0.025	0.10	mg/L	0.500	0.148	95	75-125			
Matrix Spike Dup (2204323-MSD1)			**Source: 22E1405-02**		Prepared & Analyzed: 05/25/22						
Ammonia as N	0.612	0.025	0.10	mg/L	0.500	0.148	93	75-125	1	25	
Batch 2204324 - Solvent Extract											
Blank (2204324-BLK1)					Prepared: 05/25/22 Analyzed: 05/26/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							

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Project Number: 750.10 Task 0620.01
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CLS Work Order #: 22E1403
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204324 - Solvent Extract											
LCS (2204324-BS1)					Prepared: 05/25/22 Analyzed: 05/26/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.0	1.0	5.0	mg/L	40.0		98	78-114			
LCS Dup (2204324-BSD1)					Prepared: 05/25/22 Analyzed: 05/26/22						
Hexane Extractable Material (HEM, Oil & Grease)	36.7	1.0	5.0	mg/L	40.0		92	78-114	6	18	
Batch 2204341 - General Preparation											
Blank (2204341-BLK1)					Prepared & Analyzed: 05/25/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2204341-BS1)					Prepared & Analyzed: 05/25/22						
Total Phosphorus as P	0.298	0.023	0.050	mg/L	0.300		99	80-120			
LCS Dup (2204341-BSD1)					Prepared & Analyzed: 05/25/22						
Total Phosphorus as P	0.290	0.023	0.050	mg/L	0.300		97	80-120	3	25	
Matrix Spike (2204341-MS1)			**Source: 22E1403-01**		Prepared & Analyzed: 05/25/22						
Total Phosphorus as P	0.290	0.023	0.050	mg/L	0.300	ND	97	75-125			
Matrix Spike Dup (2204341-MSD1)			**Source: 22E1403-01**		Prepared & Analyzed: 05/25/22						
Total Phosphorus as P	0.283	0.023	0.050	mg/L	0.300	ND	94	75-125	2	30	
Batch 2204348 - General Preparation											
Blank (2204348-BLK1)					Prepared & Analyzed: 05/25/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							

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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204348 - General Preparation											
LCS (2204348-BS1)					Prepared & Analyzed: 05/25/22						
Total Kjeldahl Nitrogen	0.416	0.040	0.20	mg/L	0.500		83	80-120			
LCS Dup (2204348-BSD1)					Prepared & Analyzed: 05/25/22						
Total Kjeldahl Nitrogen	0.418	0.040	0.20	mg/L	0.500		84	80-120	0.5	20	
Matrix Spike (2204348-MS1)			**Source: 22E1403-01**		Prepared & Analyzed: 05/25/22						
Total Kjeldahl Nitrogen	0.367	0.040	0.20	mg/L	0.500	0.0930	55	75-125			QM-7
Matrix Spike Dup (2204348-MSD1)			**Source: 22E1403-01**		Prepared & Analyzed: 05/25/22						
Total Kjeldahl Nitrogen	0.372	0.040	0.20	mg/L	0.500	0.0930	56	75-125	1	25	QM-7
Batch 2204377 - General Preparation											
Duplicate (2204377-DUP1)			**Source: 22E1403-01**		Prepared: 05/26/22 Analyzed: 05/27/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	
Batch 2204382 - General Prep											
Blank (2204382-BLK1)					Prepared & Analyzed: 05/26/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Blank (2204382-BLK2)					Prepared & Analyzed: 05/26/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							

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COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204382 - General Prep											
Duplicate (2204382-DUP1)			**Source: 22E1403-01**		Prepared & Analyzed: 05/26/22						
Total Alkalinity	6.80	1.0	5.0	mg/L		6.40			6	20	
Bicarbonate as CaCO3	6.80	0.50	5.0	"		6.40			6	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Duplicate (2204382-DUP2)			**Source: 22E1541-01**		Prepared & Analyzed: 05/26/22						
Total Alkalinity	411	1.0	5.0	mg/L		429			4	20	
Bicarbonate as CaCO3	411	0.50	5.0	"		429			4	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204281 - EPA 3510B GCNV											
Blank (2204281-BLK1)					Prepared & Analyzed: 05/24/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Surrogate: o-Terphenyl	*0.0242*			*"*	*0.0250*		*97*	*65-135*			
LCS (2204281-BS1)					Prepared & Analyzed: 05/24/22						
Diesel	1.81	0.0021	0.050	mg/L	2.50		72	65-135			
Surrogate: o-Terphenyl	*0.0172*			*"*	*0.0250*		*69*	*65-135*			
LCS Dup (2204281-BSD1)					Prepared & Analyzed: 05/24/22						
Diesel	1.83	0.0021	0.050	mg/L	2.50		73	65-135	1	30	
Surrogate: o-Terphenyl	*0.0233*			*"*	*0.0250*		*93*	*65-135*			
Matrix Spike (2204281-MS1)			**Source: 22E1228-01**		Prepared & Analyzed: 05/24/22						
Diesel	2.36	0.0021	0.050	mg/L	2.50	ND	94	46-137			
Surrogate: o-Terphenyl	*0.0238*			*"*	*0.0250*		*95*	*65-135*			
Matrix Spike Dup (2204281-MSD1)			**Source: 22E1228-01**		Prepared & Analyzed: 05/24/22						
Diesel	2.26	0.0021	0.050	mg/L	2.50	ND	90	46-137	5	30	
Surrogate: o-Terphenyl	*0.0220*			*"*	*0.0250*		*88*	*65-135*			

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Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1403
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204262 - EPA 200 Series											
Blank (2204262-BLK1)					Prepared: 05/24/22 Analyzed: 05/31/22						
Aluminum	ND	1.6	20	µg/L							
Antimony	ND	0.34	6.0	"							
Arsenic	ND	0.45	2.0	"							
Barium	ND	0.14	5.0	"							
Beryllium	ND	0.31	1.0	"							
Boron	29.1	4.1	20	"							
Cadmium	ND	0.17	0.50	"							
Chromium	0.149	0.14	1.0	"							J
Cobalt	ND	0.060	2.0	"							
Copper	ND	0.090	2.0	"							
Iron	ND	3.8	20	"							
Lead	ND	0.020	5.0	"							
Manganese	0.0590	0.050	2.0	"							J
Molybdenum	1.04	0.11	2.0	"							J
Nickel	ND	0.13	2.0	"							
Selenium	ND	0.75	5.0	"							
Silver	ND	0.070	0.50	"							
Strontium	ND	0.070	20	"							
Thallium	ND	0.030	1.0	"							
Tin	ND	10	10	"							
Titanium	ND	10	10	"							
Vanadium	0.188	0.070	3.0	"							J
Zinc	ND	0.27	10	"							
Silica (SiO2)	ND	150	500	"							
Calcium	ND	200	200	"							
Magnesium	ND	200	200	"							
Potassium	ND	200	200	"							
Sodium	ND	200	200	"							

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CLS Work Order #: 22E1403
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204262 - EPA 200 Series											
LCS (2204262-BS1)					Prepared: 05/24/22 Analyzed: 05/25/22						
Aluminum	489	1.6	20	µg/L	500		98	85-115			
Antimony	95.5	0.34	6.0	"	100		95	85-115			
Arsenic	97.4	0.45	2.0	"	100		97	85-115			
Barium	102	0.14	5.0	"	100		102	85-115			
Beryllium	94.7	0.31	1.0	"	100		95	85-115			
Boron	484	4.1	20	"	500		97	85-115			
Cadmium	97.3	0.17	0.50	"	100		97	85-115			
Chromium	100	0.14	1.0	"	100		100	85-115			
Cobalt	102	0.060	2.0	"	100		102	85-115			
Copper	100	0.090	2.0	"	100		100	85-115			
Iron	550	3.8	20	"	500		110	85-115			
Lead	96.2	0.020	5.0	"	100		96	85-115			
Manganese	99.6	0.050	2.0	"	100		100	85-115			
Molybdenum	98.3	0.11	2.0	"	100		98	85-115			
Nickel	99.6	0.13	2.0	"	100		100	85-115			
Selenium	105	0.75	5.0	"	100		105	85-115			
Silver	101	0.070	0.50	"	100		101	85-115			
Strontium	0.110	0.070	20	"	100		0.1	85-115			J
Thallium	99.2	0.030	1.0	"	100		99	85-115			
Tin	ND	10	10	"	100			85-115			
Titanium	ND	10	10	"	100			85-115			
Vanadium	103	0.070	3.0	"	100		103	85-115			
Zinc	89.0	0.27	10	"	100		89	85-115			
Silica (SiO2)	ND	150	500	"				85-115			
Calcium	948	200	200	"	1000		95	85-115			
Magnesium	1040	200	200	"	1000		104	85-115			
Potassium	1030	200	200	"	1000		103	85-115			
Sodium	1060	200	200	"	1000		106	85-115			

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1403
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204262 - EPA 200 Series											
Matrix Spike (2204262-MS1)			**Source: 22E1365-01**	Prepared: 05/24/22 Analyzed: 05/25/22							
Aluminum	532	1.6	20	µg/L	500	ND	106	70-130			
Antimony	104	0.34	6.0	"	100	ND	104	70-130			
Arsenic	98.1	0.45	2.0	"	100	1.15	97	70-130			
Barium	230	0.14	5.0	"	100	109	121	70-130			
Beryllium	105	0.31	1.0	"	100	ND	105	70-130			
Boron	575	4.1	20	"	500	54.0	104	70-130			
Cadmium	106	0.17	0.50	"	100	ND	106	70-130			
Chromium	104	0.14	1.0	"	100	2.47	101	70-130			
Cobalt	101	0.060	2.0	"	100	ND	101	70-130			
Copper	101	0.090	2.0	"	100	0.571	101	70-130			
Iron	513	3.8	20	"	500	5.34	102	70-130			
Lead	103	0.020	5.0	"	100	0.102	103	70-130			
Manganese	103	0.050	2.0	"	100	2.30	100	70-130			
Molybdenum	101	0.11	2.0	"	100	0.446	101	70-130			
Nickel	98.4	0.13	2.0	"	100	ND	98	70-130			
Selenium	93.4	0.75	5.0	"	100	1.24	92	70-130			
Silver	111	0.070	0.50	"	100	ND	111	70-130			
Strontium	307	0.070	20	"	100	288	18	70-130			
Thallium	105	0.030	1.0	"	100	ND	105	70-130			
Tin	ND	10	10	"	100	ND		70-130			
Titanium	ND	10	10	"	100	ND		70-130			
Vanadium	119	0.070	3.0	"	100	10.8	108	70-130			
Zinc	135	0.27	10	"	100	22.8	112	70-130			
Silica (SiO2)	ND	150	500	"		ND		70-130			
Calcium	27200	200	200	"	1000	25500	169	70-130			
Magnesium	16900	200	200	"	1000	15700	112	70-130			
Potassium	3280	200	200	"	1000	2230	105	70-130			
Sodium	14100	200	200	"	1000	13100	100	70-130			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204262 - EPA 200 Series											
Matrix Spike (2204262-MS2)			**Source: 22E1404-03**	Prepared: 05/24/22	Analyzed: 05/25/22						
Aluminum	495	1.6	20	µg/L	500	9.62	97	70-130			
Antimony	96.2	0.34	6.0	"	100	ND	96	70-130			
Arsenic	92.2	0.45	2.0	"	100	0.483	92	70-130			
Barium	114	0.14	5.0	"	100	13.9	100	70-130			
Beryllium	95.5	0.31	1.0	"	100	ND	95	70-130			
Boron	518	4.1	20	"	500	48.7	94	70-130			
Cadmium	97.2	0.17	0.50	"	100	ND	97	70-130			
Chromium	95.6	0.14	1.0	"	100	1.04	95	70-130			
Cobalt	96.7	0.060	2.0	"	100	ND	97	70-130			
Copper	96.4	0.090	2.0	"	100	0.508	96	70-130			
Iron	523	3.8	20	"	500	5.36	103	70-130			
Lead	95.8	0.020	5.0	"	100	0.128	96	70-130			
Manganese	94.8	0.050	2.0	"	100	0.376	94	70-130			
Molybdenum	94.2	0.11	2.0	"	100	ND	94	70-130			
Nickel	93.6	0.13	2.0	"	100	0.280	93	70-130			
Selenium	100	0.75	5.0	"	100	0.789	100	70-130			
Silver	102	0.070	0.50	"	100	ND	102	70-130			
Strontium	45.9	0.070	20	"	100	46.1	NR	70-130			
Thallium	98.5	0.030	1.0	"	100	ND	98	70-130			
Tin	ND	10	10	"	100	ND		70-130			
Titanium	ND	10	10	"	100	ND		70-130			
Vanadium	100	0.070	3.0	"	100	ND	100	70-130			
Zinc	116	0.27	10	"	100	14.6	102	70-130			
Silica (SiO2)	ND	150	500	"		ND		70-130			
Calcium	9040	200	200	"	1000	8010	104	70-130			
Magnesium	3170	200	200	"	1000	2170	101	70-130			
Potassium	1760	200	200	"	1000	760	100	70-130			
Sodium	5770	200	200	"	1000	4800	97	70-130			

06/02/22 12:56

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1403
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204263 - EPA 200 Series											
Blank (2204263-BLK1)					Prepared: 05/24/22 Analyzed: 05/25/22						
Calcium	ND	27	1000	µg/L							
Iron	ND	9.1	100	"							
Magnesium	ND	21	1000	"							
Potassium	ND	61	1000	"							
Sodium	ND	34	1000	"							
LCS (2204263-BS1)					Prepared: 05/24/22 Analyzed: 05/25/22						
Calcium	4830	27	1000	µg/L	5000		97	85-115			
Iron	485	9.1	100	"	500		97	85-115			
Magnesium	5310	21	1000	"	5000		106	85-115			
Potassium	5010	61	1000	"	5000		100	85-115			
Sodium	4980	34	1000	"	5000		100	85-115			
Matrix Spike (2204263-MS1)			**Source: 22E1391-01**		Prepared: 05/24/22 Analyzed: 05/25/22						
Calcium	6830	27	1000	µg/L	5000	1520	106	70-130			
Iron	2610	9.1	100	"	500	ND	522	70-130			QM-4X
Magnesium	5650	21	1000	"	5000	391	105	70-130			
Potassium	5660	61	1000	"	5000	ND	113	70-130			
Sodium	9760	34	1000	"	5000	4660	102	70-130			
Matrix Spike (2204263-MS2)			**Source: 22E1404-01**		Prepared: 05/24/22 Analyzed: 05/25/22						
Calcium	12000	27	1000	µg/L	5000	7490	90	70-130			
Iron	475	9.1	100	"	500	ND	95	70-130			
Magnesium	7160	21	1000	"	5000	2150	100	70-130			
Potassium	5490	61	1000	"	5000	571	98	70-130			
Sodium	9170	34	1000	"	5000	4510	93	70-130			

06/02/22 12:56

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1403
COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204320 - EPA 200 No Digestion											
Blank (2204320-BLK1)					Prepared: 05/25/22 Analyzed: 05/31/22						
Iron	ND	6.8	100	µg/L							
LCS (2204320-BS1)					Prepared: 05/25/22 Analyzed: 05/31/22						
Iron	462	6.8	100	µg/L	500		92	85-115			
Matrix Spike (2204320-MS1)			**Source: 22E1391-01**		Prepared: 05/25/22 Analyzed: 05/31/22						
Iron	399	6.8	100	µg/L	500	ND	80	70-130			
Batch 2204433 - EPA 200 No Digestion											
Blank (2204433-BLK1)					Prepared & Analyzed: 05/27/22						
Aluminum	ND	0.52	20	µg/L							
Silver	ND	0.15	0.50	"							
LCS (2204433-BS1)					Prepared & Analyzed: 05/27/22						
Aluminum	467	0.52	20	µg/L	500		93	85-115			
Silver	95.9	0.15	0.50	"	100		96	85-115			
Matrix Spike (2204433-MS1)			**Source: 22E0999-01**		Prepared & Analyzed: 05/27/22						
Aluminum	502	0.52	20	µg/L	500	21.4	96	70-130			
Silver	95.3	0.15	0.50	"	100	ND	95	70-130			
Matrix Spike (2204433-MS2)			**Source: 22E1403-03**		Prepared & Analyzed: 05/27/22						
Aluminum	463	0.52	20	µg/L	500	ND	93	70-130			
Silver	94.7	0.15	0.50	"	100	ND	95	70-130			

06/02/22 12:56

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1403
COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204332 - EPA 5030 Water GC											
Blank (2204332-BLK1)					Prepared & Analyzed: 05/25/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*21.0*			"	*20.0*		*105*	*65-135*			
LCS (2204332-BS1)					Prepared & Analyzed: 05/25/22						
Gasoline	448	10	50	µg/L	500		90	70-130			
Surrogate: o-Chlorotoluene (Gas)	*21.3*			"	*20.0*		*107*	*65-135*			
LCS Dup (2204332-BSD1)					Prepared & Analyzed: 05/25/22						
Gasoline	472	10	50	µg/L	500		94	70-130	5	30	
Surrogate: o-Chlorotoluene (Gas)	*20.5*			"	*20.0*		*102*	*65-135*			
Matrix Spike (2204332-MS1)			**Source: 22E1449-01**		Prepared & Analyzed: 05/25/22						
Gasoline	443	10	50	µg/L	500	ND	89	68-132			
Surrogate: o-Chlorotoluene (Gas)	*22.1*			"	*20.0*		*110*	*65-135*			
Matrix Spike Dup (2204332-MSD1)			**Source: 22E1449-01**		Prepared & Analyzed: 05/25/22						
Gasoline	388	10	50	µg/L	500	ND	78	68-132	13	32	
Surrogate: o-Chlorotoluene (Gas)	*20.5*			"	*20.0*		*102*	*65-135*			

06/02/22 12:56

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1403**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204300 - EPA 5030 Water MS											
Blank (2204300-BLK1)					Prepared & Analyzed: 05/24/22						
Methyl tert-butyl ether	ND	0.095	0.50	µg/L							
1,2-Dichloroethane	ND	0.16	0.50	"							
Benzene	ND	0.11	0.50	"							
Toluene	ND	0.11	0.50	"							
Ethylbenzene	ND	0.10	0.50	"							
Xylenes (total)	ND	0.33	1.0	"							
Surrogate: Toluene-d8	*9.65*			"	*10.0*		*97*	*72-125*			
LCS (2204300-BS1)					Prepared & Analyzed: 05/24/22						
Methyl tert-butyl ether	22.6	0.095	0.50	µg/L	20.0		113	52-130			
Benzene	19.8	0.11	0.50	"	20.0		99	52-130			
Surrogate: Toluene-d8	*9.99*			"	*10.0*		*100*	*72-125*			
LCS Dup (2204300-BSD1)					Prepared & Analyzed: 05/24/22						
Methyl tert-butyl ether	24.4	0.095	0.50	µg/L	20.0		122	52-130	8	30	
Benzene	21.4	0.11	0.50	"	20.0		107	52-130	7	30	
Surrogate: Toluene-d8	*9.98*			"	*10.0*		*100*	*72-125*			
Matrix Spike (2204300-MS1)			**Source: 22E1281-09**		Prepared & Analyzed: 05/24/22						
Methyl tert-butyl ether	20.7	0.095	0.50	µg/L	20.0	ND	104	52-140			
Benzene	19.1	0.11	0.50	"	20.0	ND	95	52-140			
Surrogate: Toluene-d8	*10.2*			"	*10.0*		*102*	*72-125*			
Matrix Spike Dup (2204300-MSD1)			**Source: 22E1281-09**		Prepared & Analyzed: 05/24/22						
Methyl tert-butyl ether	22.0	0.095	0.50	µg/L	20.0	ND	110	52-140	6	30	
Benzene	19.7	0.11	0.50	"	20.0	ND	99	52-140	3	30	
Surrogate: Toluene-d8	*10.0*			"	*10.0*		*100*	*72-125*			

06/02/22 12:56

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1403**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22E1403 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[X] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [X] NO [ ]

GLOBAL ID

FIELD CONDITIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	TSS, TDS, Hardness, Alkalinity, NO2-N, NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
5/23/22	10:00	UARP-R-15-13-CR		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
5/23/22	12:00	UARP-R-15-12-JR		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
5/23/22	13:30	R-15-16-EBR		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	INVOICE TO
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	Project No. 750.10 Task 0620.01
				Surface water			6											X	QUOTE#

ANALYSIS REQUESTED

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (2) HNO_3 (3) = COLD (4)= H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
[signature]	Joey Verdean/Stillwater Sciences	5/23/22 1620		

RECEIVED AT LAB BY: [signature] DATE/TIME: 5/23/22 1624 CONDITIONS/COMMENTS: 2.4/1.5

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER _____ AIR BILL # _____

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

June 03, 2022

CLS Work Order #: 22E1449
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 05/24/22 16:45. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

06/03/22 08:01

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1449
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-1S-14-SC (22E1449-01) Surface Water	**Sampled: 05/24/22 10:00**		**Received: 05/24/22 16:45**							
Ammonia as N	**0.081**	0.025	0.10	mg/L	1	2204373	05/26/22	05/26/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**11**	0.50	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**1.7**	0.026	0.50	"	"	2204296	05/25/22	05/25/22	EPA 300.0	
Cyanide (total)	**0.0023**	0.0012	0.0050	"	"	2204367	05/26/22	05/26/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2204324	05/25/22	05/26/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	
Nitrate/Nitrite as N	**0.16**	0.055	0.40	"	"	2204296	05/25/22	05/25/22	EPA 300.0	J
Orthophosphate as PO4	**0.022**	0.0051	0.15	"	"	2204349	05/26/22	05/26/22	SM4500-P E	J
Sulfate as SO4	**1.2**	0.038	0.50	"	"	2204296	05/25/22	05/25/22	EPA 300.0	
Total Alkalinity	**11**	1.0	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	
Total Dissolved Solids	**27**	5.0	10	"	"	2204387	05/26/22	05/27/22	SM2540C	
Total Hardness as CaCO3	**11**	0.19	1.0	"	"	2204374	05/26/22	05/27/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.26**	0.040	0.20	"	"	2204394	05/27/22	05/27/22	SM4500-NH3F-1997	
Total Organic Carbon	**2.1**	0.54	1.0	"	"	2204441	05/31/22	05/31/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2204341	05/25/22	05/25/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2204377	05/26/22	05/27/22	SM2540D	
R-1S-15-SC (22E1449-02) Surface Water	**Sampled: 05/24/22 10:00**		**Received: 05/24/22 16:45**							
Ammonia as N	**0.066**	0.025	0.10	mg/L	1	2204373	05/26/22	05/26/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**12**	0.50	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**1.4**	0.026	0.50	"	"	2204296	05/25/22	05/25/22	EPA 300.0	
Cyanide (total)	**0.0019**	0.0012	0.0050	"	"	2204367	05/26/22	05/26/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2204324	05/25/22	05/26/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	
Nitrate/Nitrite as N	**0.080**	0.055	0.40	"	"	2204296	05/25/22	05/25/22	EPA 300.0	J
Orthophosphate as PO4	**0.014**	0.0051	0.15	"	"	2204349	05/26/22	05/26/22	SM4500-P E	J

06/03/22 08:01

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1449
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-1S-15-SC (22E1449-02) Surface Water	**Sampled: 05/24/22 10:00**		**Received: 05/24/22 16:45**							
Sulfate as SO4	**0.89**	0.038	0.50	mg/L	1	2204296	05/25/22	05/25/22	EPA 300.0	
Total Alkalinity	**12**	1.0	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	
Total Dissolved Solids	**28**	5.0	10	"	"	2204387	05/26/22	05/27/22	SM2540C	
Total Hardness as CaCO3	**11**	0.19	1.0	"	"	2204374	05/26/22	05/27/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.079**	0.040	0.20	"	"	2204394	05/27/22	05/27/22	SM4500-NH3F-1997	J
Total Organic Carbon	**2.1**	0.54	1.0	"	"	2204441	05/31/22	05/31/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2204341	05/25/22	05/25/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2204377	05/26/22	05/27/22	SM2540D	
R-1S-16-CB (22E1449-03) Surface Water	**Sampled: 05/24/22 13:45**		**Received: 05/24/22 16:45**							
Ammonia as N	**0.054**	0.025	0.10	mg/L	1	2204373	05/26/22	05/26/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**12**	0.50	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**1.7**	0.026	0.50	"	"	2204296	05/25/22	05/25/22	EPA 300.0	
Cyanide (total)	**0.0034**	0.0012	0.0050	"	"	2204367	05/26/22	05/26/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2204324	05/25/22	05/26/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	
Nitrate/Nitrite as N	**0.17**	0.055	0.40	"	"	2204296	05/25/22	05/25/22	EPA 300.0	J
Orthophosphate as PO4	**0.0060**	0.0051	0.15	"	"	2204349	05/26/22	05/26/22	SM4500-P E	J
Sulfate as SO4	**1.3**	0.038	0.50	"	"	2204296	05/25/22	05/25/22	EPA 300.0	
Total Alkalinity	**12**	1.0	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	
Total Dissolved Solids	**29**	5.0	10	"	"	2204387	05/26/22	05/27/22	SM2540C	
Total Hardness as CaCO3	**12**	0.19	1.0	"	"	2204374	05/26/22	05/27/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.22**	0.040	0.20	"	"	2204394	05/27/22	05/27/22	SM4500-NH3F-1997	
Total Organic Carbon	**2.2**	0.54	1.0	"	"	2204441	05/31/22	05/31/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2204341	05/25/22	05/25/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2204377	05/26/22	05/27/22	SM2540D	

06/03/22 08:01

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1449
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-1S-17-CB (22E1449-04) Surface Water	**Sampled: 05/24/22 14:15**		**Received: 05/24/22 16:45**							
Ammonia as N	**0.047**	0.025	0.10	mg/L	1	2204373	05/26/22	05/26/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**12**	0.50	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**1.8**	0.026	0.50	"	"	2204296	05/25/22	05/25/22	EPA 300.0	
Cyanide (total)	**0.0030**	0.0012	0.0050	"	"	2204367	05/26/22	05/26/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2204324	05/25/22	05/26/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	
Nitrate/Nitrite as N	**0.16**	0.055	0.40	"	"	2204296	05/25/22	05/25/22	EPA 300.0	J
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2204349	05/26/22	05/26/22	SM4500-P E	
Sulfate as SO4	**1.3**	0.038	0.50	"	"	2204296	05/25/22	05/25/22	EPA 300.0	
Total Alkalinity	**12**	1.0	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	
Total Dissolved Solids	**31**	5.0	10	"	"	2204387	05/26/22	05/27/22	SM2540C	
Total Hardness as CaCO3	**12**	0.19	1.0	"	"	2204374	05/26/22	05/27/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.15**	0.040	0.20	"	"	2204394	05/27/22	05/27/22	SM4500-NH3F-1997	J
Total Organic Carbon	**2.2**	0.54	1.0	"	"	2204441	05/31/22	05/31/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2204341	05/25/22	05/25/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2204377	05/26/22	05/27/22	SM2540D	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1449
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-1S-14-SC (22E1449-01) Surface Water	**Sampled: 05/24/22 10:00**		**Received: 05/24/22 16:45**							
Diesel	ND	0.0021	0.050	mg/L	1	2204361	05/25/22	05/26/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*119 %*	*65-135*		"	"	"	"	
R-1S-15-SC (22E1449-02) Surface Water	**Sampled: 05/24/22 10:00**		**Received: 05/24/22 16:45**							
Diesel	ND	0.0021	0.050	mg/L	1	2204361	05/25/22	05/26/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*106 %*	*65-135*		"	"	"	"	
R-1S-16-CB (22E1449-03) Surface Water	**Sampled: 05/24/22 13:45**		**Received: 05/24/22 16:45**							
Diesel	ND	0.0021	0.050	mg/L	1	2204361	05/25/22	05/26/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*98 %*	*65-135*		"	"	"	"	
R-1S-17-CB (22E1449-04) Surface Water	**Sampled: 05/24/22 14:15**		**Received: 05/24/22 16:45**							
Diesel	ND	0.0021	0.050	mg/L	1	2204361	05/25/22	05/26/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1449**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-1S-17-CB (22E1449-04) Surface Water	**Sampled: 05/24/22 14:15**		**Received: 05/24/22 16:45**							
Surrogate: o-Terphenyl			*102 %*		*65-135*	*2204361*	"	*05/26/22*	*EPA 8015M*	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1449
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-1S-14-SC (22E1449-01) Surface Water	**Sampled: 05/24/22 10:00**		**Received: 05/24/22 16:45**							
Aluminum	**27**	1.6	20	µg/L	1	2204351	05/26/22	05/26/22	EPA 200.8	
Barium	**12**	0.14	5.0	"	"	"	"	"	"	
Calcium	**3100**	27	1000	"	"	2204391	05/27/22	05/27/22	EPA 200.7	
Iron	**75**	9.1	100	"	"	"	"	"	"	J
Magnesium	**680**	21	1000	"	"	"	"	"	"	J
Manganese	**12**	0.050	2.0	"	"	2204351	05/26/22	05/26/22	EPA 200.8	
Potassium	**1100**	61	1000	"	"	2204391	05/27/22	05/31/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2204351	05/26/22	05/26/22	EPA 200.8	
Sodium	**2200**	34	1000	"	"	2204391	05/27/22	05/27/22	EPA 200.7	
R-1S-15-SC (22E1449-02) Surface Water	**Sampled: 05/24/22 10:00**		**Received: 05/24/22 16:45**							
Aluminum	**50**	1.6	20	µg/L	1	2204351	05/26/22	05/26/22	EPA 200.8	
Barium	**12**	0.14	5.0	"	"	"	"	"	"	
Calcium	**3000**	27	1000	"	"	2204391	05/27/22	05/27/22	EPA 200.7	
Iron	**36**	9.1	100	"	"	"	"	"	"	J
Magnesium	**700**	21	1000	"	"	"	"	"	"	J
Manganese	**20**	0.050	2.0	"	"	2204351	05/26/22	05/26/22	EPA 200.8	
Potassium	**770**	61	1000	"	"	2204391	05/27/22	05/31/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2204351	05/26/22	05/26/22	EPA 200.8	
Sodium	**2200**	34	1000	"	"	2204391	05/27/22	05/27/22	EPA 200.7	
R-1S-16-CB (22E1449-03) Surface Water	**Sampled: 05/24/22 13:45**		**Received: 05/24/22 16:45**							
Aluminum	**51**	1.6	20	µg/L	1	2204351	05/26/22	05/26/22	EPA 200.8	
Barium	**12**	0.14	5.0	"	"	"	"	"	"	
Calcium	**3200**	27	1000	"	"	2204391	05/27/22	05/27/22	EPA 200.7	
Iron	**76**	9.1	100	"	"	"	"	"	"	J
Magnesium	**770**	21	1000	"	"	"	"	"	"	J
Manganese	**19**	0.050	2.0	"	"	2204351	05/26/22	05/26/22	EPA 200.8	
Potassium	**910**	61	1000	"	"	2204391	05/27/22	05/31/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2204351	05/26/22	05/26/22	EPA 200.8	
Sodium	**2100**	34	1000	"	"	2204391	05/27/22	05/27/22	EPA 200.7	

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Stillwater Sciences
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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1449
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-1S-17-CB (22E1449-04) Surface Water	**Sampled: 05/24/22 14:15**	**Received: 05/24/22 16:45**								
Aluminum	ND	1.6	20	µg/L	1	2204351	05/26/22	05/26/22	EPA 200.8	
Barium	ND	0.14	5.0	"	"	"	"	"	"	
Calcium	**3300**	27	1000	"	"	2204391	05/27/22	05/27/22	EPA 200.7	
Iron	**72**	9.1	100	"	"	"	"	"	"	J
Magnesium	**810**	21	1000	"	"	"	"	"	"	J
Manganese	**0.24**	0.050	2.0	"	"	2204351	05/26/22	05/26/22	EPA 200.8	J
Potassium	**830**	61	1000	"	"	2204391	05/27/22	05/31/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2204351	05/26/22	05/26/22	EPA 200.8	
Sodium	**2200**	34	1000	"	"	2204391	05/27/22	05/27/22	EPA 200.7	

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Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1449
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-1S-14-SC (22E1449-01) Surface Water	**Sampled: 05/24/22 10:00**		**Received: 05/24/22 16:45**							
Aluminum	**44**	0.52	20	µg/L	1	2204465	05/31/22	05/31/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2204374	05/26/22	05/26/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2204465	05/31/22	06/01/22	EPA 200.8	
R-1S-15-SC (22E1449-02) Surface Water	**Sampled: 05/24/22 10:00**		**Received: 05/24/22 16:45**							
Aluminum	**18**	0.52	20	µg/L	1	2204465	05/31/22	05/31/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2204374	05/26/22	05/26/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2204465	05/31/22	06/01/22	EPA 200.8	
R-1S-16-CB (22E1449-03) Surface Water	**Sampled: 05/24/22 13:45**		**Received: 05/24/22 16:45**							
Aluminum	**31**	0.52	20	µg/L	1	2204465	05/31/22	05/31/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2204374	05/26/22	05/26/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2204465	05/31/22	06/01/22	EPA 200.8	
R-1S-17-CB (22E1449-04) Surface Water	**Sampled: 05/24/22 14:15**		**Received: 05/24/22 16:45**							
Aluminum	**34**	0.52	20	µg/L	1	2204465	05/31/22	05/31/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2204374	05/26/22	05/26/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2204465	05/31/22	06/01/22	EPA 200.8	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1449**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-1S-14-SC (22E1449-01) Surface Water Sampled: 05/24/22 10:00 Received: 05/24/22 16:45										
Gasoline	ND	10	50	µg/L	1	2204332	05/25/22	05/25/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*106 %*	*65-135*		"	"	"	"	
R-1S-15-SC (22E1449-02) Surface Water Sampled: 05/24/22 10:00 Received: 05/24/22 16:45										
Gasoline	ND	10	50	µg/L	1	2204332	05/25/22	05/25/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*100 %*	*65-135*		"	"	"	"	
R-1S-16-CB (22E1449-03) Surface Water Sampled: 05/24/22 13:45 Received: 05/24/22 16:45										
Gasoline	ND	10	50	µg/L	1	2204332	05/25/22	05/25/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*102 %*	*65-135*		"	"	"	"	
R-1S-17-CB (22E1449-04) Surface Water Sampled: 05/24/22 14:15 Received: 05/24/22 16:45										
Gasoline	ND	10	50	µg/L	1	2204332	05/25/22	05/25/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*109 %*	*65-135*		"	"	"	"	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1449
COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-1S-14-SC (22E1449-01) Surface Water	**Sampled: 05/24/22 10:00**		**Received: 05/24/22 16:45**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2204442	05/26/22	05/26/22	EPA 8260B	
Surrogate: Toluene-d8			*98 %*	*72-125*		"	"	"	"	
R-1S-15-SC (22E1449-02) Surface Water	**Sampled: 05/24/22 10:00**		**Received: 05/24/22 16:45**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2204442	05/26/22	05/26/22	EPA 8260B	
Surrogate: Toluene-d8			*97 %*	*72-125*		"	"	"	"	
R-1S-16-CB (22E1449-03) Surface Water	**Sampled: 05/24/22 13:45**		**Received: 05/24/22 16:45**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2204442	05/26/22	05/26/22	EPA 8260B	
Surrogate: Toluene-d8			*97 %*	*72-125*		"	"	"	"	
R-1S-17-CB (22E1449-04) Surface Water	**Sampled: 05/24/22 14:15**		**Received: 05/24/22 16:45**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2204442	05/26/22	05/26/22	EPA 8260B	
Surrogate: Toluene-d8			*97 %*	*72-125*		"	"	"	"	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1449
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204296 - General Prep											
Blank (2204296-BLK1)					Prepared & Analyzed: 05/25/22						
Sulfate as SO4	0.144	0.038	0.50	mg/L							J
Chloride	0.291	0.026	0.50	"							J
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2204296-BS1)					Prepared & Analyzed: 05/25/22						
Sulfate as SO4	4.74	0.038	0.50	mg/L	5.00		95	80-120			
Chloride	4.64	0.026	0.50	"	5.00		93	80-120			
Nitrate/Nitrite as N	3.88	0.055	0.40	"	4.00		97	80-120			
LCS Dup (2204296-BSD1)					Prepared & Analyzed: 05/25/22						
Chloride	4.70	0.026	0.50	mg/L	5.00		94	80-120	1	20	
Sulfate as SO4	4.80	0.038	0.50	"	5.00		96	80-120	1	20	
Nitrate/Nitrite as N	3.94	0.055	0.40	"	4.00		98	80-120	2	20	
Matrix Spike (2204296-MS1)			**Source: 22E1449-01**		Prepared & Analyzed: 05/25/22						
Chloride	6.27	0.026	0.50	mg/L	5.00	1.73	91	80-120			
Sulfate as SO4	5.78	0.038	0.50	"	5.00	1.19	92	80-120			
Nitrate/Nitrite as N	4.06	0.055	0.40	"	4.00	0.157	97	80-120			
Matrix Spike Dup (2204296-MSD1)			**Source: 22E1449-01**		Prepared & Analyzed: 05/25/22						
Chloride	6.32	0.026	0.50	mg/L	5.00	1.73	92	80-120	0.8	20	
Sulfate as SO4	5.83	0.038	0.50	"	5.00	1.19	93	80-120	0.9	20	
Nitrate/Nitrite as N	4.10	0.055	0.40	"	4.00	0.157	99	80-120	1	20	
Batch 2204324 - Solvent Extract											
Blank (2204324-BLK1)					Prepared: 05/25/22 Analyzed: 05/26/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1449**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204324 - Solvent Extract											
LCS (2204324-BS1)					Prepared: 05/25/22 Analyzed: 05/26/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.0	1.0	5.0	mg/L	40.0		98	78-114			
LCS Dup (2204324-BSD1)					Prepared: 05/25/22 Analyzed: 05/26/22						
Hexane Extractable Material (HEM, Oil & Grease)	36.7	1.0	5.0	mg/L	40.0		92	78-114	6	18	
Batch 2204341 - General Preparation											
Blank (2204341-BLK1)					Prepared & Analyzed: 05/25/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2204341-BS1)					Prepared & Analyzed: 05/25/22						
Total Phosphorus as P	0.298	0.023	0.050	mg/L	0.300		99	80-120			
LCS Dup (2204341-BSD1)					Prepared & Analyzed: 05/25/22						
Total Phosphorus as P	0.290	0.023	0.050	mg/L	0.300		97	80-120	3	25	
Matrix Spike (2204341-MS1)			**Source: 22E1403-01**		Prepared & Analyzed: 05/25/22						
Total Phosphorus as P	0.290	0.023	0.050	mg/L	0.300	ND	97	75-125			
Matrix Spike Dup (2204341-MSD1)			**Source: 22E1403-01**		Prepared & Analyzed: 05/25/22						
Total Phosphorus as P	0.283	0.023	0.050	mg/L	0.300	ND	94	75-125	2	30	
Batch 2204349 - General Prep											
Blank (2204349-BLK1)					Prepared & Analyzed: 05/26/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							

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Stillwater Sciences
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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1449
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204349 - General Prep											
LCS (2204349-BS1)					Prepared & Analyzed: 05/26/22						
Orthophosphate as PO4	0.868	0.0051	0.15	mg/L	0.918		95	80-120			
LCS Dup (2204349-BSD1)					Prepared & Analyzed: 05/26/22						
Orthophosphate as PO4	0.884	0.0051	0.15	mg/L	0.918		96	80-120	2	20	
Matrix Spike (2204349-MS1)			**Source: 22E1449-01**		Prepared & Analyzed: 05/26/22						
Orthophosphate as PO4	0.851	0.0051	0.15	mg/L	0.918	0.0220	90	75-125			
Matrix Spike Dup (2204349-MSD1)			**Source: 22E1449-01**		Prepared & Analyzed: 05/26/22						
Orthophosphate as PO4	0.851	0.0051	0.15	mg/L	0.918	0.0220	90	75-125	0	25	
Batch 2204367 - General Preparation											
Blank (2204367-BLK1)					Prepared & Analyzed: 05/26/22						
Cyanide (total)	ND	0.0012	0.0050	mg/L							
LCS (2204367-BS1)					Prepared & Analyzed: 05/26/22						
Cyanide (total)	0.0780	0.0012	0.0050	mg/L	0.100		78	75-125			
LCS Dup (2204367-BSD1)					Prepared & Analyzed: 05/26/22						
Cyanide (total)	0.0817	0.0012	0.0050	mg/L	0.100		82	75-125	5	25	
Matrix Spike (2204367-MS1)			**Source: 22E1180-01**		Prepared & Analyzed: 05/26/22						
Cyanide (total)	0.0925	0.0012	0.0050	mg/L	0.100	0.00230	90	75-125			
Matrix Spike Dup (2204367-MSD1)			**Source: 22E1180-01**		Prepared & Analyzed: 05/26/22						
Cyanide (total)	0.0939	0.0012	0.0050	mg/L	0.100	0.00230	92	75-125	2	25	

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Stillwater Sciences
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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1449
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204373 - General Preparation											
Blank (2204373-BLK1)					Prepared & Analyzed: 05/26/22						
Ammonia as N	ND	0.025	0.10	mg/L							
LCS (2204373-BS1)					Prepared & Analyzed: 05/26/22						
Ammonia as N	0.481	0.025	0.10	mg/L	0.500		96	80-120			
LCS Dup (2204373-BSD1)					Prepared & Analyzed: 05/26/22						
Ammonia as N	0.494	0.025	0.10	mg/L	0.500		99	80-120	3	25	
Matrix Spike (2204373-MS1)			**Source: 22E1453-02**		Prepared & Analyzed: 05/26/22						
Ammonia as N	0.734	0.025	0.10	mg/L	0.500	0.213	104	75-125			
Matrix Spike Dup (2204373-MSD1)			**Source: 22E1453-02**		Prepared & Analyzed: 05/26/22						
Ammonia as N	0.744	0.025	0.10	mg/L	0.500	0.213	106	75-125	1	25	
Batch 2204374 - EPA 200 No Digestion											
Blank (2204374-BLK1)					Prepared: 05/26/22 Analyzed: 05/27/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2204374-BS1)					Prepared: 05/26/22 Analyzed: 05/27/22						
Total Hardness as CaCO3	33.9	0.19	1.0	mg/L	33.1		103	85-115			
Matrix Spike (2204374-MS1)			**Source: 22E1449-01**		Prepared: 05/26/22 Analyzed: 05/27/22						
Total Hardness as CaCO3	43.6	0.19	1.0	mg/L	33.1	10.7	99	70-130			
Matrix Spike (2204374-MS2)			**Source: 22E1480-01**		Prepared: 05/26/22 Analyzed: 05/27/22						
Total Hardness as CaCO3	258	0.19	1.0	mg/L	33.1	223	107	70-130			

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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1449
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204377 - General Preparation											
Duplicate (2204377-DUP1)			**Source: 22E1403-01**		Prepared: 05/26/22 Analyzed: 05/27/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	
Batch 2204382 - General Prep											
Blank (2204382-BLK1)					Prepared & Analyzed: 05/26/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Blank (2204382-BLK2)					Prepared & Analyzed: 05/26/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Duplicate (2204382-DUP1)			**Source: 22E1403-01**		Prepared & Analyzed: 05/26/22						
Total Alkalinity	6.80	1.0	5.0	mg/L		6.40			6	20	
Bicarbonate as CaCO3	6.80	0.50	5.0	"		6.40			6	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Duplicate (2204382-DUP2)			**Source: 22E1541-01**		Prepared & Analyzed: 05/26/22						
Total Alkalinity	411	1.0	5.0	mg/L		429			4	20	
Bicarbonate as CaCO3	411	0.50	5.0	"		429			4	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204387 - General Preparation											
Blank (2204387-BLK1)					Prepared: 05/26/22 Analyzed: 05/27/22						
Total Dissolved Solids	ND	5.0	10	mg/L							
Duplicate (2204387-DUP1)			**Source: 22E1449-01**		Prepared: 05/26/22 Analyzed: 05/27/22						
Total Dissolved Solids	26.0	5.0	10	mg/L		27.0			4	20	
Batch 2204394 - General Preparation											
Blank (2204394-BLK1)					Prepared & Analyzed: 05/27/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2204394-BS1)					Prepared & Analyzed: 05/27/22						
Total Kjeldahl Nitrogen	0.572	0.040	0.20	mg/L	0.500		114	80-120			
LCS Dup (2204394-BSD1)					Prepared & Analyzed: 05/27/22						
Total Kjeldahl Nitrogen	0.573	0.040	0.20	mg/L	0.500		115	80-120	0.2	20	
Matrix Spike (2204394-MS1)			**Source: 22E1449-04**		Prepared & Analyzed: 05/27/22						
Total Kjeldahl Nitrogen	0.550	0.040	0.20	mg/L	0.500	0.151	80	75-125			
Matrix Spike Dup (2204394-MSD1)			**Source: 22E1449-04**		Prepared & Analyzed: 05/27/22						
Total Kjeldahl Nitrogen	0.552	0.040	0.20	mg/L	0.500	0.151	80	75-125	0.4	25	
Batch 2204441 - General Prep											
Blank (2204441-BLK1)					Prepared & Analyzed: 05/31/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204441 - General Prep											
LCS (2204441-BS1)					Prepared & Analyzed: 05/31/22						
Total Organic Carbon	10.3	0.54	1.0	mg/L	10.0		103	75-125			
LCS Dup (2204441-BSD1)					Prepared & Analyzed: 05/31/22						
Total Organic Carbon	10.4	0.54	1.0	mg/L	10.0		104	75-125	1	25	
Matrix Spike (2204441-MS1)			**Source: 22E1449-02**		Prepared & Analyzed: 05/31/22						
Total Organic Carbon	12.7	0.54	1.0	mg/L	10.0	2.08	106	75-125			
Matrix Spike Dup (2204441-MSD1)			**Source: 22E1449-02**		Prepared & Analyzed: 05/31/22						
Total Organic Carbon	12.6	0.54	1.0	mg/L	10.0	2.08	105	75-125	1	25	

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Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204361 - EPA 3510B GCNV											
Blank (2204361-BLK1)					Prepared: 05/25/22 Analyzed: 05/26/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Surrogate: o-Terphenyl	*0.0302*			*"*	*0.0250*		*121*	*65-135*			
LCS (2204361-BS1)					Prepared: 05/25/22 Analyzed: 05/26/22						
Diesel	1.71	0.0021	0.050	mg/L	2.50		68	65-135			
Surrogate: o-Terphenyl	*0.0223*			*"*	*0.0250*		*89*	*65-135*			
LCS Dup (2204361-BSD1)					Prepared: 05/25/22 Analyzed: 05/26/22						
Diesel	1.83	0.0021	0.050	mg/L	2.50		73	65-135	7	30	
Surrogate: o-Terphenyl	*0.0210*			*"*	*0.0250*		*84*	*65-135*			
Matrix Spike (2204361-MS1)			**Source: 22E1429-01**		Prepared: 05/25/22 Analyzed: 05/26/22						
Diesel	2.52	0.0021	0.050	mg/L	2.50	ND	101	46-137			
Surrogate: o-Terphenyl	*0.0288*			*"*	*0.0250*		*115*	*65-135*			
Matrix Spike Dup (2204361-MSD1)			**Source: 22E1429-01**		Prepared: 05/25/22 Analyzed: 05/26/22						
Diesel	2.30	0.0021	0.050	mg/L	2.50	ND	92	46-137	9	30	
Surrogate: o-Terphenyl	*0.0244*			*"*	*0.0250*		*97*	*65-135*			

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COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204351 - EPA 200 Series											
Blank (2204351-BLK1)					Prepared & Analyzed: 05/26/22						
Aluminum	ND	1.6	20	µg/L							
Arsenic	ND	0.45	2.0	"							
Barium	ND	0.14	5.0	"							
Chromium	ND	0.14	1.0	"							
Copper	ND	0.090	2.0	"							
Manganese	ND	0.050	2.0	"							
Nickel	ND	0.13	2.0	"							
Silver	ND	0.070	0.50	"							
LCS (2204351-BS1)					Prepared & Analyzed: 05/26/22						
Aluminum	490	1.6	20	µg/L	500		98	85-115			
Arsenic	98.5	0.45	2.0	"	100		99	85-115			
Barium	99.4	0.14	5.0	"	100		99	85-115			
Chromium	102	0.14	1.0	"	100		102	85-115			
Copper	103	0.090	2.0	"	100		103	85-115			
Manganese	102	0.050	2.0	"	100		102	85-115			
Nickel	101	0.13	2.0	"	100		101	85-115			
Silver	101	0.070	0.50	"	100		101	85-115			
Matrix Spike (2204351-MS1)			**Source: 22E1379-01**		Prepared & Analyzed: 05/26/22						
Aluminum	489	1.6	20	µg/L	500	ND	98	70-130			
Arsenic	86.1	0.45	2.0	"	100	2.88	83	70-130			
Barium	162	0.14	5.0	"	100	58.4	104	70-130			
Chromium	91.2	0.14	1.0	"	100	5.41	86	70-130			
Copper	293	0.090	2.0	"	100	244	49	70-130			QM-7
Manganese	90.7	0.050	2.0	"	100	3.30	87	70-130			
Nickel	93.8	0.13	2.0	"	100	8.47	85	70-130			
Silver	103	0.070	0.50	"	100	0.128	103	70-130			

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COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204351 - EPA 200 Series											
Matrix Spike (2204351-MS2)			**Source: 22E1509-01**		Prepared & Analyzed: 05/26/22						
Aluminum	493	1.6	20	µg/L	500	ND	99	70-130			
Arsenic	96.9	0.45	2.0	"	100	0.457	96	70-130			
Barium	240	0.14	5.0	"	100	136	104	70-130			
Chromium	99.3	0.14	1.0	"	100	0.748	99	70-130			
Copper	126	0.090	2.0	"	100	26.4	100	70-130			
Manganese	104	0.050	2.0	"	100	4.47	99	70-130			
Nickel	98.5	0.13	2.0	"	100	0.500	98	70-130			
Silver	102	0.070	0.50	"	100	ND	102	70-130			
Batch 2204391 - EPA 200 Series											
Blank (2204391-BLK1)					Prepared & Analyzed: 05/27/22						
Boron	ND	5.3	50	µg/L							
Calcium	36.1	27	1000	"							J
Iron	ND	9.1	100	"							
Magnesium	ND	21	1000	"							
Manganese	ND	0.92	10	"							
Potassium	ND	61	1000	"							
Sodium	ND	34	1000	"							
LCS (2204391-BS1)					Prepared & Analyzed: 05/27/22						
Boron	480	5.3	50	µg/L	500		96	85-115			
Calcium	4880	27	1000	"	5000		98	85-115			
Iron	467	9.1	100	"	500		93	85-115			
Magnesium	5310	21	1000	"	5000		106	85-115			
Manganese	514	0.92	10	"	500		103	85-115			
Potassium	5130	61	1000	"	5000		103	85-115			
Sodium	5110	34	1000	"	5000		102	85-115			

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CLS Work Order #: 22E1449
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204391 - EPA 200 Series											
Matrix Spike (2204391-MS1)			**Source: 22E1417-01**		Prepared & Analyzed: 05/27/22						
Boron	505	5.3	50	µg/L	500	6.55	100	70-130			
Calcium	10100	27	1000	"	5000	5190	97	70-130			
Iron	494	9.1	100	"	500	ND	99	70-130			
Magnesium	5360	21	1000	"	5000	ND	107	70-130			
Manganese	526	0.92	10	"	500	ND	105	70-130			
Potassium	5310	61	1000	"	5000	ND	106	70-130			
Sodium	7080	34	1000	"	5000	1960	102	70-130			
Matrix Spike (2204391-MS2)			**Source: 22E1560-01**		Prepared & Analyzed: 05/27/22						
Boron	581	5.3	50	µg/L	500	68.1	103	70-130			
Calcium	105000	27	1000	"	5000	97400	156	70-130			QM-4X
Iron	681	9.1	100	"	500	195	97	70-130			
Magnesium	150000	21	1000	"	5000	143000	142	70-130			QM-4X
Manganese	1020	0.92	10	"	500	491	106	70-130			
Potassium	12000	61	1000	"	5000	7530	90	70-130			
Sodium	53100	34	1000	"	5000	47700	107	70-130			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204374 - EPA 200 No Digestion											
Blank (2204374-BLK1)					Prepared & Analyzed: 05/26/22						
Iron	ND	6.8	100	µg/L							
LCS (2204374-BS1)					Prepared & Analyzed: 05/26/22						
Iron	483	6.8	100	µg/L	500		97	85-115			
Matrix Spike (2204374-MS1)			**Source: 22E1449-01**		Prepared & Analyzed: 05/26/22						
Iron	432	6.8	100	µg/L	500	ND	86	70-130			
Matrix Spike (2204374-MS2)			**Source: 22E1480-01**		Prepared & Analyzed: 05/26/22						
Iron	513	6.8	100	µg/L	500	20.7	98	70-130			
Batch 2204465 - EPA 200 No Digestion											
Blank (2204465-BLK1)					Prepared & Analyzed: 05/31/22						
Aluminum	ND	0.52	20	µg/L							
Silver	ND	0.15	0.50	"							
LCS (2204465-BS1)					Prepared & Analyzed: 05/31/22						
Aluminum	431	0.52	20	µg/L	500		86	85-115			
Silver	87.7	0.15	0.50	"	100		88	85-115			
Matrix Spike (2204465-MS1)			**Source: 22E1180-01**		Prepared & Analyzed: 05/31/22						
Aluminum	459	0.52	20	µg/L	500	17.0	88	70-130			
Silver	100	0.15	0.50	"	100	ND	100	70-130			
Matrix Spike (2204465-MS2)			**Source: 22E1254-01**		Prepared & Analyzed: 05/31/22						
Aluminum	447	0.52	20	µg/L	500	12.2	87	70-130			
Silver	99.7	0.15	0.50	"	100	ND	100	70-130			

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TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204332 - EPA 5030 Water GC											
Blank (2204332-BLK1)					Prepared & Analyzed: 05/25/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*21.0*			"	*20.0*		*105*	*65-135*			
LCS (2204332-BS1)					Prepared & Analyzed: 05/25/22						
Gasoline	448	10	50	µg/L	500		90	70-130			
Surrogate: o-Chlorotoluene (Gas)	*21.3*			"	*20.0*		*107*	*65-135*			
LCS Dup (2204332-BSD1)					Prepared & Analyzed: 05/25/22						
Gasoline	472	10	50	µg/L	500		94	70-130	5	30	
Surrogate: o-Chlorotoluene (Gas)	*20.5*			"	*20.0*		*102*	*65-135*			
Matrix Spike (2204332-MS1)			**Source: 22E1449-01**		Prepared & Analyzed: 05/25/22						
Gasoline	443	10	50	µg/L	500	ND	89	68-132			
Surrogate: o-Chlorotoluene (Gas)	*22.1*			"	*20.0*		*110*	*65-135*			
Matrix Spike Dup (2204332-MSD1)			**Source: 22E1449-01**		Prepared & Analyzed: 05/25/22						
Gasoline	388	10	50	µg/L	500	ND	78	68-132	13	32	
Surrogate: o-Chlorotoluene (Gas)	*20.5*			"	*20.0*		*102*	*65-135*			

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Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204442 - EPA 5030 Water MS											
Blank (2204442-BLK1)					Prepared & Analyzed: 05/26/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Surrogate: Toluene-d8	*9.55*			"	*10.0*		*96*	*72-125*			
LCS (2204442-BS1)					Prepared & Analyzed: 05/26/22						
Methyl tert-butyl ether	23.6	0.095	0.50	µg/L	20.0		118	52-130			
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			
LCS Dup (2204442-BSD1)					Prepared & Analyzed: 05/26/22						
Methyl tert-butyl ether	23.0	0.095	0.50	µg/L	20.0		115	52-130	3	30	
Surrogate: Toluene-d8	*9.98*			"	*10.0*		*100*	*72-125*			
Matrix Spike (2204442-MS1)			**Source: 22E1449-04**		Prepared & Analyzed: 05/26/22						
Methyl tert-butyl ether	21.1	0.095	0.50	µg/L	20.0	ND	105	52-140			
Surrogate: Toluene-d8	*10.2*			"	*10.0*		*102*	*72-125*			
Matrix Spike Dup (2204442-MSD1)			**Source: 22E1449-04**		Prepared & Analyzed: 05/26/22						
Methyl tert-butyl ether	21.6	0.095	0.50	µg/L	20.0	ND	108	52-140	3	30	
Surrogate: Toluene-d8	*10.2*			"	*10.0*		*102*	*72-125*			

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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22E1449 (__1__of__1__)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches.

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

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[ ] **OTHER**

GEOTRACKER

EDF REPORT YES [X] [ ] NO

GLOBAL ID.

FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	CONTAINER MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	TSS, TDS, Hardness, Alkalinity, NO2-N, NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
5/24/22	10:00	R-15-14-SC		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
5/24/22	10:00	R-15-15-SC		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
5/24/22	13:45	R-15-16-CB		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
5/24/22	14:15	R-15-17-CB		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	INVOICE TO:
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	**Project No. 750.10 Task 0620.01**
				Surface water			6											X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H2SO4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Stillwater (Esther Adelstein)	5/24/22 1650		

RECEIVED AT LAB BY: DATE/TIME: 5/24/22 1645 CONDITIONS/COMMENTS: 1-2/0.5

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER AIR BILL #

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

June 03, 2022

CLS Work Order #: 22E1534
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 05/25/22 16:23. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

06/03/22 08:18

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1534
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-18-RR-TOP (22E1534-01) Surface Water Sampled: 05/25/22 10:50 Received: 05/25/22 16:23										
Ammonia as N	**0.072**	0.025	0.10	mg/L	1	2204373	05/26/22	05/26/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**4.4**	0.50	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	J
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.53**	0.026	0.50	"	"	2204346	05/26/22	05/26/22	EPA 300.0	
Cyanide (total)	**0.0026**	0.0012	0.0050	"	"	2204367	05/26/22	05/26/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2204384	05/26/22	05/31/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2204346	05/26/22	05/26/22	EPA 300.0	
Orthophosphate as PO4	**0.018**	0.0051	0.15	"	"	2204349	05/26/22	05/26/22	SM4500-P E	J
Sulfate as SO4	**0.73**	0.038	0.50	"	"	2204346	05/26/22	05/26/22	EPA 300.0	
Total Alkalinity	**4.4**	1.0	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	J
Total Dissolved Solids	**14**	5.0	10	"	"	2204387	05/26/22	05/27/22	SM2540C	
Total Hardness as CaCO3	**4.8**	0.19	1.0	"	"	2204391	05/27/22	05/27/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.11**	0.040	0.20	"	"	2204418	05/27/22	05/27/22	SM4500-NH3F-1997	J
Total Organic Carbon	**1.8**	0.54	1.0	"	"	2204441	05/31/22	05/31/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2204411	05/27/22	05/27/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2204467	05/31/22	06/01/22	SM2540D	
IS-I-RR (22E1534-02) Surface Water Sampled: 05/25/22 11:50 Received: 05/25/22 16:23										
Ammonia as N	**0.081**	0.025	0.10	mg/L	1	2204373	05/26/22	05/26/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**3.4**	0.50	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	J
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.70**	0.026	0.50	"	"	2204346	05/26/22	05/26/22	EPA 300.0	
Cyanide (total)	**0.0030**	0.0012	0.0050	"	"	2204367	05/26/22	05/26/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2204384	05/26/22	05/31/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	
Nitrate/Nitrite as N	**0.14**	0.055	0.40	"	"	2204346	05/26/22	05/26/22	EPA 300.0	J
Orthophosphate as PO4	**0.010**	0.0051	0.15	"	"	2204349	05/26/22	05/26/22	SM4500-P E	J

06/03/22 08:18

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1534
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-I-RR (22E1534-02) Surface Water	**Sampled: 05/25/22 11:50**		**Received: 05/25/22 16:23**							
Sulfate as SO4	**0.93**	0.038	0.50	mg/L	1	2204346	05/26/22	05/26/22	EPA 300.0	
Total Alkalinity	**3.4**	1.0	5.0	"	"	2204382	05/26/22	05/26/22	SM2320B	J
Total Dissolved Solids	**9.0**	5.0	10	"	"	2204387	05/26/22	05/27/22	SM2540C	J
Total Hardness as CaCO3	**5.3**	0.19	1.0	"	"	2204391	05/27/22	05/27/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.17**	0.040	0.20	"	"	2204418	05/27/22	05/27/22	SM4500-NH3F-1997	J
Total Organic Carbon	**2.1**	0.54	1.0	"	"	2204441	05/31/22	05/31/22	SM5310B	
Total Phosphorus as P	**0.061**	0.023	0.050	"	"	2204411	05/27/22	05/27/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2204467	05/31/22	06/01/22	SM2540D	

06/03/22 08:18

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1534
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-18-RR-TOP (22E1534-01) Surface Water Sampled: 05/25/22 10:50 Received: 05/25/22 16:23										
Diesel	ND	0.0021	0.050	mg/L	1	2204361	05/25/22	05/26/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*86 %*	*65-135*		"	"	"	"	
IS-I-RR (22E1534-02) Surface Water Sampled: 05/25/22 11:50 Received: 05/25/22 16:23										
Diesel	ND	0.0021	0.050	mg/L	1	2204361	05/25/22	05/26/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*108 %*	*65-135*		"	"	"	"	

06/03/22 08:18

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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1534
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-18-RR-TOP (22E1534-01) Surface Water Sampled: 05/25/22 10:50 Received: 05/25/22 16:23										
Aluminum	**54**	1.6	20	µg/L	1	2204390	05/27/22	05/27/22	EPA 200.8	
Barium	**2.0**	0.14	5.0	"	"	"	"	"	"	J
Calcium	**1700**	27	1000	"	"	2204391	05/27/22	05/27/22	EPA 200.7	
Iron	**11**	9.1	100	"	"	"	"	"	"	J
Magnesium	**110**	21	1000	"	"	"	"	"	"	J
Manganese	**1.6**	0.050	2.0	"	"	2204390	05/27/22	05/27/22	EPA 200.8	J
Potassium	**290**	61	1000	"	"	2204391	05/27/22	05/31/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2204390	05/27/22	05/27/22	EPA 200.8	
Sodium	**2800**	34	1000	"	"	2204391	05/27/22	05/27/22	EPA 200.7	
IS-I-RR (22E1534-02) Surface Water Sampled: 05/25/22 11:50 Received: 05/25/22 16:23										
Aluminum	**560**	1.6	20	µg/L	1	2204390	05/27/22	05/27/22	EPA 200.8	
Barium	**3.6**	0.14	5.0	"	"	"	"	"	"	J
Calcium	**1900**	27	1000	"	"	2204391	05/27/22	05/27/22	EPA 200.7	
Iron	**170**	9.1	100	"	"	"	"	"	"	
Magnesium	**130**	21	1000	"	"	"	"	"	"	J
Manganese	**5.3**	0.050	2.0	"	"	2204390	05/27/22	05/27/22	EPA 200.8	
Potassium	**370**	61	1000	"	"	2204391	05/27/22	05/31/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2204390	05/27/22	05/27/22	EPA 200.8	
Sodium	**1900**	34	1000	"	"	2204391	05/27/22	05/27/22	EPA 200.7	

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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
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Project Manager: Emily Applequist

CLS Work Order #: 22E1534
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-18-RR-TOP (22E1534-01) Surface Water Sampled: 05/25/22 10:50 Received: 05/25/22 16:23										
Aluminum	**28**	0.52	20	µg/L	1	2204465	05/31/22	05/31/22	EPA 200.8	
Antimony	ND	0.57	6.0	"	"	"	"	06/01/22	"	
Arsenic	ND	0.27	2.0	"	"	"	"	"	"	
Barium	**2.1**	0.37	5.0	"	"	"	"	"	"	J
Beryllium	ND	0.26	1.0	"	"	"	"	"	"	
Boron	**8.2**	4.1	20	"	"	"	"	"	"	J
Cadmium	ND	0.17	0.50	"	"	"	"	"	"	
Chromium	ND	0.28	1.0	"	"	"	"	"	"	
Cobalt	ND	0.11	2.0	"	"	"	"	"	"	
Copper	ND	0.26	2.0	"	"	"	"	"	"	
Iron	ND	6.8	100	"	"	2204459	05/31/22	05/31/22	EPA 200.7	
Iron	**6.0**	5.5	20	"	"	2204465	05/31/22	06/01/22	EPA 200.8	J
Lead	ND	0.23	5.0	"	"	"	"	"	"	
Manganese	**1.7**	0.16	2.0	"	"	"	"	"	"	J
Mercury	ND	1.0	1.0	"	"	"	"	"	"	
Molybdenum	ND	0.55	2.0	"	"	"	"	"	"	
Nickel	ND	0.22	2.0	"	"	"	"	"	"	
Phosphorus	ND	42	100	"	"	"	"	"	"	
Selenium	ND	1.1	5.0	"	"	"	"	"	"	
Silica (SiO2)	ND	150	500	"	"	"	"	"	"	
Silicon	ND	69	100	"	"	"	"	"	"	
Silver	ND	0.15	0.50	"	"	"	"	"	"	
Strontium	ND	20	20	"	"	"	"	"	"	
Thallium	ND	0.11	1.0	"	"	"	"	"	"	
Tin	ND	10	10	"	"	"	"	"	"	
Tungsten	ND	10	10	"	"	"	"	"	"	
Uranium	ND	2.0	5.0	"	"	"	"	"	"	
Vanadium	ND	0.44	3.0	"	"	"	"	"	"	
Zinc	**2.2**	0.65	10	"	"	"	"	"	"	J

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Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1534
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-I-RR (22E1534-02) Surface Water	**Sampled: 05/25/22 11:50**		**Received: 05/25/22 16:23**							
Aluminum	**30**	0.52	20	µg/L	1	2204465	05/31/22	05/31/22	EPA 200.8	
Antimony	ND	0.57	6.0	"	"	"	"	06/01/22	"	
Arsenic	**0.37**	0.27	2.0	"	"	"	"	"	"	J
Barium	**2.2**	0.37	5.0	"	"	"	"	"	"	J
Beryllium	ND	0.26	1.0	"	"	"	"	"	"	
Boron	**8.0**	4.1	20	"	"	"	"	"	"	J
Cadmium	ND	0.17	0.50	"	"	"	"	"	"	
Chromium	ND	0.28	1.0	"	"	"	"	"	"	
Cobalt	ND	0.11	2.0	"	"	"	"	"	"	
Copper	ND	0.26	2.0	"	"	"	"	"	"	
Iron	**7.4**	6.8	100	"	"	2204459	05/31/22	05/31/22	EPA 200.7	J
Iron	**6.9**	5.5	20	"	"	2204465	05/31/22	06/01/22	EPA 200.8	J
Lead	ND	0.23	5.0	"	"	"	"	"	"	
Manganese	**1.9**	0.16	2.0	"	"	"	"	"	"	J
Mercury	ND	1.0	1.0	"	"	"	"	"	"	
Molybdenum	ND	0.55	2.0	"	"	"	"	"	"	
Nickel	ND	0.22	2.0	"	"	"	"	"	"	
Phosphorus	ND	42	100	"	"	"	"	"	"	
Selenium	ND	1.1	5.0	"	"	"	"	"	"	
Silica (SiO2)	ND	150	500	"	"	"	"	"	"	
Silicon	ND	69	100	"	"	"	"	"	"	
Silver	ND	0.15	0.50	"	"	"	"	"	"	
Strontium	ND	20	20	"	"	"	"	"	"	
Thallium	ND	0.11	1.0	"	"	"	"	"	"	
Tin	ND	10	10	"	"	"	"	"	"	
Tungsten	ND	10	10	"	"	"	"	"	"	
Uranium	ND	2.0	5.0	"	"	"	"	"	"	
Vanadium	ND	0.44	3.0	"	"	"	"	"	"	
Zinc	**1.1**	0.65	10	"	"	"	"	"	"	J

06/03/22 08:18

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1534**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-18-RR-TOP (22E1534-01) Surface Water Sampled: 05/25/22 10:50 Received: 05/25/22 16:23										
Gasoline	ND	10	50	µg/L	1	2204451	05/31/22	05/31/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*100 %*	*65-135*		"	"	"	"	
IS-I-RR (22E1534-02) Surface Water Sampled: 05/25/22 11:50 Received: 05/25/22 16:23										
Gasoline	ND	10	50	µg/L	1	2204451	05/31/22	05/31/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*99 %*	*65-135*		"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1534**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-18-RR-TOP (22E1534-01) Surface Water Sampled: 05/25/22 10:50 Received: 05/25/22 16:23										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2204442	05/26/22	05/26/22	EPA 8260B	
Surrogate: Toluene-d8			*96 %*	*72-125*		"	"	"	"	
IS-I-RR (22E1534-02) Surface Water Sampled: 05/25/22 11:50 Received: 05/25/22 16:23										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2204442	05/26/22	05/26/22	EPA 8260B	
Surrogate: Toluene-d8			*97 %*	*72-125*		"	"	"	"	

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Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1534
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204346 - General Preparation											
Blank (2204346-BLK1)					Prepared & Analyzed: 05/26/22						
Chloride	0.292	0.026	0.50	mg/L							J
Sulfate as SO4	ND	0.038	0.50	"							
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2204346-BS1)					Prepared & Analyzed: 05/26/22						
Chloride	4.68	0.026	0.50	mg/L	5.00		94	80-120			
Sulfate as SO4	4.77	0.038	0.50	"	5.00		95	80-120			
Nitrate/Nitrite as N	3.94	0.055	0.40	"	4.00		98	80-120			
LCS Dup (2204346-BSD1)					Prepared & Analyzed: 05/26/22						
Chloride	4.87	0.026	0.50	mg/L	5.00		97	80-120	4	20	
Sulfate as SO4	4.95	0.038	0.50	"	5.00		99	80-120	4	20	
Nitrate/Nitrite as N	4.08	0.055	0.40	"	4.00		102	80-120	4	20	
Matrix Spike (2204346-MS1)			**Source: 22E1534-01**		Prepared & Analyzed: 05/26/22						
Sulfate as SO4	5.54	0.038	0.50	mg/L	5.00	0.727	96	80-120			
Chloride	5.10	0.026	0.50	"	5.00	0.533	91	80-120			
Nitrate/Nitrite as N	4.01	0.055	0.40	"	4.00	ND	100	80-120			
Matrix Spike Dup (2204346-MSD1)			**Source: 22E1534-01**		Prepared & Analyzed: 05/26/22						
Sulfate as SO4	5.73	0.038	0.50	mg/L	5.00	0.727	100	80-120	3	20	
Chloride	5.26	0.026	0.50	"	5.00	0.533	94	80-120	3	20	
Nitrate/Nitrite as N	4.14	0.055	0.40	"	4.00	ND	103	80-120	3	20	
Batch 2204349 - General Prep											
Blank (2204349-BLK1)					Prepared & Analyzed: 05/26/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							

06/03/22 08:18

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COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204349 - General Prep											
LCS (2204349-BS1)					Prepared & Analyzed: 05/26/22						
Orthophosphate as PO4	0.868	0.0051	0.15	mg/L	0.918		95	80-120			
LCS Dup (2204349-BSD1)					Prepared & Analyzed: 05/26/22						
Orthophosphate as PO4	0.884	0.0051	0.15	mg/L	0.918		96	80-120	2	20	
Matrix Spike (2204349-MS1)			**Source: 22E1449-01**		Prepared & Analyzed: 05/26/22						
Orthophosphate as PO4	0.851	0.0051	0.15	mg/L	0.918	0.0220	90	75-125			
Matrix Spike Dup (2204349-MSD1)			**Source: 22E1449-01**		Prepared & Analyzed: 05/26/22						
Orthophosphate as PO4	0.851	0.0051	0.15	mg/L	0.918	0.0220	90	75-125	0	25	
Batch 2204367 - General Preparation											
Blank (2204367-BLK1)					Prepared & Analyzed: 05/26/22						
Cyanide (total)	ND	0.0012	0.0050	mg/L							
LCS (2204367-BS1)					Prepared & Analyzed: 05/26/22						
Cyanide (total)	0.0780	0.0012	0.0050	mg/L	0.100		78	75-125			
LCS Dup (2204367-BSD1)					Prepared & Analyzed: 05/26/22						
Cyanide (total)	0.0817	0.0012	0.0050	mg/L	0.100		82	75-125	5	25	
Matrix Spike (2204367-MS1)			**Source: 22E1180-01**		Prepared & Analyzed: 05/26/22						
Cyanide (total)	0.0925	0.0012	0.0050	mg/L	0.100	0.00230	90	75-125			
Matrix Spike Dup (2204367-MSD1)			**Source: 22E1180-01**		Prepared & Analyzed: 05/26/22						
Cyanide (total)	0.0939	0.0012	0.0050	mg/L	0.100	0.00230	92	75-125	2	25	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1534
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204373 - General Preparation											
Blank (2204373-BLK1)					Prepared & Analyzed: 05/26/22						
Ammonia as N	ND	0.025	0.10	mg/L							
LCS (2204373-BS1)					Prepared & Analyzed: 05/26/22						
Ammonia as N	0.481	0.025	0.10	mg/L	0.500		96	80-120			
LCS Dup (2204373-BSD1)					Prepared & Analyzed: 05/26/22						
Ammonia as N	0.494	0.025	0.10	mg/L	0.500		99	80-120	3	25	
Matrix Spike (2204373-MS1)			**Source: 22E1453-02**		Prepared & Analyzed: 05/26/22						
Ammonia as N	0.734	0.025	0.10	mg/L	0.500	0.213	104	75-125			
Matrix Spike Dup (2204373-MSD1)			**Source: 22E1453-02**		Prepared & Analyzed: 05/26/22						
Ammonia as N	0.744	0.025	0.10	mg/L	0.500	0.213	106	75-125	1	25	
Batch 2204382 - General Prep											
Blank (2204382-BLK1)					Prepared & Analyzed: 05/26/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Blank (2204382-BLK2)					Prepared & Analyzed: 05/26/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204382 - General Prep											
Duplicate (2204382-DUP1)			**Source: 22E1403-01**		Prepared & Analyzed: 05/26/22						
Total Alkalinity	6.80	1.0	5.0	mg/L		6.40			6	20	
Bicarbonate as CaCO3	6.80	0.50	5.0	"		6.40			6	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Duplicate (2204382-DUP2)			**Source: 22E1541-01**		Prepared & Analyzed: 05/26/22						
Total Alkalinity	411	1.0	5.0	mg/L		429			4	20	
Bicarbonate as CaCO3	411	0.50	5.0	"		429			4	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Batch 2204384 - Solvent Extract											
Blank (2204384-BLK1)					Prepared: 05/26/22 Analyzed: 05/31/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2204384-BS1)					Prepared: 05/26/22 Analyzed: 05/31/22						
Hexane Extractable Material (HEM, Oil & Grease)	37.3	1.0	5.0	mg/L	40.0		93	78-114			
LCS Dup (2204384-BSD1)					Prepared: 05/26/22 Analyzed: 05/31/22						
Hexane Extractable Material (HEM, Oil & Grease)	37.1	1.0	5.0	mg/L	40.0		93	78-114	0.5	18	
Batch 2204387 - General Preparation											
Blank (2204387-BLK1)					Prepared: 05/26/22 Analyzed: 05/27/22						
Total Dissolved Solids	ND	5.0	10	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204387 - General Preparation											
Duplicate (2204387-DUP1)			**Source: 22E1449-01**		Prepared: 05/26/22 Analyzed: 05/27/22						
Total Dissolved Solids	26.0	5.0	10	mg/L		27.0			4	20	
Batch 2204391 - EPA 200 Series											
Blank (2204391-BLK1)					Prepared & Analyzed: 05/27/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2204391-BS1)					Prepared & Analyzed: 05/27/22						
Total Hardness as CaCO3	34.1	0.19	1.0	mg/L	33.1		103	85-115			
Matrix Spike (2204391-MS1)			**Source: 22E1417-01**		Prepared & Analyzed: 05/27/22						
Total Hardness as CaCO3	47.2	0.19	1.0	mg/L	33.1	12.8	104	70-130			
Matrix Spike (2204391-MS2)			**Source: 22E1560-01**		Prepared & Analyzed: 05/27/22						
Total Hardness as CaCO3	882	0.19	1.0	mg/L	33.1	834	147	70-130			QM-5
Batch 2204411 - General Prep											
Blank (2204411-BLK1)					Prepared & Analyzed: 05/27/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2204411-BS1)					Prepared & Analyzed: 05/27/22						
Total Phosphorus as P	0.298	0.023	0.050	mg/L	0.300		99	80-120			
LCS Dup (2204411-BSD1)					Prepared & Analyzed: 05/27/22						
Total Phosphorus as P	0.300	0.023	0.050	mg/L	0.300		100	80-120	0.7	25	

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COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204411 - General Prep											
Matrix Spike (2204411-MS1)			**Source: 22E1595-01**		Prepared & Analyzed: 05/27/22						
Total Phosphorus as P	0.318	0.023	0.050	mg/L	0.300	ND	106	75-125			
Matrix Spike Dup (2204411-MSD1)			**Source: 22E1595-01**		Prepared & Analyzed: 05/27/22						
Total Phosphorus as P	0.312	0.023	0.050	mg/L	0.300	ND	104	75-125	2	30	
Batch 2204418 - General Preparation											
Blank (2204418-BLK1)					Prepared & Analyzed: 05/27/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2204418-BS1)					Prepared & Analyzed: 05/27/22						
Total Kjeldahl Nitrogen	0.432	0.040	0.20	mg/L	0.500		86	80-120			
LCS Dup (2204418-BSD1)					Prepared & Analyzed: 05/27/22						
Total Kjeldahl Nitrogen	0.435	0.040	0.20	mg/L	0.500		87	80-120	0.7	20	
Matrix Spike (2204418-MS1)			**Source: 22E1539-01**		Prepared & Analyzed: 05/27/22						
Total Kjeldahl Nitrogen	0.323	0.040	0.20	mg/L	0.500	0.0960	45	75-125			QM-7
Matrix Spike Dup (2204418-MSD1)			**Source: 22E1539-01**		Prepared & Analyzed: 05/27/22						
Total Kjeldahl Nitrogen	0.329	0.040	0.20	mg/L	0.500	0.0960	47	75-125	2	25	QM-7
Batch 2204441 - General Prep											
Blank (2204441-BLK1)					Prepared & Analyzed: 05/31/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204441 - General Prep											
LCS (2204441-BS1)					Prepared & Analyzed: 05/31/22						
Total Organic Carbon	10.3	0.54	1.0	mg/L	10.0		103	75-125			
LCS Dup (2204441-BSD1)					Prepared & Analyzed: 05/31/22						
Total Organic Carbon	10.4	0.54	1.0	mg/L	10.0		104	75-125	1	25	
Matrix Spike (2204441-MS1)			**Source: 22E1449-02**		Prepared & Analyzed: 05/31/22						
Total Organic Carbon	12.7	0.54	1.0	mg/L	10.0	2.08	106	75-125			
Matrix Spike Dup (2204441-MSD1)			**Source: 22E1449-02**		Prepared & Analyzed: 05/31/22						
Total Organic Carbon	12.6	0.54	1.0	mg/L	10.0	2.08	105	75-125	1	25	
Batch 2204467 - General Preparation											
Duplicate (2204467-DUP1)			**Source: 22E1534-01**		Prepared: 05/31/22 Analyzed: 06/01/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	

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COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204361 - EPA 3510B GCNV											
Blank (2204361-BLK1)					Prepared: 05/25/22 Analyzed: 05/26/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Surrogate: o-Terphenyl	*0.0302*			*"*	*0.0250*		*121*	*65-135*			
LCS (2204361-BS1)					Prepared: 05/25/22 Analyzed: 05/26/22						
Diesel	1.71	0.0021	0.050	mg/L	2.50		68	65-135			
Surrogate: o-Terphenyl	*0.0223*			*"*	*0.0250*		*89*	*65-135*			
LCS Dup (2204361-BSD1)					Prepared: 05/25/22 Analyzed: 05/26/22						
Diesel	1.83	0.0021	0.050	mg/L	2.50		73	65-135	7	30	
Surrogate: o-Terphenyl	*0.0210*			*"*	*0.0250*		*84*	*65-135*			
Matrix Spike (2204361-MS1)			**Source: 22E1429-01**		Prepared: 05/25/22 Analyzed: 05/26/22						
Diesel	2.52	0.0021	0.050	mg/L	2.50	ND	101	46-137			
Surrogate: o-Terphenyl	*0.0288*			*"*	*0.0250*		*115*	*65-135*			
Matrix Spike Dup (2204361-MSD1)			**Source: 22E1429-01**		Prepared: 05/25/22 Analyzed: 05/26/22						
Diesel	2.30	0.0021	0.050	mg/L	2.50	ND	92	46-137	9	30	
Surrogate: o-Terphenyl	*0.0244*			*"*	*0.0250*		*97*	*65-135*			

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Project: SMUD In situ & Chemistry Monitoring
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COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204390 - EPA 200 Series											
Blank (2204390-BLK1)					Prepared & Analyzed: 05/27/22						
Aluminum	ND	1.6	20	µg/L							
Antimony	ND	0.34	6.0	"							
Arsenic	ND	0.45	2.0	"							
Barium	ND	0.14	5.0	"							
Manganese	ND	0.050	2.0	"							
Silver	ND	0.070	0.50	"							
LCS (2204390-BS1)					Prepared & Analyzed: 05/27/22						
Aluminum	468	1.6	20	µg/L	500		94	85-115			
Antimony	96.0	0.34	6.0	"	100		96	85-115			
Arsenic	94.7	0.45	2.0	"	100		95	85-115			
Barium	99.1	0.14	5.0	"	100		99	85-115			
Manganese	97.3	0.050	2.0	"	100		97	85-115			
Silver	99.5	0.070	0.50	"	100		100	85-115			
Matrix Spike (2204390-MS1)			**Source: 22E1594-01**		Prepared & Analyzed: 05/27/22						
Aluminum	560	1.6	20	µg/L	500	73.3	97	70-130			
Antimony	108	0.34	6.0	"	100	11.1	97	70-130			
Arsenic	120	0.45	2.0	"	100	26.8	93	70-130			
Barium	105	0.14	5.0	"	100	3.55	102	70-130			
Manganese	149	0.050	2.0	"	100	56.5	93	70-130			
Silver	99.7	0.070	0.50	"	100	ND	100	70-130			
Matrix Spike (2204390-MS2)			**Source: 22E1534-01**		Prepared & Analyzed: 05/27/22						
Aluminum	516	1.6	20	µg/L	500	54.2	92	70-130			
Antimony	93.8	0.34	6.0	"	100	ND	94	70-130			
Arsenic	89.2	0.45	2.0	"	100	ND	89	70-130			
Barium	100	0.14	5.0	"	100	2.01	98	70-130			
Manganese	93.8	0.050	2.0	"	100	1.59	92	70-130			
Silver	97.8	0.070	0.50	"	100	ND	98	70-130			

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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204391 - EPA 200 Series											
Blank (2204391-BLK1)					Prepared & Analyzed: 05/27/22						
Boron	ND	5.3	50	µg/L							
Calcium	36.1	27	1000	"							J
Iron	ND	9.1	100	"							
Magnesium	ND	21	1000	"							
Manganese	ND	0.92	10	"							
Potassium	ND	61	1000	"							
Sodium	ND	34	1000	"							
LCS (2204391-BS1)					Prepared & Analyzed: 05/27/22						
Boron	480	5.3	50	µg/L	500		96	85-115			
Calcium	4880	27	1000	"	5000		98	85-115			
Iron	467	9.1	100	"	500		93	85-115			
Magnesium	5310	21	1000	"	5000		106	85-115			
Manganese	514	0.92	10	"	500		103	85-115			
Potassium	5130	61	1000	"	5000		103	85-115			
Sodium	5110	34	1000	"	5000		102	85-115			
Matrix Spike (2204391-MS1)			**Source: 22E1417-01**		Prepared & Analyzed: 05/27/22						
Boron	505	5.3	50	µg/L	500	6.55	100	70-130			
Calcium	10100	27	1000	"	5000	5190	97	70-130			
Iron	494	9.1	100	"	500	ND	99	70-130			
Magnesium	5360	21	1000	"	5000	ND	107	70-130			
Manganese	526	0.92	10	"	500	ND	105	70-130			
Potassium	5310	61	1000	"	5000	ND	106	70-130			
Sodium	7080	34	1000	"	5000	1960	102	70-130			
Matrix Spike (2204391-MS2)			**Source: 22E1560-01**		Prepared & Analyzed: 05/27/22						
Boron	581	5.3	50	µg/L	500	68.1	103	70-130			
Calcium	105000	27	1000	"	5000	97400	156	70-130			QM-4X
Iron	681	9.1	100	"	500	195	97	70-130			
Magnesium	150000	21	1000	"	5000	143000	142	70-130			QM-4X
Manganese	1020	0.92	10	"	500	491	106	70-130			
Potassium	12000	61	1000	"	5000	7530	90	70-130			

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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204391 - EPA 200 Series											
Matrix Spike (2204391-MS2)			**Source: 22E1560-01**		Prepared & Analyzed: 05/27/22						
Sodium	53100	34	1000	µg/L	5000	47700	107	70-130			

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COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204459 - EPA 200 No Digestion											
Blank (2204459-BLK1)					Prepared & Analyzed: 05/31/22						
Iron	ND	6.8	100	µg/L							
LCS (2204459-BS1)					Prepared & Analyzed: 05/31/22						
Iron	519	6.8	100	µg/L	500		104	85-115			
Matrix Spike (2204459-MS1)			**Source: 22E1534-01**		Prepared & Analyzed: 05/31/22						
Iron	502	6.8	100	µg/L	500	ND	100	70-130			
Batch 2204465 - EPA 200 No Digestion											
Blank (2204465-BLK1)					Prepared & Analyzed: 05/31/22						
Aluminum	ND	0.52	20	µg/L							
Silver	ND	0.15	0.50	"							
LCS (2204465-BS1)					Prepared & Analyzed: 05/31/22						
Aluminum	431	0.52	20	µg/L	500		86	85-115			
Silver	87.7	0.15	0.50	"	100		88	85-115			
Matrix Spike (2204465-MS1)			**Source: 22E1180-01**		Prepared & Analyzed: 05/31/22						
Aluminum	459	0.52	20	µg/L	500	17.0	88	70-130			
Silver	100	0.15	0.50	"	100	ND	100	70-130			
Matrix Spike (2204465-MS2)			**Source: 22E1254-01**		Prepared & Analyzed: 05/31/22						
Aluminum	447	0.52	20	µg/L	500	12.2	87	70-130			
Silver	99.7	0.15	0.50	"	100	ND	100	70-130			

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COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204451 - EPA 5030 Water GC											
Blank (2204451-BLK1)					Prepared & Analyzed: 05/31/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*19.9*			"	*20.0*		*99*	*65-135*			
LCS (2204451-BS1)					Prepared & Analyzed: 05/31/22						
Gasoline	465	10	50	µg/L	500		93	70-130			
Surrogate: o-Chlorotoluene (Gas)	*21.0*			"	*20.0*		*105*	*65-135*			
LCS Dup (2204451-BSD1)					Prepared & Analyzed: 05/31/22						
Gasoline	507	10	50	µg/L	500		101	70-130	9	30	
Surrogate: o-Chlorotoluene (Gas)	*21.8*			"	*20.0*		*109*	*65-135*			
Matrix Spike (2204451-MS1)			**Source: 22E1595-01**		Prepared & Analyzed: 05/31/22						
Gasoline	506	10	50	µg/L	500	ND	101	68-132			
Surrogate: o-Chlorotoluene (Gas)	*20.6*			"	*20.0*		*103*	*65-135*			
Matrix Spike Dup (2204451-MSD1)			**Source: 22E1595-01**		Prepared & Analyzed: 05/31/22						
Gasoline	498	10	50	µg/L	500	ND	100	68-132	2	32	
Surrogate: o-Chlorotoluene (Gas)	*19.8*			"	*20.0*		*99*	*65-135*			

06/03/22 08:18

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1534
COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204442 - EPA 5030 Water MS											
Blank (2204442-BLK1)					Prepared & Analyzed: 05/26/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Surrogate: Toluene-d8	*9.55*			"	*10.0*		*96*	*72-125*			
LCS (2204442-BS1)					Prepared & Analyzed: 05/26/22						
Methyl tert-butyl ether	23.6	0.095	0.50	µg/L	20.0		118	52-130			
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			
LCS Dup (2204442-BSD1)					Prepared & Analyzed: 05/26/22						
Methyl tert-butyl ether	23.0	0.095	0.50	µg/L	20.0		115	52-130	3	30	
Surrogate: Toluene-d8	*9.98*			"	*10.0*		*100*	*72-125*			
Matrix Spike (2204442-MS1)			**Source: 22E1449-04**		Prepared & Analyzed: 05/26/22						
Methyl tert-butyl ether	21.1	0.095	0.50	µg/L	20.0	ND	105	52-140			
Surrogate: Toluene-d8	*10.2*			"	*10.0*		*102*	*72-125*			
Matrix Spike Dup (2204442-MSD1)			**Source: 22E1449-04**		Prepared & Analyzed: 05/26/22						
Methyl tert-butyl ether	21.6	0.095	0.50	µg/L	20.0	ND	108	52-140	3	30	
Surrogate: Toluene-d8	*10.2*			"	*10.0*		*102*	*72-125*			

06/03/22 08:18

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1534**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
QM-5	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 226534 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[x] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [x] NO [ ]

GLOBAL ID

FIELD CONDITIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	ANALYSIS REQUESTED: TSS, TDS, Hardness, Alkalinity, NO2-N, NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS: 1	2	3	5	SPECIAL INSTRUCTIONS
5/25/22	10:50	R-IS-18-R-TOC		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
5/25/22	11:50	IS-I-R-2		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	INVOICE TO
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	Project No. 750.10 Task 0620.01
				Surface water			6											X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Esther Adelstein / Stillwater	5/25/22 11:22		

RECEIVED AT LAB BY: DATE/TIME: 5/25/22 1622

CONDITIONS/COMMENTS: 4.1/3.4

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER AIR BILL #

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

June 03, 2022

CLS Work Order #: 22E1595
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 05/26/22 15:30. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

06/03/22 16:48

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1595
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-19-BI (22E1595-01) Surface Water	**Sampled: 05/26/22 10:20**		**Received: 05/26/22 15:30**							
Ammonia as N	**0.026**	0.025	0.10	mg/L	1	2204454	05/31/22	05/31/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**3.8**	0.50	5.0	"	"	2204510	06/01/22	06/01/22	SM2320B	J
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.45**	0.026	0.50	"	"	2204395	05/27/22	05/27/22	EPA 300.0	J
Cyanide (total)	ND	0.0012	0.0050	"	"	2204499	06/01/22	06/01/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2204384	05/26/22	05/31/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2204510	06/01/22	06/01/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2204395	05/27/22	05/27/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2204396	05/27/22	05/27/22	SM4500-P E	
Sulfate as SO4	**0.63**	0.038	0.50	"	"	2204395	05/27/22	05/27/22	EPA 300.0	
Total Alkalinity	**3.8**	1.0	5.0	"	"	2204510	06/01/22	06/01/22	SM2320B	J
Total Dissolved Solids	**13**	5.0	10	"	"	2204480	05/31/22	06/01/22	SM2540C	
Total Hardness as CaCO3	**4.1**	0.19	1.0	"	"	2204408	05/27/22	05/31/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.11**	0.040	0.20	"	"	2204502	06/01/22	06/01/22	SM4500-NH3F-1997	J
Total Organic Carbon	**2.1**	0.54	1.0	"	"	2204441	05/31/22	05/31/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2204411	05/27/22	05/27/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2204467	05/31/22	06/01/22	SM2540D	
IS-3-LRR (22E1595-02) Surface Water	**Sampled: 05/26/22 11:10**		**Received: 05/26/22 15:30**							
Ammonia as N	**0.045**	0.025	0.10	mg/L	1	2204454	05/31/22	05/31/22	SM4500-NH3F-1997	J
Bicarbonate as CaCO3	**4.2**	0.50	5.0	"	"	2204510	06/01/22	06/01/22	SM2320B	J
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.36**	0.026	0.50	"	"	2204395	05/27/22	05/27/22	EPA 300.0	J
Cyanide (total)	ND	0.0012	0.0050	"	"	2204499	06/01/22	06/01/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2204384	05/26/22	05/31/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2204510	06/01/22	06/01/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2204395	05/27/22	05/27/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2204396	05/27/22	05/27/22	SM4500-P E	

06/03/22 16:48

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1595
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-3-LRR (22E1595-02) Surface Water	**Sampled: 05/26/22 11:10**		**Received: 05/26/22 15:30**							
Sulfate as SO4	**0.63**	0.038	0.50	mg/L	1	2204395	05/27/22	05/27/22	EPA 300.0	
Total Alkalinity	**4.2**	1.0	5.0	"	"	2204510	06/01/22	06/01/22	SM2320B	J
Total Dissolved Solids	ND	5.0	10	"	"	2204480	05/31/22	06/01/22	SM2540C	
Total Hardness as CaCO3	**3.5**	0.19	1.0	"	"	2204408	05/27/22	05/31/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.091**	0.040	0.20	"	"	2204502	06/01/22	06/01/22	SM4500-NH3F-1997	J
Total Organic Carbon	**1.9**	0.54	1.0	"	"	2204441	05/31/22	05/31/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2204411	05/27/22	05/27/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2204467	05/31/22	06/01/22	SM2540D	
IS-2-LRR (22E1595-03) Surface Water	**Sampled: 05/26/22 12:30**		**Received: 05/26/22 15:30**							
Ammonia as N	ND	0.025	0.10	mg/L	1	2204454	05/31/22	05/31/22	SM4500-NH3F-1997	
Bicarbonate as CaCO3	**4.0**	0.50	5.0	"	"	2204510	06/01/22	06/01/22	SM2320B	J
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.57**	0.026	0.50	"	"	2204395	05/27/22	05/27/22	EPA 300.0	
Cyanide (total)	**0.0038**	0.0012	0.0050	"	"	2204499	06/01/22	06/01/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2204384	05/26/22	05/31/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2204510	06/01/22	06/01/22	SM2320B	
Nitrate/Nitrite as N	**0.061**	0.055	0.40	"	"	2204395	05/27/22	05/27/22	EPA 300.0	J
Orthophosphate as PO4	**0.030**	0.0051	0.15	"	"	2204396	05/27/22	05/27/22	SM4500-P E	J
Sulfate as SO4	**0.64**	0.038	0.50	"	"	2204395	05/27/22	05/27/22	EPA 300.0	
Total Alkalinity	**4.0**	1.0	5.0	"	"	2204510	06/01/22	06/01/22	SM2320B	J
Total Dissolved Solids	**6.0**	5.0	10	"	"	2204480	05/31/22	06/01/22	SM2540C	J
Total Hardness as CaCO3	**4.6**	0.19	1.0	"	"	2204408	05/27/22	05/31/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.074**	0.040	0.20	"	"	2204502	06/01/22	06/01/22	SM4500-NH3F-1997	J
Total Organic Carbon	**2.1**	0.54	1.0	"	"	2204441	05/31/22	05/31/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2204411	05/27/22	05/27/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2204467	05/31/22	06/01/22	SM2540D	

06/03/22 16:48

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1595
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-19-BI (22E1595-01) Surface Water	**Sampled: 05/26/22 10:20**		**Received: 05/26/22 15:30**							
Diesel	ND	0.0021	0.050	mg/L	1	2204504	06/01/22	06/02/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*97 %*	*65-135*		"	"	"	"	
IS-3-LRR (22E1595-02) Surface Water	**Sampled: 05/26/22 11:10**		**Received: 05/26/22 15:30**							
Diesel	ND	0.0021	0.050	mg/L	1	2204504	06/01/22	06/02/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*103 %*	*65-135*		"	"	"	"	
IS-2-LRR (22E1595-03) Surface Water	**Sampled: 05/26/22 12:30**		**Received: 05/26/22 15:30**							
Diesel	ND	0.0021	0.050	mg/L	1	2204504	06/01/22	06/02/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*116 %*	*65-135*		"	"	"	"	

06/03/22 16:48

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1595
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-19-BI (22E1595-01) Surface Water	**Sampled: 05/26/22 10:20**		**Received: 05/26/22 15:30**							
Aluminum	**60**	1.6	20	µg/L	1	2204477	05/31/22	06/01/22	EPA 200.8	
Antimony	ND	0.34	6.0	"	"	"	"	"	"	
Arsenic	ND	0.45	2.0	"	"	"	"	"	"	
Barium	**2.0**	0.14	5.0	"	"	"	"	"	"	J
Beryllium	ND	0.31	1.0	"	"	"	"	"	"	
Boron	**50**	4.1	20	"	"	"	"	"	"	
Cadmium	ND	0.17	0.50	"	"	"	"	"	"	
Calcium	**1500**	27	1000	"	"	2204408	05/27/22	05/31/22	EPA 200.7	
Calcium	**1700**	200	200	"	"	2204477	05/31/22	06/01/22	EPA 200.8	
Chromium	**0.57**	0.14	1.0	"	"	"	"	"	"	J
Cobalt	ND	0.060	2.0	"	"	"	"	"	"	
Copper	**0.35**	0.090	2.0	"	"	"	"	"	"	J
Iron	**19**	3.8	20	"	"	"	"	"	"	J
Iron	**200**	9.1	100	"	"	2204408	05/27/22	05/31/22	EPA 200.7	
Lead	**0.060**	0.020	5.0	"	"	2204477	05/31/22	06/01/22	EPA 200.8	J
Magnesium	**100**	21	1000	"	"	2204408	05/27/22	05/31/22	EPA 200.7	J
Magnesium	ND	200	200	"	"	2204477	05/31/22	06/01/22	EPA 200.8	
Manganese	**1.8**	0.050	2.0	"	"	"	"	"	"	J
Molybdenum	**0.16**	0.11	2.0	"	"	"	"	"	"	J
Nickel	**0.23**	0.13	2.0	"	"	"	"	"	"	J
Potassium	**1900**	61	1000	"	"	2204408	05/27/22	05/27/22	EPA 200.7	
Potassium	ND	200	200	"	"	2204477	05/31/22	06/01/22	EPA 200.8	
Selenium	ND	0.75	5.0	"	"	"	"	"	"	
Silica (SiO2)	ND	150	500	"	"	"	"	"	"	
Silver	ND	0.070	0.50	"	"	"	"	"	"	
Sodium	**65000**	34	1000	"	"	2204408	05/27/22	05/27/22	EPA 200.7	
Sodium	**450**	200	200	"	"	2204477	05/31/22	06/01/22	EPA 200.8	
Strontium	**4.7**	0.070	20	"	"	"	"	"	"	J
Thallium	ND	0.030	1.0	"	"	"	"	"	"	
Tin	ND	10	10	"	"	"	"	"	"	
Titanium	ND	10	10	"	"	"	"	"	"	

06/03/22 16:48

Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1595
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-19-BI (22E1595-01) Surface Water	**Sampled: 05/26/22 10:20**		**Received: 05/26/22 15:30**							
Vanadium	**0.075**	0.070	3.0	µg/L	1	2204477	"	06/01/22	EPA 200.8	J
Zinc	**4.0**	0.27	10	"	"	"	"	"	"	J
IS-3-LRR (22E1595-02) Surface Water	**Sampled: 05/26/22 11:10**		**Received: 05/26/22 15:30**							
Aluminum	**60**	1.6	20	µg/L	1	2204477	05/31/22	06/01/22	EPA 200.8	
Antimony	ND	0.34	6.0	"	"	"	"	"	"	
Arsenic	**0.89**	0.45	2.0	"	"	"	"	"	"	J
Barium	**2.1**	0.14	5.0	"	"	"	"	"	"	J
Beryllium	ND	0.31	1.0	"	"	"	"	"	"	
Boron	**35**	4.1	20	"	"	"	"	"	"	
Cadmium	ND	0.17	0.50	"	"	"	"	"	"	
Calcium	**1300**	27	1000	"	"	2204408	05/27/22	05/31/22	EPA 200.7	
Calcium	**1200**	200	200	"	"	2204477	05/31/22	06/01/22	EPA 200.8	
Chromium	**0.48**	0.14	1.0	"	"	"	"	"	"	J
Cobalt	ND	0.060	2.0	"	"	"	"	"	"	
Copper	**0.32**	0.090	2.0	"	"	"	"	"	"	J
Iron	**15**	3.8	20	"	"	"	"	"	"	J
Iron	**670**	9.1	100	"	"	2204408	05/27/22	05/31/22	EPA 200.7	
Lead	**0.041**	0.020	5.0	"	"	2204477	05/31/22	06/01/22	EPA 200.8	J
Magnesium	**95**	21	1000	"	"	2204408	05/27/22	05/31/22	EPA 200.7	J
Magnesium	ND	200	200	"	"	2204477	05/31/22	06/01/22	EPA 200.8	
Manganese	**1.8**	0.050	2.0	"	"	"	"	"	"	J
Molybdenum	**0.18**	0.11	2.0	"	"	"	"	"	"	J
Nickel	**0.33**	0.13	2.0	"	"	"	"	"	"	J
Potassium	**3300**	61	1000	"	"	2204408	05/27/22	05/27/22	EPA 200.7	
Potassium	ND	200	200	"	"	2204477	05/31/22	06/01/22	EPA 200.8	
Selenium	ND	0.75	5.0	"	"	"	"	"	"	
Silica (SiO2)	ND	150	500	"	"	"	"	"	"	
Silver	ND	0.070	0.50	"	"	"	"	"	"	
Sodium	**69000**	34	1000	"	"	2204408	05/27/22	05/27/22	EPA 200.7	
Sodium	**370**	200	200	"	"	2204477	05/31/22	06/01/22	EPA 200.8	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1595
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-3-LRR (22E1595-02) Surface Water	**Sampled: 05/26/22 11:10**		**Received: 05/26/22 15:30**							
Strontium	**4.7**	0.070	20	µg/L	1	2204477	"	06/01/22	EPA 200.8	J
Thallium	ND	0.030	1.0	"	"	"	"	"	"	
Tin	ND	10	10	"	"	"	"	"	"	
Titanium	ND	10	10	"	"	"	"	"	"	
Vanadium	**0.16**	0.070	3.0	"	"	"	"	"	"	J
Zinc	ND	0.27	10	"	"	"	"	"	"	
IS-2-LRR (22E1595-03) Surface Water	**Sampled: 05/26/22 12:30**		**Received: 05/26/22 15:30**							
Aluminum	**57**	1.6	20	µg/L	1	2204477	05/31/22	06/01/22	EPA 200.8	
Antimony	ND	0.34	6.0	"	"	"	"	"	"	
Arsenic	ND	0.45	2.0	"	"	"	"	"	"	
Barium	**1.9**	0.14	5.0	"	"	"	"	"	"	J
Beryllium	ND	0.31	1.0	"	"	"	"	"	"	
Boron	**25**	4.1	20	"	"	"	"	"	"	
Cadmium	ND	0.17	0.50	"	"	"	"	"	"	
Calcium	**1700**	27	1000	"	"	2204408	05/27/22	05/31/22	EPA 200.7	
Calcium	**1600**	200	200	"	"	2204477	05/31/22	06/01/22	EPA 200.8	
Chromium	**0.41**	0.14	1.0	"	"	"	"	"	"	J
Cobalt	ND	0.060	2.0	"	"	"	"	"	"	
Copper	**0.20**	0.090	2.0	"	"	"	"	"	"	J
Iron	**16**	3.8	20	"	"	"	"	"	"	J
Iron	**20**	9.1	100	"	"	2204408	05/27/22	05/31/22	EPA 200.7	J
Lead	**0.13**	0.020	5.0	"	"	2204477	05/31/22	06/01/22	EPA 200.8	J
Magnesium	**100**	21	1000	"	"	2204408	05/27/22	05/31/22	EPA 200.7	J
Magnesium	ND	200	200	"	"	2204477	05/31/22	06/01/22	EPA 200.8	
Manganese	**1.6**	0.050	2.0	"	"	"	"	"	"	J
Molybdenum	**0.15**	0.11	2.0	"	"	"	"	"	"	J
Nickel	ND	0.13	2.0	"	"	"	"	"	"	
Potassium	**2900**	61	1000	"	"	2204408	05/27/22	05/27/22	EPA 200.7	
Potassium	ND	200	200	"	"	2204477	05/31/22	06/01/22	EPA 200.8	
Selenium	ND	0.75	5.0	"	"	"	"	"	"	

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CLS Work Order #: 22E1595
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-2-LRR (22E1595-03) Surface Water	**Sampled: 05/26/22 12:30**		**Received: 05/26/22 15:30**							
Silica (SiO2)	ND	150	500	µg/L	1	2204477	"	06/01/22	EPA 200.8	
Silver	ND	0.070	0.50	"	"	"	"	"	"	
Sodium	**150000**	34	1000	"	"	2204408	05/27/22	05/27/22	EPA 200.7	
Sodium	**410**	200	200	"	"	2204477	05/31/22	06/01/22	EPA 200.8	
Strontium	**4.6**	0.070	20	"	"	"	"	"	"	J
Thallium	ND	0.030	1.0	"	"	"	"	"	"	
Tin	ND	10	10	"	"	"	"	"	"	
Titanium	ND	10	10	"	"	"	"	"	"	
Vanadium	ND	0.070	3.0	"	"	"	"	"	"	
Zinc	**0.50**	0.27	10	"	"	"	"	"	"	J

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
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CLS Work Order #: 22E1595
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-19-BI (22E1595-01) Surface Water	**Sampled: 05/26/22 10:20**		**Received: 05/26/22 15:30**							
Aluminum	**25**	0.52	20	µg/L	1	2204465	05/31/22	05/31/22	EPA 200.8	
Antimony	ND	0.57	6.0	"	"	"	"	06/01/22	"	
Arsenic	**0.39**	0.27	2.0	"	"	"	"	"	"	J
Barium	**2.0**	0.37	5.0	"	"	"	"	"	"	J
Beryllium	ND	0.26	1.0	"	"	"	"	"	"	
Boron	**6.0**	4.1	20	"	"	"	"	"	"	J
Cadmium	ND	0.17	0.50	"	"	"	"	"	"	
Chromium	ND	0.28	1.0	"	"	"	"	"	"	
Cobalt	ND	0.11	2.0	"	"	"	"	"	"	
Copper	ND	0.26	2.0	"	"	"	"	"	"	
Iron	ND	6.8	100	"	"	2204459	05/31/22	05/31/22	EPA 200.7	
Iron	ND	5.5	20	"	"	2204465	05/31/22	06/01/22	EPA 200.8	
Lead	ND	0.23	5.0	"	"	"	"	"	"	
Manganese	**1.4**	0.16	2.0	"	"	"	"	"	"	J
Mercury	ND	1.0	1.0	"	"	"	"	06/01/22	"	
Molybdenum	ND	0.55	2.0	"	"	"	"	06/01/22	"	
Nickel	ND	0.22	2.0	"	"	"	"	"	"	
Phosphorus	ND	42	100	"	"	"	"	06/01/22	"	
Selenium	ND	1.1	5.0	"	"	"	"	06/01/22	"	
Silica (SiO2)	ND	150	500	"	"	"	"	06/01/22	"	
Silicon	ND	69	100	"	"	"	"	"	"	
Silver	ND	0.15	0.50	"	"	"	"	06/01/22	"	
Strontium	ND	20	20	"	"	"	"	"	"	
Thallium	ND	0.11	1.0	"	"	"	"	"	"	
Tin	ND	10	10	"	"	"	"	06/01/22	"	
Tungsten	ND	10	10	"	"	"	"	"	"	
Uranium	ND	2.0	5.0	"	"	"	"	06/01/22	"	
Vanadium	ND	0.44	3.0	"	"	"	"	"	"	
Zinc	**4.6**	0.65	10	"	"	"	"	"	"	J

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1595
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-3-LRR (22E1595-02) Surface Water	**Sampled: 05/26/22 11:10**		**Received: 05/26/22 15:30**							
Aluminum	**23**	0.52	20	µg/L	1	2204465	05/31/22	05/31/22	EPA 200.8	
Antimony	ND	0.57	6.0	"	"	"	"	06/01/22	"	
Arsenic	ND	0.27	2.0	"	"	"	"	"	"	
Barium	**2.0**	0.37	5.0	"	"	"	"	"	"	J
Beryllium	ND	0.26	1.0	"	"	"	"	"	"	
Boron	**4.5**	4.1	20	"	"	"	"	"	"	J
Cadmium	ND	0.17	0.50	"	"	"	"	"	"	
Chromium	ND	0.28	1.0	"	"	"	"	"	"	
Cobalt	ND	0.11	2.0	"	"	"	"	"	"	
Copper	ND	0.26	2.0	"	"	"	"	"	"	
Iron	ND	6.8	100	"	"	2204459	05/31/22	05/31/22	EPA 200.7	
Iron	ND	5.5	20	"	"	2204465	05/31/22	06/01/22	EPA 200.8	
Lead	ND	0.23	5.0	"	"	"	"	"	"	
Manganese	**1.4**	0.16	2.0	"	"	"	"	"	"	J
Mercury	ND	1.0	1.0	"	"	"	"	06/01/22	"	
Molybdenum	ND	0.55	2.0	"	"	"	"	06/01/22	"	
Nickel	ND	0.22	2.0	"	"	"	"	"	"	
Phosphorus	ND	42	100	"	"	"	"	06/01/22	"	
Selenium	ND	1.1	5.0	"	"	"	"	06/01/22	"	
Silica (SiO2)	ND	150	500	"	"	"	"	06/01/22	"	
Silicon	ND	69	100	"	"	"	"	"	"	
Silver	ND	0.15	0.50	"	"	"	"	06/01/22	"	
Strontium	ND	20	20	"	"	"	"	"	"	
Thallium	ND	0.11	1.0	"	"	"	"	"	"	
Tin	ND	10	10	"	"	"	"	06/01/22	"	
Tungsten	ND	10	10	"	"	"	"	"	"	
Uranium	ND	2.0	5.0	"	"	"	"	06/01/22	"	
Vanadium	ND	0.44	3.0	"	"	"	"	"	"	
Zinc	**0.90**	0.65	10	"	"	"	"	"	"	J

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CLS Work Order #: 22E1595
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-2-LRR (22E1595-03) Surface Water	**Sampled: 05/26/22 12:30**		**Received: 05/26/22 15:30**							
Aluminum	**23**	0.52	20	µg/L	1	2204465	05/31/22	05/31/22	EPA 200.8	
Antimony	ND	0.57	6.0	"	"	"	"	06/01/22	"	
Arsenic	ND	0.27	2.0	"	"	"	"	"	"	
Barium	**1.9**	0.37	5.0	"	"	"	"	"	"	J
Beryllium	ND	0.26	1.0	"	"	"	"	"	"	
Boron	**4.7**	4.1	20	"	"	"	"	"	"	J
Cadmium	ND	0.17	0.50	"	"	"	"	"	"	
Chromium	ND	0.28	1.0	"	"	"	"	"	"	
Cobalt	ND	0.11	2.0	"	"	"	"	"	"	
Copper	ND	0.26	2.0	"	"	"	"	"	"	
Iron	ND	6.8	100	"	"	2204459	05/31/22	05/31/22	EPA 200.7	
Iron	ND	5.5	20	"	"	2204465	05/31/22	06/01/22	EPA 200.8	
Lead	ND	0.23	5.0	"	"	"	"	"	"	
Manganese	**1.2**	0.16	2.0	"	"	"	"	"	"	J
Mercury	ND	1.0	1.0	"	"	"	"	06/01/22	"	
Molybdenum	ND	0.55	2.0	"	"	"	"	06/01/22	"	
Nickel	ND	0.22	2.0	"	"	"	"	"	"	
Phosphorus	ND	42	100	"	"	"	"	06/01/22	"	
Selenium	ND	1.1	5.0	"	"	"	"	06/01/22	"	
Silica (SiO2)	ND	150	500	"	"	"	"	06/01/22	"	
Silicon	ND	69	100	"	"	"	"	"	"	
Silver	ND	0.15	0.50	"	"	"	"	06/01/22	"	
Strontium	ND	20	20	"	"	"	"	"	"	
Thallium	ND	0.11	1.0	"	"	"	"	"	"	
Tin	ND	10	10	"	"	"	"	06/01/22	"	
Tungsten	ND	10	10	"	"	"	"	"	"	
Uranium	ND	2.0	5.0	"	"	"	"	06/01/22	"	
Vanadium	ND	0.44	3.0	"	"	"	"	"	"	
Zinc	**1.5**	0.65	10	"	"	"	"	"	"	J

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1595**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-19-BI (22E1595-01) Surface Water Sampled: 05/26/22 10:20 Received: 05/26/22 15:30										
Gasoline	ND	10	50	µg/L	1	2204451	05/31/22	05/31/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*97 %*	*65-135*		"	"	"	"	
IS-3-LRR (22E1595-02) Surface Water Sampled: 05/26/22 11:10 Received: 05/26/22 15:30										
Gasoline	ND	10	50	µg/L	1	2204451	05/31/22	05/31/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*98 %*	*65-135*		"	"	"	"	
IS-2-LRR (22E1595-03) Surface Water Sampled: 05/26/22 12:30 Received: 05/26/22 15:30										
Gasoline	ND	10	50	µg/L	1	2204451	05/31/22	06/01/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*100 %*	*65-135*		"	"	"	"	

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CLS Work Order #: 22E1595
COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-19-BI (22E1595-01) Surface Water	**Sampled: 05/26/22 10:20**		**Received: 05/26/22 15:30**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2204530	05/31/22	05/31/22	EPA 8260B	
Surrogate: Toluene-d8			*98 %*	*72-125*		"	"	"	"	
IS-3-LRR (22E1595-02) Surface Water	**Sampled: 05/26/22 11:10**		**Received: 05/26/22 15:30**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2204530	05/31/22	05/31/22	EPA 8260B	
Surrogate: Toluene-d8			*97 %*	*72-125*		"	"	"	"	
IS-2-LRR (22E1595-03) Surface Water	**Sampled: 05/26/22 12:30**		**Received: 05/26/22 15:30**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2204530	05/31/22	05/31/22	EPA 8260B	
Surrogate: Toluene-d8			*97 %*	*72-125*		"	"	"	"	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204384 - Solvent Extract											
Blank (2204384-BLK1)					Prepared: 05/26/22 Analyzed: 05/31/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2204384-BS1)					Prepared: 05/26/22 Analyzed: 05/31/22						
Hexane Extractable Material (HEM, Oil & Grease)	37.3	1.0	5.0	mg/L	40.0		93	78-114			
LCS Dup (2204384-BSD1)					Prepared: 05/26/22 Analyzed: 05/31/22						
Hexane Extractable Material (HEM, Oil & Grease)	37.1	1.0	5.0	mg/L	40.0		93	78-114	0.5	18	
Batch 2204395 - General Preparation											
Blank (2204395-BLK1)					Prepared & Analyzed: 05/27/22						
Chloride	0.279	0.026	0.50	mg/L							J
Sulfate as SO4	ND	0.038	0.50	"							
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2204395-BS1)					Prepared & Analyzed: 05/27/22						
Sulfate as SO4	4.86	0.038	0.50	mg/L	5.00		97	80-120			
Chloride	4.79	0.026	0.50	"	5.00		96	80-120			
Nitrate/Nitrite as N	4.02	0.055	0.40	"	4.00		101	80-120			
LCS Dup (2204395-BSD1)					Prepared & Analyzed: 05/27/22						
Chloride	4.58	0.026	0.50	mg/L	5.00		92	80-120	5	20	
Sulfate as SO4	4.65	0.038	0.50	"	5.00		93	80-120	4	20	
Nitrate/Nitrite as N	3.82	0.055	0.40	"	4.00		95	80-120	5	20	
Matrix Spike (2204395-MS1)			**Source: 22E1595-01**		Prepared & Analyzed: 05/27/22						
Chloride	4.96	0.026	0.50	mg/L	5.00	0.455	90	80-120			
Sulfate as SO4	5.36	0.038	0.50	"	5.00	0.626	95	80-120			
Nitrate/Nitrite as N	3.96	0.055	0.40	"	4.00	ND	99	80-120			

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204395 - General Preparation											
Matrix Spike Dup (2204395-MSD1)			**Source: 22E1595-01**		Prepared & Analyzed: 05/27/22						
Chloride	5.12	0.026	0.50	mg/L	5.00	0.455	93	80-120	3	20	
Sulfate as SO4	5.53	0.038	0.50	"	5.00	0.626	98	80-120	3	20	
Nitrate/Nitrite as N	4.10	0.055	0.40	"	4.00	ND	102	80-120	3	20	
Batch 2204396 - General Preparation											
Blank (2204396-BLK1)					Prepared & Analyzed: 05/27/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							
LCS (2204396-BS1)					Prepared & Analyzed: 05/27/22						
Orthophosphate as PO4	0.966	0.0051	0.15	mg/L	0.918		105	80-120			
LCS Dup (2204396-BSD1)					Prepared & Analyzed: 05/27/22						
Orthophosphate as PO4	0.921	0.0051	0.15	mg/L	0.918		100	80-120	5	20	
Matrix Spike (2204396-MS1)			**Source: 22E1595-01**		Prepared & Analyzed: 05/27/22						
Orthophosphate as PO4	0.974	0.0051	0.15	mg/L	0.918	ND	106	75-125			
Matrix Spike Dup (2204396-MSD1)			**Source: 22E1595-01**		Prepared & Analyzed: 05/27/22						
Orthophosphate as PO4	0.913	0.0051	0.15	mg/L	0.918	ND	99	75-125	6	25	
Batch 2204408 - EPA 200 Series											
Blank (2204408-BLK1)					Prepared & Analyzed: 05/27/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204408 - EPA 200 Series											
LCS (2204408-BS1)					Prepared & Analyzed: 05/27/22						
Total Hardness as CaCO3	33.9	0.19	1.0	mg/L	33.1		103	85-115			
Matrix Spike (2204408-MS1)			**Source: 22E1379-01**		Prepared & Analyzed: 05/27/22						
Total Hardness as CaCO3	140	0.19	1.0	mg/L	33.1	106	103	70-130			
Matrix Spike (2204408-MS2)			**Source: 22E1595-03**		Prepared & Analyzed: 05/27/22						
Total Hardness as CaCO3	171	0.19	1.0	mg/L	33.1	4.60	503	70-130			QM-5
Batch 2204411 - General Prep											
Blank (2204411-BLK1)					Prepared & Analyzed: 05/27/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2204411-BS1)					Prepared & Analyzed: 05/27/22						
Total Phosphorus as P	0.298	0.023	0.050	mg/L	0.300		99	80-120			
LCS Dup (2204411-BSD1)					Prepared & Analyzed: 05/27/22						
Total Phosphorus as P	0.300	0.023	0.050	mg/L	0.300		100	80-120	0.7	25	
Matrix Spike (2204411-MS1)			**Source: 22E1595-01**		Prepared & Analyzed: 05/27/22						
Total Phosphorus as P	0.318	0.023	0.050	mg/L	0.300	ND	106	75-125			
Matrix Spike Dup (2204411-MSD1)			**Source: 22E1595-01**		Prepared & Analyzed: 05/27/22						
Total Phosphorus as P	0.312	0.023	0.050	mg/L	0.300	ND	104	75-125	2	30	
Batch 2204441 - General Prep											
Blank (2204441-BLK1)					Prepared & Analyzed: 05/31/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22E1595
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204441 - General Prep											
LCS (2204441-BS1)					Prepared & Analyzed: 05/31/22						
Total Organic Carbon	10.3	0.54	1.0	mg/L	10.0		103	75-125			
LCS Dup (2204441-BSD1)					Prepared & Analyzed: 05/31/22						
Total Organic Carbon	10.4	0.54	1.0	mg/L	10.0		104	75-125	1	25	
Matrix Spike (2204441-MS1)			**Source: 22E1449-02**		Prepared & Analyzed: 05/31/22						
Total Organic Carbon	12.7	0.54	1.0	mg/L	10.0	2.08	106	75-125			
Matrix Spike Dup (2204441-MSD1)			**Source: 22E1449-02**		Prepared & Analyzed: 05/31/22						
Total Organic Carbon	12.6	0.54	1.0	mg/L	10.0	2.08	105	75-125	1	25	
Batch 2204454 - General Preparation											
Blank (2204454-BLK1)					Prepared & Analyzed: 05/31/22						
Ammonia as N	ND	0.025	0.10	mg/L							
LCS (2204454-BS1)					Prepared & Analyzed: 05/31/22						
Ammonia as N	0.451	0.025	0.10	mg/L	0.500		90	80-120			
LCS Dup (2204454-BSD1)					Prepared & Analyzed: 05/31/22						
Ammonia as N	0.447	0.025	0.10	mg/L	0.500		89	80-120	0.9	25	
Matrix Spike (2204454-MS1)			**Source: 22E1539-01**		Prepared & Analyzed: 05/31/22						
Ammonia as N	0.512	0.025	0.10	mg/L	0.500	ND	102	75-125			
Matrix Spike Dup (2204454-MSD1)			**Source: 22E1539-01**		Prepared & Analyzed: 05/31/22						
Ammonia as N	0.502	0.025	0.10	mg/L	0.500	ND	100	75-125	2	25	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204467 - General Preparation											
Duplicate (2204467-DUP1)			**Source: 22E1534-01**		Prepared: 05/31/22 Analyzed: 06/01/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	
Batch 2204480 - General Preparation											
Blank (2204480-BLK1)					Prepared: 05/31/22 Analyzed: 06/01/22						
Total Dissolved Solids	ND	5.0	10	mg/L							
Duplicate (2204480-DUP1)			**Source: 22E1538-01**		Prepared: 05/31/22 Analyzed: 06/01/22						
Total Dissolved Solids	403	5.0	10	mg/L		399			1	20	
Batch 2204499 - General Prep											
Blank (2204499-BLK1)					Prepared & Analyzed: 06/01/22						
Cyanide (total)	ND	0.0012	0.0050	mg/L							
LCS (2204499-BS1)					Prepared & Analyzed: 06/01/22						
Cyanide (total)	0.0906	0.0012	0.0050	mg/L	0.100		91	75-125			
LCS Dup (2204499-BSD1)					Prepared & Analyzed: 06/01/22						
Cyanide (total)	0.0854	0.0012	0.0050	mg/L	0.100		85	75-125	6	25	
Matrix Spike (2204499-MS1)			**Source: 22E1566-01**		Prepared & Analyzed: 06/01/22						
Cyanide (total)	0.0772	0.0012	0.0050	mg/L	0.100	ND	77	75-125			
Matrix Spike Dup (2204499-MSD1)			**Source: 22E1566-01**		Prepared & Analyzed: 06/01/22						
Cyanide (total)	0.0861	0.0012	0.0050	mg/L	0.100	ND	86	75-125	11	25	

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CLS Work Order #: 22E1595
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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204502 - General Preparation											
Blank (2204502-BLK1)					Prepared & Analyzed: 06/01/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2204502-BS1)					Prepared & Analyzed: 06/01/22						
Total Kjeldahl Nitrogen	0.552	0.040	0.20	mg/L	0.500		110	80-120			
LCS Dup (2204502-BSD1)					Prepared & Analyzed: 06/01/22						
Total Kjeldahl Nitrogen	0.575	0.040	0.20	mg/L	0.500		115	80-120	4	20	
Matrix Spike (2204502-MS1)			**Source: 22E1595-01**		Prepared & Analyzed: 06/01/22						
Total Kjeldahl Nitrogen	0.552	0.040	0.20	mg/L	0.500	0.114	88	75-125			
Matrix Spike Dup (2204502-MSD1)			**Source: 22E1595-01**		Prepared & Analyzed: 06/01/22						
Total Kjeldahl Nitrogen	0.563	0.040	0.20	mg/L	0.500	0.114	90	75-125	2	25	
Batch 2204510 - General Preparation											
Blank (2204510-BLK1)					Prepared & Analyzed: 06/01/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Duplicate (2204510-DUP1)			**Source: 22E1595-01**		Prepared & Analyzed: 06/01/22						
Total Alkalinity	4.00	1.0	5.0	mg/L		3.80			5	20	J
Bicarbonate as CaCO3	4.00	0.50	5.0	"		3.80			5	20	J
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	

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CLS Work Order #: 22E1595
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Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204504 - EPA 3510B GCNV											
Blank (2204504-BLK1)					Prepared: 06/01/22 Analyzed: 06/02/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Surrogate: o-Terphenyl	*0.0241*			*"*	*0.0250*		*96*	*65-135*			
LCS (2204504-BS1)					Prepared: 06/01/22 Analyzed: 06/02/22						
Diesel	1.89	0.0021	0.050	mg/L	2.50		76	65-135			
Surrogate: o-Terphenyl	*0.0260*			*"*	*0.0250*		*104*	*65-135*			
LCS Dup (2204504-BSD1)					Prepared: 06/01/22 Analyzed: 06/02/22						
Diesel	1.65	0.0021	0.050	mg/L	2.50		66	65-135	14	30	
Surrogate: o-Terphenyl	*0.0198*			*"*	*0.0250*		*79*	*65-135*			
Matrix Spike (2204504-MS1)			**Source: 22E1589-01**		Prepared: 06/01/22 Analyzed: 06/02/22						
Diesel	2.70	0.0021	0.050	mg/L	2.50	ND	108	46-137			
Surrogate: o-Terphenyl	*0.0265*			*"*	*0.0250*		*106*	*65-135*			
Matrix Spike Dup (2204504-MSD1)			**Source: 22E1589-01**		Prepared: 06/01/22 Analyzed: 06/02/22						
Diesel	2.72	0.0021	0.050	mg/L	2.50	ND	109	46-137	0.9	30	
Surrogate: o-Terphenyl	*0.0266*			*"*	*0.0250*		*106*	*65-135*			

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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204408 - EPA 200 Series											
Blank (2204408-BLK1)					Prepared & Analyzed: 05/27/22						
Boron	ND	5.3	50	µg/L							
Calcium	ND	27	1000	"							
Iron	ND	9.1	100	"							
Magnesium	ND	21	1000	"							
Manganese	ND	0.92	10	"							
Potassium	987	61	1000	"							J
Sodium	489	34	1000	"							J
LCS (2204408-BS1)					Prepared & Analyzed: 05/27/22						
Boron	480	5.3	50	µg/L	500		96	85-115			
Calcium	5100	27	1000	"	5000		102	85-115			
Iron	522	9.1	100	"	500		104	85-115			
Magnesium	5260	21	1000	"	5000		105	85-115			
Manganese	509	0.92	10	"	500		102	85-115			
Potassium	6020	61	1000	"	5000		120	85-115			QM-1
Sodium	5050	34	1000	"	5000		101	85-115			
Matrix Spike (2204408-MS1)			**Source: 22E1379-01**		Prepared & Analyzed: 05/27/22						
Boron	544	5.3	50	µg/L	500	19.8	105	70-130			
Calcium	28000	27	1000	"	5000	22600	107	70-130			
Iron	525	9.1	100	"	500	68.1	91	70-130			
Magnesium	18200	21	1000	"	5000	11900	127	70-130			
Manganese	521	0.92	10	"	500	3.47	103	70-130			
Potassium	9040	61	1000	"	5000	2560	130	70-130			
Sodium	21500	34	1000	"	5000	15500	120	70-130			
Matrix Spike (2204408-MS2)			**Source: 22E1595-03**		Prepared & Analyzed: 05/27/22						
Boron	13.7	5.3	50	µg/L	500	167	NR	70-130			QM-5, J
Calcium	6980	27	1000	"	5000	1670	106	70-130			
Iron	523	9.1	100	"	500	19.7	101	70-130			
Magnesium	5780	21	1000	"	5000	104	113	70-130			
Manganese	23.5	0.92	10	"	500	1.62	4	70-130			QM-5
Potassium	8640	61	1000	"	5000	2880	115	70-130			

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CLS Work Order #: 22E1595
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204408 - EPA 200 Series											
Matrix Spike (2204408-MS2)			**Source: 22E1595-03**		Prepared & Analyzed: 05/27/22						
Sodium	18900	34	1000	µg/L	5000	155000	NR	70-130			QM-5
Batch 2204477 - EPA 200 Series											
Blank (2204477-BLK1)					Prepared: 05/31/22 Analyzed: 06/01/22						
Aluminum	ND	1.6	20	µg/L							
Antimony	ND	0.34	6.0	"							
Arsenic	0.511	0.45	2.0	"							J
Barium	ND	0.14	5.0	"							
Cadmium	ND	0.17	0.50	"							
Chromium	0.200	0.14	1.0	"							J
Copper	ND	0.090	2.0	"							
Lead	0.0630	0.020	5.0	"							J
Manganese	0.309	0.050	2.0	"							J
Nickel	ND	0.13	2.0	"							
Silver	ND	0.070	0.50	"							
Zinc	ND	0.27	10	"							
LCS (2204477-BS1)					Prepared: 05/31/22 Analyzed: 06/01/22						
Aluminum	482	1.6	20	µg/L	500		96	85-115			
Antimony	95.3	0.34	6.0	"	100		95	85-115			
Arsenic	97.9	0.45	2.0	"	100		98	85-115			
Barium	98.9	0.14	5.0	"	100		99	85-115			
Cadmium	97.0	0.17	0.50	"	100		97	85-115			
Chromium	101	0.14	1.0	"	100		101	85-115			
Copper	101	0.090	2.0	"	100		101	85-115			
Lead	95.4	0.020	5.0	"	100		95	85-115			
Manganese	101	0.050	2.0	"	100		101	85-115			
Nickel	101	0.13	2.0	"	100		101	85-115			
Silver	102	0.070	0.50	"	100		102	85-115			
Zinc	97.5	0.27	10	"	100		98	85-115			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204477 - EPA 200 Series											
Matrix Spike (2204477-MS1)			**Source: 22E1591-01**		Prepared: 05/31/22	Analyzed: 06/01/22					
Aluminum	489	1.6	20	µg/L	500	2.41	97	70-130			
Antimony	95.8	0.34	6.0	"	100	2.04	94	70-130			
Arsenic	92.9	0.45	2.0	"	100	1.05	92	70-130			
Barium	107	0.14	5.0	"	100	8.27	99	70-130			
Cadmium	92.2	0.17	0.50	"	100	ND	92	70-130			
Chromium	94.5	0.14	1.0	"	100	0.327	94	70-130			
Copper	113	0.090	2.0	"	100	15.0	98	70-130			
Lead	98.6	0.020	5.0	"	100	2.31	96	70-130			
Manganese	115	0.050	2.0	"	100	22.7	93	70-130			
Nickel	97.6	0.13	2.0	"	100	3.78	94	70-130			
Silver	99.4	0.070	0.50	"	100	ND	99	70-130			
Zinc	106	0.27	10	"	100	11.9	94	70-130			
Matrix Spike (2204477-MS2)			**Source: 22E1716-01**		Prepared: 05/31/22	Analyzed: 06/01/22					
Aluminum	495	1.6	20	µg/L	500	12.5	96	70-130			
Antimony	96.0	0.34	6.0	"	100	1.15	95	70-130			
Arsenic	93.6	0.45	2.0	"	100	3.49	90	70-130			
Barium	103	0.14	5.0	"	100	3.55	99	70-130			
Cadmium	94.0	0.17	0.50	"	100	0.215	94	70-130			
Chromium	94.5	0.14	1.0	"	100	1.56	93	70-130			
Copper	116	0.090	2.0	"	100	24.2	92	70-130			
Lead	95.7	0.020	5.0	"	100	0.173	96	70-130			
Manganese	203	0.050	2.0	"	100	111	92	70-130			
Nickel	109	0.13	2.0	"	100	17.4	92	70-130			
Silver	100	0.070	0.50	"	100	ND	100	70-130			
Zinc	87.8	0.27	10	"	100	ND	88	70-130			

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22E1595
COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204459 - EPA 200 No Digestion											
Blank (2204459-BLK1)					Prepared & Analyzed: 05/31/22						
Iron	ND	6.8	100	µg/L							
LCS (2204459-BS1)					Prepared & Analyzed: 05/31/22						
Iron	519	6.8	100	µg/L	500		104	85-115			
Matrix Spike (2204459-MS1)			**Source: 22E1534-01**		Prepared & Analyzed: 05/31/22						
Iron	502	6.8	100	µg/L	500	ND	100	70-130			
Batch 2204465 - EPA 200 No Digestion											
Blank (2204465-BLK1)					Prepared & Analyzed: 05/31/22						
Aluminum	ND	0.52	20	µg/L							
Silver	ND	0.15	0.50	"							
LCS (2204465-BS1)					Prepared & Analyzed: 05/31/22						
Aluminum	431	0.52	20	µg/L	500		86	85-115			
Silver	87.7	0.15	0.50	"	100		88	85-115			
Matrix Spike (2204465-MS1)			**Source: 22E1180-01**		Prepared & Analyzed: 05/31/22						
Aluminum	459	0.52	20	µg/L	500	17.0	88	70-130			
Silver	100	0.15	0.50	"	100	ND	100	70-130			
Matrix Spike (2204465-MS2)			**Source: 22E1254-01**		Prepared & Analyzed: 05/31/22						
Aluminum	447	0.52	20	µg/L	500	12.2	87	70-130			
Silver	99.7	0.15	0.50	"	100	ND	100	70-130			

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TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204451 - EPA 5030 Water GC											
Blank (2204451-BLK1)					Prepared & Analyzed: 05/31/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*19.9*			"	*20.0*		*99*	*65-135*			
LCS (2204451-BS1)					Prepared & Analyzed: 05/31/22						
Gasoline	465	10	50	µg/L	500		93	70-130			
Surrogate: o-Chlorotoluene (Gas)	*21.0*			"	*20.0*		*105*	*65-135*			
LCS Dup (2204451-BSD1)					Prepared & Analyzed: 05/31/22						
Gasoline	507	10	50	µg/L	500		101	70-130	9	30	
Surrogate: o-Chlorotoluene (Gas)	*21.8*			"	*20.0*		*109*	*65-135*			
Matrix Spike (2204451-MS1)			**Source: 22E1595-01**		Prepared & Analyzed: 05/31/22						
Gasoline	506	10	50	µg/L	500	ND	101	68-132			
Surrogate: o-Chlorotoluene (Gas)	*20.6*			"	*20.0*		*103*	*65-135*			
Matrix Spike Dup (2204451-MSD1)			**Source: 22E1595-01**		Prepared & Analyzed: 05/31/22						
Gasoline	498	10	50	µg/L	500	ND	100	68-132	2	32	
Surrogate: o-Chlorotoluene (Gas)	*19.8*			"	*20.0*		*99*	*65-135*			

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Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2204530 - EPA 5030 Water MS											
Blank (2204530-BLK1)					Prepared & Analyzed: 05/31/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Benzene	ND	0.11	0.50	"							
Toluene	ND	0.11	0.50	"							
Ethylbenzene	ND	0.10	0.50	"							
Xylenes (total)	ND	0.33	1.0	"							
Surrogate: Toluene-d8	*9.84*			"	*10.0*		*98*	*72-125*			
LCS (2204530-BS1)					Prepared & Analyzed: 05/31/22						
Methyl tert-butyl ether	19.1	0.095	0.50	µg/L	20.0		95	52-130			
Benzene	18.8	0.11	0.50	"	20.0		94	52-130			
Surrogate: Toluene-d8	*10.6*			"	*10.0*		*106*	*72-125*			
LCS Dup (2204530-BSD1)					Prepared & Analyzed: 05/31/22						
Methyl tert-butyl ether	22.0	0.095	0.50	µg/L	20.0		110	52-130	14	30	
Benzene	21.8	0.11	0.50	"	20.0		109	52-130	15	30	
Surrogate: Toluene-d8	*10.5*			"	*10.0*		*105*	*72-125*			
Matrix Spike (2204530-MS1)			**Source: 22E1595-03**		Prepared & Analyzed: 05/31/22						
Methyl tert-butyl ether	21.0	0.095	0.50	µg/L	20.0	ND	105	52-140			
Benzene	22.1	0.11	0.50	"	20.0	ND	110	52-140			
Surrogate: Toluene-d8	*10.2*			"	*10.0*		*102*	*72-125*			
Matrix Spike Dup (2204530-MSD1)			**Source: 22E1595-03**		Prepared & Analyzed: 05/31/22						
Methyl tert-butyl ether	22.2	0.095	0.50	µg/L	20.0	ND	111	52-140	5	30	
Benzene	21.5	0.11	0.50	"	20.0	ND	107	52-140	3	30	
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			

06/03/22 16:48

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22E1595**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QM-5	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
QM-1	The spike recovery was outside acceptance limits for the LCS or LCSD. The batch was accepted based on acceptable MS/MSD recoveries & RPD's.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22E1595 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches.

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[X] **CLS** (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] **OTHER**

GEOTRACKER

EDF REPORT YES [X] NO [ ]

GLOBAL ID.

FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	ANALYSIS REQUESTED: TSS, TDS, Hardness, Alkalinity, NO2-N, NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS: 1	2	3	5	SPECIAL INSTRUCTIONS
5/26/22	10:20	R-IS-19-BE		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
5/26/22	11:10	IS-3-LRR		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
5/26/22	12:30	IS-2-LRR		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	INVOICE TO:
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	**Project No. 750.10 Task 0620.01**
				Surface water			6											X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Esther Adelstein / Stillwater	5/26/22		

RECEIVED AT LAB BY: [signature] **DATE/TIME:** 5/26/22 1530 **CONDITIONS/COMMENTS:** 2-2/1-5

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER _____ **AIR BILL #** _____

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

August 08, 2022

CLS Work Order #: 22H0066
COC #:

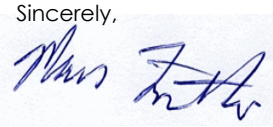
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 08/01/22 16:55. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

08/08/22 14:25

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0066
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-5-GC (22H0066-01) Surface Water	**Sampled: 08/01/22 08:45**		**Received: 08/01/22 16:55**							
Ammonia as N	ND		0.10	mg/L	1	2206508	08/04/22	08/04/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**6.2**		5.0	"	"	2206450	08/03/22	08/03/22	SM2320B	
Carbonate as CaCO3	ND		5.0	"	"	"	"	"	"	
Chloride	**0.79**		0.50	"	"	2206392	08/02/22	08/02/22	EPA 300.0	
Cyanide (total)	ND		0.0050	"	"	2206514	08/04/22	08/04/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND		5.0	"	"	2206427	08/02/22	08/04/22	EPA 1664B	
Hydroxide as CaCO3	ND		5.0	"	"	2206450	08/03/22	08/03/22	SM2320B	
Nitrate/Nitrite as N	ND		0.40	"	"	2206392	08/02/22	08/02/22	EPA 300.0	
Orthophosphate as PO4	ND		0.15	"	"	2206395	08/02/22	08/02/22	SM4500-P E	
Sulfate as SO4	**0.72**		0.50	"	"	2206392	08/02/22	08/02/22	EPA 300.0	
Total Alkalinity	**6.2**		5.0	"	"	2206450	08/03/22	08/03/22	SM2320B	
Total Dissolved Solids	**15**		10	"	"	2206486	08/03/22	08/05/22	SM2540C	
Total Hardness as CaCO3	**3.9**		1.0	"	"	2206454	08/03/22	08/03/22	EPA 200.7	
Total Kjeldahl Nitrogen	ND		0.20	"	"	2206528	08/04/22	08/04/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.8**		1.0	"	"	2206396	08/02/22	08/02/22	SM5310B	
Total Phosphorus as P	ND		0.050	"	"	2206601	08/05/22	08/05/22	SM4500-P E	
Total Suspended Solids	ND		5.0	"	"	2206465	08/03/22	08/05/22	SM2540D	
R-IS-4-GC (22H0066-02) Surface Water	**Sampled: 08/01/22 10:30**		**Received: 08/01/22 16:55**							
Ammonia as N	ND		0.10	mg/L	1	2206508	08/04/22	08/04/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**6.0**		5.0	"	"	2206450	08/03/22	08/03/22	SM2320B	
Carbonate as CaCO3	ND		5.0	"	"	"	"	"	"	
Chloride	**0.59**		0.50	"	"	2206392	08/02/22	08/02/22	EPA 300.0	
Cyanide (total)	ND		0.0050	"	"	2206514	08/04/22	08/04/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND		5.0	"	"	2206427	08/02/22	08/04/22	EPA 1664B	
Hydroxide as CaCO3	ND		5.0	"	"	2206450	08/03/22	08/03/22	SM2320B	
Nitrate/Nitrite as N	ND		0.40	"	"	2206392	08/02/22	08/02/22	EPA 300.0	
Orthophosphate as PO4	ND		0.15	"	"	2206395	08/02/22	08/02/22	SM4500-P E	

08/08/22 14:25

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0066
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-4-GC (22H0066-02) Surface Water	**Sampled: 08/01/22 10:30**		**Received: 08/01/22 16:55**							
Sulfate as SO4	**0.62**		0.50	mg/L	1	2206392	08/02/22	08/02/22	EPA 300.0	
Total Alkalinity	**6.0**		5.0	"	"	2206450	08/03/22	08/03/22	SM2320B	
Total Dissolved Solids	**14**		10	"	"	2206486	08/03/22	08/05/22	SM2540C	
Total Hardness as CaCO3	**4.0**		1.0	"	"	2206454	08/03/22	08/03/22	EPA 200.7	
Total Kjeldahl Nitrogen	ND		0.20	"	"	2206528	08/04/22	08/04/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.1**		1.0	"	"	2206396	08/02/22	08/02/22	SM5310B	
Total Phosphorus as P	ND		0.050	"	"	2206601	08/05/22	08/05/22	SM4500-P E	
Total Suspended Solids	ND		5.0	"	"	2206465	08/03/22	08/05/22	SM2540D	
IS-9-GCC (22H0066-03) Surface Water	**Sampled: 08/01/22 12:40**		**Received: 08/01/22 16:55**							
Ammonia as N	ND		0.10	mg/L	1	2206508	08/04/22	08/04/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**6.0**		5.0	"	"	2206450	08/03/22	08/03/22	SM2320B	
Carbonate as CaCO3	ND		5.0	"	"	"	"	"	"	
Chloride	**0.91**		0.50	"	"	2206392	08/02/22	08/02/22	EPA 300.0	
Cyanide (total)	ND		0.0050	"	"	2206514	08/04/22	08/04/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND		5.0	"	"	2206427	08/02/22	08/04/22	EPA 1664B	
Hydroxide as CaCO3	ND		5.0	"	"	2206450	08/03/22	08/03/22	SM2320B	
Nitrate/Nitrite as N	ND		0.40	"	"	2206392	08/02/22	08/02/22	EPA 300.0	
Orthophosphate as PO4	ND		0.15	"	"	2206395	08/02/22	08/02/22	SM4500-P E	
Sulfate as SO4	**1.0**		0.50	"	"	2206392	08/02/22	08/02/22	EPA 300.0	
Total Alkalinity	**6.0**		5.0	"	"	2206450	08/03/22	08/03/22	SM2320B	
Total Dissolved Solids	**11**		10	"	"	2206486	08/03/22	08/05/22	SM2540C	
Total Hardness as CaCO3	**4.2**		1.0	"	"	2206454	08/03/22	08/03/22	EPA 200.7	
Total Kjeldahl Nitrogen	ND		0.20	"	"	2206528	08/04/22	08/04/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.2**		1.0	"	"	2206396	08/02/22	08/02/22	SM5310B	
Total Phosphorus as P	ND		0.050	"	"	2206601	08/05/22	08/05/22	SM4500-P E	
Total Suspended Solids	ND		5.0	"	"	2206465	08/03/22	08/05/22	SM2540D	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0066
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-7-SFRR (22H0066-04) Surface Water	**Sampled: 08/01/22 13:30**		**Received: 08/01/22 16:55**							
Ammonia as N	ND		0.10	mg/L	1	2206508	08/04/22	08/04/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**6.6**		5.0	"	"	2206450	08/03/22	08/03/22	SM2320B	
Carbonate as CaCO3	ND		5.0	"	"	"	"	"	"	
Chloride	ND		0.50	"	"	2206392	08/02/22	08/02/22	EPA 300.0	
Cyanide (total)	ND		0.0050	"	"	2206514	08/04/22	08/04/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND		5.0	"	"	2206427	08/02/22	08/04/22	EPA 1664B	
Hydroxide as CaCO3	ND		5.0	"	"	2206450	08/03/22	08/03/22	SM2320B	
Nitrate/Nitrite as N	ND		0.40	"	"	2206392	08/02/22	08/02/22	EPA 300.0	
Orthophosphate as PO4	ND		0.15	"	"	2206395	08/02/22	08/02/22	SM4500-P E	
Sulfate as SO4	**0.58**		0.50	"	"	2206392	08/02/22	08/02/22	EPA 300.0	
Total Alkalinity	**6.6**		5.0	"	"	2206450	08/03/22	08/03/22	SM2320B	
Total Dissolved Solids	**10**		10	"	"	2206486	08/03/22	08/05/22	SM2540C	
Total Hardness as CaCO3	**4.1**		1.0	"	"	2206454	08/03/22	08/03/22	EPA 200.7	
Total Kjeldahl Nitrogen	ND		0.20	"	"	2206528	08/04/22	08/04/22	SM4500-NH3F-2011	
Total Organic Carbon	**1.9**		1.0	"	"	2206396	08/02/22	08/02/22	SM5310B	
Total Phosphorus as P	ND		0.050	"	"	2206601	08/05/22	08/05/22	SM4500-P E	
Total Suspended Solids	ND		5.0	"	"	2206465	08/03/22	08/05/22	SM2540D	
IS-6-GC (22H0066-05) Surface Water	**Sampled: 08/01/22 11:50**		**Received: 08/01/22 16:55**							
Ammonia as N	ND		0.10	mg/L	1	2206508	08/04/22	08/04/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**5.0**		5.0	"	"	2206450	08/03/22	08/03/22	SM2320B	
Carbonate as CaCO3	ND		5.0	"	"	"	"	"	"	
Chloride	**0.54**		0.50	"	"	2206392	08/02/22	08/02/22	EPA 300.0	
Cyanide (total)	ND		0.0050	"	"	2206514	08/04/22	08/04/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND		5.0	"	"	2206427	08/02/22	08/04/22	EPA 1664B	
Hydroxide as CaCO3	ND		5.0	"	"	2206450	08/03/22	08/03/22	SM2320B	
Nitrate/Nitrite as N	ND		0.40	"	"	2206392	08/02/22	08/02/22	EPA 300.0	
Orthophosphate as PO4	ND		0.15	"	"	2206395	08/02/22	08/02/22	SM4500-P E	

08/08/22 14:25

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0066
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-6-GC (22H0066-05) Surface Water	**Sampled: 08/01/22 11:50**		**Received: 08/01/22 16:55**							
Sulfate as SO4	**0.74**		0.50	mg/L	1	2206392	08/02/22	08/02/22	EPA 300.0	
Total Alkalinity	**5.0**		5.0	"	"	2206450	08/03/22	08/03/22	SM2320B	
Total Dissolved Solids	**15**		10	"	"	2206486	08/03/22	08/05/22	SM2540C	
Total Hardness as CaCO3	**4.0**		1.0	"	"	2206454	08/03/22	08/03/22	EPA 200.7	
Total Kjeldahl Nitrogen	ND		0.20	"	"	2206528	08/04/22	08/04/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.1**		1.0	"	"	2206396	08/02/22	08/02/22	SM5310B	
Total Phosphorus as P	ND		0.050	"	"	2206601	08/05/22	08/05/22	SM4500-P E	
Total Suspended Solids	ND		5.0	"	"	2206465	08/03/22	08/05/22	SM2540D	
IS-8-SFRR (22H0066-06) Surface Water	**Sampled: 08/01/22 14:00**		**Received: 08/01/22 16:55**							
Ammonia as N	ND		0.10	mg/L	1	2206508	08/04/22	08/04/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**6.0**		5.0	"	"	2206450	08/03/22	08/03/22	SM2320B	
Carbonate as CaCO3	ND		5.0	"	"	"	"	"	"	
Chloride	**0.52**		0.50	"	"	2206392	08/02/22	08/02/22	EPA 300.0	
Cyanide (total)	ND		0.0050	"	"	2206514	08/04/22	08/04/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND		5.0	"	"	2206518	08/04/22	08/05/22	EPA 1664B	
Hydroxide as CaCO3	ND		5.0	"	"	2206450	08/03/22	08/03/22	SM2320B	
Nitrate/Nitrite as N	ND		0.40	"	"	2206392	08/02/22	08/02/22	EPA 300.0	
Orthophosphate as PO4	ND		0.15	"	"	2206395	08/02/22	08/02/22	SM4500-P E	
Sulfate as SO4	**0.63**		0.50	"	"	2206392	08/02/22	08/02/22	EPA 300.0	
Total Alkalinity	**6.0**		5.0	"	"	2206450	08/03/22	08/03/22	SM2320B	
Total Dissolved Solids	**15**		10	"	"	2206486	08/03/22	08/05/22	SM2540C	
Total Hardness as CaCO3	**4.1**		1.0	"	"	2206454	08/03/22	08/04/22	EPA 200.7	
Total Kjeldahl Nitrogen	ND		0.20	"	"	2206528	08/04/22	08/04/22	SM4500-NH3F-2011	
Total Organic Carbon	**1.9**		1.0	"	"	2206396	08/02/22	08/02/22	SM5310B	
Total Phosphorus as P	ND		0.050	"	"	2206601	08/05/22	08/05/22	SM4500-P E	
Total Suspended Solids	ND		5.0	"	"	2206465	08/03/22	08/05/22	SM2540D	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0066
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-4-GCB (22H0066-07) Surface Water	**Sampled: 08/01/22 10:45**		**Received: 08/01/22 16:55**							
Ammonia as N	ND		0.10	mg/L	1	2206508	08/04/22	08/04/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**5.4**		5.0	"	"	2206450	08/03/22	08/03/22	SM2320B	
Carbonate as CaCO3	ND		5.0	"	"	"	"	"	"	
Chloride	**0.54**		0.50	"	"	2206392	08/02/22	08/02/22	EPA 300.0	
Cyanide (total)	ND		0.0050	"	"	2206514	08/04/22	08/04/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND		5.0	"	"	2206518	08/04/22	08/05/22	EPA 1664B	
Hydroxide as CaCO3	ND		5.0	"	"	2206450	08/03/22	08/03/22	SM2320B	
Nitrate/Nitrite as N	ND		0.40	"	"	2206392	08/02/22	08/02/22	EPA 300.0	
Orthophosphate as PO4	ND		0.15	"	"	2206395	08/02/22	08/02/22	SM4500-P E	
Sulfate as SO4	**0.64**		0.50	"	"	2206392	08/02/22	08/02/22	EPA 300.0	
Total Alkalinity	**5.4**		5.0	"	"	2206450	08/03/22	08/03/22	SM2320B	
Total Dissolved Solids	**11**		10	"	"	2206486	08/03/22	08/05/22	SM2540C	
Total Hardness as CaCO3	**4.1**		1.0	"	"	2206454	08/03/22	08/04/22	EPA 200.7	
Total Kjeldahl Nitrogen	ND		0.20	"	"	2206528	08/04/22	08/04/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.0**		1.0	"	"	2206396	08/02/22	08/02/22	SM5310B	
Total Phosphorus as P	ND		0.050	"	"	2206601	08/05/22	08/05/22	SM4500-P E	
Total Suspended Solids	ND		5.0	"	"	2206465	08/03/22	08/05/22	SM2540D	

08/08/22 14:25

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0066
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-5-GC (22H0066-01) Surface Water	**Sampled: 08/01/22 08:45**		**Received: 08/01/22 16:55**							
Diesel	ND		0.050	mg/L	1	2206373	08/02/22	08/02/22	EPA 8015M	
Hydraulic Oil	ND		0.050	"	"	"	"	"	"	
Kerosene	ND		0.050	"	"	"	"	"	"	
Mineral Oil	ND		0.050	"	"	"	"	"	"	
Motor Oil	ND		0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*125 %*	*65-135*		"	"	"	"	
R-IS-4-GC (22H0066-02) Surface Water	**Sampled: 08/01/22 10:30**		**Received: 08/01/22 16:55**							
Diesel	ND		0.050	mg/L	1	2206373	08/02/22	08/02/22	EPA 8015M	
Hydraulic Oil	ND		0.050	"	"	"	"	"	"	
Kerosene	ND		0.050	"	"	"	"	"	"	
Mineral Oil	ND		0.050	"	"	"	"	"	"	
Motor Oil	ND		0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*111 %*	*65-135*		"	"	"	"	
IS-9-GCC (22H0066-03) Surface Water	**Sampled: 08/01/22 12:40**		**Received: 08/01/22 16:55**							
Diesel	ND		0.050	mg/L	1	2206373	08/02/22	08/02/22	EPA 8015M	
Hydraulic Oil	ND		0.050	"	"	"	"	"	"	
Kerosene	ND		0.050	"	"	"	"	"	"	
Mineral Oil	ND		0.050	"	"	"	"	"	"	
Motor Oil	ND		0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*117 %*	*65-135*		"	"	"	"	
IS-7-SFRR (22H0066-04) Surface Water	**Sampled: 08/01/22 13:30**		**Received: 08/01/22 16:55**							
Diesel	ND		0.050	mg/L	1	2206373	08/02/22	08/02/22	EPA 8015M	
Hydraulic Oil	ND		0.050	"	"	"	"	"	"	
Kerosene	ND		0.050	"	"	"	"	"	"	
Mineral Oil	ND		0.050	"	"	"	"	"	"	
Motor Oil	ND		0.050	"	"	"	"	"	"	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0066
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-7-SFRR (22H0066-04) Surface Water Sampled: 08/01/22 13:30 Received: 08/01/22 16:55										
Surrogate: o-Terphenyl			*106 %*	*65-135*		*2206373*	"	*08/02/22*	*EPA 8015M*	
IS-6-GC (22H0066-05) Surface Water Sampled: 08/01/22 11:50 Received: 08/01/22 16:55										
Diesel	ND		0.050	mg/L	1	2206373	08/02/22	08/02/22	EPA 8015M	
Hydraulic Oil	ND		0.050	"	"	"	"	"	"	
Kerosene	ND		0.050	"	"	"	"	"	"	
Mineral Oil	ND		0.050	"	"	"	"	"	"	
Motor Oil	ND		0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*111 %*	*65-135*		"	"	"	"	
IS-8-SFRR (22H0066-06) Surface Water Sampled: 08/01/22 14:00 Received: 08/01/22 16:55										
Diesel	ND		0.050	mg/L	1	2206373	08/02/22	08/02/22	EPA 8015M	
Hydraulic Oil	ND		0.050	"	"	"	"	"	"	
Kerosene	ND		0.050	"	"	"	"	"	"	
Mineral Oil	ND		0.050	"	"	"	"	"	"	
Motor Oil	ND		0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*107 %*	*65-135*		"	"	"	"	
R-IS-4-GCB (22H0066-07) Surface Water Sampled: 08/01/22 10:45 Received: 08/01/22 16:55										
Diesel	ND		0.050	mg/L	1	2206373	08/02/22	08/02/22	EPA 8015M	
Hydraulic Oil	ND		0.050	"	"	"	"	"	"	
Kerosene	ND		0.050	"	"	"	"	"	"	
Mineral Oil	ND		0.050	"	"	"	"	"	"	
Motor Oil	ND		0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*104 %*	*65-135*		"	"	"	"	

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22H0066
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-5-GC (22H0066-01) Surface Water	**Sampled: 08/01/22 08:45**		**Received: 08/01/22 16:55**							
Aluminum	**24**		20	µg/L	1	2206398	08/02/22	08/02/22	EPA 200.8	
Barium	**5.1**		5.0	"	"	"	"	"	"	
Calcium	**1300**		1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Iron	**130**		100	"	"	"	"	"	"	
Magnesium	ND		1000	"	"	"	"	"	"	
Manganese	**6.9**		2.0	"	"	2206398	08/02/22	08/02/22	EPA 200.8	
Potassium	ND		1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Silver	ND		0.50	"	"	2206398	08/02/22	08/02/22	EPA 200.8	
Sodium	ND		1000	"	"	2206505	08/04/22	08/05/22	EPA 200.7	
R-IS-4-GC (22H0066-02) Surface Water	**Sampled: 08/01/22 10:30**		**Received: 08/01/22 16:55**							
Aluminum	**38**		20	µg/L	1	2206398	08/02/22	08/02/22	EPA 200.8	
Barium	ND		5.0	"	"	"	"	"	"	
Calcium	**1300**		1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Iron	**150**		100	"	"	"	"	"	"	
Magnesium	ND		1000	"	"	"	"	"	"	
Manganese	**7.5**		2.0	"	"	2206398	08/02/22	08/02/22	EPA 200.8	
Potassium	ND		1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Silver	ND		0.50	"	"	2206398	08/02/22	08/02/22	EPA 200.8	
Sodium	ND		1000	"	"	2206505	08/04/22	08/05/22	EPA 200.7	
IS-9-GCC (22H0066-03) Surface Water	**Sampled: 08/01/22 12:40**		**Received: 08/01/22 16:55**							
Aluminum	**59**		20	µg/L	1	2206398	08/02/22	08/02/22	EPA 200.8	
Barium	ND		5.0	"	"	"	"	"	"	
Calcium	**1300**		1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Iron	**110**		100	"	"	"	"	"	"	
Magnesium	ND		1000	"	"	"	"	"	"	
Manganese	**11**		2.0	"	"	2206398	08/02/22	08/02/22	EPA 200.8	
Potassium	ND		1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Silver	ND		0.50	"	"	2206398	08/02/22	08/02/22	EPA 200.8	
Sodium	ND		1000	"	"	2206505	08/04/22	08/05/22	EPA 200.7	

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CLS Work Order #: 22H0066
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Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-7-SFRR (22H0066-04) Surface Water	**Sampled: 08/01/22 13:30**		**Received: 08/01/22 16:55**							
Aluminum	**23**		20	µg/L	1	2206398	08/02/22	08/02/22	EPA 200.8	
Barium	**5.1**		5.0	"	"	"	"	"	"	
Calcium	**1300**		1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Iron	ND		100	"	"	"	"	"	"	
Magnesium	ND		1000	"	"	"	"	"	"	
Manganese	**4.4**		2.0	"	"	2206398	08/02/22	08/02/22	EPA 200.8	
Potassium	ND		1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Silver	ND		0.50	"	"	2206398	08/02/22	08/02/22	EPA 200.8	
Sodium	ND		1000	"	"	2206505	08/04/22	08/05/22	EPA 200.7	
IS-6-GC (22H0066-05) Surface Water	**Sampled: 08/01/22 11:50**		**Received: 08/01/22 16:55**							
Aluminum	**28**		20	µg/L	1	2206398	08/02/22	08/02/22	EPA 200.8	
Barium	ND		5.0	"	"	"	"	"	"	
Calcium	**1300**		1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Iron	ND		100	"	"	"	"	"	"	
Magnesium	ND		1000	"	"	"	"	"	"	
Manganese	**8.8**		2.0	"	"	2206398	08/02/22	08/02/22	EPA 200.8	
Potassium	ND		1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Silver	ND		0.50	"	"	2206398	08/02/22	08/02/22	EPA 200.8	
Sodium	ND		1000	"	"	2206505	08/04/22	08/05/22	EPA 200.7	
IS-8-SFRR (22H0066-06) Surface Water	**Sampled: 08/01/22 14:00**		**Received: 08/01/22 16:55**							
Aluminum	**27**		20	µg/L	1	2206398	08/02/22	08/02/22	EPA 200.8	
Barium	**5.2**		5.0	"	"	"	"	"	"	
Calcium	**1300**		1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Iron	ND		100	"	"	"	"	"	"	
Magnesium	ND		1000	"	"	"	"	"	"	
Manganese	**4.5**		2.0	"	"	2206398	08/02/22	08/02/22	EPA 200.8	
Potassium	ND		1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Silver	ND		0.50	"	"	2206398	08/02/22	08/02/22	EPA 200.8	
Sodium	ND		1000	"	"	2206505	08/04/22	08/05/22	EPA 200.7	

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22H0066
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-4-GCB (22H0066-07) Surface Water	**Sampled: 08/01/22 10:45**		**Received: 08/01/22 16:55**							
Aluminum	**25**		20	µg/L	1	2206398	08/02/22	08/02/22	EPA 200.8	
Barium	ND		5.0	"	"	"	"	"	"	
Calcium	**1300**		1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Iron	ND		100	"	"	"	"	"	"	
Magnesium	ND		1000	"	"	"	"	"	"	
Manganese	**8.4**		2.0	"	"	2206398	08/02/22	08/02/22	EPA 200.8	
Potassium	ND		1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Silver	ND		0.50	"	"	2206398	08/02/22	08/02/22	EPA 200.8	
Sodium	ND		1000	"	"	2206505	08/04/22	08/05/22	EPA 200.7	

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COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-5-GC (22H0066-01) Surface Water Sampled: 08/01/22 08:45 Received: 08/01/22 16:55										
Aluminum	ND		20	µg/L	1	2206441	08/03/22	08/03/22	EPA 200.8	
Iron	ND		100	"	"	2206454	08/03/22	08/04/22	EPA 200.7	
Silver	ND		0.50	"	"	2206441	08/03/22	08/03/22	EPA 200.8	
R-IS-4-GC (22H0066-02) Surface Water Sampled: 08/01/22 10:30 Received: 08/01/22 16:55										
Aluminum	ND		20	µg/L	1	2206441	08/03/22	08/03/22	EPA 200.8	
Iron	ND		100	"	"	2206454	08/03/22	08/03/22	EPA 200.7	
Silver	ND		0.50	"	"	2206441	08/03/22	08/03/22	EPA 200.8	
IS-9-GCC (22H0066-03) Surface Water Sampled: 08/01/22 12:40 Received: 08/01/22 16:55										
Aluminum	ND		20	µg/L	1	2206441	08/03/22	08/03/22	EPA 200.8	
Iron	ND		100	"	"	2206454	08/03/22	08/03/22	EPA 200.7	
Silver	ND		0.50	"	"	2206441	08/03/22	08/03/22	EPA 200.8	
IS-7-SFRR (22H0066-04) Surface Water Sampled: 08/01/22 13:30 Received: 08/01/22 16:55										
Aluminum	ND		20	µg/L	1	2206441	08/03/22	08/03/22	EPA 200.8	
Iron	ND		100	"	"	2206454	08/03/22	08/03/22	EPA 200.7	
Silver	ND		0.50	"	"	2206441	08/03/22	08/03/22	EPA 200.8	
IS-6-GC (22H0066-05) Surface Water Sampled: 08/01/22 11:50 Received: 08/01/22 16:55										
Aluminum	ND		20	µg/L	1	2206441	08/03/22	08/03/22	EPA 200.8	
Iron	ND		100	"	"	2206454	08/03/22	08/03/22	EPA 200.7	
Silver	ND		0.50	"	"	2206441	08/03/22	08/03/22	EPA 200.8	
IS-8-SFRR (22H0066-06) Surface Water Sampled: 08/01/22 14:00 Received: 08/01/22 16:55										
Aluminum	ND		20	µg/L	1	2206441	08/03/22	08/03/22	EPA 200.8	
Iron	ND		100	"	"	2206454	08/03/22	08/04/22	EPA 200.7	
Silver	ND		0.50	"	"	2206441	08/03/22	08/03/22	EPA 200.8	

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Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0066
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-4-GCB (22H0066-07) Surface Water	**Sampled: 08/01/22 10:45**		**Received: 08/01/22 16:55**							
Aluminum	**40**		20	µg/L	1	2206441	08/03/22	08/03/22	EPA 200.8	
Iron	ND		100	"	"	2206454	08/03/22	08/04/22	EPA 200.7	
Silver	ND		0.50	"	"	2206441	08/03/22	08/03/22	EPA 200.8	

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CLS Work Order #: 22H0066
COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-5-GC (22H0066-01) Surface Water Sampled: 08/01/22 08:45 Received: 08/01/22 16:55										
Gasoline	ND		50	µg/L	1	2206443	08/03/22	08/03/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*85 %*		*65-135*		"	"	"	"
R-IS-4-GC (22H0066-02) Surface Water Sampled: 08/01/22 10:30 Received: 08/01/22 16:55										
Gasoline	ND		50	µg/L	1	2206443	08/03/22	08/03/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*82 %*		*65-135*		"	"	"	"
IS-9-GCC (22H0066-03) Surface Water Sampled: 08/01/22 12:40 Received: 08/01/22 16:55										
Gasoline	ND		50	µg/L	1	2206443	08/03/22	08/03/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*83 %*		*65-135*		"	"	"	"
IS-7-SFRR (22H0066-04) Surface Water Sampled: 08/01/22 13:30 Received: 08/01/22 16:55										
Gasoline	ND		50	µg/L	1	2206443	08/03/22	08/03/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*83 %*		*65-135*		"	"	"	"
IS-6-GC (22H0066-05) Surface Water Sampled: 08/01/22 11:50 Received: 08/01/22 16:55										
Gasoline	ND		50	µg/L	1	2206443	08/03/22	08/03/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*88 %*		*65-135*		"	"	"	"
IS-8-SFRR (22H0066-06) Surface Water Sampled: 08/01/22 14:00 Received: 08/01/22 16:55										
Gasoline	ND		50	µg/L	1	2206443	08/03/22	08/03/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*83 %*		*65-135*		"	"	"	"
R-IS-4-GCB (22H0066-07) Surface Water Sampled: 08/01/22 10:45 Received: 08/01/22 16:55										
Gasoline	ND		50	µg/L	1	2206443	08/03/22	08/03/22	EPA 8015M	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22H0066**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-4-GCB (22H0066-07) Surface Water	**Sampled: 08/01/22 10:45**		**Received: 08/01/22 16:55**							
Surrogate: o-Chlorotoluene (Gas)			*84 %*		*65-135*	*2206443*	"	*08/03/22*	*EPA 8015M*	

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Project Manager: Emily Applequist

CLS Work Order #: 22H0066
COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-5-GC (22H0066-01) Surface Water Sampled: 08/01/22 08:45 Received: 08/01/22 16:55										
Methyl tert-butyl ether	ND		0.50	µg/L	1	2206445	08/02/22	08/02/22	EPA 8260B	
Surrogate: Toluene-d8			*94 %*		*72-125*		"	"	"	"
R-IS-4-GC (22H0066-02) Surface Water Sampled: 08/01/22 10:30 Received: 08/01/22 16:55										
Methyl tert-butyl ether	ND		0.50	µg/L	1	2206445	08/02/22	08/02/22	EPA 8260B	
Surrogate: Toluene-d8			*96 %*		*72-125*		"	"	"	"
IS-9-GCC (22H0066-03) Surface Water Sampled: 08/01/22 12:40 Received: 08/01/22 16:55										
Methyl tert-butyl ether	ND		0.50	µg/L	1	2206445	08/02/22	08/02/22	EPA 8260B	
Surrogate: Toluene-d8			*94 %*		*72-125*		"	"	"	"
IS-7-SFRR (22H0066-04) Surface Water Sampled: 08/01/22 13:30 Received: 08/01/22 16:55										
Methyl tert-butyl ether	ND		0.50	µg/L	1	2206445	08/02/22	08/02/22	EPA 8260B	
Surrogate: Toluene-d8			*94 %*		*72-125*		"	"	"	"
IS-6-GC (22H0066-05) Surface Water Sampled: 08/01/22 11:50 Received: 08/01/22 16:55										
Methyl tert-butyl ether	ND		0.50	µg/L	1	2206445	08/02/22	08/02/22	EPA 8260B	
Surrogate: Toluene-d8			*97 %*		*72-125*		"	"	"	"
IS-8-SFRR (22H0066-06) Surface Water Sampled: 08/01/22 14:00 Received: 08/01/22 16:55										
Methyl tert-butyl ether	ND		0.50	µg/L	1	2206445	08/02/22	08/03/22	EPA 8260B	
Surrogate: Toluene-d8			*93 %*		*72-125*		"	"	"	"
R-IS-4-GCB (22H0066-07) Surface Water Sampled: 08/01/22 10:45 Received: 08/01/22 16:55										
Methyl tert-butyl ether	ND		0.50	µg/L	1	2206445	08/02/22	08/03/22	EPA 8260B	

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COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-4-GCB (22H0066-07) Surface Water	**Sampled: 08/01/22 10:45**		**Received: 08/01/22 16:55**							
Surrogate: Toluene-d8			*93 %*		*72-125*	*2206445*	"	*08/03/22*	*EPA 8260B*	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0066
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206392 - General Prep											
Blank (2206392-BLK1)					Prepared & Analyzed: 08/02/22						
Chloride	ND		0.50	mg/L							
Sulfate as SO4	ND		0.50	"							
Nitrate/Nitrite as N	ND		0.40	"							
LCS (2206392-BS1)					Prepared & Analyzed: 08/02/22						
Sulfate as SO4	5.11		0.50	mg/L	5.00		102	80-120			
Chloride	4.88		0.50	"	5.00		98	80-120			
Nitrate/Nitrite as N	4.11		0.40	"	4.00		103	80-120			
LCS Dup (2206392-BSD1)					Prepared & Analyzed: 08/02/22						
Chloride	4.73		0.50	mg/L	5.00		95	80-120	3	20	
Sulfate as SO4	5.01		0.50	"	5.00		100	80-120	2	20	
Nitrate/Nitrite as N	4.04		0.40	"	4.00		101	80-120	2	20	
Matrix Spike (2206392-MS1)			**Source: 22H0066-01**		Prepared & Analyzed: 08/02/22						
Sulfate as SO4	5.22		0.50	mg/L	5.00	0.716	90	80-120			
Chloride	4.77		0.50	"	5.00	0.788	80	80-120			
Nitrate/Nitrite as N	3.82		0.40	"	4.00	ND	96	80-120			
Matrix Spike Dup (2206392-MSD1)			**Source: 22H0066-01**		Prepared & Analyzed: 08/02/22						
Sulfate as SO4	5.31		0.50	mg/L	5.00	0.716	92	80-120	2	20	
Chloride	4.80		0.50	"	5.00	0.788	80	80-120	0.8	20	
Nitrate/Nitrite as N	3.85		0.40	"	4.00	ND	96	80-120	0.9	20	
Batch 2206395 - General Preparation											
Blank (2206395-BLK1)					Prepared & Analyzed: 08/02/22						
Orthophosphate as PO4	ND		0.15	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206395 - General Preparation											
LCS (2206395-BS1)					Prepared & Analyzed: 08/02/22						
Orthophosphate as PO4	0.913		0.15	mg/L	0.918		99	80-120			
LCS Dup (2206395-BSD1)					Prepared & Analyzed: 08/02/22						
Orthophosphate as PO4	0.864		0.15	mg/L	0.918		94	80-120	6	20	
Matrix Spike (2206395-MS1)			**Source: 22H0059-01**		Prepared & Analyzed: 08/02/22						
Orthophosphate as PO4	1.78		0.15	mg/L	0.918	0.937	92	75-125			
Matrix Spike Dup (2206395-MSD1)			**Source: 22H0059-01**		Prepared & Analyzed: 08/02/22						
Orthophosphate as PO4	1.75		0.15	mg/L	0.918	0.937	89	75-125	1	25	
Batch 2206396 - General Prep											
Blank (2206396-BLK1)					Prepared & Analyzed: 08/02/22						
Total Organic Carbon	ND		1.0	mg/L							
LCS (2206396-BS1)					Prepared & Analyzed: 08/02/22						
Total Organic Carbon	10.9		1.0	mg/L	10.0		109	75-125			
LCS Dup (2206396-BSD1)					Prepared & Analyzed: 08/02/22						
Total Organic Carbon	10.8		1.0	mg/L	10.0		108	75-125	0.8	25	
Matrix Spike (2206396-MS1)			**Source: 22G1527-01**		Prepared & Analyzed: 08/02/22						
Total Organic Carbon	11.2		1.0	mg/L	10.0	ND	112	75-125			
Matrix Spike Dup (2206396-MSD1)			**Source: 22G1527-01**		Prepared & Analyzed: 08/02/22						
Total Organic Carbon	11.3		1.0	mg/L	10.0	ND	113	75-125	0.9	25	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206427 - Solvent Extract											
Blank (2206427-BLK1)					Prepared: 08/02/22 Analyzed: 08/04/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND		5.0	mg/L							
LCS (2206427-BS1)					Prepared: 08/02/22 Analyzed: 08/04/22						
Hexane Extractable Material (HEM, Oil & Grease)	35.8		5.0	mg/L	40.0		90	78-114			
LCS Dup (2206427-BSD1)					Prepared: 08/02/22 Analyzed: 08/04/22						
Hexane Extractable Material (HEM, Oil & Grease)	36.8		5.0	mg/L	40.0		92	78-114	3	18	
Batch 2206450 - General Preparation											
Blank (2206450-BLK1)					Prepared & Analyzed: 08/03/22						
Total Alkalinity	ND		5.0	mg/L							
Bicarbonate as CaCO3	ND		5.0	"							
Carbonate as CaCO3	ND		5.0	"							
Hydroxide as CaCO3	ND		5.0	"							
Blank (2206450-BLK2)					Prepared & Analyzed: 08/03/22						
Total Alkalinity	ND		5.0	mg/L							
Bicarbonate as CaCO3	ND		5.0	"							
Carbonate as CaCO3	ND		5.0	"							
Hydroxide as CaCO3	ND		5.0	"							
Duplicate (2206450-DUP1)			**Source: 22G0469-12**		Prepared & Analyzed: 08/03/22						
Total Alkalinity	73.2		5.0	mg/L		72.8			0.5	20	
Bicarbonate as CaCO3	72.8		5.0	"		72.8			0	20	
Carbonate as CaCO3	ND		5.0	"		ND				20	
Hydroxide as CaCO3	ND		5.0	"		ND				20	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22H0066**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206450 - General Preparation											
Duplicate (2206450-DUP2)			**Source: 22H0066-01**		Prepared & Analyzed: 08/03/22						
Total Alkalinity	5.60		5.0	mg/L		6.20			10	20	
Bicarbonate as CaCO3	5.60		5.0	"		6.20			10	20	
Carbonate as CaCO3	ND		5.0	"		ND				20	
Hydroxide as CaCO3	ND		5.0	"		ND				20	
Batch 2206454 - EPA 200 No Digestion											
Blank (2206454-BLK1)					Prepared & Analyzed: 08/03/22						
Total Hardness as CaCO3	ND		1.0	mg/L							
LCS (2206454-BS1)					Prepared & Analyzed: 08/03/22						
Total Hardness as CaCO3	30.7		1.0	mg/L	33.1		93	85-115			
Matrix Spike (2206454-MS1)			**Source: 22H0064-01**		Prepared & Analyzed: 08/03/22						
Total Hardness as CaCO3	72.6		1.0	mg/L	33.1	40.9	96	70-130			
Matrix Spike (2206454-MS2)			**Source: 22H0066-01**		Prepared & Analyzed: 08/03/22						
Total Hardness as CaCO3	36.5		1.0	mg/L	33.1	3.94	98	70-130			
Batch 2206465 - General Preparation											
Duplicate (2206465-DUP1)			**Source: 22H0057-01**		Prepared: 08/03/22 Analyzed: 08/05/22						
Total Suspended Solids	ND		5.0	mg/L		ND				20	
Batch 2206486 - General Preparation											
Blank (2206486-BLK1)					Prepared: 08/03/22 Analyzed: 08/05/22						
Total Dissolved Solids	ND		10	mg/L							

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COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206486 - General Preparation											
Duplicate (2206486-DUP1)			**Source: 22G1619-01**		Prepared: 08/03/22 Analyzed: 08/05/22						
Total Dissolved Solids	271		10	mg/L		259			5	20	
Batch 2206508 - General Preparation											
Blank (2206508-BLK1)					Prepared & Analyzed: 08/04/22						
Ammonia as N	ND		0.10	mg/L							
LCS (2206508-BS1)					Prepared & Analyzed: 08/04/22						
Ammonia as N	0.481		0.10	mg/L	0.500		96	80-120			
LCS Dup (2206508-BSD1)					Prepared & Analyzed: 08/04/22						
Ammonia as N	0.473		0.10	mg/L	0.500		95	80-120	2	25	
Matrix Spike (2206508-MS1)			**Source: 22H0170-07**		Prepared & Analyzed: 08/04/22						
Ammonia as N	0.511		0.10	mg/L	0.500	ND	102	75-125			
Matrix Spike Dup (2206508-MSD1)			**Source: 22H0170-07**		Prepared & Analyzed: 08/04/22						
Ammonia as N	0.522		0.10	mg/L	0.500	ND	104	75-125	2	25	
Batch 2206514 - General Prep											
Blank (2206514-BLK1)					Prepared & Analyzed: 08/04/22						
Cyanide (total)	ND		0.0050	mg/L							
LCS (2206514-BS1)					Prepared & Analyzed: 08/04/22						
Cyanide (total)	0.0847		0.0050	mg/L	0.100		85	75-125			

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206514 - General Prep											
LCS Dup (2206514-BSD1)					Prepared & Analyzed: 08/04/22						
Cyanide (total)	0.0884		0.0050	mg/L	0.100		88	75-125	4	25	
Matrix Spike (2206514-MS1)			**Source: 22H0066-01**		Prepared & Analyzed: 08/04/22						
Cyanide (total)	0.0694		0.0050	mg/L	0.100	0.00260	67	75-125			QM-7
Matrix Spike Dup (2206514-MSD1)			**Source: 22H0066-01**		Prepared & Analyzed: 08/04/22						
Cyanide (total)	0.0795		0.0050	mg/L	0.100	0.00260	77	75-125	14	25	
Batch 2206518 - Solvent Extract											
Blank (2206518-BLK1)					Prepared: 08/04/22 Analyzed: 08/05/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND		5.0	mg/L							
LCS (2206518-BS1)					Prepared: 08/04/22 Analyzed: 08/05/22						
Hexane Extractable Material (HEM, Oil & Grease)	42.7		5.0	mg/L	40.0		107	78-114			
LCS Dup (2206518-BSD1)					Prepared: 08/04/22 Analyzed: 08/05/22						
Hexane Extractable Material (HEM, Oil & Grease)	42.4		5.0	mg/L	40.0		106	78-114	0.7	18	
Batch 2206528 - General Preparation											
Blank (2206528-BLK1)					Prepared & Analyzed: 08/04/22						
Total Kjeldahl Nitrogen	ND		0.20	mg/L							
LCS (2206528-BS1)					Prepared & Analyzed: 08/04/22						
Total Kjeldahl Nitrogen	0.649		0.20	mg/L	0.500		130	80-120			QM-1

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206528 - General Preparation											
LCS Dup (2206528-BSD1)					Prepared & Analyzed: 08/04/22						
Total Kjeldahl Nitrogen	0.636		0.20	mg/L	0.500		127	80-120	2	20	QM-1
Matrix Spike (2206528-MS1)			**Source: 22H0066-01**		Prepared & Analyzed: 08/04/22						
Total Kjeldahl Nitrogen	0.437		0.20	mg/L	0.500	0.0480	78	75-125			
Matrix Spike Dup (2206528-MSD1)			**Source: 22H0066-01**		Prepared & Analyzed: 08/04/22						
Total Kjeldahl Nitrogen	0.482		0.20	mg/L	0.500	0.0480	87	75-125	10	25	
Batch 2206601 - General Preparation											
Blank (2206601-BLK1)					Prepared & Analyzed: 08/05/22						
Total Phosphorus as P	ND		0.050	mg/L							
LCS (2206601-BS1)					Prepared & Analyzed: 08/05/22						
Total Phosphorus as P	0.311		0.050	mg/L	0.300		104	80-120			
LCS Dup (2206601-BSD1)					Prepared & Analyzed: 08/05/22						
Total Phosphorus as P	0.313		0.050	mg/L	0.300		104	80-120	0.9	25	
Matrix Spike (2206601-MS1)			**Source: 22H0066-01**		Prepared & Analyzed: 08/05/22						
Total Phosphorus as P	0.295		0.050	mg/L	0.300	ND	98	75-125			
Matrix Spike Dup (2206601-MSD1)			**Source: 22H0066-01**		Prepared & Analyzed: 08/05/22						
Total Phosphorus as P	0.299		0.050	mg/L	0.300	ND	100	75-125	1	30	

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Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206373 - EPA 3510B GCNV											
Blank (2206373-BLK1)					Prepared & Analyzed: 08/01/22						
Diesel	ND		0.050	mg/L							
Motor Oil	ND		0.050	"							
Surrogate: o-Terphenyl	*0.0233*			*"*	*0.0250*		*93*	*65-135*			
LCS (2206373-BS1)					Prepared & Analyzed: 08/01/22						
Diesel	2.06		0.050	mg/L	2.50		82	65-135			
Surrogate: o-Terphenyl	*0.0248*			*"*	*0.0250*		*99*	*65-135*			
LCS Dup (2206373-BSD1)					Prepared & Analyzed: 08/01/22						
Diesel	2.25		0.050	mg/L	2.50		90	65-135	9	30	
Surrogate: o-Terphenyl	*0.0265*			*"*	*0.0250*		*106*	*65-135*			
Matrix Spike (2206373-MS1)			**Source: 22G1654-01**		Prepared & Analyzed: 08/01/22						
Diesel	2.06		0.050	mg/L	2.50	ND	83	46-137			
Surrogate: o-Terphenyl	*0.0266*			*"*	*0.0250*		*106*	*65-135*			
Matrix Spike Dup (2206373-MSD1)			**Source: 22G1654-01**		Prepared & Analyzed: 08/01/22						
Diesel	2.67		0.050	mg/L	2.50	ND	107	46-137	25	30	
Surrogate: o-Terphenyl	*0.0274*			*"*	*0.0250*		*110*	*65-135*			

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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206398 - EPA 200 Series											
Blank (2206398-BLK1)					Prepared & Analyzed: 08/02/22						
Aluminum	ND		20	µg/L							
Barium	ND		5.0	"							
Boron	ND		20	"							
Cadmium	ND		0.50	"							
Chromium	ND		1.0	"							
Copper	ND		2.0	"							
Lead	ND		5.0	"							
Manganese	ND		2.0	"							
Nickel	ND		2.0	"							
Silver	ND		0.50	"							
Zinc	ND		10	"							
LCS (2206398-BS1)					Prepared & Analyzed: 08/02/22						
Aluminum	520		20	µg/L	500		104	85-115			
Barium	102		5.0	"	100		102	85-115			
Boron	506		20	"	500		101	85-115			
Cadmium	98.8		0.50	"	100		99	85-115			
Chromium	100		1.0	"	100		100	85-115			
Copper	101		2.0	"	100		101	85-115			
Lead	96.0		5.0	"	100		96	85-115			
Manganese	103		2.0	"	100		103	85-115			
Nickel	99.2		2.0	"	100		99	85-115			
Silver	106		0.50	"	100		106	85-115			
Zinc	99.4		10	"	100		99	85-115			
Matrix Spike (2206398-MS1)				**Source: 22H0067-02**	Prepared & Analyzed: 08/02/22						
Aluminum	581		20	µg/L	500	91.7	98	70-130			
Barium	126		5.0	"	100	27.1	99	70-130			
Boron	1250		20	"	500	629	125	70-130			
Cadmium	97.1		0.50	"	100	ND	97	70-130			
Chromium	95.6		1.0	"	100	2.03	94	70-130			
Copper	115		2.0	"	100	18.1	97	70-130			

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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206398 - EPA 200 Series											
Matrix Spike (2206398-MS1)			**Source: 22H0067-02**		Prepared & Analyzed: 08/02/22						
Lead	93.6		5.0	µg/L	100	0.0740	93	70-130			
Manganese	97.0		2.0	"	100	1.02	96	70-130			
Nickel	93.7		2.0	"	100	0.213	94	70-130			
Silver	101		0.50	"	100	ND	101	70-130			
Zinc	97.5		10	"	100	3.85	94	70-130			
Matrix Spike (2206398-MS2)			**Source: 22H0066-06**		Prepared & Analyzed: 08/02/22						
Aluminum	509		20	µg/L	500	27.0	96	70-130			
Barium	103		5.0	"	100	5.22	98	70-130			
Boron	590		20	"	500	225	73	70-130			
Cadmium	94.8		0.50	"	100	ND	95	70-130			
Chromium	93.5		1.0	"	100	0.579	93	70-130			
Copper	99.3		2.0	"	100	0.298	99	70-130			
Lead	92.6		5.0	"	100	0.0520	93	70-130			
Manganese	99.5		2.0	"	100	4.55	95	70-130			
Nickel	92.3		2.0	"	100	ND	92	70-130			
Silver	103		0.50	"	100	ND	103	70-130			
Zinc	92.3		10	"	100	0.615	92	70-130			
Batch 2206505 - EPA 200 Series											
Blank (2206505-BLK1)					Prepared & Analyzed: 08/04/22						
Calcium	ND		1000	µg/L							
Iron	ND		100	"							
Magnesium	ND		1000	"							
Potassium	ND		1000	"							
Sodium	ND		1000	"							

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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206505 - EPA 200 Series											
LCS (2206505-BS1)					Prepared & Analyzed: 08/04/22						
Calcium	5000		1000	µg/L	5000		100	85-115			
Iron	503		100	"	500		101	85-115			
Magnesium	5070		1000	"	5000		101	85-115			
Potassium	5050		1000	"	5000		101	85-115			
Sodium	5170		1000	"	5000		103	85-115			
Matrix Spike (2206505-MS1)			**Source: 22H0066-01**		Prepared & Analyzed: 08/04/22						
Calcium	6230		1000	µg/L	5000	1280	99	70-130			
Iron	639		100	"	500	127	103	70-130			
Magnesium	5220		1000	"	5000	173	101	70-130			
Potassium	5280		1000	"	5000	316	99	70-130			
Sodium	5560		1000	"	5000	778	96	70-130			
Matrix Spike (2206505-MS2)			**Source: 22H0280-01**		Prepared & Analyzed: 08/04/22						
Calcium	15100		1000	µg/L	5000	10000	102	70-130			
Iron	647		100	"	500	106	108	70-130			
Magnesium	10100		1000	"	5000	5160	100	70-130			
Potassium	6680		1000	"	5000	1960	94	70-130			
Sodium	10900		1000	"	5000	8260	53	70-130			QM-7

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2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0066
COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206441 - EPA 200 No Digestion											
Blank (2206441-BLK1)					Prepared & Analyzed: 08/03/22						
Aluminum	ND		20	µg/L							
Silver	ND		0.50	"							
LCS (2206441-BS1)					Prepared & Analyzed: 08/03/22						
Aluminum	488		20	µg/L	500		98	85-115			
Silver	97.9		0.50	"	100		98	85-115			
Matrix Spike (2206441-MS1)			**Source: 22H0066-01**		Prepared & Analyzed: 08/03/22						
Aluminum	463		20	µg/L	500	12.3	90	70-130			
Silver	93.1		0.50	"	100	ND	93	70-130			
Batch 2206454 - EPA 200 No Digestion											
Blank (2206454-BLK1)					Prepared: 08/03/22 Analyzed: 08/04/22						
Iron	ND		100	µg/L							
LCS (2206454-BS1)					Prepared: 08/03/22 Analyzed: 08/04/22						
Iron	479		100	µg/L	500		96	85-115			
Matrix Spike (2206454-MS1)			**Source: 22H0064-01**		Prepared: 08/03/22 Analyzed: 08/04/22						
Iron	473		100	µg/L	500	ND	95	70-130			
Matrix Spike (2206454-MS2)			**Source: 22H0066-01**		Prepared: 08/03/22 Analyzed: 08/04/22						
Iron	473		100	µg/L	500	29.2	89	70-130			

08/08/22 14:25

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0066
COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206443 - EPA 5030 Water GC											
Blank (2206443-BLK1)					Prepared & Analyzed: 08/03/22						
Gasoline	ND		50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*17.0*			"	*20.0*		*85*	*65-135*			
LCS (2206443-BS1)					Prepared & Analyzed: 08/03/22						
Gasoline	520		50	µg/L	500		104	70-130			
Surrogate: o-Chlorotoluene (Gas)	*18.9*			"	*20.0*		*95*	*65-135*			
LCS Dup (2206443-BSD1)					Prepared & Analyzed: 08/03/22						
Gasoline	484		50	µg/L	500		97	70-130	7	30	
Surrogate: o-Chlorotoluene (Gas)	*18.6*			"	*20.0*		*93*	*65-135*			
Matrix Spike (2206443-MS1)			**Source: 22H0136-01**		Prepared & Analyzed: 08/03/22						
Gasoline	617		50	µg/L	500	ND	123	68-132			
Surrogate: o-Chlorotoluene (Gas)	*19.0*			"	*20.0*		*95*	*65-135*			
Matrix Spike Dup (2206443-MSD1)			**Source: 22H0136-01**		Prepared & Analyzed: 08/03/22						
Gasoline	445		50	µg/L	500	ND	89	68-132	32	32	
Surrogate: o-Chlorotoluene (Gas)	*17.9*			"	*20.0*		*90*	*65-135*			

08/08/22 14:25

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22H0066**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206445 - EPA 3510B GCMS											
Blank (2206445-BLK1)					Prepared & Analyzed: 08/02/22						
Di-isopropyl ether	ND		0.50	µg/L							
Ethyl tert-butyl ether	ND		0.50	"							
Methyl tert-butyl ether	ND		0.50	"							
tert-Amyl methyl ether	ND		0.50	"							
tert-Butyl alcohol	ND		5.0	"							
Surrogate: Toluene-d8	*9.41*			*"*	*10.0*		*94*	*72-125*			
LCS (2206445-BS1)					Prepared & Analyzed: 08/02/22						
Methyl tert-butyl ether	21.7		0.50	µg/L	20.0		108	52-130			
Surrogate: Toluene-d8	*10.5*			*"*	*10.0*		*105*	*72-125*			
LCS Dup (2206445-BSD1)					Prepared & Analyzed: 08/02/22						
Methyl tert-butyl ether	21.9		0.50	µg/L	20.0		110	52-130	1	30	
Surrogate: Toluene-d8	*9.77*			*"*	*10.0*		*98*	*72-125*			

08/08/22 14:25

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22H0066**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
QM-1	The spike recovery was outside acceptance limits for the LCS or LCSD. The batch was accepted based on acceptable MS/MSD recoveries & RPD's.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22H0066 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By
Emily Applequist, Bethany Leach

Job Description
Monitor water chemistry in UARP reaches.

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[X] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [X] NO [ ]

GLOBAL ID

FIELD CONDITIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	ANALYSIS REQUESTED: TSS, TDS, Hardness, Alkalinity, NO2-N, NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS: 1	2	3	5	SPECIAL INSTRUCTIONS
8/1/22	0845	IS-5-GL		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
8/1/22	1030	R-IS-4-GL		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
8/1/22	1240	IS-9-GLL		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
8/1/22	1330	IS-7-SFRR		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
8/1/22	1150	IS-6-GL		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
8/1/22	1400	IS-8-SFRR		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
8/1/22	1045	R-IS-4-GLB		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	INVOICE TO:
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	**Project No. 750.10 Task 0620.01**
				Surface water			6											X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H_2SO_4 (5) NH_2/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Bethany Leach Stillwater Sciences	8/1/22 16:55		

RECEIVED AT LAB BY: CB **DATE/TIME:** 08/01/22 1655 **CONDITIONS/COMMENTS:** 4.4/5.8

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER _____ **AIR BILL #** _____

basic laboratory

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02

Lab No: 22H0098
Reported: 08/18/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22H0098, received on 08/02/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: IS-5-GC
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0098-01
Sampled: 08/01/22 08:45
Received: 08/02/22 10:06

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.21		0.04	0.10	"	"	"	"
Lead	"	0.024	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.42	J	0.22	0.50	EPA 1631E	08/03/22	08/03/22	B2H0969 / DJC
Methyl Mercury as Mercury	"	0.035	J	0.017	0.050	EPA 1630	08/03/22	08/02/22	B2H0935 / EDM
Nickel	ug/l	0.16		0.02	0.10	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/11/22	08/05/22	B2H0987 / EDM
Zinc	"	0.65		0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/16/22	08/16/22	B2H1319 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.18		0.04	0.10	"	"	"	"
Lead	"	0.014	J	0.007	0.050	"	"	"	"
Nickel	"	0.15		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/11/22	08/11/22	B2H1219 / EDM
Zinc	"	0.53		0.12	0.50	EPA 1638	08/16/22	08/16/22	B2H1319 / EDM

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Analytical Report

Description: R-IS-4-GC
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0098-02
Sampled: 08/01/22 10:30
Received: 08/02/22 10:06

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Cadmium	"	0.05	J	0.02	0.10	"	"	"	"
Copper	"	0.22		0.04	0.10	"	"	"	"
Lead	"	0.018	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.73		0.22	0.50	EPA 1631E	08/03/22	08/03/22	B2H0969 / DJC
Methyl Mercury as Mercury	"	0.024	J	0.017	0.050	EPA 1630	08/03/22	08/02/22	B2H0935 / EDM
Nickel	ug/l	0.16		0.02	0.10	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/11/22	08/05/22	B2H0987 / EDM
Zinc	"	0.99		0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/16/22	08/16/22	B2H1319 / EDM
Cadmium	"	0.05	J	0.02	0.10	"	"	"	"
Copper	"	0.20		0.04	0.10	"	"	"	"
Lead	"	0.011	J	0.007	0.050	"	"	"	"
Nickel	"	0.13		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/11/22	08/11/22	B2H1219 / EDM
Zinc	"	0.84		0.12	0.50	EPA 1638	08/16/22	08/16/22	B2H1319 / EDM

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Analytical Report

Description: IS-9-GCC
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0098-03
Sampled: 08/01/22 12:40
Received: 08/02/22 10:06

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.14	J	0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.71		0.04	0.10	"	"	"	"
Lead	"	0.408		0.007	0.050	"	"	"	"
Mercury	ng/l	1.32		0.22	0.50	EPA 1631E	08/03/22	08/03/22	B2H0969 / DJC
Methyl Mercury as Mercury	"	0.065		0.017	0.050	EPA 1630	08/03/22	08/02/22	B2H0935 / EDM
Nickel	ug/l	0.34		0.02	0.10	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/11/22	08/05/22	B2H0987 / EDM
Zinc	"	2.70		0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/16/22	08/16/22	B2H1319 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.56		0.04	0.10	"	"	"	"
Lead	"	0.008	J	0.007	0.050	"	"	"	"
Nickel	"	0.11		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/11/22	08/11/22	B2H1219 / EDM
Zinc	"	0.77		0.12	0.50	EPA 1638	08/16/22	08/16/22	B2H1319 / EDM

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Analytical Report

Description: IS-6-GC
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0098-04
Sampled: 08/01/22 11:50
Received: 08/02/22 10:06

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.26		0.04	0.10	"	"	"	"
Lead	"	0.015	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.57		0.22	0.50	EPA 1631E	08/03/22	08/03/22	B2H0969 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	08/03/22	08/02/22	B2H0935 / EDM
Nickel	ug/l	0.10		0.02	0.10	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/11/22	08/05/22	B2H0987 / EDM
Zinc	"	0.43	J	0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/16/22	08/16/22	B2H1319 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.22		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.09	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/11/22	08/11/22	B2H1219 / EDM
Zinc	"	0.33	J	0.12	0.50	EPA 1638	08/16/22	08/16/22	B2H1319 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total **Batch B2H0935 - EPA 1630 Distillation (Modified)**										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.04	0.050	ng/l	2.00		102	67-133			
Matrix Spike	Source: 22G0579-03									
Methyl Mercury as Mercury	1.17	0.050	ng/l	1.00	0.062	111	65-135			
Matrix Spike Dup	Source: 22G0579-03									
Methyl Mercury as Mercury	1.20	0.050	ng/l	1.00	0.062	114	65-135	2.31	35	
Metals - Total **Batch B2H0969 - BrCl Digestion**										

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2H0969 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	9.62	0.50	ng/l	10.0		96.2	77-123			
Matrix Spike	Source: 22G1101-01									
Mercury	12.2	0.50	ng/l	10.0	2.25	99.4	71-125			
Matrix Spike	Source: 22H0098-01									
Mercury	11.0	0.50	ng/l	10.0	0.42	106	71-125			
Matrix Spike Dup	Source: 22G1101-01									
Mercury	12.0	0.50	ng/l	10.0	2.25	97.6	71-125	1.46	24	
Matrix Spike Dup	Source: 22H0098-01									
Mercury	12.1	0.50	ng/l	10.0	0.42	117	71-125	9.56	24	
Metals - Total	**Batch B2H0987 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	207	2.0	ug/l	200		104	85-115			
Duplicate	Source: 22G1234-01									
Selenium	ND	20.0	ug/l		ND				20	
Duplicate	Source: 22H0017-02									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22G1234-01									
Selenium	202	20.0	ug/l	200	ND	101	75-125			
Matrix Spike	Source: 22H0017-02									
Selenium	200	2.0	ug/l	200	ND	99.8	75-125			
Metals - Total	**Batch B2H1240 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total **Batch B2H1240 - EPA 1638 - Closed Bottle Oven Digestion**										
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.5	50-150			
Cadmium	0.23	0.10	ug/l	0.250		93.7	84-113			
Copper	0.23	0.10	ug/l	0.250		93.1	51-145			
Lead	0.121	0.050	ug/l	0.125		97.0	72-143			
Nickel	0.25	0.10	ug/l	0.250		100	68-134			
Zinc	1.23	0.50	ug/l	1.25		98.3	46-146			
LCS										
Arsenic	1.18	0.50	ug/l	1.25		94.2	50-150			
Cadmium	0.23	0.10	ug/l	0.250		91.8	84-113			
Copper	0.24	0.10	ug/l	0.250		95.2	51-145			
Lead	0.120	0.050	ug/l	0.125		96.2	72-143			
Nickel	0.25	0.10	ug/l	0.250		101	68-134			
Zinc	1.20	0.50	ug/l	1.25		96.3	46-146			
Matrix Spike	Source: 22H0098-01									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.47	0.10	ug/l	0.500	ND	95.0	84-113			
Copper	0.68	0.10	ug/l	0.500	0.21	94.4	51-145			
Lead	0.268	0.050	ug/l	0.250	0.024	97.5	72-143			
Nickel	0.65	0.10	ug/l	0.500	0.16	97.6	68-134			
Zinc	3.10	0.50	ug/l	2.50	0.65	97.8	46-146			
Matrix Spike	Source: 22H0206-01									
Arsenic	2.43	0.50	ug/l	2.50	ND	97.0	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.2	84-113			
Copper	0.61	0.10	ug/l	0.500	0.13	95.6	51-145			
Lead	0.245	0.050	ug/l	0.250	0.012	93.1	72-143			
Nickel	0.53	0.10	ug/l	0.500	0.05	95.0	68-134			
Zinc	2.58	0.50	ug/l	2.50	0.15	96.9	46-146			
Matrix Spike Dup	Source: 22H0098-01									
Arsenic	2.44	0.50	ug/l	2.50	ND	97.6	50-150	3.61	20	
Cadmium	0.47	0.10	ug/l	0.500	ND	93.6	84-113	1.47	20	
Copper	0.68	0.10	ug/l	0.500	0.21	94.1	51-145	0.235	20	
Lead	0.270	0.050	ug/l	0.250	0.024	98.4	72-143	0.772	20	
Nickel	0.62	0.10	ug/l	0.500	0.16	91.2	68-134	5.01	20	
Zinc	3.05	0.50	ug/l	2.50	0.65	96.1	46-146	1.38	20	
Matrix Spike Dup	Source: 22H0206-01									
Arsenic	2.40	0.50	ug/l	2.50	ND	95.9	50-150	1.13	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	95.1	84-113	1.13	20	
Copper	0.65	0.10	ug/l	0.500	0.13	103	51-145	5.48	20	
Lead	0.252	0.050	ug/l	0.250	0.012	95.7	72-143	2.54	20	
Nickel	0.54	0.10	ug/l	0.500	0.05	97.2	68-134	2.04	20	

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2H1240 - EPA 1638 - Closed Bottle Oven Digestion**									
Zinc	2.50	0.50	ug/l	2.50	0.15	93.8	46-146	2.99	20	
Metals - Dissolved	**Batch B2H1219 - EPA 200.8 Diss**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	205	2.0	ug/l	200		103	85-115			
Duplicate	Source: 22H0017-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22H0017-01									
Selenium	209	2.0	ug/l	200	ND	104	75-125			
Metals - Dissolved	**Batch B2H1319 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.28	0.50	ug/l	1.25		103	50-150			
Cadmium	0.24	0.10	ug/l	0.250		97.2	84-113			
Copper	0.27	0.10	ug/l	0.250		110	51-145			
Lead	0.131	0.050	ug/l	0.125		105	72-143			
Nickel	0.26	0.10	ug/l	0.250		105	68-134			
Zinc	1.36	0.50	ug/l	1.25		109	46-146			
LCS										
Arsenic	1.30	0.50	ug/l	1.25		104	50-150			
Cadmium	0.25	0.10	ug/l	0.250		101	84-113			
Copper	0.26	0.10	ug/l	0.250		105	51-145			
Lead	0.129	0.050	ug/l	0.125		103	72-143			
Nickel	0.24	0.10	ug/l	0.250		95.1	68-134			
Zinc	1.32	0.50	ug/l	1.25		105	46-146			
Matrix Spike	Source: 22H0098-01									

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved **Batch B2H1319 - EPA 1638 - Dissolved**										
Arsenic	2.78	0.50	ug/l	2.50	ND	111	50-150			
Cadmium	0.52	0.10	ug/l	0.500	ND	104	84-113			
Copper	0.73	0.10	ug/l	0.500	0.18	109	51-145			
Lead	0.285	0.050	ug/l	0.250	0.014	108	72-143			
Nickel	0.67	0.10	ug/l	0.500	0.15	105	68-134			
Zinc	3.21	0.50	ug/l	2.50	0.53	107	46-146			
Matrix Spike	Source: 22H0206-01									
Arsenic	2.75	0.50	ug/l	2.50	ND	110	50-150			
Cadmium	0.54	0.10	ug/l	0.500	ND	107	84-113			
Copper	0.66	0.10	ug/l	0.500	0.12	108	51-145			
Lead	0.280	0.050	ug/l	0.250	ND	112	72-143			
Nickel	0.60	0.10	ug/l	0.500	0.05	109	68-134			
Zinc	2.89	0.50	ug/l	2.50	0.22	107	46-146			
Matrix Spike Dup	Source: 22H0098-01									
Arsenic	2.67	0.50	ug/l	2.50	ND	107	50-150	3.79	20	
Cadmium	0.52	0.10	ug/l	0.500	ND	104	84-113	0.688	20	
Copper	0.72	0.10	ug/l	0.500	0.18	108	51-145	0.695	20	
Lead	0.279	0.050	ug/l	0.250	0.014	106	72-143	2.23	20	
Nickel	0.65	0.10	ug/l	0.500	0.15	101	68-134	2.69	20	
Zinc	3.16	0.50	ug/l	2.50	0.53	105	46-146	1.59	20	
Matrix Spike Dup	Source: 22H0206-01									
Arsenic	2.59	0.50	ug/l	2.50	ND	104	50-150	5.93	20	
Cadmium	0.53	0.10	ug/l	0.500	ND	107	84-113	0.284	20	
Copper	0.65	0.10	ug/l	0.500	0.12	107	51-145	0.535	20	
Lead	0.267	0.050	ug/l	0.250	ND	107	72-143	4.64	20	
Nickel	0.58	0.10	ug/l	0.500	0.05	105	68-134	3.17	20	
Zinc	2.89	0.50	ug/l	2.50	0.22	107	46-146	0.0758	20	

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	CA-ELAP does not accredit this analyte or method as of December 2020. *(Newly released 2021 FOA tables may include this analyte or method.)*
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless samples are received on ice and collected on the same day as delivery. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

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Analytical Report

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen

Ricky Jensen, General Manager
Pace Analytical Services LLC - Redding CA
California ELAP Cert #1677 & 2718

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

22H0098

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494
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LABORATORY WORK ORDER # 22H0098
PAGE 1 OF 2

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS: 279 Cousteau Place, Suite 400, Davis, CA 95618

REPORT TO ☒ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED: ☑ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one): ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	ANALYSES REQUESTED: T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	8/1/22	0845 AM PM	SW		✓	IS-5-GC		6	✓	✓	✓	✓	✓	✓
2	8/1/22	1030 AM PM	↓		✓	R-IS-4-GC		6	✓	✓	✓	✓	✓	✓
3	8/1/22	1240 AM PM			✓	IS-9-GCC		6	✓	✓	✓	✓	✓	✓
4	8/1/22	1150 AM PM			✓	IS-6-GC		6	✓	✓	✓	✓	✓	✓
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												

SAMPLED BY: (please print) Emily Applequist, Bethany Leach

RELINQUISHED DATE / TIME: 8/1/22 / 16:00 PM

SAMPLING / ANALYSIS COMMENTS: (1) Total and Dissolved LL 1638 Metals

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME: Emily Applequist
SIGNATURE:
DATE: 8/1/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
	8-2-22 1006		8-2-22 1516

For Official Lab Comments Only

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

FRM-002.1 - Chain of Custody (rev 1.1)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22H0098

SHIPPING INFORMATION

Walk-In ☐
Courier ☐
FedEx ☑
UPS ☐
Other ☐

Cooler Present? Yes ☑ No ☐

Samples Received By: RH Date: 8.2.22

	Yes	No
Samples received on ice?	☑	☐
Samples received the same day collected?	☐	☑

Ice type? ☑ Wet ☐ Blue ☐ Other _____ melted

SAMPLE TEMPERATURES AT RECEIPT Therm. ID (Circle one): Therm-36 Therm-37 (Therm-59) Other: _____

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	6.2	-06		-11		-16	
-02	5.8	-07		-12		-17	
-03	5.3	-08		-13		-18	
-04	8.2	-09		-14		-19	
-05		-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: RH Date: ~~22H0~~ 8.2.22 CH 8.2.22

	Yes	No	NA
Custody seals present?	☐	☐	☑
Samples in proper containers?	☑	☐	
Sample containers damaged?	☐	☑	
Sufficient sample volume for indicated tests?	☑	☐	
Samples received within holding times?	☑	☐	
Are VOA vials free of headspace?	☐	☐	☑
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☑

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☑	☐	☐
Preserved in the lab?	☑	☐	☐

Lab Preservation Date & Time 8.2.22 1043

☐ H2SO4 (ID_____) ☑ HNO3 (ID 2G08006) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☐
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☐	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☐
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☐
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☐
Are proper preservation lables present?	☐	☐	☐

By:_____ Meter ID:_____

Preservation checked at Lab? Date & Time 8.2.22 1046 Test Strip (ID 2B24019)

Preservation and Preservation Checks performed by: RH

COMMENTS, DISCREPANCEIS, ANOMALIES

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02

Lab No: 22H0099
Reported: 08/24/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22H0099, received on 08/02/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: IS-7-SFRR
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0099-01
Sampled: 08/01/22 13:30
Received: 08/02/22 10:07

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.20		0.04	0.10	"	"	"	"
Lead	"	0.014	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.48	J	0.22	0.50	EPA 1631E	08/06/22	08/06/22	B2H1088 / DJC
Methyl Mercury as Mercury	"	0.020	J	0.017	0.050	EPA 1630	08/03/22	08/02/22	B2H0935 / EDM
Nickel	ug/l	0.09	J	0.02	0.10	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/13/22	08/09/22	B2H1060 / EDM
Zinc	"	0.28	J	0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/16/22	08/16/22	B2H1319 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.18		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.08	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/13/22	08/13/22	B2H1262 / EDM
Zinc	"	0.21	J	0.12	0.50	EPA 1638	08/16/22	08/16/22	B2H1319 / EDM

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Analytical Report

Description: IS-8-SFRR
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0099-02
Sampled: 08/01/22 14:00
Received: 08/02/22 10:07

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.23		0.04	0.10	"	"	"	"
Lead	"	0.014	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.41	J	0.22	0.50	EPA 1631E	08/06/22	08/06/22	B2H1088 / DJC
Methyl Mercury as Mercury	"	0.021	J	0.017	0.050	EPA 1630	08/03/22	08/02/22	B2H0935 / EDM
Nickel	ug/l	0.09	J	0.02	0.10	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/13/22	08/09/22	B2H1060 / EDM
Zinc	"	0.40	J	0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/16/22	08/16/22	B2H1319 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.20		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.07	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/13/22	08/13/22	B2H1262 / EDM
Zinc	"	0.25	J	0.12	0.50	EPA 1638	08/16/22	08/16/22	B2H1319 / EDM

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Analytical Report

Description: R-IS-4-GCB
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0099-03
Sampled: 08/01/22 10:45
Received: 08/02/22 10:07

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.28		0.04	0.10	"	"	"	"
Lead	"	0.018	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.47	J	0.22	0.50	EPA 1631E	08/06/22	08/06/22	B2H1088 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	08/19/22	08/18/22	B2H1362 / EDM
Nickel	ug/l	0.14		0.02	0.10	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/13/22	08/09/22	B2H1060 / EDM
Zinc	"	3.78		0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/16/22	08/16/22	B2H1319 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.22		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.11		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/13/22	08/13/22	B2H1262 / EDM
Zinc	"	3.37		0.12	0.50	EPA 1638	08/16/22	08/16/22	B2H1319 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total **Batch B2H0935 - EPA 1630 Distillation (Modified)**										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.04	0.050	ng/l	2.00		102	67-133			
Matrix Spike	Source: 22G0579-03									
Methyl Mercury as Mercury	1.17	0.050	ng/l	1.00	0.062	111	65-135			
Matrix Spike Dup	Source: 22G0579-03									
Methyl Mercury as Mercury	1.20	0.050	ng/l	1.00	0.062	114	65-135	2.31	35	
Metals - Total **Batch B2H1060 - EPA 200.8 Total**										

basic laboratory
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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2H1060 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	207	2.0	ug/l	200		104	85-115			
Duplicate	Source: 22H0099-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22H0192-03									
Selenium	1.3	2.0	ug/l		1.2			8.00	20	J
Matrix Spike	Source: 22H0099-01									
Selenium	204	2.0	ug/l	200	ND	102	75-125			
Matrix Spike	Source: 22H0192-03									
Selenium	203	2.0	ug/l	200	1.2	101	75-125			
Metals - Total	**Batch B2H1088 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	9.98	0.50	ng/l	10.0		99.8	77-123			
Matrix Spike	Source: 22G1113-04									
Mercury	9.58	0.50	ng/l	10.0	0.70	88.8	71-125			
Matrix Spike	Source: 22H0205-01									
Mercury	11.8	0.50	ng/l	10.0	0.63	112	71-125			
Matrix Spike Dup	Source: 22G1113-04									
Mercury	10.1	0.50	ng/l	10.0	0.70	94.4	71-125	5.70	24	
Matrix Spike Dup	Source: 22H0205-01									
Mercury	12.0	0.50	ng/l	10.0	0.63	113	71-125	1.28	24	
Metals - Total	**Batch B2H1240 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total **Batch B2H1240 - EPA 1638 - Closed Bottle Oven Digestion**										
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.5	50-150			
Cadmium	0.23	0.10	ug/l	0.250		93.7	84-113			
Copper	0.23	0.10	ug/l	0.250		93.1	51-145			
Lead	0.121	0.050	ug/l	0.125		97.0	72-143			
Nickel	0.25	0.10	ug/l	0.250		100	68-134			
Zinc	1.23	0.50	ug/l	1.25		98.3	46-146			
LCS										
Arsenic	1.18	0.50	ug/l	1.25		94.2	50-150			
Cadmium	0.23	0.10	ug/l	0.250		91.8	84-113			
Copper	0.24	0.10	ug/l	0.250		95.2	51-145			
Lead	0.120	0.050	ug/l	0.125		96.2	72-143			
Nickel	0.25	0.10	ug/l	0.250		101	68-134			
Zinc	1.20	0.50	ug/l	1.25		96.3	46-146			
Matrix Spike	Source: 22H0098-01									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.47	0.10	ug/l	0.500	ND	95.0	84-113			
Copper	0.68	0.10	ug/l	0.500	0.21	94.4	51-145			
Lead	0.268	0.050	ug/l	0.250	0.024	97.5	72-143			
Nickel	0.65	0.10	ug/l	0.500	0.16	97.6	68-134			
Zinc	3.10	0.50	ug/l	2.50	0.65	97.8	46-146			
Matrix Spike	Source: 22H0206-01									
Arsenic	2.43	0.50	ug/l	2.50	ND	97.0	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.2	84-113			
Copper	0.61	0.10	ug/l	0.500	0.13	95.6	51-145			
Lead	0.245	0.050	ug/l	0.250	0.012	93.1	72-143			
Nickel	0.53	0.10	ug/l	0.500	0.05	95.0	68-134			
Zinc	2.58	0.50	ug/l	2.50	0.15	96.9	46-146			
Matrix Spike Dup	Source: 22H0098-01									
Arsenic	2.44	0.50	ug/l	2.50	ND	97.6	50-150	3.61	20	
Cadmium	0.47	0.10	ug/l	0.500	ND	93.6	84-113	1.47	20	
Copper	0.68	0.10	ug/l	0.500	0.21	94.1	51-145	0.235	20	
Lead	0.270	0.050	ug/l	0.250	0.024	98.4	72-143	0.772	20	
Nickel	0.62	0.10	ug/l	0.500	0.16	91.2	68-134	5.01	20	
Zinc	3.05	0.50	ug/l	2.50	0.65	96.1	46-146	1.38	20	
Matrix Spike Dup	Source: 22H0206-01									
Arsenic	2.40	0.50	ug/l	2.50	ND	95.9	50-150	1.13	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	95.1	84-113	1.13	20	
Copper	0.65	0.10	ug/l	0.500	0.13	103	51-145	5.48	20	
Lead	0.252	0.050	ug/l	0.250	0.012	95.7	72-143	2.54	20	
Nickel	0.54	0.10	ug/l	0.500	0.05	97.2	68-134	2.04	20	

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total **Batch B2H1240 - EPA 1638 - Closed Bottle Oven Digestion**										
Zinc	2.50	0.50	ug/l	2.50	0.15	93.8	46-146	2.99	20	
Metals - Total **Batch B2H1362 - EPA 1630 Distillation (Modified)**										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.24	0.050	ng/l	2.00		112	67-133			
Matrix Spike	Source: 22H0099-03									
Methyl Mercury as Mercury	1.18	0.050	ng/l	1.00	ND	118	65-135			
Matrix Spike	Source: 22H0284-01									
Methyl Mercury as Mercury	1.26	0.050	ng/l	1.00	0.044	122	65-135			
Matrix Spike Dup	Source: 22H0099-03									
Methyl Mercury as Mercury	1.16	0.050	ng/l	1.00	ND	116	65-135	1.92	35	
Matrix Spike Dup	Source: 22H0284-01									
Methyl Mercury as Mercury	1.36	0.050	ng/l	1.00	0.044	131	65-135	7.25	35	
Metals - Dissolved **Batch B2H1262 - EPA 200.8 Diss**										
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	211	2.0	ug/l	200		106	85-115			
Duplicate	Source: 22H0099-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22H0205-02									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22H0099-01									
Selenium	211	2.0	ug/l	200	ND	105	75-125			
Matrix Spike	Source: 22H0205-02									
Selenium	211	2.0	ug/l	200	ND	105	75-125			
Metals - Dissolved **Batch B2H1319 - EPA 1638 - Dissolved**										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved **Batch B2H1319 - EPA 1638 - Dissolved**										
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.28	0.50	ug/l	1.25		103	50-150			
Cadmium	0.24	0.10	ug/l	0.250		97.2	84-113			
Copper	0.27	0.10	ug/l	0.250		110	51-145			
Lead	0.131	0.050	ug/l	0.125		105	72-143			
Nickel	0.26	0.10	ug/l	0.250		105	68-134			
Zinc	1.36	0.50	ug/l	1.25		109	46-146			
LCS										
Arsenic	1.30	0.50	ug/l	1.25		104	50-150			
Cadmium	0.25	0.10	ug/l	0.250		101	84-113			
Copper	0.26	0.10	ug/l	0.250		105	51-145			
Lead	0.129	0.050	ug/l	0.125		103	72-143			
Nickel	0.24	0.10	ug/l	0.250		95.1	68-134			
Zinc	1.32	0.50	ug/l	1.25		105	46-146			
Matrix Spike	Source: 22H0098-01									
Arsenic	2.78	0.50	ug/l	2.50	ND	111	50-150			
Cadmium	0.52	0.10	ug/l	0.500	ND	104	84-113			
Copper	0.73	0.10	ug/l	0.500	0.18	109	51-145			
Lead	0.285	0.050	ug/l	0.250	0.014	108	72-143			
Nickel	0.67	0.10	ug/l	0.500	0.15	105	68-134			
Zinc	3.21	0.50	ug/l	2.50	0.53	107	46-146			
Matrix Spike	Source: 22H0206-01									
Arsenic	2.75	0.50	ug/l	2.50	ND	110	50-150			
Cadmium	0.54	0.10	ug/l	0.500	ND	107	84-113			
Copper	0.66	0.10	ug/l	0.500	0.12	108	51-145			
Lead	0.280	0.050	ug/l	0.250	ND	112	72-143			
Nickel	0.60	0.10	ug/l	0.500	0.05	109	68-134			
Zinc	2.89	0.50	ug/l	2.50	0.22	107	46-146			
Matrix Spike Dup	Source: 22H0098-01									
Arsenic	2.67	0.50	ug/l	2.50	ND	107	50-150	3.79	20	
Cadmium	0.52	0.10	ug/l	0.500	ND	104	84-113	0.688	20	
Copper	0.72	0.10	ug/l	0.500	0.18	108	51-145	0.695	20	
Lead	0.279	0.050	ug/l	0.250	0.014	106	72-143	2.23	20	
Nickel	0.65	0.10	ug/l	0.500	0.15	101	68-134	2.69	20	

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved **Batch B2H1319 - EPA 1638 - Dissolved**										
Zinc	3.16	0.50	ug/l	2.50	0.53	105	46-146	1.59	20	
Matrix Spike Dup	Source: 22H0206-01									
Arsenic	2.59	0.50	ug/l	2.50	ND	104	50-150	5.93	20	
Cadmium	0.53	0.10	ug/l	0.500	ND	107	84-113	0.284	20	
Copper	0.65	0.10	ug/l	0.500	0.12	107	51-145	0.535	20	
Lead	0.267	0.050	ug/l	0.250	ND	107	72-143	4.64	20	
Nickel	0.58	0.10	ug/l	0.500	0.05	105	68-134	3.17	20	
Zinc	2.89	0.50	ug/l	2.50	0.22	107	46-146	0.0758	20	

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	CA-ELAP does not accredit this analyte or method as of December 2020. *(Newly released 2021 FOA tables may include this analyte or method.)*
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless samples are received on ice and collected on the same day as delivery. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

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Analytical Report

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen

Ricky Jensen, General Manager
Pace Analytical Services LLC - Redding CA
California ELAP Cert #1677 & 2718

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

22H0099

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494
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LABORATORY WORK ORDER # 22H0099
PAGE 1 OF 2

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS: 279 Cousteau Place, Suite 400, Davis, CA 95618

REPORT TO ☒ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED: ☒ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one): ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED		SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	8/1/22	1330	AM (PM)	SW		✓	15-7-SFRR		6	✓	✓	✓	✓	✓	✓
2	8/1/22	1400	AM (PM)	SW		✓	15-8-SFRR		6	✓	✓	✓	✓	✓	✓
3	8/1/22	1045	(AM) PM	SW		✓	R-15-4-GCB		6	✓	✓	✓	✓	✓	✓
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												

SAMPLED BY: (please print) Emily Applequist, Bethany Leach

RELINQUISHED DATE / TIME: 8/1/22 / 1600 PM

SAMPLING / ANALYSIS COMMENTS: (1) Total and Dissolved LL 1638 Metals

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME: Emily Applequist SIGNATURE: [signature] DATE: 8/1/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB: [signature]	DATE/TIME: 8.02.22 1007	LOGGED BY LAB: [signature]	DATE/TIME: 8.02.22 1520

For Official Lab Comments Only

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

FRM-002.1 - Chain of Custody (rev 1.1)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22H0099

SHIPPING INFORMATION

Walk-In ☐
Courier ☐
FedEx ☑
UPS ☐
Other ☐

Cooler Present? Yes ☑ No ☐

Samples Received By: RH Date: 8.2.22

	Yes	No	
Samples received on ice?	☑	☐	Ice type? ☑ Wet ☐ Blue ☐ Other _____
Samples received the same day collected?	☐	☑	melted

SAMPLE TEMPERATURES AT RECEIPT **Therm. ID (Circle one):** Therm-36 Therm-37 (Therm-59) Other: _____

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	12.7	-06		-11		-16	
-02	11.0	-07		-12		-17	
-03	10.4	-08		-13		-18	
-04		-09		-14		-19	
-05		-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: RH Date: 8.2.22

	Yes	No	NA
Custody seals present?	☐	☐	☑
Samples in proper containers?	☑	☐	
Sample containers damaged?	☐	☑	
Sufficient sample volume for indicated tests?	☑	☐	
Samples received within holding times?	☑	☐	
Are VOA vials free of headspace?	☐	☐	☑
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☑

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☑	☐	☐
Preserved in the lab?	☑	☐	☐

Lab Preservation Date & Time 8.2.22 1043

☐ H2SO4 (ID_____) ☑ HNO3 (ID 2G18006) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☐
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☐
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☐
Are proper preservation lables present?	☑	☐	☐

By:_____ Meter ID:_____

Preservation checked at Lab? Date & Time 8.2.22 1046 Test Strip (ID 2B24019)

Preservation and Preservation Checks performed by: RH

COMMENTS, DISCREPANCEIS, ANOMALIES

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

August 16, 2022

CLS Work Order #: 22H0170
COC #:

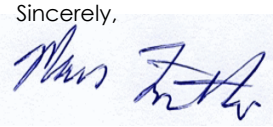
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 08/02/22 17:21. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

08/16/22 12:57

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0170
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-14-SC (22H0170-01) Surface Water	**Sampled: 08/02/22 09:00**		**Received: 08/02/22 17:21**							
Ammonia as N	**0.043**	0.025	0.10	mg/L	1	2206508	08/04/22	08/04/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**7.8**	0.50	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.55**	0.026	0.50	"	"	2206431	08/03/22	08/03/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2206672	08/09/22	08/09/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2206518	08/04/22	08/05/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Nitrate/Nitrite as N	**0.065**	0.055	0.40	"	"	2206431	08/03/22	08/03/22	EPA 300.0	J
Orthophosphate as PO4	**0.051**	0.0051	0.15	"	"	2206497	08/04/22	08/04/22	SM4500-P E	J
Sulfate as SO4	**0.51**	0.038	0.50	"	"	2206431	08/03/22	08/03/22	EPA 300.0	
Total Alkalinity	**7.8**	1.0	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Total Dissolved Solids	**26**	5.0	10	"	"	2206603	08/05/22	08/10/22	SM2540C	
Total Hardness as CaCO3	**5.6**	0.19	1.0	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.28**	0.040	0.20	"	"	2206597	08/05/22	08/05/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.0**	0.54	1.0	"	"	2206794	08/12/22	08/12/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2206649	08/08/22	08/08/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2206522	08/04/22	08/05/22	SM2540D	
IS-13-SC (22H0170-02) Surface Water	**Sampled: 08/02/22 11:40**		**Received: 08/02/22 17:21**							
Ammonia as N	ND	0.025	0.10	mg/L	1	2206508	08/04/22	08/04/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**9.2**	0.50	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.60**	0.026	0.50	"	"	2206431	08/03/22	08/03/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2206672	08/09/22	08/09/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2206518	08/04/22	08/05/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Nitrate/Nitrite as N	**0.064**	0.055	0.40	"	"	2206431	08/03/22	08/03/22	EPA 300.0	J
Orthophosphate as PO4	**0.030**	0.0051	0.15	"	"	2206497	08/04/22	08/04/22	SM4500-P E	J

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0170
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-13-SC (22H0170-02) Surface Water	**Sampled: 08/02/22 11:40**		**Received: 08/02/22 17:21**							
Sulfate as SO4	**0.53**	0.038	0.50	mg/L	1	2206431	08/03/22	08/03/22	EPA 300.0	
Total Alkalinity	**9.2**	1.0	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Total Dissolved Solids	**20**	5.0	10	"	"	2206603	08/05/22	08/10/22	SM2540C	
Total Hardness as CaCO3	**5.6**	0.19	1.0	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.27**	0.040	0.20	"	"	2206597	08/05/22	08/05/22	SM4500-NH3F-2011	
Total Organic Carbon	**1.5**	0.54	1.0	"	"	2206794	08/12/22	08/12/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2206649	08/08/22	08/08/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2206522	08/04/22	08/05/22	SM2540D	
R-IS-12-JR (22H0170-03) Surface Water	**Sampled: 08/02/22 14:50**		**Received: 08/02/22 17:21**							
Ammonia as N	ND	0.025	0.10	mg/L	1	2206508	08/04/22	08/04/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**8.2**	0.50	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.56**	0.026	0.50	"	"	2206431	08/03/22	08/03/22	EPA 300.0	
Cyanide (total)	**0.0023**	0.0012	0.0050	"	"	2206672	08/09/22	08/09/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2206518	08/04/22	08/05/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Nitrate/Nitrite as N	**0.084**	0.055	0.40	"	"	2206431	08/03/22	08/03/22	EPA 300.0	J
Orthophosphate as PO4	**0.055**	0.0051	0.15	"	"	2206497	08/04/22	08/04/22	SM4500-P E	J
Sulfate as SO4	**0.69**	0.038	0.50	"	"	2206431	08/03/22	08/03/22	EPA 300.0	
Total Alkalinity	**8.2**	1.0	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Total Dissolved Solids	**22**	5.0	10	"	"	2206603	08/05/22	08/10/22	SM2540C	
Total Hardness as CaCO3	**5.1**	0.19	1.0	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.31**	0.040	0.20	"	"	2206597	08/05/22	08/05/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.2**	0.54	1.0	"	"	2206794	08/12/22	08/12/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2206649	08/08/22	08/08/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2206522	08/04/22	08/05/22	SM2540D	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0170
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-12-SC (22H0170-04) Surface Water	**Sampled: 08/02/22 13:15**		**Received: 08/02/22 17:21**							
Ammonia as N	**0.029**	0.025	0.10	mg/L	1	2206508	08/04/22	08/04/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**9.0**	0.50	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.55**	0.026	0.50	"	"	2206431	08/03/22	08/03/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2206672	08/09/22	08/09/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2206518	08/04/22	08/05/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Nitrate/Nitrite as N	**0.076**	0.055	0.40	"	"	2206431	08/03/22	08/03/22	EPA 300.0	J
Orthophosphate as PO4	**0.018**	0.0051	0.15	"	"	2206497	08/04/22	08/04/22	SM4500-P E	J
Sulfate as SO4	**0.45**	0.038	0.50	"	"	2206431	08/03/22	08/03/22	EPA 300.0	J
Total Alkalinity	**9.0**	1.0	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Total Dissolved Solids	**24**	5.0	10	"	"	2206603	08/05/22	08/10/22	SM2540C	
Total Hardness as CaCO3	**4.9**	0.19	1.0	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.32**	0.040	0.20	"	"	2206597	08/05/22	08/05/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.2**	0.54	1.0	"	"	2206794	08/12/22	08/12/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2206649	08/08/22	08/08/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2206522	08/04/22	08/05/22	SM2540D	
IS-11-SFSC (22H0170-05) Surface Water	**Sampled: 08/02/22 12:40**		**Received: 08/02/22 17:21**							
Ammonia as N	**0.025**	0.025	0.10	mg/L	1	2206508	08/04/22	08/04/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**7.8**	0.50	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.56**	0.026	0.50	"	"	2206431	08/03/22	08/03/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2206672	08/09/22	08/09/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2206518	08/04/22	08/05/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Nitrate/Nitrite as N	**0.093**	0.055	0.40	"	"	2206431	08/03/22	08/03/22	EPA 300.0	J
Orthophosphate as PO4	**0.022**	0.0051	0.15	"	"	2206497	08/04/22	08/04/22	SM4500-P E	J

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0170
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-11-SFSC (22H0170-05) Surface Water	**Sampled: 08/02/22 12:40**		**Received: 08/02/22 17:21**							
Sulfate as SO4	**0.75**	0.038	0.50	mg/L	1	2206431	08/03/22	08/03/22	EPA 300.0	
Total Alkalinity	**7.8**	1.0	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Total Dissolved Solids	**20**	5.0	10	"	"	2206603	08/05/22	08/10/22	SM2540C	
Total Hardness as CaCO3	**5.1**	0.19	1.0	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.33**	0.040	0.20	"	"	2206597	08/05/22	08/05/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.1**	0.54	1.0	"	"	2206794	08/12/22	08/12/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2206649	08/08/22	08/08/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2206522	08/04/22	08/05/22	SM2540D	
R-IS-12-JRB (22H0170-06) Surface Water	**Sampled: 08/02/22 15:10**		**Received: 08/02/22 17:21**							
Ammonia as N	**0.030**	0.025	0.10	mg/L	1	2206508	08/04/22	08/04/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**8.0**	0.50	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.54**	0.026	0.50	"	"	2206431	08/03/22	08/03/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2206672	08/09/22	08/09/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2206548	08/04/22	08/05/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Nitrate/Nitrite as N	**0.062**	0.055	0.40	"	"	2206431	08/03/22	08/03/22	EPA 300.0	J
Orthophosphate as PO4	**0.14**	0.0051	0.15	"	"	2206497	08/04/22	08/04/22	SM4500-P E	J
Sulfate as SO4	**0.47**	0.038	0.50	"	"	2206431	08/03/22	08/03/22	EPA 300.0	J
Total Alkalinity	**8.0**	1.0	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Total Dissolved Solids	**25**	5.0	10	"	"	2206603	08/05/22	08/10/22	SM2540C	
Total Hardness as CaCO3	**5.0**	0.19	1.0	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.39**	0.040	0.20	"	"	2206597	08/05/22	08/05/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.2**	0.54	1.0	"	"	2206794	08/12/22	08/12/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2206649	08/08/22	08/08/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2206522	08/04/22	08/05/22	SM2540D	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0170
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-13-CR (22H0170-07) Surface Water	**Sampled: 08/02/22 10:50**		**Received: 08/02/22 17:21**							
Ammonia as N	ND	0.025	0.10	mg/L	1	2206508	08/04/22	08/04/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**8.6**	0.50	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.61**	0.026	0.50	"	"	2206431	08/03/22	08/03/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2206672	08/09/22	08/09/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2206548	08/04/22	08/05/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Nitrate/Nitrite as N	**0.072**	0.055	0.40	"	"	2206431	08/03/22	08/03/22	EPA 300.0	J
Orthophosphate as PO4	**0.014**	0.0051	0.15	"	"	2206497	08/04/22	08/04/22	SM4500-P E	J
Sulfate as SO4	**0.52**	0.038	0.50	"	"	2206431	08/03/22	08/03/22	EPA 300.0	
Total Alkalinity	**8.6**	1.0	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Total Dissolved Solids	**20**	5.0	10	"	"	2206603	08/05/22	08/10/22	SM2540C	
Total Hardness as CaCO3	**5.2**	0.19	1.0	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.31**	0.040	0.20	"	"	2206597	08/05/22	08/05/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.0**	0.54	1.0	"	"	2206794	08/12/22	08/12/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2206649	08/08/22	08/08/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2206522	08/04/22	08/05/22	SM2540D	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0170
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-14-SC (22H0170-01) Surface Water	**Sampled: 08/02/22 09:00**		**Received: 08/02/22 17:21**							
Diesel	ND	0.0021	0.050	mg/L	1	2206538	08/04/22	08/04/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*97 %*	*65-135*		"	"	"	"	
IS-13-SC (22H0170-02) Surface Water	**Sampled: 08/02/22 11:40**		**Received: 08/02/22 17:21**							
Diesel	ND	0.0021	0.050	mg/L	1	2206538	08/04/22	08/04/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*101 %*	*65-135*		"	"	"	"	
R-IS-12-JR (22H0170-03) Surface Water	**Sampled: 08/02/22 14:50**		**Received: 08/02/22 17:21**							
Diesel	ND	0.0021	0.050	mg/L	1	2206538	08/04/22	08/04/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*93 %*	*65-135*		"	"	"	"	
IS-12-SC (22H0170-04) Surface Water	**Sampled: 08/02/22 13:15**		**Received: 08/02/22 17:21**							
Diesel	ND	0.0021	0.050	mg/L	1	2206538	08/04/22	08/04/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22H0170**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-12-SC (22H0170-04) Surface Water Sampled: 08/02/22 13:15 Received: 08/02/22 17:21										
Surrogate: o-Terphenyl			*96 %*	*65-135*		*2206538*	"	*08/04/22*	*EPA 8015M*	
IS-11-SFSC (22H0170-05) Surface Water Sampled: 08/02/22 12:40 Received: 08/02/22 17:21										
Diesel	ND	0.0021	0.050	mg/L	1	2206538	08/04/22	08/04/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*78 %*	*65-135*		"	"	"	"	
R-IS-12-JRB (22H0170-06) Surface Water Sampled: 08/02/22 15:10 Received: 08/02/22 17:21										
Diesel	ND	0.0021	0.050	mg/L	1	2206538	08/04/22	08/04/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*101 %*	*65-135*		"	"	"	"	
R-IS-13-CR (22H0170-07) Surface Water Sampled: 08/02/22 10:50 Received: 08/02/22 17:21										
Diesel	ND	0.0021	0.050	mg/L	1	2206538	08/04/22	08/04/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*115 %*	*65-135*		"	"	"	"	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0170
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-14-SC (22H0170-01) Surface Water	**Sampled: 08/02/22 09:00**		**Received: 08/02/22 17:21**							
Aluminum	**16**	1.6	20	µg/L	1	2206503	08/04/22	08/04/22	EPA 200.8	J
Barium	**8.3**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1700**	27	1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Iron	**35**	9.1	100	"	"	"	"	"	"	J
Magnesium	**350**	21	1000	"	"	"	"	"	"	J
Manganese	**5.1**	0.050	2.0	"	"	2206503	08/04/22	08/04/22	EPA 200.8	
Potassium	**450**	61	1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2206503	08/04/22	08/04/22	EPA 200.8	
Sodium	**1200**	34	1000	"	"	2206505	08/04/22	08/05/22	EPA 200.7	
IS-13-SC (22H0170-02) Surface Water	**Sampled: 08/02/22 11:40**		**Received: 08/02/22 17:21**							
Aluminum	**18**	1.6	20	µg/L	1	2206503	08/04/22	08/04/22	EPA 200.8	J
Barium	**10**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1600**	27	1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Iron	**15**	9.1	100	"	"	"	"	"	"	J
Magnesium	**410**	21	1000	"	"	"	"	"	"	J
Manganese	**2.2**	0.050	2.0	"	"	2206503	08/04/22	08/04/22	EPA 200.8	
Potassium	**550**	61	1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2206503	08/04/22	08/04/22	EPA 200.8	
Sodium	**1100**	34	1000	"	"	2206505	08/04/22	08/05/22	EPA 200.7	
R-IS-12-JR (22H0170-03) Surface Water	**Sampled: 08/02/22 14:50**		**Received: 08/02/22 17:21**							
Aluminum	**14**	1.6	20	µg/L	1	2206503	08/04/22	08/04/22	EPA 200.8	J
Barium	**9.0**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1500**	27	1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Iron	**38**	9.1	100	"	"	"	"	"	"	J
Magnesium	**320**	21	1000	"	"	"	"	"	"	J
Manganese	**8.1**	0.050	2.0	"	"	2206503	08/04/22	08/04/22	EPA 200.8	
Potassium	**630**	61	1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2206503	08/04/22	08/04/22	EPA 200.8	
Sodium	**1000**	34	1000	"	"	2206505	08/04/22	08/05/22	EPA 200.7	

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Stillwater Sciences
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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0170
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-12-SC (22H0170-04) Surface Water	**Sampled: 08/02/22 13:15**		**Received: 08/02/22 17:21**							
Aluminum	**19**	1.6	20	µg/L	1	2206503	08/04/22	08/04/22	EPA 200.8	J
Barium	**6.5**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1400**	27	1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Iron	**90**	9.1	100	"	"	"	"	"	"	J
Magnesium	**310**	21	1000	"	"	"	"	"	"	J
Manganese	**8.9**	0.050	2.0	"	"	2206503	08/04/22	08/04/22	EPA 200.8	
Potassium	**600**	61	1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	J
Silver	**0.094**	0.070	0.50	"	"	2206503	08/04/22	08/04/22	EPA 200.8	J
Sodium	**1000**	34	1000	"	"	2206505	08/04/22	08/05/22	EPA 200.7	
IS-11-SFSC (22H0170-05) Surface Water	**Sampled: 08/02/22 12:40**		**Received: 08/02/22 17:21**							
Aluminum	**18**	1.6	20	µg/L	1	2206503	08/04/22	08/04/22	EPA 200.8	J
Barium	**9.0**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1500**	27	1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Iron	**39**	9.1	100	"	"	"	"	"	"	J
Magnesium	**310**	21	1000	"	"	"	"	"	"	J
Manganese	**7.0**	0.050	2.0	"	"	2206503	08/04/22	08/04/22	EPA 200.8	
Potassium	**670**	61	1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2206503	08/04/22	08/04/22	EPA 200.8	
Sodium	**1000**	34	1000	"	"	2206505	08/04/22	08/05/22	EPA 200.7	
R-IS-12-JRB (22H0170-06) Surface Water	**Sampled: 08/02/22 15:10**		**Received: 08/02/22 17:21**							
Aluminum	**20**	1.6	20	µg/L	1	2206503	08/04/22	08/04/22	EPA 200.8	
Barium	**6.6**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1500**	27	1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Iron	**30**	9.1	100	"	"	"	"	"	"	J
Magnesium	**310**	21	1000	"	"	"	"	"	"	J
Manganese	**7.6**	0.050	2.0	"	"	2206503	08/04/22	08/04/22	EPA 200.8	
Potassium	**510**	61	1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2206503	08/04/22	08/04/22	EPA 200.8	
Sodium	**980**	34	1000	"	"	2206505	08/04/22	08/05/22	EPA 200.7	J

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0170
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-13-CR (22H0170-07) Surface Water	**Sampled: 08/02/22 10:50**		**Received: 08/02/22 17:21**							
Aluminum	**20**	1.6	20	µg/L	1	2206503	08/04/22	08/04/22	EPA 200.8	
Barium	**8.3**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1500**	27	1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	
Iron	**31**	9.1	100	"	"	"	"	"	"	J
Magnesium	**350**	21	1000	"	"	"	"	"	"	J
Manganese	**4.8**	0.050	2.0	"	"	2206503	08/04/22	08/04/22	EPA 200.8	
Potassium	**580**	61	1000	"	"	2206505	08/04/22	08/04/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2206503	08/04/22	08/04/22	EPA 200.8	
Sodium	**990**	34	1000	"	"	2206505	08/04/22	08/05/22	EPA 200.7	J

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0170
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-14-SC (22H0170-01) Surface Water Sampled: 08/02/22 09:00 Received: 08/02/22 17:21										
Aluminum	**15**	0.52	20	µg/L	1	2206593	08/05/22	08/05/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2206648	08/08/22	08/08/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2206593	08/05/22	08/05/22	EPA 200.8	
IS-13-SC (22H0170-02) Surface Water Sampled: 08/02/22 11:40 Received: 08/02/22 17:21										
Aluminum	**12**	0.52	20	µg/L	1	2206593	08/05/22	08/05/22	EPA 200.8	J
Iron	**7.4**	6.8	100	"	"	2206648	08/08/22	08/08/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2206593	08/05/22	08/05/22	EPA 200.8	
R-IS-12-JR (22H0170-03) Surface Water Sampled: 08/02/22 14:50 Received: 08/02/22 17:21										
Aluminum	**13**	0.52	20	µg/L	1	2206593	08/05/22	08/05/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2206648	08/08/22	08/08/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2206593	08/05/22	08/05/22	EPA 200.8	
IS-12-SC (22H0170-04) Surface Water Sampled: 08/02/22 13:15 Received: 08/02/22 17:21										
Aluminum	**18**	0.52	20	µg/L	1	2206593	08/05/22	08/05/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2206648	08/08/22	08/08/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2206593	08/05/22	08/05/22	EPA 200.8	
IS-11-SFSC (22H0170-05) Surface Water Sampled: 08/02/22 12:40 Received: 08/02/22 17:21										
Aluminum	**16**	0.52	20	µg/L	1	2206593	08/05/22	08/05/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2206648	08/08/22	08/08/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2206593	08/05/22	08/05/22	EPA 200.8	
R-IS-12-JRB (22H0170-06) Surface Water Sampled: 08/02/22 15:10 Received: 08/02/22 17:21										
Aluminum	**17**	0.52	20	µg/L	1	2206593	08/05/22	08/05/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2206648	08/08/22	08/08/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2206593	08/05/22	08/05/22	EPA 200.8	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22H0170**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-13-CR (22H0170-07) Surface Water	**Sampled: 08/02/22 10:50**		**Received: 08/02/22 17:21**							
Aluminum	**18**	0.52	20	µg/L	1	2206593	08/05/22	08/05/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2206648	08/08/22	08/08/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2206593	08/05/22	08/05/22	EPA 200.8	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22H0170**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-14-SC (22H0170-01) Surface Water Sampled: 08/02/22 09:00 Received: 08/02/22 17:21										
Gasoline	ND	10	50	µg/L	1	2206443	08/03/22	08/03/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*82 %*		*65-135*		"	"	"	"
IS-13-SC (22H0170-02) Surface Water Sampled: 08/02/22 11:40 Received: 08/02/22 17:21										
Gasoline	ND	10	50	µg/L	1	2206443	08/03/22	08/04/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*85 %*		*65-135*		"	"	"	"
R-IS-12-JR (22H0170-03) Surface Water Sampled: 08/02/22 14:50 Received: 08/02/22 17:21										
Gasoline	ND	10	50	µg/L	1	2206443	08/03/22	08/04/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*85 %*		*65-135*		"	"	"	"
IS-12-SC (22H0170-04) Surface Water Sampled: 08/02/22 13:15 Received: 08/02/22 17:21										
Gasoline	ND	10	50	µg/L	1	2206443	08/03/22	08/04/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*83 %*		*65-135*		"	"	"	"
IS-11-SFSC (22H0170-05) Surface Water Sampled: 08/02/22 12:40 Received: 08/02/22 17:21										
Gasoline	ND	10	50	µg/L	1	2206443	08/03/22	08/04/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*87 %*		*65-135*		"	"	"	"
R-IS-12-JRB (22H0170-06) Surface Water Sampled: 08/02/22 15:10 Received: 08/02/22 17:21										
Gasoline	ND	10	50	µg/L	1	2206443	08/03/22	08/04/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*88 %*		*65-135*		"	"	"	"
R-IS-13-CR (22H0170-07) Surface Water Sampled: 08/02/22 10:50 Received: 08/02/22 17:21										
Gasoline	ND	10	50	µg/L	1	2206443	08/03/22	08/04/22	EPA 8015M	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22H0170**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-13-CR (22H0170-07) Surface Water	**Sampled: 08/02/22 10:50**		**Received: 08/02/22 17:21**							
Surrogate: o-Chlorotoluene (Gas)			*91 %*		*65-135*	*2206443*	"	*08/04/22*	*EPA 8015M*	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22H0170**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-14-SC (22H0170-01) Surface Water Sampled: 08/02/22 09:00 Received: 08/02/22 17:21										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2206498	08/03/22	08/03/22	EPA 8260B	
Surrogate: Toluene-d8			*93 %*		*72-125*		"	"	"	"
IS-13-SC (22H0170-02) Surface Water Sampled: 08/02/22 11:40 Received: 08/02/22 17:21										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2206498	08/03/22	08/03/22	EPA 8260B	
Surrogate: Toluene-d8			*94 %*		*72-125*		"	"	"	"
R-IS-12-JR (22H0170-03) Surface Water Sampled: 08/02/22 14:50 Received: 08/02/22 17:21										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2206498	08/03/22	08/03/22	EPA 8260B	
Surrogate: Toluene-d8			*93 %*		*72-125*		"	"	"	"
IS-12-SC (22H0170-04) Surface Water Sampled: 08/02/22 13:15 Received: 08/02/22 17:21										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2206498	08/03/22	08/03/22	EPA 8260B	
Surrogate: Toluene-d8			*91 %*		*72-125*		"	"	"	"
IS-11-SFSC (22H0170-05) Surface Water Sampled: 08/02/22 12:40 Received: 08/02/22 17:21										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2206498	08/03/22	08/03/22	EPA 8260B	
Surrogate: Toluene-d8			*91 %*		*72-125*		"	"	"	"
R-IS-12-JRB (22H0170-06) Surface Water Sampled: 08/02/22 15:10 Received: 08/02/22 17:21										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2206498	08/03/22	08/03/22	EPA 8260B	
Surrogate: Toluene-d8			*91 %*		*72-125*		"	"	"	"
R-IS-13-CR (22H0170-07) Surface Water Sampled: 08/02/22 10:50 Received: 08/02/22 17:21										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2206498	08/03/22	08/03/22	EPA 8260B	

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Stillwater Sciences
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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0170
COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-13-CR (22H0170-07) Surface Water	**Sampled: 08/02/22 10:50**		**Received: 08/02/22 17:21**							
Surrogate: Toluene-d8			*92 %*		*72-125*	*2206498*	"	*08/03/22*	*EPA 8260B*	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22H0170**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206431 - General Preparation											
Blank (2206431-BLK1)					Prepared & Analyzed: 08/03/22						
Sulfate as SO4	ND	0.038	0.50	mg/L							
Chloride	0.278	0.026	0.50	"							J
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2206431-BS1)					Prepared & Analyzed: 08/03/22						
Chloride	4.90	0.026	0.50	mg/L	5.00		98	80-120			
Sulfate as SO4	5.15	0.038	0.50	"	5.00		103	80-120			
Nitrate/Nitrite as N	4.19	0.055	0.40	"	4.00		105	80-120			
LCS Dup (2206431-BSD1)					Prepared & Analyzed: 08/03/22						
Sulfate as SO4	4.77	0.038	0.50	mg/L	5.00		95	80-120	8	20	
Chloride	4.63	0.026	0.50	"	5.00		93	80-120	6	20	
Nitrate/Nitrite as N	3.94	0.055	0.40	"	4.00		98	80-120	6	20	
Matrix Spike (2206431-MS1)			**Source: 22H0170-01**		Prepared & Analyzed: 08/03/22						
Chloride	4.78	0.026	0.50	mg/L	5.00	0.552	85	80-120			
Sulfate as SO4	5.13	0.038	0.50	"	5.00	0.515	92	80-120			
Nitrate/Nitrite as N	3.83	0.055	0.40	"	4.00	0.0651	94	80-120			
Matrix Spike Dup (2206431-MSD1)			**Source: 22H0170-01**		Prepared & Analyzed: 08/03/22						
Sulfate as SO4	5.16	0.038	0.50	mg/L	5.00	0.515	93	80-120	0.4	20	
Chloride	4.81	0.026	0.50	"	5.00	0.552	85	80-120	0.5	20	
Nitrate/Nitrite as N	3.85	0.055	0.40	"	4.00	0.0651	95	80-120	0.7	20	
Batch 2206497 - General Preparation											
Blank (2206497-BLK1)					Prepared & Analyzed: 08/04/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							

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CLS Work Order #: 22H0170
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206497 - General Preparation											
LCS (2206497-BS1)					Prepared & Analyzed: 08/04/22						
Orthophosphate as PO4	0.917	0.0051	0.15	mg/L	0.918		100	80-120			
LCS Dup (2206497-BSD1)					Prepared & Analyzed: 08/04/22						
Orthophosphate as PO4	0.884	0.0051	0.15	mg/L	0.918		96	80-120	4	20	
Matrix Spike (2206497-MS1)			**Source: 22H0156-01**		Prepared & Analyzed: 08/04/22						
Orthophosphate as PO4	1.73	0.0051	0.15	mg/L	0.918	0.941	86	75-125			
Matrix Spike Dup (2206497-MSD1)			**Source: 22H0156-01**		Prepared & Analyzed: 08/04/22						
Orthophosphate as PO4	1.75	0.0051	0.15	mg/L	0.918	0.941	88	75-125	0.7	25	
Batch 2206505 - EPA 200 Series											
Blank (2206505-BLK1)					Prepared & Analyzed: 08/04/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2206505-BS1)					Prepared & Analyzed: 08/04/22						
Total Hardness as CaCO3	33.4	0.19	1.0	mg/L	33.1		101	85-115			
Matrix Spike (2206505-MS1)			**Source: 22H0066-01**		Prepared & Analyzed: 08/04/22						
Total Hardness as CaCO3	37.1	0.19	1.0	mg/L	33.1	3.94	100	70-130			
Matrix Spike (2206505-MS2)			**Source: 22H0280-01**		Prepared & Analyzed: 08/04/22						
Total Hardness as CaCO3	79.6	0.19	1.0	mg/L	33.1	46.3	101	70-130			
Batch 2206508 - General Preparation											
Blank (2206508-BLK1)					Prepared & Analyzed: 08/04/22						
Ammonia as N	ND	0.025	0.10	mg/L							

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0170
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206508 - General Preparation											
LCS (2206508-BS1)					Prepared & Analyzed: 08/04/22						
Ammonia as N	0.481	0.025	0.10	mg/L	0.500		96	80-120			
LCS Dup (2206508-BSD1)					Prepared & Analyzed: 08/04/22						
Ammonia as N	0.473	0.025	0.10	mg/L	0.500		95	80-120	2	25	
Matrix Spike (2206508-MS1)			**Source: 22H0170-07**		Prepared & Analyzed: 08/04/22						
Ammonia as N	0.511	0.025	0.10	mg/L	0.500	ND	102	75-125			
Matrix Spike Dup (2206508-MSD1)			**Source: 22H0170-07**		Prepared & Analyzed: 08/04/22						
Ammonia as N	0.522	0.025	0.10	mg/L	0.500	ND	104	75-125	2	25	
Batch 2206518 - Solvent Extract											
Blank (2206518-BLK1)					Prepared: 08/04/22 Analyzed: 08/05/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2206518-BS1)					Prepared: 08/04/22 Analyzed: 08/05/22						
Hexane Extractable Material (HEM, Oil & Grease)	42.7	1.0	5.0	mg/L	40.0		107	78-114			
LCS Dup (2206518-BSD1)					Prepared: 08/04/22 Analyzed: 08/05/22						
Hexane Extractable Material (HEM, Oil & Grease)	42.4	1.0	5.0	mg/L	40.0		106	78-114	0.7	18	
Batch 2206522 - General Preparation											
Duplicate (2206522-DUP1)			**Source: 22H0129-02**		Prepared: 08/04/22 Analyzed: 08/05/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206548 - Solvent Extract											
Blank (2206548-BLK1)					Prepared: 08/04/22 Analyzed: 08/05/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2206548-BS1)					Prepared: 08/04/22 Analyzed: 08/05/22						
Hexane Extractable Material (HEM, Oil & Grease)	38.3	1.0	5.0	mg/L	40.0		96	78-114			
LCS Dup (2206548-BSD1)					Prepared: 08/04/22 Analyzed: 08/05/22						
Hexane Extractable Material (HEM, Oil & Grease)	36.9	1.0	5.0	mg/L	40.0		92	78-114	4	18	
Batch 2206597 - General Preparation											
Blank (2206597-BLK1)					Prepared & Analyzed: 08/05/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2206597-BS1)					Prepared & Analyzed: 08/05/22						
Total Kjeldahl Nitrogen	0.485	0.040	0.20	mg/L	0.500		97	80-120			
LCS Dup (2206597-BSD1)					Prepared & Analyzed: 08/05/22						
Total Kjeldahl Nitrogen	0.531	0.040	0.20	mg/L	0.500		106	80-120	9	20	
Matrix Spike (2206597-MS1)			**Source: 22H0229-02**		Prepared & Analyzed: 08/05/22						
Total Kjeldahl Nitrogen	0.772	0.040	0.20	mg/L	0.500	0.291	96	75-125			
Matrix Spike Dup (2206597-MSD1)			**Source: 22H0229-02**		Prepared & Analyzed: 08/05/22						
Total Kjeldahl Nitrogen	0.756	0.040	0.20	mg/L	0.500	0.291	93	75-125	2	25	
Batch 2206603 - General Preparation											
Blank (2206603-BLK1)					Prepared: 08/05/22 Analyzed: 08/10/22						
Total Dissolved Solids	ND	5.0	10	mg/L							

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CLS Work Order #: 22H0170
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206603 - General Preparation											
Duplicate (2206603-DUP1)			**Source: 22H0170-01**		Prepared: 08/05/22 Analyzed: 08/10/22						
Total Dissolved Solids	28.0	5.0	10	mg/L		26.0			7	20	
Batch 2206641 - General Preparation											
Blank (2206641-BLK1)					Prepared & Analyzed: 08/08/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Duplicate (2206641-DUP1)			**Source: 22H0311-01**		Prepared & Analyzed: 08/08/22						
Total Alkalinity	30.2	1.0	5.0	mg/L		32.0			6	20	
Bicarbonate as CaCO3	30.2	0.50	5.0	"		32.0			6	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Batch 2206649 - General Preparation											
Blank (2206649-BLK1)					Prepared & Analyzed: 08/08/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2206649-BS1)					Prepared & Analyzed: 08/08/22						
Total Phosphorus as P	0.299	0.023	0.050	mg/L	0.300		100	80-120			
LCS Dup (2206649-BSD1)					Prepared & Analyzed: 08/08/22						
Total Phosphorus as P	0.309	0.023	0.050	mg/L	0.300		103	80-120	3	25	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206649 - General Preparation											
Matrix Spike (2206649-MS1)			**Source: 22H0170-01**		Prepared & Analyzed: 08/08/22						
Total Phosphorus as P	0.293	0.023	0.050	mg/L	0.300	ND	98	75-125			
Matrix Spike Dup (2206649-MSD1)			**Source: 22H0170-01**		Prepared & Analyzed: 08/08/22						
Total Phosphorus as P	0.295	0.023	0.050	mg/L	0.300	ND	98	75-125	0.5	30	
Batch 2206672 - General Preparation											
Blank (2206672-BLK1)					Prepared & Analyzed: 08/09/22						
Cyanide (total)	ND	0.0012	0.0050	mg/L							
LCS (2206672-BS1)					Prepared & Analyzed: 08/09/22						
Cyanide (total)	0.0906	0.0012	0.0050	mg/L	0.100		91	75-125			
LCS Dup (2206672-BSD1)					Prepared & Analyzed: 08/09/22						
Cyanide (total)	0.0854	0.0012	0.0050	mg/L	0.100		85	75-125	6	25	
Matrix Spike (2206672-MS1)			**Source: 22H0170-01**		Prepared & Analyzed: 08/09/22						
Cyanide (total)	0.0565	0.0012	0.0050	mg/L	0.100	ND	57	75-125			QM-7
Matrix Spike Dup (2206672-MSD1)			**Source: 22H0170-01**		Prepared & Analyzed: 08/09/22						
Cyanide (total)	0.0639	0.0012	0.0050	mg/L	0.100	ND	64	75-125	12	25	QM-7
Batch 2206794 - General Prep											
Blank (2206794-BLK1)					Prepared & Analyzed: 08/12/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							

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COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206794 - General Prep											
LCS (2206794-BS1)					Prepared & Analyzed: 08/12/22						
Total Organic Carbon	10.7	0.54	1.0	mg/L	10.0		107	75-125			
LCS Dup (2206794-BSD1)					Prepared & Analyzed: 08/12/22						
Total Organic Carbon	11.1	0.54	1.0	mg/L	10.0		111	75-125	4	25	
Matrix Spike (2206794-MS1)			**Source: 22H0170-01**		Prepared & Analyzed: 08/12/22						
Total Organic Carbon	12.4	0.54	1.0	mg/L	10.0	2.04	104	75-125			
Matrix Spike Dup (2206794-MSD1)			**Source: 22H0170-01**		Prepared & Analyzed: 08/12/22						
Total Organic Carbon	13.7	0.54	1.0	mg/L	10.0	2.04	116	75-125	10	25	

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CLS Work Order #: 22H0170
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206538 - EPA 3510B GCNV											
Blank (2206538-BLK1)					Prepared & Analyzed: 08/04/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Surrogate: o-Terphenyl	*0.0269*			*"*	*0.0250*		*107*	*65-135*			
LCS (2206538-BS1)					Prepared & Analyzed: 08/04/22						
Diesel	2.47	0.0021	0.050	mg/L	2.50		99	65-135			
Surrogate: o-Terphenyl	*0.0301*			*"*	*0.0250*		*120*	*65-135*			
LCS Dup (2206538-BSD1)					Prepared & Analyzed: 08/04/22						
Diesel	2.48	0.0021	0.050	mg/L	2.50		99	65-135	0.2	30	
Surrogate: o-Terphenyl	*0.0305*			*"*	*0.0250*		*122*	*65-135*			
Matrix Spike (2206538-MS1)			**Source: 22H0136-01**		Prepared & Analyzed: 08/04/22						
Diesel	2.00	0.0021	0.050	mg/L	2.50	ND	80	46-137			
Surrogate: o-Terphenyl	*0.0282*			*"*	*0.0250*		*113*	*65-135*			
Matrix Spike Dup (2206538-MSD1)			**Source: 22H0136-01**		Prepared & Analyzed: 08/04/22						
Diesel	2.34	0.0021	0.050	mg/L	2.50	ND	93	46-137	16	30	
Surrogate: o-Terphenyl	*0.0261*			*"*	*0.0250*		*104*	*65-135*			

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CLS Work Order #: 22H0170
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206503 - EPA 200 Series											
Blank (2206503-BLK1)					Prepared & Analyzed: 08/04/22						
Aluminum	ND	1.6	20	µg/L							
Barium	0.202	0.14	5.0	"							J
Manganese	0.283	0.050	2.0	"							J
Silver	0.307	0.070	0.50	"							J
LCS (2206503-BS1)					Prepared & Analyzed: 08/04/22						
Aluminum	525	1.6	20	µg/L	500		105	85-115			
Barium	105	0.14	5.0	"	100		105	85-115			
Manganese	106	0.050	2.0	"	100		106	85-115			
Silver	105	0.070	0.50	"	100		105	85-115			
Matrix Spike (2206503-MS1)			**Source: 22H0176-01**		Prepared & Analyzed: 08/04/22						
Aluminum	528	1.6	20	µg/L	500	ND	106	70-130			
Barium	113	0.14	5.0	"	100	6.79	106	70-130			
Manganese	112	0.050	2.0	"	100	10.2	101	70-130			
Silver	105	0.070	0.50	"	100	ND	105	70-130			
Matrix Spike (2206503-MS2)			**Source: 22H0278-01**		Prepared & Analyzed: 08/04/22						
Aluminum	529	1.6	20	µg/L	500	4.23	105	70-130			
Barium	115	0.14	5.0	"	100	10.6	104	70-130			
Manganese	117	0.050	2.0	"	100	14.4	102	70-130			
Silver	105	0.070	0.50	"	100	ND	105	70-130			
Batch 2206505 - EPA 200 Series											
Blank (2206505-BLK1)					Prepared & Analyzed: 08/04/22						
Calcium	ND	27	1000	µg/L							
Iron	ND	9.1	100	"							
Magnesium	ND	21	1000	"							
Potassium	171	61	1000	"							J
Sodium	695	34	1000	"							J

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COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206505 - EPA 200 Series											
LCS (2206505-BS1)					Prepared & Analyzed: 08/04/22						
Calcium	5000	27	1000	µg/L	5000		100	85-115			
Iron	503	9.1	100	"	500		101	85-115			
Magnesium	5070	21	1000	"	5000		101	85-115			
Potassium	5050	61	1000	"	5000		101	85-115			
Sodium	5170	34	1000	"	5000		103	85-115			
Matrix Spike (2206505-MS1)			**Source: 22H0066-01**		Prepared & Analyzed: 08/04/22						
Calcium	6230	27	1000	µg/L	5000	1280	99	70-130			
Iron	639	9.1	100	"	500	127	103	70-130			
Magnesium	5220	21	1000	"	5000	173	101	70-130			
Potassium	5280	61	1000	"	5000	316	99	70-130			
Sodium	5560	34	1000	"	5000	778	96	70-130			
Matrix Spike (2206505-MS2)			**Source: 22H0280-01**		Prepared & Analyzed: 08/04/22						
Calcium	15100	27	1000	µg/L	5000	10000	102	70-130			
Iron	647	9.1	100	"	500	106	108	70-130			
Magnesium	10100	21	1000	"	5000	5160	100	70-130			
Potassium	6680	61	1000	"	5000	1960	94	70-130			
Sodium	10900	34	1000	"	5000	8260	53	70-130			QM-7

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Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206593 - EPA 200 No Digestion											
Blank (2206593-BLK1)					Prepared & Analyzed: 08/05/22						
Aluminum	5.99	0.52	20	µg/L							J
Silver	ND	0.15	0.50	"							
LCS (2206593-BS1)					Prepared & Analyzed: 08/05/22						
Aluminum	476	0.52	20	µg/L	500		95	85-115			
Silver	99.3	0.15	0.50	"	100		99	85-115			
Matrix Spike (2206593-MS1)			**Source: 22H0170-01**		Prepared & Analyzed: 08/05/22						
Aluminum	478	0.52	20	µg/L	500	14.8	93	70-130			
Silver	98.4	0.15	0.50	"	100	ND	98	70-130			
Matrix Spike (2206593-MS2)			**Source: 22H0328-01**		Prepared & Analyzed: 08/05/22						
Aluminum	497	0.52	20	µg/L	500	7.63	98	70-130			
Silver	99.9	0.15	0.50	"	100	ND	100	70-130			
Batch 2206648 - EPA 200 No Digestion											
Blank (2206648-BLK1)					Prepared & Analyzed: 08/08/22						
Iron	ND	6.8	100	µg/L							
LCS (2206648-BS1)					Prepared & Analyzed: 08/08/22						
Iron	492	6.8	100	µg/L	500		98	85-115			
Matrix Spike (2206648-MS1)			**Source: 22H0170-01**		Prepared & Analyzed: 08/08/22						
Iron	483	6.8	100	µg/L	500	ND	97	70-130			
Matrix Spike (2206648-MS2)			**Source: 22H0328-01**		Prepared & Analyzed: 08/08/22						
Iron	482	6.8	100	µg/L	500	ND	96	70-130			

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COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206443 - EPA 5030 Water GC											
Blank (2206443-BLK1)					Prepared & Analyzed: 08/03/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*17.0*			"	*20.0*		*85*	*65-135*			
LCS (2206443-BS1)					Prepared & Analyzed: 08/03/22						
Gasoline	520	10	50	µg/L	500		104	70-130			
Surrogate: o-Chlorotoluene (Gas)	*18.9*			"	*20.0*		*95*	*65-135*			
LCS Dup (2206443-BSD1)					Prepared & Analyzed: 08/03/22						
Gasoline	484	10	50	µg/L	500		97	70-130	7	30	
Surrogate: o-Chlorotoluene (Gas)	*18.6*			"	*20.0*		*93*	*65-135*			
Matrix Spike (2206443-MS1)			**Source: 22H0136-01**		Prepared & Analyzed: 08/03/22						
Gasoline	617	10	50	µg/L	500	ND	123	68-132			
Surrogate: o-Chlorotoluene (Gas)	*19.0*			"	*20.0*		*95*	*65-135*			
Matrix Spike Dup (2206443-MSD1)			**Source: 22H0136-01**		Prepared & Analyzed: 08/03/22						
Gasoline	445	10	50	µg/L	500	ND	89	68-132	32	32	
Surrogate: o-Chlorotoluene (Gas)	*17.9*			"	*20.0*		*90*	*65-135*			

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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206498 - EPA 3510B GCMS											
Blank (2206498-BLK1)					Prepared & Analyzed: 08/03/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Surrogate: Toluene-d8	*8.56*			"	*10.0*		*86*	*72-125*			
LCS (2206498-BS1)					Prepared & Analyzed: 08/03/22						
Methyl tert-butyl ether	20.8	0.095	0.50	µg/L	20.0		104	52-130			
Surrogate: Toluene-d8	*10.5*			"	*10.0*		*105*	*72-125*			
LCS Dup (2206498-BSD1)					Prepared & Analyzed: 08/03/22						
Methyl tert-butyl ether	21.7	0.095	0.50	µg/L	20.0		108	52-130	4	30	
Surrogate: Toluene-d8	*10.3*			"	*10.0*		*103*	*72-125*			

08/16/22 12:57

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22H0170**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22H0170 (1 of 1)

Report To:	Client Job Number: 750.10 Task 0620.01
Stillwater Sciences 279 Cousteau Place Suite 400 Davis, CA 95618	Destination Laboratory: Rancho Cordova
Project Manager: Emily Applequist eapplequist@stillwatersci.com	[x] CLS (916) 638-7301 3249 Fitzgerald Road Rancho Cordova, CA 95742 www.californialab.com
Project Name: SMUD In situ & Chemistry Monitoring	
Sampled By: Emily Applequist, Bethany Leach	[ ] OTHER
Job Description: Monitor water chemistry in UARP reaches	
Site Location: Upper American River Project Sites	

ANALYSIS REQUESTED

GEOTRACKER

EDF REPORT YES [x] NO [ ]

GLOBAL ID -

FIELD CONDITIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	TSS, TDS, Hardness, Alkalinity, [illegible] Cl, SO4	Oil & Grease	Cyanide - SM4500CN E	TPH - GRO, MTBE, BTEX	TPH-DRO	TKN, Ammonia, Total Phosphorus, [illegible]	Metals, Total	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
8/2/22	0900	15-14-SC		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
8/2/22	1140	15-13-SC		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
8/2/22	1450	R-15-12-JR		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
8/2/22	1215	15-12-SC		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
8/2/22	1240	15-11-SFSC		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
8/2/22	1510	R-15-12-JRB		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
8/2/22	1050	R-15-13-CR		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	INVOICE TO
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	Project No. 750.10 Task 0620.01
				Surface water			6											X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (2) HNO_3 (3) = COLD (4) = H2SO4 (5) NH_4/NH_3 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
[signature]	Bethany Leach Stillwater Sciences	8/2/22 17:21		

RECEIVED AT LAB BY: [initials] **DATE/TIME:** 08/02/22 1721 **CONDITIONS/COMMENTS:** 4.7/4.1

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER ______ **AIR BILL #** ______

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02 UARP

Lab No: 22H0205
Reported: 08/24/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22H0205, received on 08/03/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: IS-12-SC
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0205-01
Sampled: 08/02/22 13:15
Received: 08/03/22 11:57

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.20		0.04	0.10	"	"	"	"
Lead	"	0.017	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.63		0.22	0.50	EPA 1631E	08/06/22	08/06/22	B2H1088 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	08/19/22	08/18/22	B2H1362 / EDM
Nickel	ug/l	0.10	J	0.02	0.10	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/13/22	08/09/22	B2H1060 / EDM
Zinc	"	0.25	J	0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/16/22	08/16/22	B2H1319 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.17		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.08	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/13/22	08/13/22	B2H1262 / EDM
Zinc	"	0.23	J	0.12	0.50	EPA 1638	08/16/22	08/16/22	B2H1319 / EDM

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Analytical Report

Description: IS-14-SC
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0205-02
Sampled: 08/02/22 09:00
Received: 08/03/22 11:57

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.19		0.04	0.10	"	"	"	"
Lead	"	0.007	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.50	J	0.22	0.50	EPA 1631E	08/06/22	08/06/22	B2H1088 / DJC
Methyl Mercury as Mercury	"	0.022	J	0.017	0.050	EPA 1630	08/19/22	08/18/22	B2H1362 / EDM
Nickel	ug/l	0.10	J	0.02	0.10	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/13/22	08/09/22	B2H1060 / EDM
Zinc	"	0.15	J	0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/16/22	08/16/22	B2H1319 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.19		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.09	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/13/22	08/13/22	B2H1262 / EDM
Zinc	"	0.19	J	0.12	0.50	EPA 1638	08/16/22	08/16/22	B2H1319 / EDM

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Analytical Report

Description: R-IS-13-CR
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0205-03
Sampled: 08/02/22 10:50
Received: 08/03/22 11:57

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.23		0.04	0.10	"	"	"	"
Lead	"	0.008	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.61		0.22	0.50	EPA 1631E	08/06/22	08/06/22	B2H1088 / DJC
Methyl Mercury as Mercury	"	0.019	J	0.017	0.050	EPA 1630	08/19/22	08/18/22	B2H1362 / EDM
Nickel	ug/l	0.14		0.02	0.10	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/13/22	08/09/22	B2H1060 / EDM
Zinc	"	0.71		0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/16/22	08/16/22	B2H1319 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.20		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.14		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/13/22	08/13/22	B2H1262 / EDM
Zinc	"	0.56		0.12	0.50	EPA 1638	08/16/22	08/16/22	B2H1319 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2H1060 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	207	2.0	ug/l	200		104	85-115			
Duplicate	Source: 22H0099-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22H0192-03									
Selenium	1.3	2.0	ug/l		1.2			8.00	20	J
Matrix Spike	Source: 22H0099-01									
Selenium	204	2.0	ug/l	200	ND	102	75-125			
Matrix Spike	Source: 22H0192-03									
Selenium	203	2.0	ug/l	200	1.2	101	75-125			
Metals - Total	**Batch B2H1088 - BrCl Digestion**									

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2H1088 - BrCl Digestion										
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	9.98	0.50	ng/l	10.0		99.8	77-123			
Matrix Spike	Source: 22G1113-04									
Mercury	9.58	0.50	ng/l	10.0	0.70	88.8	71-125			
Matrix Spike	Source: 22H0205-01									
Mercury	11.8	0.50	ng/l	10.0	0.63	112	71-125			
Matrix Spike Dup	Source: 22G1113-04									
Mercury	10.1	0.50	ng/l	10.0	0.70	94.4	71-125	5.70	24	
Matrix Spike Dup	Source: 22H0205-01									
Mercury	12.0	0.50	ng/l	10.0	0.63	113	71-125	1.28	24	
Metals - Total Batch B2H1240 - EPA 1638 - Closed Bottle Oven Digestion										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.5	50-150			
Cadmium	0.23	0.10	ug/l	0.250		93.7	84-113			
Copper	0.23	0.10	ug/l	0.250		93.1	51-145			
Lead	0.121	0.050	ug/l	0.125		97.0	72-143			
Nickel	0.25	0.10	ug/l	0.250		100	68-134			
Zinc	1.23	0.50	ug/l	1.25		98.3	46-146			

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total **Batch B2H1240 - EPA 1638 - Closed Bottle Oven Digestion**										
LCS										
Arsenic	1.18	0.50	ug/l	1.25		94.2	50-150			
Cadmium	0.23	0.10	ug/l	0.250		91.8	84-113			
Copper	0.24	0.10	ug/l	0.250		95.2	51-145			
Lead	0.120	0.050	ug/l	0.125		96.2	72-143			
Nickel	0.25	0.10	ug/l	0.250		101	68-134			
Zinc	1.20	0.50	ug/l	1.25		96.3	46-146			
Matrix Spike	Source: 22H0098-01									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.47	0.10	ug/l	0.500	ND	95.0	84-113			
Copper	0.68	0.10	ug/l	0.500	0.21	94.4	51-145			
Lead	0.268	0.050	ug/l	0.250	0.024	97.5	72-143			
Nickel	0.65	0.10	ug/l	0.500	0.16	97.6	68-134			
Zinc	3.10	0.50	ug/l	2.50	0.65	97.8	46-146			
Matrix Spike	Source: 22H0206-01									
Arsenic	2.43	0.50	ug/l	2.50	ND	97.0	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.2	84-113			
Copper	0.61	0.10	ug/l	0.500	0.13	95.6	51-145			
Lead	0.245	0.050	ug/l	0.250	0.012	93.1	72-143			
Nickel	0.53	0.10	ug/l	0.500	0.05	95.0	68-134			
Zinc	2.58	0.50	ug/l	2.50	0.15	96.9	46-146			
Matrix Spike Dup	Source: 22H0098-01									
Arsenic	2.44	0.50	ug/l	2.50	ND	97.6	50-150	3.61	20	
Cadmium	0.47	0.10	ug/l	0.500	ND	93.6	84-113	1.47	20	
Copper	0.68	0.10	ug/l	0.500	0.21	94.1	51-145	0.235	20	
Lead	0.270	0.050	ug/l	0.250	0.024	98.4	72-143	0.772	20	
Nickel	0.62	0.10	ug/l	0.500	0.16	91.2	68-134	5.01	20	
Zinc	3.05	0.50	ug/l	2.50	0.65	96.1	46-146	1.38	20	
Matrix Spike Dup	Source: 22H0206-01									
Arsenic	2.40	0.50	ug/l	2.50	ND	95.9	50-150	1.13	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	95.1	84-113	1.13	20	
Copper	0.65	0.10	ug/l	0.500	0.13	103	51-145	5.48	20	
Lead	0.252	0.050	ug/l	0.250	0.012	95.7	72-143	2.54	20	
Nickel	0.54	0.10	ug/l	0.500	0.05	97.2	68-134	2.04	20	
Zinc	2.50	0.50	ug/l	2.50	0.15	93.8	46-146	2.99	20	
Metals - Total **Batch B2H1362 - EPA 1630 Distillation (Modified)**										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.24	0.050	ng/l	2.00		112	67-133			
Matrix Spike	Source: 22H0099-03									
Methyl Mercury as Mercury	1.18	0.050	ng/l	1.00	ND	118	65-135			
Matrix Spike	Source: 22H0284-01									

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2H1362 - EPA 1630 Distillation (Modified)										
Methyl Mercury as Mercury	1.26	0.050	ng/l	1.00	0.044	122	65-135			
Matrix Spike Dup	Source: 22H0099-03									
Methyl Mercury as Mercury	1.16	0.050	ng/l	1.00	ND	116	65-135	1.92	35	
Matrix Spike Dup	Source: 22H0284-01									
Methyl Mercury as Mercury	1.36	0.050	ng/l	1.00	0.044	131	65-135	7.25	35	
Metals - Dissolved Batch B2H1262 - EPA 200.8 Diss										
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	211	2.0	ug/l	200		106	85-115			
Duplicate	Source: 22H0099-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22H0205-02									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22H0099-01									
Selenium	211	2.0	ug/l	200	ND	105	75-125			
Matrix Spike	Source: 22H0205-02									
Selenium	211	2.0	ug/l	200	ND	105	75-125			
Metals - Dissolved Batch B2H1319 - EPA 1638 - Dissolved										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved	**Batch B2H1319 - EPA 1638 - Dissolved**									
LCS										
Arsenic	1.28	0.50	ug/l	1.25		103	50-150			
Cadmium	0.24	0.10	ug/l	0.250		97.2	84-113			
Copper	0.27	0.10	ug/l	0.250		110	51-145			
Lead	0.131	0.050	ug/l	0.125		105	72-143			
Nickel	0.26	0.10	ug/l	0.250		105	68-134			
Zinc	1.36	0.50	ug/l	1.25		109	46-146			
LCS										
Arsenic	1.30	0.50	ug/l	1.25		104	50-150			
Cadmium	0.25	0.10	ug/l	0.250		101	84-113			
Copper	0.26	0.10	ug/l	0.250		105	51-145			
Lead	0.129	0.050	ug/l	0.125		103	72-143			
Nickel	0.24	0.10	ug/l	0.250		95.1	68-134			
Zinc	1.32	0.50	ug/l	1.25		105	46-146			
Matrix Spike	Source: 22H0098-01									
Arsenic	2.78	0.50	ug/l	2.50	ND	111	50-150			
Cadmium	0.52	0.10	ug/l	0.500	ND	104	84-113			
Copper	0.73	0.10	ug/l	0.500	0.18	109	51-145			
Lead	0.285	0.050	ug/l	0.250	0.014	108	72-143			
Nickel	0.67	0.10	ug/l	0.500	0.15	105	68-134			
Zinc	3.21	0.50	ug/l	2.50	0.53	107	46-146			
Matrix Spike	Source: 22H0206-01									
Arsenic	2.75	0.50	ug/l	2.50	ND	110	50-150			
Cadmium	0.54	0.10	ug/l	0.500	ND	107	84-113			
Copper	0.66	0.10	ug/l	0.500	0.12	108	51-145			
Lead	0.280	0.050	ug/l	0.250	ND	112	72-143			
Nickel	0.60	0.10	ug/l	0.500	0.05	109	68-134			
Zinc	2.89	0.50	ug/l	2.50	0.22	107	46-146			
Matrix Spike Dup	Source: 22H0098-01									
Arsenic	2.67	0.50	ug/l	2.50	ND	107	50-150	3.79	20	
Cadmium	0.52	0.10	ug/l	0.500	ND	104	84-113	0.688	20	
Copper	0.72	0.10	ug/l	0.500	0.18	108	51-145	0.695	20	
Lead	0.279	0.050	ug/l	0.250	0.014	106	72-143	2.23	20	
Nickel	0.65	0.10	ug/l	0.500	0.15	101	68-134	2.69	20	
Zinc	3.16	0.50	ug/l	2.50	0.53	105	46-146	1.59	20	
Matrix Spike Dup	Source: 22H0206-01									
Arsenic	2.59	0.50	ug/l	2.50	ND	104	50-150	5.93	20	
Cadmium	0.53	0.10	ug/l	0.500	ND	107	84-113	0.284	20	
Copper	0.65	0.10	ug/l	0.500	0.12	107	51-145	0.535	20	
Lead	0.267	0.050	ug/l	0.250	ND	107	72-143	4.64	20	
Nickel	0.58	0.10	ug/l	0.500	0.05	105	68-134	3.17	20	
Zinc	2.89	0.50	ug/l	2.50	0.22	107	46-146	0.0758	20	

Notes and Definitions

J Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.

ND Analyte NOT DETECTED at or above the detection limit

basic laboratory

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Analytical Report

RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	CA-ELAP does not accredit this analyte or method as of December 2020. *(Newly released 2021 FOA tables may include this analyte or method.)*
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless samples are received on ice and collected on the same day as delivery. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen
Ricky Jensen, General Manager
Pace Analytical Services LLC - Redding CA
California ELAP Cert #1677 & 2718

22H0205

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494
☐ 3860 Morrow Lane, Suite F Chico, CA 95928 (530) 894-8966 FAX: (530) 894-5143

LABORATORY WORK ORDER # 22H0205
PAGE 1 OF 1

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	mm 8.3.22

MAILING ADDRESS
279 Cousteau Place, Suite 400
Davis, CA 95618

REPORT TO ☒ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED
☒ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one) ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	8/2/22	1315 AM (PM)	SW[2]		✓	15-12-SC		6	✓	✓	✓	✓	✓	✓
2	8/2/22	0900 (AM) PM	↓		✓	15-14-SC		6	✓	✓	✓	✓	✓	✓
3	8/2/22	1050 (AM) PM	↓		✓	R-15-13-CR		6	✓	✓	✓	✓	✓	✓
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												

SAMPLED BY: (please print) Emily Applequist, Bethany Leach

RELINQUISHED DATE / TIME: 8/2/22 1730

SAMPLING / ANALYSIS COMMENTS
[2] Per past project practice mm 8.3.22

(1) Total and Dissolved LL 1638 Metals

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME	SIGNATURE	DATE
Emily Applequist		8/2/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
	8.3.22 1157		8.3.22 18.27

For Official Lab Comments Only

*SAMPLE TYPE CODES
DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water
SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

FRM-002.1 - Chain of Custody (rev 1.1)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22H0205

SHIPPING INFORMATION

Walk-In ☐
Courier ☐
FedEx ☑
UPS ☐
Other ☐

Cooler Present? Yes ☑ No ☐

Samples Received By: jmc Date: 8.3.22

	Yes	No
Samples received on ice?	☑	☐
Samples received the same day collected?	☐	☑

Ice type? ☑ Wet ☐ Blue ☐ Other _____

SAMPLE TEMPERATURES AT RECEIPT Therm. ID (Circle one): Therm-36 Therm-37 (Therm-59) Other: _____

jmc 8.3.22

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	~~7~~ 10.9	-06		-11		-16	
-02	5.7	-07		-12		-17	
-03	7.1	-08		-13		-18	
-04		-09		-14		-19	
-05		-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: jmc Date: 8.3.22

	Yes	No	NA
Custody seals present?	☐	☐	☑
Samples in proper containers?	☑	☐	
Sample containers damaged?	☐	☑	
Sufficient sample volume for indicated tests?	☑	☐	
Samples received within holding times?	☑	☐	
Are VOA vials free of headspace?	☐	☐	☑
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☑

SAMPLE PRESERVATION NA ☐

jmc 8.3.22

	Yes	No	NA
Preserved in the field?	☑	☑	☐
Preserved in the lab?	☑	☐	☐

Lab Preservation Date & Time 8.3.22 16:40

☐ H2SO4 (ID_____) ☑ HNO3 (ID 2G080069) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑
Are proper preservation lables present?	☐	☐	☐

By:_____ Meter ID:_____

Preservation checked at Lab? Date & Time 8.3.22 10:51 Test Strip (ID 2B24019)

Preservation and Preservation Checks performed by: ~~jmc~~ RH
jmc 8.3.22

COMMENTS, DISCREPANCEIS, ANOMALIES

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02

Lab No: 22H0206
Reported: 08/24/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22H0206, received on 08/03/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: IS-11-SFSC
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0206-01
Sampled: 08/02/22 12:40
Received: 08/03/22 11:58

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.13		0.04	0.10	"	"	"	"
Lead	"	0.012	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.59		0.22	0.50	EPA 1631E	08/10/22	08/10/22	B2H1166 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	08/19/22	08/18/22	B2H1362 / EDM
Nickel	ug/l	0.05	J	0.02	0.10	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/17/22	08/10/22	B2H1061 / EDM
Zinc	"	0.15	J	0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/16/22	08/16/22	B2H1319 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.12		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.05	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/17/22	08/17/22	B2H1349 / EDM
Zinc	"	0.22	J	0.12	0.50	EPA 1638	08/16/22	08/16/22	B2H1319 / EDM

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Analytical Report

Description: IS-13-SC
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0206-02
Sampled: 08/02/22 11:40
Received: 08/03/22 11:58

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.16		0.04	0.10	"	"	"	"
Lead	"	0.013	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.44	J	0.22	0.50	EPA 1631E	08/10/22	08/10/22	B2H1166 / DJC
Methyl Mercury as Mercury	"	0.017	J	0.017	0.050	EPA 1630	08/19/22	08/18/22	B2H1362 / EDM
Nickel	ug/l	0.12		0.02	0.10	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/17/22	08/10/22	B2H1061 / EDM
Zinc	"	0.19	J	0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/16/22	08/16/22	B2H1319 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.14		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.11		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/17/22	08/17/22	B2H1349 / EDM
Zinc	"	0.25	J	0.12	0.50	EPA 1638	08/16/22	08/16/22	B2H1319 / EDM

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Analytical Report

Description: R-IS-12-JRB
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0206-03
Sampled: 08/02/22 15:10
Received: 08/03/22 11:58

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.17		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Mercury	ng/l	0.74		0.22	0.50	EPA 1631E	08/10/22	08/10/22	B2H1166 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	08/19/22	08/18/22	B2H1362 / EDM
Nickel	ug/l	0.10	J	0.02	0.10	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/17/22	08/10/22	B2H1061 / EDM
Zinc	"	1.21		0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/16/22	08/16/22	B2H1319 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.15		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.10		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/17/22	08/17/22	B2H1349 / EDM
Zinc	"	0.87		0.12	0.50	EPA 1638	08/16/22	08/16/22	B2H1319 / EDM

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Analytical Report

Description: R-IS-12-JR
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0206-04
Sampled: 08/02/22 14:50
Received: 08/03/22 11:58

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.14		0.04	0.10	"	"	"	"
Lead	"	0.017	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.47	J	0.22	0.50	EPA 1631E	08/10/22	08/10/22	B2H1166 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	08/19/22	08/18/22	B2H1362 / EDM
Nickel	ug/l	0.07	J	0.02	0.10	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/17/22	08/10/22	B2H1061 / EDM
Zinc	"	0.29	J	0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/16/22	08/16/22	B2H1319 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.13		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.06	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/17/22	08/17/22	B2H1349 / EDM
Zinc	"	0.21	J	0.12	0.50	EPA 1638	08/16/22	08/16/22	B2H1319 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2H1061 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	207	2.0	ug/l	200		103	85-115			
Duplicate	Source: 22H0206-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22H0284-03									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22H0206-01									
Selenium	201	2.0	ug/l	200	ND	100	75-125			
Matrix Spike	Source: 22H0284-03									
Selenium	205	2.0	ug/l	200	ND	102	75-125			
Metals - Total	**Batch B2H1166 - BrCl Digestion**									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2H1166 - BrCl Digestion										
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	0.28	0.50	ng/l							J
LCS										
Mercury	10.3	0.50	ng/l	10.0		103	77-123			
Matrix Spike	Source: 22H0206-01									
Mercury	11.2	0.50	ng/l	10.0	0.59	106	71-125			
Matrix Spike	Source: 22H0294-01									
Mercury	10.4	0.50	ng/l	10.0	0.31	101	71-125			
Matrix Spike Dup	Source: 22H0206-01									
Mercury	10.9	0.50	ng/l	10.0	0.59	104	71-125	2.19	24	
Matrix Spike Dup	Source: 22H0294-01									
Mercury	10.4	0.50	ng/l	10.0	0.31	101	71-125	0.356	24	
Metals - Total Batch B2H1240 - EPA 1638 - Closed Bottle Oven Digestion										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.5	50-150			
Cadmium	0.23	0.10	ug/l	0.250		93.7	84-113			
Copper	0.23	0.10	ug/l	0.250		93.1	51-145			
Lead	0.121	0.050	ug/l	0.125		97.0	72-143			
Nickel	0.25	0.10	ug/l	0.250		100	68-134			
Zinc	1.23	0.50	ug/l	1.25		98.3	46-146			

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total **Batch B2H1240 - EPA 1638 - Closed Bottle Oven Digestion**										
LCS										
Arsenic	1.18	0.50	ug/l	1.25		94.2	50-150			
Cadmium	0.23	0.10	ug/l	0.250		91.8	84-113			
Copper	0.24	0.10	ug/l	0.250		95.2	51-145			
Lead	0.120	0.050	ug/l	0.125		96.2	72-143			
Nickel	0.25	0.10	ug/l	0.250		101	68-134			
Zinc	1.20	0.50	ug/l	1.25		96.3	46-146			
Matrix Spike	Source: 22H0098-01									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.47	0.10	ug/l	0.500	ND	95.0	84-113			
Copper	0.68	0.10	ug/l	0.500	0.21	94.4	51-145			
Lead	0.268	0.050	ug/l	0.250	0.024	97.5	72-143			
Nickel	0.65	0.10	ug/l	0.500	0.16	97.6	68-134			
Zinc	3.10	0.50	ug/l	2.50	0.65	97.8	46-146			
Matrix Spike	Source: 22H0206-01									
Arsenic	2.43	0.50	ug/l	2.50	ND	97.0	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.2	84-113			
Copper	0.61	0.10	ug/l	0.500	0.13	95.6	51-145			
Lead	0.245	0.050	ug/l	0.250	0.012	93.1	72-143			
Nickel	0.53	0.10	ug/l	0.500	0.05	95.0	68-134			
Zinc	2.58	0.50	ug/l	2.50	0.15	96.9	46-146			
Matrix Spike Dup	Source: 22H0098-01									
Arsenic	2.44	0.50	ug/l	2.50	ND	97.6	50-150	3.61	20	
Cadmium	0.47	0.10	ug/l	0.500	ND	93.6	84-113	1.47	20	
Copper	0.68	0.10	ug/l	0.500	0.21	94.1	51-145	0.235	20	
Lead	0.270	0.050	ug/l	0.250	0.024	98.4	72-143	0.772	20	
Nickel	0.62	0.10	ug/l	0.500	0.16	91.2	68-134	5.01	20	
Zinc	3.05	0.50	ug/l	2.50	0.65	96.1	46-146	1.38	20	
Matrix Spike Dup	Source: 22H0206-01									
Arsenic	2.40	0.50	ug/l	2.50	ND	95.9	50-150	1.13	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	95.1	84-113	1.13	20	
Copper	0.65	0.10	ug/l	0.500	0.13	103	51-145	5.48	20	
Lead	0.252	0.050	ug/l	0.250	0.012	95.7	72-143	2.54	20	
Nickel	0.54	0.10	ug/l	0.500	0.05	97.2	68-134	2.04	20	
Zinc	2.50	0.50	ug/l	2.50	0.15	93.8	46-146	2.99	20	
Metals - Total **Batch B2H1362 - EPA 1630 Distillation (Modified)**										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.24	0.050	ng/l	2.00		112	67-133			
Matrix Spike	Source: 22H0099-03									
Methyl Mercury as Mercury	1.18	0.050	ng/l	1.00	ND	118	65-135			
Matrix Spike	Source: 22H0284-01									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2H1362 - EPA 1630 Distillation (Modified)										
Methyl Mercury as Mercury	1.26	0.050	ng/l	1.00	0.044	122	65-135			
Matrix Spike Dup	Source: 22H0099-03									
Methyl Mercury as Mercury	1.16	0.050	ng/l	1.00	ND	116	65-135	1.92	35	
Matrix Spike Dup	Source: 22H0284-01									
Methyl Mercury as Mercury	1.36	0.050	ng/l	1.00	0.044	131	65-135	7.25	35	
Metals - Dissolved Batch B2H1319 - EPA 1638 - Dissolved										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.28	0.50	ug/l	1.25		103	50-150			
Cadmium	0.24	0.10	ug/l	0.250		97.2	84-113			
Copper	0.27	0.10	ug/l	0.250		110	51-145			
Lead	0.131	0.050	ug/l	0.125		105	72-143			
Nickel	0.26	0.10	ug/l	0.250		105	68-134			
Zinc	1.36	0.50	ug/l	1.25		109	46-146			
LCS										
Arsenic	1.30	0.50	ug/l	1.25		104	50-150			
Cadmium	0.25	0.10	ug/l	0.250		101	84-113			
Copper	0.26	0.10	ug/l	0.250		105	51-145			
Lead	0.129	0.050	ug/l	0.125		103	72-143			
Nickel	0.24	0.10	ug/l	0.250		95.1	68-134			
Zinc	1.32	0.50	ug/l	1.25		105	46-146			
Matrix Spike	Source: 22H0098-01									
Arsenic	2.78	0.50	ug/l	2.50	ND	111	50-150			
Cadmium	0.52	0.10	ug/l	0.500	ND	104	84-113			
Copper	0.73	0.10	ug/l	0.500	0.18	109	51-145			
Lead	0.285	0.050	ug/l	0.250	0.014	108	72-143			
Nickel	0.67	0.10	ug/l	0.500	0.15	105	68-134			
Zinc	3.21	0.50	ug/l	2.50	0.53	107	46-146			

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved	**Batch B2H1319 - EPA 1638 - Dissolved**									
Matrix Spike	Source: 22H0206-01									
Arsenic	2.75	0.50	ug/l	2.50	ND	110	50-150			
Cadmium	0.54	0.10	ug/l	0.500	ND	107	84-113			
Copper	0.66	0.10	ug/l	0.500	0.12	108	51-145			
Lead	0.280	0.050	ug/l	0.250	ND	112	72-143			
Nickel	0.60	0.10	ug/l	0.500	0.05	109	68-134			
Zinc	2.89	0.50	ug/l	2.50	0.22	107	46-146			
Matrix Spike Dup	Source: 22H0098-01									
Arsenic	2.67	0.50	ug/l	2.50	ND	107	50-150	3.79	20	
Cadmium	0.52	0.10	ug/l	0.500	ND	104	84-113	0.688	20	
Copper	0.72	0.10	ug/l	0.500	0.18	108	51-145	0.695	20	
Lead	0.279	0.050	ug/l	0.250	0.014	106	72-143	2.23	20	
Nickel	0.65	0.10	ug/l	0.500	0.15	101	68-134	2.69	20	
Zinc	3.16	0.50	ug/l	2.50	0.53	105	46-146	1.59	20	
Matrix Spike Dup	Source: 22H0206-01									
Arsenic	2.59	0.50	ug/l	2.50	ND	104	50-150	5.93	20	
Cadmium	0.53	0.10	ug/l	0.500	ND	107	84-113	0.284	20	
Copper	0.65	0.10	ug/l	0.500	0.12	107	51-145	0.535	20	
Lead	0.267	0.050	ug/l	0.250	ND	107	72-143	4.64	20	
Nickel	0.58	0.10	ug/l	0.500	0.05	105	68-134	3.17	20	
Zinc	2.89	0.50	ug/l	2.50	0.22	107	46-146	0.0758	20	
Metals - Dissolved	**Batch B2H1349 - EPA 200.8 Diss**									
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	209	2.0	ug/l	200		105	85-115			
Duplicate	Source: 22H0206-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22H0285-02									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22H0206-01									
Selenium	207	2.0	ug/l	200	ND	103	75-125			
Matrix Spike	Source: 22H0285-02									
Selenium	205	2.0	ug/l	200	ND	102	75-125			

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference

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MDL	Method Detection Limit
RL	Reporting Limit
* or #	CA-ELAP does not accredit this analyte or method as of December 2020. *(Newly released 2021 FOA tables may include this analyte or method.)*
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless samples are received on ice and collected on the same day as delivery. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen

Ricky Jensen, General Manager
Pace Analytical Services LLC - Redding CA
California ELAP Cert #1677 & 2718

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

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LABORATORY WORK ORDER # 22H0206
PAGE 1 OF 2

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CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS
279 Cousteau Place, Suite 400
Davis, CA 95618

REPORT TO ☐ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED
☐ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one): ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	8/2/22	1240 AM (PM)	SW		✓	15-11-SFSC		6	✓	✓	✓	✓	✓	✓
2	8/2/22	1140 (AM) PM	↓		✓	15-13-SC		6	✓	✓	✓	✓	✓	✓
3	8/2/22	1510 AM (PM)			✓	R-15-12-JRB		6	✓	✓	✓	✓	✓	✓
4	8/2/22	1450 AM (PM)			✓	R-15-12-JR		6	✓	✓	✓	✓	✓	✓
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												

ANALYSES REQUESTED

SAMPLED BY: (please print) Emily Applequist, Bethany Leach

RELINQUISHED DATE / TIME: 8/2/22 1730

SAMPLING / ANALYSIS COMMENTS

(1) Total and Dissolved LL 1638 Metals

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME: Emily Applequist SIGNATURE: [signature] DATE: 8/2/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
[signature]	8.3.22 1158	[signature]	8.3.22 1742

For Official Lab Comments Only

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22H0206

SHIPPING INFORMATION

Walk-In ☐
Courier ☐
FedEx ☑
UPS ☐
Other ☐

Cooler Present? Yes ☑ No ☐

Samples Received By: RH Date: 8·3·22

	Yes	No
Samples received on ice?	☑	☐
Samples received the same day collected?	☐	☑

Ice type? ☑ Wet ☐ Blue ☐ Other _____

Melted

SAMPLE TEMPERATURES AT RECEIPT **Therm. ID (Circle one):** Therm-36 Therm-37 (Therm-59) Other: _____

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	6.5	-06		-11		-16	
-02	5.2	-07		-12		-17	
-03	6.1	-08		-13		-18	
-04	8.7	-09		-14		-19	
-05		-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: RH Date: 8·3·22

	Yes	No	NA
Custody seals present?	☐	☐	☑
Samples in proper containers?	☑	☐	
Sample containers damaged?	☐	☑	
Sufficient sample volume for indicated tests?	☑	☐	
Samples received within holding times?	☑	☐	
Are VOA vials free of headspace?	☐	☐	☑
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☑

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☑	☐	☐
Preserved in the lab?	☑	☐	☐

Lab Preservation Date & Time 8·3·22 1640

☐ H2SO4 (ID_____) ☑ HNO3 (ID 2G08006) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☐
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☐
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☐
Are proper preservation lables present?	☑	☐	☐

By:_____ Meter ID:_____

Preservation checked at Lab? Date & Time 8·3·22 1651 Test Strip (ID 2B24019)

Preservation and Preservation Checks performed by: RH

COMMENTS, DISCREPANCEIS, ANOMALIES

_____

_____

_____

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02

Lab No: 22H0284
Reported: 08/24/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22H0284, received on 08/04/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: IS-19-SFAR
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0284-01
Sampled: 08/03/22 07:30
Received: 08/04/22 08:27

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.22	J	0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.32		0.04	0.10	"	"	"	"
Lead	"	0.083		0.007	0.050	"	"	"	"
Methyl Mercury as Mercury	ng/l	0.044	J	0.017	0.050	EPA 1630	08/19/22	08/18/22	B2H1362 / EDM
Nickel	ug/l	0.11		0.02	0.10	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/17/22	08/10/22	B2H1061 / EDM
Zinc	"	0.42	J	0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.17	J	0.12	0.50	"	08/16/22	08/16/22	B2H1319 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.21		0.04	0.10	"	"	"	"
Lead	"	0.009	J	0.007	0.050	"	"	"	"
Nickel	"	0.07	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/17/22	08/17/22	B2H1349 / EDM
Zinc	"	0.29	J	0.12	0.50	EPA 1638	08/16/22	08/16/22	B2H1319 / EDM

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Analytical Report

Description: R-IS-15-SC
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0284-02
Sampled: 08/03/22 11:25
Received: 08/04/22 08:27

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.18	J	0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.22		0.04	0.10	"	"	"	"
Lead	"	0.012	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.31	J	0.22	0.50	EPA 1631E	08/10/22	08/10/22	B2H1166 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	08/19/22	08/18/22	B2H1362 / EDM
Nickel	ug/l	0.08	J	0.02	0.10	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/17/22	08/10/22	B2H1061 / EDM
Zinc	"	ND		0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.17	J	0.12	0.50	"	08/16/22	08/16/22	B2H1319 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.24		0.04	0.10	"	"	"	"
Lead	"	0.008	J	0.007	0.050	"	"	"	"
Nickel	"	0.07	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/17/22	08/17/22	B2H1349 / EDM
Zinc	"	0.44	J	0.12	0.50	EPA 1638	08/16/22	08/16/22	B2H1319 / EDM

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Analytical Report

Description: R-IS-14-SCB
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0284-03
Sampled: 08/03/22 09:55
Received: 08/04/22 08:27

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.13	J	0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.22		0.04	0.10	"	"	"	"
Lead	"	0.042	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.56		0.22	0.50	EPA 1631E	08/10/22	08/10/22	B2H1166 / DJC
Methyl Mercury as Mercury	"	0.031	J	0.017	0.050	EPA 1630	08/19/22	08/18/22	B2H1362 / EDM
Nickel	ug/l	0.10		0.02	0.10	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/17/22	08/10/22	B2H1061 / EDM
Zinc	"	1.98		0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.13	J	0.12	0.50	"	08/16/22	08/16/22	B2H1319 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.15		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.09	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/17/22	08/17/22	B2H1349 / EDM
Zinc	"	2.14		0.12	0.50	EPA 1638	08/16/22	08/16/22	B2H1319 / EDM

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Analytical Report

Description: R-IS-14-SC
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0284-04
Sampled: 08/03/22 09:45
Received: 08/04/22 08:27

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.17	J	0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.26		0.04	0.10	"	"	"	"
Lead	"	0.020	J	0.007	0.050	"	"	"	"
Mercury	ng/l	1.15		0.22	0.50	EPA 1631E	08/10/22	08/10/22	B2H1166 / DJC
Methyl Mercury as Mercury	"	0.038	J	0.017	0.050	EPA 1630	08/19/22	08/18/22	B2H1362 / EDM
Nickel	ug/l	0.10		0.02	0.10	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/17/22	08/10/22	B2H1061 / EDM
Zinc	"	0.33	J	0.12	0.50	EPA 1638	08/16/22	08/12/22	B2H1240 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.18	J	0.12	0.50	"	08/16/22	08/16/22	B2H1319 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.22		0.04	0.10	"	"	"	"
Lead	"	0.008	J	0.007	0.050	"	"	"	"
Nickel	"	0.07	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/17/22	08/17/22	B2H1349 / EDM
Zinc	"	0.19	J	0.12	0.50	EPA 1638	08/16/22	08/16/22	B2H1319 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2H1061 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	207	2.0	ug/l	200		103	85-115			
Duplicate	Source: 22H0206-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22H0284-03									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22H0206-01									
Selenium	201	2.0	ug/l	200	ND	100	75-125			
Matrix Spike	Source: 22H0284-03									
Selenium	205	2.0	ug/l	200	ND	102	75-125			
Metals - Total	**Batch B2H1166 - BrCl Digestion**									

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2H1166 - BrCl Digestion										
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	0.28	0.50	ng/l							J
LCS										
Mercury	10.3	0.50	ng/l	10.0		103	77-123			
Matrix Spike	Source: 22H0206-01									
Mercury	11.2	0.50	ng/l	10.0	0.59	106	71-125			
Matrix Spike	Source: 22H0294-01									
Mercury	10.4	0.50	ng/l	10.0	0.31	101	71-125			
Matrix Spike Dup	Source: 22H0206-01									
Mercury	10.9	0.50	ng/l	10.0	0.59	104	71-125	2.19	24	
Matrix Spike Dup	Source: 22H0294-01									
Mercury	10.4	0.50	ng/l	10.0	0.31	101	71-125	0.356	24	
Metals - Total Batch B2H1240 - EPA 1638 - Closed Bottle Oven Digestion										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.5	50-150			
Cadmium	0.23	0.10	ug/l	0.250		93.7	84-113			
Copper	0.23	0.10	ug/l	0.250		93.1	51-145			
Lead	0.121	0.050	ug/l	0.125		97.0	72-143			
Nickel	0.25	0.10	ug/l	0.250		100	68-134			
Zinc	1.23	0.50	ug/l	1.25		98.3	46-146			

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total **Batch B2H1240 - EPA 1638 - Closed Bottle Oven Digestion**										
LCS										
Arsenic	1.18	0.50	ug/l	1.25		94.2	50-150			
Cadmium	0.23	0.10	ug/l	0.250		91.8	84-113			
Copper	0.24	0.10	ug/l	0.250		95.2	51-145			
Lead	0.120	0.050	ug/l	0.125		96.2	72-143			
Nickel	0.25	0.10	ug/l	0.250		101	68-134			
Zinc	1.20	0.50	ug/l	1.25		96.3	46-146			
Matrix Spike	Source: 22H0098-01									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.47	0.10	ug/l	0.500	ND	95.0	84-113			
Copper	0.68	0.10	ug/l	0.500	0.21	94.4	51-145			
Lead	0.268	0.050	ug/l	0.250	0.024	97.5	72-143			
Nickel	0.65	0.10	ug/l	0.500	0.16	97.6	68-134			
Zinc	3.10	0.50	ug/l	2.50	0.65	97.8	46-146			
Matrix Spike	Source: 22H0206-01									
Arsenic	2.43	0.50	ug/l	2.50	ND	97.0	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.2	84-113			
Copper	0.61	0.10	ug/l	0.500	0.13	95.6	51-145			
Lead	0.245	0.050	ug/l	0.250	0.012	93.1	72-143			
Nickel	0.53	0.10	ug/l	0.500	0.05	95.0	68-134			
Zinc	2.58	0.50	ug/l	2.50	0.15	96.9	46-146			
Matrix Spike Dup	Source: 22H0098-01									
Arsenic	2.44	0.50	ug/l	2.50	ND	97.6	50-150	3.61	20	
Cadmium	0.47	0.10	ug/l	0.500	ND	93.6	84-113	1.47	20	
Copper	0.68	0.10	ug/l	0.500	0.21	94.1	51-145	0.235	20	
Lead	0.270	0.050	ug/l	0.250	0.024	98.4	72-143	0.772	20	
Nickel	0.62	0.10	ug/l	0.500	0.16	91.2	68-134	5.01	20	
Zinc	3.05	0.50	ug/l	2.50	0.65	96.1	46-146	1.38	20	
Matrix Spike Dup	Source: 22H0206-01									
Arsenic	2.40	0.50	ug/l	2.50	ND	95.9	50-150	1.13	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	95.1	84-113	1.13	20	
Copper	0.65	0.10	ug/l	0.500	0.13	103	51-145	5.48	20	
Lead	0.252	0.050	ug/l	0.250	0.012	95.7	72-143	2.54	20	
Nickel	0.54	0.10	ug/l	0.500	0.05	97.2	68-134	2.04	20	
Zinc	2.50	0.50	ug/l	2.50	0.15	93.8	46-146	2.99	20	
Metals - Total **Batch B2H1362 - EPA 1630 Distillation (Modified)**										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.24	0.050	ng/l	2.00		112	67-133			
Matrix Spike	Source: 22H0099-03									
Methyl Mercury as Mercury	1.18	0.050	ng/l	1.00	ND	118	65-135			
Matrix Spike	Source: 22H0284-01									

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2H1362 - EPA 1630 Distillation (Modified)										
Methyl Mercury as Mercury	1.26	0.050	ng/l	1.00	0.044	122	65-135			
Matrix Spike Dup	Source: 22H0099-03									
Methyl Mercury as Mercury	1.16	0.050	ng/l	1.00	ND	116	65-135	1.92	35	
Matrix Spike Dup	Source: 22H0284-01									
Methyl Mercury as Mercury	1.36	0.050	ng/l	1.00	0.044	131	65-135	7.25	35	
Metals - Dissolved Batch B2H1319 - EPA 1638 - Dissolved										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.28	0.50	ug/l	1.25		103	50-150			
Cadmium	0.24	0.10	ug/l	0.250		97.2	84-113			
Copper	0.27	0.10	ug/l	0.250		110	51-145			
Lead	0.131	0.050	ug/l	0.125		105	72-143			
Nickel	0.26	0.10	ug/l	0.250		105	68-134			
Zinc	1.36	0.50	ug/l	1.25		109	46-146			
LCS										
Arsenic	1.30	0.50	ug/l	1.25		104	50-150			
Cadmium	0.25	0.10	ug/l	0.250		101	84-113			
Copper	0.26	0.10	ug/l	0.250		105	51-145			
Lead	0.129	0.050	ug/l	0.125		103	72-143			
Nickel	0.24	0.10	ug/l	0.250		95.1	68-134			
Zinc	1.32	0.50	ug/l	1.25		105	46-146			
Matrix Spike	Source: 22H0098-01									
Arsenic	2.78	0.50	ug/l	2.50	ND	111	50-150			
Cadmium	0.52	0.10	ug/l	0.500	ND	104	84-113			
Copper	0.73	0.10	ug/l	0.500	0.18	109	51-145			
Lead	0.285	0.050	ug/l	0.250	0.014	108	72-143			
Nickel	0.67	0.10	ug/l	0.500	0.15	105	68-134			
Zinc	3.21	0.50	ug/l	2.50	0.53	107	46-146			

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved	**Batch B2H1319 - EPA 1638 - Dissolved**									
Matrix Spike	Source: 22H0206-01									
Arsenic	2.75	0.50	ug/l	2.50	ND	110	50-150			
Cadmium	0.54	0.10	ug/l	0.500	ND	107	84-113			
Copper	0.66	0.10	ug/l	0.500	0.12	108	51-145			
Lead	0.280	0.050	ug/l	0.250	ND	112	72-143			
Nickel	0.60	0.10	ug/l	0.500	0.05	109	68-134			
Zinc	2.89	0.50	ug/l	2.50	0.22	107	46-146			
Matrix Spike Dup	Source: 22H0098-01									
Arsenic	2.67	0.50	ug/l	2.50	ND	107	50-150	3.79	20	
Cadmium	0.52	0.10	ug/l	0.500	ND	104	84-113	0.688	20	
Copper	0.72	0.10	ug/l	0.500	0.18	108	51-145	0.695	20	
Lead	0.279	0.050	ug/l	0.250	0.014	106	72-143	2.23	20	
Nickel	0.65	0.10	ug/l	0.500	0.15	101	68-134	2.69	20	
Zinc	3.16	0.50	ug/l	2.50	0.53	105	46-146	1.59	20	
Matrix Spike Dup	Source: 22H0206-01									
Arsenic	2.59	0.50	ug/l	2.50	ND	104	50-150	5.93	20	
Cadmium	0.53	0.10	ug/l	0.500	ND	107	84-113	0.284	20	
Copper	0.65	0.10	ug/l	0.500	0.12	107	51-145	0.535	20	
Lead	0.267	0.050	ug/l	0.250	ND	107	72-143	4.64	20	
Nickel	0.58	0.10	ug/l	0.500	0.05	105	68-134	3.17	20	
Zinc	2.89	0.50	ug/l	2.50	0.22	107	46-146	0.0758	20	
Metals - Dissolved	**Batch B2H1349 - EPA 200.8 Diss**									
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	209	2.0	ug/l	200		105	85-115			
Duplicate	Source: 22H0206-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22H0285-02									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22H0206-01									
Selenium	207	2.0	ug/l	200	ND	103	75-125			
Matrix Spike	Source: 22H0285-02									
Selenium	205	2.0	ug/l	200	ND	102	75-125			

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference

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Analytical Report

MDL	Method Detection Limit
RL	Reporting Limit
* or #	CA-ELAP does not accredit this analyte or method as of December 2020. *(Newly released 2021 FOA tables may include this analyte or method.)*
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless samples are received on ice and collected on the same day as delivery. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen

Ricky Jensen, General Manager
Pace Analytical Services LLC - Redding CA
California ELAP Cert #1677 & 2718

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

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LABORATORY WORK ORDER # 22H0284

PAGE 1 OF 1

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CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS
279 Cousteau Place, Suite 400
Davis, CA 95618

REPORT TO ☐ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED
☑ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one) ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	ANALYSES REQUESTED: T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	8/3/22	0730 AM PM	SW		✓	IS-19-SFAR		6	✓	✓	✓	✓	✓	✓
2	8/3/22	1125 AM PM	"		✓	R-IS-15-SC		6	✓	✓	✓	✓	✓	✓
3	8/3/22	0955 AM PM	"		✓	R-IS-14-SCB		6	✓	✓	✓	✓	✓	✓
4	8/3/22	0945 AM PM	"		✓	F-IS-14-SC		6	✓	✓	✓	✓	✓	✓
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												

SAMPLED BY: (please print) Emily Applequist, Bethany Leach

RELINQUISHED DATE / TIME: ~~Emily Applequist~~ 8/3/22 1700

SAMPLING / ANALYSIS COMMENTS

(1) Total and Dissolved LL 1638 Metals

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME: Emily Applequist SIGNATURE: [signature] DATE: 8/3/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
[signature]	8.4.22 0827	[signature]	8.4.22 1752

For Official Lab Comments Only

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

FRM-002.1 - Chain of Custody (rev 1.1)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22H0284

SHIPPING INFORMATION

Walk-In ☐
Courier ☐
FedEx ☑ Express
UPS ☐
Other ☐

Cooler Present? Yes ☑ No ☐

Samples Received By: RH Date: 8.4.22

	Yes	No
Samples received on ice?	☑	☐
Samples received the same day collected?	☐	☑

Ice type? ☑ Wet ☐ Blue ☐ Other _____

mostly melted

SAMPLE TEMPERATURES AT RECEIPT Therm. ID (Circle one): Therm-36 Therm-37 (Therm-59) Other: _____

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	7.5	-06		-11		-16	
-02	8.2	-07		-12		-17	
-03	6.8	-08		-13		-18	
-04	10.1	-09		-14		-19	
-05		-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: RH Date: 8.4.22

	Yes	No	NA
Custody seals present?	☐	☐	☑
Samples in proper containers?	☑	☐	
Sample containers damaged?	☑	☑	
Sufficient sample volume for indicated tests?	☑	☐	
Samples received within holding times?	☑	☐	
Are VOA vials free of headspace?	☐	☐	☑
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☑

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☑	☐	☐
Preserved in the lab?	☑	☐	☐

Lab Preservation Date & Time 8.4.22 0915

☐ H2SO4 (ID_____) ☑ HNO3 (ID 2G08006) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑
Are proper preservation lables present?	☑	☐	☐

By:_____ Meter ID:_____

Preservation checked at Lab? Date & Time 8.4.22 0917 Test Strip (ID 2B24019)

Preservation and Preservation Checks performed by: RH

COMMENTS, DISCREPANCEIS, ANOMALIES

for the testing Hg LL CVAFS 1631

-01 250ml CG with no preservative ✓ was received shattered. Client was contacted, they will resample per attached email RH 8.4.22

CALIFORNIA LABORATORY SERVICES
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August 17, 2022

CLS Work Order #: 22H0328
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 08/03/22 16:55. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

08/17/22 12:50

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0328
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-19-SFAR (22H0328-01) Surface Water	**Sampled: 08/03/22 07:30**		**Received: 08/03/22 16:55**							
Ammonia as N	ND	0.025	0.10	mg/L	1	2206637	08/08/22	08/08/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**10**	0.50	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**1.3**	0.026	0.50	"	"	2206495	08/04/22	08/04/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2206857	08/15/22	08/15/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2206548	08/04/22	08/05/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Nitrate/Nitrite as N	**0.066**	0.055	0.40	"	"	2206495	08/04/22	08/04/22	EPA 300.0	J
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2206497	08/04/22	08/04/22	SM4500-P E	
Sulfate as SO4	**0.61**	0.038	0.50	"	"	2206495	08/04/22	08/04/22	EPA 300.0	
Total Alkalinity	**10**	1.0	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Total Dissolved Solids	**28**	5.0	10	"	"	2206603	08/05/22	08/10/22	SM2540C	
Total Hardness as CaCO3	**8.9**	0.19	1.0	"	"	2206648	08/08/22	08/08/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.26**	0.040	0.20	"	"	2206763	08/11/22	08/11/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.0**	0.54	1.0	"	"	2206896	08/16/22	08/16/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2206649	08/08/22	08/08/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2206607	08/05/22	08/05/22	SM2540D	
R-IS-14-SCB (22H0328-02) Surface Water	**Sampled: 08/03/22 09:55**		**Received: 08/03/22 16:55**							
Ammonia as N	**0.026**	0.025	0.10	mg/L	1	2206637	08/08/22	08/08/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**11**	0.50	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**1.2**	0.026	0.50	"	"	2206495	08/04/22	08/04/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2206857	08/15/22	08/15/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	**1.0**	1.0	5.0	"	"	2206548	08/04/22	08/05/22	EPA 1664B	J
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Nitrate/Nitrite as N	**0.059**	0.055	0.40	"	"	2206495	08/04/22	08/04/22	EPA 300.0	J
Orthophosphate as PO4	**0.0099**	0.0051	0.15	"	"	2206497	08/04/22	08/04/22	SM4500-P E	J

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Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0328
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-14-SCB (22H0328-02) Surface Water	**Sampled: 08/03/22 09:55**		**Received: 08/03/22 16:55**							
Sulfate as SO4	**0.54**	0.038	0.50	mg/L	1	2206495	08/04/22	08/04/22	EPA 300.0	
Total Alkalinity	**11**	1.0	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Total Dissolved Solids	**30**	5.0	10	"	"	2206603	08/05/22	08/10/22	SM2540C	
Total Hardness as CaCO3	**8.2**	0.19	1.0	"	"	2206648	08/08/22	08/08/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.24**	0.040	0.20	"	"	2206763	08/11/22	08/11/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.0**	0.54	1.0	"	"	2206896	08/16/22	08/16/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2206649	08/08/22	08/08/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2206607	08/05/22	08/05/22	SM2540D	
R-IS-15-SC (22H0328-03) Surface Water	**Sampled: 08/03/22 11:25**		**Received: 08/03/22 16:55**							
Ammonia as N	ND	0.025	0.10	mg/L	1	2206637	08/08/22	08/08/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**14**	0.50	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**2.0**	0.026	0.50	"	"	2206495	08/04/22	08/04/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2206857	08/15/22	08/15/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2206548	08/04/22	08/05/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2206495	08/04/22	08/04/22	EPA 300.0	
Orthophosphate as PO4	**0.018**	0.0051	0.15	"	"	2206497	08/04/22	08/04/22	SM4500-P E	J
Sulfate as SO4	**0.49**	0.038	0.50	"	"	2206495	08/04/22	08/04/22	EPA 300.0	J
Total Alkalinity	**14**	1.0	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Total Dissolved Solids	**39**	5.0	10	"	"	2206603	08/05/22	08/10/22	SM2540C	
Total Hardness as CaCO3	**10**	0.19	1.0	"	"	2206648	08/08/22	08/08/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.18**	0.040	0.20	"	"	2206763	08/11/22	08/11/22	SM4500-NH3F-2011	J
Total Organic Carbon	**2.1**	0.54	1.0	"	"	2206896	08/16/22	08/16/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2206649	08/08/22	08/08/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2206607	08/05/22	08/05/22	SM2540D	

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CLS Work Order #: 22H0328
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-14-SC (22H0328-04) Surface Water	**Sampled: 08/03/22 09:45**		**Received: 08/03/22 16:55**							
Ammonia as N	ND	0.025	0.10	mg/L	1	2206637	08/08/22	08/08/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**14**	0.50	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**1.6**	0.026	0.50	"	"	2206495	08/04/22	08/04/22	EPA 300.0	
Cyanide (total)	**0.0019**	0.0012	0.0050	"	"	2206857	08/15/22	08/15/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2206548	08/04/22	08/05/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2206495	08/04/22	08/04/22	EPA 300.0	
Orthophosphate as PO4	**0.034**	0.0051	0.15	"	"	2206497	08/04/22	08/04/22	SM4500-P E	J
Sulfate as SO4	**0.63**	0.038	0.50	"	"	2206495	08/04/22	08/04/22	EPA 300.0	
Total Alkalinity	**14**	1.0	5.0	"	"	2206641	08/08/22	08/08/22	SM2320B	
Total Dissolved Solids	**28**	5.0	10	"	"	2206603	08/05/22	08/10/22	SM2540C	
Total Hardness as CaCO3	**10**	0.19	1.0	"	"	2206648	08/08/22	08/08/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.24**	0.040	0.20	"	"	2206763	08/11/22	08/11/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.0**	0.54	1.0	"	"	2206896	08/16/22	08/16/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2206649	08/08/22	08/08/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2206607	08/05/22	08/05/22	SM2540D	

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22H0328
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-19-SFAR (22H0328-01) Surface Water Sampled: 08/03/22 07:30 Received: 08/03/22 16:55										
Diesel	ND	0.0021	0.050	mg/L	1	2206538	08/04/22	08/04/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*108 %*	*65-135*		"	"	"	"	
R-IS-14-SCB (22H0328-02) Surface Water Sampled: 08/03/22 09:55 Received: 08/03/22 16:55										
Diesel	ND	0.0021	0.050	mg/L	1	2206538	08/04/22	08/04/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*111 %*	*65-135*		"	"	"	"	
R-IS-15-SC (22H0328-03) Surface Water Sampled: 08/03/22 11:25 Received: 08/03/22 16:55										
Diesel	ND	0.0021	0.050	mg/L	1	2206538	08/04/22	08/04/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*95 %*	*65-135*		"	"	"	"	
R-IS-14-SC (22H0328-04) Surface Water Sampled: 08/03/22 09:45 Received: 08/03/22 16:55										
Diesel	ND	0.0021	0.050	mg/L	1	2206538	08/04/22	08/04/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22H0328**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-14-SC (22H0328-04) Surface Water	**Sampled: 08/03/22 09:45**		**Received: 08/03/22 16:55**							
Surrogate: o-Terphenyl			*97 %*		*65-135*	*2206538*	"	*08/04/22*	*EPA 8015M*	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0328
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-19-SFAR (22H0328-01) Surface Water	**Sampled: 08/03/22 07:30**	**Received: 08/03/22 16:55**								
Aluminum	**75**	1.6	20	µg/L	1	2206587	08/05/22	08/05/22	EPA 200.8	
Barium	**12**	0.14	5.0	"	"	"	"	"	"	
Calcium	**2300**	27	1000	"	"	2206645	08/08/22	08/10/22	EPA 200.7	
Iron	**110**	9.1	100	"	"	"	"	"	"	
Magnesium	**480**	21	1000	"	"	"	"	"	"	J
Manganese	**34**	0.050	2.0	"	"	2206587	08/05/22	08/05/22	EPA 200.8	
Potassium	**920**	61	1000	"	"	2206645	08/08/22	08/11/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2206587	08/05/22	08/05/22	EPA 200.8	
Sodium	**1800**	34	1000	"	"	2206645	08/08/22	08/10/22	EPA 200.7	
R-IS-14-SCB (22H0328-02) Surface Water	**Sampled: 08/03/22 09:55**	**Received: 08/03/22 16:55**								
Aluminum	**42**	1.6	20	µg/L	1	2206587	08/05/22	08/05/22	EPA 200.8	
Barium	**8.9**	0.14	5.0	"	"	"	"	"	"	
Calcium	**2000**	27	1000	"	"	2206645	08/08/22	08/10/22	EPA 200.7	
Iron	**49**	9.1	100	"	"	"	"	"	"	J
Magnesium	**440**	21	1000	"	"	"	"	"	"	J
Manganese	**13**	0.050	2.0	"	"	2206587	08/05/22	08/05/22	EPA 200.8	
Potassium	**790**	61	1000	"	"	2206645	08/08/22	08/11/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2206587	08/05/22	08/05/22	EPA 200.8	
Sodium	**1600**	34	1000	"	"	2206645	08/08/22	08/10/22	EPA 200.7	
R-IS-15-SC (22H0328-03) Surface Water	**Sampled: 08/03/22 11:25**	**Received: 08/03/22 16:55**								
Aluminum	**15**	1.6	20	µg/L	1	2206587	08/05/22	08/05/22	EPA 200.8	J
Barium	**12**	0.14	5.0	"	"	"	"	"	"	
Calcium	**2800**	27	1000	"	"	2206645	08/08/22	08/10/22	EPA 200.7	
Iron	**27**	9.1	100	"	"	"	"	"	"	J
Magnesium	**650**	21	1000	"	"	"	"	"	"	J
Manganese	**9.1**	0.050	2.0	"	"	2206587	08/05/22	08/05/22	EPA 200.8	
Potassium	**960**	61	1000	"	"	2206645	08/08/22	08/11/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2206587	08/05/22	08/05/22	EPA 200.8	
Sodium	**2200**	34	1000	"	"	2206645	08/08/22	08/10/22	EPA 200.7	

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Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-14-SC (22H0328-04) Surface Water	**Sampled: 08/03/22 09:45**		**Received: 08/03/22 16:55**							
Aluminum	**24**	1.6	20	µg/L	1	2206587	08/05/22	08/05/22	EPA 200.8	
Barium	**11**	0.14	5.0	"	"	"	"	"	"	
Calcium	**2700**	27	1000	"	"	2206645	08/08/22	08/10/22	EPA 200.7	
Iron	**35**	9.1	100	"	"	"	"	"	"	J
Magnesium	**630**	21	1000	"	"	"	"	"	"	J
Manganese	**9.1**	0.050	2.0	"	"	2206587	08/05/22	08/05/22	EPA 200.8	
Potassium	**900**	61	1000	"	"	2206645	08/08/22	08/11/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2206587	08/05/22	08/05/22	EPA 200.8	
Sodium	**2100**	34	1000	"	"	2206645	08/08/22	08/10/22	EPA 200.7	

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Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-19-SFAR (22H0328-01) Surface Water	**Sampled: 08/03/22 07:30**		**Received: 08/03/22 16:55**							
Aluminum	**7.6**	0.52	20	µg/L	1	2206593	08/05/22	08/05/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2206648	08/08/22	08/08/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2206593	08/05/22	08/05/22	EPA 200.8	
R-IS-14-SCB (22H0328-02) Surface Water	**Sampled: 08/03/22 09:55**		**Received: 08/03/22 16:55**							
Aluminum	**8.6**	0.52	20	µg/L	1	2206593	08/05/22	08/05/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2206648	08/08/22	08/08/22	EPA 200.7	
Silver	**0.17**	0.15	0.50	"	"	2206593	08/05/22	08/05/22	EPA 200.8	J
R-IS-15-SC (22H0328-03) Surface Water	**Sampled: 08/03/22 11:25**		**Received: 08/03/22 16:55**							
Aluminum	**7.5**	0.52	20	µg/L	1	2206593	08/05/22	08/05/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2206648	08/08/22	08/08/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2206593	08/05/22	08/05/22	EPA 200.8	
R-IS-14-SC (22H0328-04) Surface Water	**Sampled: 08/03/22 09:45**		**Received: 08/03/22 16:55**							
Aluminum	**7.1**	0.52	20	µg/L	1	2206593	08/05/22	08/05/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2206648	08/08/22	08/08/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2206593	08/05/22	08/05/22	EPA 200.8	

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TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-19-SFAR (22H0328-01) Surface Water Sampled: 08/03/22 07:30 Received: 08/03/22 16:55										
Gasoline	ND	10	50	µg/L	1	2206592	08/05/22	08/05/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*87 %*	*65-135*		"	"	"	"	
R-IS-14-SCB (22H0328-02) Surface Water Sampled: 08/03/22 09:55 Received: 08/03/22 16:55										
Gasoline	ND	10	50	µg/L	1	2206592	08/05/22	08/05/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*80 %*	*65-135*		"	"	"	"	
R-IS-15-SC (22H0328-03) Surface Water Sampled: 08/03/22 11:25 Received: 08/03/22 16:55										
Gasoline	ND	10	50	µg/L	1	2206592	08/05/22	08/05/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*88 %*	*65-135*		"	"	"	"	
R-IS-14-SC (22H0328-04) Surface Water Sampled: 08/03/22 09:45 Received: 08/03/22 16:55										
Gasoline	ND	10	50	µg/L	1	2206592	08/05/22	08/05/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*80 %*	*65-135*		"	"	"	"	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0328
COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-19-SFAR (22H0328-01) Surface Water Sampled: 08/03/22 07:30 Received: 08/03/22 16:55										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2206655	08/05/22	08/05/22	EPA 8260B	
Surrogate: Toluene-d8			*87 %*		*72-125*		"	"	"	"
R-IS-14-SCB (22H0328-02) Surface Water Sampled: 08/03/22 09:55 Received: 08/03/22 16:55										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2206655	08/05/22	08/05/22	EPA 8260B	
Surrogate: Toluene-d8			*88 %*		*72-125*		"	"	"	"
R-IS-15-SC (22H0328-03) Surface Water Sampled: 08/03/22 11:25 Received: 08/03/22 16:55										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2206655	08/05/22	08/05/22	EPA 8260B	
Surrogate: Toluene-d8			*89 %*		*72-125*		"	"	"	"
R-IS-14-SC (22H0328-04) Surface Water Sampled: 08/03/22 09:45 Received: 08/03/22 16:55										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2206655	08/05/22	08/05/22	EPA 8260B	
Surrogate: Toluene-d8			*89 %*		*72-125*		"	"	"	"

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CLS Work Order #: 22H0328
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206495 - General Prep											
Blank (2206495-BLK1)					Prepared & Analyzed: 08/04/22						
Chloride	0.274	0.026	0.50	mg/L							J
Sulfate as SO4	ND	0.038	0.50	"							
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2206495-BS1)					Prepared & Analyzed: 08/04/22						
Sulfate as SO4	5.14	0.038	0.50	mg/L	5.00		103	80-120			
Chloride	4.98	0.026	0.50	"	5.00		100	80-120			
Nitrate/Nitrite as N	4.24	0.055	0.40	"	4.00		106	80-120			
LCS Dup (2206495-BSD1)					Prepared & Analyzed: 08/04/22						
Chloride	4.73	0.026	0.50	mg/L	5.00		95	80-120	5	20	
Sulfate as SO4	4.91	0.038	0.50	"	5.00		98	80-120	5	20	
Nitrate/Nitrite as N	4.02	0.055	0.40	"	4.00		101	80-120	5	20	
Matrix Spike (2206495-MS1)			**Source: 22H0328-01**		Prepared & Analyzed: 08/04/22						
Sulfate as SO4	5.13	0.038	0.50	mg/L	5.00	0.608	91	80-120			
Chloride	5.74	0.026	0.50	"	5.00	1.32	88	80-120			
Nitrate/Nitrite as N	3.85	0.055	0.40	"	4.00	0.0656	95	80-120			
Matrix Spike Dup (2206495-MSD1)			**Source: 22H0328-01**		Prepared & Analyzed: 08/04/22						
Sulfate as SO4	5.20	0.038	0.50	mg/L	5.00	0.608	92	80-120	1	20	
Chloride	5.80	0.026	0.50	"	5.00	1.32	89	80-120	1	20	
Nitrate/Nitrite as N	3.90	0.055	0.40	"	4.00	0.0656	96	80-120	1	20	
Batch 2206497 - General Preparation											
Blank (2206497-BLK1)					Prepared & Analyzed: 08/04/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206497 - General Preparation											
LCS (2206497-BS1)					Prepared & Analyzed: 08/04/22						
Orthophosphate as PO4	0.917	0.0051	0.15	mg/L	0.918		100	80-120			
LCS Dup (2206497-BSD1)					Prepared & Analyzed: 08/04/22						
Orthophosphate as PO4	0.884	0.0051	0.15	mg/L	0.918		96	80-120	4	20	
Matrix Spike (2206497-MS1)			**Source: 22H0156-01**		Prepared & Analyzed: 08/04/22						
Orthophosphate as PO4	1.73	0.0051	0.15	mg/L	0.918	0.941	86	75-125			
Matrix Spike Dup (2206497-MSD1)			**Source: 22H0156-01**		Prepared & Analyzed: 08/04/22						
Orthophosphate as PO4	1.75	0.0051	0.15	mg/L	0.918	0.941	88	75-125	0.7	25	
Batch 2206548 - Solvent Extract											
Blank (2206548-BLK1)					Prepared: 08/04/22 Analyzed: 08/05/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2206548-BS1)					Prepared: 08/04/22 Analyzed: 08/05/22						
Hexane Extractable Material (HEM, Oil & Grease)	38.3	1.0	5.0	mg/L	40.0		96	78-114			
LCS Dup (2206548-BSD1)					Prepared: 08/04/22 Analyzed: 08/05/22						
Hexane Extractable Material (HEM, Oil & Grease)	36.9	1.0	5.0	mg/L	40.0		92	78-114	4	18	
Batch 2206603 - General Preparation											
Blank (2206603-BLK1)					Prepared: 08/05/22 Analyzed: 08/10/22						
Total Dissolved Solids	ND	5.0	10	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206603 - General Preparation											
Duplicate (2206603-DUP1)			**Source: 22H0170-01**		Prepared: 08/05/22 Analyzed: 08/10/22						
Total Dissolved Solids	28.0	5.0	10	mg/L		26.0			7	20	
Batch 2206607 - General Preparation											
Duplicate (2206607-DUP1)			**Source: 22H0224-02**		Prepared & Analyzed: 08/05/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	
Batch 2206637 - General Preparation											
Blank (2206637-BLK1)					Prepared & Analyzed: 08/08/22						
Ammonia as N	ND	0.025	0.10	mg/L							
LCS (2206637-BS1)					Prepared & Analyzed: 08/08/22						
Ammonia as N	0.499	0.025	0.10	mg/L	0.500		100	80-120			
LCS Dup (2206637-BSD1)					Prepared & Analyzed: 08/08/22						
Ammonia as N	0.478	0.025	0.10	mg/L	0.500		96	80-120	4	25	
Matrix Spike (2206637-MS1)			**Source: 22H0352-01**		Prepared & Analyzed: 08/08/22						
Ammonia as N	0.553	0.025	0.10	mg/L	0.500	0.0520	100	75-125			
Matrix Spike Dup (2206637-MSD1)			**Source: 22H0352-01**		Prepared & Analyzed: 08/08/22						
Ammonia as N	0.546	0.025	0.10	mg/L	0.500	0.0520	99	75-125	1	25	
Batch 2206641 - General Preparation											
Blank (2206641-BLK1)					Prepared & Analyzed: 08/08/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206641 - General Preparation											
Duplicate (2206641-DUP1)			**Source: 22H0311-01**		Prepared & Analyzed: 08/08/22						
Total Alkalinity	30.2	1.0	5.0	mg/L		32.0			6	20	
Bicarbonate as CaCO3	30.2	0.50	5.0	"		32.0			6	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Batch 2206648 - EPA 200 No Digestion											
Blank (2206648-BLK1)					Prepared & Analyzed: 08/08/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2206648-BS1)					Prepared & Analyzed: 08/08/22						
Total Hardness as CaCO3	31.7	0.19	1.0	mg/L	33.1		96	85-115			
Matrix Spike (2206648-MS1)			**Source: 22H0170-01**		Prepared & Analyzed: 08/08/22						
Total Hardness as CaCO3	36.0	0.19	1.0	mg/L	33.1	5.62	92	70-130			
Matrix Spike (2206648-MS2)			**Source: 22H0328-01**		Prepared & Analyzed: 08/08/22						
Total Hardness as CaCO3	38.5	0.19	1.0	mg/L	33.1	8.88	89	70-130			
Batch 2206649 - General Preparation											
Blank (2206649-BLK1)					Prepared & Analyzed: 08/08/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2206649-BS1)					Prepared & Analyzed: 08/08/22						
Total Phosphorus as P	0.299	0.023	0.050	mg/L	0.300		100	80-120			

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206649 - General Preparation											
LCS Dup (2206649-BSD1)					Prepared & Analyzed: 08/08/22						
Total Phosphorus as P	0.309	0.023	0.050	mg/L	0.300		103	80-120	3	25	
Matrix Spike (2206649-MS1)			**Source: 22H0170-01**		Prepared & Analyzed: 08/08/22						
Total Phosphorus as P	0.293	0.023	0.050	mg/L	0.300	ND	98	75-125			
Matrix Spike Dup (2206649-MSD1)			**Source: 22H0170-01**		Prepared & Analyzed: 08/08/22						
Total Phosphorus as P	0.295	0.023	0.050	mg/L	0.300	ND	98	75-125	0.5	30	
Batch 2206763 - General Preparation											
Blank (2206763-BLK1)					Prepared & Analyzed: 08/11/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2206763-BS1)					Prepared & Analyzed: 08/11/22						
Total Kjeldahl Nitrogen	0.669	0.040	0.20	mg/L	0.500		134	80-120			QM-1
LCS Dup (2206763-BSD1)					Prepared & Analyzed: 08/11/22						
Total Kjeldahl Nitrogen	0.670	0.040	0.20	mg/L	0.500		134	80-120	0.1	20	QM-1
Matrix Spike (2206763-MS1)			**Source: 22H0329-01**		Prepared & Analyzed: 08/11/22						
Total Kjeldahl Nitrogen	0.799	0.040	0.20	mg/L	0.500	0.188	122	75-125			
Matrix Spike Dup (2206763-MSD1)			**Source: 22H0329-01**		Prepared & Analyzed: 08/11/22						
Total Kjeldahl Nitrogen	0.801	0.040	0.20	mg/L	0.500	0.188	123	75-125	0.2	25	
Batch 2206857 - General Prep											
Blank (2206857-BLK1)					Prepared & Analyzed: 08/15/22						
Cyanide (total)	0.00230	0.0012	0.0050	mg/L							J

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206857 - General Prep											
LCS (2206857-BS1)					Prepared & Analyzed: 08/15/22						
Cyanide (total)	0.0810	0.0012	0.0050	mg/L	0.100		81	75-125			
LCS Dup (2206857-BSD1)					Prepared & Analyzed: 08/15/22						
Cyanide (total)	0.0832	0.0012	0.0050	mg/L	0.100		83	75-125	3	25	
Matrix Spike (2206857-MS1)			**Source: 22H0328-01**		Prepared & Analyzed: 08/15/22						
Cyanide (total)	0.0691	0.0012	0.0050	mg/L	0.100	ND	69	75-125			QM-7
Matrix Spike Dup (2206857-MSD1)			**Source: 22H0328-01**		Prepared & Analyzed: 08/15/22						
Cyanide (total)	0.0706	0.0012	0.0050	mg/L	0.100	ND	71	75-125	2	25	QM-7
Batch 2206896 - General Preparation											
Blank (2206896-BLK1)					Prepared & Analyzed: 08/16/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							
LCS (2206896-BS1)					Prepared & Analyzed: 08/16/22						
Total Organic Carbon	10.9	0.54	1.0	mg/L	10.0		109	75-125			
LCS Dup (2206896-BSD1)					Prepared & Analyzed: 08/16/22						
Total Organic Carbon	10.7	0.54	1.0	mg/L	10.0		107	75-125	2	25	
Matrix Spike (2206896-MS1)			**Source: 22H0329-01**		Prepared & Analyzed: 08/16/22						
Total Organic Carbon	13.3	0.54	1.0	mg/L	10.0	2.08	112	75-125			
Matrix Spike Dup (2206896-MSD1)			**Source: 22H0329-01**		Prepared & Analyzed: 08/16/22						
Total Organic Carbon	12.2	0.54	1.0	mg/L	10.0	2.08	101	75-125	9	25	

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COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206538 - EPA 3510B GCNV											
Blank (2206538-BLK1)					Prepared & Analyzed: 08/04/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Surrogate: o-Terphenyl	*0.0269*			*"*	*0.0250*		*107*	*65-135*			
LCS (2206538-BS1)					Prepared & Analyzed: 08/04/22						
Diesel	2.47	0.0021	0.050	mg/L	2.50		99	65-135			
Surrogate: o-Terphenyl	*0.0301*			*"*	*0.0250*		*120*	*65-135*			
LCS Dup (2206538-BSD1)					Prepared & Analyzed: 08/04/22						
Diesel	2.48	0.0021	0.050	mg/L	2.50		99	65-135	0.2	30	
Surrogate: o-Terphenyl	*0.0305*			*"*	*0.0250*		*122*	*65-135*			
Matrix Spike (2206538-MS1)			**Source: 22H0136-01**		Prepared & Analyzed: 08/04/22						
Diesel	2.00	0.0021	0.050	mg/L	2.50	ND	80	46-137			
Surrogate: o-Terphenyl	*0.0282*			*"*	*0.0250*		*113*	*65-135*			
Matrix Spike Dup (2206538-MSD1)			**Source: 22H0136-01**		Prepared & Analyzed: 08/04/22						
Diesel	2.34	0.0021	0.050	mg/L	2.50	ND	93	46-137	16	30	
Surrogate: o-Terphenyl	*0.0261*			*"*	*0.0250*		*104*	*65-135*			

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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206587 - EPA 200 Series											
Blank (2206587-BLK1)					Prepared & Analyzed: 08/05/22						
Aluminum	ND	1.6	20	µg/L							
Arsenic	ND	0.45	2.0	"							
Barium	ND	0.14	5.0	"							
Cadmium	ND	0.17	0.50	"							
Chromium	0.804	0.14	1.0	"							J
Copper	ND	0.090	2.0	"							
Lead	0.0330	0.020	5.0	"							J
Nickel	ND	0.13	2.0	"							
Silver	ND	0.070	0.50	"							
Zinc	ND	0.27	10	"							
LCS (2206587-BS1)					Prepared & Analyzed: 08/05/22						
Aluminum	464	1.6	20	µg/L	500		93	85-115			
Arsenic	89.2	0.45	2.0	"	100		89	85-115			
Barium	95.4	0.14	5.0	"	100		95	85-115			
Cadmium	94.6	0.17	0.50	"	100		95	85-115			
Chromium	93.1	0.14	1.0	"	100		93	85-115			
Copper	93.8	0.090	2.0	"	100		94	85-115			
Lead	89.7	0.020	5.0	"	100		90	85-115			
Nickel	91.1	0.13	2.0	"	100		91	85-115			
Silver	96.6	0.070	0.50	"	100		97	85-115			
Zinc	93.4	0.27	10	"	100		93	85-115			
Matrix Spike (2206587-MS1)				**Source: 22H0348-01**	Prepared & Analyzed: 08/05/22						
Aluminum	492	1.6	20	µg/L	500	15.5	95	70-130			
Arsenic	91.9	0.45	2.0	"	100	ND	92	70-130			
Barium	117	0.14	5.0	"	100	16.6	100	70-130			
Cadmium	98.1	0.17	0.50	"	100	ND	98	70-130			
Chromium	93.6	0.14	1.0	"	100	0.959	93	70-130			
Copper	283	0.090	2.0	"	100	189	94	70-130			
Lead	92.6	0.020	5.0	"	100	0.0920	93	70-130			
Nickel	92.9	0.13	2.0	"	100	ND	93	70-130			

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COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206587 - EPA 200 Series											
Matrix Spike (2206587-MS1)			**Source: 22H0348-01**		Prepared & Analyzed: 08/05/22						
Silver	101	0.070	0.50	µg/L	100	ND	101	70-130			
Zinc	123	0.27	10	"	100	29.5	93	70-130			
Matrix Spike (2206587-MS2)			**Source: 22H0356-01**		Prepared & Analyzed: 08/05/22						
Aluminum	485	1.6	20	µg/L	500	1.64	97	70-130			
Arsenic	90.9	0.45	2.0	"	100	ND	91	70-130			
Barium	102	0.14	5.0	"	100	3.03	99	70-130			
Cadmium	98.8	0.17	0.50	"	100	ND	99	70-130			
Chromium	93.3	0.14	1.0	"	100	0.611	93	70-130			
Copper	96.9	0.090	2.0	"	100	1.47	95	70-130			
Lead	93.4	0.020	5.0	"	100	0.0830	93	70-130			
Nickel	94.3	0.13	2.0	"	100	ND	94	70-130			
Silver	102	0.070	0.50	"	100	ND	102	70-130			
Zinc	98.3	0.27	10	"	100	2.84	95	70-130			
Batch 2206645 - EPA 200 Series											
Blank (2206645-BLK1)					Prepared: 08/08/22 Analyzed: 08/09/22						
Calcium	ND	27	1000	µg/L							
Iron	ND	9.1	100	"							
Magnesium	ND	21	1000	"							
Potassium	358	61	1000	"							J
Sodium	58.5	34	1000	"							J
LCS (2206645-BS1)					Prepared: 08/08/22 Analyzed: 08/09/22						
Calcium	4850	27	1000	µg/L	5000		97	85-115			
Iron	441	9.1	100	"	500		88	85-115			
Magnesium	4780	21	1000	"	5000		96	85-115			
Potassium	5160	61	1000	"	5000		103	85-115			
Sodium	4790	34	1000	"	5000		96	85-115			

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COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206645 - EPA 200 Series											
Matrix Spike (2206645-MS1)			**Source: 22H0226-01**		Prepared: 08/08/22 Analyzed: 08/09/22						
Calcium	59600	27	1000	µg/L	5000	56400	64	70-130			QM-4X
Iron	1430	9.1	100	"	500	1320	21	70-130			QM-7
Magnesium	48500	21	1000	"	5000	43200	106	70-130			
Potassium	17600	61	1000	"	5000	12800	96	70-130			
Sodium	130000	34	1000	"	5000	123000	136	70-130			QM-4X
Matrix Spike (2206645-MS2)			**Source: 22H0374-01**		Prepared: 08/08/22 Analyzed: 08/09/22						
Calcium	36300	27	1000	µg/L	5000	33500	56	70-130			QM-4X
Iron	424	9.1	100	"	500	ND	85	70-130			
Magnesium	17700	21	1000	"	5000	14000	74	70-130			
Potassium	12400	61	1000	"	5000	8300	81	70-130			
Sodium	22900	34	1000	"	5000	20000	59	70-130			QM-4X

08/17/22 12:50

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0328
COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206593 - EPA 200 No Digestion											
Blank (2206593-BLK1)					Prepared & Analyzed: 08/05/22						
Aluminum	5.99	0.52	20	µg/L							J
Silver	ND	0.15	0.50	"							
LCS (2206593-BS1)					Prepared & Analyzed: 08/05/22						
Aluminum	476	0.52	20	µg/L	500		95	85-115			
Silver	99.3	0.15	0.50	"	100		99	85-115			
Matrix Spike (2206593-MS1)			**Source: 22H0170-01**		Prepared & Analyzed: 08/05/22						
Aluminum	478	0.52	20	µg/L	500	14.8	93	70-130			
Silver	98.4	0.15	0.50	"	100	ND	98	70-130			
Matrix Spike (2206593-MS2)			**Source: 22H0328-01**		Prepared & Analyzed: 08/05/22						
Aluminum	497	0.52	20	µg/L	500	7.63	98	70-130			
Silver	99.9	0.15	0.50	"	100	ND	100	70-130			
Batch 2206648 - EPA 200 No Digestion											
Blank (2206648-BLK1)					Prepared & Analyzed: 08/08/22						
Iron	ND	6.8	100	µg/L							
LCS (2206648-BS1)					Prepared & Analyzed: 08/08/22						
Iron	492	6.8	100	µg/L	500		98	85-115			
Matrix Spike (2206648-MS1)			**Source: 22H0170-01**		Prepared & Analyzed: 08/08/22						
Iron	483	6.8	100	µg/L	500	ND	97	70-130			
Matrix Spike (2206648-MS2)			**Source: 22H0328-01**		Prepared & Analyzed: 08/08/22						
Iron	482	6.8	100	µg/L	500	ND	96	70-130			

08/17/22 12:50

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2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0328
COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206592 - EPA 5030 Water GC											
Blank (2206592-BLK1)					Prepared & Analyzed: 08/05/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*16.5*			"	*20.0*		*82*	*65-135*			
LCS (2206592-BS1)					Prepared & Analyzed: 08/05/22						
Gasoline	535	10	50	µg/L	500		107	70-130			
Surrogate: o-Chlorotoluene (Gas)	*17.7*			"	*20.0*		*89*	*65-135*			
LCS Dup (2206592-BSD1)					Prepared & Analyzed: 08/05/22						
Gasoline	537	10	50	µg/L	500		107	70-130	0.3	30	
Surrogate: o-Chlorotoluene (Gas)	*18.4*			"	*20.0*		*92*	*65-135*			
Matrix Spike (2206592-MS1)			**Source: 22H0404-01**		Prepared & Analyzed: 08/05/22						
Gasoline	547	10	50	µg/L	500	ND	109	68-132			
Surrogate: o-Chlorotoluene (Gas)	*19.5*			"	*20.0*		*97*	*65-135*			
Matrix Spike Dup (2206592-MSD1)			**Source: 22H0404-01**		Prepared & Analyzed: 08/05/22						
Gasoline	538	10	50	µg/L	500	ND	108	68-132	2	32	
Surrogate: o-Chlorotoluene (Gas)	*19.4*			"	*20.0*		*97*	*65-135*			

08/17/22 12:50

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H0328
COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206655 - EPA 3510B GCMS											
Blank (2206655-BLK1)					Prepared & Analyzed: 08/05/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Surrogate: Toluene-d8	*8.47*			"	*10.0*		*85*	*72-125*			
LCS (2206655-BS1)					Prepared & Analyzed: 08/05/22						
Methyl tert-butyl ether	23.5	0.095	0.50	µg/L	20.0		118	52-130			
Surrogate: Toluene-d8	*10.4*			"	*10.0*		*104*	*72-125*			
LCS Dup (2206655-BSD1)					Prepared & Analyzed: 08/05/22						
Methyl tert-butyl ether	22.5	0.095	0.50	µg/L	20.0		112	52-130	5	30	
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			
Matrix Spike (2206655-MS1)			**Source: 22H0328-01**		Prepared: 08/05/22 Analyzed: 08/06/22						
Methyl tert-butyl ether	24.2	0.095	0.50	µg/L	20.0	ND	121	52-140			
Surrogate: Toluene-d8	*11.1*			"	*10.0*		*111*	*72-125*			
Matrix Spike Dup (2206655-MSD1)			**Source: 22H0328-01**		Prepared: 08/05/22 Analyzed: 08/06/22						
Methyl tert-butyl ether	22.1	0.095	0.50	µg/L	20.0	ND	110	52-140	9	30	
Surrogate: Toluene-d8	*10.7*			"	*10.0*		*107*	*72-125*			

08/17/22 12:50

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22H0328**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
QM-1	The spike recovery was outside acceptance limits for the LCS or LCSD. The batch was accepted based on acceptable MS/MSD recoveries & RPD's.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22H0328 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By
Emily Applequist, Bethany Leach

Job Description
Monitor water chemistry in UARP reaches

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[x] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [x] NO [ ]

GLOBAL ID

FIELD CONDITIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	TSS, TDS, Hardness, Alkalinity, NO2-N, NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
8/3/22	0730	IS-19-SFAR		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
8/3/22	0955	R-IS-14-SCB		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
8/3/22	1125	R-IS-15-SC		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
8/3/22	0945	R-IS-14-SC		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	INVOICE TO
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	Project No. 750.10 Task 0620.01
				Surface water			6											X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (2) HNO_3 (3) = COLD (4)= H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Bethany Leach Stillwater Sciences	8/3/22 1655		

RECEIVED AT LAB BY: DAS DATE/TIME: 1655 8/3/22

CONDITIONS/COMMENTS: 2.3 / I.Le

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER AIR BILL #

basic laboratory

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.11/620.02 UARP

Lab No: 22H0375
Reported: 08/30/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22H0375, received on 08/05/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: R-15-20-BC
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0375-01
Sampled: 08/04/22 09:15
Received: 08/05/22 08:52

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.09	J	0.04	0.10	"	"	"	"
Lead	"	0.014	J	0.007	0.050	"	"	"	"
Mercury	ng/l	ND		0.22	0.50	EPA 1631E	08/10/22	08/10/22	B2H1166 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	08/26/22	08/25/22	B2H1542 / EDM
Nickel	ug/l	0.09	J	0.02	0.10	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/23/22	08/18/22	B2H1295 / BDL
Zinc	"	0.34	J	0.12	0.50	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/24/22	08/24/22	B2H1520 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.08	J	0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.07	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/23/22	08/23/22	B2H1468 / BDL
Zinc	"	0.25	J	0.12	0.50	EPA 1638	08/24/22	08/24/22	B2H1520 / EDM

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Analytical Report

Description: R-15-20-BCRB
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0375-02
Sampled: 08/04/22 09:30
Received: 08/05/22 08:52

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.12		0.04	0.10	"	"	"	"
Lead	"	0.025	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.39	J	0.22	0.50	EPA 1631E	08/10/22	08/10/22	B2H1166 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	08/26/22	08/25/22	B2H1542 / EDM
Nickel	ug/l	0.10		0.02	0.10	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/23/22	08/18/22	B2H1295 / BDL
Zinc	"	1.95		0.12	0.50	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/24/22	08/24/22	B2H1520 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.10		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.07	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/23/22	08/23/22	B2H1468 / BDL
Zinc	"	0.57		0.12	0.50	EPA 1638	08/24/22	08/24/22	B2H1520 / EDM

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Analytical Report

Description: 15-17-BC
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0375-03
Sampled: 08/04/22 11:00
Received: 08/05/22 08:52

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.13	J	0.12	0.50	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.19		0.04	0.10	"	"	"	"
Lead	"	0.085		0.007	0.050	"	"	"	"
Mercury	ng/l	0.42	J	0.22	0.50	EPA 1631E	08/10/22	08/10/22	B2H1166 / DJC
Methyl Mercury as Mercury	"	0.019	J	0.017	0.050	EPA 1630	08/26/22	08/25/22	B2H1542 / EDM
Nickel	ug/l	0.16		0.02	0.10	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/23/22	08/18/22	B2H1295 / BDL
Zinc	"	0.43	J	0.12	0.50	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/24/22	08/24/22	B2H1520 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.12		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.10	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/23/22	08/23/22	B2H1468 / BDL
Zinc	"	0.17	J	0.12	0.50	EPA 1638	08/24/22	08/24/22	B2H1520 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total **Batch B2H1166 - BrCl Digestion**										
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	0.28	0.50	ng/l							J
LCS										
Mercury	10.3	0.50	ng/l	10.0		103	77-123			
Matrix Spike	Source: 22H0206-01									
Mercury	11.2	0.50	ng/l	10.0	0.59	106	71-125			
Matrix Spike	Source: 22H0294-01									
Mercury	10.4	0.50	ng/l	10.0	0.31	101	71-125			
Matrix Spike Dup	Source: 22H0206-01									
Mercury	10.9	0.50	ng/l	10.0	0.59	104	71-125	2.19	24	

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2H1166 - BrCl Digestion										
Matrix Spike Dup	Source: 22H0294-01									
Mercury	10.4	0.50	ng/l	10.0	0.31	101	71-125	0.356	24	
Metals - Total Batch B2H1295 - EPA 200.8 Total										
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	209	2.0	ug/l	200		105	85-115			
Duplicate	Source: 22H0375-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22H0440-02									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22H0375-01									
Selenium	200	2.0	ug/l	200	ND	99.8	75-125			
Matrix Spike	Source: 22H0440-02									
Selenium	206	2.0	ug/l	200	ND	103	75-125			
Metals - Total Batch B2H1471 - EPA 1638 - Closed Bottle Oven Digestion										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	0.02	0.10	ug/l							QB-05, J
Zinc	ND	0.50	ug/l							
LCS										

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total **Batch B2H1471 - EPA 1638 - Closed Bottle Oven Digestion**										
Arsenic	1.25	0.50	ug/l	1.25		99.9	50-150			
Cadmium	0.24	0.10	ug/l	0.250		94.0	84-113			
Copper	0.24	0.10	ug/l	0.250		94.7	51-145			
Lead	0.122	0.050	ug/l	0.125		97.4	72-143			
Nickel	0.24	0.10	ug/l	0.250		96.2	68-134			
Zinc	1.26	0.50	ug/l	1.25		101	46-146			
LCS										
Arsenic	1.29	0.50	ug/l	1.25		103	50-150			
Cadmium	0.25	0.10	ug/l	0.250		101	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.123	0.050	ug/l	0.125		98.4	72-143			
Nickel	0.26	0.10	ug/l	0.250		103	68-134			
Zinc	1.32	0.50	ug/l	1.25		106	46-146			
Matrix Spike	Source: 22H0371-03									
Arsenic	4.27	0.50	ug/l	2.50	1.78	99.5	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	99.4	84-113			
Copper	1.73	0.10	ug/l	0.500	1.25	96.3	51-145			
Lead	0.275	0.050	ug/l	0.250	0.027	99.3	72-143			
Nickel	1.17	0.10	ug/l	0.500	0.72	90.0	68-134			
Zinc	3.96	0.50	ug/l	2.50	1.53	97.0	46-146			
Matrix Spike	Source: 22H0688-01									
Arsenic	5.30	0.50	ug/l	2.50	2.96	93.7	50-150			
Cadmium	0.47	0.10	ug/l	0.500	ND	94.7	84-113			
Copper	2.01	0.10	ug/l	0.500	1.56	89.1	51-145			
Lead	0.511	0.050	ug/l	0.250	0.250	104	72-143			
Nickel	1.78	0.10	ug/l	0.500	1.28	99.3	68-134			
Zinc	3.90	0.50	ug/l	2.50	1.64	90.3	46-146			
Matrix Spike Dup	Source: 22H0371-03									
Arsenic	4.19	0.50	ug/l	2.50	1.78	96.4	50-150	1.85	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	100	84-113	0.621	20	
Copper	1.71	0.10	ug/l	0.500	1.25	90.9	51-145	1.55	20	
Lead	0.270	0.050	ug/l	0.250	0.027	97.3	72-143	1.78	20	
Nickel	1.15	0.10	ug/l	0.500	0.72	87.2	68-134	1.21	20	
Zinc	4.02	0.50	ug/l	2.50	1.53	99.5	46-146	1.54	20	
Matrix Spike Dup	Source: 22H0688-01									
Arsenic	5.34	0.50	ug/l	2.50	2.96	95.5	50-150	0.851	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	96.4	84-113	1.72	20	
Copper	2.00	0.10	ug/l	0.500	1.56	86.7	51-145	0.588	20	
Lead	0.503	0.050	ug/l	0.250	0.250	101	72-143	1.69	20	
Nickel	1.76	0.10	ug/l	0.500	1.28	94.9	68-134	1.24	20	
Zinc	3.95	0.50	ug/l	2.50	1.64	92.2	46-146	1.25	20	
Metals - Total **Batch B2H1542 - EPA 1630 Distillation (Modified)**										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2H1542 - EPA 1630 Distillation (Modified)										
LCS										
Methyl Mercury as Mercury	1.63	0.050	ng/l	2.00		81.3	67-133			
Matrix Spike	Source: 22H0285-01									
Methyl Mercury as Mercury	1.19	0.050	ng/l	1.00	0.032	116	65-135			
Matrix Spike	Source: 22H0870-02									
Methyl Mercury as Mercury	0.881	0.050	ng/l	1.00	ND	88.1	65-135			
Matrix Spike Dup	Source: 22H0285-01									
Methyl Mercury as Mercury	1.17	0.050	ng/l	1.00	0.032	114	65-135	1.89	35	
Matrix Spike Dup	Source: 22H0870-02									
Methyl Mercury as Mercury	0.886	0.050	ng/l	1.00	ND	88.6	65-135	0.622	35	
Metals - Dissolved Batch B2H1468 - EPA 200.8 Diss										
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	190	2.0	ug/l	200		94.8	85-115			
Duplicate	Source: 22H0440-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22H0719-04									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22H0440-01									
Selenium	191	2.0	ug/l	200	ND	95.3	75-125			
Matrix Spike	Source: 22H0719-04									
Selenium	190	2.0	ug/l	200	ND	95.0	75-125			
Metals - Dissolved Batch B2H1520 - EPA 1638 - Dissolved										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved **Batch B2H1520 - EPA 1638 - Dissolved**										
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.20	0.50	ug/l	1.25		96.2	50-150			
Cadmium	0.24	0.10	ug/l	0.250		95.2	84-113			
Copper	0.25	0.10	ug/l	0.250		99.1	51-145			
Lead	0.121	0.050	ug/l	0.125		96.7	72-143			
Nickel	0.25	0.10	ug/l	0.250		100	68-134			
Zinc	1.30	0.50	ug/l	1.25		104	46-146			
Matrix Spike	Source: 22H0371-02									
Arsenic	4.41	0.50	ug/l	2.50	1.77	106	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.7	84-113			
Copper	1.54	0.10	ug/l	0.500	1.02	104	51-145			
Lead	0.255	0.050	ug/l	0.250	ND	102	72-143			
Nickel	1.10	0.10	ug/l	0.500	0.58	104	68-134			
Zinc	3.17	0.50	ug/l	2.50	0.66	100	46-146			
Matrix Spike Dup	Source: 22H0371-02									
Arsenic	4.30	0.50	ug/l	2.50	1.77	101	50-150	2.50	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.5	84-113	2.85	20	
Copper	1.52	0.10	ug/l	0.500	1.02	99.5	51-145	1.46	20	
Lead	0.260	0.050	ug/l	0.250	ND	104	72-143	2.18	20	
Nickel	1.13	0.10	ug/l	0.500	0.58	110	68-134	2.83	20	
Zinc	3.21	0.50	ug/l	2.50	0.66	102	46-146	1.15	20	

Notes and Definitions

QB-05	The method blank contains the analyte at a concentration level above the MDL, but below the MRL.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	CA-ELAP does not accredit this analyte or method as of December 2020. *(Newly released 2021 FOA tables may include this analyte or method.)*
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless samples are received on ice and collected on the same day as delivery. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

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Analytical Report

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen

Ricky Jensen, General Manager
Pace Analytical Services LLC - Redding CA
California ELAP Cert #1677 & 2718

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD) 22H0375

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LABORATORY WORK ORDER # 22H0375
PAGE 1 OF 1

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CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	smu 8.5.22

MAILING ADDRESS
279 Cousteau Place, Suite 400
Davis, CA 95618

REPORT TO ☑ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED
☑ Standard ☐ Rush _____

INVOICE TO: same
EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one): ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	8/4/22	0915 (AM) PM	SW		✓	R-15-20-BC		6	✓	✓	✓	✓	✓	✓
2	8/4/22	0930 (AM) PM	↓		✓	R-15-20-BCRB		6	✓	✓	✓	✓	✓	✓
3	8/4/22	1100 (AM) PM	↓		✓	15-17-BC		6	✓	✓	✓	✓	✓	✓
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												

SAMPLED BY: (please print) Emily Applequist, Bethany Leach

RELINQUISHED DATE / TIME: 8/4/22 / 16:30 PM

SAMPLING / ANALYSIS COMMENTS
1Per past project practice smu 8.5.22

(1) Total and Dissolved LL 1638 Metals

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME: Emily Applequist SIGNATURE: [signature] DATE: 8/4/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
smu	8.5.22 08:52	smu	8.5.22 14:55

For Official Lab Comments Only

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

FRM-002.1 - Chain of Custody (rev 1.1)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22H0375

SHIPPING INFORMATION

Walk-In ☐
Courier ☐
FedEx ☑
UPS ☐
Other ☐

Cooler Present? Yes ☑ No ☐

Samples Received By: [illegible] Date: 8.5.22

	Yes	No
Samples received on ice?	☑	☐
Samples received the same day collected?	☐	☑

Ice type? ☑ Wet ☐ Blue ☐ Other _____

SAMPLE TEMPERATURES AT RECEIPT Therm. ID (Circle one): Therm-36 Therm-37 (Therm-59) Other: _____

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	6.0	-06		-11		-16	
-02	5.0	-07		-12		-17	
-03	5.0	-08		-13		-18	
-04		-09		-14		-19	
-05		-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: [illegible] Date: 8.5.22

	Yes	No	NA
Custody seals present?	☐	☐	☑
Samples in proper containers?	☑	☐	
Sample containers damaged?	☐	☑	
Sufficient sample volume for indicated tests?	☑	☐	
Samples received within holding times?	☑	☐	
Are VOA vials free of headspace?	☐	☐	☑
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☑

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☑	☐	☐
Preserved in the lab?	☑	☐	☐

Lab Preservation Date & Time 8.5.22 09:19

☐ H2SO4 (ID_____) ☑ HNO3 (ID 2G08001) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑
Are proper preservation lables present?	☑	☐	☐

By:_____ Meter ID:_____

Preservation checked at Lab? Date & Time 8.5.22 09:19 Test Strip (ID 2B24019)

Preservation and Preservation Checks performed by: [illegible]

COMMENTS, DISCREPANCEIS, ANOMALIES

_____

_____

_____

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02 UARP

Lab No: 22H0376
Reported: 08/30/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22H0376, received on 08/05/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: IS-15-SFAR
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0376-01
Sampled: 08/04/22 12:00
Received: 08/05/22 09:09

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.29	J	0.12	0.50	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.24		0.04	0.10	"	"	"	"
Lead	"	0.024	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.43	J	0.22	0.50	EPA 1631E	08/17/22	08/17/22	B2H1332 / DJC
Methyl Mercury as Mercury	"	0.047	J	0.017	0.050	EPA 1630	08/26/22	08/25/22	B2H1542 / EDM
Nickel	ug/l	0.08	J	0.02	0.10	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/23/22	08/18/22	B2H1295 / BDL
Zinc	"	0.20	J	0.12	0.50	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.31	J	0.12	0.50	"	08/24/22	08/24/22	B2H1520 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.21		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.07	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/23/22	08/23/22	B2H1468 / BDL
Zinc	"	0.14	J	0.12	0.50	EPA 1638	08/24/22	08/24/22	B2H1520 / EDM

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Analytical Report

Description: IS-16-SFAR
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0376-02
Sampled: 08/04/22 12:35
Received: 08/05/22 09:09

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.17	J	0.12	0.50	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.35		0.04	0.10	"	"	"	"
Lead	"	0.018	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.63		0.22	0.50	EPA 1631E	08/17/22	08/17/22	B2H1332 / DJC
Methyl Mercury as Mercury	"	0.030	J	0.017	0.050	EPA 1630	08/26/22	08/25/22	B2H1542 / EDM
Nickel	ug/l	0.09	J	0.02	0.10	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/23/22	08/18/22	B2H1295 / BDL
Zinc	"	0.21	J	0.12	0.50	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.16	J	0.12	0.50	"	08/24/22	08/24/22	B2H1520 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.32		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.09	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/23/22	08/23/22	B2H1468 / BDL
Zinc	"	0.16	J	0.12	0.50	EPA 1638	08/24/22	08/24/22	B2H1520 / EDM

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Analytical Report

Description: IS-18-SFAR
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0376-03
Sampled: 08/04/22 14:10
Received: 08/05/22 09:09

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.20	J	0.12	0.50	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.31		0.04	0.10	"	"	"	"
Lead	"	0.034	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.54		0.22	0.50	EPA 1631E	08/17/22	08/17/22	B2H1332 / DJC
Methyl Mercury as Mercury	"	0.042	J	0.017	0.050	EPA 1630	08/26/22	08/25/22	B2H1542 / EDM
Nickel	ug/l	0.15		0.02	0.10	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/23/22	08/18/22	B2H1295 / BDL
Zinc	"	0.33	J	0.12	0.50	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.20	J	0.12	0.50	"	08/24/22	08/24/22	B2H1520 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.28		0.04	0.10	"	"	"	"
Lead	"	0.009	J	0.007	0.050	"	"	"	"
Nickel	"	0.12		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/23/22	08/23/22	B2H1468 / BDL
Zinc	"	0.16	J	0.12	0.50	EPA 1638	08/24/22	08/24/22	B2H1520 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2H1295 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	209	2.0	ug/l	200		105	85-115			
Duplicate	Source: 22H0375-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22H0440-02									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22H0375-01									
Selenium	200	2.0	ug/l	200	ND	99.8	75-125			
Matrix Spike	Source: 22H0440-02									
Selenium	206	2.0	ug/l	200	ND	103	75-125			
Metals - Total	**Batch B2H1332 - BrCl Digestion**									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2H1332 - BrCl Digestion										
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	11.0	0.50	ng/l	10.0		110	77-123			
Matrix Spike	Source: 22H0376-01									
Mercury	11.4	0.50	ng/l	10.0	0.43	110	71-125			
Matrix Spike	Source: 22H0616-03									
Mercury	11.8	0.50	ng/l	10.0	1.45	103	71-125			
Matrix Spike Dup	Source: 22H0376-01									
Mercury	11.6	0.50	ng/l	10.0	0.43	112	71-125	1.73	24	
Matrix Spike Dup	Source: 22H0616-03									
Mercury	12.1	0.50	ng/l	10.0	1.45	106	71-125	2.63	24	
Metals - Total Batch B2H1471 - EPA 1638 - Closed Bottle Oven Digestion										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	0.02	0.10	ug/l							QB-05, J
Zinc	ND	0.50	ug/l							

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fax 530.894.5143

Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2H1471 - EPA 1638 - Closed Bottle Oven Digestion**									
LCS										
Arsenic	1.25	0.50	ug/l	1.25		99.9	50-150			
Cadmium	0.24	0.10	ug/l	0.250		94.0	84-113			
Copper	0.24	0.10	ug/l	0.250		94.7	51-145			
Lead	0.122	0.050	ug/l	0.125		97.4	72-143			
Nickel	0.24	0.10	ug/l	0.250		96.2	68-134			
Zinc	1.26	0.50	ug/l	1.25		101	46-146			
LCS										
Arsenic	1.29	0.50	ug/l	1.25		103	50-150			
Cadmium	0.25	0.10	ug/l	0.250		101	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.123	0.050	ug/l	0.125		98.4	72-143			
Nickel	0.26	0.10	ug/l	0.250		103	68-134			
Zinc	1.32	0.50	ug/l	1.25		106	46-146			
Matrix Spike	Source: 22H0371-03									
Arsenic	4.27	0.50	ug/l	2.50	1.78	99.5	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	99.4	84-113			
Copper	1.73	0.10	ug/l	0.500	1.25	96.3	51-145			
Lead	0.275	0.050	ug/l	0.250	0.027	99.3	72-143			
Nickel	1.17	0.10	ug/l	0.500	0.72	90.0	68-134			
Zinc	3.96	0.50	ug/l	2.50	1.53	97.0	46-146			
Matrix Spike	Source: 22H0688-01									
Arsenic	5.30	0.50	ug/l	2.50	2.96	93.7	50-150			
Cadmium	0.47	0.10	ug/l	0.500	ND	94.7	84-113			
Copper	2.01	0.10	ug/l	0.500	1.56	89.1	51-145			
Lead	0.511	0.050	ug/l	0.250	0.250	104	72-143			
Nickel	1.78	0.10	ug/l	0.500	1.28	99.3	68-134			
Zinc	3.90	0.50	ug/l	2.50	1.64	90.3	46-146			
Matrix Spike Dup	Source: 22H0371-03									
Arsenic	4.19	0.50	ug/l	2.50	1.78	96.4	50-150	1.85	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	100	84-113	0.621	20	
Copper	1.71	0.10	ug/l	0.500	1.25	90.9	51-145	1.55	20	
Lead	0.270	0.050	ug/l	0.250	0.027	97.3	72-143	1.78	20	
Nickel	1.15	0.10	ug/l	0.500	0.72	87.2	68-134	1.21	20	
Zinc	4.02	0.50	ug/l	2.50	1.53	99.5	46-146	1.54	20	
Matrix Spike Dup	Source: 22H0688-01									
Arsenic	5.34	0.50	ug/l	2.50	2.96	95.5	50-150	0.851	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	96.4	84-113	1.72	20	
Copper	2.00	0.10	ug/l	0.500	1.56	86.7	51-145	0.588	20	
Lead	0.503	0.050	ug/l	0.250	0.250	101	72-143	1.69	20	
Nickel	1.76	0.10	ug/l	0.500	1.28	94.9	68-134	1.24	20	
Zinc	3.95	0.50	ug/l	2.50	1.64	92.2	46-146	1.25	20	
Metals - Total	**Batch B2H1542 - EPA 1630 Distillation (Modified)**									
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2H1542 - EPA 1630 Distillation (Modified)										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	1.63	0.050	ng/l	2.00		81.3	67-133			
Matrix Spike	Source: 22H0285-01									
Methyl Mercury as Mercury	1.19	0.050	ng/l	1.00	0.032	116	65-135			
Matrix Spike	Source: 22H0870-02									
Methyl Mercury as Mercury	0.881	0.050	ng/l	1.00	ND	88.1	65-135			
Matrix Spike Dup	Source: 22H0285-01									
Methyl Mercury as Mercury	1.17	0.050	ng/l	1.00	0.032	114	65-135	1.89	35	
Matrix Spike Dup	Source: 22H0870-02									
Methyl Mercury as Mercury	0.886	0.050	ng/l	1.00	ND	88.6	65-135	0.622	35	
Metals - Dissolved Batch B2H1468 - EPA 200.8 Diss										
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	190	2.0	ug/l	200		94.8	85-115			
Duplicate	Source: 22H0440-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22H0719-04									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22H0440-01									
Selenium	191	2.0	ug/l	200	ND	95.3	75-125			
Matrix Spike	Source: 22H0719-04									
Selenium	190	2.0	ug/l	200	ND	95.0	75-125			
Metals - Dissolved Batch B2H1520 - EPA 1638 - Dissolved										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved **Batch B2H1520 - EPA 1638 - Dissolved**										
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.20	0.50	ug/l	1.25		96.2	50-150			
Cadmium	0.24	0.10	ug/l	0.250		95.2	84-113			
Copper	0.25	0.10	ug/l	0.250		99.1	51-145			
Lead	0.121	0.050	ug/l	0.125		96.7	72-143			
Nickel	0.25	0.10	ug/l	0.250		100	68-134			
Zinc	1.30	0.50	ug/l	1.25		104	46-146			
Matrix Spike	Source: 22H0371-02									
Arsenic	4.41	0.50	ug/l	2.50	1.77	106	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.7	84-113			
Copper	1.54	0.10	ug/l	0.500	1.02	104	51-145			
Lead	0.255	0.050	ug/l	0.250	ND	102	72-143			
Nickel	1.10	0.10	ug/l	0.500	0.58	104	68-134			
Zinc	3.17	0.50	ug/l	2.50	0.66	100	46-146			
Matrix Spike Dup	Source: 22H0371-02									
Arsenic	4.30	0.50	ug/l	2.50	1.77	101	50-150	2.50	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.5	84-113	2.85	20	
Copper	1.52	0.10	ug/l	0.500	1.02	99.5	51-145	1.46	20	
Lead	0.260	0.050	ug/l	0.250	ND	104	72-143	2.18	20	
Nickel	1.13	0.10	ug/l	0.500	0.58	110	68-134	2.83	20	
Zinc	3.21	0.50	ug/l	2.50	0.66	102	46-146	1.15	20	

Notes and Definitions

QB-05	The method blank contains the analyte at a concentration level above the MDL, but below the MRL.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	CA-ELAP does not accredit this analyte or method as of December 2020. *(Newly released 2021 FOA tables may include this analyte or method.)*
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless samples are received on ice and collected on the same day as delivery. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

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Analytical Report

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen

Ricky Jensen, General Manager
Pace Analytical Services LLC - Redding CA
California ELAP Cert #1677 & 2718

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

22H0376

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494
☐ 3860 Morrow Lane, Suite F Chico, CA 95928 (530) 894-8966 FAX: (530) 894-5143

LABORATORY WORK ORDER # 22H0376
PAGE 1 OF 1

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	jmm 8.5.22

MAILING ADDRESS
279 Cousteau Place, Suite 400
Davis, CA 95618

REPORT TO ☑ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED
☑ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one) ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED		SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	8/4/22	1200	AM (PM)	SW		✓	1S-15-SFAR		6	✓	✓	✓	✓	✓	✓
2	8/4/22	1235	AM (PM)	↓		✓	1S-16-SFAR		6	✓	✓	✓	✓	✓	✓
3	8/4/22	1410	AM (PM)	↓		✓	1S-18-SFAR		6	✓	✓	✓	✓	✓	✓
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												

SAMPLED BY: (please print) Emily Applequist

RELINQUISHED DATE / TIME: 8/4/22 / 16:30 PM

SAMPLING / ANALYSIS COMMENTS
'Per past project practice jmm 8.5.22

(1) Total and Dissolved LL 1638 Metals

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME	SIGNATURE	DATE
Emily Applequist		8/4/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
jmm	8.5.22 09:09	jmm	8.5.22 14:57

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

For Official Lab Comments Only

FRM-002.1 - Chain of Custody (rev 1.1)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 2210376

SHIPPING INFORMATION

Walk-In ☐
Courier ☐
FedEx ☑
UPS ☐
Other ☐

Cooler Present? Yes ☑ No ☐

Samples Received By: JMM Date: 8.5.22

	Yes	No
Samples received on ice?	☑	☐
Samples received the same day collected?	☐	☑

Ice type? ☑ Wet ☐ Blue ☐ Other _____

SAMPLE TEMPERATURES AT RECEIPT **Therm. ID (Circle one):** Therm-36 Therm-37 (Therm-59) Other: _____

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	7.1	-06		-11		-16	
-02	4.1	-07		-12		-17	
-03	5.3	-08		-13		-18	
-04		-09		-14		-19	
-05		-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: JMM Date: 8.5.22

	Yes	No	NA
Custody seals present?	☐	☐	☑
Samples in proper containers?	☑	☐	
Sample containers damaged?	☐	☑	
Sufficient sample volume for indicated tests?	☑	☐	
Samples received within holding times?	☑	☐	
Are VOA vials free of headspace?	☐	☐	☑
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☑

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☑	☐	☐
Preserved in the lab?	☑	☐	☐

Lab Preservation Date & Time 8.5.22 09:19

☐ H2SO4 (ID_____) ☑ HNO3 (ID 26080006) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑ By:_____ Meter ID:_____
Are proper preservation lables present?	☑	☐	☐

Preservation checked at Lab? Date & Time 8.5.22 09:19 Test Strip (ID 2B24019)

Preservation and Preservation Checks performed by: JMM

COMMENTS, DISCREPANCEIS, ANOMALIES

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

August 18, 2022

CLS Work Order #: 22H0404
COC #:

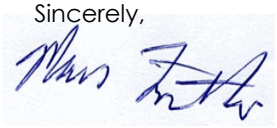
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 08/04/22 16:20. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.11 Task 0620.01	**CLS Work Order #: 22H0404**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-16-SFAR (22H0404-01) Surface Water Sampled: 08/04/22 12:35 Received: 08/04/22 16:20									
Ammonia as N	ND	0.10	mg/L	1	2206720	08/10/22	08/10/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**13**	5.0	"	"	2206922	08/16/22	08/16/22	SM2320B	
Carbonate as CaCO3	ND	5.0	"	"	"	"	"	"	
Chloride	**1.6**	0.50	"	"	2206582	08/05/22	08/05/22	EPA 300.0	
Cyanide (total)	ND	0.0050	"	"	2206954	08/17/22	08/17/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	5.0	"	"	2206651	08/08/22	08/09/22	EPA 1664B	
Hydroxide as CaCO3	ND	5.0	"	"	2206922	08/16/22	08/16/22	SM2320B	
Nitrate/Nitrite as N	ND	0.40	"	"	2206582	08/05/22	08/05/22	EPA 300.0	
Orthophosphate as PO4	ND	0.15	"	"	2206588	08/05/22	08/05/22	SM4500-P E	
Sulfate as SO4	**0.59**	0.50	"	"	2206582	08/05/22	08/05/22	EPA 300.0	
Total Alkalinity	**13**	5.0	"	"	2206922	08/16/22	08/16/22	SM2320B	
Total Dissolved Solids	**25**	10	"	"	2206733	08/10/22	08/15/22	SM2540C	
Total Hardness as CaCO3	**9.2**	1.0	"	"	2206650	08/08/22	08/08/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.67**	0.20	"	"	2206763	08/11/22	08/11/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.4**	1.0	"	"	2206896	08/16/22	08/16/22	SM5310B	
Total Phosphorus as P	ND	0.050	"	"	2206822	08/12/22	08/12/22	SM4500-P E	
Total Suspended Solids	ND	5.0	"	"	2206670	08/09/22	08/11/22	SM2540D	
IS-18-SFAR (22H0404-02) Surface Water Sampled: 08/04/22 14:10 Received: 08/04/22 16:20									
Ammonia as N	ND	0.10	mg/L	1	2206720	08/10/22	08/10/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**12**	5.0	"	"	2206922	08/16/22	08/16/22	SM2320B	
Carbonate as CaCO3	ND	5.0	"	"	"	"	"	"	
Chloride	**1.4**	0.50	"	"	2206582	08/05/22	08/05/22	EPA 300.0	
Cyanide (total)	ND	0.0050	"	"	2206954	08/17/22	08/17/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	5.0	"	"	2206651	08/08/22	08/09/22	EPA 1664B	
Hydroxide as CaCO3	ND	5.0	"	"	2206922	08/16/22	08/16/22	SM2320B	
Nitrate/Nitrite as N	ND	0.40	"	"	2206582	08/05/22	08/05/22	EPA 300.0	
Orthophosphate as PO4	ND	0.15	"	"	2206588	08/05/22	08/05/22	SM4500-P E	

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.11 Task 0620.01	**CLS Work Order #: 22H0404**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-18-SFAR (22H0404-02) Surface Water	**Sampled: 08/04/22 14:10**		**Received: 08/04/22 16:20**						
Sulfate as SO4	**0.82**	0.50	mg/L	1	2206582	08/05/22	08/05/22	EPA 300.0	
Total Alkalinity	**12**	5.0	"	"	2206922	08/16/22	08/16/22	SM2320B	
Total Dissolved Solids	**25**	10	"	"	2206733	08/10/22	08/15/22	SM2540C	
Total Hardness as CaCO3	**11**	1.0	"	"	2206650	08/08/22	08/08/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.37**	0.20	"	"	2206763	08/11/22	08/11/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.0**	1.0	"	"	2206896	08/16/22	08/16/22	SM5310B	
Total Phosphorus as P	ND	0.050	"	"	2206822	08/12/22	08/12/22	SM4500-P E	
Total Suspended Solids	ND	5.0	"	"	2206670	08/09/22	08/11/22	SM2540D	
IS-15-SFAR (22H0404-03) Surface Water	**Sampled: 08/04/22 12:00**		**Received: 08/04/22 16:20**						
Ammonia as N	ND	0.10	mg/L	1	2206720	08/10/22	08/10/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**19**	5.0	"	"	2206922	08/16/22	08/16/22	SM2320B	
Carbonate as CaCO3	ND	5.0	"	"	"	"	"	"	
Chloride	**3.8**	0.50	"	"	2206582	08/05/22	08/05/22	EPA 300.0	
Cyanide (total)	ND	0.0050	"	"	2206954	08/17/22	08/17/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	5.0	"	"	2206651	08/08/22	08/09/22	EPA 1664B	
Hydroxide as CaCO3	ND	5.0	"	"	2206922	08/16/22	08/16/22	SM2320B	
Nitrate/Nitrite as N	ND	0.40	"	"	2206582	08/05/22	08/05/22	EPA 300.0	
Orthophosphate as PO4	ND	0.15	"	"	2206588	08/05/22	08/05/22	SM4500-P E	
Sulfate as SO4	**0.76**	0.50	"	"	2206582	08/05/22	08/05/22	EPA 300.0	
Total Alkalinity	**19**	5.0	"	"	2206922	08/16/22	08/16/22	SM2320B	
Total Dissolved Solids	**42**	10	"	"	2206733	08/10/22	08/15/22	SM2540C	
Total Hardness as CaCO3	**17**	1.0	"	"	2206650	08/08/22	08/08/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.43**	0.20	"	"	2206763	08/11/22	08/11/22	SM4500-NH3F-2011	
Total Organic Carbon	**1.9**	1.0	"	"	2206896	08/16/22	08/16/22	SM5310B	
Total Phosphorus as P	ND	0.050	"	"	2206822	08/12/22	08/12/22	SM4500-P E	
Total Suspended Solids	ND	5.0	"	"	2206670	08/09/22	08/11/22	SM2540D	

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.11 Task 0620.01	**CLS Work Order #: 22H0404**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-17-BC (22H0404-04) Surface Water Sampled: 08/04/22 11:00 Received: 08/04/22 16:20									
Ammonia as N	ND	0.10	mg/L	1	2206720	08/10/22	08/10/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**13**	5.0	"	"	2206922	08/16/22	08/16/22	SM2320B	
Carbonate as CaCO3	ND	5.0	"	"	"	"	"	"	
Chloride	**1.2**	0.50	"	"	2206582	08/05/22	08/05/22	EPA 300.0	
Cyanide (total)	ND	0.0050	"	"	2206954	08/17/22	08/17/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	5.0	"	"	2206651	08/08/22	08/09/22	EPA 1664B	
Hydroxide as CaCO3	ND	5.0	"	"	2206922	08/16/22	08/16/22	SM2320B	
Nitrate/Nitrite as N	ND	0.40	"	"	2206582	08/05/22	08/05/22	EPA 300.0	
Orthophosphate as PO4	ND	0.15	"	"	2206588	08/05/22	08/05/22	SM4500-P E	
Sulfate as SO4	**1.1**	0.50	"	"	2206582	08/05/22	08/05/22	EPA 300.0	
Total Alkalinity	**13**	5.0	"	"	2206922	08/16/22	08/16/22	SM2320B	
Total Dissolved Solids	**23**	10	"	"	2206733	08/10/22	08/15/22	SM2540C	
Total Hardness as CaCO3	**10**	1.0	"	"	2206650	08/08/22	08/08/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.39**	0.20	"	"	2206763	08/11/22	08/11/22	SM4500-NH3F-2011	
Total Organic Carbon	**1.6**	1.0	"	"	2206896	08/16/22	08/16/22	SM5310B	
Total Phosphorus as P	ND	0.050	"	"	2206822	08/12/22	08/12/22	SM4500-P E	
Total Suspended Solids	ND	5.0	"	"	2206670	08/09/22	08/11/22	SM2540D	
R-IS-20-BC (22H0404-05) Surface Water Sampled: 08/04/22 09:15 Received: 08/04/22 16:20									
Ammonia as N	ND	0.10	mg/L	1	2206720	08/10/22	08/10/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**11**	5.0	"	"	2206922	08/16/22	08/16/22	SM2320B	
Carbonate as CaCO3	ND	5.0	"	"	"	"	"	"	
Chloride	**1.1**	0.50	"	"	2206582	08/05/22	08/05/22	EPA 300.0	
Cyanide (total)	ND	0.0050	"	"	2206954	08/17/22	08/17/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	5.0	"	"	2206651	08/08/22	08/09/22	EPA 1664B	
Hydroxide as CaCO3	ND	5.0	"	"	2206922	08/16/22	08/16/22	SM2320B	
Nitrate/Nitrite as N	ND	0.40	"	"	2206582	08/05/22	08/05/22	EPA 300.0	
Orthophosphate as PO4	ND	0.15	"	"	2206588	08/05/22	08/05/22	SM4500-P E	

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.11 Task 0620.01	**CLS Work Order #: 22H0404**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-20-BC (22H0404-05) Surface Water Sampled: 08/04/22 09:15 Received: 08/04/22 16:20									
Sulfate as SO4	ND	0.50	mg/L	1	2206582	08/05/22	08/05/22	EPA 300.0	
Total Alkalinity	**11**	5.0	"	"	2206922	08/16/22	08/16/22	SM2320B	
Total Dissolved Solids	**24**	10	"	"	2206733	08/10/22	08/15/22	SM2540C	
Total Hardness as CaCO3	**8.9**	1.0	"	"	2206650	08/08/22	08/08/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.34**	0.20	"	"	2206763	08/11/22	08/11/22	SM4500-NH3F-2011	
Total Organic Carbon	**1.4**	1.0	"	"	2206896	08/16/22	08/16/22	SM5310B	
Total Phosphorus as P	ND	0.050	"	"	2206822	08/12/22	08/12/22	SM4500-P E	
Total Suspended Solids	ND	5.0	"	"	2206670	08/09/22	08/11/22	SM2540D	
R-IS-20-BCRB (22H0404-06) Surface Water Sampled: 08/04/22 09:30 Received: 08/04/22 16:20									
Ammonia as N	ND	0.10	mg/L	1	2206720	08/10/22	08/10/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**10**	5.0	"	"	2206922	08/16/22	08/16/22	SM2320B	
Carbonate as CaCO3	ND	5.0	"	"	"	"	"	"	
Chloride	**0.72**	0.50	"	"	2206582	08/05/22	08/05/22	EPA 300.0	
Cyanide (total)	ND	0.0050	"	"	2206954	08/17/22	08/17/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	5.0	"	"	2206651	08/08/22	08/09/22	EPA 1664B	
Hydroxide as CaCO3	ND	5.0	"	"	2206922	08/16/22	08/16/22	SM2320B	
Nitrate/Nitrite as N	ND	0.40	"	"	2206582	08/05/22	08/05/22	EPA 300.0	
Orthophosphate as PO4	ND	0.15	"	"	2206588	08/05/22	08/05/22	SM4500-P E	
Sulfate as SO4	**0.53**	0.50	"	"	2206582	08/05/22	08/05/22	EPA 300.0	
Total Alkalinity	**10**	5.0	"	"	2206922	08/16/22	08/16/22	SM2320B	
Total Dissolved Solids	**20**	10	"	"	2206733	08/10/22	08/15/22	SM2540C	
Total Hardness as CaCO3	**7.6**	1.0	"	"	2206650	08/08/22	08/08/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.36**	0.20	"	"	2206763	08/11/22	08/11/22	SM4500-NH3F-2011	
Total Organic Carbon	**1.5**	1.0	"	"	2206896	08/16/22	08/16/22	SM5310B	
Total Phosphorus as P	ND	0.050	"	"	2206822	08/12/22	08/12/22	SM4500-P E	
Total Suspended Solids	ND	5.0	"	"	2206670	08/09/22	08/11/22	SM2540D	

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.11 Task 0620.01	**CLS Work Order #: 22H0404**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-16-SFAR (22H0404-01) Surface Water Sampled: 08/04/22 12:35 Received: 08/04/22 16:20									
Diesel	ND	0.050	mg/L	1	2206643	08/06/22	08/08/22	EPA 8015M	
Hydraulic Oil	ND	0.050	"	"	"	"	"	"	
Kerosene	ND	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*111 %*	*65-135*		"	"	"	"	
IS-18-SFAR (22H0404-02) Surface Water Sampled: 08/04/22 14:10 Received: 08/04/22 16:20									
Diesel	ND	0.050	mg/L	1	2206643	08/06/22	08/08/22	EPA 8015M	
Hydraulic Oil	ND	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*102 %*	*65-135*		"	"	"	"	
IS-15-SFAR (22H0404-03) Surface Water Sampled: 08/04/22 12:00 Received: 08/04/22 16:20									
Diesel	ND	0.050	mg/L	1	2206643	08/06/22	08/08/22	EPA 8015M	
Hydraulic Oil	ND	0.050	"	"	"	"	"	"	
Kerosene	ND	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*93 %*	*65-135*		"	"	"	"	
IS-17-BC (22H0404-04) Surface Water Sampled: 08/04/22 11:00 Received: 08/04/22 16:20									
Diesel	ND	0.050	mg/L	1	2206643	08/06/22	08/08/22	EPA 8015M	
Hydraulic Oil	ND	0.050	"	"	"	"	"	"	
Kerosene	ND	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.050	"	"	"	"	"	"	

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.11 Task 0620.01	**CLS Work Order #: 22H0404**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-17-BC (22H0404-04) Surface Water Sampled: 08/04/22 11:00 Received: 08/04/22 16:20									
Surrogate: o-Terphenyl		*121 %*	*65-135*		*2206643*	"	*08/08/22*	*EPA 8015M*	
R-IS-20-BC (22H0404-05) Surface Water Sampled: 08/04/22 09:15 Received: 08/04/22 16:20									
Diesel	ND	0.050	mg/L	1	2206643	08/06/22	08/08/22	EPA 8015M	
Hydraulic Oil	ND	0.050	"	"	"	"	"	"	
Kerosene	ND	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*130 %*	*65-135*		"	"	"	"	
R-IS-20-BCRB (22H0404-06) Surface Water Sampled: 08/04/22 09:30 Received: 08/04/22 16:20									
Diesel	ND	0.050	mg/L	1	2206643	08/06/22	08/08/22	EPA 8015M	
Hydraulic Oil	ND	0.050	"	"	"	"	"	"	
Kerosene	ND	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*97 %*	*65-135*		"	"	"	"	

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.11 Task 0620.01	**CLS Work Order #: 22H0404**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Metals by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-16-SFAR (22H0404-01) Surface Water	**Sampled: 08/04/22 12:35**		**Received: 08/04/22 16:20**						
Aluminum	**26**	20	µg/L	1	2206659	08/09/22	08/10/22	EPA 200.8	
Barium	**9.4**	5.0	"	"	"	"	"	"	
Calcium	**2500**	1000	"	"	2206660	08/09/22	08/12/22	EPA 200.7	
Iron	ND	100	"	"	"	"	08/10/22	"	
Magnesium	ND	1000	"	"	"	"	"	"	
Manganese	**7.9**	2.0	"	"	2206659	08/09/22	08/10/22	EPA 200.8	
Potassium	**1200**	1000	"	"	2206660	08/09/22	08/11/22	EPA 200.7	
Silver	ND	0.50	"	"	2206659	08/09/22	08/10/22	EPA 200.8	
Sodium	**2000**	1000	"	"	2206660	08/09/22	08/10/22	EPA 200.7	
IS-18-SFAR (22H0404-02) Surface Water	**Sampled: 08/04/22 14:10**		**Received: 08/04/22 16:20**						
Aluminum	**32**	20	µg/L	1	2206659	08/09/22	08/10/22	EPA 200.8	
Barium	**11**	5.0	"	"	"	"	"	"	
Calcium	**3300**	1000	"	"	2206660	08/09/22	08/12/22	EPA 200.7	
Iron	ND	100	"	"	"	"	08/10/22	"	
Magnesium	ND	1000	"	"	"	"	"	"	
Manganese	**13**	2.0	"	"	2206659	08/09/22	08/10/22	EPA 200.8	
Potassium	**1300**	1000	"	"	2206660	08/09/22	08/11/22	EPA 200.7	
Silver	ND	0.50	"	"	2206659	08/09/22	08/10/22	EPA 200.8	
Sodium	**2000**	1000	"	"	2206660	08/09/22	08/10/22	EPA 200.7	
IS-15-SFAR (22H0404-03) Surface Water	**Sampled: 08/04/22 12:00**		**Received: 08/04/22 16:20**						
Aluminum	**32**	20	µg/L	1	2206659	08/09/22	08/10/22	EPA 200.8	
Barium	**17**	5.0	"	"	"	"	"	"	
Calcium	**4700**	1000	"	"	2206660	08/09/22	08/12/22	EPA 200.7	
Iron	ND	100	"	"	"	"	08/10/22	"	
Magnesium	ND	1000	"	"	"	"	"	"	
Manganese	**10**	2.0	"	"	2206659	08/09/22	08/10/22	EPA 200.8	
Potassium	**1500**	1000	"	"	2206660	08/09/22	08/11/22	EPA 200.7	
Silver	ND	0.50	"	"	2206659	08/09/22	08/10/22	EPA 200.8	
Sodium	**3400**	1000	"	"	2206660	08/09/22	08/10/22	EPA 200.7	

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.11 Task 0620.01	**CLS Work Order #: 22H0404**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Metals by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-17-BC (22H0404-04) Surface Water Sampled: 08/04/22 11:00 Received: 08/04/22 16:20									
Aluminum	**36**	20	µg/L	1	2206659	08/09/22	08/10/22	EPA 200.8	
Barium	**12**	5.0	"	"	"	"	"	"	
Calcium	**2900**	1000	"	"	2206660	08/09/22	08/12/22	EPA 200.7	
Iron	**330**	100	"	"	"	"	08/10/22	"	
Magnesium	ND	1000	"	"	"	"	"	"	
Manganese	**120**	2.0	"	"	2206659	08/09/22	08/10/22	EPA 200.8	
Potassium	ND	1000	"	"	2206660	08/09/22	08/11/22	EPA 200.7	
Silver	ND	0.50	"	"	2206659	08/09/22	08/10/22	EPA 200.8	
Sodium	**1400**	1000	"	"	2206660	08/09/22	08/10/22	EPA 200.7	
R-IS-20-BC (22H0404-05) Surface Water Sampled: 08/04/22 09:15 Received: 08/04/22 16:20									
Aluminum	ND	20	µg/L	1	2206659	08/09/22	08/10/22	EPA 200.8	
Barium	**12**	5.0	"	"	"	"	"	"	
Calcium	**2100**	1000	"	"	2206660	08/09/22	08/12/22	EPA 200.7	
Iron	ND	100	"	"	"	"	08/10/22	"	
Magnesium	ND	1000	"	"	"	"	"	"	
Manganese	**2.7**	2.0	"	"	2206659	08/09/22	08/10/22	EPA 200.8	
Potassium	**1100**	1000	"	"	2206660	08/09/22	08/11/22	EPA 200.7	
Silver	ND	0.50	"	"	2206659	08/09/22	08/10/22	EPA 200.8	
Sodium	**1900**	1000	"	"	2206660	08/09/22	08/10/22	EPA 200.7	
R-IS-20-BCRB (22H0404-06) Surface Water Sampled: 08/04/22 09:30 Received: 08/04/22 16:20									
Aluminum	ND	20	µg/L	1	2206659	08/09/22	08/10/22	EPA 200.8	
Barium	**11**	5.0	"	"	"	"	"	"	
Calcium	**2000**	1000	"	"	2206660	08/09/22	08/12/22	EPA 200.7	
Iron	ND	100	"	"	"	"	08/10/22	"	
Magnesium	ND	1000	"	"	"	"	"	"	
Manganese	**36**	2.0	"	"	2206659	08/09/22	08/10/22	EPA 200.8	
Potassium	ND	1000	"	"	2206660	08/09/22	08/11/22	EPA 200.7	
Silver	ND	0.50	"	"	2206659	08/09/22	08/10/22	EPA 200.8	
Sodium	**1300**	1000	"	"	2206660	08/09/22	08/10/22	EPA 200.7	

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.11 Task 0620.01	**CLS Work Order #: 22H0404**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-16-SFAR (22H0404-01) Surface Water Sampled: 08/04/22 12:35 Received: 08/04/22 16:20									
Aluminum	ND	20	µg/L	1	2206639	08/08/22	08/10/22	EPA 200.8	
Iron	ND	100	"	"	2206650	08/08/22	08/08/22	EPA 200.7	
Silver	ND	0.50	"	"	2206639	08/08/22	08/10/22	EPA 200.8	
IS-18-SFAR (22H0404-02) Surface Water Sampled: 08/04/22 14:10 Received: 08/04/22 16:20									
Aluminum	ND	20	µg/L	1	2206639	08/08/22	08/10/22	EPA 200.8	
Iron	ND	100	"	"	2206650	08/08/22	08/08/22	EPA 200.7	
Silver	ND	0.50	"	"	2206639	08/08/22	08/10/22	EPA 200.8	
IS-15-SFAR (22H0404-03) Surface Water Sampled: 08/04/22 12:00 Received: 08/04/22 16:20									
Aluminum	ND	20	µg/L	1	2206639	08/08/22	08/10/22	EPA 200.8	
Iron	ND	100	"	"	2206650	08/08/22	08/08/22	EPA 200.7	
Silver	ND	0.50	"	"	2206639	08/08/22	08/10/22	EPA 200.8	
IS-17-BC (22H0404-04) Surface Water Sampled: 08/04/22 11:00 Received: 08/04/22 16:20									
Aluminum	ND	20	µg/L	1	2206639	08/08/22	08/10/22	EPA 200.8	
Iron	ND	100	"	"	2206650	08/08/22	08/08/22	EPA 200.7	
Silver	ND	0.50	"	"	2206639	08/08/22	08/10/22	EPA 200.8	
R-IS-20-BC (22H0404-05) Surface Water Sampled: 08/04/22 09:15 Received: 08/04/22 16:20									
Aluminum	ND	20	µg/L	1	2206639	08/08/22	08/10/22	EPA 200.8	
Iron	ND	100	"	"	2206650	08/08/22	08/08/22	EPA 200.7	
Silver	ND	0.50	"	"	2206639	08/08/22	08/10/22	EPA 200.8	
R-IS-20-BCRB (22H0404-06) Surface Water Sampled: 08/04/22 09:30 Received: 08/04/22 16:20									
Aluminum	ND	20	µg/L	1	2206639	08/08/22	08/10/22	EPA 200.8	
Iron	ND	100	"	"	2206650	08/08/22	08/08/22	EPA 200.7	
Silver	ND	0.50	"	"	2206639	08/08/22	08/10/22	EPA 200.8	

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Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

TPH-Gasoline by GC FID

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-16-SFAR (22H0404-01) Surface Water Sampled: 08/04/22 12:35 Received: 08/04/22 16:20									
Gasoline	ND	50	µg/L	1	2206592	08/05/22	08/05/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)		*89 %*		*65-135*		"	"	"	"
IS-18-SFAR (22H0404-02) Surface Water Sampled: 08/04/22 14:10 Received: 08/04/22 16:20									
Gasoline	ND	50	µg/L	1	2206592	08/05/22	08/05/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)		*84 %*		*65-135*		"	"	"	"
IS-15-SFAR (22H0404-03) Surface Water Sampled: 08/04/22 12:00 Received: 08/04/22 16:20									
Gasoline	ND	50	µg/L	1	2206592	08/05/22	08/05/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)		*81 %*		*65-135*		"	"	"	"
IS-17-BC (22H0404-04) Surface Water Sampled: 08/04/22 11:00 Received: 08/04/22 16:20									
Gasoline	ND	50	µg/L	1	2206592	08/05/22	08/05/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)		*86 %*		*65-135*		"	"	"	"
R-IS-20-BC (22H0404-05) Surface Water Sampled: 08/04/22 09:15 Received: 08/04/22 16:20									
Gasoline	ND	50	µg/L	1	2206592	08/05/22	08/05/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)		*85 %*		*65-135*		"	"	"	"
R-IS-20-BCRB (22H0404-06) Surface Water Sampled: 08/04/22 09:30 Received: 08/04/22 16:20									
Gasoline	ND	50	µg/L	1	2206592	08/05/22	08/05/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)		*83 %*		*65-135*		"	"	"	"

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Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-16-SFAR (22H0404-01) Surface Water Sampled: 08/04/22 12:35 Received: 08/04/22 16:20									
Methyl tert-butyl ether	ND	0.50	µg/L	1	2206668	08/06/22	08/06/22	EPA 8260B	
Surrogate: Toluene-d8		*90 %*		*72-125*		"	"	"	"
IS-18-SFAR (22H0404-02) Surface Water Sampled: 08/04/22 14:10 Received: 08/04/22 16:20									
Methyl tert-butyl ether	ND	0.50	µg/L	1	2206668	08/06/22	08/06/22	EPA 8260B	
Surrogate: Toluene-d8		*91 %*		*72-125*		"	"	"	"
IS-15-SFAR (22H0404-03) Surface Water Sampled: 08/04/22 12:00 Received: 08/04/22 16:20									
Methyl tert-butyl ether	ND	0.50	µg/L	1	2206668	08/06/22	08/06/22	EPA 8260B	
Surrogate: Toluene-d8		*90 %*		*72-125*		"	"	"	"
IS-17-BC (22H0404-04) Surface Water Sampled: 08/04/22 11:00 Received: 08/04/22 16:20									
Methyl tert-butyl ether	ND	0.50	µg/L	1	2206668	08/06/22	08/06/22	EPA 8260B	
Surrogate: Toluene-d8		*91 %*		*72-125*		"	"	"	"
R-IS-20-BC (22H0404-05) Surface Water Sampled: 08/04/22 09:15 Received: 08/04/22 16:20									
Methyl tert-butyl ether	ND	0.50	µg/L	1	2206668	08/06/22	08/06/22	EPA 8260B	
Surrogate: Toluene-d8		*91 %*		*72-125*		"	"	"	"
R-IS-20-BCRB (22H0404-06) Surface Water Sampled: 08/04/22 09:30 Received: 08/04/22 16:20									
Methyl tert-butyl ether	ND	0.50	µg/L	1	2206668	08/06/22	08/06/22	EPA 8260B	
Surrogate: Toluene-d8		*88 %*		*72-125*		"	"	"	"

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206582 - General Prep										
Blank (2206582-BLK1)				Prepared & Analyzed: 08/05/22						
Sulfate as SO4	ND	0.50	mg/L							
Chloride	ND	0.50	"							
Nitrate/Nitrite as N	ND	0.40	"							
LCS (2206582-BS1)				Prepared & Analyzed: 08/05/22						
Sulfate as SO4	5.02	0.50	mg/L	5.00		100	80-120			
Chloride	4.86	0.50	"	5.00		97	80-120			
Nitrate/Nitrite as N	4.14	0.40	"	4.00		104	80-120			
LCS Dup (2206582-BSD1)				Prepared & Analyzed: 08/05/22						
Sulfate as SO4	5.35	0.50	mg/L	5.00		107	80-120	6	20	
Chloride	5.16	0.50	"	5.00		103	80-120	6	20	
Nitrate/Nitrite as N	4.41	0.40	"	4.00		110	80-120	6	20	
Matrix Spike (2206582-MS1)		**Source: 22H0404-01**		Prepared & Analyzed: 08/05/22						
Sulfate as SO4	5.19	0.50	mg/L	5.00	0.590	92	80-120			
Chloride	6.15	0.50	"	5.00	1.62	90	80-120			
Nitrate/Nitrite as N	3.86	0.40	"	4.00	0.0571	95	80-120			
Matrix Spike Dup (2206582-MSD1)		**Source: 22H0404-01**		Prepared & Analyzed: 08/05/22						
Sulfate as SO4	5.14	0.50	mg/L	5.00	0.590	91	80-120	0.8	20	
Chloride	6.09	0.50	"	5.00	1.62	89	80-120	1	20	
Nitrate/Nitrite as N	3.83	0.40	"	4.00	0.0571	94	80-120	0.7	20	
Batch 2206588 - General Preparation										
Blank (2206588-BLK1)				Prepared & Analyzed: 08/05/22						
Orthophosphate as PO4	ND	0.15	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206588 - General Preparation										
LCS (2206588-BS1)				Prepared & Analyzed: 08/05/22						
Orthophosphate as PO4	0.953	0.15	mg/L	0.918		104	80-120			
LCS Dup (2206588-BSD1)				Prepared & Analyzed: 08/05/22						
Orthophosphate as PO4	0.957	0.15	mg/L	0.918		104	80-120	0.4	20	
Matrix Spike (2206588-MS1)		**Source: 22H0329-01**		Prepared & Analyzed: 08/05/22						
Orthophosphate as PO4	0.913	0.15	mg/L	0.918	0.0304	96	75-125			
Matrix Spike Dup (2206588-MSD1)		**Source: 22H0329-01**		Prepared & Analyzed: 08/05/22						
Orthophosphate as PO4	0.921	0.15	mg/L	0.918	0.0304	97	75-125	0.9	25	
Batch 2206650 - EPA 200 No Digestion										
Blank (2206650-BLK1)				Prepared & Analyzed: 08/08/22						
Total Hardness as CaCO3	ND	1.0	mg/L							
LCS (2206650-BS1)				Prepared & Analyzed: 08/08/22						
Total Hardness as CaCO3	31.7	1.0	mg/L	33.1		96	85-115			
Matrix Spike (2206650-MS1)		**Source: 22H0129-03**		Prepared & Analyzed: 08/08/22						
Total Hardness as CaCO3	187	1.0	mg/L	33.1	161	77	70-130			
Matrix Spike (2206650-MS2)		**Source: 22H0180-06**		Prepared & Analyzed: 08/08/22						
Total Hardness as CaCO3	79.6	1.0	mg/L	33.1	51.2	86	70-130			
Batch 2206651 - Solvent Extract										
Blank (2206651-BLK1)				Prepared: 08/08/22 Analyzed: 08/09/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	5.0	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206651 - Solvent Extract										
LCS (2206651-BS1)				Prepared: 08/08/22 Analyzed: 08/09/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.7	5.0	mg/L	40.0		99	78-114			
LCS Dup (2206651-BSD1)				Prepared: 08/08/22 Analyzed: 08/09/22						
Hexane Extractable Material (HEM, Oil & Grease)	37.8	5.0	mg/L	40.0		95	78-114	5	18	
Batch 2206670 - General Preparation										
Duplicate (2206670-DUP1)		**Source: 22H0329-01**		Prepared: 08/09/22 Analyzed: 08/11/22						
Total Suspended Solids	ND	5.0	mg/L		ND				20	
Batch 2206720 - General Preparation										
Blank (2206720-BLK1)				Prepared & Analyzed: 08/10/22						
Ammonia as N	ND	0.10	mg/L							
LCS (2206720-BS1)				Prepared & Analyzed: 08/10/22						
Ammonia as N	0.527	0.10	mg/L	0.500		105	80-120			
LCS Dup (2206720-BSD1)				Prepared & Analyzed: 08/10/22						
Ammonia as N	0.535	0.10	mg/L	0.500		107	80-120	2	25	
Matrix Spike (2206720-MS1)		**Source: 22H0329-01**		Prepared & Analyzed: 08/10/22						
Ammonia as N	0.465	0.10	mg/L	0.500	0.0680	79	75-125			
Matrix Spike Dup (2206720-MSD1)		**Source: 22H0329-01**		Prepared & Analyzed: 08/10/22						
Ammonia as N	0.483	0.10	mg/L	0.500	0.0680	83	75-125	4	25	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206733 - General Preparation										
Blank (2206733-BLK1)				Prepared: 08/10/22 Analyzed: 08/15/22						
Total Dissolved Solids	ND	10	mg/L							
Duplicate (2206733-DUP1)		**Source: 22H0371-01**		Prepared: 08/10/22 Analyzed: 08/15/22						
Total Dissolved Solids	213	10	mg/L		206			3	20	
Batch 2206763 - General Preparation										
Blank (2206763-BLK1)				Prepared & Analyzed: 08/11/22						
Total Kjeldahl Nitrogen	ND	0.20	mg/L							
LCS (2206763-BS1)				Prepared & Analyzed: 08/11/22						
Total Kjeldahl Nitrogen	0.669	0.20	mg/L	0.500		134	80-120			QM-1
LCS Dup (2206763-BSD1)				Prepared & Analyzed: 08/11/22						
Total Kjeldahl Nitrogen	0.670	0.20	mg/L	0.500		134	80-120	0.1	20	QM-1
Matrix Spike (2206763-MS1)		**Source: 22H0329-01**		Prepared & Analyzed: 08/11/22						
Total Kjeldahl Nitrogen	0.799	0.20	mg/L	0.500	0.188	122	75-125			
Matrix Spike Dup (2206763-MSD1)		**Source: 22H0329-01**		Prepared & Analyzed: 08/11/22						
Total Kjeldahl Nitrogen	0.801	0.20	mg/L	0.500	0.188	123	75-125	0.2	25	
Batch 2206822 - General Preparation										
Blank (2206822-BLK1)				Prepared & Analyzed: 08/12/22						
Total Phosphorus as P	ND	0.050	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206822 - General Preparation										
LCS (2206822-BS1)				Prepared & Analyzed: 08/12/22						
Total Phosphorus as P	0.306	0.050	mg/L	0.300		102	80-120			
LCS Dup (2206822-BSD1)				Prepared & Analyzed: 08/12/22						
Total Phosphorus as P	0.300	0.050	mg/L	0.300		100	80-120	2	25	
Matrix Spike (2206822-MS1)		**Source: 22H0329-01**		Prepared & Analyzed: 08/12/22						
Total Phosphorus as P	0.295	0.050	mg/L	0.300	ND	98	75-125			
Matrix Spike Dup (2206822-MSD1)		**Source: 22H0329-01**		Prepared & Analyzed: 08/12/22						
Total Phosphorus as P	0.285	0.050	mg/L	0.300	ND	95	75-125	3	30	
Batch 2206896 - General Preparation										
Blank (2206896-BLK1)				Prepared & Analyzed: 08/16/22						
Total Organic Carbon	ND	1.0	mg/L							
LCS (2206896-BS1)				Prepared & Analyzed: 08/16/22						
Total Organic Carbon	10.9	1.0	mg/L	10.0		109	75-125			
LCS Dup (2206896-BSD1)				Prepared & Analyzed: 08/16/22						
Total Organic Carbon	10.7	1.0	mg/L	10.0		107	75-125	2	25	
Matrix Spike (2206896-MS1)		**Source: 22H0329-01**		Prepared & Analyzed: 08/16/22						
Total Organic Carbon	13.3	1.0	mg/L	10.0	2.08	112	75-125			
Matrix Spike Dup (2206896-MSD1)		**Source: 22H0329-01**		Prepared & Analyzed: 08/16/22						
Total Organic Carbon	12.2	1.0	mg/L	10.0	2.08	101	75-125	9	25	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206922 - General Preparation										
Blank (2206922-BLK1)				Prepared & Analyzed: 08/16/22						
Total Alkalinity	ND	5.0	mg/L							
Bicarbonate as CaCO3	ND	5.0	"							
Carbonate as CaCO3	ND	5.0	"							
Hydroxide as CaCO3	ND	5.0	"							
Duplicate (2206922-DUP1)	**Source: 22H0701-01**			Prepared & Analyzed: 08/16/22						
Total Alkalinity	265	5.0	mg/L		270			2	20	
Bicarbonate as CaCO3	265	5.0	"		270			2	20	
Carbonate as CaCO3	ND	5.0	"		ND				20	
Hydroxide as CaCO3	ND	5.0	"		ND				20	
Batch 2206954 - General Preparation										
Blank (2206954-BLK1)				Prepared & Analyzed: 08/17/22						
Cyanide (total)	ND	0.0050	mg/L							
LCS (2206954-BS1)				Prepared & Analyzed: 08/17/22						
Cyanide (total)	0.0854	0.0050	mg/L	0.100		85	75-125			
LCS Dup (2206954-BSD1)				Prepared & Analyzed: 08/17/22						
Cyanide (total)	0.0854	0.0050	mg/L	0.100		85	75-125	0	25	
Matrix Spike (2206954-MS1)	**Source: 22H0404-01**			Prepared & Analyzed: 08/17/22						
Cyanide (total)	0.0680	0.0050	mg/L	0.100	0.00190	66	75-125			QM-7
Matrix Spike Dup (2206954-MSD1)	**Source: 22H0404-01**			Prepared & Analyzed: 08/17/22						
Cyanide (total)	0.0694	0.0050	mg/L	0.100	0.00190	68	75-125	2	25	QM-7

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Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206643 - EPA 3510B GCNV										
Blank (2206643-BLK1)				Prepared: 08/06/22 Analyzed: 08/08/22						
Diesel	ND	0.050	mg/L							
Motor Oil	ND	0.050	"							
Surrogate: o-Terphenyl	*0.0304*		*"*	*0.0250*		*122*	*65-135*			
LCS (2206643-BS1)				Prepared: 08/06/22 Analyzed: 08/08/22						
Diesel	1.95	0.050	mg/L	2.50		78	65-135			
Surrogate: o-Terphenyl	*0.0255*		*"*	*0.0250*		*102*	*65-135*			
LCS Dup (2206643-BSD1)				Prepared: 08/06/22 Analyzed: 08/08/22						
Diesel	2.34	0.050	mg/L	2.50		93	65-135	18	30	
Surrogate: o-Terphenyl	*0.0306*		*"*	*0.0250*		*122*	*65-135*			
Matrix Spike (2206643-MS1)		**Source: 22H0366-01**		Prepared: 08/06/22 Analyzed: 08/08/22						
Diesel	2.70	0.050	mg/L	2.50	ND	108	46-137			
Surrogate: o-Terphenyl	*0.0273*		*"*	*0.0250*		*109*	*65-135*			
Matrix Spike Dup (2206643-MSD1)		**Source: 22H0366-01**		Prepared: 08/06/22 Analyzed: 08/08/22						
Diesel	2.69	0.050	mg/L	2.50	ND	107	46-137	0.6	30	
Surrogate: o-Terphenyl	*0.0278*		*"*	*0.0250*		*111*	*65-135*			

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206659 - EPA 200 Series										
Blank (2206659-BLK1)				Prepared: 08/09/22 Analyzed: 08/10/22						
Aluminum	ND	20	µg/L							
Barium	ND	5.0	"							
Manganese	ND	2.0	"							
Silver	ND	0.50	"							
LCS (2206659-BS1)				Prepared: 08/09/22 Analyzed: 08/10/22						
Aluminum	486	20	µg/L	500		97	85-115			
Barium	99.3	5.0	"	100		99	85-115			
Manganese	95.3	2.0	"	100		95	85-115			
Silver	102	0.50	"	100		102	85-115			
Matrix Spike (2206659-MS1)	**Source: 22H0371-01**			Prepared: 08/09/22 Analyzed: 08/10/22						
Aluminum	477	20	µg/L	500	1.79	95	70-130			
Barium	157	5.0	"	100	60.1	97	70-130			
Manganese	89.7	2.0	"	100	0.233	89	70-130			
Silver	99.8	0.50	"	100	ND	100	70-130			
Matrix Spike (2206659-MS2)	**Source: 22H0525-01**			Prepared: 08/09/22 Analyzed: 08/10/22						
Aluminum	455	20	µg/L	500	ND	91	70-130			
Barium	173	5.0	"	100	77.7	95	70-130			
Manganese	87.2	2.0	"	100	0.388	87	70-130			
Silver	96.4	0.50	"	100	ND	96	70-130			
Batch 2206660 - EPA 200 Series										
Blank (2206660-BLK1)				Prepared & Analyzed: 08/09/22						
Barium	ND	20	µg/L							
Boron	ND	50	"							
Calcium	ND	1000	"							
Iron	ND	100	"							
Magnesium	ND	1000	"							
Potassium	ND	1000	"							
Sodium	ND	1000	"							

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206660 - EPA 200 Series										
LCS (2206660-BS1)				Prepared & Analyzed: 08/09/22						
Barium	488	20	µg/L	500		98	85-115			
Boron	480	50	"	500		96	85-115			
Calcium	4590	1000	"	5000		92	85-115			
Iron	464	100	"	500		93	85-115			
Magnesium	4990	1000	"	5000		100	85-115			
Potassium	5140	1000	"	5000		103	85-115			
Sodium	4830	1000	"	5000		97	85-115			
Matrix Spike (2206660-MS1)		**Source: 22H0377-01**		Prepared & Analyzed: 08/09/22						
Barium	686	20	µg/L	500	184	100	70-130			
Boron	547	50	"	500	31.9	103	70-130			
Calcium	60400	1000	"	5000	53000	147	70-130			QM-7
Iron	496	100	"	500	ND	99	70-130			
Magnesium	28100	1000	"	5000	23300	96	70-130			
Potassium	12900	1000	"	5000	7500	108	70-130			
Sodium	33700	1000	"	5000	28400	106	70-130			
Matrix Spike (2206660-MS2)		**Source: 22H0549-01**		Prepared & Analyzed: 08/09/22						
Barium	532	20	µg/L	500	22.4	102	70-130			
Boron	514	50	"	500	12.5	100	70-130			
Calcium	14800	1000	"	5000	9700	103	70-130			
Iron	459	100	"	500	ND	92	70-130			
Magnesium	9520	1000	"	5000	4820	94	70-130			
Potassium	6760	1000	"	5000	1600	103	70-130			
Sodium	14500	1000	"	5000	9740	95	70-130			

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.11 Task 0620.01	**CLS Work Order #: 22H0404**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206639 - EPA 200 No Digestion										
Blank (2206639-BLK1)				Prepared: 08/08/22 Analyzed: 08/10/22						
Aluminum	ND	20	µg/L							
Silver	ND	0.50	"							
LCS (2206639-BS1)				Prepared: 08/08/22 Analyzed: 08/10/22						
Aluminum	439	20	µg/L	500		88	85-115			
Silver	93.1	0.50	"	100		93	85-115			
Matrix Spike (2206639-MS1)	**Source: 22H0404-01**			Prepared: 08/08/22 Analyzed: 08/10/22						
Aluminum	433	20	µg/L	500	8.20	85	70-130			
Silver	92.9	0.50	"	100	ND	93	70-130			
Matrix Spike (2206639-MS2)	**Source: 22H0586-01**			Prepared: 08/08/22 Analyzed: 08/10/22						
Aluminum	442	20	µg/L	500	19.8	85	70-130			
Silver	91.2	0.50	"	100	ND	91	70-130			
Batch 2206650 - EPA 200 No Digestion										
Blank (2206650-BLK1)				Prepared & Analyzed: 08/08/22						
Iron	ND	100	µg/L							
LCS (2206650-BS1)				Prepared & Analyzed: 08/08/22						
Iron	492	100	µg/L	500		98	85-115			
Matrix Spike (2206650-MS1)	**Source: 22H0129-03**			Prepared & Analyzed: 08/08/22						
Iron	496	100	µg/L	500	22.4	95	70-130			
Matrix Spike (2206650-MS2)	**Source: 22H0180-06**			Prepared & Analyzed: 08/08/22						
Iron	491	100	µg/L	500	27.8	93	70-130			

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring
2855 Telegraph Ave., Suite 400	Project Number:	750.11 Task 0620.01
Berkeley, CA 94705	Project Manager:	Emily Applequist

CLS Work Order #: 22H0404
COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206592 - EPA 5030 Water GC										
Blank (2206592-BLK1)				Prepared & Analyzed: 08/05/22						
Gasoline	ND	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*16.5*		*"*	*20.0*		*82*	*65-135*			
LCS (2206592-BS1)				Prepared & Analyzed: 08/05/22						
Gasoline	535	50	µg/L	500		107	70-130			
Surrogate: o-Chlorotoluene (Gas)	*17.7*		*"*	*20.0*		*89*	*65-135*			
LCS Dup (2206592-BSD1)				Prepared & Analyzed: 08/05/22						
Gasoline	537	50	µg/L	500		107	70-130	0.3	30	
Surrogate: o-Chlorotoluene (Gas)	*18.4*		*"*	*20.0*		*92*	*65-135*			
Matrix Spike (2206592-MS1)	**Source: 22H0404-01**			Prepared & Analyzed: 08/05/22						
Gasoline	547	50	µg/L	500	ND	109	68-132			
Surrogate: o-Chlorotoluene (Gas)	*19.5*		*"*	*20.0*		*97*	*65-135*			
Matrix Spike Dup (2206592-MSD1)	**Source: 22H0404-01**			Prepared & Analyzed: 08/05/22						
Gasoline	538	50	µg/L	500	ND	108	68-132	2	32	
Surrogate: o-Chlorotoluene (Gas)	*19.4*		*"*	*20.0*		*97*	*65-135*			

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.11 Task 0620.01	**CLS Work Order #: 22H0404**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206668 - EPA 3510B GCMS										
Blank (2206668-BLK1)				Prepared & Analyzed: 08/06/22						
Di-isopropyl ether	ND	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.50	"							
Methyl tert-butyl ether	ND	0.50	"							
tert-Amyl methyl ether	ND	0.50	"							
tert-Butyl alcohol	ND	5.0	"							
Surrogate: Toluene-d8	*8.58*		*"*	*10.0*		*86*	*72-125*			
LCS (2206668-BS1)				Prepared & Analyzed: 08/06/22						
Methyl tert-butyl ether	21.7	0.50	µg/L	20.0		109	52-130			
Surrogate: Toluene-d8	*10.6*		*"*	*10.0*		*106*	*72-125*			
LCS Dup (2206668-BSD1)				Prepared & Analyzed: 08/06/22						
Methyl tert-butyl ether	21.5	0.50	µg/L	20.0		107	52-130	1	30	
Surrogate: Toluene-d8	*11.1*		*"*	*10.0*		*111*	*72-125*			

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.11 Task 0620.01	**CLS Work Order #: 22H0404**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
QM-1	The spike recovery was outside acceptance limits for the LCS or LCSD. The batch was accepted based on acceptable MS/MSD recoveries & RPD's.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22H0404 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By
Emily Applequist, Bethany Leach

Job Description
Monitor water chemistry in UARP reaches.

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[X] **CLS** (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] **OTHER**

GEOTRACKER

EDF REPORT YES [X] NO [ ]

GLOBAL ID.

FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES ▼	ANALYSIS REQUESTED: TSS, TDS, Hardness, Alkalinity, NO2-N, NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS: 1	2	3	5	SPECIAL INSTRUCTIONS
8/4/22	1235	IS-16-SFAR		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
8/4/22	1410	IS-18-SFAR		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
8/4/22	1200	IS-15-SFAR		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
8/4/22	1100	IS-17-BC		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
8/4/22	0915	R-IS-20-BC		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
8/4/22	0930	R-IS-20-BCRB		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
				Surface water			6											X	INVOICE TO:
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	**Project No. 750.10 Task 0620.01**
				Surface water			6											X	QUOTE#

TURNAROUND TIME IN DAYS: 1 | 2 | 3 | 5

SPECIAL INSTRUCTIONS

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (2) HNO_3 (3) = COLD (4)= H2SO4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Bethany Leach	8/4/22		
	Stillwater Sciences	16:20		

RECEIVED AT LAB BY: **DATE/TIME:** 8/4/22 1620 **CONDITIONS/COMMENTS:** 7.1 / 6.4

SHIPPED BY: [ ] **FED EX** [ ] **UPS** [ ] **OTHER** _____ **AIR BILL #** _____

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02

Lab No: 22H0870
Reported: 09/27/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22H0870, received on 08/16/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: R-IS-1-LL
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0870-01
Sampled: 08/15/22 10:00
Received: 08/16/22 11:29

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.24		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Mercury	ng/l	0.52		0.22	0.50	EPA 1631E	08/24/22	08/24/22	B2H1510 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	08/26/22	08/25/22	B2H1542 / EDM
Nickel	ug/l	0.13		0.02	0.10	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/23/22	08/22/22	B2H1418 / BDL
Zinc	"	0.38	J	0.12	0.50	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/24/22	08/24/22	B2H1520 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.17		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.10		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/23/22	08/23/22	B2H1468 / BDL
Zinc	"	0.35	J	0.12	0.50	EPA 1638	08/24/22	08/24/22	B2H1520 / EDM

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Analytical Report

Description: R-IS-1-LLB
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0870-02
Sampled: 08/15/22 10:20
Received: 08/16/22 11:29

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.17		0.04	0.10	"	"	"	"
Lead	"	0.012	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.56		0.22	0.50	EPA 1631E	08/24/22	08/24/22	B2H1510 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	08/26/22	08/25/22	B2H1542 / EDM
Nickel	ug/l	0.10		0.02	0.10	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/23/22	08/22/22	B2H1418 / BDL
Zinc	"	2.09		0.12	0.50	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	09/23/22	09/23/22	B2I1440 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.18		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.09	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/23/22	08/23/22	B2H1468 / BDL
Zinc	"	1.71		0.12	0.50	EPA 1638	09/23/22	09/23/22	B2I1440 / EDM

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Analytical Report

Description: R-IS-2-LL
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0870-03
Sampled: 08/15/22 11:25
Received: 08/16/22 11:29

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.28		0.04	0.10	"	"	"	"
Lead	"	0.009	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.42	J	0.22	0.50	EPA 1631E	08/24/22	08/24/22	B2H1510 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	08/26/22	08/25/22	B2H1542 / EDM
Nickel	ug/l	0.14		0.02	0.10	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/23/22	08/22/22	B2H1418 / BDL
Zinc	"	0.52		0.12	0.50	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/31/22	08/31/22	B2H1669 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.20		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.13		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/23/22	08/23/22	B2H1468 / BDL
Zinc	"	0.43	J	0.12	0.50	EPA 1638	08/31/22	08/31/22	B2H1669 / EDM

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Analytical Report

Description: R-IS-2-LLB
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0870-04
Sampled: 08/15/22 11:45
Received: 08/16/22 11:29

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.14		0.04	0.10	"	"	"	"
Lead	"	0.008	J	0.007	0.050	"	"	"	"
Mercury	ng/l	1.06		0.22	0.50	EPA 1631E	08/24/22	08/24/22	B2H1510 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	08/26/22	08/25/22	B2H1542 / EDM
Nickel	ug/l	0.09	J	0.02	0.10	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/23/22	08/22/22	B2H1418 / BDL
Zinc	"	1.83		0.12	0.50	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/31/22	08/31/22	B2H1669 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.15		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.08	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/23/22	08/23/22	B2H1468 / BDL
Zinc	"	0.63		0.12	0.50	EPA 1638	08/31/22	08/31/22	B2H1669 / EDM

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Analytical Report

Description: R-IS-3-LL
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0870-05
Sampled: 08/15/22 12:30
Received: 08/16/22 11:29

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.23		0.04	0.10	"	"	"	"
Lead	"	0.014	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.42	J	0.22	0.50	EPA 1631E	08/24/22	08/24/22	B2H1510 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	08/26/22	08/25/22	B2H1542 / EDM
Nickel	ug/l	0.14		0.02	0.10	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/23/22	08/22/22	B2H1418 / BDL
Zinc	"	0.48	J	0.12	0.50	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/31/22	08/31/22	B2H1669 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.19		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.12		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/23/22	08/23/22	B2H1468 / BDL
Zinc	"	0.38	J	0.12	0.50	EPA 1638	08/31/22	08/31/22	B2H1669 / EDM

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Analytical Report

Description: R-IS-3-LLB
Matrix / Type: Surface Water (Grab)
Lab ID: 22H0870-06
Sampled: 08/15/22 12:50
Received: 08/16/22 11:29

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.16		0.04	0.10	"	"	"	"
Lead	"	0.009	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.52		0.22	0.50	EPA 1631E	08/24/22	08/24/22	B2H1510 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	09/02/22	09/01/22	B2I0844 / EDM
Nickel	ug/l	0.16		0.02	0.10	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/23/22	08/22/22	B2H1418 / BDL
Zinc	"	1.37		0.12	0.50	EPA 1638	08/24/22	08/23/22	B2H1471 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/31/22	08/31/22	B2H1669 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.18		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.10		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/23/22	08/23/22	B2H1468 / BDL
Zinc	"	0.53		0.12	0.50	EPA 1638	08/31/22	08/31/22	B2H1669 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2H1418 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	212	2.0	ug/l	200		106	85-115			
Duplicate	Source: 22H0719-04									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22H0870-06									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22H0719-04									
Selenium	199	2.0	ug/l	200	ND	99.7	75-125			
Matrix Spike	Source: 22H0870-06									
Selenium	201	2.0	ug/l	200	ND	100	75-125			
Metals - Total - Redding Location	**Batch B2H1471 - EPA 1638 - Closed Bottle Oven Digestion**									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2H1471 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	0.02	0.10	ug/l							QB-05, J
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.25	0.50	ug/l	1.25		99.9	50-150			
Cadmium	0.24	0.10	ug/l	0.250		94.0	84-113			
Copper	0.24	0.10	ug/l	0.250		94.7	51-145			
Lead	0.122	0.050	ug/l	0.125		97.4	72-143			
Nickel	0.24	0.10	ug/l	0.250		96.2	68-134			
Zinc	1.26	0.50	ug/l	1.25		101	46-146			
LCS										
Arsenic	1.29	0.50	ug/l	1.25		103	50-150			
Cadmium	0.25	0.10	ug/l	0.250		101	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.123	0.050	ug/l	0.125		98.4	72-143			
Nickel	0.26	0.10	ug/l	0.250		103	68-134			
Zinc	1.32	0.50	ug/l	1.25		106	46-146			
Matrix Spike	Source: 22H0371-03									
Arsenic	4.27	0.50	ug/l	2.50	1.78	99.5	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	99.4	84-113			
Copper	1.73	0.10	ug/l	0.500	1.25	96.3	51-145			
Lead	0.275	0.050	ug/l	0.250	0.027	99.3	72-143			
Nickel	1.17	0.10	ug/l	0.500	0.72	90.0	68-134			
Zinc	3.96	0.50	ug/l	2.50	1.53	97.0	46-146			
Matrix Spike	Source: 22H0688-01									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2H1471 - EPA 1638 - Closed Bottle Oven Digestion**									
Arsenic	5.30	0.50	ug/l	2.50	2.96	93.7	50-150			
Cadmium	0.47	0.10	ug/l	0.500	ND	94.7	84-113			
Copper	2.01	0.10	ug/l	0.500	1.56	89.1	51-145			
Lead	0.511	0.050	ug/l	0.250	0.250	104	72-143			
Nickel	1.78	0.10	ug/l	0.500	1.28	99.3	68-134			
Zinc	3.90	0.50	ug/l	2.50	1.64	90.3	46-146			
Matrix Spike Dup	Source: 22H0371-03									
Arsenic	4.19	0.50	ug/l	2.50	1.78	96.4	50-150	1.85	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	100	84-113	0.621	20	
Copper	1.71	0.10	ug/l	0.500	1.25	90.9	51-145	1.55	20	
Lead	0.270	0.050	ug/l	0.250	0.027	97.3	72-143	1.78	20	
Nickel	1.15	0.10	ug/l	0.500	0.72	87.2	68-134	1.21	20	
Zinc	4.02	0.50	ug/l	2.50	1.53	99.5	46-146	1.54	20	
Matrix Spike Dup	Source: 22H0688-01									
Arsenic	5.34	0.50	ug/l	2.50	2.96	95.5	50-150	0.851	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	96.4	84-113	1.72	20	
Copper	2.00	0.10	ug/l	0.500	1.56	86.7	51-145	0.588	20	
Lead	0.503	0.050	ug/l	0.250	0.250	101	72-143	1.69	20	
Nickel	1.76	0.10	ug/l	0.500	1.28	94.9	68-134	1.24	20	
Zinc	3.95	0.50	ug/l	2.50	1.64	92.2	46-146	1.25	20	
Metals - Total - Redding Location	**Batch B2H1510 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	10.5	0.50	ng/l	10.0		105	77-123			
Matrix Spike	Source: 22H0643-01									
Mercury	12.4	0.50	ng/l	10.0	1.15	113	71-125			
Matrix Spike	Source: 22H0870-03									
Mercury	10.9	0.50	ng/l	10.0	0.42	105	71-125			
Matrix Spike Dup	Source: 22H0643-01									
Mercury	13.2	0.50	ng/l	10.0	1.15	121	71-125	6.32	24	
Matrix Spike Dup	Source: 22H0870-03									
Mercury	11.1	0.50	ng/l	10.0	0.42	107	71-125	1.90	24	
Metals - Total - Redding Location	**Batch B2H1542 - EPA 1630 Distillation (Modified)**									
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2H1542 - EPA 1630 Distillation (Modified)**									
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	1.63	0.050	ng/l	2.00		81.3	67-133			
Matrix Spike	Source: 22H0285-01									
Methyl Mercury as Mercury	1.19	0.050	ng/l	1.00	0.032	116	65-135			
Matrix Spike	Source: 22H0870-02									
Methyl Mercury as Mercury	0.881	0.050	ng/l	1.00	ND	88.1	65-135			
Matrix Spike Dup	Source: 22H0285-01									
Methyl Mercury as Mercury	1.17	0.050	ng/l	1.00	0.032	114	65-135	1.89	35	
Matrix Spike Dup	Source: 22H0870-02									
Methyl Mercury as Mercury	0.886	0.050	ng/l	1.00	ND	88.6	65-135	0.622	35	
Metals - Total - Redding Location	**Batch B2I0844 - EPA 1630 Distillation (Modified)**									
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.44	0.050	ng/l	2.00		122	67-133			
Matrix Spike	Source: 22H0870-06									
Methyl Mercury as Mercury	1.16	0.050	ng/l	1.00	ND	116	65-135			
Matrix Spike	Source: 22H1058-04									
Methyl Mercury as Mercury	1.13	0.050	ng/l	1.00	ND	113	65-135			
Matrix Spike Dup	Source: 22H0870-06									
Methyl Mercury as Mercury	1.26	0.050	ng/l	1.00	ND	126	65-135	8.62	35	
Matrix Spike Dup	Source: 22H1058-04									
Methyl Mercury as Mercury	1.27	0.050	ng/l	1.00	ND	127	65-135	11.8	35	
Metals - Dissolved - Redding Location	**Batch B2H1468 - EPA 200.8 Diss**									
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2H1468 - EPA 200.8 Diss**									
Selenium	190	2.0	ug/l	200		94.8	85-115			
Duplicate	Source: 22H0440-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22H0719-04									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22H0440-01									
Selenium	191	2.0	ug/l	200	ND	95.3	75-125			
Matrix Spike	Source: 22H0719-04									
Selenium	190	2.0	ug/l	200	ND	95.0	75-125			
Metals - Dissolved - Redding Location	**Batch B2H1520 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.20	0.50	ug/l	1.25		96.2	50-150			
Cadmium	0.24	0.10	ug/l	0.250		95.2	84-113			
Copper	0.25	0.10	ug/l	0.250		99.1	51-145			
Lead	0.121	0.050	ug/l	0.125		96.7	72-143			
Nickel	0.25	0.10	ug/l	0.250		100	68-134			
Zinc	1.30	0.50	ug/l	1.25		104	46-146			
Matrix Spike	Source: 22H0371-02									
Arsenic	4.41	0.50	ug/l	2.50	1.77	106	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.7	84-113			
Copper	1.54	0.10	ug/l	0.500	1.02	104	51-145			
Lead	0.255	0.050	ug/l	0.250	ND	102	72-143			
Nickel	1.10	0.10	ug/l	0.500	0.58	104	68-134			
Zinc	3.17	0.50	ug/l	2.50	0.66	100	46-146			
Matrix Spike Dup	Source: 22H0371-02									
Arsenic	4.30	0.50	ug/l	2.50	1.77	101	50-150	2.50	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.5	84-113	2.85	20	
Copper	1.52	0.10	ug/l	0.500	1.02	99.5	51-145	1.46	20	
Lead	0.260	0.050	ug/l	0.250	ND	104	72-143	2.18	20	
Nickel	1.13	0.10	ug/l	0.500	0.58	110	68-134	2.83	20	
Zinc	3.21	0.50	ug/l	2.50	0.66	102	46-146	1.15	20	
Metals - Dissolved - Redding Location	**Batch B2H1669 - EPA 1638 - Dissolved**									
Blank										

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2H1669 - EPA 1638 - Dissolved**									
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.5	50-150			
Cadmium	0.25	0.10	ug/l	0.250		101	84-113			
Copper	0.25	0.10	ug/l	0.250		102	51-145			
Lead	0.122	0.050	ug/l	0.125		97.9	72-143			
Nickel	0.26	0.10	ug/l	0.250		103	68-134			
Zinc	1.26	0.50	ug/l	1.25		101	46-146			
Matrix Spike	Source: 22H0870-04									
Arsenic	2.58	0.50	ug/l	2.50	ND	103	50-150			
Cadmium	0.53	0.10	ug/l	0.500	ND	105	84-113			
Copper	0.63	0.10	ug/l	0.500	0.15	96.0	51-145			
Lead	0.246	0.050	ug/l	0.250	ND	98.2	72-143			
Nickel	0.58	0.10	ug/l	0.500	0.08	98.3	68-134			
Zinc	3.18	0.50	ug/l	2.50	0.63	102	46-146			
Matrix Spike Dup	Source: 22H0870-04									
Arsenic	2.54	0.50	ug/l	2.50	ND	102	50-150	1.51	20	
Cadmium	0.52	0.10	ug/l	0.500	ND	104	84-113	0.905	20	
Copper	0.65	0.10	ug/l	0.500	0.15	98.7	51-145	2.07	20	
Lead	0.251	0.050	ug/l	0.250	ND	100	72-143	2.15	20	
Nickel	0.60	0.10	ug/l	0.500	0.08	102	68-134	3.27	20	
Zinc	3.11	0.50	ug/l	2.50	0.63	99.3	46-146	2.30	20	
Metals - Dissolved - Redding Location	**Batch B2I1440 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.26	0.50	ug/l	1.25		100	50-150			
Cadmium	0.25	0.10	ug/l	0.250		99.8	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.126	0.050	ug/l	0.125		101	72-143			
Nickel	0.25	0.10	ug/l	0.250		100	68-134			
Zinc	1.21	0.50	ug/l	1.25		96.5	46-146			
Matrix Spike	Source: 22I0385-02									
Arsenic	4.40	0.50	ug/l	2.50	2.00	95.8	50-150			
Cadmium	0.52	0.10	ug/l	0.500	ND	103	84-113			
Copper	1.44	0.10	ug/l	0.500	0.94	99.6	51-145			
Lead	0.255	0.050	ug/l	0.250	ND	102	72-143			
Nickel	1.07	0.10	ug/l	0.500	0.52	108	68-134			
Zinc	2.98	0.50	ug/l	2.50	0.53	98.0	46-146			
Matrix Spike Dup	Source: 22I0385-02									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2I1440 - EPA 1638 - Dissolved**									
Arsenic	4.54	0.50	ug/l	2.50	2.00	102	50-150	3.22	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	98.8	84-113	4.60	20	
Copper	1.43	0.10	ug/l	0.500	0.94	97.5	51-145	0.733	20	
Lead	0.253	0.050	ug/l	0.250	ND	101	72-143	0.682	20	
Nickel	1.05	0.10	ug/l	0.500	0.52	105	68-134	1.44	20	
Zinc	3.02	0.50	ug/l	2.50	0.53	99.5	46-146	1.27	20	

Notes and Definitions

QB-05	The method blank contains the analyte at a concentration level above the MDL, but below the MRL.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	CA-ELAP does not accredit this analyte or method as of December 2020. *(Newly released 2021 FOA tables may include this analyte or method.)*
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless samples are received on ice and collected on the same day as delivery. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

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Analytical Report

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen

Ricky Jensen, General Manager
Pace Analytical Services LLC - Redding CA
California ELAP Cert #1677 & 2718

22H0870

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

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LABORATORY WORK ORDER # 22H0870
PAGE 1 OF 1

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CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS: 279 Cousteau Place, Suite 400, Davis, CA 95618

REPORT TO ☒ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED ☒ Standard ☐ Rush _____

INVOICE TO: same
EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one) ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	8.15	10:00 AM PM	SW			R.IS.1.LLB	R-IS-1-LL*	6	X	X	X	X	X	X
2	8.15	10:25 AM PM	"			R.IS.1.LLB		6	X	X	X	X	X	X
3	8.15	11:25 AM PM	"			R.IS.2.LLB	R-IS-2-LL*	6	X	X	X	X	X	X
4	8.15	11:45 AM PM	"			R.IS.2.LLB		6	X	X	X	X	X	X
5	8.15	12:50 AM PM	"			R.IS.3.LLB	R-IS-3-LL*	6	X	X	X	X	X	X
6	8.15	12:50 AM PM	↓			R.IS.3.LLB		6	X	X	X	X	X	X
		AM PM												
		AM PM												
		AM PM												
		AM PM												

SAMPLED BY: (please print) BRUCE HITCH

RELINQUISHED DATE / TIME:

SAMPLING / ANALYSIS COMMENTS

(1) Total and Dissolved LL 1638 Metals

*corrected per attached email from Emily. NSA 9/9/22

☐ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME	SIGNATURE	DATE
BRUCE HITCH		8.15.2022

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
	8.16.22 1129		1X 8.16.22 1010

For Official Lab Comments Only

RH 8.22.22

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22H0870

SHIPPING INFORMATION

Walk-In ☐
Courier ☐
FedEx ☑
UPS ☐
Other ☐

Cooler Present? Yes ☑ No ☐

Samples Received By: RH Date: 8·16·22

	Yes	No
Samples received on ice?	☑	☐
Samples received the same day collected?	☐	☑

Ice type? ☑ Wet ☐ Blue ☐ Other _____

melted

SAMPLE TEMPERATURES AT RECEIPT **Therm. ID (Circle one):** Therm-36 Therm-37 (Therm-59) Other: _____

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	7.8	-06	12.5	-11		-16	
-02	8.5	-07		-12		-17	
-03	9.2	-08		-13		-18	
-04	11.7	-09		-14		-19	
-05	13.9	-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: RH Date: 8·16·22

	Yes	No	NA
Custody seals present?	☐	☐	☑
Samples in proper containers?	☑	☐	
Sample containers damaged?	☐	☑	
Sufficient sample volume for indicated tests?	☑	☐	
Samples received within holding times?	☑	☐	
Are VOA vials free of headspace?	☐	☐	☑
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☑

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☑	☐	☐
Preserved in the lab?	☑	☐	☐

Lab Preservation Date & Time 8·16·22 1726

☐ H2SO4 (ID_____) ☑ HNO3 (ID 260800G) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☐
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☐
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☐
Are proper preservation lables present?	☑	☐	☐

By:_____ Meter ID:_____

Preservation checked at Lab? Date & Time RH 8·16·22 1736 KH 8·16·22 Test Strip (ID 2B240K 9) KH 8·16·22

Preservation and Preservation Checks performed by: RH

COMMENTS, DISCREPANCEIS, ANOMALIES

_____

_____

_____

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

August 29, 2022

CLS Work Order #: 22H1018
COC #:

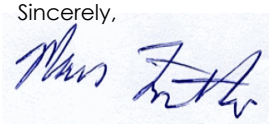
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 08/15/22 16:21. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

08/29/22 16:29

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1018
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-1-LL (22H1018-01) Surface Water	**Sampled: 08/15/22 10:00**		**Received: 08/15/22 16:21**							
Ammonia as N	**0.047**	0.025	0.10	mg/L	1	2207058	08/19/22	08/19/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**4.6**	0.50	5.0	"	"	2206991	08/17/22	08/17/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.38**	0.026	0.50	"	"	2206888	08/16/22	08/16/22	EPA 300.0	
Cyanide (total)	**0.0030**	0.0012	0.0050	"	"	2207073	08/19/22	08/19/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2206912	08/16/22	08/17/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2206991	08/17/22	08/17/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2206888	08/16/22	08/16/22	EPA 300.0	
Orthophosphate as PO4	**0.026**	0.0051	0.15	"	"	2206905	08/16/22	08/17/22	SM4500-P E	
Sulfate as SO4	**0.56**	0.038	0.50	"	"	2206888	08/16/22	08/16/22	EPA 300.0	
Total Alkalinity	**4.6**	1.0	5.0	"	"	2206991	08/17/22	08/17/22	SM2320B	
Total Dissolved Solids	**13**	5.0	10	"	"	2207040	08/18/22	08/19/22	SM2540C	
Total Hardness as CaCO3	**3.6**	0.19	1.0	"	"	2206966	08/17/22	08/18/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.24**	0.040	0.20	"	"	2207080	08/19/22	08/19/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.0**	0.54	1.0	"	"	2206999	08/18/22	08/19/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2207036	08/18/22	08/18/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2206986	08/17/22	08/19/22	SM2540D	
R-IS-1-LLB (22H1018-02) Surface Water	**Sampled: 08/15/22 10:20**		**Received: 08/15/22 16:21**							
Ammonia as N	**0.042**	0.025	0.10	mg/L	1	2207058	08/19/22	08/19/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**4.4**	0.50	5.0	"	"	2206991	08/17/22	08/17/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.38**	0.026	0.50	"	"	2206888	08/16/22	08/16/22	EPA 300.0	
Cyanide (total)	**0.0023**	0.0012	0.0050	"	"	2207073	08/19/22	08/19/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2206912	08/16/22	08/17/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2206991	08/17/22	08/17/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2206888	08/16/22	08/16/22	EPA 300.0	
Orthophosphate as PO4	**0.018**	0.0051	0.15	"	"	2206905	08/16/22	08/17/22	SM4500-P E	
Sulfate as SO4	**0.56**	0.038	0.50	"	"	2206888	08/16/22	08/16/22	EPA 300.0	

08/29/22 16:29

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1018
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-1-LLB (22H1018-02) Surface Water	**Sampled: 08/15/22 10:20**		**Received: 08/15/22 16:21**							
Total Alkalinity	**4.4**	1.0	5.0	mg/L	1	2206991	08/17/22	08/17/22	SM2320B	
Total Dissolved Solids	**11**	5.0	10	"	"	2207040	08/18/22	08/19/22	SM2540C	
Total Hardness as CaCO3	**3.9**	0.19	1.0	"	"	2206966	08/17/22	08/18/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.23**	0.040	0.20	"	"	2207080	08/19/22	08/19/22	SM4500-NH3F-2011	
Total Organic Carbon	**1.9**	0.54	1.0	"	"	2206999	08/18/22	08/19/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2207036	08/18/22	08/18/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2206986	08/17/22	08/19/22	SM2540D	
R-IS-2-LL (22H1018-03) Surface Water	**Sampled: 08/15/22 11:25**		**Received: 08/15/22 16:21**							
Ammonia as N	**0.045**	0.025	0.10	mg/L	1	2207058	08/19/22	08/19/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**4.8**	0.50	5.0	"	"	2206991	08/17/22	08/17/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.46**	0.026	0.50	"	"	2206888	08/16/22	08/16/22	EPA 300.0	
Cyanide (total)	**0.0026**	0.0012	0.0050	"	"	2207073	08/19/22	08/19/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2206912	08/16/22	08/17/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2206991	08/17/22	08/17/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2206888	08/16/22	08/16/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2206905	08/16/22	08/17/22	SM4500-P E	
Sulfate as SO4	**0.59**	0.038	0.50	"	"	2206888	08/16/22	08/16/22	EPA 300.0	
Total Alkalinity	**4.8**	1.0	5.0	"	"	2206991	08/17/22	08/17/22	SM2320B	
Total Dissolved Solids	**9.0**	5.0	10	"	"	2207040	08/18/22	08/19/22	SM2540C	
Total Hardness as CaCO3	**3.6**	0.19	1.0	"	"	2206966	08/17/22	08/18/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.23**	0.040	0.20	"	"	2207080	08/19/22	08/19/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.0**	0.54	1.0	"	"	2206999	08/18/22	08/19/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2207036	08/18/22	08/18/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2206986	08/17/22	08/19/22	SM2540D	

08/29/22 16:29

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1018
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-2-LLB (22H1018-04) Surface Water	**Sampled: 08/15/22 11:45**		**Received: 08/15/22 16:21**							
Ammonia as N	**0.034**	0.025	0.10	mg/L	1	2207058	08/19/22	08/19/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**4.6**	0.50	5.0	"	"	2206991	08/17/22	08/17/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.38**	0.026	0.50	"	"	2206888	08/16/22	08/16/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2207073	08/19/22	08/19/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2206912	08/16/22	08/17/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2206991	08/17/22	08/17/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2206888	08/16/22	08/16/22	EPA 300.0	
Orthophosphate as PO4	**0.0059**	0.0051	0.15	"	"	2206905	08/16/22	08/17/22	SM4500-P E	
Sulfate as SO4	**0.55**	0.038	0.50	"	"	2206888	08/16/22	08/16/22	EPA 300.0	
Total Alkalinity	**4.6**	1.0	5.0	"	"	2206991	08/17/22	08/17/22	SM2320B	
Total Dissolved Solids	**8.0**	5.0	10	"	"	2207040	08/18/22	08/19/22	SM2540C	
Total Hardness as CaCO3	**3.6**	0.19	1.0	"	"	2206966	08/17/22	08/18/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.22**	0.040	0.20	"	"	2207080	08/19/22	08/19/22	SM4500-NH3F-2011	
Total Organic Carbon	**1.9**	0.54	1.0	"	"	2206999	08/18/22	08/19/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2207036	08/18/22	08/18/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2206986	08/17/22	08/19/22	SM2540D	
R-IS-3-LL (22H1018-05) Surface Water	**Sampled: 08/15/22 12:30**		**Received: 08/15/22 16:21**							
Ammonia as N	**0.038**	0.025	0.10	mg/L	1	2207058	08/19/22	08/19/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**4.4**	0.50	5.0	"	"	2206991	08/17/22	08/17/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.38**	0.026	0.50	"	"	2206888	08/16/22	08/16/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2207073	08/19/22	08/19/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2206912	08/16/22	08/17/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2206991	08/17/22	08/17/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2206888	08/16/22	08/16/22	EPA 300.0	
Orthophosphate as PO4	**0.0099**	0.0051	0.15	"	"	2206905	08/16/22	08/17/22	SM4500-P E	
Sulfate as SO4	**0.58**	0.038	0.50	"	"	2206888	08/16/22	08/16/22	EPA 300.0	

08/29/22 16:29

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1018**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-3-LL (22H1018-05) Surface Water	**Sampled: 08/15/22 12:30**		**Received: 08/15/22 16:21**							
Total Alkalinity	**4.4**	1.0	5.0	mg/L	1	2206991	08/17/22	08/17/22	SM2320B	
Total Dissolved Solids	**12**	5.0	10	"	"	2207040	08/18/22	08/19/22	SM2540C	
Total Hardness as CaCO3	**3.5**	0.19	1.0	"	"	2206966	08/17/22	08/18/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.25**	0.040	0.20	"	"	2207080	08/19/22	08/19/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.0**	0.54	1.0	"	"	2206999	08/18/22	08/19/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2207036	08/18/22	08/18/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2206986	08/17/22	08/19/22	SM2540D	
R-IS-3-LLB (22H1018-06) Surface Water	**Sampled: 08/15/22 12:50**		**Received: 08/15/22 16:21**							
Ammonia as N	ND	0.025	0.10	mg/L	1	2207058	08/19/22	08/19/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**4.6**	0.50	5.0	"	"	2206991	08/17/22	08/17/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.38**	0.026	0.50	"	"	2206888	08/16/22	08/16/22	EPA 300.0	
Cyanide (total)	**0.0026**	0.0012	0.0050	"	"	2207073	08/19/22	08/19/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2206912	08/16/22	08/17/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2206991	08/17/22	08/17/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2206888	08/16/22	08/16/22	EPA 300.0	
Orthophosphate as PO4	**0.0059**	0.0051	0.15	"	"	2206905	08/16/22	08/17/22	SM4500-P E	
Sulfate as SO4	**0.58**	0.038	0.50	"	"	2206888	08/16/22	08/16/22	EPA 300.0	
Total Alkalinity	**4.6**	1.0	5.0	"	"	2206991	08/17/22	08/17/22	SM2320B	
Total Dissolved Solids	**9.0**	5.0	10	"	"	2207040	08/18/22	08/19/22	SM2540C	
Total Hardness as CaCO3	**3.4**	0.19	1.0	"	"	2206966	08/17/22	08/18/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.21**	0.040	0.20	"	"	2207080	08/19/22	08/19/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.2**	0.54	1.0	"	"	2206999	08/18/22	08/19/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2207036	08/18/22	08/18/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2206986	08/17/22	08/19/22	SM2540D	

08/29/22 16:29

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1018**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-1-LL (22H1018-01) Surface Water Sampled: 08/15/22 10:00 Received: 08/15/22 16:21										
Diesel	ND	0.0021	0.050	mg/L	1	2206933	08/16/22	08/17/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*123 %*	*65-135*		"	"	"	"	
R-IS-1-LLB (22H1018-02) Surface Water Sampled: 08/15/22 10:20 Received: 08/15/22 16:21										
Diesel	ND	0.0021	0.050	mg/L	1	2206933	08/16/22	08/17/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*94 %*	*65-135*		"	"	"	"	
R-IS-2-LL (22H1018-03) Surface Water Sampled: 08/15/22 11:25 Received: 08/15/22 16:21										
Diesel	ND	0.0021	0.050	mg/L	1	2206933	08/16/22	08/17/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*128 %*	*65-135*		"	"	"	"	
R-IS-2-LLB (22H1018-04) Surface Water Sampled: 08/15/22 11:45 Received: 08/15/22 16:21										
Diesel	ND	0.0021	0.050	mg/L	1	2206933	08/16/22	08/17/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1018**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-2-LLB (22H1018-04) Surface Water Sampled: 08/15/22 11:45 Received: 08/15/22 16:21										
Surrogate: o-Terphenyl			*116 %*	*65-135*		*2206933*	"	*08/17/22*	*EPA 8015M*	
R-IS-3-LL (22H1018-05) Surface Water Sampled: 08/15/22 12:30 Received: 08/15/22 16:21										
Diesel	ND	0.0021	0.050	mg/L	1	2206933	08/16/22	08/17/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*120 %*	*65-135*		*"*	"	*"*	*"*	
R-IS-3-LLB (22H1018-06) Surface Water Sampled: 08/15/22 12:50 Received: 08/15/22 16:21										
Diesel	ND	0.0021	0.050	mg/L	1	2206933	08/16/22	08/17/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*133 %*	*65-135*		*"*	"	*"*	*"*	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1018
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-1-LL (22H1018-01) Surface Water	**Sampled: 08/15/22 10:00**		**Received: 08/15/22 16:21**							
Aluminum	**28**	1.6	20	µg/L	1	2206962	08/17/22	08/18/22	EPA 200.8	
Barium	**3.3**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1200**	27	1000	"	"	2206966	08/17/22	08/18/22	EPA 200.7	
Iron	**23**	9.1	100	"	"	"	"	"	"	
Magnesium	**110**	21	1000	"	"	"	"	"	"	
Manganese	**2.7**	0.050	2.0	"	"	2206962	08/17/22	08/18/22	EPA 200.8	
Potassium	**850**	61	1000	"	"	2206966	08/17/22	08/19/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2206962	08/17/22	08/18/22	EPA 200.8	
Sodium	**810**	34	1000	"	"	2206966	08/17/22	08/18/22	EPA 200.7	
R-IS-1-LLB (22H1018-02) Surface Water	**Sampled: 08/15/22 10:20**		**Received: 08/15/22 16:21**							
Aluminum	**27**	1.6	20	µg/L	1	2206962	08/17/22	08/18/22	EPA 200.8	
Barium	**3.7**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1300**	27	1000	"	"	2206966	08/17/22	08/18/22	EPA 200.7	
Iron	**49**	9.1	100	"	"	"	"	"	"	
Magnesium	**120**	21	1000	"	"	"	"	"	"	
Manganese	**12**	0.050	2.0	"	"	2206962	08/17/22	08/18/22	EPA 200.8	
Potassium	**640**	61	1000	"	"	2206966	08/17/22	08/19/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2206962	08/17/22	08/18/22	EPA 200.8	
Sodium	**590**	34	1000	"	"	2206966	08/17/22	08/18/22	EPA 200.7	
R-IS-2-LL (22H1018-03) Surface Water	**Sampled: 08/15/22 11:25**		**Received: 08/15/22 16:21**							
Aluminum	**28**	1.6	20	µg/L	1	2206962	08/17/22	08/18/22	EPA 200.8	
Barium	**3.3**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1300**	27	1000	"	"	2206966	08/17/22	08/18/22	EPA 200.7	
Iron	**17**	9.1	100	"	"	"	"	"	"	
Magnesium	**120**	21	1000	"	"	"	"	"	"	
Manganese	**2.2**	0.050	2.0	"	"	2206962	08/17/22	08/18/22	EPA 200.8	
Potassium	**700**	61	1000	"	"	2206966	08/17/22	08/19/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2206962	08/17/22	08/18/22	EPA 200.8	
Sodium	**530**	34	1000	"	"	2206966	08/17/22	08/18/22	EPA 200.7	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1018
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-2-LLB (22H1018-04) Surface Water	**Sampled: 08/15/22 11:45**		**Received: 08/15/22 16:21**							
Aluminum	**22**	1.6	20	µg/L	1	2206962	08/17/22	08/18/22	EPA 200.8	
Barium	**3.4**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1200**	27	1000	"	"	2206966	08/17/22	08/18/22	EPA 200.7	
Iron	**22**	9.1	100	"	"	"	"	"	"	
Magnesium	**110**	21	1000	"	"	"	"	"	"	
Manganese	**7.0**	0.050	2.0	"	"	2206962	08/17/22	08/18/22	EPA 200.8	
Potassium	**600**	61	1000	"	"	2206966	08/17/22	08/19/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2206962	08/17/22	08/18/22	EPA 200.8	
Sodium	**700**	34	1000	"	"	2206966	08/17/22	08/18/22	EPA 200.7	
R-IS-3-LL (22H1018-05) Surface Water	**Sampled: 08/15/22 12:30**		**Received: 08/15/22 16:21**							
Aluminum	**27**	1.6	20	µg/L	1	2206962	08/17/22	08/18/22	EPA 200.8	
Barium	**3.2**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1200**	27	1000	"	"	2206966	08/17/22	08/18/22	EPA 200.7	
Iron	**17**	9.1	100	"	"	"	"	"	"	
Magnesium	**110**	21	1000	"	"	"	"	"	"	
Manganese	**2.3**	0.050	2.0	"	"	2206962	08/17/22	08/18/22	EPA 200.8	
Potassium	**550**	61	1000	"	"	2206966	08/17/22	08/19/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2206962	08/17/22	08/18/22	EPA 200.8	
Sodium	**520**	34	1000	"	"	2206966	08/17/22	08/18/22	EPA 200.7	
R-IS-3-LLB (22H1018-06) Surface Water	**Sampled: 08/15/22 12:50**		**Received: 08/15/22 16:21**							
Aluminum	**27**	1.6	20	µg/L	1	2206962	08/17/22	08/18/22	EPA 200.8	
Barium	**3.0**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1200**	27	1000	"	"	2206966	08/17/22	08/18/22	EPA 200.7	
Iron	**18**	9.1	100	"	"	"	"	"	"	
Magnesium	**110**	21	1000	"	"	"	"	"	"	
Manganese	**2.4**	0.050	2.0	"	"	2206962	08/17/22	08/18/22	EPA 200.8	
Potassium	**640**	61	1000	"	"	2206966	08/17/22	08/19/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2206962	08/17/22	08/18/22	EPA 200.8	
Sodium	**480**	34	1000	"	"	2206966	08/17/22	08/18/22	EPA 200.7	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1018
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-1-LL (22H1018-01) Surface Water	**Sampled: 08/15/22 10:00**		**Received: 08/15/22 16:21**							
Aluminum	**6.9**	0.52	20	µg/L	1	2207138	08/22/22	08/22/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2207133	08/22/22	08/22/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207138	08/22/22	08/23/22	EPA 200.8	
R-IS-1-LLB (22H1018-02) Surface Water	**Sampled: 08/15/22 10:20**		**Received: 08/15/22 16:21**							
Aluminum	**3.6**	0.52	20	µg/L	1	2207138	08/22/22	08/22/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2207133	08/22/22	08/22/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207138	08/22/22	08/22/22	EPA 200.8	
R-IS-2-LL (22H1018-03) Surface Water	**Sampled: 08/15/22 11:25**		**Received: 08/15/22 16:21**							
Aluminum	**9.0**	0.52	20	µg/L	1	2207138	08/22/22	08/22/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2207133	08/22/22	08/22/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207138	08/22/22	08/22/22	EPA 200.8	
R-IS-2-LLB (22H1018-04) Surface Water	**Sampled: 08/15/22 11:45**		**Received: 08/15/22 16:21**							
Aluminum	**4.0**	0.52	20	µg/L	1	2207138	08/22/22	08/22/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2207133	08/22/22	08/22/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207138	08/22/22	08/22/22	EPA 200.8	
R-IS-3-LL (22H1018-05) Surface Water	**Sampled: 08/15/22 12:30**		**Received: 08/15/22 16:21**							
Aluminum	**8.2**	0.52	20	µg/L	1	2207138	08/22/22	08/22/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2207133	08/22/22	08/22/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207138	08/22/22	08/22/22	EPA 200.8	
R-IS-3-LLB (22H1018-06) Surface Water	**Sampled: 08/15/22 12:50**		**Received: 08/15/22 16:21**							
Aluminum	**6.8**	0.52	20	µg/L	1	2207138	08/22/22	08/22/22	EPA 200.8	
Iron	**10**	6.8	100	"	"	2207133	08/22/22	08/22/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207138	08/22/22	08/22/22	EPA 200.8	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1018
COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-1-LL (22H1018-01) Surface Water Sampled: 08/15/22 10:00 Received: 08/15/22 16:21										
Gasoline	ND	10	50	µg/L	1	2207021	08/17/22	08/17/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*88 %*		*65-135*		"	"	"	"
R-IS-1-LLB (22H1018-02) Surface Water Sampled: 08/15/22 10:20 Received: 08/15/22 16:21										
Gasoline	ND	10	50	µg/L	1	2207021	08/17/22	08/17/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*90 %*		*65-135*		"	"	"	"
R-IS-2-LL (22H1018-03) Surface Water Sampled: 08/15/22 11:25 Received: 08/15/22 16:21										
Gasoline	ND	10	50	µg/L	1	2207021	08/17/22	08/17/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*89 %*		*65-135*		"	"	"	"
R-IS-2-LLB (22H1018-04) Surface Water Sampled: 08/15/22 11:45 Received: 08/15/22 16:21										
Gasoline	ND	10	50	µg/L	1	2207021	08/17/22	08/17/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*87 %*		*65-135*		"	"	"	"
R-IS-3-LL (22H1018-05) Surface Water Sampled: 08/15/22 12:30 Received: 08/15/22 16:21										
Gasoline	ND	10	50	µg/L	1	2207021	08/17/22	08/17/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*93 %*		*65-135*		"	"	"	"
R-IS-3-LLB (22H1018-06) Surface Water Sampled: 08/15/22 12:50 Received: 08/15/22 16:21										
Gasoline	ND	10	50	µg/L	1	2207021	08/17/22	08/17/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*89 %*		*65-135*		"	"	"	"

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1018**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-1-LL (22H1018-01) Surface Water	**Sampled: 08/15/22 10:00**		**Received: 08/15/22 16:21**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207055	08/18/22	08/18/22	EPA 8260B	
Surrogate: Toluene-d8			*90 %*	*72-125*		"	"	"	"	
R-IS-1-LLB (22H1018-02) Surface Water	**Sampled: 08/15/22 10:20**		**Received: 08/15/22 16:21**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207055	08/18/22	08/18/22	EPA 8260B	
Surrogate: Toluene-d8			*89 %*	*72-125*		"	"	"	"	
R-IS-2-LL (22H1018-03) Surface Water	**Sampled: 08/15/22 11:25**		**Received: 08/15/22 16:21**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207055	08/18/22	08/18/22	EPA 8260B	
Surrogate: Toluene-d8			*88 %*	*72-125*		"	"	"	"	
R-IS-2-LLB (22H1018-04) Surface Water	**Sampled: 08/15/22 11:45**		**Received: 08/15/22 16:21**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207055	08/18/22	08/18/22	EPA 8260B	
Surrogate: Toluene-d8			*88 %*	*72-125*		"	"	"	"	
R-IS-3-LL (22H1018-05) Surface Water	**Sampled: 08/15/22 12:30**		**Received: 08/15/22 16:21**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207055	08/18/22	08/18/22	EPA 8260B	
Surrogate: Toluene-d8			*89 %*	*72-125*		"	"	"	"	
R-IS-3-LLB (22H1018-06) Surface Water	**Sampled: 08/15/22 12:50**		**Received: 08/15/22 16:21**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207055	08/18/22	08/18/22	EPA 8260B	
Surrogate: Toluene-d8			*86 %*	*72-125*		"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1018**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206888 - General Preparation											
Blank (2206888-BLK1)					Prepared & Analyzed: 08/16/22						
Sulfate as SO4	ND	0.038	0.50	mg/L							
Chloride	0.272	0.026	0.50	"							
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2206888-BS1)					Prepared & Analyzed: 08/16/22						
Sulfate as SO4	4.60	0.038	0.50	mg/L	5.00		92	80-120			
Chloride	4.51	0.026	0.50	"	5.00		90	80-120			
Nitrate/Nitrite as N	3.84	0.055	0.40	"	4.00		96	80-120			
LCS Dup (2206888-BSD1)					Prepared & Analyzed: 08/16/22						
Sulfate as SO4	4.58	0.038	0.50	mg/L	5.00		92	80-120	0.3	20	
Chloride	4.51	0.026	0.50	"	5.00		90	80-120	0.01	20	
Nitrate/Nitrite as N	3.80	0.055	0.40	"	4.00		95	80-120	1	20	
Matrix Spike (2206888-MS1)			**Source: 22H1018-01**		Prepared & Analyzed: 08/16/22						
Chloride	4.65	0.026	0.50	mg/L	5.00	0.377	86	80-120			
Sulfate as SO4	5.16	0.038	0.50	"	5.00	0.558	92	80-120			
Nitrate/Nitrite as N	3.80	0.055	0.40	"	4.00	ND	95	80-120			
Matrix Spike Dup (2206888-MSD1)			**Source: 22H1018-01**		Prepared & Analyzed: 08/16/22						
Sulfate as SO4	5.16	0.038	0.50	mg/L	5.00	0.558	92	80-120	0.07	20	
Chloride	4.66	0.026	0.50	"	5.00	0.377	86	80-120	0.2	20	
Nitrate/Nitrite as N	3.80	0.055	0.40	"	4.00	ND	95	80-120	0.1	20	
Batch 2206905 - General Preparation											
Blank (2206905-BLK1)					Prepared: 08/16/22 Analyzed: 08/17/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1018**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206905 - General Preparation											
LCS (2206905-BS1)					Prepared: 08/16/22 Analyzed: 08/17/22						
Orthophosphate as PO4	0.917	0.0051	0.15	mg/L	0.918		100	80-120			
LCS Dup (2206905-BSD1)					Prepared: 08/16/22 Analyzed: 08/17/22						
Orthophosphate as PO4	0.938	0.0051	0.15	mg/L	0.918		102	80-120	2	20	
Matrix Spike (2206905-MS1)			**Source: 22H0989-01**		Prepared: 08/16/22 Analyzed: 08/17/22						
Orthophosphate as PO4	1.70	0.0051	0.15	mg/L	0.918	0.892	88	75-125			
Matrix Spike Dup (2206905-MSD1)			**Source: 22H0989-01**		Prepared: 08/16/22 Analyzed: 08/17/22						
Orthophosphate as PO4	1.70	0.0051	0.15	mg/L	0.918	0.892	89	75-125	0.2	25	
Batch 2206912 - Solvent Extract											
Blank (2206912-BLK1)					Prepared: 08/16/22 Analyzed: 08/17/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2206912-BS1)					Prepared: 08/16/22 Analyzed: 08/17/22						
Hexane Extractable Material (HEM, Oil & Grease)	38.2	1.0	5.0	mg/L	40.0		96	78-114			
LCS Dup (2206912-BSD1)					Prepared: 08/16/22 Analyzed: 08/17/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.2	1.0	5.0	mg/L	40.0		98	78-114	3	18	
Batch 2206966 - EPA 200 Series											
Blank (2206966-BLK1)					Prepared: 08/17/22 Analyzed: 08/18/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							

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2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1018
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206966 - EPA 200 Series											
LCS (2206966-BS1)					Prepared: 08/17/22 Analyzed: 08/18/22						
Total Hardness as CaCO3	32.7	0.19	1.0	mg/L	33.1		99	85-115			
Matrix Spike (2206966-MS1)			**Source: 22H1018-06**		Prepared: 08/17/22 Analyzed: 08/18/22						
Total Hardness as CaCO3	34.8	0.19	1.0	mg/L	33.1	3.41	95	70-130			
Matrix Spike (2206966-MS2)			**Source: 22H1033-01**		Prepared: 08/17/22 Analyzed: 08/19/22						
Total Hardness as CaCO3	327	0.19	1.0	mg/L	33.1	296	94	70-130			
Batch 2206986 - General Preparation											
Blank (2206986-BLK1)					Prepared: 08/17/22 Analyzed: 08/19/22						
Total Suspended Solids	ND	2.0	5.0	mg/L							
Duplicate (2206986-DUP1)			**Source: 22H0950-01**		Prepared: 08/17/22 Analyzed: 08/19/22						
Total Suspended Solids	2.29	2.0	5.0	mg/L		2.00			14	20	
Batch 2206991 - General Preparation											
Blank (2206991-BLK1)					Prepared & Analyzed: 08/17/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Duplicate (2206991-DUP1)			**Source: 22H0920-02**		Prepared & Analyzed: 08/17/22						
Total Alkalinity	8.00	1.0	5.0	mg/L		8.00			0	20	
Bicarbonate as CaCO3	8.00	0.50	5.0	"		8.00			0	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	

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COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206999 - General Prep											
Blank (2206999-BLK1)					Prepared: 08/18/22 Analyzed: 08/19/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							
LCS (2206999-BS1)					Prepared: 08/18/22 Analyzed: 08/19/22						
Total Organic Carbon	11.2	0.54	1.0	mg/L	10.0		112	75-125			
LCS Dup (2206999-BSD1)					Prepared: 08/18/22 Analyzed: 08/19/22						
Total Organic Carbon	10.9	0.54	1.0	mg/L	10.0		109	75-125	3	25	
Matrix Spike (2206999-MS1)			**Source: 22H1018-01**		Prepared: 08/18/22 Analyzed: 08/19/22						
Total Organic Carbon	12.6	0.54	1.0	mg/L	10.0	1.98	106	75-125			
Matrix Spike Dup (2206999-MSD1)			**Source: 22H1018-01**		Prepared: 08/18/22 Analyzed: 08/19/22						
Total Organic Carbon	12.6	0.54	1.0	mg/L	10.0	1.98	106	75-125	0	25	
Batch 2207036 - General Preparation											
Blank (2207036-BLK1)					Prepared & Analyzed: 08/18/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2207036-BS1)					Prepared & Analyzed: 08/18/22						
Total Phosphorus as P	0.313	0.023	0.050	mg/L	0.300		104	80-120			
LCS Dup (2207036-BSD1)					Prepared & Analyzed: 08/18/22						
Total Phosphorus as P	0.303	0.023	0.050	mg/L	0.300		101	80-120	3	25	
Matrix Spike (2207036-MS1)			**Source: 22H1018-01**		Prepared & Analyzed: 08/18/22						
Total Phosphorus as P	0.324	0.023	0.050	mg/L	0.300	ND	108	75-125			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207036 - General Preparation											
Matrix Spike Dup (2207036-MSD1)			**Source: 22H1018-01**		Prepared & Analyzed: 08/18/22						
Total Phosphorus as P	0.328	0.023	0.050	mg/L	0.300	ND	109	75-125	1	30	
Batch 2207040 - General Preparation											
Blank (2207040-BLK1)					Prepared: 08/18/22 Analyzed: 08/19/22						
Total Dissolved Solids	ND	5.0	10	mg/L							
Duplicate (2207040-DUP1)			**Source: 22H1018-01**		Prepared: 08/18/22 Analyzed: 08/19/22						
Total Dissolved Solids	10.0	5.0	10	mg/L		13.0			26	20	QD-5X
Batch 2207058 - General Preparation											
Blank (2207058-BLK1)					Prepared & Analyzed: 08/19/22						
Ammonia as N	ND	0.025	0.10	mg/L							
LCS (2207058-BS1)					Prepared & Analyzed: 08/19/22						
Ammonia as N	0.490	0.025	0.10	mg/L	0.500		98	80-120			
LCS Dup (2207058-BSD1)					Prepared & Analyzed: 08/19/22						
Ammonia as N	0.441	0.025	0.10	mg/L	0.500		88	80-120	11	25	
Matrix Spike (2207058-MS1)			**Source: 22H1195-05**		Prepared & Analyzed: 08/19/22						
Ammonia as N	0.653	0.025	0.10	mg/L	0.500	0.174	96	75-125			
Matrix Spike Dup (2207058-MSD1)			**Source: 22H1195-05**		Prepared & Analyzed: 08/19/22						
Ammonia as N	0.627	0.025	0.10	mg/L	0.500	0.174	91	75-125	4	25	

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22H1018
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207073 - General Prep											
Blank (2207073-BLK1)					Prepared & Analyzed: 08/19/22						
Cyanide (total)	ND	0.0012	0.0050	mg/L							
LCS (2207073-BS1)					Prepared & Analyzed: 08/19/22						
Cyanide (total)	0.0787	0.0012	0.0050	mg/L	0.100		79	75-125			
LCS Dup (2207073-BSD1)					Prepared & Analyzed: 08/19/22						
Cyanide (total)	0.0836	0.0012	0.0050	mg/L	0.100		84	75-125	6	25	
Matrix Spike (2207073-MS1)			**Source: 22H1018-01**		Prepared & Analyzed: 08/19/22						
Cyanide (total)	0.0865	0.0012	0.0050	mg/L	0.100	0.00300	84	75-125			
Matrix Spike Dup (2207073-MSD1)			**Source: 22H1018-01**		Prepared & Analyzed: 08/19/22						
Cyanide (total)	0.0854	0.0012	0.0050	mg/L	0.100	0.00300	82	75-125	1	25	
Batch 2207080 - General Preparation											
Blank (2207080-BLK1)					Prepared & Analyzed: 08/19/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2207080-BS1)					Prepared & Analyzed: 08/19/22						
Total Kjeldahl Nitrogen	0.490	0.040	0.20	mg/L	0.500		98	80-120			
LCS Dup (2207080-BSD1)					Prepared & Analyzed: 08/19/22						
Total Kjeldahl Nitrogen	0.500	0.040	0.20	mg/L	0.500		100	80-120	2	20	
Matrix Spike (2207080-MS1)			**Source: 22H1163-02**		Prepared & Analyzed: 08/19/22						
Total Kjeldahl Nitrogen	3.75	0.20	1.0	mg/L	2.50	2.66	43	75-125			QM-7

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207080 - General Preparation											
Matrix Spike Dup (2207080-MSD1)			**Source: 22H1163-02**		Prepared & Analyzed: 08/19/22						
Total Kjeldahl Nitrogen	3.61	0.20	1.0	mg/L	2.50	2.66	38	75-125	4	25	QM-7

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1018**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206933 - EPA 3510B GCNV											
Blank (2206933-BLK1)					Prepared: 08/16/22 Analyzed: 08/17/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Surrogate: o-Terphenyl	*0.0278*			*"*	*0.0250*		*111*	*65-135*			
LCS (2206933-BS1)					Prepared: 08/16/22 Analyzed: 08/17/22						
Diesel	2.10	0.0021	0.050	mg/L	2.50		84	65-135			
Surrogate: o-Terphenyl	*0.0255*			*"*	*0.0250*		*102*	*65-135*			
LCS Dup (2206933-BSD1)					Prepared: 08/16/22 Analyzed: 08/17/22						
Diesel	2.09	0.0021	0.050	mg/L	2.50		84	65-135	0.2	30	
Surrogate: o-Terphenyl	*0.0234*			*"*	*0.0250*		*93*	*65-135*			
Matrix Spike (2206933-MS1)			**Source: 22H0988-04**		Prepared: 08/16/22 Analyzed: 08/17/22						
Diesel	2.43	0.0021	0.050	mg/L	2.50	ND	97	46-137			
Surrogate: o-Terphenyl	*0.0244*			*"*	*0.0250*		*98*	*65-135*			
Matrix Spike Dup (2206933-MSD1)			**Source: 22H0988-04**		Prepared: 08/16/22 Analyzed: 08/17/22						
Diesel	1.75	0.0021	0.050	mg/L	2.50	ND	70	46-137	33	30	QR-1
Surrogate: o-Terphenyl	*0.0230*			*"*	*0.0250*		*92*	*65-135*			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206962 - EPA 200 Series											
Blank (2206962-BLK1)					Prepared: 08/17/22 Analyzed: 08/18/22						
Aluminum	3.26	1.6	20	µg/L							
Antimony	ND	0.34	6.0	"							
Arsenic	ND	0.45	2.0	"							
Barium	ND	0.14	5.0	"							
Cadmium	ND	0.17	0.50	"							
Chromium	ND	0.14	1.0	"							
Copper	ND	0.090	2.0	"							
Lead	0.0500	0.020	5.0	"							
Manganese	0.104	0.050	2.0	"							
Nickel	ND	0.13	2.0	"							
Selenium	ND	0.75	5.0	"							
Silver	ND	0.070	0.50	"							
Thallium	0.0930	0.030	1.0	"							
LCS (2206962-BS1)					Prepared: 08/17/22 Analyzed: 08/18/22						
Aluminum	513	1.6	20	µg/L	500		103	85-115			
Antimony	103	0.34	6.0	"	100		103	85-115			
Arsenic	105	0.45	2.0	"	100		105	85-115			
Barium	107	0.14	5.0	"	100		107	85-115			
Cadmium	105	0.17	0.50	"	100		105	85-115			
Chromium	105	0.14	1.0	"	100		105	85-115			
Copper	104	0.090	2.0	"	100		104	85-115			
Lead	98.9	0.020	5.0	"	100		99	85-115			
Manganese	106	0.050	2.0	"	100		106	85-115			
Nickel	104	0.13	2.0	"	100		104	85-115			
Selenium	106	0.75	5.0	"	100		106	85-115			
Silver	100	0.070	0.50	"	100		100	85-115			
Thallium	102	0.030	1.0	"	100		102	85-115			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1018**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206962 - EPA 200 Series											
Matrix Spike (2206962-MS1)			**Source: 22H1049-01**		Prepared: 08/17/22	Analyzed: 08/18/22					
Aluminum	516	1.6	20	µg/L	500	6.39	102	70-130			
Antimony	103	0.34	6.0	"	100	ND	103	70-130			
Arsenic	96.7	0.45	2.0	"	100	0.483	96	70-130			
Barium	643	0.14	5.0	"	100	533	110	70-130			
Cadmium	102	0.17	0.50	"	100	ND	102	70-130			
Chromium	95.8	0.14	1.0	"	100	0.194	96	70-130			
Copper	101	0.090	2.0	"	100	6.89	94	70-130			
Lead	101	0.020	5.0	"	100	0.801	100	70-130			
Manganese	468	0.050	2.0	"	100	382	86	70-130			
Nickel	93.9	0.13	2.0	"	100	0.576	93	70-130			
Selenium	95.9	0.75	5.0	"	100	ND	96	70-130			
Silver	97.2	0.070	0.50	"	100	ND	97	70-130			
Thallium	104	0.030	1.0	"	100	ND	104	70-130			
Matrix Spike (2206962-MS2)			**Source: 22H1055-01**		Prepared: 08/17/22	Analyzed: 08/18/22					
Aluminum	497	1.6	20	µg/L	500	ND	99	70-130			
Antimony	101	0.34	6.0	"	100	ND	101	70-130			
Arsenic	95.1	0.45	2.0	"	100	ND	95	70-130			
Barium	166	0.14	5.0	"	100	57.1	108	70-130			
Cadmium	101	0.17	0.50	"	100	ND	101	70-130			
Chromium	94.4	0.14	1.0	"	100	0.991	93	70-130			
Copper	93.5	0.090	2.0	"	100	0.224	93	70-130			
Lead	97.9	0.020	5.0	"	100	ND	98	70-130			
Manganese	96.2	0.050	2.0	"	100	0.347	96	70-130			
Nickel	92.7	0.13	2.0	"	100	0.280	92	70-130			
Selenium	97.4	0.75	5.0	"	100	ND	97	70-130			
Silver	97.3	0.070	0.50	"	100	ND	97	70-130			
Thallium	102	0.030	1.0	"	100	ND	102	70-130			

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22H1018
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206966 - EPA 200 Series											
Blank (2206966-BLK1)					Prepared: 08/17/22 Analyzed: 08/18/22						
Beryllium	0.353	0.29	5.0	µg/L							
Calcium	ND	27	1000	"							
Iron	ND	9.1	100	"							
Magnesium	ND	21	1000	"							
Potassium	544	61	1000	"							
Sodium	ND	34	1000	"							
Zinc	ND	1.7	20	"							
LCS (2206966-BS1)					Prepared: 08/17/22 Analyzed: 08/18/22						
Beryllium	526	0.29	5.0	µg/L	500		105	85-115			
Calcium	4940	27	1000	"	5000		99	85-115			
Iron	517	9.1	100	"	500		103	85-115			
Magnesium	4940	21	1000	"	5000		99	85-115			
Potassium	5360	61	1000	"	5000		107	85-115			
Sodium	4900	34	1000	"	5000		98	85-115			
Zinc	518	1.7	20	"	500		104	85-115			
Matrix Spike (2206966-MS1)				**Source: 22H1018-06**	Prepared: 08/17/22 Analyzed: 08/18/22						
Beryllium	515	0.29	5.0	µg/L	500	ND	103	70-130			
Calcium	5960	27	1000	"	5000	1180	96	70-130			
Iron	511	9.1	100	"	500	18.2	98	70-130			
Magnesium	4840	21	1000	"	5000	110	95	70-130			
Potassium	5420	61	1000	"	5000	639	96	70-130			
Sodium	5280	34	1000	"	5000	480	96	70-130			
Zinc	493	1.7	20	"	500	ND	99	70-130			
Matrix Spike (2206966-MS2)				**Source: 22H1033-01**	Prepared: 08/17/22 Analyzed: 08/19/22						
Beryllium	555	0.29	5.0	µg/L	500	ND	111	70-130			
Calcium	90000	27	1000	"	5000	85600	88	70-130			
Iron	538	9.1	100	"	500	11.0	105	70-130			
Magnesium	24600	21	1000	"	5000	19800	97	70-130			
Potassium	83600	61	1000	"	5000	78400	105	70-130			
Sodium	143000	34	1000	"	5000	146000	NR	70-130			QM-7

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206966 - EPA 200 Series											
Matrix Spike (2206966-MS2)			**Source: 22H1033-01**		Prepared: 08/17/22	Analyzed: 08/18/22					
Zinc	33.8	1.7	20	µg/L	500	34.2	NR	70-130			QM-7

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207133 - EPA 200 Series											
Blank (2207133-BLK1)					Prepared & Analyzed: 08/22/22						
Iron	ND	6.8	100	µg/L							
LCS (2207133-BS1)					Prepared & Analyzed: 08/22/22						
Iron	466	6.8	100	µg/L	500		93	85-115			
Matrix Spike (2207133-MS1)			**Source: 22H0933-01**		Prepared & Analyzed: 08/22/22						
Iron	454	6.8	100	µg/L	500	ND	91	70-130			
Matrix Spike (2207133-MS2)			**Source: 22H1160-01**		Prepared & Analyzed: 08/22/22						
Iron	497	6.8	100	µg/L	500	42.5	91	70-130			
Batch 2207138 - EPA 200 No Digestion											
Blank (2207138-BLK1)					Prepared & Analyzed: 08/22/22						
Aluminum	ND	0.52	20	µg/L							
Silver	ND	0.15	0.50	"							
LCS (2207138-BS1)					Prepared & Analyzed: 08/22/22						
Aluminum	486	0.52	20	µg/L	500		97	85-115			
Silver	90.3	0.15	0.50	"	100		90	85-115			
Matrix Spike (2207138-MS1)			**Source: 22H0697-01**		Prepared & Analyzed: 08/22/22						
Aluminum	474	0.52	20	µg/L	500	0.787	95	70-130			
Silver	32.9	0.15	0.50	"	100	ND	33	70-130			QM-7

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207021 - EPA 5030 Water GC											
Blank (2207021-BLK1)					Prepared & Analyzed: 08/17/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*17.3*			"	*20.0*		*86*	*65-135*			
LCS (2207021-BS1)					Prepared & Analyzed: 08/17/22						
Gasoline	496	10	50	µg/L	500		99	70-130			
Surrogate: o-Chlorotoluene (Gas)	*19.0*			"	*20.0*		*95*	*65-135*			
LCS Dup (2207021-BSD1)					Prepared & Analyzed: 08/17/22						
Gasoline	511	10	50	µg/L	500		102	70-130	3	30	
Surrogate: o-Chlorotoluene (Gas)	*19.1*			"	*20.0*		*95*	*65-135*			
Matrix Spike (2207021-MS1)			**Source: 22H1018-06**		Prepared & Analyzed: 08/17/22						
Gasoline	645	10	50	µg/L	500	ND	129	68-132			
Surrogate: o-Chlorotoluene (Gas)	*19.3*			"	*20.0*		*96*	*65-135*			
Matrix Spike Dup (2207021-MSD1)			**Source: 22H1018-06**		Prepared & Analyzed: 08/17/22						
Gasoline	645	10	50	µg/L	500	ND	129	68-132	0.07	32	
Surrogate: o-Chlorotoluene (Gas)	*18.4*			"	*20.0*		*92*	*65-135*			

08/29/22 16:29

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1018
COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207055 - EPA 3510B GCMS											
Blank (2207055-BLK1)					Prepared & Analyzed: 08/18/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Surrogate: Toluene-d8	*8.93*			"	*10.0*		*89*	*72-125*			
LCS (2207055-BS1)					Prepared & Analyzed: 08/18/22						
Methyl tert-butyl ether	19.2	0.095	0.50	µg/L	20.0		96	52-130			
Surrogate: Toluene-d8	*11.6*			"	*10.0*		*116*	*72-125*			
LCS Dup (2207055-BSD1)					Prepared & Analyzed: 08/18/22						
Methyl tert-butyl ether	21.4	0.095	0.50	µg/L	20.0		107	52-130	11	30	
Surrogate: Toluene-d8	*11.2*			"	*10.0*		*112*	*72-125*			
Matrix Spike (2207055-MS1)			**Source: 22H1018-04**		Prepared & Analyzed: 08/18/22						
Methyl tert-butyl ether	21.3	0.095	0.50	µg/L	20.0	ND	106	52-140			
Surrogate: Toluene-d8	*12.0*			"	*10.0*		*120*	*72-125*			
Matrix Spike Dup (2207055-MSD1)			**Source: 22H1018-04**		Prepared & Analyzed: 08/18/22						
Methyl tert-butyl ether	21.2	0.095	0.50	µg/L	20.0	ND	106	52-140	0.5	30	
Surrogate: Toluene-d8	*11.3*			"	*10.0*		*113*	*72-125*			

08/29/22 16:29

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1018**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QR-1	The RPD value for the sample duplicate or MS/MSD was outside of the QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery.
QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
QD-5X	The RPD was outside of the QC acceptance limit for the Duplicate due to that the analyte concentration is less than 5 times of the reporting limit. No correction action is needed.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22H1078 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[X] **CLS** (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [X] NO

GLOBAL ID

FIELD CONDITIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	CONTAINER MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	TSS, TDS, Hardness, Alkalinity, NO2-N+NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
8.15	10:00	R-IS-1-LL		Surface water	12		6	X	X	X	X	X	X	X				X	
8.15	10:20	R-IS-1-LLB		Surface water			6	X	X	X	X	X	X	X				X	
8.15	11:25	R-IS-2-LL		Surface water			6	X	X	X	X	X	X	X				X	
8.15	11:45	R-IS-2-LLB		Surface water			6	X	X	X	X	X	X	X				X	
8.15	12:30	R-IS-3-LL		Surface water			6	X	X	X	X	X	X	X				X	
8.15	12:50	R-IS-3-LLB		Surface water			6	X	X	X	X	X	X	X				X	
				Surface water			6											X	INVOICE TO:
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	**Project No. 750.10 Task 0620.01**
				Surface water			6											X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
[signature]	STILLWATER SCIENCES	8.15 16:21		

RECEIVED AT LAB BY: [signature] **DATE/TIME:** 08/15/22 1621 **CONDITIONS/COMMENTS:** 13.2/15.0

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER _____ **AIR BILL #** _____

basic laboratory

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fax 530.894.5143

Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02 UARP

Lab No: 22H1028
Reported: 09/09/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22H1028, received on 08/18/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: R IS-5-UVR
Matrix / Type: Surface Water (Grab)
Lab ID: 22H1028-01
Sampled: 08/17/22 11:25
Received: 08/18/22 13:01

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.19		0.04	0.10	"	"	"	"
Lead	"	0.008	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.27	J	0.22	0.50	EPA 1631E	08/28/22	08/28/22	B2H1609 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	09/02/22	09/01/22	B2I0844 / EDM
Nickel	ug/l	0.09	J	0.02	0.10	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/25/22	08/24/22	B2H1419 / BDL
Zinc	"	0.16	J	0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/31/22	08/31/22	B2H1670 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.17		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.08	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/25/22	08/25/22	B2H1535 / BDL
Zinc	"	0.21	J	0.12	0.50	EPA 1638	08/31/22	08/31/22	B2H1670 / EDM

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Analytical Report

Description: R IS-5-UVR B
Matrix / Type: Surface Water (Grab)
Lab ID: 22H1028-02
Sampled: 08/17/22 11:45
Received: 08/18/22 13:01

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.12		0.04	0.10	"	"	"	"
Lead	"	0.014	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.32	J	0.22	0.50	EPA 1631E	08/28/22	08/28/22	B2H1609 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	09/02/22	09/01/22	B2I0844 / EDM
Nickel	ug/l	0.08	J	0.02	0.10	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/25/22	08/24/22	B2H1419 / BDL
Zinc	"	1.49		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/31/22	08/31/22	B2H1670 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.12		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.09	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/25/22	08/25/22	B2H1535 / BDL
Zinc	"	1.30		0.12	0.50	EPA 1638	08/31/22	08/31/22	B2H1670 / EDM

basic laboratory

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Analytical Report

Description: R IS-7-UVR B
Matrix / Type: Surface Water (Grab)
Lab ID: 22H1028-03
Sampled: 08/17/22 12:30
Received: 08/18/22 13:01

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.20		0.04	0.10	"	"	"	"
Lead	"	0.008	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.29	J	0.22	0.50	EPA 1631E	08/28/22	08/28/22	B2H1609 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	09/02/22	09/01/22	B2I0844 / EDM
Nickel	ug/l	0.11		0.02	0.10	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/25/22	08/24/22	B2H1419 / BDL
Zinc	"	0.70		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/31/22	08/31/22	B2H1670 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.17		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.09	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/25/22	08/25/22	B2H1535 / BDL
Zinc	"	0.21	J	0.12	0.50	EPA 1638	08/31/22	08/31/22	B2H1670 / EDM

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Analytical Report

Description: R IS-7-UVR B
Matrix / Type: Surface Water (Grab)
Lab ID: 22H1028-04
Sampled: 08/17/22 12:45
Received: 08/18/22 13:01

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.16		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Mercury	ng/l	0.85		0.22	0.50	EPA 1631E	08/28/22	08/28/22	B2H1609 / DJC
Methyl Mercury as Mercury	"	0.041	J	0.017	0.050	EPA 1630	09/02/22	09/01/22	B2I0844 / EDM
Nickel	ug/l	0.10		0.02	0.10	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/25/22	08/24/22	B2H1419 / BDL
Zinc	"	0.76		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/31/22	08/31/22	B2H1670 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.22		0.04	0.10	"	"	"	"
Lead	"	0.030	J	0.007	0.050	"	"	"	"
Nickel	"	0.10	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/25/22	08/25/22	B2H1535 / BDL
Zinc	"	1.40	CONF	0.12	0.50	EPA 1638	08/31/22	08/31/22	B2H1670 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2H1419 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	207	2.0	ug/l	200		104	85-115			
Duplicate	Source: 22H1025-01									
Selenium	0.5	2.0	ug/l		0.4			13.5	20	J
Duplicate	Source: 22H1050-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22H1025-01									
Selenium	200	2.0	ug/l	200	0.4	99.7	75-125			
Matrix Spike	Source: 22H1050-01									
Selenium	202	2.0	ug/l	200	ND	101	75-125			
Metals - Total	**Batch B2H1609 - BrCl Digestion**									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2H1609 - BrCl Digestion										
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	10.0	0.50	ng/l	10.0		100	77-123			
Matrix Spike	Source: 22H1028-01									
Mercury	10.4	0.50	ng/l	10.0	0.27	101	71-125			
Matrix Spike	Source: 22H1059-01									
Mercury	10.6	0.50	ng/l	10.0	0.52	101	71-125			
Matrix Spike Dup	Source: 22H1028-01									
Mercury	10.6	0.50	ng/l	10.0	0.27	104	71-125	2.27	24	
Matrix Spike Dup	Source: 22H1059-01									
Mercury	10.6	0.50	ng/l	10.0	0.52	101	71-125	0.0283	24	
Metals - Total Batch B2H1644 - EPA 1638 - Closed Bottle Oven Digestion										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total **Batch B2H1644 - EPA 1638 - Closed Bottle Oven Digestion**										
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.4	50-150			
Cadmium	0.25	0.10	ug/l	0.250		98.8	84-113			
Copper	0.24	0.10	ug/l	0.250		97.2	51-145			
Lead	0.125	0.050	ug/l	0.125		100	72-143			
Nickel	0.25	0.10	ug/l	0.250		99.9	68-134			
Zinc	1.20	0.50	ug/l	1.25		96.2	46-146			
LCS										
Arsenic	1.24	0.50	ug/l	1.25		98.9	50-150			
Cadmium	0.25	0.10	ug/l	0.250		100	84-113			
Copper	0.25	0.10	ug/l	0.250		98.0	51-145			
Lead	0.127	0.050	ug/l	0.125		102	72-143			
Nickel	0.25	0.10	ug/l	0.250		99.1	68-134			
Zinc	1.25	0.50	ug/l	1.25		100	46-146			
Matrix Spike	Source: 22H1028-01									
Arsenic	2.43	0.50	ug/l	2.50	ND	97.3	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.9	84-113			
Copper	0.68	0.10	ug/l	0.500	0.19	98.7	51-145			
Lead	0.251	0.050	ug/l	0.250	0.008	97.3	72-143			
Nickel	0.56	0.10	ug/l	0.500	0.09	94.6	68-134			
Zinc	2.54	0.50	ug/l	2.50	0.16	95.3	46-146			
Matrix Spike	Source: 22H1133-01									
Arsenic	2.41	0.50	ug/l	2.50	ND	96.4	50-150			
Cadmium	0.49	0.10	ug/l	0.500	ND	97.8	84-113			
Copper	0.61	0.10	ug/l	0.500	0.14	95.4	51-145			
Lead	0.251	0.050	ug/l	0.250	ND	100	72-143			
Nickel	0.55	0.10	ug/l	0.500	0.04	101	68-134			
Zinc	2.74	0.50	ug/l	2.50	0.31	97.2	46-146			
Matrix Spike Dup	Source: 22H1028-01									
Arsenic	2.51	0.50	ug/l	2.50	ND	100	50-150	3.10	20	
Cadmium	0.51	0.10	ug/l	0.500	ND	101	84-113	4.14	20	
Copper	0.69	0.10	ug/l	0.500	0.19	101	51-145	1.71	20	
Lead	0.247	0.050	ug/l	0.250	0.008	95.9	72-143	1.47	20	
Nickel	0.55	0.10	ug/l	0.500	0.09	92.7	68-134	1.78	20	
Zinc	2.58	0.50	ug/l	2.50	0.16	97.0	46-146	1.63	20	
Matrix Spike Dup	Source: 22H1133-01									
Arsenic	2.46	0.50	ug/l	2.50	ND	98.4	50-150	2.03	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.9	84-113	2.13	20	
Copper	0.63	0.10	ug/l	0.500	0.14	99.3	51-145	3.14	20	
Lead	0.247	0.050	ug/l	0.250	ND	98.9	72-143	1.54	20	
Nickel	0.55	0.10	ug/l	0.500	0.04	102	68-134	1.18	20	
Zinc	2.70	0.50	ug/l	2.50	0.31	95.4	46-146	1.61	20	
Metals - Total **Batch B2I0844 - EPA 1630 Distillation (Modified)**										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2I0844 - EPA 1630 Distillation (Modified)										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.44	0.050	ng/l	2.00		122	67-133			
Matrix Spike	Source: 22H0870-06									
Methyl Mercury as Mercury	1.16	0.050	ng/l	1.00	ND	116	65-135			
Matrix Spike	Source: 22H1058-04									
Methyl Mercury as Mercury	1.13	0.050	ng/l	1.00	ND	113	65-135			
Matrix Spike Dup	Source: 22H0870-06									
Methyl Mercury as Mercury	1.26	0.050	ng/l	1.00	ND	126	65-135	8.62	35	
Matrix Spike Dup	Source: 22H1058-04									
Methyl Mercury as Mercury	1.27	0.050	ng/l	1.00	ND	127	65-135	11.8	35	
Metals - Dissolved Batch B2H1535 - EPA 200.8 Diss										
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	190	2.0	ug/l	200		94.8	85-115			
Duplicate	Source: 22H1028-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22H1028-01									
Selenium	192	2.0	ug/l	200	ND	96.2	75-125			
Metals - Dissolved Batch B2H1670 - EPA 1638 - Dissolved										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved	**Batch B2H1670 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.7	50-150			
Cadmium	0.24	0.10	ug/l	0.250		96.5	84-113			
Copper	0.26	0.10	ug/l	0.250		103	51-145			
Lead	0.124	0.050	ug/l	0.125		99.2	72-143			
Nickel	0.24	0.10	ug/l	0.250		96.5	68-134			
Zinc	1.29	0.50	ug/l	1.25		103	46-146			
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.9	50-150			
Cadmium	0.25	0.10	ug/l	0.250		101	84-113			
Copper	0.26	0.10	ug/l	0.250		104	51-145			
Lead	0.126	0.050	ug/l	0.125		100	72-143			
Nickel	0.26	0.10	ug/l	0.250		105	68-134			
Zinc	1.27	0.50	ug/l	1.25		102	46-146			
Matrix Spike	Source: 22H1028-01									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.69	0.10	ug/l	0.500	0.17	104	51-145			
Lead	0.245	0.050	ug/l	0.250	ND	97.9	72-143			
Nickel	0.57	0.10	ug/l	0.500	0.08	97.4	68-134			
Zinc	2.77	0.50	ug/l	2.50	0.21	102	46-146			
Matrix Spike	Source: 22H1133-01									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113			
Copper	0.62	0.10	ug/l	0.500	0.14	96.2	51-145			
Lead	0.249	0.050	ug/l	0.250	ND	99.7	72-143			
Nickel	0.51	0.10	ug/l	0.500	0.04	94.9	68-134			
Zinc	4.15	0.50	ug/l	2.50	1.66	99.5	46-146			
Matrix Spike Dup	Source: 22H1028-01									
Arsenic	2.47	0.50	ug/l	2.50	ND	99.0	50-150	2.18	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.5	84-113	1.97	20	
Copper	0.66	0.10	ug/l	0.500	0.17	98.8	51-145	3.95	20	
Lead	0.249	0.050	ug/l	0.250	ND	99.6	72-143	1.74	20	
Nickel	0.54	0.10	ug/l	0.500	0.08	92.2	68-134	4.64	20	
Zinc	2.60	0.50	ug/l	2.50	0.21	95.6	46-146	6.33	20	
Matrix Spike Dup	Source: 22H1133-01									
Arsenic	2.52	0.50	ug/l	2.50	ND	101	50-150	0.506	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.5	84-113	2.36	20	
Copper	0.63	0.10	ug/l	0.500	0.14	97.1	51-145	0.664	20	
Lead	0.248	0.050	ug/l	0.250	ND	99.0	72-143	0.704	20	
Nickel	0.52	0.10	ug/l	0.500	0.04	95.6	68-134	0.659	20	
Zinc	4.17	0.50	ug/l	2.50	1.66	100	46-146	0.373	20	

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Analytical Report

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
CONF	Sample was re-analyzed and confirmed.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	CA-ELAP does not accredit this analyte or method as of December 2020. *(Newly released 2021 FOA tables may include this analyte or method.)*
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless samples are received on ice and collected on the same day as delivery. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By:_____
Josh Kirkpatrick, Quality Manager
Pace Analytical Services LLC - Redding CA
California ELAP Cert #1677 & 2718

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

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LABORATORY WORK ORDER # 22H1028
PAGE 1 OF 1

22H1028

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CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS
279 Cousteau Place, Suite 400
Davis, CA 95618

REPORT TO ☒ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED
☒ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one) ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED		SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	ANALYSES REQUESTED: T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	8.17	11:25	AM PM	SW			R.IS.5.UVR		6	X	X	X	X	X	X
2	8.17	11:45	AM PM	SW			R.IS.5.UVRB		6	X	X	X	X	X	X
3	8.17	12:30	AM PM	SW			R.IS.7.UVRB		6	X	X	X	X	X	X
4	8.17	12:45	AM PM	SW			R.IS.7.UVRB		6	X	X	X	X	X	X
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												

SAMPLED BY: (please print) BH, EA

RELINQUISHED DATE / TIME:

SAMPLING / ANALYSIS COMMENTS
Per bottles BBS 8/18/22
(1) Total and Dissolved LL 1638 Metals

☐ **I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS.** (www.basiclab.com/terms)

NAME	SIGNATURE	DATE
BRUCE HITCH		8.19

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
	8/18/22 1301		8/18/22 1704

For Official Lab Comments Only

***SAMPLE TYPE CODES**

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

FRM-002.1 - Chain of Custody (rev 1.1)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22H1028

SHIPPING INFORMATION			
Walk-In	☐		
Courier	☐		
FedEx	☑		
UPS	☐	Cooler Present?	Yes ☒ No ☐
Other	☐		

Samples Received By: PB Date: 8/18/22

	Yes	No	
Samples received on ice?	☒	☐	Ice type? ☑ Wet ☐ Blue ☐ Other ____
Samples received the same day collected?	☐	☑	melted

SAMPLE TEMPERATURES AT RECEIPT **Therm. ID (Circle one):** Therm-36 Therm-37 (Therm-59) Other: ____

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	11.5	-06		-11		-16	
-02	10.8	-07		-12		-17	
-03	9.7	-08		-13		-18	
-04	9.7	-09		-14		-19	
-05		-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: PB Date: 8/18/22

	Yes	No	NA	
Custody seals present?	☐	☐	☑	
Samples in proper containers?	☑	☐		
Sample containers damaged?	☐	☒		
Sufficient sample volume for indicated tests?	☒	☐		
Samples received within holding times?	☑	☐		
Are VOA vials free of headspace?	☐	☐	☑	
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☑	

SAMPLE PRESERVATION NA ☐

	Yes	No	NA	
Preserved in the field?	☑	☐	☐	
Preserved in the lab?	☑	☐	☐	Lab Preservation Date & Time 8/18/22 1655

☐ H2SO4 (ID____) ☑ HNO3 (ID 260806) ☐ NaOH (ID____)
☐ Other (ID____) ☐ Other (ID____) ☐ Other (ID____)

	Yes	No	NA	
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑	
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐	
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑	
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑	
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑	By:____ Meter ID:____
Are proper preservation lables present?	☑	☐	☐	

Preservation checked at Lab? Date & Time 8/18/22 1657 Test Strip (ID 2B24019)

Preservation and Preservation Checks performed by: PB

COMMENTS, DISCREPANCEIS, ANOMALIES

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02 UARP

Lab No: 22H1058
Reported: 09/09/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22H1058, received on 08/19/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: R-IS-6-UVR
Matrix / Type: Surface Water (Grab)
Lab ID: 22H1058-01
Sampled: 08/18/22 08:40
Received: 08/19/22 08:28

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.18		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Mercury	ng/l	0.28	J	0.22	0.50	EPA 1631E	08/28/22	08/28/22	B2H1609 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	09/02/22	09/01/22	B2I0844 / EDM
Nickel	ug/l	0.10		0.02	0.10	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/25/22	08/24/22	B2H1419 / BDL
Zinc	"	0.29	J	0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/31/22	08/31/22	B2H1670 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.17		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.09	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/25/22	08/25/22	B2H1535 / BDL
Zinc	"	0.31	J	0.12	0.50	EPA 1638	08/31/22	08/31/22	B2H1670 / EDM

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Analytical Report

Description: R-IS-6-UVRB
Matrix / Type: Surface Water (Grab)
Lab ID: 22H1058-02
Sampled: 08/18/22 08:55
Received: 08/19/22 08:28

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.19		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Mercury	ng/l	0.57		0.22	0.50	EPA 1631E	08/28/22	08/28/22	B2H1609 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	09/02/22	09/01/22	B2I0844 / EDM
Nickel	ug/l	0.09	J	0.02	0.10	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/25/22	08/24/22	B2H1419 / BDL
Zinc	"	0.73		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/31/22	08/31/22	B2H1670 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.12		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.09	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/25/22	08/25/22	B2H1535 / BDL
Zinc	"	1.33	CONF	0.12	0.50	EPA 1638	08/31/22	08/31/22	B2H1670 / EDM

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Analytical Report

Description: R-IS-8-UVR
Matrix / Type: Surface Water (Grab)
Lab ID: 22H1058-03
Sampled: 08/18/22 10:10
Received: 08/19/22 08:28

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.19		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Mercury	ng/l	0.30	J	0.22	0.50	EPA 1631E	08/28/22	08/28/22	B2H1609 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	09/02/22	09/01/22	B2I0844 / EDM
Nickel	ug/l	0.09	J	0.02	0.10	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/25/22	08/24/22	B2H1419 / BDL
Zinc	"	ND		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/31/22	08/31/22	B2H1670 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.18		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.09	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/25/22	08/25/22	B2H1535 / BDL
Zinc	"	0.21	J	0.12	0.50	EPA 1638	08/31/22	08/31/22	B2H1670 / EDM

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Analytical Report

Description: R-IS-8-UVRB
Matrix / Type: Surface Water (Grab)
Lab ID: 22H1058-04
Sampled: 08/18/22 10:45
Received: 08/19/22 08:28

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.15		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Mercury	ng/l	0.69		0.22	0.50	EPA 1631E	08/28/22	08/28/22	B2H1609 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	09/02/22	09/01/22	B2I0844 / EDM
Nickel	ug/l	0.09	J	0.02	0.10	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	08/25/22	08/24/22	B2H1419 / BDL
Zinc	"	0.96		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/31/22	08/31/22	B2H1670 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.12		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.08	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	08/25/22	08/25/22	B2H1535 / BDL
Zinc	"	0.87		0.12	0.50	EPA 1638	08/31/22	08/31/22	B2H1670 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2H1419 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	207	2.0	ug/l	200		104	85-115			
Duplicate	Source: 22H1025-01									
Selenium	0.5	2.0	ug/l		0.4			13.5	20	J
Duplicate	Source: 22H1050-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22H1025-01									
Selenium	200	2.0	ug/l	200	0.4	99.7	75-125			
Matrix Spike	Source: 22H1050-01									
Selenium	202	2.0	ug/l	200	ND	101	75-125			
Metals - Total	**Batch B2H1609 - BrCl Digestion**									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2H1609 - BrCl Digestion										
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	10.0	0.50	ng/l	10.0		100	77-123			
Matrix Spike	Source: 22H1028-01									
Mercury	10.4	0.50	ng/l	10.0	0.27	101	71-125			
Matrix Spike	Source: 22H1059-01									
Mercury	10.6	0.50	ng/l	10.0	0.52	101	71-125			
Matrix Spike Dup	Source: 22H1028-01									
Mercury	10.6	0.50	ng/l	10.0	0.27	104	71-125	2.27	24	
Matrix Spike Dup	Source: 22H1059-01									
Mercury	10.6	0.50	ng/l	10.0	0.52	101	71-125	0.0283	24	
Metals - Total Batch B2H1644 - EPA 1638 - Closed Bottle Oven Digestion										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total **Batch B2H1644 - EPA 1638 - Closed Bottle Oven Digestion**										
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.4	50-150			
Cadmium	0.25	0.10	ug/l	0.250		98.8	84-113			
Copper	0.24	0.10	ug/l	0.250		97.2	51-145			
Lead	0.125	0.050	ug/l	0.125		100	72-143			
Nickel	0.25	0.10	ug/l	0.250		99.9	68-134			
Zinc	1.20	0.50	ug/l	1.25		96.2	46-146			
LCS										
Arsenic	1.24	0.50	ug/l	1.25		98.9	50-150			
Cadmium	0.25	0.10	ug/l	0.250		100	84-113			
Copper	0.25	0.10	ug/l	0.250		98.0	51-145			
Lead	0.127	0.050	ug/l	0.125		102	72-143			
Nickel	0.25	0.10	ug/l	0.250		99.1	68-134			
Zinc	1.25	0.50	ug/l	1.25		100	46-146			
Matrix Spike	Source: 22H1028-01									
Arsenic	2.43	0.50	ug/l	2.50	ND	97.3	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.9	84-113			
Copper	0.68	0.10	ug/l	0.500	0.19	98.7	51-145			
Lead	0.251	0.050	ug/l	0.250	0.008	97.3	72-143			
Nickel	0.56	0.10	ug/l	0.500	0.09	94.6	68-134			
Zinc	2.54	0.50	ug/l	2.50	0.16	95.3	46-146			
Matrix Spike	Source: 22H1133-01									
Arsenic	2.41	0.50	ug/l	2.50	ND	96.4	50-150			
Cadmium	0.49	0.10	ug/l	0.500	ND	97.8	84-113			
Copper	0.61	0.10	ug/l	0.500	0.14	95.4	51-145			
Lead	0.251	0.050	ug/l	0.250	ND	100	72-143			
Nickel	0.55	0.10	ug/l	0.500	0.04	101	68-134			
Zinc	2.74	0.50	ug/l	2.50	0.31	97.2	46-146			
Matrix Spike Dup	Source: 22H1028-01									
Arsenic	2.51	0.50	ug/l	2.50	ND	100	50-150	3.10	20	
Cadmium	0.51	0.10	ug/l	0.500	ND	101	84-113	4.14	20	
Copper	0.69	0.10	ug/l	0.500	0.19	101	51-145	1.71	20	
Lead	0.247	0.050	ug/l	0.250	0.008	95.9	72-143	1.47	20	
Nickel	0.55	0.10	ug/l	0.500	0.09	92.7	68-134	1.78	20	
Zinc	2.58	0.50	ug/l	2.50	0.16	97.0	46-146	1.63	20	
Matrix Spike Dup	Source: 22H1133-01									
Arsenic	2.46	0.50	ug/l	2.50	ND	98.4	50-150	2.03	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.9	84-113	2.13	20	
Copper	0.63	0.10	ug/l	0.500	0.14	99.3	51-145	3.14	20	
Lead	0.247	0.050	ug/l	0.250	ND	98.9	72-143	1.54	20	
Nickel	0.55	0.10	ug/l	0.500	0.04	102	68-134	1.18	20	
Zinc	2.70	0.50	ug/l	2.50	0.31	95.4	46-146	1.61	20	
Metals - Total **Batch B2I0844 - EPA 1630 Distillation (Modified)**										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2I0844 - EPA 1630 Distillation (Modified)										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.44	0.050	ng/l	2.00		122	67-133			
Matrix Spike	Source: 22H0870-06									
Methyl Mercury as Mercury	1.16	0.050	ng/l	1.00	ND	116	65-135			
Matrix Spike	Source: 22H1058-04									
Methyl Mercury as Mercury	1.13	0.050	ng/l	1.00	ND	113	65-135			
Matrix Spike Dup	Source: 22H0870-06									
Methyl Mercury as Mercury	1.26	0.050	ng/l	1.00	ND	126	65-135	8.62	35	
Matrix Spike Dup	Source: 22H1058-04									
Methyl Mercury as Mercury	1.27	0.050	ng/l	1.00	ND	127	65-135	11.8	35	
Metals - Dissolved Batch B2H1535 - EPA 200.8 Diss										
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	190	2.0	ug/l	200		94.8	85-115			
Duplicate	Source: 22H1028-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22H1028-01									
Selenium	192	2.0	ug/l	200	ND	96.2	75-125			
Metals - Dissolved Batch B2H1670 - EPA 1638 - Dissolved										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved	**Batch B2H1670 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.7	50-150			
Cadmium	0.24	0.10	ug/l	0.250		96.5	84-113			
Copper	0.26	0.10	ug/l	0.250		103	51-145			
Lead	0.124	0.050	ug/l	0.125		99.2	72-143			
Nickel	0.24	0.10	ug/l	0.250		96.5	68-134			
Zinc	1.29	0.50	ug/l	1.25		103	46-146			
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.9	50-150			
Cadmium	0.25	0.10	ug/l	0.250		101	84-113			
Copper	0.26	0.10	ug/l	0.250		104	51-145			
Lead	0.126	0.050	ug/l	0.125		100	72-143			
Nickel	0.26	0.10	ug/l	0.250		105	68-134			
Zinc	1.27	0.50	ug/l	1.25		102	46-146			
Matrix Spike	Source: 22H1028-01									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.69	0.10	ug/l	0.500	0.17	104	51-145			
Lead	0.245	0.050	ug/l	0.250	ND	97.9	72-143			
Nickel	0.57	0.10	ug/l	0.500	0.08	97.4	68-134			
Zinc	2.77	0.50	ug/l	2.50	0.21	102	46-146			
Matrix Spike	Source: 22H1133-01									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113			
Copper	0.62	0.10	ug/l	0.500	0.14	96.2	51-145			
Lead	0.249	0.050	ug/l	0.250	ND	99.7	72-143			
Nickel	0.51	0.10	ug/l	0.500	0.04	94.9	68-134			
Zinc	4.15	0.50	ug/l	2.50	1.66	99.5	46-146			
Matrix Spike Dup	Source: 22H1028-01									
Arsenic	2.47	0.50	ug/l	2.50	ND	99.0	50-150	2.18	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.5	84-113	1.97	20	
Copper	0.66	0.10	ug/l	0.500	0.17	98.8	51-145	3.95	20	
Lead	0.249	0.050	ug/l	0.250	ND	99.6	72-143	1.74	20	
Nickel	0.54	0.10	ug/l	0.500	0.08	92.2	68-134	4.64	20	
Zinc	2.60	0.50	ug/l	2.50	0.21	95.6	46-146	6.33	20	
Matrix Spike Dup	Source: 22H1133-01									
Arsenic	2.52	0.50	ug/l	2.50	ND	101	50-150	0.506	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.5	84-113	2.36	20	
Copper	0.63	0.10	ug/l	0.500	0.14	97.1	51-145	0.664	20	
Lead	0.248	0.050	ug/l	0.250	ND	99.0	72-143	0.704	20	
Nickel	0.52	0.10	ug/l	0.500	0.04	95.6	68-134	0.659	20	
Zinc	4.17	0.50	ug/l	2.50	1.66	100	46-146	0.373	20	

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Analytical Report

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
CONF	Sample was re-analyzed and confirmed.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	CA-ELAP does not accredit this analyte or method as of December 2020. *(Newly released 2021 FOA tables may include this analyte or method.)*
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless samples are received on ice and collected on the same day as delivery. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By:_____
Josh Kirkpatrick, Quality Manager
Pace Analytical Services LLC - Redding CA
California ELAP Cert #1677 & 2718

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

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LABORATORY WORK ORDER # 22H1058
PAGE 1 OF 1

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS: 279 Cousteau Place, Suite 400, Davis, CA 95618

REPORT TO ☑ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED: ☑ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one): ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED			SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	ANALYSES REQUESTED: T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	8.18	8:40	AM	PM	SW			R.IS.6.UVR		4	X	X	X	X	X	X
2	8.18	8:55	AM	PM				R.IS.6.UVRB		4	X	X	X	X	X	X
3	8.18	10:10	AM	PM				R.IS.8.UVR		4	X	X	X	X	X	X
4	8.18	10:45	AM	PM				R.IS.8.UVRB		4	X	X	X	X	X	X
			AM	PM												
			AM	PM												
			AM	PM												
			AM	PM												
			AM	PM												
			AM	PM												

SAMPLED BY: (please print) BH/EA

RELINQUISHED DATE / TIME:

SAMPLING / ANALYSIS COMMENTS: 1 per bottle RM 8.19.22

(1) Total and Dissolved LL 1638 Metals

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME: BRUCE HATCH SIGNATURE: [signature] DATE: 8.18

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
[signature]	8.19.22 0828	[signature]	8.19.22 1402

For Official Lab Comments Only

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22H1058

SHIPPING INFORMATION

Walk-In ☐
Courier ☐
FedEx ☑ Express
UPS ☐
Other ☐

Cooler Present? Yes ☑ No ☐

Samples Received By: RH Date: 8.19.22

	Yes	No
Samples received on ice?	☑	☐
Samples received the same day collected?	☐	☑

Ice type? ☑ Wet ☐ Blue ☐ Other _____

melted

SAMPLE TEMPERATURES AT RECEIPT **Therm. ID (Circle one):** Therm-36 Therm-37 (Therm-59) Other: _____

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	9.9	-06		-11		-16	
-02	8.4	-07		-12		-17	
-03	14.9	-08		-13		-18	
-04	9.8	-09		-14		-19	
-05		-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: RH Date: 8.19.22

	Yes	No	NA
Custody seals present?	☐	☐	☑
Samples in proper containers?	☑	☐	
Sample containers damaged?	☐	☑	
Sufficient sample volume for indicated tests?	☑	☐	
Samples received within holding times?	☑	☐	
Are VOA vials free of headspace?	☐	☐	☑
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☑

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☑	☐	☐
Preserved in the lab?	☑	☐	☐

Lab Preservation Date & Time 8.19.22 0923

☐ H2SO4 (ID_____) ☑ HNO3 (ID 26080006) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑
Are proper preservation lables present?	☑	☐	☐

By:_____ Meter ID:_____

Preservation checked at Lab? Date & Time 8.19.22 0926 Test Strip (ID 2B24019)

Preservation and Preservation Checks performed by: RH

COMMENTS, DISCREPANCEIS, ANOMALIES

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02 UARP

Lab No: 22H1133
Reported: 10/10/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22H1133, received on 08/23/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: R-IS-9-IHR
Matrix / Type: Surface Water (Grab)
Lab ID: 22H1133-01
Sampled: 08/22/22 09:20
Received: 08/23/22 09:08

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.14		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Mercury	ng/l	0.45	J	0.22	0.50	EPA 1631E	09/04/22	09/04/22	B2H1671 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	09/02/22	09/01/22	B2I0844 / EDM
Nickel	ug/l	0.04	J	0.02	0.10	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	08/26/22	B2H1555 / BDL
Zinc	"	0.31	J	0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/31/22	08/31/22	B2H1670 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.14		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.04	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	09/06/22	B2I0922 / BDL
Zinc	"	0.23	Z-01, J	0.12	0.50	EPA 1638	10/06/22	10/06/22	B2J1003 / edm

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Analytical Report

Description: R-IS-9-IHRB
Matrix / Type: Surface Water (Grab)
Lab ID: 22H1133-02
Sampled: 08/22/22 09:40
Received: 08/23/22 09:08

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.13		0.04	0.10	"	"	"	"
Lead	"	0.013	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.71		0.22	0.50	EPA 1631E	09/04/22	09/04/22	B2H1671 / DJC
Methyl Mercury as Mercury	"	0.026	J	0.017	0.050	EPA 1630	09/10/22	09/09/22	B2I1046 / EDM
Nickel	ug/l	0.05	J	0.02	0.10	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	08/26/22	B2H1555 / BDL
Zinc	"	1.30		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/31/22	08/31/22	B2H1670 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.12		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.05	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	09/06/22	B2I0922 / BDL
Zinc	"	0.92		0.12	0.50	EPA 1638	08/31/22	08/31/22	B2H1670 / EDM

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Analytical Report

Description: R-IS-10-IHR
Matrix / Type: Surface Water (Grab)
Lab ID: 22H1133-03
Sampled: 08/22/22 13:15
Received: 08/23/22 09:08

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.14		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Mercury	ng/l	0.42	J	0.22	0.50	EPA 1631E	09/04/22	09/04/22	B2H1671 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	09/10/22	09/09/22	B2I1046 / EDM
Nickel	ug/l	0.04	J	0.02	0.10	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	08/26/22	B2H1555 / BDL
Zinc	"	ND		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/31/22	08/31/22	B2H1670 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.14		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.04	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	09/06/22	B2I0922 / BDL
Zinc	"	0.40	Z-01, J	0.12	0.50	EPA 1638	10/06/22	10/06/22	B2J1003 / edm

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Analytical Report

Description: R-IS-10-IHRB
Matrix / Type: Surface Water (Grab)
Lab ID: 22H1133-04
Sampled: 08/22/22 13:30
Received: 08/23/22 09:08

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.08	J	0.04	0.10	"	"	"	"
Lead	"	0.008	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.38	J	0.22	0.50	EPA 1631E	09/04/22	09/04/22	B2H1671 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	09/10/22	09/09/22	B2I1046 / EDM
Nickel	ug/l	0.04	J	0.02	0.10	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	08/26/22	B2H1555 / BDL
Zinc	"	3.20		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/31/22	08/31/22	B2H1670 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.06	J	0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.03	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	09/06/22	B2I0922 / BDL
Zinc	"	2.78		0.12	0.50	EPA 1638	08/31/22	08/31/22	B2H1670 / EDM

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Analytical Report

Description: R-IS-11-IHR
Matrix / Type: Surface Water (Grab)
Lab ID: 22H1133-05
Sampled: 08/22/22 11:40
Received: 08/23/22 09:08

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.14		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Mercury	ng/l	0.36	J	0.22	0.50	EPA 1631E	09/04/22	09/04/22	B2H1671 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	09/10/22	09/09/22	B2I1046 / EDM
Nickel	ug/l	0.04	J	0.02	0.10	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	08/26/22	B2H1555 / BDL
Zinc	"	0.24	J	0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/31/22	08/31/22	B2H1670 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.13		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.04	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	09/06/22	B2I0922 / BDL
Zinc	"	0.26	Z-01, J	0.12	0.50	EPA 1638	10/06/22	10/06/22	B2J1003 / edm

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Analytical Report

Description: R-IS-11-IHRB
Matrix / Type: Surface Water (Grab)
Lab ID: 22H1133-06
Sampled: 08/22/22 12:10
Received: 08/23/22 09:08

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.10		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Mercury	ng/l	0.54		0.22	0.50	EPA 1631E	09/04/22	09/04/22	B2H1671 / DJC
Methyl Mercury as Mercury	"	0.019	J	0.017	0.050	EPA 1630	09/10/22	09/09/22	B2I1046 / EDM
Nickel	ug/l	0.05	J	0.02	0.10	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	08/26/22	B2H1555 / BDL
Zinc	"	1.29		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/31/22	08/31/22	B2H1670 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.08	J	0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.03	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	09/06/22	B2I0922 / BDL
Zinc	"	1.15		0.12	0.50	EPA 1638	08/31/22	08/31/22	B2H1670 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2H1555 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	204	2.0	ug/l	200		102	85-115			
Duplicate	Source: 22H1133-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22H1241-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22H1133-01									
Selenium	201	2.0	ug/l	200	ND	100	75-125			
Matrix Spike	Source: 22H1241-01									
Selenium	202	2.0	ug/l	200	ND	101	75-125			
Metals - Total - Redding Location	**Batch B2H1644 - EPA 1638 - Closed Bottle Oven Digestion**									

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2H1644 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.4	50-150			
Cadmium	0.25	0.10	ug/l	0.250		98.8	84-113			
Copper	0.24	0.10	ug/l	0.250		97.2	51-145			
Lead	0.125	0.050	ug/l	0.125		100	72-143			
Nickel	0.25	0.10	ug/l	0.250		99.9	68-134			
Zinc	1.20	0.50	ug/l	1.25		96.2	46-146			
LCS										
Arsenic	1.24	0.50	ug/l	1.25		98.9	50-150			
Cadmium	0.25	0.10	ug/l	0.250		100	84-113			
Copper	0.25	0.10	ug/l	0.250		98.0	51-145			
Lead	0.127	0.050	ug/l	0.125		102	72-143			
Nickel	0.25	0.10	ug/l	0.250		99.1	68-134			
Zinc	1.25	0.50	ug/l	1.25		100	46-146			
Matrix Spike	Source: 22H1028-01									
Arsenic	2.43	0.50	ug/l	2.50	ND	97.3	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.9	84-113			
Copper	0.68	0.10	ug/l	0.500	0.19	98.7	51-145			
Lead	0.251	0.050	ug/l	0.250	0.008	97.3	72-143			
Nickel	0.56	0.10	ug/l	0.500	0.09	94.6	68-134			
Zinc	2.54	0.50	ug/l	2.50	0.16	95.3	46-146			
Matrix Spike	Source: 22H1133-01									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2H1644 - EPA 1638 - Closed Bottle Oven Digestion**									
Arsenic	2.41	0.50	ug/l	2.50	ND	96.4	50-150			
Cadmium	0.49	0.10	ug/l	0.500	ND	97.8	84-113			
Copper	0.61	0.10	ug/l	0.500	0.14	95.4	51-145			
Lead	0.251	0.050	ug/l	0.250	ND	100	72-143			
Nickel	0.55	0.10	ug/l	0.500	0.04	101	68-134			
Zinc	2.74	0.50	ug/l	2.50	0.31	97.2	46-146			
Matrix Spike Dup	Source: 22H1028-01									
Arsenic	2.51	0.50	ug/l	2.50	ND	100	50-150	3.10	20	
Cadmium	0.51	0.10	ug/l	0.500	ND	101	84-113	4.14	20	
Copper	0.69	0.10	ug/l	0.500	0.19	101	51-145	1.71	20	
Lead	0.247	0.050	ug/l	0.250	0.008	95.9	72-143	1.47	20	
Nickel	0.55	0.10	ug/l	0.500	0.09	92.7	68-134	1.78	20	
Zinc	2.58	0.50	ug/l	2.50	0.16	97.0	46-146	1.63	20	
Matrix Spike Dup	Source: 22H1133-01									
Arsenic	2.46	0.50	ug/l	2.50	ND	98.4	50-150	2.03	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.9	84-113	2.13	20	
Copper	0.63	0.10	ug/l	0.500	0.14	99.3	51-145	3.14	20	
Lead	0.247	0.050	ug/l	0.250	ND	98.9	72-143	1.54	20	
Nickel	0.55	0.10	ug/l	0.500	0.04	102	68-134	1.18	20	
Zinc	2.70	0.50	ug/l	2.50	0.31	95.4	46-146	1.61	20	
Metals - Total - Redding Location	**Batch B2H1671 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	10.2	0.50	ng/l	10.0		102	77-123			
Matrix Spike	Source: 22H1133-02									
Mercury	11.1	0.50	ng/l	10.0	0.71	104	71-125			
Matrix Spike	Source: 22H1241-01									
Mercury	11.1	0.50	ng/l	10.0	0.80	103	71-125			
Matrix Spike Dup	Source: 22H1133-02									
Mercury	11.2	0.50	ng/l	10.0	0.71	104	71-125	0.395	24	
Matrix Spike Dup	Source: 22H1241-01									
Mercury	11.4	0.50	ng/l	10.0	0.80	106	71-125	2.35	24	
Metals - Total - Redding Location	**Batch B2I0844 - EPA 1630 Distillation (Modified)**									
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2I0844 - EPA 1630 Distillation (Modified)**									
LCS										
Methyl Mercury as Mercury	2.44	0.050	ng/l	2.00		122	67-133			
Matrix Spike	Source: 22H0870-06									
Methyl Mercury as Mercury	1.16	0.050	ng/l	1.00	ND	116	65-135			
Matrix Spike	Source: 22H1058-04									
Methyl Mercury as Mercury	1.13	0.050	ng/l	1.00	ND	113	65-135			
Matrix Spike Dup	Source: 22H0870-06									
Methyl Mercury as Mercury	1.26	0.050	ng/l	1.00	ND	126	65-135	8.62	35	
Matrix Spike Dup	Source: 22H1058-04									
Methyl Mercury as Mercury	1.27	0.050	ng/l	1.00	ND	127	65-135	11.8	35	
Metals - Total - Redding Location	**Batch B2I1046 - EPA 1630 Distillation (Modified)**									
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.52	0.050	ng/l	2.00		126	67-133			
Matrix Spike	Source: 22H1133-02									
Methyl Mercury as Mercury	1.25	0.050	ng/l	1.00	0.026	122	65-135			
Matrix Spike	Source: 22H1194-06									
Methyl Mercury as Mercury	1.26	0.050	ng/l	1.00	ND	126	65-135			
Matrix Spike Dup	Source: 22H1133-02									
Methyl Mercury as Mercury	1.36	0.050	ng/l	1.00	0.026	133	65-135	8.51	35	
Matrix Spike Dup	Source: 22H1194-06									
Methyl Mercury as Mercury	1.27	0.050	ng/l	1.00	ND	127	65-135	0.0870	35	
Metals - Dissolved - Redding Location	**Batch B2H1670 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

basic laboratory
2218 Railroad Avenue
Redding, California 96001
voice 530.243.7234
fax 530.243.7494

3860 Morrow Lane, Suite F
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fax 530.894.5143

Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2H1670 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.7	50-150			
Cadmium	0.24	0.10	ug/l	0.250		96.5	84-113			
Copper	0.26	0.10	ug/l	0.250		103	51-145			
Lead	0.124	0.050	ug/l	0.125		99.2	72-143			
Nickel	0.24	0.10	ug/l	0.250		96.5	68-134			
Zinc	1.29	0.50	ug/l	1.25		103	46-146			
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.9	50-150			
Cadmium	0.25	0.10	ug/l	0.250		101	84-113			
Copper	0.26	0.10	ug/l	0.250		104	51-145			
Lead	0.126	0.050	ug/l	0.125		100	72-143			
Nickel	0.26	0.10	ug/l	0.250		105	68-134			
Zinc	1.27	0.50	ug/l	1.25		102	46-146			
Matrix Spike	Source: 22H1028-01									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.69	0.10	ug/l	0.500	0.17	104	51-145			
Lead	0.245	0.050	ug/l	0.250	ND	97.9	72-143			
Nickel	0.57	0.10	ug/l	0.500	0.08	97.4	68-134			
Zinc	2.77	0.50	ug/l	2.50	0.21	102	46-146			
Matrix Spike	Source: 22H1133-01									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113			
Copper	0.62	0.10	ug/l	0.500	0.14	96.2	51-145			
Lead	0.249	0.050	ug/l	0.250	ND	99.7	72-143			
Nickel	0.51	0.10	ug/l	0.500	0.04	94.9	68-134			
Matrix Spike	Source: 22H1133-01RE1									
Zinc	4.15	0.50	ug/l	2.50	1.66	99.5	46-146			
Matrix Spike Dup	Source: 22H1028-01									
Arsenic	2.47	0.50	ug/l	2.50	ND	99.0	50-150	2.18	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.5	84-113	1.97	20	
Copper	0.66	0.10	ug/l	0.500	0.17	98.8	51-145	3.95	20	
Lead	0.249	0.050	ug/l	0.250	ND	99.6	72-143	1.74	20	
Nickel	0.54	0.10	ug/l	0.500	0.08	92.2	68-134	4.64	20	
Zinc	2.60	0.50	ug/l	2.50	0.21	95.6	46-146	6.33	20	

basic laboratory
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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2H1670 - EPA 1638 - Dissolved**									
Matrix Spike Dup	Source: 22H1133-01									
Arsenic	2.52	0.50	ug/l	2.50	ND	101	50-150	0.506	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.5	84-113	2.36	20	
Copper	0.63	0.10	ug/l	0.500	0.14	97.1	51-145	0.664	20	
Lead	0.248	0.050	ug/l	0.250	ND	99.0	72-143	0.704	20	
Nickel	0.52	0.10	ug/l	0.500	0.04	95.6	68-134	0.659	20	
Matrix Spike Dup	Source: 22H1133-01RE1									
Zinc	4.17	0.50	ug/l	2.50	1.66	100	46-146	0.373	20	
Metals - Dissolved - Redding Location	**Batch B2I0922 - EPA 200.8 Diss**									
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	195	2.0	ug/l	200		97.5	85-115			
Duplicate	Source: 22H1133-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22H1194-02									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22H1133-01									
Selenium	190	2.0	ug/l	200	ND	95.0	75-125			
Matrix Spike	Source: 22H1194-02									
Selenium	188	2.0	ug/l	200	ND	94.0	75-125			
Metals - Dissolved - Redding Location	**Batch B2J1003 - EPA 1638 - Dissolved**									
Blank										
Zinc	ND	0.50	ug/l							
Blank										
Zinc	ND	0.50	ug/l							
LCS										
Zinc	1.25	0.50	ug/l	1.25		99.6	46-146			
Matrix Spike	Source: 22I1214-03									
Zinc	3.40	0.50	ug/l	2.50	0.99	96.2	46-146			
Matrix Spike Dup	Source: 22I1214-03									
Zinc	3.35	0.50	ug/l	2.50	0.99	94.4	46-146	1.32	20	

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Notes and Definitions

Z-01	Due to suspected contamination in the original filtration, samples were re-filtered for dissolved zinc analysis on 10/4/22.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	CA-ELAP does not accredit this analyte or method as of December 2020. *(Newly released 2021 FOA tables may include this analyte or method.)*
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless samples are received on ice and collected on the same day as delivery. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen

Ricky Jensen, General Manager
Pace Analytical Services LLC - Redding CA
California ELAP Cert #1677 & 2718

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494
☐ 3860 Morrow Lane, Suite F Chico, CA 95928 (530) 894-8966 FAX: (530) 894-5143

LABORATORY WORK ORDER # 22H1133
PAGE 1 OF 1

22H1133

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS
279 Cousteau Place, Suite 400
Davis, CA 95618

REPORT TO ☑ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED
☑ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one) ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	8.22	9:20 AM PM	SW			R15 IHR		6	✓	✓	✓	C	✓	✓
2	8.22	9:40 AM PM				R IS 9 IHRB		6	✓	✓	✓	✓	✓	✓
3	8.22	13:15 AM PM				R 15 10 IHR		6	✓	✓	✓	✓	✓	✓
4	8.22	13:30 AM PM				R IS 10 IHRB		6	✓	✓	✓	✓	✓	✓
5	8.22	11:40 AM PM				R IS 11 IHR		6	✓	✓	✓	✓	✓	✓
6	8.22	12:10 AM PM	↓			R IS 11 IHRB		6	✓	✓	✓	✓	✓	✓
		AM PM												
		AM PM												
		AM PM												
		AM PM												

SAMPLED BY: (please print) BH/EA[1]

RELINQUISHED DATE / TIME:

SAMPLING / ANALYSIS COMMENTS
[1]Per bottle. BB 8/23/22 (1) Total and Dissolved LL 1638 Metals

☑ **I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS.** (www.basiclab.com/terms)

NAME	SIGNATURE	DATE
BRUCE HATCH		8.22.2022

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
	8.23.22 0908		8/23/22 0946

For Official Lab Comments Only

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

FRM-002.1 - Chain of Custody (rev 1.1)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22H1133

SHIPPING INFORMATION

Walk-In ☑
Courier ☐
FedEx ☐
UPS ☐
Other ☐

Cooler Present? Yes ☑ No ☐

Samples Received By: RH Date: 8.23.22

	Yes	No
Samples received on ice?	☑	☐
Samples received the same day collected?	☐	☑

Ice type? ☑ Wet ☐ Blue ☐ Other _____

melted

SAMPLE TEMPERATURES AT RECEIPT **Therm. ID (Circle one):** Therm-36 Therm-37 (Therm-59) Other: _____

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	15.7	-06	11.5	-11		-16	
-02	14.4	-07		-12		-17	
-03	8.9	-08		-13		-18	
-04	10.0	-09		-14		-19	
-05	15.2	-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: RH Date: 8.23.22

	Yes	No	NA
Custody seals present?	☐	☑	☑
Samples in proper containers?	☑	☐	
Sample containers damaged?	☐	☑	
Sufficient sample volume for indicated tests?	☑	☐	
Samples received within holding times?	☑	☐	
Are VOA vials free of headspace?	☐	☐	☑
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☑

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☑	☐	☐
Preserved in the lab?	☑	☐	☐

Lab Preservation Date & Time 8.23.22 0933

☐ H2SO4 (ID_____) ☑ HNO3 (ID 2G08006) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☐
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☐
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☐
Are proper preservation lables present?	☑	☐	☐

By:_____ Meter ID:_____

Preservation checked at Lab? Date & Time 8.23.22 0934 Test Strip (ID 2B24019)

Preservation and Preservation Checks performed by: RH

COMMENTS, DISCREPANCEIS, ANOMALIES

_____

_____

_____

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

August 31, 2022

CLS Work Order #: 22H1193
COC #:

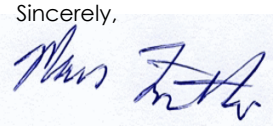
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 08/17/22 15:45. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

08/31/22 16:03

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1193
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-5-UVR (22H1193-01) Surface Water	**Sampled: 08/17/22 11:25**		**Received: 08/17/22 15:45**							
Ammonia as N	**0.028**	0.025	0.10	mg/L	1	2207135	08/22/22	08/22/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**7.6**	0.50	5.0	"	"	2207090	08/19/22	08/19/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.51**	0.026	0.50	"	"	2206995	08/18/22	08/18/22	EPA 300.0	
Cyanide (total)	**0.0019**	0.0012	0.0050	"	"	2207073	08/19/22	08/19/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2207084	08/19/22	08/22/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2207090	08/19/22	08/19/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2206995	08/18/22	08/18/22	EPA 300.0	
Orthophosphate as PO4	**0.018**	0.0051	0.15	"	"	2207034	08/18/22	08/18/22	SM4500-P E	
Sulfate as SO4	**0.37**	0.038	0.50	"	"	2206995	08/18/22	08/18/22	EPA 300.0	
Total Alkalinity	**7.6**	1.0	5.0	"	"	2207090	08/19/22	08/19/22	SM2320B	
Total Dissolved Solids	**31**	5.0	10	"	"	2207082	08/19/22	08/22/22	SM2540C	
Total Hardness as CaCO3	**5.1**	0.19	1.0	"	"	2207133	08/22/22	08/22/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.27**	0.040	0.20	"	"	2207171	08/23/22	08/23/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.8**	0.54	1.0	"	"	2206999	08/18/22	08/19/22	SM5310B	
Total Phosphorus as P	**0.034**	0.023	0.050	"	"	2207036	08/18/22	08/18/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2207059	08/19/22	08/22/22	SM2540D	
R-IS-5-UVRB (22H1193-02) Surface Water	**Sampled: 08/17/22 11:45**		**Received: 08/17/22 15:45**							
Ammonia as N	**0.036**	0.025	0.10	mg/L	1	2207135	08/22/22	08/22/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**6.4**	0.50	5.0	"	"	2207090	08/19/22	08/19/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.50**	0.026	0.50	"	"	2206995	08/18/22	08/18/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2207073	08/19/22	08/19/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2207084	08/19/22	08/22/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2207090	08/19/22	08/19/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2206995	08/18/22	08/18/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2207034	08/18/22	08/18/22	SM4500-P E	

08/31/22 16:03

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1193
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-5-UVRB (22H1193-02) Surface Water	**Sampled: 08/17/22 11:45**		**Received: 08/17/22 15:45**							
Sulfate as SO4	**0.41**	0.038	0.50	mg/L	1	2206995	08/18/22	08/18/22	EPA 300.0	
Total Alkalinity	**6.4**	1.0	5.0	"	"	2207090	08/19/22	08/19/22	SM2320B	
Total Dissolved Solids	**13**	5.0	10	"	"	2207082	08/19/22	08/22/22	SM2540C	
Total Hardness as CaCO3	**5.3**	0.19	1.0	"	"	2207133	08/22/22	08/22/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.25**	0.040	0.20	"	"	2207171	08/23/22	08/23/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.7**	0.54	1.0	"	"	2206999	08/18/22	08/19/22	SM5310B	
Total Phosphorus as P	**0.045**	0.023	0.050	"	"	2207036	08/18/22	08/18/22	SM4500-P E	
Total Suspended Solids	**4.0**	2.0	5.0	"	"	2207059	08/19/22	08/22/22	SM2540D	
R-IS-7-UVR (22H1193-03) Surface Water	**Sampled: 08/17/22 12:30**		**Received: 08/17/22 15:45**							
Ammonia as N	**0.030**	0.025	0.10	mg/L	1	2207135	08/22/22	08/22/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**7.0**	0.50	5.0	"	"	2207090	08/19/22	08/19/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.55**	0.026	0.50	"	"	2206995	08/18/22	08/18/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2207073	08/19/22	08/19/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2207084	08/19/22	08/22/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2207090	08/19/22	08/19/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2206995	08/18/22	08/18/22	EPA 300.0	
Orthophosphate as PO4	**0.034**	0.0051	0.15	"	"	2207034	08/18/22	08/18/22	SM4500-P E	
Sulfate as SO4	**0.38**	0.038	0.50	"	"	2206995	08/18/22	08/18/22	EPA 300.0	
Total Alkalinity	**7.0**	1.0	5.0	"	"	2207090	08/19/22	08/19/22	SM2320B	
Total Dissolved Solids	**31**	5.0	10	"	"	2207082	08/19/22	08/22/22	SM2540C	
Total Hardness as CaCO3	**5.1**	0.19	1.0	"	"	2207133	08/22/22	08/22/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.24**	0.040	0.20	"	"	2207171	08/23/22	08/23/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.5**	0.54	1.0	"	"	2206999	08/18/22	08/19/22	SM5310B	
Total Phosphorus as P	**0.028**	0.023	0.050	"	"	2207036	08/18/22	08/18/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2207059	08/19/22	08/22/22	SM2540D	

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2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1193
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-7-UVRB (22H1193-04) Surface Water	**Sampled: 08/17/22 12:45**		**Received: 08/17/22 15:45**							
Ammonia as N	**0.026**	0.025	0.10	mg/L	1	2207135	08/22/22	08/22/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**7.0**	0.50	5.0	"	"	2207090	08/19/22	08/19/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.50**	0.026	0.50	"	"	2206995	08/18/22	08/18/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2207073	08/19/22	08/19/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2207084	08/19/22	08/22/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2207090	08/19/22	08/19/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2206995	08/18/22	08/18/22	EPA 300.0	
Orthophosphate as PO4	**0.026**	0.0051	0.15	"	"	2207034	08/18/22	08/18/22	SM4500-P E	
Sulfate as SO4	**0.37**	0.038	0.50	"	"	2206995	08/18/22	08/18/22	EPA 300.0	
Total Alkalinity	**7.0**	1.0	5.0	"	"	2207090	08/19/22	08/19/22	SM2320B	
Total Dissolved Solids	**14**	5.0	10	"	"	2207082	08/19/22	08/22/22	SM2540C	
Total Hardness as CaCO3	**4.9**	0.19	1.0	"	"	2207133	08/22/22	08/22/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.27**	0.040	0.20	"	"	2207171	08/23/22	08/23/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.5**	0.54	1.0	"	"	2206999	08/18/22	08/19/22	SM5310B	
Total Phosphorus as P	**0.045**	0.023	0.050	"	"	2207036	08/18/22	08/18/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2207059	08/19/22	08/22/22	SM2540D	

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CLS Work Order #: 22H1193
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-5-UVR (22H1193-01) Surface Water Sampled: 08/17/22 11:25 Received: 08/17/22 15:45										
Diesel	ND	0.0021	0.050	mg/L	1	2207038	08/18/22	08/18/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*129 %*	*65-135*		"	"	"	"	
R-IS-5-UVRB (22H1193-02) Surface Water Sampled: 08/17/22 11:45 Received: 08/17/22 15:45										
Diesel	ND	0.0021	0.050	mg/L	1	2207038	08/18/22	08/18/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*95 %*	*65-135*		"	"	"	"	
R-IS-7-UVR (22H1193-03) Surface Water Sampled: 08/17/22 12:30 Received: 08/17/22 15:45										
Diesel	ND	0.0021	0.050	mg/L	1	2207038	08/18/22	08/18/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*102 %*	*65-135*		"	"	"	"	
R-IS-7-UVRB (22H1193-04) Surface Water Sampled: 08/17/22 12:45 Received: 08/17/22 15:45										
Diesel	ND	0.0021	0.050	mg/L	1	2207038	08/18/22	08/18/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1193**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-7-UVRB (22H1193-04) Surface Water Sampled: 08/17/22 12:45 Received: 08/17/22 15:45										
Surrogate: o-Terphenyl			*107 %*		*65-135*	*2207038*	"	*08/18/22*	*EPA 8015M*	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1193
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-5-UVR (22H1193-01) Surface Water	**Sampled: 08/17/22 11:25**		**Received: 08/17/22 15:45**							
Aluminum	**27**	1.6	20	µg/L	1	2207116	08/22/22	08/23/22	EPA 200.8	
Barium	**5.6**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1200**	27	1000	"	"	2207109	08/22/22	08/22/22	EPA 200.7	
Iron	**12**	9.1	100	"	"	"	"	"	"	
Magnesium	**290**	21	1000	"	"	"	"	"	"	
Manganese	**2.5**	0.050	2.0	"	"	2207116	08/22/22	08/23/22	EPA 200.8	
Potassium	**340**	61	1000	"	"	2207109	08/22/22	08/22/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2207116	08/22/22	08/23/22	EPA 200.8	
Sodium	**950**	34	1000	"	"	2207109	08/22/22	08/22/22	EPA 200.7	
R-IS-5-UVRB (22H1193-02) Surface Water	**Sampled: 08/17/22 11:45**		**Received: 08/17/22 15:45**							
Aluminum	**170**	1.6	20	µg/L	1	2207116	08/22/22	08/23/22	EPA 200.8	
Barium	**7.6**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1300**	27	1000	"	"	2207109	08/22/22	08/22/22	EPA 200.7	
Iron	**140**	9.1	100	"	"	"	"	"	"	
Magnesium	**280**	21	1000	"	"	"	"	"	"	
Manganese	**22**	0.050	2.0	"	"	2207116	08/22/22	08/23/22	EPA 200.8	
Potassium	**400**	61	1000	"	"	2207109	08/22/22	08/22/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2207116	08/22/22	08/23/22	EPA 200.8	
Sodium	**900**	34	1000	"	"	2207109	08/22/22	08/22/22	EPA 200.7	
R-IS-7-UVR (22H1193-03) Surface Water	**Sampled: 08/17/22 12:30**		**Received: 08/17/22 15:45**							
Aluminum	**26**	1.6	20	µg/L	1	2207116	08/22/22	08/23/22	EPA 200.8	
Barium	**5.5**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1300**	27	1000	"	"	2207109	08/22/22	08/22/22	EPA 200.7	
Iron	**11**	9.1	100	"	"	"	"	"	"	
Magnesium	**290**	21	1000	"	"	"	"	"	"	
Manganese	**2.1**	0.050	2.0	"	"	2207116	08/22/22	08/23/22	EPA 200.8	
Potassium	**460**	61	1000	"	"	2207109	08/22/22	08/22/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2207116	08/22/22	08/23/22	EPA 200.8	
Sodium	**1000**	34	1000	"	"	2207109	08/22/22	08/22/22	EPA 200.7	

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CLS Work Order #: 22H1193
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-7-UVRB (22H1193-04) Surface Water	**Sampled: 08/17/22 12:45**		**Received: 08/17/22 15:45**							
Aluminum	**25**	1.6	20	µg/L	1	2207116	08/22/22	08/23/22	EPA 200.8	
Barium	**5.2**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1200**	27	1000	"	"	2207109	08/22/22	08/22/22	EPA 200.7	
Iron	ND	9.1	100	"	"	"	"	"	"	
Magnesium	**290**	21	1000	"	"	"	"	"	"	
Manganese	**2.0**	0.050	2.0	"	"	2207116	08/22/22	08/23/22	EPA 200.8	
Potassium	**190**	61	1000	"	"	2207109	08/22/22	08/22/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2207116	08/22/22	08/23/22	EPA 200.8	
Sodium	**970**	34	1000	"	"	2207109	08/22/22	08/22/22	EPA 200.7	

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CLS Work Order #: 22H1193
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-5-UVR (22H1193-01) Surface Water	**Sampled: 08/17/22 11:25**		**Received: 08/17/22 15:45**							
Aluminum	**7.3**	0.52	20	µg/L	1	2207432	08/31/22	08/31/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2207133	08/22/22	08/22/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207432	08/31/22	08/31/22	EPA 200.8	
R-IS-5-UVRB (22H1193-02) Surface Water	**Sampled: 08/17/22 11:45**		**Received: 08/17/22 15:45**							
Aluminum	**5.2**	0.52	20	µg/L	1	2207432	08/31/22	08/31/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2207133	08/22/22	08/22/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207432	08/31/22	08/31/22	EPA 200.8	
R-IS-7-UVR (22H1193-03) Surface Water	**Sampled: 08/17/22 12:30**		**Received: 08/17/22 15:45**							
Aluminum	**7.5**	0.52	20	µg/L	1	2207432	08/31/22	08/31/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2207133	08/22/22	08/22/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207432	08/31/22	08/31/22	EPA 200.8	
R-IS-7-UVRB (22H1193-04) Surface Water	**Sampled: 08/17/22 12:45**		**Received: 08/17/22 15:45**							
Aluminum	**9.2**	0.52	20	µg/L	1	2207432	08/31/22	08/31/22	EPA 200.8	
Iron	**12**	6.8	100	"	"	2207133	08/22/22	08/22/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207432	08/31/22	08/31/22	EPA 200.8	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-5-UVR (22H1193-01) Surface Water Sampled: 08/17/22 11:25 Received: 08/17/22 15:45										
Gasoline	ND	10	50	µg/L	1	2207113	08/18/22	08/18/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*94 %*		*65-135*		"	"	"	"
R-IS-5-UVRB (22H1193-02) Surface Water Sampled: 08/17/22 11:45 Received: 08/17/22 15:45										
Gasoline	ND	10	50	µg/L	1	2207113	08/18/22	08/18/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*88 %*		*65-135*		"	"	"	"
R-IS-7-UVR (22H1193-03) Surface Water Sampled: 08/17/22 12:30 Received: 08/17/22 15:45										
Gasoline	ND	10	50	µg/L	1	2207113	08/18/22	08/18/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*90 %*		*65-135*		"	"	"	"
R-IS-7-UVRB (22H1193-04) Surface Water Sampled: 08/17/22 12:45 Received: 08/17/22 15:45										
Gasoline	ND	10	50	µg/L	1	2207113	08/18/22	08/18/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*92 %*		*65-135*		"	"	"	"

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-5-UVR (22H1193-01) Surface Water Sampled: 08/17/22 11:25 Received: 08/17/22 15:45										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207049	08/18/22	08/18/22	EPA 8260B	
Surrogate: Toluene-d8			*97 %*		*72-125*		"	"	"	"
R-IS-5-UVRB (22H1193-02) Surface Water Sampled: 08/17/22 11:45 Received: 08/17/22 15:45										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207049	08/18/22	08/18/22	EPA 8260B	
Surrogate: Toluene-d8			*96 %*		*72-125*		"	"	"	"
R-IS-7-UVR (22H1193-03) Surface Water Sampled: 08/17/22 12:30 Received: 08/17/22 15:45										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207049	08/18/22	08/18/22	EPA 8260B	
Surrogate: Toluene-d8			*97 %*		*72-125*		"	"	"	"
R-IS-7-UVRB (22H1193-04) Surface Water Sampled: 08/17/22 12:45 Received: 08/17/22 15:45										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207049	08/18/22	08/18/22	EPA 8260B	
Surrogate: Toluene-d8			*97 %*		*72-125*		"	"	"	"

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206995 - General Prep											
Blank (2206995-BLK1)					Prepared & Analyzed: 08/18/22						
Sulfate as SO4	ND	0.038	0.50	mg/L							
Chloride	0.293	0.026	0.50	"							
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2206995-BS1)					Prepared & Analyzed: 08/18/22						
Chloride	4.80	0.026	0.50	mg/L	5.00		96	80-120			
Sulfate as SO4	4.94	0.038	0.50	"	5.00		99	80-120			
Nitrate/Nitrite as N	4.04	0.055	0.40	"	4.00		101	80-120			
LCS Dup (2206995-BSD1)					Prepared & Analyzed: 08/18/22						
Chloride	4.85	0.026	0.50	mg/L	5.00		97	80-120	1	20	
Sulfate as SO4	4.96	0.038	0.50	"	5.00		99	80-120	0.4	20	
Nitrate/Nitrite as N	4.07	0.055	0.40	"	4.00		102	80-120	0.6	20	
Matrix Spike (2206995-MS1)			**Source: 22H1193-01**		Prepared & Analyzed: 08/18/22						
Sulfate as SO4	5.07	0.038	0.50	mg/L	5.00	0.369	94	80-120			
Chloride	4.93	0.026	0.50	"	5.00	0.510	88	80-120			
Nitrate/Nitrite as N	3.90	0.055	0.40	"	4.00	ND	98	80-120			
Matrix Spike Dup (2206995-MSD1)			**Source: 22H1193-01**		Prepared & Analyzed: 08/18/22						
Chloride	4.99	0.026	0.50	mg/L	5.00	0.510	90	80-120	1	20	
Sulfate as SO4	5.14	0.038	0.50	"	5.00	0.369	95	80-120	1	20	
Nitrate/Nitrite as N	3.96	0.055	0.40	"	4.00	ND	99	80-120	1	20	
Batch 2206999 - General Prep											
Blank (2206999-BLK1)					Prepared: 08/18/22 Analyzed: 08/19/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2206999 - General Prep											
LCS (2206999-BS1)					Prepared: 08/18/22 Analyzed: 08/19/22						
Total Organic Carbon	11.2	0.54	1.0	mg/L	10.0		112	75-125			
LCS Dup (2206999-BSD1)					Prepared: 08/18/22 Analyzed: 08/19/22						
Total Organic Carbon	10.9	0.54	1.0	mg/L	10.0		109	75-125	3	25	
Matrix Spike (2206999-MS1)			**Source: 22H1018-01**		Prepared: 08/18/22 Analyzed: 08/19/22						
Total Organic Carbon	12.6	0.54	1.0	mg/L	10.0	1.98	106	75-125			
Matrix Spike Dup (2206999-MSD1)			**Source: 22H1018-01**		Prepared: 08/18/22 Analyzed: 08/19/22						
Total Organic Carbon	12.6	0.54	1.0	mg/L	10.0	1.98	106	75-125	0	25	
Batch 2207034 - General Preparation											
Blank (2207034-BLK1)					Prepared & Analyzed: 08/18/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							
LCS (2207034-BS1)					Prepared & Analyzed: 08/18/22						
Orthophosphate as PO4	0.917	0.0051	0.15	mg/L	0.918		100	80-120			
LCS Dup (2207034-BSD1)					Prepared & Analyzed: 08/18/22						
Orthophosphate as PO4	0.904	0.0051	0.15	mg/L	0.918		98	80-120	1	20	
Matrix Spike (2207034-MS1)			**Source: 22H1193-01**		Prepared & Analyzed: 08/18/22						
Orthophosphate as PO4	1.04	0.0051	0.15	mg/L	0.918	0.0180	111	75-125			
Matrix Spike Dup (2207034-MSD1)			**Source: 22H1193-01**		Prepared & Analyzed: 08/18/22						
Orthophosphate as PO4	1.06	0.0051	0.15	mg/L	0.918	0.0180	113	75-125	2	25	

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22H1193
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207036 - General Preparation											
Blank (2207036-BLK1)					Prepared & Analyzed: 08/18/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2207036-BS1)					Prepared & Analyzed: 08/18/22						
Total Phosphorus as P	0.313	0.023	0.050	mg/L	0.300		104	80-120			
LCS Dup (2207036-BSD1)					Prepared & Analyzed: 08/18/22						
Total Phosphorus as P	0.303	0.023	0.050	mg/L	0.300		101	80-120	3	25	
Matrix Spike (2207036-MS1)			**Source: 22H1018-01**		Prepared & Analyzed: 08/18/22						
Total Phosphorus as P	0.324	0.023	0.050	mg/L	0.300	ND	108	75-125			
Matrix Spike Dup (2207036-MSD1)			**Source: 22H1018-01**		Prepared & Analyzed: 08/18/22						
Total Phosphorus as P	0.328	0.023	0.050	mg/L	0.300	ND	109	75-125	1	30	
Batch 2207059 - General Preparation											
Blank (2207059-BLK1)					Prepared: 08/19/22 Analyzed: 08/22/22						
Total Suspended Solids	ND	2.0	5.0	mg/L							
Duplicate (2207059-DUP1)			**Source: 22H1160-01**		Prepared: 08/19/22 Analyzed: 08/22/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	
Batch 2207073 - General Prep											
Blank (2207073-BLK1)					Prepared & Analyzed: 08/19/22						
Cyanide (total)	ND	0.0012	0.0050	mg/L							

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1193
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207073 - General Prep											
LCS (2207073-BS1)					Prepared & Analyzed: 08/19/22						
Cyanide (total)	0.0787	0.0012	0.0050	mg/L	0.100		79	75-125			
LCS Dup (2207073-BSD1)					Prepared & Analyzed: 08/19/22						
Cyanide (total)	0.0836	0.0012	0.0050	mg/L	0.100		84	75-125	6	25	
Matrix Spike (2207073-MS1)			**Source: 22H1018-01**		Prepared & Analyzed: 08/19/22						
Cyanide (total)	0.0865	0.0012	0.0050	mg/L	0.100	0.00300	84	75-125			
Matrix Spike Dup (2207073-MSD1)			**Source: 22H1018-01**		Prepared & Analyzed: 08/19/22						
Cyanide (total)	0.0854	0.0012	0.0050	mg/L	0.100	0.00300	82	75-125	1	25	
Batch 2207082 - General Preparation											
Blank (2207082-BLK1)					Prepared: 08/19/22 Analyzed: 08/22/22						
Total Dissolved Solids	ND	5.0	10	mg/L							
Duplicate (2207082-DUP1)			**Source: 22H1168-02**		Prepared: 08/19/22 Analyzed: 08/22/22						
Total Dissolved Solids	ND	5.0	10	mg/L		6.00				20	
Batch 2207084 - Solvent Extract											
Blank (2207084-BLK1)					Prepared: 08/19/22 Analyzed: 08/22/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2207084-BS1)					Prepared: 08/19/22 Analyzed: 08/22/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.6	1.0	5.0	mg/L	40.0		99	78-114			

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CLS Work Order #: 22H1193
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207084 - Solvent Extract											
LCS Dup (2207084-BSD1)					Prepared: 08/19/22 Analyzed: 08/22/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.7	1.0	5.0	mg/L	40.0		99	78-114	0.3	18	
Batch 2207090 - General Preparation											
Blank (2207090-BLK1)					Prepared & Analyzed: 08/19/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Duplicate (2207090-DUP1)				**Source: 22H1086-01**	Prepared & Analyzed: 08/19/22						
Total Alkalinity	10.2	1.0	5.0	mg/L		10.2			0	20	
Bicarbonate as CaCO3	10.2	0.50	5.0	"		10.2			0	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Batch 2207133 - EPA 200 Series											
Blank (2207133-BLK1)					Prepared & Analyzed: 08/22/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2207133-BS1)					Prepared & Analyzed: 08/22/22						
Total Hardness as CaCO3	31.5	0.19	1.0	mg/L	33.1		95	85-115			
Matrix Spike (2207133-MS1)				**Source: 22H0933-01**	Prepared & Analyzed: 08/22/22						
Total Hardness as CaCO3	83.6	0.19	1.0	mg/L	33.1	54.4	88	70-130			

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1193
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207133 - EPA 200 Series											
Matrix Spike (2207133-MS2)			**Source: 22H1160-01**		Prepared & Analyzed: 08/22/22						
Total Hardness as CaCO3	262	0.19	1.0	mg/L	33.1	232	90	70-130			
Batch 2207135 - General Preparation											
Blank (2207135-BLK1)					Prepared & Analyzed: 08/22/22						
Ammonia as N	ND	0.025	0.10	mg/L							
LCS (2207135-BS1)					Prepared & Analyzed: 08/22/22						
Ammonia as N	0.438	0.025	0.10	mg/L	0.500		88	80-120			
LCS Dup (2207135-BSD1)					Prepared & Analyzed: 08/22/22						
Ammonia as N	0.455	0.025	0.10	mg/L	0.500		91	80-120	4	25	
Matrix Spike (2207135-MS1)			**Source: 22H1293-03**		Prepared & Analyzed: 08/22/22						
Ammonia as N	0.583	0.025	0.10	mg/L	0.500	0.146	87	75-125			
Matrix Spike Dup (2207135-MSD1)			**Source: 22H1293-03**		Prepared & Analyzed: 08/22/22						
Ammonia as N	0.609	0.025	0.10	mg/L	0.500	0.146	93	75-125	4	25	
Batch 2207171 - General Preparation											
Blank (2207171-BLK1)					Prepared & Analyzed: 08/23/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2207171-BS1)					Prepared & Analyzed: 08/23/22						
Total Kjeldahl Nitrogen	0.496	0.040	0.20	mg/L	0.500		99	80-120			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1193**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207171 - General Preparation											
LCS Dup (2207171-BSD1)					Prepared & Analyzed: 08/23/22						
Total Kjeldahl Nitrogen	0.529	0.040	0.20	mg/L	0.500		106	80-120	6	20	
Matrix Spike (2207171-MS1)			**Source: 22H1193-01**		Prepared & Analyzed: 08/23/22						
Total Kjeldahl Nitrogen	0.885	0.040	0.20	mg/L	0.500	0.265	124	75-125			
Matrix Spike Dup (2207171-MSD1)			**Source: 22H1193-01**		Prepared & Analyzed: 08/23/22						
Total Kjeldahl Nitrogen	0.914	0.040	0.20	mg/L	0.500	0.265	130	75-125	3	25	QM-7

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1193**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207038 - EPA 3510B GCNV											
Blank (2207038-BLK1)					Prepared & Analyzed: 08/18/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Hydraulic Oil	ND	0.030	0.050	"							
Mineral Oil	ND	0.020	0.050	"							
Kerosene	ND	0.0036	0.050	"							
Surrogate: o-Terphenyl	*0.0296*			*"*	*0.0250*		*118*	*65-135*			
LCS (2207038-BS1)					Prepared & Analyzed: 08/18/22						
Diesel	2.07	0.0021	0.050	mg/L	2.50		83	65-135			
Surrogate: o-Terphenyl	*0.0293*			*"*	*0.0250*		*117*	*65-135*			
LCS Dup (2207038-BSD1)					Prepared & Analyzed: 08/18/22						
Diesel	2.40	0.0021	0.050	mg/L	2.50		96	65-135	15	30	
Surrogate: o-Terphenyl	*0.0273*			*"*	*0.0250*		*109*	*65-135*			

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1193
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207109 - EPA 200 Series											
Blank (2207109-BLK1)					Prepared & Analyzed: 08/22/22						
Calcium	ND	27	1000	µg/L							
Iron	ND	9.1	100	"							
Magnesium	ND	21	1000	"							
Potassium	ND	61	1000	"							
Sodium	ND	34	1000	"							
LCS (2207109-BS1)					Prepared & Analyzed: 08/22/22						
Calcium	4610	27	1000	µg/L	5000		92	85-115			
Iron	449	9.1	100	"	500		90	85-115			
Magnesium	4900	21	1000	"	5000		98	85-115			
Potassium	4550	61	1000	"	5000		91	85-115			
Sodium	4330	34	1000	"	5000		87	85-115			
Matrix Spike (2207109-MS1)			**Source: 22H1171-01**		Prepared & Analyzed: 08/22/22						
Calcium	33300	27	1000	µg/L	5000	29000	86	70-130			
Iron	452	9.1	100	"	500	ND	90	70-130			
Magnesium	51800	21	1000	"	5000	47700	83	70-130			
Potassium	5740	61	1000	"	5000	1260	90	70-130			
Sodium	29600	34	1000	"	5000	25900	74	70-130			
Matrix Spike (2207109-MS2)			**Source: 22H1281-01**		Prepared & Analyzed: 08/22/22						
Calcium	5980	27	1000	µg/L	5000	1340	93	70-130			
Iron	479	9.1	100	"	500	ND	96	70-130			
Magnesium	5270	21	1000	"	5000	309	99	70-130			
Potassium	5220	61	1000	"	5000	336	98	70-130			
Sodium	5520	34	1000	"	5000	1060	89	70-130			

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Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1193
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207116 - EPA 200 Series											
Blank (2207116-BLK1)					Prepared: 08/22/22 Analyzed: 08/23/22						
Aluminum	ND	1.6	20	µg/L							
Barium	ND	0.14	5.0	"							
Manganese	0.219	0.050	2.0	"							
Silver	ND	0.070	0.50	"							
LCS (2207116-BS1)					Prepared: 08/22/22 Analyzed: 08/23/22						
Aluminum	483	1.6	20	µg/L	500		97	85-115			
Barium	99.4	0.14	5.0	"	100		99	85-115			
Manganese	96.7	0.050	2.0	"	100		97	85-115			
Silver	91.9	0.070	0.50	"	100		92	85-115			
Matrix Spike (2207116-MS1)			**Source: 22H1193-01**		Prepared: 08/22/22 Analyzed: 08/23/22						
Aluminum	490	1.6	20	µg/L	500	27.0	93	70-130			
Barium	103	0.14	5.0	"	100	5.63	98	70-130			
Manganese	88.9	0.050	2.0	"	100	2.46	86	70-130			
Silver	89.6	0.070	0.50	"	100	ND	90	70-130			

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1193
COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207133 - EPA 200 Series											
Blank (2207133-BLK1)					Prepared & Analyzed: 08/22/22						
Iron	ND	6.8	100	µg/L							
LCS (2207133-BS1)					Prepared & Analyzed: 08/22/22						
Iron	466	6.8	100	µg/L	500		93	85-115			
Matrix Spike (2207133-MS1)			**Source: 22H0933-01**		Prepared & Analyzed: 08/22/22						
Iron	454	6.8	100	µg/L	500	ND	91	70-130			
Matrix Spike (2207133-MS2)			**Source: 22H1160-01**		Prepared & Analyzed: 08/22/22						
Iron	497	6.8	100	µg/L	500	42.5	91	70-130			
Batch 2207432 - EPA 200 No Digestion											
Blank (2207432-BLK1)					Prepared & Analyzed: 08/31/22						
Aluminum	ND	0.52	20	µg/L							
Silver	ND	0.15	0.50	"							
LCS (2207432-BS1)					Prepared & Analyzed: 08/31/22						
Aluminum	482	0.52	20	µg/L	500		96	85-115			
Silver	96.3	0.15	0.50	"	100		96	85-115			
Matrix Spike (2207432-MS1)			**Source: 22H1193-01**		Prepared & Analyzed: 08/31/22						
Aluminum	507	0.52	20	µg/L	500	7.29	100	70-130			
Silver	96.9	0.15	0.50	"	100	ND	97	70-130			
Matrix Spike (2207432-MS2)			**Source: 22H1281-01**		Prepared & Analyzed: 08/31/22						
Aluminum	493	0.52	20	µg/L	500	7.48	97	70-130			
Silver	94.2	0.15	0.50	"	100	ND	94	70-130			

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Project: SMUD In situ & Chemistry Monitoring
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Project Manager: Emily Applequist

CLS Work Order #: 22H1193
COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207113 - EPA 5030 Water GC											
Blank (2207113-BLK1)					Prepared & Analyzed: 08/18/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*18.6*			*"*	*20.0*		*93*	*65-135*			
LCS (2207113-BS1)					Prepared & Analyzed: 08/18/22						
Gasoline	557	10	50	µg/L	500		111	70-130			
Surrogate: o-Chlorotoluene (Gas)	*19.4*			*"*	*20.0*		*97*	*65-135*			
LCS Dup (2207113-BSD1)					Prepared & Analyzed: 08/18/22						
Gasoline	504	10	50	µg/L	500		101	70-130	10	30	
Surrogate: o-Chlorotoluene (Gas)	*18.9*			*"*	*20.0*		*95*	*65-135*			

08/31/22 16:03

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1193**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207049 - EPA 3510B GCMS											
Blank (2207049-BLK1)					Prepared & Analyzed: 08/18/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Surrogate: Toluene-d8	*9.73*			"	*10.0*		*97*	*72-125*			
LCS (2207049-BS1)					Prepared & Analyzed: 08/18/22						
Methyl tert-butyl ether	21.3	0.095	0.50	µg/L	20.0		107	52-130			
Surrogate: Toluene-d8	*9.92*			"	*10.0*		*99*	*72-125*			
LCS Dup (2207049-BSD1)					Prepared & Analyzed: 08/18/22						
Methyl tert-butyl ether	22.2	0.095	0.50	µg/L	20.0		111	52-130	4	30	
Surrogate: Toluene-d8	*9.86*			"	*10.0*		*99*	*72-125*			
Matrix Spike (2207049-MS1)			**Source: 22H1173-07**		Prepared & Analyzed: 08/18/22						
Methyl tert-butyl ether	18.8	0.095	0.50	µg/L	20.0	ND	94	52-140			
Surrogate: Toluene-d8	*9.19*			"	*10.0*		*92*	*72-125*			
Matrix Spike Dup (2207049-MSD1)			**Source: 22H1173-07**		Prepared & Analyzed: 08/18/22						
Methyl tert-butyl ether	20.0	0.095	0.50	µg/L	20.0	ND	100	52-140	6	30	
Surrogate: Toluene-d8	*9.12*			"	*10.0*		*91*	*72-125*			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1193**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 72411193 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches.

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[X] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [X] NO [ ]

GLOBAL ID

FIELD CONDITIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	ANALYSIS REQUESTED: TSS, TDS, Hardness, Alkalinity, NO2-N+NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS: 1	2	3	5	SPECIAL INSTRUCTIONS
8.17	11:35	R-IS-5-UVR		Surface water			6	X	X	X	X	X	X					X	
8.17	11:45	R-IS-5-UVRB		Surface water			6	X	X	X	X	X	X					X	
8.17	12:30	R-IS-7-UVR		Surface water			6	X	X	X	X	X	X					X	
8.17	12:45	R-IS-7-UVRB		Surface water			6	X	X	X	X	X	X					X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	INVOICE TO:
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	**Project No. 750.10 Task 0620.01**
				Surface water			6											X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (2) HNO_3 (3) = COLD (4)= H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
[signature]	STILLWATER SCIENCES	8/17/22 15:45		

RECEIVED AT LAB BY: [signature] DATE/TIME: 8/17/22 1545

CONDITIONS/COMMENTS: 7.0/6.3

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER _____ AIR BILL # _____

basic laboratory

2218 Railroad Avenue
Redding, California 96001
voice 530.243.7234
fax 530.243.7494

3860 Morrow Lane, Suite F
Chico, California 95928
voice 530.894.8966
fax 530.894.5143

Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02 UARP

Lab No: 22H1194
Reported: 09/12/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22H1194, received on 08/24/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: R IS-18-RR
Matrix / Type: Surface Water (Grab)
Lab ID: 22H1194-01
Sampled: 08/23/22 09:55
Received: 08/24/22 09:16

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	2.04		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.53		0.04	0.10	"	"	"	"
Lead	"	0.086		0.007	0.050	"	"	"	"
Mercury	ng/l	1.68		0.22	0.50	EPA 1631E	09/04/22	09/04/22	B2H1671 / DJC
Methyl Mercury as Mercury	"	0.163		0.017	0.050	EPA 1630	09/10/22	09/09/22	B2I1046 / EDM
Nickel	ug/l	0.17		0.02	0.10	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	09/01/22	B2H1683 / BDL
Zinc	"	0.46	J	0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	1.74		0.12	0.50	"	08/31/22	08/31/22	B2H1670 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.47		0.04	0.10	"	"	"	"
Lead	"	0.065		0.007	0.050	"	"	"	"
Nickel	"	0.14		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	09/06/22	B2I0922 / BDL
Zinc	"	0.43	J	0.12	0.50	EPA 1638	08/31/22	08/31/22	B2H1670 / EDM

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Analytical Report

Description: IS-1-RR
Matrix / Type: Surface Water (Grab)
Lab ID: 22H1194-02
Sampled: 08/23/22 10:35
Received: 08/24/22 09:16

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	2.08		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Cadmium	"	0.05	J	0.02	0.10	"	"	"	"
Copper	"	0.59		0.04	0.10	"	"	"	"
Lead	"	0.098		0.007	0.050	"	"	"	"
Mercury	ng/l	1.74		0.22	0.50	EPA 1631E	09/04/22	09/04/22	B2H1671 / DJC
Methyl Mercury as Mercury	"	0.184		0.017	0.050	EPA 1630	09/10/22	09/09/22	B2I1046 / EDM
Nickel	ug/l	0.19		0.02	0.10	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	09/01/22	B2H1683 / BDL
Zinc	"	1.06		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	1.78		0.12	0.50	"	08/31/22	08/31/22	B2H1670 / EDM
Cadmium	"	0.02	J	0.02	0.10	"	"	"	"
Copper	"	0.51		0.04	0.10	"	"	"	"
Lead	"	0.067		0.007	0.050	"	"	"	"
Nickel	"	0.17		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	09/06/22	B2I0922 / BDL
Zinc	"	0.76		0.12	0.50	EPA 1638	08/31/22	08/31/22	B2H1670 / EDM

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Analytical Report

Description: IS-4-GC
Matrix / Type: Surface Water (Grab)
Lab ID: 22H1194-03
Sampled: 08/23/22 12:20
Received: 08/24/22 09:16

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.23		0.04	0.10	"	"	"	"
Lead	"	0.016	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.49	J	0.22	0.50	EPA 1631E	09/04/22	09/04/22	B2H1671 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	09/10/22	09/09/22	B2I1046 / EDM
Nickel	ug/l	0.19		0.02	0.10	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	09/01/22	B2H1683 / BDL
Zinc	"	0.90		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/31/22	08/31/22	B2H1670 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.18		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.19		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	09/06/22	B2I0922 / BDL
Zinc	"	0.83		0.12	0.50	EPA 1638	08/31/22	08/31/22	B2H1670 / EDM

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Analytical Report

Description: IS-4-GC-DUP
Matrix / Type: Surface Water (Grab)
Lab ID: 22H1194-04
Sampled: 08/23/22 12:30
Received: 08/24/22 09:16

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.22		0.04	0.10	"	"	"	"
Lead	"	0.015	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.51		0.22	0.50	EPA 1631E	09/04/22	09/04/22	B2H1671 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	09/10/22	09/09/22	B2I1046 / EDM
Nickel	ug/l	0.19		0.02	0.10	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	09/01/22	B2H1683 / BDL
Zinc	"	0.90		0.12	0.50	EPA 1638	08/31/22	08/30/22	B2H1644 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	08/31/22	08/31/22	B2H1670 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.19		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.18		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	09/06/22	B2I0922 / BDL
Zinc	"	0.79		0.12	0.50	EPA 1638	08/31/22	08/31/22	B2H1670 / EDM

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Analytical Report

Description: IS-10-SFSC
Matrix / Type: Surface Water (Grab)
Lab ID: 22H1194-05
Sampled: 08/23/22 13:55
Received: 08/24/22 09:16

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	09/08/22	09/07/22	B2I0956 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.14		0.04	0.10	"	"	"	"
Lead	"	0.012	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.74		0.22	0.50	EPA 1631E	09/04/22	09/04/22	B2H1671 / DJC
Methyl Mercury as Mercury	"	0.019	J	0.017	0.050	EPA 1630	09/10/22	09/09/22	B2I1046 / EDM
Nickel	ug/l	0.04	J	0.02	0.10	EPA 1638	09/08/22	09/07/22	B2I0956 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	09/01/22	B2H1683 / BDL
Zinc	"	0.18	J	0.12	0.50	EPA 1638	09/08/22	09/07/22	B2I0956 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	09/08/22	09/08/22	B2I1018 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.14		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.04	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	09/06/22	B2I0922 / BDL
Zinc	"	0.33	J	0.12	0.50	EPA 1638	09/08/22	09/08/22	B2I1018 / EDM

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Analytical Report

Description: IS-10-SFSC-FB
Matrix / Type: Surface Water (Grab)
Lab ID: 22H1194-06
Sampled: 08/23/22 13:40
Received: 08/24/22 09:16

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	09/08/22	09/07/22	B2I0956 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.05	J	0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Mercury	ng/l	ND		0.22	0.50	EPA 1631E	09/04/22	09/04/22	B2H1671 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	09/10/22	09/09/22	B2I1046 / EDM
Nickel	ug/l	ND		0.02	0.10	EPA 1638	09/08/22	09/07/22	B2I0956 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	09/01/22	B2H1683 / BDL
Zinc	"	0.66		0.12	0.50	EPA 1638	09/08/22	09/07/22	B2I0956 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	09/08/22	09/08/22	B2I1018 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	ND		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	ND		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	09/06/22	B2I0922 / BDL
Zinc	"	ND		0.12	0.50	EPA 1638	09/08/22	09/08/22	B2I1018 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2H1644 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total **Batch B2H1644 - EPA 1638 - Closed Bottle Oven Digestion**										
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.4	50-150			
Cadmium	0.25	0.10	ug/l	0.250		98.8	84-113			
Copper	0.24	0.10	ug/l	0.250		97.2	51-145			
Lead	0.125	0.050	ug/l	0.125		100	72-143			
Nickel	0.25	0.10	ug/l	0.250		99.9	68-134			
Zinc	1.20	0.50	ug/l	1.25		96.2	46-146			
LCS										
Arsenic	1.24	0.50	ug/l	1.25		98.9	50-150			
Cadmium	0.25	0.10	ug/l	0.250		100	84-113			
Copper	0.25	0.10	ug/l	0.250		98.0	51-145			
Lead	0.127	0.050	ug/l	0.125		102	72-143			
Nickel	0.25	0.10	ug/l	0.250		99.1	68-134			
Zinc	1.25	0.50	ug/l	1.25		100	46-146			
Matrix Spike	Source: 22H1028-01									
Arsenic	2.43	0.50	ug/l	2.50	ND	97.3	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.9	84-113			
Copper	0.68	0.10	ug/l	0.500	0.19	98.7	51-145			
Lead	0.251	0.050	ug/l	0.250	0.008	97.3	72-143			
Nickel	0.56	0.10	ug/l	0.500	0.09	94.6	68-134			
Zinc	2.54	0.50	ug/l	2.50	0.16	95.3	46-146			
Matrix Spike	Source: 22H1133-01									
Arsenic	2.41	0.50	ug/l	2.50	ND	96.4	50-150			
Cadmium	0.49	0.10	ug/l	0.500	ND	97.8	84-113			
Copper	0.61	0.10	ug/l	0.500	0.14	95.4	51-145			
Lead	0.251	0.050	ug/l	0.250	ND	100	72-143			
Nickel	0.55	0.10	ug/l	0.500	0.04	101	68-134			
Zinc	2.74	0.50	ug/l	2.50	0.31	97.2	46-146			
Matrix Spike Dup	Source: 22H1028-01									
Arsenic	2.51	0.50	ug/l	2.50	ND	100	50-150	3.10	20	
Cadmium	0.51	0.10	ug/l	0.500	ND	101	84-113	4.14	20	
Copper	0.69	0.10	ug/l	0.500	0.19	101	51-145	1.71	20	
Lead	0.247	0.050	ug/l	0.250	0.008	95.9	72-143	1.47	20	
Nickel	0.55	0.10	ug/l	0.500	0.09	92.7	68-134	1.78	20	
Zinc	2.58	0.50	ug/l	2.50	0.16	97.0	46-146	1.63	20	
Matrix Spike Dup	Source: 22H1133-01									
Arsenic	2.46	0.50	ug/l	2.50	ND	98.4	50-150	2.03	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.9	84-113	2.13	20	
Copper	0.63	0.10	ug/l	0.500	0.14	99.3	51-145	3.14	20	
Lead	0.247	0.050	ug/l	0.250	ND	98.9	72-143	1.54	20	

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2H1644 - EPA 1638 - Closed Bottle Oven Digestion**									
Nickel	0.55	0.10	ug/l	0.500	0.04	102	68-134	1.18	20	
Zinc	2.70	0.50	ug/l	2.50	0.31	95.4	46-146	1.61	20	
Metals - Total	**Batch B2H1671 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	10.2	0.50	ng/l	10.0		102	77-123			
Matrix Spike	Source: 22H1133-02									
Mercury	11.1	0.50	ng/l	10.0	0.71	104	71-125			
Matrix Spike	Source: 22H1241-01									
Mercury	11.1	0.50	ng/l	10.0	0.80	103	71-125			
Matrix Spike Dup	Source: 22H1133-02									
Mercury	11.2	0.50	ng/l	10.0	0.71	104	71-125	0.395	24	
Matrix Spike Dup	Source: 22H1241-01									
Mercury	11.4	0.50	ng/l	10.0	0.80	106	71-125	2.35	24	
Metals - Total	**Batch B2H1683 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	204	2.0	ug/l	200		102	85-115			
Duplicate	Source: 22H1194-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22H1335-04									
Selenium	0.4	2.0	ug/l		0.5			12.3	20	J
Matrix Spike	Source: 22H1194-01									
Selenium	203	2.0	ug/l	200	ND	102	75-125			
Matrix Spike	Source: 22H1335-04									
Selenium	203	2.0	ug/l	200	0.5	101	75-125			
Metals - Total	**Batch B2I0956 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total **Batch B2I0956 - EPA 1638 - Closed Bottle Oven Digestion**										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.5	50-150			
Cadmium	0.24	0.10	ug/l	0.250		95.7	84-113			
Copper	0.26	0.10	ug/l	0.250		102	51-145			
Lead	0.124	0.050	ug/l	0.125		99.3	72-143			
Nickel	0.26	0.10	ug/l	0.250		103	68-134			
Zinc	1.14	0.50	ug/l	1.25		90.9	46-146			
Matrix Spike	Source: 22H1194-05									
Arsenic	2.40	0.50	ug/l	2.50	ND	95.9	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	99.1	84-113			
Copper	0.62	0.10	ug/l	0.500	0.14	97.2	51-145			
Lead	0.256	0.050	ug/l	0.250	0.012	97.8	72-143			
Nickel	0.53	0.10	ug/l	0.500	0.04	98.7	68-134			
Zinc	2.63	0.50	ug/l	2.50	0.18	97.8	46-146			
Matrix Spike Dup	Source: 22H1194-05									
Arsenic	2.49	0.50	ug/l	2.50	ND	99.7	50-150	3.95	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	96.4	84-113	2.76	20	
Copper	0.63	0.10	ug/l	0.500	0.14	98.3	51-145	0.892	20	
Lead	0.252	0.050	ug/l	0.250	0.012	95.9	72-143	1.93	20	
Nickel	0.53	0.10	ug/l	0.500	0.04	98.3	68-134	0.401	20	
Zinc	2.60	0.50	ug/l	2.50	0.18	96.6	46-146	1.14	20	
Metals - Total **Batch B2I1046 - EPA 1630 Distillation (Modified)**										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.52	0.050	ng/l	2.00		126	67-133			
Matrix Spike	Source: 22H1133-02									
Methyl Mercury as Mercury	1.25	0.050	ng/l	1.00	0.026	122	65-135			
Matrix Spike	Source: 22H1194-06									
Methyl Mercury as Mercury	1.26	0.050	ng/l	1.00	ND	126	65-135			

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2I1046 - EPA 1630 Distillation (Modified)										
Matrix Spike Dup	Source: 22H1133-02									
Methyl Mercury as Mercury	1.36	0.050	ng/l	1.00	0.026	133	65-135	8.51	35	
Matrix Spike Dup	Source: 22H1194-06									
Methyl Mercury as Mercury	1.27	0.050	ng/l	1.00	ND	127	65-135	0.0870	35	
Metals - Dissolved Batch B2H1670 - EPA 1638 - Dissolved										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.7	50-150			
Cadmium	0.24	0.10	ug/l	0.250		96.5	84-113			
Copper	0.26	0.10	ug/l	0.250		103	51-145			
Lead	0.124	0.050	ug/l	0.125		99.2	72-143			
Nickel	0.24	0.10	ug/l	0.250		96.5	68-134			
Zinc	1.29	0.50	ug/l	1.25		103	46-146			
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.9	50-150			
Cadmium	0.25	0.10	ug/l	0.250		101	84-113			
Copper	0.26	0.10	ug/l	0.250		104	51-145			
Lead	0.126	0.050	ug/l	0.125		100	72-143			
Nickel	0.26	0.10	ug/l	0.250		105	68-134			
Zinc	1.27	0.50	ug/l	1.25		102	46-146			
Matrix Spike	Source: 22H1028-01									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved	**Batch B2H1670 - EPA 1638 - Dissolved**									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.69	0.10	ug/l	0.500	0.17	104	51-145			
Lead	0.245	0.050	ug/l	0.250	ND	97.9	72-143			
Nickel	0.57	0.10	ug/l	0.500	0.08	97.4	68-134			
Zinc	2.77	0.50	ug/l	2.50	0.21	102	46-146			
Matrix Spike	Source: 22H1133-01									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113			
Copper	0.62	0.10	ug/l	0.500	0.14	96.2	51-145			
Lead	0.249	0.050	ug/l	0.250	ND	99.7	72-143			
Nickel	0.51	0.10	ug/l	0.500	0.04	94.9	68-134			
Zinc	4.15	0.50	ug/l	2.50	1.66	99.5	46-146			
Matrix Spike Dup	Source: 22H1028-01									
Arsenic	2.47	0.50	ug/l	2.50	ND	99.0	50-150	2.18	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.5	84-113	1.97	20	
Copper	0.66	0.10	ug/l	0.500	0.17	98.8	51-145	3.95	20	
Lead	0.249	0.050	ug/l	0.250	ND	99.6	72-143	1.74	20	
Nickel	0.54	0.10	ug/l	0.500	0.08	92.2	68-134	4.64	20	
Zinc	2.60	0.50	ug/l	2.50	0.21	95.6	46-146	6.33	20	
Matrix Spike Dup	Source: 22H1133-01									
Arsenic	2.52	0.50	ug/l	2.50	ND	101	50-150	0.506	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.5	84-113	2.36	20	
Copper	0.63	0.10	ug/l	0.500	0.14	97.1	51-145	0.664	20	
Lead	0.248	0.050	ug/l	0.250	ND	99.0	72-143	0.704	20	
Nickel	0.52	0.10	ug/l	0.500	0.04	95.6	68-134	0.659	20	
Zinc	4.17	0.50	ug/l	2.50	1.66	100	46-146	0.373	20	
Metals - Dissolved	**Batch B2I0922 - EPA 200.8 Diss**									
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	195	2.0	ug/l	200		97.5	85-115			
Duplicate	Source: 22H1133-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22H1194-02									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22H1133-01									
Selenium	190	2.0	ug/l	200	ND	95.0	75-125			
Matrix Spike	Source: 22H1194-02									
Selenium	188	2.0	ug/l	200	ND	94.0	75-125			

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved	**Batch B2I1018 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.24	0.10	ug/l	0.250		96.9	84-113			
Copper	0.26	0.10	ug/l	0.250		104	51-145			
Lead	0.127	0.050	ug/l	0.125		102	72-143			
Nickel	0.27	0.10	ug/l	0.250		108	68-134			
Zinc	1.23	0.50	ug/l	1.25		98.2	46-146			
Matrix Spike	Source: 22H1194-05									
Arsenic	2.57	0.50	ug/l	2.50	ND	103	50-150			
Cadmium	0.49	0.10	ug/l	0.500	ND	97.7	84-113			
Copper	0.63	0.10	ug/l	0.500	0.14	98.4	51-145			
Lead	0.250	0.050	ug/l	0.250	ND	99.8	72-143			
Nickel	0.55	0.10	ug/l	0.500	0.04	102	68-134			
Zinc	2.76	0.50	ug/l	2.50	0.33	97.4	46-146			
Matrix Spike Dup	Source: 22H1194-05									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150	1.60	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.7	84-113	1.98	20	
Copper	0.64	0.10	ug/l	0.500	0.14	101	51-145	1.70	20	
Lead	0.253	0.050	ug/l	0.250	ND	101	72-143	1.24	20	
Nickel	0.56	0.10	ug/l	0.500	0.04	104	68-134	1.58	20	
Zinc	2.76	0.50	ug/l	2.50	0.33	97.2	46-146	0.190	20	

Notes and Definitions

J — Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.

ND — Analyte NOT DETECTED at or above the detection limit

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Analytical Report

RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	CA-ELAP does not accredit this analyte or method as of December 2020. *(Newly released 2021 FOA tables may include this analyte or method.)*
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless samples are received on ice and collected on the same day as delivery. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen
Ricky Jensen, General Manager
Pace Analytical Services LLC - Redding CA
California ELAP Cert #1677 & 2718

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

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LABORATORY WORK ORDER # 22H1194

PAGE 1 OF 1

22H1194

basic laboratory

CLIENT NAME: Stillwater Sciences

PROJECT NAME: SMUD UARP 2022

PROJECT / PO #: 750.10/620.02

PWS # (If Applicable):

MAILING ADDRESS: 279 Cousteau Place, Suite 400, Davis, CA 95618

REPORT TO ☑ Email ☐ Mail Hardcopy

NAME / ATTENTION: Emily Applequist

PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED ☒ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one) ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED			SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	8.23	0955	AM	PM	SW			R-3-18-RR		6	X	X	X	X	X	Y
2	8.23	1035	AM	PM				ES-1-RR		6	X	X	X	X	X	X
3	8.23	12:20	AM	PM				IS-4-GC		6	X	X	X	X	X	X
4	8.23	12:35	AM	PM				IS-4-GC-DUP		6	X	X	X	X	X	X
5	8.23	13:55	AM	PM				IS-10-SESC		6	X	X	X	X	X	X
6	8.23	13:40	AM	PM				IS-10-SESC-FB		6	X	X	X	X	X	X
			AM	PM												
			AM	PM												
			AM	PM												
			AM	PM												

SAMPLED BY: (please print) BH/EA

RELINQUISHED DATE / TIME:

SAMPLING / ANALYSIS COMMENTS

(1) Total and Dissolved LL 1638 Metals

1 per bottle BB 8.24.22

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME: BRUCE WITH

SIGNATURE

DATE: 8.23.22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
	8/24/22 0916		8/25/22 1642

For Official Lab Comments Only

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

FRM-002.1 - Chain of Custody (rev 1.1)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 2241194

SHIPPING INFORMATION

Walk-In ☐
Courier ☐
FedEx ☑
UPS ☐
Other ☐

Cooler Present? Yes ☑ No ☐

Samples Received By: BM Date: 8/24/22

	Yes	No
Samples received on ice?	☑	☐
Samples received the same day collected?	☐	☒

Ice type? ☑ Wet ☐ Blue ☐ Other _____ Melted

SAMPLE TEMPERATURES AT RECEIPT **Therm. ID (Circle one):** Therm-36 Therm-37 (Therm-59) Other: _____

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	16.9	-06	16.1	-11		-16	
-02	14.2	-07		-12		-17	
-03	11.5	-08		-13		-18	
-04	11.7	-09		-14		-19	
-05	12.2	-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: BM Date: 8/24/22

	Yes	No	NA
Custody seals present?	☐	☐	☑
Samples in proper containers?	☒	☐	
Sample containers damaged?	☐	☒	
Sufficient sample volume for indicated tests?	☒	☐	
Samples received within holding times?	☒	☐	
Are VOA vials free of headspace?	☐	☐	☒
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☒

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☒	☐	☐
Preserved in the lab?	☒	☐	☐

Lab Preservation Date & Time 8/24/22 1007

☐ H2SO4 (ID_____) ☒ HNO3 (ID 26080026) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☒
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☒	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☒
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☒
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☒
Are proper preservation lables present?	☒	☐	☐

By:_____ Meter ID:_____

Preservation checked at Lab? Date & Time 8/24/22 1009 Test Strip (ID 2024019)

Preservation and Preservation Checks performed by: BM

COMMENTS, DISCREPANCEIS, ANOMALIES

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02 UARP

Lab No: 22H1241
Reported: 09/19/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22H1241, received on 08/25/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: R-IS-19-BI
Matrix / Type: Surface Water (Grab)
Lab ID: 22H1241-01
Sampled: 08/24/22 10:15
Received: 08/25/22 08:16

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.21	J	0.12	0.50	EPA 1638	09/08/22	09/07/22	B2I0956 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.24		0.04	0.10	"	"	"	"
Lead	"	0.008	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.80		0.22	0.50	EPA 1631E	09/04/22	09/04/22	B2H1671 / DJC
Methyl Mercury as Mercury	"	0.033	J	0.017	0.050	EPA 1630	09/10/22	09/09/22	B2I1046 / EDM
Nickel	ug/l	0.06	J	0.02	0.10	EPA 1638	09/08/22	09/07/22	B2I0956 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	08/26/22	B2H1555 / BDL
Zinc	"	ND		0.12	0.50	EPA 1638	09/08/22	09/07/22	B2I0956 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.27	J	0.12	0.50	"	09/08/22	09/08/22	B2I1018 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.20		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.06	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	09/06/22	B2I0922 / BDL
Zinc	"	0.30	J	0.12	0.50	EPA 1638	09/08/22	09/08/22	B2I1018 / EDM

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Analytical Report

Description: R-IS-19-BIB
Matrix / Type: Surface Water (Grab)
Lab ID: 22H1241-02
Sampled: 08/24/22 10:30
Received: 08/25/22 08:16

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.22	J	0.12	0.50	EPA 1638	09/08/22	09/07/22	B2I0956 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.15		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Mercury	ng/l	1.60		0.22	0.50	EPA 1631E	09/04/22	09/04/22	B2H1671 / DJC
Methyl Mercury as Mercury	"	0.129		0.017	0.050	EPA 1630	09/10/22	09/09/22	B2I1046 / EDM
Nickel	ug/l	0.07	J	0.02	0.10	EPA 1638	09/08/22	09/07/22	B2I0956 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	08/26/22	B2H1555 / BDL
Zinc	"	2.31		0.12	0.50	EPA 1638	09/08/22	09/07/22	B2I0956 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.22	J	0.12	0.50	"	09/08/22	09/08/22	B2I1018 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.14		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.05	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	09/06/22	B2I0922 / BDL
Zinc	"	1.73		0.12	0.50	EPA 1638	09/08/22	09/08/22	B2I1018 / EDM

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fax 530.894.5143

Analytical Report

Description: IS-3-LRR
Matrix / Type: Surface Water (Grab)
Lab ID: 22H1241-03
Sampled: 08/24/22 11:15
Received: 08/25/22 08:16

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.25	J	0.12	0.50	EPA 1638	09/08/22	09/07/22	B2I0956 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.24		0.04	0.10	"	"	"	"
Lead	"	0.014	J	0.007	0.050	"	"	"	"
Mercury	ng/l	0.69		0.22	0.50	EPA 1631E	09/04/22	09/04/22	B2H1671 / DJC
Methyl Mercury as Mercury	"	0.050	J	0.017	0.050	EPA 1630	09/10/22	09/09/22	B2I1046 / EDM
Nickel	ug/l	0.07	J	0.02	0.10	EPA 1638	09/08/22	09/07/22	B2I0956 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	08/26/22	B2H1555 / BDL
Zinc	"	0.14	J	0.12	0.50	EPA 1638	09/08/22	09/07/22	B2I0956 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.25	J	0.12	0.50	"	09/08/22	09/08/22	B2I1018 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.20		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	0.05	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	09/06/22	B2I0922 / BDL
Zinc	"	ND		0.12	0.50	EPA 1638	09/08/22	09/08/22	B2I1018 / EDM

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Analytical Report

Description: IS-2-LRR
Matrix / Type: Surface Water (Grab)
Lab ID: 22H1241-04
Sampled: 08/24/22 12:35
Received: 08/25/22 08:16

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.36	J	0.12	0.50	EPA 1638	09/08/22	09/07/22	B2I0956 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.24		0.04	0.10	"	"	"	"
Lead	"	0.036	J	0.007	0.050	"	"	"	"
Mercury	ng/l	1.42		0.22	0.50	EPA 1631E	09/04/22	09/04/22	B2H1671 / DJC
Methyl Mercury as Mercury	"	0.082		0.017	0.050	EPA 1630	09/16/22	09/15/22	B2I1219 / EDM
Nickel	ug/l	0.13		0.02	0.10	EPA 1638	09/08/22	09/07/22	B2I0956 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	08/26/22	B2H1555 / BDL
Zinc	"	0.67		0.12	0.50	EPA 1638	09/08/22	09/07/22	B2I0956 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.35	J	0.12	0.50	"	09/08/22	09/08/22	B2I1018 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	0.20		0.04	0.10	"	"	"	"
Lead	"	0.009	J	0.007	0.050	"	"	"	"
Nickel	"	0.10	J	0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	09/06/22	09/06/22	B2I0922 / BDL
Zinc	"	0.44	J	0.12	0.50	EPA 1638	09/08/22	09/08/22	B2I1018 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2H1555 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	204	2.0	ug/l	200		102	85-115			
Duplicate	Source: 22H1133-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22H1241-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22H1133-01									
Selenium	201	2.0	ug/l	200	ND	100	75-125			
Matrix Spike	Source: 22H1241-01									
Selenium	202	2.0	ug/l	200	ND	101	75-125			
Metals - Total	**Batch B2H1671 - BrCl Digestion**									

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2H1671 - BrCl Digestion										
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	10.2	0.50	ng/l	10.0		102	77-123			
Matrix Spike	Source: 22H1133-02									
Mercury	11.1	0.50	ng/l	10.0	0.71	104	71-125			
Matrix Spike	Source: 22H1241-01									
Mercury	11.1	0.50	ng/l	10.0	0.80	103	71-125			
Matrix Spike Dup	Source: 22H1133-02									
Mercury	11.2	0.50	ng/l	10.0	0.71	104	71-125	0.395	24	
Matrix Spike Dup	Source: 22H1241-01									
Mercury	11.4	0.50	ng/l	10.0	0.80	106	71-125	2.35	24	
Metals - Total Batch B2I0956 - EPA 1638 - Closed Bottle Oven Digestion										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.5	50-150			
Cadmium	0.24	0.10	ug/l	0.250		95.7	84-113			
Copper	0.26	0.10	ug/l	0.250		102	51-145			
Lead	0.124	0.050	ug/l	0.125		99.3	72-143			
Nickel	0.26	0.10	ug/l	0.250		103	68-134			
Zinc	1.14	0.50	ug/l	1.25		90.9	46-146			

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2I0956 - EPA 1638 - Closed Bottle Oven Digestion										
Matrix Spike	Source: 22H1194-05									
Arsenic	2.40	0.50	ug/l	2.50	ND	95.9	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	99.1	84-113			
Copper	0.62	0.10	ug/l	0.500	0.14	97.2	51-145			
Lead	0.256	0.050	ug/l	0.250	0.012	97.8	72-143			
Nickel	0.53	0.10	ug/l	0.500	0.04	98.7	68-134			
Zinc	2.63	0.50	ug/l	2.50	0.18	97.8	46-146			
Matrix Spike Dup	Source: 22H1194-05									
Arsenic	2.49	0.50	ug/l	2.50	ND	99.7	50-150	3.95	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	96.4	84-113	2.76	20	
Copper	0.63	0.10	ug/l	0.500	0.14	98.3	51-145	0.892	20	
Lead	0.252	0.050	ug/l	0.250	0.012	95.9	72-143	1.93	20	
Nickel	0.53	0.10	ug/l	0.500	0.04	98.3	68-134	0.401	20	
Zinc	2.60	0.50	ug/l	2.50	0.18	96.6	46-146	1.14	20	
Metals - Total Batch B2I1046 - EPA 1630 Distillation (Modified)										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.52	0.050	ng/l	2.00		126	67-133			
Matrix Spike	Source: 22H1133-02									
Methyl Mercury as Mercury	1.25	0.050	ng/l	1.00	0.026	122	65-135			
Matrix Spike	Source: 22H1194-06									
Methyl Mercury as Mercury	1.26	0.050	ng/l	1.00	ND	126	65-135			
Matrix Spike Dup	Source: 22H1133-02									
Methyl Mercury as Mercury	1.36	0.050	ng/l	1.00	0.026	133	65-135	8.51	35	
Matrix Spike Dup	Source: 22H1194-06									
Methyl Mercury as Mercury	1.27	0.050	ng/l	1.00	ND	127	65-135	0.0870	35	
Metals - Total Batch B2I1219 - EPA 1630 Distillation (Modified)										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	1.90	0.050	ng/l	2.00		94.9	67-133			
Matrix Spike	Source: 22H1241-04									
Methyl Mercury as Mercury	1.22	0.050	ng/l	1.00	0.082	113	65-135			

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2I1219 - EPA 1630 Distillation (Modified)										
Matrix Spike Dup	Source: 22H1241-04									
Methyl Mercury as Mercury	1.19	0.050	ng/l	1.00	0.082	111	65-135	2.36	35	
Metals - Dissolved Batch B2I0922 - EPA 200.8 Diss										
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	195	2.0	ug/l	200		97.5	85-115			
Duplicate	Source: 22H1133-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22H1194-02									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22H1133-01									
Selenium	190	2.0	ug/l	200	ND	95.0	75-125			
Matrix Spike	Source: 22H1194-02									
Selenium	188	2.0	ug/l	200	ND	94.0	75-125			
Metals - Dissolved Batch B2I1018 - EPA 1638 - Dissolved										
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved **Batch B2I1018 - EPA 1638 - Dissolved**										
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.24	0.10	ug/l	0.250		96.9	84-113			
Copper	0.26	0.10	ug/l	0.250		104	51-145			
Lead	0.127	0.050	ug/l	0.125		102	72-143			
Nickel	0.27	0.10	ug/l	0.250		108	68-134			
Zinc	1.23	0.50	ug/l	1.25		98.2	46-146			
Matrix Spike	Source: 22H1194-05									
Arsenic	2.57	0.50	ug/l	2.50	ND	103	50-150			
Cadmium	0.49	0.10	ug/l	0.500	ND	97.7	84-113			
Copper	0.63	0.10	ug/l	0.500	0.14	98.4	51-145			
Lead	0.250	0.050	ug/l	0.250	ND	99.8	72-143			
Nickel	0.55	0.10	ug/l	0.500	0.04	102	68-134			
Zinc	2.76	0.50	ug/l	2.50	0.33	97.4	46-146			
Matrix Spike Dup	Source: 22H1194-05									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150	1.60	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.7	84-113	1.98	20	
Copper	0.64	0.10	ug/l	0.500	0.14	101	51-145	1.70	20	
Lead	0.253	0.050	ug/l	0.250	ND	101	72-143	1.24	20	
Nickel	0.56	0.10	ug/l	0.500	0.04	104	68-134	1.58	20	
Zinc	2.76	0.50	ug/l	2.50	0.33	97.2	46-146	0.190	20	

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	CA-ELAP does not accredit this analyte or method as of December 2020. *(Newly released 2021 FOA tables may include this analyte or method.)*
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless samples are received on ice and collected on the same day as delivery. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

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Analytical Report

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen

Ricky Jensen, General Manager
Pace Analytical Services LLC - Redding CA
California ELAP Cert #1677 & 2718

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494
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LABORATORY WORK ORDER # 22H1241
PAGE 1 OF 1

22H1241

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS
279 Coustea Place, Suite 400
Davis, CA 95618

REPORT TO ☑ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED
☑ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one) ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	ANALYSES REQUESTED: T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	8.24	10:15 AM PM	SW			R.IS.19.BI		6	X	X	X	X	X	X
2	8.24	10:30 AM PM	↓			R.IS.19.BIB		2	X	X	X	X	X	X
3	8.24	11:55 AM PM				IS.3.LRR		6	X	X	X	X	X	X
4	8.24	12:35 AM PM	↓			IS.2.LRR		6	X	X	X	X	X	X
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												

SAMPLED BY: (please print) BRUCE A. HOA

RELINQUISHED DATE / TIME:

SAMPLING / ANALYSIS COMMENTS
(1) Total and Dissolved LL 1638 Metals

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME	SIGNATURE	DATE
BRUCE HOA		8.24.22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
	8.25.22 0816		8.25.22 0856

For Official Lab Comments Only

*SAMPLE TYPE CODES
DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water
SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

FRM-002.1 - Chain of Custody (rev 1.1)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22H1241

SHIPPING INFORMATION

Walk-In ☐
Courier ☐
FedEx ☑ Express
UPS ☐
Other ☐

Cooler Present? Yes ☑ No ☐

Samples Received By: RH Date: 8.25.22

	Yes	No
Samples received on ice?	☑	☐
Samples received the same day collected?	☐	☑

Ice type? ☑ Wet ☐ Blue ☐ Other _____

Melted

SAMPLE TEMPERATURES AT RECEIPT Therm. ID (Circle one): Therm-36 Therm-37 (Therm-59) Other: _____

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	5.0	-06		-11		-16	
-02	9.7	-07		-12		-17	
-03	2.5	-08		-13		-18	
-04	3.7	-09		-14		-19	
-05		-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: RH Date: 8.25.22

	Yes	No	NA
Custody seals present?	☐	☐	☑
Samples in proper containers?	☑	☐	
Sample containers damaged?	☐	☑	
Sufficient sample volume for indicated tests?	☑	☐	
Samples received within holding times?	☑	☐	
Are VOA vials free of headspace?	☐	☐	☑
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☑

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☑	☐	☐
Preserved in the lab?	☑	☐	☐

Lab Preservation Date & Time 8.25.22 0833

☐ H2SO4 (ID_____) ☑ HNO3 (ID 2G08006) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑
Are proper preservation lables present?	☑	☐	☐

By:_____ Meter ID:_____

Preservation checked at Lab? Date & Time 8.25.22 0834 Test Strip (ID 2B24019)

Preservation and Preservation Checks performed by: RH

COMMENTS, DISCREPANCEIS, ANOMALIES

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

September 02, 2022

CLS Work Order #: 22H1281
COC #:

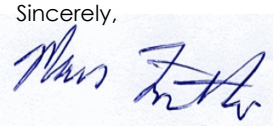
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 08/18/22 16:20. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1281
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-6-UVR (22H1281-01) Surface Water	**Sampled: 08/18/22 08:40**		**Received: 08/18/22 16:20**							
Ammonia as N	ND	0.025	0.10	mg/L	1	2207173	08/23/22	08/23/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**7.0**	0.50	5.0	"	"	2207090	08/19/22	08/19/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.51**	0.026	0.50	"	"	2207051	08/19/22	08/19/22	EPA 300.0	
Cyanide (total)	**0.0026**	0.0012	0.0050	"	"	2207258	08/25/22	08/25/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2207213	08/24/22	08/26/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2207090	08/19/22	08/19/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2207051	08/19/22	08/19/22	EPA 300.0	
Orthophosphate as PO4	**0.0059**	0.0051	0.15	"	"	2207066	08/19/22	08/19/22	SM4500-P E	
Sulfate as SO4	**0.37**	0.038	0.50	"	"	2207051	08/19/22	08/19/22	EPA 300.0	
Total Alkalinity	**7.0**	1.0	5.0	"	"	2207090	08/19/22	08/19/22	SM2320B	
Total Dissolved Solids	**14**	5.0	10	"	"	2207224	08/24/22	08/26/22	SM2540C	
Total Hardness as CaCO3	**4.4**	0.19	1.0	"	"	2207134	08/22/22	08/22/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.26**	0.040	0.20	"	"	2207218	08/24/22	08/24/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.4**	0.54	1.0	"	"	2207101	08/22/22	08/23/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2207193	08/24/22	08/24/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2207174	08/23/22	08/23/22	SM2540D	
R-IS-6-UVRB (22H1281-02) Surface Water	**Sampled: 08/18/22 08:55**		**Received: 08/18/22 16:20**							
Ammonia as N	**0.043**	0.025	0.10	mg/L	1	2207173	08/23/22	08/23/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**7.0**	0.50	5.0	"	"	2207090	08/19/22	08/19/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.53**	0.026	0.50	"	"	2207051	08/19/22	08/19/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2207258	08/25/22	08/25/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2207213	08/24/22	08/26/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2207090	08/19/22	08/19/22	SM2320B	
Nitrate/Nitrite as N	**0.060**	0.055	0.40	"	"	2207051	08/19/22	08/19/22	EPA 300.0	
Orthophosphate as PO4	**0.0099**	0.0051	0.15	"	"	2207066	08/19/22	08/19/22	SM4500-P E	

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Stillwater Sciences
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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22H1281
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-6-UVRB (22H1281-02) Surface Water	**Sampled: 08/18/22 08:55**		**Received: 08/18/22 16:20**							
Sulfate as SO4	**0.43**	0.038	0.50	mg/L	1	2207051	08/19/22	08/19/22	EPA 300.0	
Total Alkalinity	**7.0**	1.0	5.0	"	"	2207090	08/19/22	08/19/22	SM2320B	
Total Dissolved Solids	**16**	5.0	10	"	"	2207224	08/24/22	08/26/22	SM2540C	
Total Hardness as CaCO3	**4.7**	0.19	1.0	"	"	2207134	08/22/22	08/22/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.18**	0.040	0.20	"	"	2207218	08/24/22	08/24/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.2**	0.54	1.0	"	"	2207101	08/22/22	08/23/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2207193	08/24/22	08/24/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2207174	08/23/22	08/23/22	SM2540D	
R-IS-8-UVR (22H1281-03) Surface Water	**Sampled: 08/18/22 10:10**		**Received: 08/18/22 16:20**							
Ammonia as N	**0.035**	0.025	0.10	mg/L	1	2207173	08/23/22	08/23/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**6.8**	0.50	5.0	"	"	2207090	08/19/22	08/19/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.56**	0.026	0.50	"	"	2207051	08/19/22	08/19/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2207258	08/25/22	08/25/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2207213	08/24/22	08/26/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2207090	08/19/22	08/19/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2207051	08/19/22	08/19/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2207066	08/19/22	08/19/22	SM4500-P E	
Sulfate as SO4	**0.37**	0.038	0.50	"	"	2207051	08/19/22	08/19/22	EPA 300.0	
Total Alkalinity	**6.8**	1.0	5.0	"	"	2207090	08/19/22	08/19/22	SM2320B	
Total Dissolved Solids	**21**	5.0	10	"	"	2207224	08/24/22	08/26/22	SM2540C	
Total Hardness as CaCO3	**4.5**	0.19	1.0	"	"	2207134	08/22/22	08/22/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.19**	0.040	0.20	"	"	2207218	08/24/22	08/24/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.5**	0.54	1.0	"	"	2207101	08/22/22	08/23/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2207193	08/24/22	08/24/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2207174	08/23/22	08/23/22	SM2540D	

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COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-8-UVRB (22H1281-04) Surface Water	**Sampled: 08/18/22 10:45**		**Received: 08/18/22 16:20**							
Ammonia as N	**0.033**	0.025	0.10	mg/L	1	2207173	08/23/22	08/23/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**5.6**	0.50	5.0	"	"	2207090	08/19/22	08/19/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.53**	0.026	0.50	"	"	2207051	08/19/22	08/19/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2207258	08/25/22	08/25/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2207213	08/24/22	08/26/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2207090	08/19/22	08/19/22	SM2320B	
Nitrate/Nitrite as N	**0.060**	0.055	0.40	"	"	2207051	08/19/22	08/19/22	EPA 300.0	
Orthophosphate as PO4	**0.0099**	0.0051	0.15	"	"	2207066	08/19/22	08/19/22	SM4500-P E	
Sulfate as SO4	**0.43**	0.038	0.50	"	"	2207051	08/19/22	08/19/22	EPA 300.0	
Total Alkalinity	**5.6**	1.0	5.0	"	"	2207090	08/19/22	08/19/22	SM2320B	
Total Dissolved Solids	**10**	5.0	10	"	"	2207224	08/24/22	08/26/22	SM2540C	
Total Hardness as CaCO3	**4.3**	0.19	1.0	"	"	2207134	08/22/22	08/22/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.31**	0.040	0.20	"	"	2207218	08/24/22	08/24/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.2**	0.54	1.0	"	"	2207101	08/22/22	08/23/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2207193	08/24/22	08/24/22	SM4500-P E	
Total Suspended Solids	**8.0**	2.0	5.0	"	"	2207174	08/23/22	08/23/22	SM2540D	

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Project: SMUD In situ & Chemistry Monitoring
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Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-6-UVR (22H1281-01) Surface Water	**Sampled: 08/18/22 08:40**		**Received: 08/18/22 16:20**							
Diesel	ND	0.0021	0.050	mg/L	1	2207038	08/19/22	08/19/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*103 %*	*65-135*		"	"	"	"	
R-IS-6-UVRB (22H1281-02) Surface Water	**Sampled: 08/18/22 08:55**		**Received: 08/18/22 16:20**							
Diesel	ND	0.0021	0.050	mg/L	1	2207038	08/19/22	08/19/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*82 %*	*65-135*		"	"	"	"	
R-IS-8-UVR (22H1281-03) Surface Water	**Sampled: 08/18/22 10:10**		**Received: 08/18/22 16:20**							
Diesel	ND	0.0021	0.050	mg/L	1	2207038	08/19/22	08/19/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*105 %*	*65-135*		"	"	"	"	
R-IS-8-UVRB (22H1281-04) Surface Water	**Sampled: 08/18/22 10:45**		**Received: 08/18/22 16:20**							
Diesel	ND	0.0021	0.050	mg/L	1	2207038	08/19/22	08/19/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1281**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-8-UVRB (22H1281-04) Surface Water Sampled: 08/18/22 10:45 Received: 08/18/22 16:20										
Surrogate: o-Terphenyl			*90 %*		*65-135*	*2207038*	"	*08/19/22*	*EPA 8015M*	

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Project: SMUD In situ & Chemistry Monitoring
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COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-6-UVR (22H1281-01) Surface Water	**Sampled: 08/18/22 08:40**		**Received: 08/18/22 16:20**							
Aluminum	**24**	1.6	20	µg/L	1	2207102	08/22/22	08/23/22	EPA 200.8	
Barium	**5.6**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1300**	27	1000	"	"	2207109	08/22/22	08/22/22	EPA 200.7	
Iron	ND	9.1	100	"	"	"	"	"	"	
Magnesium	**310**	21	1000	"	"	"	"	"	"	
Manganese	**2.1**	0.050	2.0	"	"	2207102	08/22/22	08/23/22	EPA 200.8	
Potassium	**340**	61	1000	"	"	2207109	08/22/22	08/22/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2207102	08/22/22	08/23/22	EPA 200.8	
Sodium	**1100**	34	1000	"	"	2207109	08/22/22	08/22/22	EPA 200.7	
R-IS-6-UVRB (22H1281-02) Surface Water	**Sampled: 08/18/22 08:55**		**Received: 08/18/22 16:20**							
Aluminum	**26**	1.6	20	µg/L	1	2207102	08/22/22	08/23/22	EPA 200.8	
Barium	**5.9**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1300**	27	1000	"	"	2207109	08/22/22	08/22/22	EPA 200.7	
Iron	**31**	9.1	100	"	"	"	"	"	"	
Magnesium	**300**	21	1000	"	"	"	"	"	"	
Manganese	**5.1**	0.050	2.0	"	"	2207102	08/22/22	08/23/22	EPA 200.8	
Potassium	**260**	61	1000	"	"	2207109	08/22/22	08/22/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2207102	08/22/22	08/23/22	EPA 200.8	
Sodium	**980**	34	1000	"	"	2207109	08/22/22	08/22/22	EPA 200.7	
R-IS-8-UVR (22H1281-03) Surface Water	**Sampled: 08/18/22 10:10**		**Received: 08/18/22 16:20**							
Aluminum	**22**	1.6	20	µg/L	1	2207102	08/22/22	08/23/22	EPA 200.8	
Barium	**5.8**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1400**	27	1000	"	"	2207109	08/22/22	08/22/22	EPA 200.7	
Iron	**17**	9.1	100	"	"	"	"	"	"	
Magnesium	**310**	21	1000	"	"	"	"	"	"	
Manganese	**2.0**	0.050	2.0	"	"	2207102	08/22/22	08/23/22	EPA 200.8	
Potassium	**370**	61	1000	"	"	2207109	08/22/22	08/22/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2207102	08/22/22	08/23/22	EPA 200.8	
Sodium	**1100**	34	1000	"	"	2207109	08/22/22	08/22/22	EPA 200.7	

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Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-8-UVRB (22H1281-04) Surface Water	**Sampled: 08/18/22 10:45**		**Received: 08/18/22 16:20**							
Aluminum	**96**	1.6	20	µg/L	1	2207102	08/22/22	08/23/22	EPA 200.8	
Barium	**6.4**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1300**	27	1000	"	"	2207109	08/22/22	08/22/22	EPA 200.7	
Iron	**91**	9.1	100	"	"	"	"	"	"	
Magnesium	**300**	21	1000	"	"	"	"	"	"	
Manganese	**8.8**	0.050	2.0	"	"	2207102	08/22/22	08/23/22	EPA 200.8	
Potassium	**260**	61	1000	"	"	2207109	08/22/22	08/22/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2207102	08/22/22	08/23/22	EPA 200.8	
Sodium	**980**	34	1000	"	"	2207109	08/22/22	08/22/22	EPA 200.7	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-6-UVR (22H1281-01) Surface Water	**Sampled: 08/18/22 08:40**		**Received: 08/18/22 16:20**							
Aluminum	**7.5**	0.52	20	µg/L	1	2207432	08/31/22	08/31/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2207134	08/22/22	08/22/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207432	08/31/22	08/31/22	EPA 200.8	
R-IS-6-UVRB (22H1281-02) Surface Water	**Sampled: 08/18/22 08:55**		**Received: 08/18/22 16:20**							
Aluminum	**3.2**	0.52	20	µg/L	1	2207432	08/31/22	08/31/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2207134	08/22/22	08/22/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207432	08/31/22	08/31/22	EPA 200.8	
R-IS-8-UVR (22H1281-03) Surface Water	**Sampled: 08/18/22 10:10**		**Received: 08/18/22 16:20**							
Aluminum	**5.4**	0.52	20	µg/L	1	2207432	08/31/22	08/31/22	EPA 200.8	
Iron	**6.9**	6.8	100	"	"	2207134	08/22/22	08/22/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207432	08/31/22	08/31/22	EPA 200.8	
R-IS-8-UVRB (22H1281-04) Surface Water	**Sampled: 08/18/22 10:45**		**Received: 08/18/22 16:20**							
Aluminum	**3.3**	0.52	20	µg/L	1	2207432	08/31/22	08/31/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2207134	08/22/22	08/22/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207432	08/31/22	08/31/22	EPA 200.8	

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TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-6-UVR (22H1281-01) Surface Water	**Sampled: 08/18/22 08:40**		**Received: 08/18/22 16:20**							
Gasoline	ND	10	50	µg/L	1	2207154	08/22/22	08/23/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*88 %*	*65-135*		"	"	"	"	
R-IS-6-UVRB (22H1281-02) Surface Water	**Sampled: 08/18/22 08:55**		**Received: 08/18/22 16:20**							
Gasoline	ND	10	50	µg/L	1	2207154	08/22/22	08/23/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*88 %*	*65-135*		"	"	"	"	
R-IS-8-UVR (22H1281-03) Surface Water	**Sampled: 08/18/22 10:10**		**Received: 08/18/22 16:20**							
Gasoline	ND	10	50	µg/L	1	2207154	08/22/22	08/23/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*96 %*	*65-135*		"	"	"	"	
R-IS-8-UVRB (22H1281-04) Surface Water	**Sampled: 08/18/22 10:45**		**Received: 08/18/22 16:20**							
Gasoline	ND	10	50	µg/L	1	2207154	08/22/22	08/23/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*89 %*	*65-135*		"	"	"	"	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1281
COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-6-UVR (22H1281-01) Surface Water	**Sampled: 08/18/22 08:40**		**Received: 08/18/22 16:20**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207108	08/19/22	08/19/22	EPA 8260B	
Surrogate: Toluene-d8			*96 %*	*72-125*		"	"	"	"	
R-IS-6-UVRB (22H1281-02) Surface Water	**Sampled: 08/18/22 08:55**		**Received: 08/18/22 16:20**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207108	08/19/22	08/19/22	EPA 8260B	
Surrogate: Toluene-d8			*96 %*	*72-125*		"	"	"	"	
R-IS-8-UVR (22H1281-03) Surface Water	**Sampled: 08/18/22 10:10**		**Received: 08/18/22 16:20**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207108	08/19/22	08/19/22	EPA 8260B	
Surrogate: Toluene-d8			*96 %*	*72-125*		"	"	"	"	
R-IS-8-UVRB (22H1281-04) Surface Water	**Sampled: 08/18/22 10:45**		**Received: 08/18/22 16:20**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207108	08/19/22	08/19/22	EPA 8260B	
Surrogate: Toluene-d8			*96 %*	*72-125*		"	"	"	"	

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COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207051 - General Preparation											
Blank (2207051-BLK1)					Prepared & Analyzed: 08/19/22						
Sulfate as SO4	ND	0.038	0.50	mg/L							
Chloride	0.279	0.026	0.50	"							
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2207051-BS1)					Prepared & Analyzed: 08/19/22						
Sulfate as SO4	5.15	0.038	0.50	mg/L	5.00		103	80-120			
Chloride	5.01	0.026	0.50	"	5.00		100	80-120			
Nitrate/Nitrite as N	4.23	0.055	0.40	"	4.00		106	80-120			
LCS Dup (2207051-BSD1)					Prepared & Analyzed: 08/19/22						
Sulfate as SO4	5.24	0.038	0.50	mg/L	5.00		105	80-120	2	20	
Chloride	5.09	0.026	0.50	"	5.00		102	80-120	2	20	
Nitrate/Nitrite as N	4.30	0.055	0.40	"	4.00		108	80-120	2	20	
Matrix Spike (2207051-MS1)			**Source: 22H1281-01**		Prepared & Analyzed: 08/19/22						
Sulfate as SO4	5.11	0.038	0.50	mg/L	5.00	0.366	95	80-120			
Chloride	4.99	0.026	0.50	"	5.00	0.513	90	80-120			
Nitrate/Nitrite as N	3.94	0.055	0.40	"	4.00	ND	99	80-120			
Matrix Spike Dup (2207051-MSD1)			**Source: 22H1281-01**		Prepared & Analyzed: 08/19/22						
Sulfate as SO4	5.14	0.038	0.50	mg/L	5.00	0.366	95	80-120	0.5	20	
Chloride	5.03	0.026	0.50	"	5.00	0.513	90	80-120	0.7	20	
Nitrate/Nitrite as N	3.98	0.055	0.40	"	4.00	ND	99	80-120	0.9	20	
Batch 2207066 - General Preparation											
Blank (2207066-BLK1)					Prepared & Analyzed: 08/19/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							

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CLS Work Order #: 22H1281
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207066 - General Preparation											
LCS (2207066-BS1)					Prepared & Analyzed: 08/19/22						
Orthophosphate as PO4	0.864	0.0051	0.15	mg/L	0.918		94	80-120			
LCS Dup (2207066-BSD1)					Prepared & Analyzed: 08/19/22						
Orthophosphate as PO4	0.917	0.0051	0.15	mg/L	0.918		100	80-120	6	20	
Matrix Spike (2207066-MS1)			**Source: 22H1281-01**		Prepared & Analyzed: 08/19/22						
Orthophosphate as PO4	0.908	0.0051	0.15	mg/L	0.918	0.00590	98	75-125			
Matrix Spike Dup (2207066-MSD1)			**Source: 22H1281-01**		Prepared & Analyzed: 08/19/22						
Orthophosphate as PO4	0.913	0.0051	0.15	mg/L	0.918	0.00590	99	75-125	0.5	25	
Batch 2207090 - General Preparation											
Blank (2207090-BLK1)					Prepared & Analyzed: 08/19/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Duplicate (2207090-DUP1)			**Source: 22H1086-01**		Prepared & Analyzed: 08/19/22						
Total Alkalinity	10.2	1.0	5.0	mg/L		10.2			0	20	
Bicarbonate as CaCO3	10.2	0.50	5.0	"		10.2			0	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Batch 2207101 - General Prep											
Blank (2207101-BLK1)					Prepared: 08/22/22 Analyzed: 08/23/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207101 - General Prep											
LCS (2207101-BS1)					Prepared: 08/22/22 Analyzed: 08/23/22						
Total Organic Carbon	10.8	0.54	1.0	mg/L	10.0		108	75-125			
LCS Dup (2207101-BSD1)					Prepared: 08/22/22 Analyzed: 08/23/22						
Total Organic Carbon	10.4	0.54	1.0	mg/L	10.0		104	75-125	4	25	
Matrix Spike (2207101-MS1)			**Source: 22H1281-01**		Prepared: 08/22/22 Analyzed: 08/23/22						
Total Organic Carbon	12.9	0.54	1.0	mg/L	10.0	2.39	105	75-125			
Matrix Spike Dup (2207101-MSD1)			**Source: 22H1281-01**		Prepared: 08/22/22 Analyzed: 08/23/22						
Total Organic Carbon	13.3	0.54	1.0	mg/L	10.0	2.39	109	75-125	3	25	
Batch 2207134 - EPA 200 No Digestion											
Blank (2207134-BLK1)					Prepared & Analyzed: 08/22/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2207134-BS1)					Prepared & Analyzed: 08/22/22						
Total Hardness as CaCO3	31.4	0.19	1.0	mg/L	33.1		95	85-115			
Matrix Spike (2207134-MS1)			**Source: 22H0974-01**		Prepared & Analyzed: 08/22/22						
Total Hardness as CaCO3	209	0.19	1.0	mg/L	33.1	181	83	70-130			
Matrix Spike Dup (2207134-MSD1)			**Source: 22H0974-01**		Prepared & Analyzed: 08/22/22						
Total Hardness as CaCO3	208	0.19	1.0	mg/L	33.1	181	82	70-130	0.3	25	
Batch 2207173 - General Preparation											
Blank (2207173-BLK1)					Prepared & Analyzed: 08/23/22						
Ammonia as N	ND	0.025	0.10	mg/L							

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CLS Work Order #: 22H1281
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207173 - General Preparation											
LCS (2207173-BS1)					Prepared & Analyzed: 08/23/22						
Ammonia as N	0.481	0.025	0.10	mg/L	0.500		96	80-120			
LCS Dup (2207173-BSD1)					Prepared & Analyzed: 08/23/22						
Ammonia as N	0.519	0.025	0.10	mg/L	0.500		104	80-120	8	25	
Matrix Spike (2207173-MS1)			**Source: 22H1281-01**		Prepared & Analyzed: 08/23/22						
Ammonia as N	0.441	0.025	0.10	mg/L	0.500	ND	88	75-125			
Matrix Spike Dup (2207173-MSD1)			**Source: 22H1281-01**		Prepared & Analyzed: 08/23/22						
Ammonia as N	0.529	0.025	0.10	mg/L	0.500	ND	106	75-125	18	25	
Batch 2207174 - General Preparation											
Blank (2207174-BLK1)					Prepared & Analyzed: 08/23/22						
Total Suspended Solids	ND	2.0	5.0	mg/L							
Duplicate (2207174-DUP1)			**Source: 22H1238-01**		Prepared & Analyzed: 08/23/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	
Batch 2207193 - General Preparation											
Blank (2207193-BLK1)					Prepared & Analyzed: 08/24/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2207193-BS1)					Prepared & Analyzed: 08/24/22						
Total Phosphorus as P	0.306	0.023	0.050	mg/L	0.300		102	80-120			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207193 - General Preparation											
LCS Dup (2207193-BSD1)					Prepared & Analyzed: 08/24/22						
Total Phosphorus as P	0.295	0.023	0.050	mg/L	0.300		98	80-120	4	25	
Matrix Spike (2207193-MS1)			**Source: 22H1238-01**		Prepared & Analyzed: 08/24/22						
Total Phosphorus as P	0.293	0.023	0.050	mg/L	0.300	ND	98	75-125			
Matrix Spike Dup (2207193-MSD1)			**Source: 22H1238-01**		Prepared & Analyzed: 08/24/22						
Total Phosphorus as P	0.296	0.023	0.050	mg/L	0.300	ND	99	75-125	1	30	
Batch 2207213 - Solvent Extract											
Blank (2207213-BLK1)					Prepared: 08/24/22 Analyzed: 08/26/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2207213-BS1)					Prepared: 08/24/22 Analyzed: 08/26/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.8	1.0	5.0	mg/L	40.0		100	78-114			
LCS Dup (2207213-BSD1)					Prepared: 08/24/22 Analyzed: 08/26/22						
Hexane Extractable Material (HEM, Oil & Grease)	37.0	1.0	5.0	mg/L	40.0		93	78-114	7	18	
Batch 2207218 - General Preparation											
Blank (2207218-BLK1)					Prepared & Analyzed: 08/24/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2207218-BS1)					Prepared & Analyzed: 08/24/22						
Total Kjeldahl Nitrogen	0.523	0.040	0.20	mg/L	0.500		105	80-120			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207218 - General Preparation											
LCS Dup (2207218-BSD1)					Prepared & Analyzed: 08/24/22						
Total Kjeldahl Nitrogen	0.565	0.040	0.20	mg/L	0.500		113	80-120	8	20	
Matrix Spike (2207218-MS1)			**Source: 22H1281-01**		Prepared & Analyzed: 08/24/22						
Total Kjeldahl Nitrogen	0.791	0.040	0.20	mg/L	0.500	0.261	106	75-125			
Matrix Spike Dup (2207218-MSD1)			**Source: 22H1281-01**		Prepared & Analyzed: 08/24/22						
Total Kjeldahl Nitrogen	0.839	0.040	0.20	mg/L	0.500	0.261	116	75-125	6	25	
Batch 2207224 - General Preparation											
Blank (2207224-BLK1)					Prepared: 08/24/22 Analyzed: 08/26/22						
Total Dissolved Solids	ND	5.0	10	mg/L							
Duplicate (2207224-DUP1)			**Source: 22H1281-01**		Prepared: 08/24/22 Analyzed: 08/26/22						
Total Dissolved Solids	15.0	5.0	10	mg/L		14.0			7	20	
Batch 2207258 - General Prep											
Blank (2207258-BLK1)					Prepared & Analyzed: 08/25/22						
Cyanide (total)	ND	0.0012	0.0050	mg/L							
LCS (2207258-BS1)					Prepared & Analyzed: 08/25/22						
Cyanide (total)	0.0795	0.0012	0.0050	mg/L	0.100		80	75-125			
LCS Dup (2207258-BSD1)					Prepared & Analyzed: 08/25/22						
Cyanide (total)	0.0836	0.0012	0.0050	mg/L	0.100		84	75-125	5	25	

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COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207258 - General Prep											
Matrix Spike (2207258-MS1)			**Source: 22H1281-01**		Prepared & Analyzed: 08/25/22						
Cyanide (total)	0.0895	0.0012	0.0050	mg/L	0.100	0.00260	87	75-125			
Matrix Spike Dup (2207258-MSD1)			**Source: 22H1281-01**		Prepared & Analyzed: 08/25/22						
Cyanide (total)	0.0813	0.0012	0.0050	mg/L	0.100	0.00260	79	75-125	10	25	

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COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207038 - EPA 3510B GCNV											
Blank (2207038-BLK1)					Prepared & Analyzed: 08/18/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Hydraulic Oil	ND	0.030	0.050	"							
Mineral Oil	ND	0.020	0.050	"							
Kerosene	ND	0.0036	0.050	"							
Surrogate: o-Terphenyl	*0.0296*			*"*	*0.0250*		*118*	*65-135*			
LCS (2207038-BS1)					Prepared & Analyzed: 08/18/22						
Diesel	2.07	0.0021	0.050	mg/L	2.50		83	65-135			
Surrogate: o-Terphenyl	*0.0293*			*"*	*0.0250*		*117*	*65-135*			
LCS Dup (2207038-BSD1)					Prepared & Analyzed: 08/18/22						
Diesel	2.40	0.0021	0.050	mg/L	2.50		96	65-135	15	30	
Surrogate: o-Terphenyl	*0.0273*			*"*	*0.0250*		*109*	*65-135*			

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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207102 - EPA 200 Series											
Blank (2207102-BLK1)					Prepared: 08/22/22 Analyzed: 08/23/22						
Aluminum	1.80	1.6	20	µg/L							
Arsenic	ND	0.45	2.0	"							
Barium	ND	0.14	5.0	"							
Cadmium	ND	0.17	0.50	"							
Chromium	0.276	0.14	1.0	"							
Copper	ND	0.090	2.0	"							
Lead	ND	0.020	5.0	"							
Manganese	0.221	0.050	2.0	"							
Molybdenum	0.777	0.11	2.0	"							
Nickel	ND	0.13	2.0	"							
Selenium	ND	0.75	5.0	"							
Silver	ND	0.070	0.50	"							
Zinc	ND	0.27	10	"							
LCS (2207102-BS1)					Prepared: 08/22/22 Analyzed: 08/23/22						
Aluminum	485	1.6	20	µg/L	500		97	85-115			
Arsenic	94.1	0.45	2.0	"	100		94	85-115			
Barium	97.6	0.14	5.0	"	100		98	85-115			
Cadmium	94.7	0.17	0.50	"	100		95	85-115			
Chromium	94.3	0.14	1.0	"	100		94	85-115			
Copper	92.1	0.090	2.0	"	100		92	85-115			
Lead	94.9	0.020	5.0	"	100		95	85-115			
Manganese	94.3	0.050	2.0	"	100		94	85-115			
Molybdenum	95.8	0.11	2.0	"	100		96	85-115			
Nickel	93.1	0.13	2.0	"	100		93	85-115			
Selenium	92.3	0.75	5.0	"	100		92	85-115			
Silver	95.6	0.070	0.50	"	100		96	85-115			
Zinc	93.0	0.27	10	"	100		93	85-115			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207102 - EPA 200 Series											
Matrix Spike (2207102-MS1)			**Source: 22H1127-01**		Prepared: 08/22/22	Analyzed: 08/23/22					
Aluminum	461	1.6	20	µg/L	500	4.69	91	70-130			
Arsenic	84.8	0.45	2.0	"	100	ND	85	70-130			
Barium	134	0.14	5.0	"	100	41.8	92	70-130			
Cadmium	90.5	0.17	0.50	"	100	ND	91	70-130			
Chromium	85.0	0.14	1.0	"	100	0.799	84	70-130			
Copper	266	0.090	2.0	"	100	196	70	70-130			
Lead	91.1	0.020	5.0	"	100	0.923	90	70-130			
Manganese	86.7	0.050	2.0	"	100	1.60	85	70-130			
Molybdenum	87.3	0.11	2.0	"	100	0.979	86	70-130			
Nickel	89.6	0.13	2.0	"	100	6.83	83	70-130			
Selenium	84.4	0.75	5.0	"	100	ND	84	70-130			
Silver	106	0.070	0.50	"	100	14.2	92	70-130			
Zinc	265	0.27	10	"	100	193	72	70-130			
Matrix Spike (2207102-MS2)			**Source: 22H1281-04**		Prepared: 08/22/22	Analyzed: 08/23/22					
Aluminum	552	1.6	20	µg/L	500	96.1	91	70-130			
Arsenic	89.5	0.45	2.0	"	100	ND	90	70-130			
Barium	101	0.14	5.0	"	100	6.37	95	70-130			
Cadmium	92.1	0.17	0.50	"	100	ND	92	70-130			
Chromium	90.2	0.14	1.0	"	100	1.12	89	70-130			
Copper	89.1	0.090	2.0	"	100	0.233	89	70-130			
Lead	89.8	0.020	5.0	"	100	0.0230	90	70-130			
Manganese	98.8	0.050	2.0	"	100	8.80	90	70-130			
Molybdenum	88.4	0.11	2.0	"	100	ND	88	70-130			
Nickel	88.5	0.13	2.0	"	100	ND	89	70-130			
Selenium	92.1	0.75	5.0	"	100	ND	92	70-130			
Silver	91.7	0.070	0.50	"	100	ND	92	70-130			
Zinc	90.4	0.27	10	"	100	ND	90	70-130			

09/02/22 10:11

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1281
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207109 - EPA 200 Series											
Blank (2207109-BLK1)					Prepared & Analyzed: 08/22/22						
Calcium	ND	27	1000	µg/L							
Iron	ND	9.1	100	"							
Magnesium	ND	21	1000	"							
Potassium	ND	61	1000	"							
Sodium	ND	34	1000	"							
LCS (2207109-BS1)					Prepared & Analyzed: 08/22/22						
Calcium	4610	27	1000	µg/L	5000		92	85-115			
Iron	449	9.1	100	"	500		90	85-115			
Magnesium	4900	21	1000	"	5000		98	85-115			
Potassium	4550	61	1000	"	5000		91	85-115			
Sodium	4330	34	1000	"	5000		87	85-115			
Matrix Spike (2207109-MS1)			**Source: 22H1171-01**		Prepared & Analyzed: 08/22/22						
Calcium	33300	27	1000	µg/L	5000	29000	86	70-130			
Iron	452	9.1	100	"	500	ND	90	70-130			
Magnesium	51800	21	1000	"	5000	47700	83	70-130			
Potassium	5740	61	1000	"	5000	1260	90	70-130			
Sodium	29600	34	1000	"	5000	25900	74	70-130			
Matrix Spike (2207109-MS2)			**Source: 22H1281-01**		Prepared & Analyzed: 08/22/22						
Calcium	5980	27	1000	µg/L	5000	1340	93	70-130			
Iron	479	9.1	100	"	500	ND	96	70-130			
Magnesium	5270	21	1000	"	5000	309	99	70-130			
Potassium	5220	61	1000	"	5000	336	98	70-130			
Sodium	5520	34	1000	"	5000	1060	89	70-130			

09/02/22 10:11

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1281**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207134 - EPA 200 No Digestion											
Blank (2207134-BLK1)					Prepared & Analyzed: 08/22/22						
Iron	ND	6.8	100	µg/L							
LCS (2207134-BS1)					Prepared & Analyzed: 08/22/22						
Iron	455	6.8	100	µg/L	500		91	85-115			
Matrix Spike (2207134-MS1)			**Source: 22H0974-01**		Prepared & Analyzed: 08/22/22						
Iron	672	6.8	100	µg/L	500	222	90	70-130			
Matrix Spike Dup (2207134-MSD1)			**Source: 22H0974-01**		Prepared & Analyzed: 08/22/22						
Iron	656	6.8	100	µg/L	500	222	87	70-130	2	25	
Batch 2207432 - EPA 200 No Digestion											
Blank (2207432-BLK1)					Prepared & Analyzed: 08/31/22						
Aluminum	ND	0.52	20	µg/L							
Silver	ND	0.15	0.50	"							
LCS (2207432-BS1)					Prepared & Analyzed: 08/31/22						
Aluminum	482	0.52	20	µg/L	500		96	85-115			
Silver	96.3	0.15	0.50	"	100		96	85-115			
Matrix Spike (2207432-MS1)			**Source: 22H1193-01**		Prepared & Analyzed: 08/31/22						
Aluminum	507	0.52	20	µg/L	500	7.29	100	70-130			
Silver	96.9	0.15	0.50	"	100	ND	97	70-130			
Matrix Spike (2207432-MS2)			**Source: 22H1281-01**		Prepared & Analyzed: 08/31/22						
Aluminum	493	0.52	20	µg/L	500	7.48	97	70-130			
Silver	94.2	0.15	0.50	"	100	ND	94	70-130			

09/02/22 10:11

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1281
COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207154 - EPA 5030 Water GC											
Blank (2207154-BLK1)					Prepared: 08/22/22 Analyzed: 08/23/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*18.5*			*"*	*20.0*		*92*	*65-135*			
LCS (2207154-BS1)					Prepared: 08/22/22 Analyzed: 08/23/22						
Gasoline	480	10	50	µg/L	500		96	70-130			
Surrogate: o-Chlorotoluene (Gas)	*20.0*			*"*	*20.0*		*100*	*65-135*			
LCS Dup (2207154-BSD1)					Prepared: 08/22/22 Analyzed: 08/23/22						
Gasoline	548	10	50	µg/L	500		110	70-130	13	30	
Surrogate: o-Chlorotoluene (Gas)	*19.7*			*"*	*20.0*		*98*	*65-135*			
Matrix Spike (2207154-MS1)				**Source: 22H1330-01**	Prepared: 08/22/22 Analyzed: 08/23/22						
Gasoline	514	10	50	µg/L	500	ND	103	68-132			
Surrogate: o-Chlorotoluene (Gas)	*21.2*			*"*	*20.0*		*106*	*65-135*			
Matrix Spike Dup (2207154-MSD1)				**Source: 22H1330-01**	Prepared: 08/22/22 Analyzed: 08/23/22						
Gasoline	517	10	50	µg/L	500	ND	103	68-132	0.6	32	
Surrogate: o-Chlorotoluene (Gas)	*20.9*			*"*	*20.0*		*104*	*65-135*			

09/02/22 10:11

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1281
COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207108 - EPA 3510B GCMS											
Blank (2207108-BLK1)					Prepared & Analyzed: 08/19/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Surrogate: Toluene-d8	*9.71*			"	*10.0*		*97*	*72-125*			
LCS (2207108-BS1)					Prepared & Analyzed: 08/19/22						
Methyl tert-butyl ether	21.4	0.095	0.50	µg/L	20.0		107	52-130			
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			
LCS Dup (2207108-BSD1)					Prepared & Analyzed: 08/19/22						
Methyl tert-butyl ether	20.7	0.095	0.50	µg/L	20.0		103	52-130	3	30	
Surrogate: Toluene-d8	*9.94*			"	*10.0*		*99*	*72-125*			
Matrix Spike (2207108-MS1)			**Source: 22H1285-02**		Prepared & Analyzed: 08/19/22						
Methyl tert-butyl ether	25.5	0.095	0.50	µg/L	20.0	ND	127	52-140			
Surrogate: Toluene-d8	*9.82*			"	*10.0*		*98*	*72-125*			
Matrix Spike Dup (2207108-MSD1)			**Source: 22H1285-02**		Prepared & Analyzed: 08/19/22						
Methyl tert-butyl ether	25.5	0.095	0.50	µg/L	20.0	ND	127	52-140	0	30	
Surrogate: Toluene-d8	*9.82*			"	*10.0*		*98*	*72-125*			

09/02/22 10:11

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1281**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 2241261 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[X] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [X] [ ] NO

GLOBAL ID

FIELD CONDITIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	ANALYSIS REQUESTED: Cl, SO4, Hardness, Alkalinity, NO2-N+NO3-N, Diss Metals	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS: 1	2	3	5	SPECIAL INSTRUCTIONS
8-18	0940	R-IS-6-UVR		Surface water			6	X	X	X	X	X	X					X	
8-18	0955	R-IS-6-UVRB		Surface water			6	X	X	X	X	X	X					X	
8-18	1010	R-IS-B-UVR		Surface water			6	X	X	X	X	X	X					X	
8-18	1025	R-IS-B-UVRB		Surface water			6	X	X	X	X	X	X					X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	INVOICE TO:
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	**Project No. 750.10 Task 0620.01**
				Surface water			6											X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	STILLWATER SCIENCES	8-18 1620		

RECEIVED AT LAB BY: DATE/TIME: 8/18 1620 CONDITIONS/COMMENTS: 9.1 / 8.4

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER AIR BILL #

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

August 30, 2022

CLS Work Order #: 22H1431
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 08/22/22 16:40. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

08/30/22 17:09

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1431
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-9-IHR (22H1431-01) Surface Water	**Sampled: 08/22/22 09:20**		**Received: 08/22/22 16:40**							
Ammonia as N	**0.036**	0.025	0.10	mg/L	1	2207266	08/25/22	08/25/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**4.0**	0.50	5.0	"	"	2207313	08/26/22	08/26/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.51**	0.026	0.50	"	"	2207147	08/23/22	08/23/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2207258	08/25/22	08/25/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2207161	08/23/22	08/24/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2207313	08/26/22	08/26/22	SM2320B	
Nitrate/Nitrite as N	**0.46**	0.055	0.40	"	"	2207147	08/23/22	08/23/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2207189	08/24/22	08/24/22	SM4500-P E	
Sulfate as SO4	**0.63**	0.038	0.50	"	"	2207147	08/23/22	08/23/22	EPA 300.0	
Total Alkalinity	**4.0**	1.0	5.0	"	"	2207313	08/26/22	08/26/22	SM2320B	
Total Dissolved Solids	**19**	5.0	10	"	"	2207224	08/24/22	08/26/22	SM2540C	
Total Hardness as CaCO3	**4.4**	0.19	1.0	"	"	2207215	08/24/22	08/25/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.17**	0.040	0.20	"	"	2207309	08/26/22	08/26/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.8**	0.54	1.0	"	"	2207279	08/26/22	08/29/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2207388	08/30/22	08/30/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2207244	08/25/22	08/29/22	SM2540D	
R-IS-9-IHRB (22H1431-02) Surface Water	**Sampled: 08/22/22 09:40**		**Received: 08/22/22 16:40**							
Ammonia as N	**0.039**	0.025	0.10	mg/L	1	2207266	08/25/22	08/25/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**6.0**	0.50	5.0	"	"	2207313	08/26/22	08/26/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**1.1**	0.026	0.50	"	"	2207147	08/23/22	08/23/22	EPA 300.0	
Cyanide (total)	**0.0038**	0.0012	0.0050	"	"	2207258	08/25/22	08/25/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2207161	08/23/22	08/24/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2207313	08/26/22	08/26/22	SM2320B	
Nitrate/Nitrite as N	**0.11**	0.055	0.40	"	"	2207147	08/23/22	08/23/22	EPA 300.0	
Orthophosphate as PO4	**0.014**	0.0051	0.15	"	"	2207189	08/24/22	08/24/22	SM4500-P E	

08/30/22 17:09

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1431
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-9-IHRB (22H1431-02) Surface Water	**Sampled: 08/22/22 09:40**		**Received: 08/22/22 16:40**							
Sulfate as SO4	**1.2**	0.038	0.50	mg/L	1	2207147	08/23/22	08/23/22	EPA 300.0	
Total Alkalinity	**6.0**	1.0	5.0	"	"	2207313	08/26/22	08/26/22	SM2320B	
Total Dissolved Solids	**13**	5.0	10	"	"	2207224	08/24/22	08/26/22	SM2540C	
Total Hardness as CaCO3	**5.1**	0.19	1.0	"	"	2207215	08/24/22	08/25/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.24**	0.040	0.20	"	"	2207309	08/26/22	08/26/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.1**	0.54	1.0	"	"	2207279	08/26/22	08/29/22	SM5310B	
Total Phosphorus as P	**0.045**	0.023	0.050	"	"	2207388	08/30/22	08/30/22	SM4500-P E	
Total Suspended Solids	**8.8**	2.0	5.0	"	"	2207244	08/25/22	08/29/22	SM2540D	
R-IS-10-IHR (22H1431-03) Surface Water	**Sampled: 08/22/22 13:15**		**Received: 08/22/22 16:40**							
Ammonia as N	**0.040**	0.025	0.10	mg/L	1	2207266	08/25/22	08/25/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**6.2**	0.50	5.0	"	"	2207313	08/26/22	08/26/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.51**	0.026	0.50	"	"	2207147	08/23/22	08/23/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2207258	08/25/22	08/25/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2207161	08/23/22	08/24/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2207313	08/26/22	08/26/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2207147	08/23/22	08/23/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2207189	08/24/22	08/24/22	SM4500-P E	
Sulfate as SO4	**0.64**	0.038	0.50	"	"	2207147	08/23/22	08/23/22	EPA 300.0	
Total Alkalinity	**6.2**	1.0	5.0	"	"	2207313	08/26/22	08/26/22	SM2320B	
Total Dissolved Solids	**16**	5.0	10	"	"	2207224	08/24/22	08/26/22	SM2540C	
Total Hardness as CaCO3	**4.6**	0.19	1.0	"	"	2207215	08/24/22	08/25/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.17**	0.040	0.20	"	"	2207309	08/26/22	08/26/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.9**	0.54	1.0	"	"	2207279	08/26/22	08/29/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2207388	08/30/22	08/30/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2207244	08/25/22	08/29/22	SM2540D	

08/30/22 17:09

Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1431
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-10-IHRB (22H1431-04) Surface Water Sampled: 08/22/22 13:30 Received: 08/22/22 16:40										
Ammonia as N	**0.051**	0.025	0.10	mg/L	1	2207266	08/25/22	08/25/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**6.0**	0.50	5.0	"	"	2207313	08/26/22	08/26/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.49**	0.026	0.50	"	"	2207147	08/23/22	08/23/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2207258	08/25/22	08/25/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2207161	08/23/22	08/24/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2207313	08/26/22	08/26/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2207147	08/23/22	08/23/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2207189	08/24/22	08/24/22	SM4500-P E	
Sulfate as SO4	**0.63**	0.038	0.50	"	"	2207147	08/23/22	08/23/22	EPA 300.0	
Total Alkalinity	**6.0**	1.0	5.0	"	"	2207313	08/26/22	08/26/22	SM2320B	
Total Dissolved Solids	**16**	5.0	10	"	"	2207224	08/24/22	08/26/22	SM2540C	
Total Hardness as CaCO3	**4.3**	0.19	1.0	"	"	2207215	08/24/22	08/25/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.20**	0.040	0.20	"	"	2207309	08/26/22	08/26/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.7**	0.54	1.0	"	"	2207279	08/26/22	08/29/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2207388	08/30/22	08/30/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2207244	08/25/22	08/29/22	SM2540D	
R-IS-11-IHR (22H1431-05) Surface Water Sampled: 08/22/22 11:40 Received: 08/22/22 16:40										
Ammonia as N	**0.038**	0.025	0.10	mg/L	1	2207266	08/25/22	08/25/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**5.6**	0.50	5.0	"	"	2207313	08/26/22	08/26/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.55**	0.026	0.50	"	"	2207147	08/23/22	08/23/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2207258	08/25/22	08/25/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2207161	08/23/22	08/24/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2207313	08/26/22	08/26/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2207147	08/23/22	08/23/22	EPA 300.0	
Orthophosphate as PO4	**0.022**	0.0051	0.15	"	"	2207189	08/24/22	08/24/22	SM4500-P E	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1431
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-11-IHR (22H1431-05) Surface Water	**Sampled: 08/22/22 11:40**		**Received: 08/22/22 16:40**							
Sulfate as SO4	**0.64**	0.038	0.50	mg/L	1	2207147	08/23/22	08/23/22	EPA 300.0	
Total Alkalinity	**5.6**	1.0	5.0	"	"	2207313	08/26/22	08/26/22	SM2320B	
Total Dissolved Solids	**8.0**	5.0	10	"	"	2207224	08/24/22	08/26/22	SM2540C	
Total Hardness as CaCO3	**4.6**	0.19	1.0	"	"	2207215	08/24/22	08/25/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.23**	0.040	0.20	"	"	2207309	08/26/22	08/26/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.8**	0.54	1.0	"	"	2207279	08/26/22	08/29/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2207388	08/30/22	08/30/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2207244	08/25/22	08/29/22	SM2540D	
R-IS-11-IHRB (22H1431-06) Surface Water	**Sampled: 08/22/22 12:10**		**Received: 08/22/22 16:40**							
Ammonia as N	**0.060**	0.025	0.10	mg/L	1	2207266	08/25/22	08/25/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**4.6**	0.50	5.0	"	"	2207313	08/26/22	08/26/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.93**	0.026	0.50	"	"	2207147	08/23/22	08/23/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2207258	08/25/22	08/25/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2207161	08/23/22	08/24/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2207313	08/26/22	08/26/22	SM2320B	
Nitrate/Nitrite as N	**0.12**	0.055	0.40	"	"	2207147	08/23/22	08/23/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2207189	08/24/22	08/24/22	SM4500-P E	
Sulfate as SO4	**1.2**	0.038	0.50	"	"	2207147	08/23/22	08/23/22	EPA 300.0	
Total Alkalinity	**4.6**	1.0	5.0	"	"	2207313	08/26/22	08/26/22	SM2320B	
Total Dissolved Solids	**12**	5.0	10	"	"	2207224	08/24/22	08/26/22	SM2540C	
Total Hardness as CaCO3	**4.8**	0.19	1.0	"	"	2207215	08/24/22	08/25/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.071**	0.040	0.20	"	"	2207309	08/26/22	08/26/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.0**	0.54	1.0	"	"	2207279	08/26/22	08/29/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2207388	08/30/22	08/30/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2207244	08/25/22	08/29/22	SM2540D	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1431
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-9-IHR (22H1431-01) Surface Water Sampled: 08/22/22 09:20 Received: 08/22/22 16:40										
Diesel	ND	0.0021	0.050	mg/L	1	2207141	08/23/22	08/23/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*130 %*	*65-135*		"	"	"	"	
R-IS-9-IHRB (22H1431-02) Surface Water Sampled: 08/22/22 09:40 Received: 08/22/22 16:40										
Diesel	ND	0.0021	0.050	mg/L	1	2207141	08/23/22	08/23/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*105 %*	*65-135*		"	"	"	"	
R-IS-10-IHR (22H1431-03) Surface Water Sampled: 08/22/22 13:15 Received: 08/22/22 16:40										
Diesel	ND	0.0021	0.050	mg/L	1	2207141	08/23/22	08/23/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*128 %*	*65-135*		"	"	"	"	
R-IS-10-IHRB (22H1431-04) Surface Water Sampled: 08/22/22 13:30 Received: 08/22/22 16:40										
Diesel	ND	0.0021	0.050	mg/L	1	2207141	08/23/22	08/23/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1431**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-10-IHRB (22H1431-04) Surface Water Sampled: 08/22/22 13:30 Received: 08/22/22 16:40										
Surrogate: o-Terphenyl			*83 %*	*65-135*		*2207141*	"	*08/23/22*	*EPA 8015M*	
R-IS-11-IHR (22H1431-05) Surface Water Sampled: 08/22/22 11:40 Received: 08/22/22 16:40										
Diesel	ND	0.0021	0.050	mg/L	1	2207141	08/23/22	08/23/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*111 %*	*65-135*		*"*	"	*"*	*"*	
R-IS-11-IHRB (22H1431-06) Surface Water Sampled: 08/22/22 12:10 Received: 08/22/22 16:40										
Diesel	ND	0.0021	0.050	mg/L	1	2207141	08/23/22	08/23/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*98 %*	*65-135*		*"*	"	*"*	*"*	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1431
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-9-IHR (22H1431-01) Surface Water	**Sampled: 08/22/22 09:20**		**Received: 08/22/22 16:40**							
Aluminum	**36**	1.6	20	µg/L	1	2207214	08/24/22	08/24/22	EPA 200.8	
Barium	**5.4**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1400**	27	1000	"	"	2207215	08/24/22	08/25/22	EPA 200.7	
Iron	ND	9.1	100	"	"	"	"	08/24/22	"	
Magnesium	**220**	21	1000	"	"	"	"	"	"	
Manganese	**1.8**	0.050	2.0	"	"	2207214	08/24/22	08/24/22	EPA 200.8	
Potassium	**700**	61	1000	"	"	2207215	08/24/22	08/24/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2207214	08/24/22	08/24/22	EPA 200.8	
Sodium	**1100**	34	1000	"	"	2207215	08/24/22	08/25/22	EPA 200.7	
R-IS-9-IHRB (22H1431-02) Surface Water	**Sampled: 08/22/22 09:40**		**Received: 08/22/22 16:40**							
Aluminum	**120**	1.6	20	µg/L	1	2207214	08/24/22	08/24/22	EPA 200.8	
Barium	**10**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1600**	27	1000	"	"	2207215	08/24/22	08/25/22	EPA 200.7	
Iron	**250**	9.1	100	"	"	"	"	08/24/22	"	
Magnesium	**250**	21	1000	"	"	"	"	"	"	
Manganese	**91**	0.050	2.0	"	"	2207214	08/24/22	08/24/22	EPA 200.8	
Potassium	**630**	61	1000	"	"	2207215	08/24/22	08/24/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2207214	08/24/22	08/24/22	EPA 200.8	
Sodium	**1000**	34	1000	"	"	2207215	08/24/22	08/25/22	EPA 200.7	
R-IS-10-IHR (22H1431-03) Surface Water	**Sampled: 08/22/22 13:15**		**Received: 08/22/22 16:40**							
Aluminum	**32**	1.6	20	µg/L	1	2207214	08/24/22	08/24/22	EPA 200.8	
Barium	**5.6**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1400**	27	1000	"	"	2207215	08/24/22	08/25/22	EPA 200.7	
Iron	ND	9.1	100	"	"	"	"	08/24/22	"	
Magnesium	**230**	21	1000	"	"	"	"	"	"	
Manganese	**1.8**	0.050	2.0	"	"	2207214	08/24/22	08/24/22	EPA 200.8	
Potassium	**440**	61	1000	"	"	2207215	08/24/22	08/24/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2207214	08/24/22	08/24/22	EPA 200.8	
Sodium	**1000**	34	1000	"	"	2207215	08/24/22	08/25/22	EPA 200.7	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1431
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-10-IHRB (22H1431-04) Surface Water	**Sampled: 08/22/22 13:30**		**Received: 08/22/22 16:40**							
Aluminum	**35**	1.6	20	µg/L	1	2207214	08/24/22	08/24/22	EPA 200.8	
Barium	**5.6**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1300**	27	1000	"	"	2207215	08/24/22	08/25/22	EPA 200.7	
Iron	**11**	9.1	100	"	"	"	"	08/24/22	"	
Magnesium	**220**	21	1000	"	"	"	"	"	"	
Manganese	**1.9**	0.050	2.0	"	"	2207214	08/24/22	"	EPA 200.8	
Potassium	**410**	61	1000	"	"	2207215	08/24/22	"	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2207214	08/24/22	"	EPA 200.8	
Sodium	**980**	34	1000	"	"	2207215	08/24/22	08/25/22	EPA 200.7	
R-IS-11-IHR (22H1431-05) Surface Water	**Sampled: 08/22/22 11:40**		**Received: 08/22/22 16:40**							
Aluminum	**32**	1.6	20	µg/L	1	2207214	08/24/22	08/24/22	EPA 200.8	
Barium	**5.6**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1400**	27	1000	"	"	2207215	08/24/22	08/25/22	EPA 200.7	
Iron	**15**	9.1	100	"	"	"	"	08/24/22	"	
Magnesium	**230**	21	1000	"	"	"	"	"	"	
Manganese	**1.7**	0.050	2.0	"	"	2207214	08/24/22	"	EPA 200.8	
Potassium	**560**	61	1000	"	"	2207215	08/24/22	"	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2207214	08/24/22	"	EPA 200.8	
Sodium	**1000**	34	1000	"	"	2207215	08/24/22	08/25/22	EPA 200.7	
R-IS-11-IHRB (22H1431-06) Surface Water	**Sampled: 08/22/22 12:10**		**Received: 08/22/22 16:40**							
Aluminum	**32**	1.6	20	µg/L	1	2207214	08/24/22	08/24/22	EPA 200.8	
Barium	**8.9**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1500**	27	1000	"	"	2207215	08/24/22	08/25/22	EPA 200.7	
Iron	**110**	9.1	100	"	"	"	"	08/24/22	"	
Magnesium	**240**	21	1000	"	"	"	"	"	"	
Manganese	**49**	0.050	2.0	"	"	2207214	08/24/22	08/24/22	EPA 200.8	
Potassium	**510**	61	1000	"	"	2207215	08/24/22	08/24/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2207214	08/24/22	08/24/22	EPA 200.8	
Sodium	**940**	34	1000	"	"	2207215	08/24/22	08/24/22	EPA 200.7	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1431
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-9-IHR (22H1431-01) Surface Water	**Sampled: 08/22/22 09:20**		**Received: 08/22/22 16:40**							
Aluminum	**7.5**	0.52	20	µg/L	1	2207337	08/29/22	08/29/22	EPA 200.8	
Iron	**9.8**	6.8	100	"	"	2207263	08/25/22	08/25/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207337	08/29/22	08/29/22	EPA 200.8	
R-IS-9-IHRB (22H1431-02) Surface Water	**Sampled: 08/22/22 09:40**		**Received: 08/22/22 16:40**							
Aluminum	**4.5**	0.52	20	µg/L	1	2207337	08/29/22	08/29/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2207263	08/25/22	08/25/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207337	08/29/22	08/29/22	EPA 200.8	
R-IS-10-IHR (22H1431-03) Surface Water	**Sampled: 08/22/22 13:15**		**Received: 08/22/22 16:40**							
Aluminum	**9.0**	0.52	20	µg/L	1	2207337	08/29/22	08/29/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2207263	08/25/22	08/25/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207337	08/29/22	08/29/22	EPA 200.8	
R-IS-10-IHRB (22H1431-04) Surface Water	**Sampled: 08/22/22 13:30**		**Received: 08/22/22 16:40**							
Aluminum	**11**	0.52	20	µg/L	1	2207337	08/29/22	08/29/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2207263	08/25/22	08/25/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207337	08/29/22	08/29/22	EPA 200.8	
R-IS-11-IHR (22H1431-05) Surface Water	**Sampled: 08/22/22 11:40**		**Received: 08/22/22 16:40**							
Aluminum	**11**	0.52	20	µg/L	1	2207337	08/29/22	08/29/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2207263	08/25/22	08/25/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207337	08/29/22	08/29/22	EPA 200.8	
R-IS-11-IHRB (22H1431-06) Surface Water	**Sampled: 08/22/22 12:10**		**Received: 08/22/22 16:40**							
Aluminum	**4.8**	0.52	20	µg/L	1	2207337	08/29/22	08/29/22	EPA 200.8	
Iron	**13**	6.8	100	"	"	2207263	08/25/22	08/25/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207337	08/29/22	08/29/22	EPA 200.8	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1431**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-9-IHR (22H1431-01) Surface Water Sampled: 08/22/22 09:20 Received: 08/22/22 16:40										
Gasoline	ND	10	50	µg/L	1	2207198	08/24/22	08/24/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*96 %*		*65-135*		"	"	"	"
R-IS-9-IHRB (22H1431-02) Surface Water Sampled: 08/22/22 09:40 Received: 08/22/22 16:40										
Gasoline	ND	10	50	µg/L	1	2207198	08/24/22	08/24/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*97 %*		*65-135*		"	"	"	"
R-IS-10-IHR (22H1431-03) Surface Water Sampled: 08/22/22 13:15 Received: 08/22/22 16:40										
Gasoline	ND	10	50	µg/L	1	2207198	08/24/22	08/24/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*98 %*		*65-135*		"	"	"	"
R-IS-10-IHRB (22H1431-04) Surface Water Sampled: 08/22/22 13:30 Received: 08/22/22 16:40										
Gasoline	ND	10	50	µg/L	1	2207198	08/24/22	08/24/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*99 %*		*65-135*		"	"	"	"
R-IS-11-IHR (22H1431-05) Surface Water Sampled: 08/22/22 11:40 Received: 08/22/22 16:40										
Gasoline	ND	10	50	µg/L	1	2207198	08/24/22	08/24/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*97 %*		*65-135*		"	"	"	"
R-IS-11-IHRB (22H1431-06) Surface Water Sampled: 08/22/22 12:10 Received: 08/22/22 16:40										
Gasoline	ND	10	50	µg/L	1	2207198	08/24/22	08/24/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*90 %*		*65-135*		"	"	"	"

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1431**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-9-IHR (22H1431-01) Surface Water Sampled: 08/22/22 09:20 Received: 08/22/22 16:40										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207235	08/23/22	08/23/22	EPA 8260B	
Surrogate: Toluene-d8			*97 %*		*72-125*		"	"	"	"
R-IS-9-IHRB (22H1431-02) Surface Water Sampled: 08/22/22 09:40 Received: 08/22/22 16:40										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207235	08/23/22	08/23/22	EPA 8260B	
Surrogate: Toluene-d8			*98 %*		*72-125*		"	"	"	"
R-IS-10-IHR (22H1431-03) Surface Water Sampled: 08/22/22 13:15 Received: 08/22/22 16:40										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207235	08/23/22	08/23/22	EPA 8260B	
Surrogate: Toluene-d8			*97 %*		*72-125*		"	"	"	"
R-IS-10-IHRB (22H1431-04) Surface Water Sampled: 08/22/22 13:30 Received: 08/22/22 16:40										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207235	08/23/22	08/23/22	EPA 8260B	
Surrogate: Toluene-d8			*97 %*		*72-125*		"	"	"	"
R-IS-11-IHR (22H1431-05) Surface Water Sampled: 08/22/22 11:40 Received: 08/22/22 16:40										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207235	08/23/22	08/23/22	EPA 8260B	
Surrogate: Toluene-d8			*97 %*		*72-125*		"	"	"	"
R-IS-11-IHRB (22H1431-06) Surface Water Sampled: 08/22/22 12:10 Received: 08/22/22 16:40										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207235	08/23/22	08/23/22	EPA 8260B	
Surrogate: Toluene-d8			*97 %*		*72-125*		"	"	"	"

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CLS Work Order #: 22H1431
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207147 - General Preparation											
Blank (2207147-BLK1)					Prepared & Analyzed: 08/23/22						
Sulfate as SO4	ND	0.038	0.50	mg/L							
Chloride	0.272	0.026	0.50	"							
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2207147-BS1)					Prepared & Analyzed: 08/23/22						
Chloride	4.88	0.026	0.50	mg/L	5.00		98	80-120			
Sulfate as SO4	4.86	0.038	0.50	"	5.00		97	80-120			
Nitrate/Nitrite as N	4.14	0.055	0.40	"	4.00		103	80-120			
LCS Dup (2207147-BSD1)					Prepared & Analyzed: 08/23/22						
Sulfate as SO4	5.03	0.038	0.50	mg/L	5.00		101	80-120	3	20	
Chloride	5.03	0.026	0.50	"	5.00		101	80-120	3	20	
Nitrate/Nitrite as N	4.27	0.055	0.40	"	4.00		107	80-120	3	20	
Matrix Spike (2207147-MS1)			**Source: 22H1431-01**		Prepared & Analyzed: 08/23/22						
Sulfate as SO4	5.15	0.038	0.50	mg/L	5.00	0.625	91	80-120			
Chloride	4.89	0.026	0.50	"	5.00	0.514	88	80-120			
Nitrate/Nitrite as N	4.37	0.055	0.40	"	4.00	0.461	98	80-120			
Matrix Spike Dup (2207147-MSD1)			**Source: 22H1431-01**		Prepared & Analyzed: 08/23/22						
Sulfate as SO4	5.24	0.038	0.50	mg/L	5.00	0.625	92	80-120	2	20	
Chloride	4.99	0.026	0.50	"	5.00	0.514	89	80-120	2	20	
Nitrate/Nitrite as N	4.46	0.055	0.40	"	4.00	0.461	100	80-120	2	20	
Batch 2207161 - Solvent Extract											
Blank (2207161-BLK1)					Prepared: 08/23/22 Analyzed: 08/24/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207161 - Solvent Extract											
LCS (2207161-BS1)					Prepared: 08/23/22 Analyzed: 08/24/22						
Hexane Extractable Material (HEM, Oil & Grease)	40.5	1.0	5.0	mg/L	40.0		101	78-114			
LCS Dup (2207161-BSD1)					Prepared: 08/23/22 Analyzed: 08/24/22						
Hexane Extractable Material (HEM, Oil & Grease)	37.4	1.0	5.0	mg/L	40.0		94	78-114	8	18	
Batch 2207189 - General Preparation											
Blank (2207189-BLK1)					Prepared & Analyzed: 08/24/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							
LCS (2207189-BS1)					Prepared & Analyzed: 08/24/22						
Orthophosphate as PO4	0.880	0.0051	0.15	mg/L	0.918		96	80-120			
LCS Dup (2207189-BSD1)					Prepared & Analyzed: 08/24/22						
Orthophosphate as PO4	0.859	0.0051	0.15	mg/L	0.918		94	80-120	2	20	
Matrix Spike (2207189-MS1)			**Source: 22H1431-01**		Prepared & Analyzed: 08/24/22						
Orthophosphate as PO4	0.851	0.0051	0.15	mg/L	0.918	ND	93	75-125			
Matrix Spike Dup (2207189-MSD1)			**Source: 22H1431-01**		Prepared & Analyzed: 08/24/22						
Orthophosphate as PO4	0.888	0.0051	0.15	mg/L	0.918	ND	97	75-125	4	25	
Batch 2207215 - EPA 200 Series											
Blank (2207215-BLK1)					Prepared: 08/24/22 Analyzed: 08/25/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							

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COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207215 - EPA 200 Series											
LCS (2207215-BS1)					Prepared: 08/24/22 Analyzed: 08/25/22						
Total Hardness as CaCO3	34.5	0.19	1.0	mg/L	33.1		104	85-115			
Matrix Spike (2207215-MS1)			**Source: 22H1285-01**		Prepared: 08/24/22 Analyzed: 08/25/22						
Total Hardness as CaCO3	43.3	0.19	1.0	mg/L	33.1	7.73	107	70-130			
Matrix Spike (2207215-MS2)			**Source: 22H1502-01**		Prepared: 08/24/22 Analyzed: 08/25/22						
Total Hardness as CaCO3	306	0.19	1.0	mg/L	33.1	273	98	70-130			
Batch 2207224 - General Preparation											
Blank (2207224-BLK1)					Prepared: 08/24/22 Analyzed: 08/26/22						
Total Dissolved Solids	ND	5.0	10	mg/L							
Duplicate (2207224-DUP1)			**Source: 22H1281-01**		Prepared: 08/24/22 Analyzed: 08/26/22						
Total Dissolved Solids	15.0	5.0	10	mg/L		14.0			7	20	
Batch 2207244 - General Preparation											
Duplicate (2207244-DUP1)			**Source: 22H1380-01**		Prepared: 08/25/22 Analyzed: 08/29/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	
Batch 2207258 - General Prep											
Blank (2207258-BLK1)					Prepared & Analyzed: 08/25/22						
Cyanide (total)	ND	0.0012	0.0050	mg/L							

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CLS Work Order #: 22H1431
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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207258 - General Prep											
LCS (2207258-BS1)					Prepared & Analyzed: 08/25/22						
Cyanide (total)	0.0795	0.0012	0.0050	mg/L	0.100		80	75-125			
LCS Dup (2207258-BSD1)					Prepared & Analyzed: 08/25/22						
Cyanide (total)	0.0836	0.0012	0.0050	mg/L	0.100		84	75-125	5	25	
Matrix Spike (2207258-MS1)			**Source: 22H1281-01**		Prepared & Analyzed: 08/25/22						
Cyanide (total)	0.0895	0.0012	0.0050	mg/L	0.100	0.00260	87	75-125			
Matrix Spike Dup (2207258-MSD1)			**Source: 22H1281-01**		Prepared & Analyzed: 08/25/22						
Cyanide (total)	0.0813	0.0012	0.0050	mg/L	0.100	0.00260	79	75-125	10	25	
Batch 2207266 - General Preparation											
Blank (2207266-BLK1)					Prepared & Analyzed: 08/25/22						
Ammonia as N	ND	0.025	0.10	mg/L							
LCS (2207266-BS1)					Prepared & Analyzed: 08/25/22						
Ammonia as N	0.446	0.025	0.10	mg/L	0.500		89	80-120			
LCS Dup (2207266-BSD1)					Prepared & Analyzed: 08/25/22						
Ammonia as N	0.466	0.025	0.10	mg/L	0.500		93	80-120	4	25	
Matrix Spike (2207266-MS1)			**Source: 22H1501-03**		Prepared & Analyzed: 08/25/22						
Ammonia as N	0.663	0.025	0.10	mg/L	0.500	0.174	98	75-125			
Matrix Spike Dup (2207266-MSD1)			**Source: 22H1501-03**		Prepared & Analyzed: 08/25/22						
Ammonia as N	0.655	0.025	0.10	mg/L	0.500	0.174	96	75-125	1	25	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207279 - General Prep											
Blank (2207279-BLK1)					Prepared: 08/26/22 Analyzed: 08/29/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							
LCS (2207279-BS1)					Prepared: 08/26/22 Analyzed: 08/29/22						
Total Organic Carbon	11.0	0.54	1.0	mg/L	10.0		110	75-125			
LCS Dup (2207279-BSD1)					Prepared: 08/26/22 Analyzed: 08/29/22						
Total Organic Carbon	10.6	0.54	1.0	mg/L	10.0		106	75-125	3	25	
Matrix Spike (2207279-MS1)			**Source: 22H1431-06**		Prepared: 08/26/22 Analyzed: 08/29/22						
Total Organic Carbon	13.1	0.54	1.0	mg/L	10.0	2.04	110	75-125			
Matrix Spike Dup (2207279-MSD1)			**Source: 22H1431-06**		Prepared: 08/26/22 Analyzed: 08/29/22						
Total Organic Carbon	12.9	0.54	1.0	mg/L	10.0	2.04	108	75-125	1	25	
Batch 2207309 - General Preparation											
Blank (2207309-BLK1)					Prepared & Analyzed: 08/26/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2207309-BS1)					Prepared & Analyzed: 08/26/22						
Total Kjeldahl Nitrogen	0.537	0.040	0.20	mg/L	0.500		107	80-120			
LCS Dup (2207309-BSD1)					Prepared & Analyzed: 08/26/22						
Total Kjeldahl Nitrogen	0.466	0.040	0.20	mg/L	0.500		93	80-120	14	20	
Matrix Spike (2207309-MS1)			**Source: 22H1431-06**		Prepared & Analyzed: 08/26/22						
Total Kjeldahl Nitrogen	0.702	0.040	0.20	mg/L	0.500	0.0710	126	75-125			QM-7

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207309 - General Preparation											
Matrix Spike Dup (2207309-MSD1)			**Source: 22H1431-06**		Prepared & Analyzed: 08/26/22						
Total Kjeldahl Nitrogen	0.742	0.040	0.20	mg/L	0.500	0.0710	134	75-125	6	25	QM-7
Batch 2207313 - General Preparation											
Blank (2207313-BLK1)					Prepared & Analyzed: 08/26/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Duplicate (2207313-DUP1)			**Source: 22H1360-26**		Prepared & Analyzed: 08/26/22						
Total Alkalinity	ND	1.0	5.0	mg/L		ND				20	
Bicarbonate as CaCO3	1.00	0.50	5.0	"		1.00			0	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Batch 2207388 - General Preparation											
Blank (2207388-BLK1)					Prepared & Analyzed: 08/30/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2207388-BS1)					Prepared & Analyzed: 08/30/22						
Total Phosphorus as P	0.308	0.023	0.050	mg/L	0.300		103	80-120			
LCS Dup (2207388-BSD1)					Prepared & Analyzed: 08/30/22						
Total Phosphorus as P	0.303	0.023	0.050	mg/L	0.300		101	80-120	2	25	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207388 - General Preparation											
Matrix Spike (2207388-MS1)			**Source: 22H1504-01**		Prepared & Analyzed: 08/30/22						
Total Phosphorus as P	0.308	0.023	0.050	mg/L	0.300	ND	103	75-125			
Matrix Spike Dup (2207388-MSD1)			**Source: 22H1504-01**		Prepared & Analyzed: 08/30/22						
Total Phosphorus as P	0.321	0.023	0.050	mg/L	0.300	ND	107	75-125	4	30	

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22H1431
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207141 - EPA 3510B GCNV											
Blank (2207141-BLK1)					Prepared: 08/22/22 Analyzed: 08/23/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Surrogate: o-Terphenyl	*0.0271*			*"*	*0.0250*		*109*	*65-135*			
LCS (2207141-BS1)					Prepared: 08/22/22 Analyzed: 08/23/22						
Diesel	2.10	0.0021	0.050	mg/L	2.50		84	65-135			
Surrogate: o-Terphenyl	*0.0269*			*"*	*0.0250*		*108*	*65-135*			
LCS Dup (2207141-BSD1)					Prepared: 08/22/22 Analyzed: 08/23/22						
Diesel	2.34	0.0021	0.050	mg/L	2.50		94	65-135	11	30	
Surrogate: o-Terphenyl	*0.0268*			*"*	*0.0250*		*107*	*65-135*			
Matrix Spike (2207141-MS1)			**Source: 22H1330-01**		Prepared: 08/22/22 Analyzed: 08/23/22						
Diesel	2.02	0.0021	0.050	mg/L	2.50	ND	81	46-137			
Surrogate: o-Terphenyl	*0.0230*			*"*	*0.0250*		*92*	*65-135*			
Matrix Spike Dup (2207141-MSD1)			**Source: 22H1330-01**		Prepared: 08/22/22 Analyzed: 08/23/22						
Diesel	2.56	0.0021	0.050	mg/L	2.50	ND	102	46-137	24	30	
Surrogate: o-Terphenyl	*0.0303*			*"*	*0.0250*		*121*	*65-135*			

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COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207214 - EPA 200 Series											
Blank (2207214-BLK1)					Prepared & Analyzed: 08/24/22						
Aluminum	ND	1.6	20	µg/L							
Antimony	ND	0.34	6.0	"							
Arsenic	ND	0.45	2.0	"							
Barium	ND	0.14	5.0	"							
Beryllium	ND	0.31	1.0	"							
Cadmium	ND	0.17	0.50	"							
Chromium	ND	0.14	1.0	"							
Cobalt	ND	0.060	2.0	"							
Copper	ND	0.090	2.0	"							
Iron	ND	3.8	20	"							
Lead	ND	0.020	5.0	"							
Manganese	ND	0.050	2.0	"							
Nickel	ND	0.13	2.0	"							
Selenium	ND	0.75	5.0	"							
Silver	ND	0.070	0.50	"							
Thallium	ND	0.030	1.0	"							
Zinc	ND	0.27	10	"							
LCS (2207214-BS1)					Prepared & Analyzed: 08/24/22						
Aluminum	505	1.6	20	µg/L	500		101	85-115			
Antimony	98.7	0.34	6.0	"	100		99	85-115			
Arsenic	93.3	0.45	2.0	"	100		93	85-115			
Barium	101	0.14	5.0	"	100		101	85-115			
Beryllium	95.3	0.31	1.0	"	100		95	85-115			
Cadmium	96.7	0.17	0.50	"	100		97	85-115			
Chromium	93.9	0.14	1.0	"	100		94	85-115			
Cobalt	94.7	0.060	2.0	"	100		95	85-115			
Copper	92.1	0.090	2.0	"	100		92	85-115			
Iron	465	3.8	20	"	500		93	85-115			
Lead	97.2	0.020	5.0	"	100		97	85-115			
Manganese	93.8	0.050	2.0	"	100		94	85-115			
Nickel	91.7	0.13	2.0	"	100		92	85-115			

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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207214 - EPA 200 Series											
LCS (2207214-BS1)					Prepared & Analyzed: 08/24/22						
Selenium	95.4	0.75	5.0	µg/L	100		95	85-115			
Silver	99.5	0.070	0.50	"	100		100	85-115			
Thallium	98.5	0.030	1.0	"	100		98	85-115			
Zinc	93.6	0.27	10	"	100		94	85-115			
Matrix Spike (2207214-MS1)			**Source: 22H1390-01**		Prepared & Analyzed: 08/24/22						
Aluminum	538	1.6	20	µg/L	500	42.6	99	70-130			
Antimony	99.3	0.34	6.0	"	100	ND	99	70-130			
Arsenic	93.3	0.45	2.0	"	100	2.42	91	70-130			
Barium	218	0.14	5.0	"	100	119	99	70-130			
Beryllium	97.6	0.31	1.0	"	100	ND	98	70-130			
Cadmium	96.6	0.17	0.50	"	100	ND	97	70-130			
Chromium	92.5	0.14	1.0	"	100	1.99	91	70-130			
Cobalt	91.4	0.060	2.0	"	100	ND	91	70-130			
Copper	442	0.090	2.0	"	100	364	78	70-130			
Iron	628	3.8	20	"	500	200	86	70-130			
Lead	101	0.020	5.0	"	100	5.76	95	70-130			
Manganese	120	0.050	2.0	"	100	30.0	90	70-130			
Nickel	1740	0.13	2.0	"	100	1670	74	70-130			
Selenium	92.4	0.75	5.0	"	100	ND	92	70-130			
Silver	99.0	0.070	0.50	"	100	ND	99	70-130			
Thallium	98.4	0.030	1.0	"	100	0.0550	98	70-130			
Zinc	274	0.27	10	"	100	186	87	70-130			
Matrix Spike (2207214-MS2)			**Source: 22H1484-01**		Prepared & Analyzed: 08/24/22						
Aluminum	569	1.6	20	µg/L	500	18.7	110	70-130			
Antimony	103	0.34	6.0	"	100	1.66	101	70-130			
Arsenic	135	0.45	2.0	"	100	39.4	96	70-130			
Barium	106	0.14	5.0	"	100	0.263	106	70-130			
Beryllium	114	0.31	1.0	"	100	ND	114	70-130			
Cadmium	99.2	0.17	0.50	"	100	ND	99	70-130			
Chromium	102	0.14	1.0	"	100	3.97	98	70-130			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1431**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207214 - EPA 200 Series											
Matrix Spike (2207214-MS2)			**Source: 22H1484-01**		Prepared & Analyzed: 08/24/22						
Cobalt	97.2	0.060	2.0	µg/L	100	0.0830	97	70-130			
Copper	151	0.090	2.0	"	100	56.7	94	70-130			
Iron	519	3.8	20	"	500	33.8	97	70-130			
Lead	99.1	0.020	5.0	"	100	0.0650	99	70-130			
Manganese	98.0	0.050	2.0	"	100	1.34	97	70-130			
Nickel	95.8	0.13	2.0	"	100	1.35	94	70-130			
Selenium	94.9	0.75	5.0	"	100	1.04	94	70-130			
Silver	101	0.070	0.50	"	100	ND	101	70-130			
Thallium	101	0.030	1.0	"	100	ND	101	70-130			
Zinc	113	0.27	10	"	100	16.6	97	70-130			
Batch 2207215 - EPA 200 Series											
Blank (2207215-BLK1)					Prepared: 08/24/22 Analyzed: 08/25/22						
Calcium	ND	27	1000	µg/L							
Iron	11.6	9.1	100	"							
Magnesium	ND	21	1000	"							
Potassium	133	61	1000	"							
Sodium	64.6	34	1000	"							
LCS (2207215-BS1)					Prepared: 08/24/22 Analyzed: 08/25/22						
Calcium	5170	27	1000	µg/L	5000		103	85-115			
Iron	515	9.1	100	"	500		103	85-115			
Magnesium	4610	21	1000	"	5000		92	85-115			
Potassium	5300	61	1000	"	5000		106	85-115			
Sodium	5250	34	1000	"	5000		105	85-115			

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1431
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207215 - EPA 200 Series											
Matrix Spike (2207215-MS1)			**Source: 22H1285-01**		Prepared: 08/24/22	Analyzed: 08/25/22					
Calcium	7950	27	1000	µg/L	5000	2670	106	70-130			
Iron	576	9.1	100	"	500	78.1	100	70-130			
Magnesium	5130	21	1000	"	5000	500	93	70-130			
Potassium	5410	61	1000	"	5000	736	94	70-130			
Sodium	6840	34	1000	"	5000	1830	100	70-130			
Matrix Spike (2207215-MS2)			**Source: 22H1502-01**		Prepared: 08/24/22	Analyzed: 08/25/22					
Calcium	102000	27	1000	µg/L	5000	96800	102	70-130			
Iron	8110	9.1	100	"	500	7590	104	70-130			
Magnesium	11200	21	1000	"	5000	6880	87	70-130			
Potassium	5950	61	1000	"	5000	1090	97	70-130			
Sodium	30200	34	1000	"	5000	25100	103	70-130			

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1431
COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207263 - EPA 200 No Digestion											
Blank (2207263-BLK1)					Prepared & Analyzed: 08/25/22						
Iron	ND	6.8	100	µg/L							
LCS (2207263-BS1)					Prepared & Analyzed: 08/25/22						
Iron	474	6.8	100	µg/L	500		95	85-115			
Matrix Spike (2207263-MS1)			**Source: 22H1431-01**		Prepared & Analyzed: 08/25/22						
Iron	459	6.8	100	µg/L	500	9.82	90	70-130			
Matrix Spike (2207263-MS2)			**Source: 22H1504-01**		Prepared & Analyzed: 08/25/22						
Iron	481	6.8	100	µg/L	500	7.54	95	70-130			
Batch 2207337 - EPA 200 No Digestion											
Blank (2207337-BLK1)					Prepared & Analyzed: 08/29/22						
Aluminum	ND	0.52	20	µg/L							
Silver	ND	0.15	0.50	"							
LCS (2207337-BS1)					Prepared & Analyzed: 08/29/22						
Aluminum	538	0.52	20	µg/L	500		108	85-115			
Silver	108	0.15	0.50	"	100		108	85-115			
Matrix Spike (2207337-MS1)			**Source: 22H1431-01**		Prepared & Analyzed: 08/29/22						
Aluminum	477	0.52	20	µg/L	500	7.49	94	70-130			
Silver	92.1	0.15	0.50	"	100	ND	92	70-130			

08/30/22 17:09

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1431**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207198 - EPA 5030 Water GC											
Blank (2207198-BLK1)					Prepared & Analyzed: 08/24/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*19.8*			"	*20.0*		*99*	*65-135*			
LCS (2207198-BS1)					Prepared & Analyzed: 08/24/22						
Gasoline	426	10	50	µg/L	500		85	70-130			
Surrogate: o-Chlorotoluene (Gas)	*19.6*			"	*20.0*		*98*	*65-135*			
LCS Dup (2207198-BSD1)					Prepared & Analyzed: 08/24/22						
Gasoline	528	10	50	µg/L	500		106	70-130	21	30	
Surrogate: o-Chlorotoluene (Gas)	*20.1*			"	*20.0*		*101*	*65-135*			
Matrix Spike (2207198-MS1)			**Source: 22H1431-01**		Prepared & Analyzed: 08/24/22						
Gasoline	588	10	50	µg/L	500	ND	118	68-132			
Surrogate: o-Chlorotoluene (Gas)	*19.8*			"	*20.0*		*99*	*65-135*			
Matrix Spike Dup (2207198-MSD1)			**Source: 22H1431-01**		Prepared & Analyzed: 08/24/22						
Gasoline	535	10	50	µg/L	500	ND	107	68-132	9	32	
Surrogate: o-Chlorotoluene (Gas)	*19.6*			"	*20.0*		*98*	*65-135*			

08/30/22 17:09

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1431**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207235 - EPA 3510B GCMS											
Blank (2207235-BLK1)					Prepared & Analyzed: 08/23/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Surrogate: Toluene-d8	*9.84*			"	*10.0*		*98*	*72-125*			
LCS (2207235-BS1)					Prepared & Analyzed: 08/23/22						
Methyl tert-butyl ether	21.3	0.095	0.50	µg/L	20.0		107	52-130			
Surrogate: Toluene-d8	*10.2*			"	*10.0*		*102*	*72-125*			
LCS Dup (2207235-BSD1)					Prepared & Analyzed: 08/23/22						
Methyl tert-butyl ether	20.8	0.095	0.50	µg/L	20.0		104	52-130	3	30	
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			
Matrix Spike (2207235-MS1)			**Source: 22H1431-01**		Prepared & Analyzed: 08/23/22						
Methyl tert-butyl ether	19.4	0.095	0.50	µg/L	20.0	ND	97	52-140			
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			
Matrix Spike Dup (2207235-MSD1)			**Source: 22H1431-01**		Prepared & Analyzed: 08/23/22						
Methyl tert-butyl ether	19.2	0.095	0.50	µg/L	20.0	ND	96	52-140	0.9	30	
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			

08/30/22 17:09

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1431**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 224430 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[X] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [X] NO [ ]

GLOBAL ID

FIELD CONDITIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	ANALYSIS REQUESTED: TSS, TDS, Hardness, Alkalinity, NO2-N+NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS: 1	2	3	5	SPECIAL INSTRUCTIONS
8.22	09:20	R.IS.9.INR		Surface water			6	x	x	x	x	x	x					x	
8.22	9:40	R.IS.9.INRB		Surface water			6	x	x	x	x	x	x					x	
8.22	13:15	R.IS.10.INR		Surface water			6	x	x	x	x	x	x					x	
8.22	13:30	R.IS.10.INRB		Surface water			6	x	x	x	x	x	x					x	
8.22	11:40	R.IS.11.INR		Surface water			6	x	x	x	x	x	x					x	
8.22	12:10	R.IS.11.INRB		Surface water			6	x	x	x	x	x	x					x	
				Surface water			6											x	INVOICE TO:
				Surface water			6											x	Stillwater Sciences
				Surface water			6											x	Same as above
				Surface water			6											x	
				Surface water			6											x	**Project No. 750.10 Task 0620.01**
				Surface water			6											x	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (2) HNO_3 (3) = COLD (4)= $H2SO4$ (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
[signature]	STILLWATER SCIENCES	8/22/22 1640		

RECEIVED AT LAB BY: [signature] DATE/TIME: 08/22/22 1640 CONDITIONS/COMMENTS: 3.0/2.3

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER _____ AIR BILL # _____

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

September 07, 2022

CLS Work Order #: 22H1504
COC #:

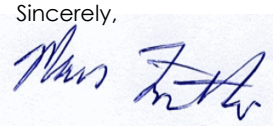
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 08/23/22 16:00. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

09/07/22 13:28

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1504
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-18-RR (22H1504-01) Surface Water	**Sampled: 08/23/22 09:55**		**Received: 08/23/22 16:00**							
Ammonia as N	**0.047**	0.025	0.10	mg/L	1	2207387	08/30/22	08/30/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**7.6**	0.50	5.0	"	"	2207314	08/26/22	08/26/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.78**	0.026	0.50	"	"	2207186	08/24/22	08/24/22	EPA 300.0	
Cyanide (total)	**0.0034**	0.0012	0.0050	"	"	2207440	08/31/22	08/31/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2207264	08/25/22	08/26/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2207314	08/26/22	08/26/22	SM2320B	
Nitrate/Nitrite as N	**0.16**	0.055	0.40	"	"	2207186	08/24/22	08/24/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2207189	08/24/22	08/24/22	SM4500-P E	
Sulfate as SO4	**1.1**	0.038	0.50	"	"	2207186	08/24/22	08/24/22	EPA 300.0	
Total Alkalinity	**7.6**	1.0	5.0	"	"	2207314	08/26/22	08/26/22	SM2320B	
Total Dissolved Solids	**13**	5.0	10	"	"	2207270	08/25/22	08/29/22	SM2540C	
Total Hardness as CaCO3	**7.2**	0.19	1.0	"	"	2207245	08/25/22	08/25/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.33**	0.040	0.20	"	"	2207406	08/30/22	08/30/22	SM4500-NH3F-2011	
Total Organic Carbon	**3.5**	0.54	1.0	"	"	2207279	08/26/22	08/29/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2207388	08/30/22	08/30/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2207310	08/26/22	08/30/22	SM2540D	
IS-1-RR (22H1504-02) Surface Water	**Sampled: 08/23/22 10:35**		**Received: 08/23/22 16:00**							
Ammonia as N	**0.033**	0.025	0.10	mg/L	1	2207387	08/30/22	08/30/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**7.2**	0.50	5.0	"	"	2207314	08/26/22	08/26/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.87**	0.026	0.50	"	"	2207186	08/24/22	08/24/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2207440	08/31/22	08/31/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2207264	08/25/22	08/26/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2207314	08/26/22	08/26/22	SM2320B	
Nitrate/Nitrite as N	**0.22**	0.055	0.40	"	"	2207186	08/24/22	08/24/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2207189	08/24/22	08/24/22	SM4500-P E	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1504
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-1-RR (22H1504-02) Surface Water	**Sampled: 08/23/22 10:35**		**Received: 08/23/22 16:00**							
Sulfate as SO4	**1.2**	0.038	0.50	mg/L	1	2207186	08/24/22	08/24/22	EPA 300.0	
Total Alkalinity	**7.2**	1.0	5.0	"	"	2207314	08/26/22	08/26/22	SM2320B	
Total Dissolved Solids	**12**	5.0	10	"	"	2207270	08/25/22	08/29/22	SM2540C	
Total Hardness as CaCO3	**7.3**	0.19	1.0	"	"	2207245	08/25/22	08/25/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.28**	0.040	0.20	"	"	2207406	08/30/22	08/30/22	SM4500-NH3F-2011	
Total Organic Carbon	**3.9**	0.54	1.0	"	"	2207279	08/26/22	08/29/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2207388	08/30/22	08/30/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2207310	08/26/22	08/30/22	SM2540D	
IS-4-GC (22H1504-03) Surface Water	**Sampled: 08/23/22 12:20**		**Received: 08/23/22 16:00**							
Ammonia as N	**0.037**	0.025	0.10	mg/L	1	2207387	08/30/22	08/30/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**5.2**	0.50	5.0	"	"	2207314	08/26/22	08/26/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.43**	0.026	0.50	"	"	2207186	08/24/22	08/24/22	EPA 300.0	
Cyanide (total)	**0.0023**	0.0012	0.0050	"	"	2207440	08/31/22	08/31/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2207264	08/25/22	08/26/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2207314	08/26/22	08/26/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2207186	08/24/22	08/24/22	EPA 300.0	
Orthophosphate as PO4	**0.0099**	0.0051	0.15	"	"	2207189	08/24/22	08/24/22	SM4500-P E	
Sulfate as SO4	**0.63**	0.038	0.50	"	"	2207186	08/24/22	08/24/22	EPA 300.0	
Total Alkalinity	**5.2**	1.0	5.0	"	"	2207314	08/26/22	08/26/22	SM2320B	
Total Dissolved Solids	**11**	5.0	10	"	"	2207270	08/25/22	08/29/22	SM2540C	
Total Hardness as CaCO3	**4.1**	0.19	1.0	"	"	2207245	08/25/22	08/25/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.28**	0.040	0.20	"	"	2207406	08/30/22	08/30/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.1**	0.54	1.0	"	"	2207279	08/26/22	08/29/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2207388	08/30/22	08/30/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2207310	08/26/22	08/30/22	SM2540D	

09/07/22 13:28

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1504
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-4-GC-DUP (22H1504-04) Surface Water Sampled: 08/23/22 12:30 Received: 08/23/22 16:00										
Ammonia as N	**0.029**	0.025	0.10	mg/L	1	2207387	08/30/22	08/30/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**6.8**	0.50	5.0	"	"	2207314	08/26/22	08/26/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.71**	0.026	0.50	"	"	2207186	08/24/22	08/24/22	EPA 300.0	
Cyanide (total)	**0.0026**	0.0012	0.0050	"	"	2207440	08/31/22	08/31/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2207264	08/25/22	08/26/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2207314	08/26/22	08/26/22	SM2320B	
Nitrate/Nitrite as N	**0.069**	0.055	0.40	"	"	2207186	08/24/22	08/24/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2207189	08/24/22	08/24/22	SM4500-P E	
Sulfate as SO4	**0.63**	0.038	0.50	"	"	2207186	08/24/22	08/24/22	EPA 300.0	
Total Alkalinity	**6.8**	1.0	5.0	"	"	2207314	08/26/22	08/26/22	SM2320B	
Total Dissolved Solids	**14**	5.0	10	"	"	2207270	08/25/22	08/29/22	SM2540C	
Total Hardness as CaCO3	**5.1**	0.19	1.0	"	"	2207245	08/25/22	08/25/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.18**	0.040	0.20	"	"	2207406	08/30/22	08/30/22	SM4500-NH3F-2011	
Total Organic Carbon	**1.8**	0.54	1.0	"	"	2207279	08/26/22	08/29/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2207388	08/30/22	08/30/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2207310	08/26/22	08/30/22	SM2540D	
IS-10-SFSC (22H1504-05) Surface Water Sampled: 08/23/22 13:55 Received: 08/23/22 16:00										
Ammonia as N	**0.058**	0.025	0.10	mg/L	1	2207387	08/30/22	08/30/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**5.4**	0.50	5.0	"	"	2207314	08/26/22	08/26/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.56**	0.026	0.50	"	"	2207186	08/24/22	08/24/22	EPA 300.0	
Cyanide (total)	**0.0023**	0.0012	0.0050	"	"	2207440	08/31/22	08/31/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2207264	08/25/22	08/26/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2207314	08/26/22	08/26/22	SM2320B	
Nitrate/Nitrite as N	**0.11**	0.055	0.40	"	"	2207186	08/24/22	08/24/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2207189	08/24/22	08/24/22	SM4500-P E	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1504
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-10-SFSC (22H1504-05) Surface Water	**Sampled: 08/23/22 13:55**		**Received: 08/23/22 16:00**							
Sulfate as SO4	**0.86**	0.038	0.50	mg/L	1	2207186	08/24/22	08/24/22	EPA 300.0	
Total Alkalinity	**5.4**	1.0	5.0	"	"	2207314	08/26/22	08/26/22	SM2320B	
Total Dissolved Solids	**16**	5.0	10	"	"	2207270	08/25/22	08/29/22	SM2540C	
Total Hardness as CaCO3	**4.7**	0.19	1.0	"	"	2207245	08/25/22	08/25/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.29**	0.040	0.20	"	"	2207406	08/30/22	08/30/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.2**	0.54	1.0	"	"	2207279	08/26/22	08/29/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2207388	08/30/22	08/30/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2207310	08/26/22	08/30/22	SM2540D	
IS-10-SFSC-FB (22H1504-06) Surface Water	**Sampled: 08/23/22 13:40**		**Received: 08/23/22 16:00**							
Ammonia as N	ND	0.025	0.10	mg/L	1	2207387	08/30/22	08/30/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	ND	0.50	5.0	"	"	2207314	08/26/22	08/26/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.30**	0.026	0.50	"	"	2207186	08/24/22	08/24/22	EPA 300.0	
Cyanide (total)	**0.0023**	0.0012	0.0050	"	"	2207440	08/31/22	08/31/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2207264	08/25/22	08/26/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2207314	08/26/22	08/26/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2207186	08/24/22	08/24/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2207189	08/24/22	08/24/22	SM4500-P E	
Sulfate as SO4	ND	0.038	0.50	"	"	2207186	08/24/22	08/24/22	EPA 300.0	
Total Alkalinity	ND	1.0	5.0	"	"	2207314	08/26/22	08/26/22	SM2320B	
Total Dissolved Solids	ND	5.0	10	"	"	2207270	08/25/22	08/29/22	SM2540C	
Total Hardness as CaCO3	ND	0.19	1.0	"	"	2207245	08/25/22	08/25/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.20**	0.040	0.20	"	"	2207406	08/30/22	08/30/22	SM4500-NH3F-2011	
Total Organic Carbon	**0.93**	0.54	1.0	"	"	2207279	08/26/22	08/29/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2207388	08/30/22	08/30/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2207310	08/26/22	08/30/22	SM2540D	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1504
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-18-RR (22H1504-01) Surface Water Sampled: 08/23/22 09:55 Received: 08/23/22 16:00										
Diesel	ND	0.0021	0.050	mg/L	1	2207238	08/24/22	08/25/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*107 %*	*65-135*		"	"	"	"	
IS-1-RR (22H1504-02) Surface Water Sampled: 08/23/22 10:35 Received: 08/23/22 16:00										
Diesel	ND	0.0021	0.050	mg/L	1	2207238	08/24/22	08/25/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*114 %*	*65-135*		"	"	"	"	
IS-4-GC (22H1504-03) Surface Water Sampled: 08/23/22 12:20 Received: 08/23/22 16:00										
Diesel	ND	0.0021	0.050	mg/L	1	2207238	08/24/22	08/25/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*131 %*	*65-135*		"	"	"	"	
IS-4-GC-DUP (22H1504-04) Surface Water Sampled: 08/23/22 12:30 Received: 08/23/22 16:00										
Diesel	ND	0.0021	0.050	mg/L	1	2207238	08/24/22	08/25/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1504**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-4-GC-DUP (22H1504-04) Surface Water Sampled: 08/23/22 12:30 Received: 08/23/22 16:00										
Surrogate: o-Terphenyl			*120 %*	*65-135*		*2207238*	"	*08/25/22*	*EPA 8015M*	
IS-10-SFSC (22H1504-05) Surface Water Sampled: 08/23/22 13:55 Received: 08/23/22 16:00										
Diesel	ND	0.0021	0.050	mg/L	1	2207238	08/24/22	08/25/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*134 %*	*65-135*		*"*	"	*"*	*"*	
IS-10-SFSC-FB (22H1504-06) Surface Water Sampled: 08/23/22 13:40 Received: 08/23/22 16:00										
Diesel	ND	0.0021	0.050	mg/L	1	2207238	08/24/22	08/25/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*124 %*	*65-135*		*"*	"	*"*	*"*	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1504
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-18-RR (22H1504-01) Surface Water	**Sampled: 08/23/22 09:55**		**Received: 08/23/22 16:00**							
Aluminum	**73**	1.6	20	µg/L	1	2207240	08/25/22	08/25/22	EPA 200.8	
Barium	**5.4**	0.14	5.0	"	"	"	"	"	"	
Calcium	**2600**	27	1000	"	"	2207245	08/25/22	08/25/22	EPA 200.7	
Iron	**610**	9.1	100	"	"	"	"	"	"	
Magnesium	**190**	21	1000	"	"	"	"	"	"	
Manganese	**20**	0.050	2.0	"	"	2207240	08/25/22	08/25/22	EPA 200.8	
Potassium	**480**	61	1000	"	"	2207245	08/25/22	08/25/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2207240	08/25/22	08/25/22	EPA 200.8	
Sodium	**570**	34	1000	"	"	2207245	08/25/22	08/25/22	EPA 200.7	
IS-1-RR (22H1504-02) Surface Water	**Sampled: 08/23/22 10:35**		**Received: 08/23/22 16:00**							
Aluminum	**75**	1.6	20	µg/L	1	2207240	08/25/22	08/25/22	EPA 200.8	
Barium	**5.3**	0.14	5.0	"	"	"	"	"	"	
Calcium	**2600**	27	1000	"	"	2207245	08/25/22	08/25/22	EPA 200.7	
Iron	**630**	9.1	100	"	"	"	"	"	"	
Magnesium	**190**	21	1000	"	"	"	"	"	"	
Manganese	**22**	0.050	2.0	"	"	2207240	08/25/22	08/25/22	EPA 200.8	
Potassium	**480**	61	1000	"	"	2207245	08/25/22	08/25/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2207240	08/25/22	08/25/22	EPA 200.8	
Sodium	**570**	34	1000	"	"	2207245	08/25/22	08/25/22	EPA 200.7	
IS-4-GC (22H1504-03) Surface Water	**Sampled: 08/23/22 12:20**		**Received: 08/23/22 16:00**							
Aluminum	**32**	1.6	20	µg/L	1	2207240	08/25/22	08/25/22	EPA 200.8	
Barium	**4.0**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1400**	27	1000	"	"	2207245	08/25/22	08/25/22	EPA 200.7	
Iron	**50**	9.1	100	"	"	"	"	"	"	
Magnesium	**140**	21	1000	"	"	"	"	"	"	
Manganese	**24**	0.050	2.0	"	"	2207240	08/25/22	08/25/22	EPA 200.8	
Potassium	**330**	61	1000	"	"	2207245	08/25/22	08/25/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2207240	08/25/22	08/25/22	EPA 200.8	
Sodium	**570**	34	1000	"	"	2207245	08/25/22	08/25/22	EPA 200.7	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1504
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-4-GC-DUP (22H1504-04) Surface Water Sampled: 08/23/22 12:30 Received: 08/23/22 16:00										
Aluminum	**32**	1.6	20	µg/L	1	2207240	08/25/22	08/25/22	EPA 200.8	
Barium	**3.9**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1800**	27	1000	"	"	2207245	08/25/22	08/25/22	EPA 200.7	
Iron	**34**	9.1	100	"	"	"	"	"	"	
Magnesium	**140**	21	1000	"	"	"	"	"	"	
Manganese	**24**	0.050	2.0	"	"	2207240	08/25/22	08/25/22	EPA 200.8	
Potassium	**420**	61	1000	"	"	2207245	08/25/22	08/25/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2207240	08/25/22	08/25/22	EPA 200.8	
Sodium	**560**	34	1000	"	"	2207245	08/25/22	08/25/22	EPA 200.7	
IS-10-SFSC (22H1504-05) Surface Water Sampled: 08/23/22 13:55 Received: 08/23/22 16:00										
Aluminum	**42**	1.6	20	µg/L	1	2207240	08/25/22	08/25/22	EPA 200.8	
Barium	**8.7**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1500**	27	1000	"	"	2207245	08/25/22	08/25/22	EPA 200.7	
Iron	**100**	9.1	100	"	"	"	"	"	"	
Magnesium	**260**	21	1000	"	"	"	"	"	"	
Manganese	**50**	0.050	2.0	"	"	2207240	08/25/22	08/25/22	EPA 200.8	
Potassium	**500**	61	1000	"	"	2207245	08/25/22	08/25/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2207240	08/25/22	08/25/22	EPA 200.8	
Sodium	**970**	34	1000	"	"	2207245	08/25/22	08/25/22	EPA 200.7	
IS-10-SFSC-FB (22H1504-06) Surface Water Sampled: 08/23/22 13:40 Received: 08/23/22 16:00										
Aluminum	**9.6**	1.6	20	µg/L	1	2207240	08/25/22	08/25/22	EPA 200.8	
Barium	ND	0.14	5.0	"	"	"	"	"	"	
Calcium	**29**	27	1000	"	"	2207245	08/25/22	08/25/22	EPA 200.7	
Iron	**15**	9.1	100	"	"	"	"	"	"	
Magnesium	ND	21	1000	"	"	"	"	"	"	
Manganese	**0.22**	0.050	2.0	"	"	2207240	08/25/22	08/25/22	EPA 200.8	
Potassium	**180**	61	1000	"	"	2207245	08/25/22	08/25/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2207240	08/25/22	08/25/22	EPA 200.8	
Sodium	ND	34	1000	"	"	2207245	08/25/22	08/25/22	EPA 200.7	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1504
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-18-RR (22H1504-01) Surface Water Sampled: 08/23/22 09:55 Received: 08/23/22 16:00										
Aluminum	**16**	0.52	20	µg/L	1	2207432	08/31/22	08/31/22	EPA 200.8	
Iron	**7.5**	6.8	100	"	"	2207263	08/25/22	08/25/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207432	08/31/22	08/31/22	EPA 200.8	
IS-1-RR (22H1504-02) Surface Water Sampled: 08/23/22 10:35 Received: 08/23/22 16:00										
Aluminum	**30**	0.52	20	µg/L	1	2207432	08/31/22	08/31/22	EPA 200.8	
Iron	**60**	6.8	100	"	"	2207263	08/25/22	08/25/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207432	08/31/22	08/31/22	EPA 200.8	
IS-4-GC (22H1504-03) Surface Water Sampled: 08/23/22 12:20 Received: 08/23/22 16:00										
Aluminum	**4.2**	0.52	20	µg/L	1	2207432	08/31/22	08/31/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2207263	08/25/22	08/25/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207432	08/31/22	08/31/22	EPA 200.8	
IS-4-GC-DUP (22H1504-04) Surface Water Sampled: 08/23/22 12:30 Received: 08/23/22 16:00										
Aluminum	**4.3**	0.52	20	µg/L	1	2207432	08/31/22	08/31/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2207263	08/25/22	08/25/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207432	08/31/22	08/31/22	EPA 200.8	
IS-10-SFSC (22H1504-05) Surface Water Sampled: 08/23/22 13:55 Received: 08/23/22 16:00										
Aluminum	**4.2**	0.52	20	µg/L	1	2207432	08/31/22	08/31/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2207263	08/25/22	08/25/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207432	08/31/22	08/31/22	EPA 200.8	
IS-10-SFSC-FB (22H1504-06) Surface Water Sampled: 08/23/22 13:40 Received: 08/23/22 16:00										
Aluminum	ND	0.52	20	µg/L	1	2207432	08/31/22	08/31/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2207263	08/25/22	08/25/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207432	08/31/22	08/31/22	EPA 200.8	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1504**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-18-RR (22H1504-01) Surface Water Sampled: 08/23/22 09:55 Received: 08/23/22 16:00										
Gasoline	ND	10	50	µg/L	1	2207198	08/24/22	08/24/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*96 %*	*65-135*		"	"	"	"	
IS-1-RR (22H1504-02) Surface Water Sampled: 08/23/22 10:35 Received: 08/23/22 16:00										
Gasoline	ND	10	50	µg/L	1	2207198	08/24/22	08/24/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*92 %*	*65-135*		"	"	"	"	
IS-4-GC (22H1504-03) Surface Water Sampled: 08/23/22 12:20 Received: 08/23/22 16:00										
Gasoline	ND	10	50	µg/L	1	2207198	08/24/22	08/24/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*90 %*	*65-135*		"	"	"	"	
IS-4-GC-DUP (22H1504-04) Surface Water Sampled: 08/23/22 12:30 Received: 08/23/22 16:00										
Gasoline	ND	10	50	µg/L	1	2207198	08/24/22	08/25/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*96 %*	*65-135*		"	"	"	"	
IS-10-SFSC (22H1504-05) Surface Water Sampled: 08/23/22 13:55 Received: 08/23/22 16:00										
Gasoline	ND	10	50	µg/L	1	2207198	08/24/22	08/25/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*100 %*	*65-135*		"	"	"	"	
IS-10-SFSC-FB (22H1504-06) Surface Water Sampled: 08/23/22 13:40 Received: 08/23/22 16:00										
Gasoline	ND	10	50	µg/L	1	2207198	08/24/22	08/25/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*102 %*	*65-135*		"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1504**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-18-RR (22H1504-01) Surface Water Sampled: 08/23/22 09:55 Received: 08/23/22 16:00										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207379	08/26/22	08/26/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"
IS-1-RR (22H1504-02) Surface Water Sampled: 08/23/22 10:35 Received: 08/23/22 16:00										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207379	08/26/22	08/26/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"
IS-4-GC (22H1504-03) Surface Water Sampled: 08/23/22 12:20 Received: 08/23/22 16:00										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207379	08/26/22	08/26/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"
IS-4-GC-DUP (22H1504-04) Surface Water Sampled: 08/23/22 12:30 Received: 08/23/22 16:00										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207379	08/26/22	08/26/22	EPA 8260B	
Surrogate: Toluene-d8			*98 %*		*72-125*		"	"	"	"
IS-10-SFSC (22H1504-05) Surface Water Sampled: 08/23/22 13:55 Received: 08/23/22 16:00										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207379	08/26/22	08/26/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"
IS-10-SFSC-FB (22H1504-06) Surface Water Sampled: 08/23/22 13:40 Received: 08/23/22 16:00										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207379	08/26/22	08/26/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1504
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207186 - General Prep											
Blank (2207186-BLK1)					Prepared & Analyzed: 08/24/22						
Chloride	0.278	0.026	0.50	mg/L							
Sulfate as SO4	ND	0.038	0.50	"							
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2207186-BS1)					Prepared & Analyzed: 08/24/22						
Sulfate as SO4	4.64	0.038	0.50	mg/L	5.00		93	80-120			
Chloride	4.63	0.026	0.50	"	5.00		93	80-120			
Nitrate/Nitrite as N	3.91	0.055	0.40	"	4.00		98	80-120			
LCS Dup (2207186-BSD1)					Prepared & Analyzed: 08/24/22						
Sulfate as SO4	4.91	0.038	0.50	mg/L	5.00		98	80-120	6	20	
Chloride	4.90	0.026	0.50	"	5.00		98	80-120	6	20	
Nitrate/Nitrite as N	4.13	0.055	0.40	"	4.00		103	80-120	5	20	
Matrix Spike (2207186-MS1)			**Source: 22H1451-01**		Prepared & Analyzed: 08/24/22						
Sulfate as SO4	8.80	0.038	0.50	mg/L	5.00	3.90	98	80-120			
Chloride	11.8	0.026	0.50	"	5.00	6.99	97	80-120			
Nitrate/Nitrite as N	3.89	0.055	0.40	"	4.00	ND	97	80-120			
Matrix Spike Dup (2207186-MSD1)			**Source: 22H1451-01**		Prepared & Analyzed: 08/24/22						
Sulfate as SO4	8.79	0.038	0.50	mg/L	5.00	3.90	98	80-120	0.08	20	
Chloride	11.8	0.026	0.50	"	5.00	6.99	97	80-120	0.1	20	
Nitrate/Nitrite as N	3.88	0.055	0.40	"	4.00	ND	97	80-120	0.2	20	
Batch 2207189 - General Preparation											
Blank (2207189-BLK1)					Prepared & Analyzed: 08/24/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							

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CLS Work Order #: 22H1504
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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207189 - General Preparation											
LCS (2207189-BS1)					Prepared & Analyzed: 08/24/22						
Orthophosphate as PO4	0.880	0.0051	0.15	mg/L	0.918		96	80-120			
LCS Dup (2207189-BSD1)					Prepared & Analyzed: 08/24/22						
Orthophosphate as PO4	0.859	0.0051	0.15	mg/L	0.918		94	80-120	2	20	
Matrix Spike (2207189-MS1)			**Source: 22H1431-01**		Prepared & Analyzed: 08/24/22						
Orthophosphate as PO4	0.851	0.0051	0.15	mg/L	0.918	ND	93	75-125			
Matrix Spike Dup (2207189-MSD1)			**Source: 22H1431-01**		Prepared & Analyzed: 08/24/22						
Orthophosphate as PO4	0.888	0.0051	0.15	mg/L	0.918	ND	97	75-125	4	25	
Batch 2207245 - EPA 200 Series											
Blank (2207245-BLK1)					Prepared & Analyzed: 08/25/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2207245-BS1)					Prepared & Analyzed: 08/25/22						
Total Hardness as CaCO3	33.5	0.19	1.0	mg/L	33.1		101	85-115			
Matrix Spike (2207245-MS1)			**Source: 22H1504-01**		Prepared & Analyzed: 08/25/22						
Total Hardness as CaCO3	40.5	0.19	1.0	mg/L	33.1	7.22	101	70-130			
Matrix Spike (2207245-MS2)			**Source: 22H1579-04**		Prepared & Analyzed: 08/25/22						
Total Hardness as CaCO3	384	0.19	1.0	mg/L	33.1	352	99	70-130			
Batch 2207264 - Solvent Extract											
Blank (2207264-BLK1)					Prepared: 08/25/22 Analyzed: 08/26/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207264 - Solvent Extract											
LCS (2207264-BS1)					Prepared: 08/25/22 Analyzed: 08/26/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.7	1.0	5.0	mg/L	40.0		99	78-114			
LCS Dup (2207264-BSD1)					Prepared: 08/25/22 Analyzed: 08/26/22						
Hexane Extractable Material (HEM, Oil & Grease)	38.9	1.0	5.0	mg/L	40.0		97	78-114	2	18	
Batch 2207270 - General Preparation											
Blank (2207270-BLK1)					Prepared: 08/25/22 Analyzed: 08/29/22						
Total Dissolved Solids	ND	5.0	10	mg/L							
Duplicate (2207270-DUP1)			**Source: 22H1451-01**		Prepared: 08/25/22 Analyzed: 08/29/22						
Total Dissolved Solids	147	5.0	10	mg/L		147			0	20	
Batch 2207279 - General Prep											
Blank (2207279-BLK1)					Prepared: 08/26/22 Analyzed: 08/29/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							
LCS (2207279-BS1)					Prepared: 08/26/22 Analyzed: 08/29/22						
Total Organic Carbon	11.0	0.54	1.0	mg/L	10.0		110	75-125			
LCS Dup (2207279-BSD1)					Prepared: 08/26/22 Analyzed: 08/29/22						
Total Organic Carbon	10.6	0.54	1.0	mg/L	10.0		106	75-125	3	25	
Matrix Spike (2207279-MS1)			**Source: 22H1431-06**		Prepared: 08/26/22 Analyzed: 08/29/22						
Total Organic Carbon	13.1	0.54	1.0	mg/L	10.0	2.04	110	75-125			

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CLS Work Order #: 22H1504
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207279 - General Prep											
Matrix Spike Dup (2207279-MSD1)			**Source: 22H1431-06**		Prepared: 08/26/22 Analyzed: 08/29/22						
Total Organic Carbon	12.9	0.54	1.0	mg/L	10.0	2.04	108	75-125	1	25	
Batch 2207310 - General Preparation											
Duplicate (2207310-DUP1)			**Source: 22H1482-02**		Prepared: 08/26/22 Analyzed: 08/30/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	
Batch 2207314 - General Preparation											
Blank (2207314-BLK1)					Prepared & Analyzed: 08/26/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Duplicate (2207314-DUP1)			**Source: 22H1467-01**		Prepared & Analyzed: 08/26/22						
Total Alkalinity	50.8	1.0	5.0	mg/L		54.8			8	20	
Bicarbonate as CaCO3	50.8	0.50	5.0	"		54.8			8	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Batch 2207387 - General Preparation											
Blank (2207387-BLK1)					Prepared & Analyzed: 08/30/22						
Ammonia as N	ND	0.025	0.10	mg/L							

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CLS Work Order #: 22H1504
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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207387 - General Preparation											
LCS (2207387-BS1)					Prepared & Analyzed: 08/30/22						
Ammonia as N	0.458	0.025	0.10	mg/L	0.500		92	80-120			
LCS Dup (2207387-BSD1)					Prepared & Analyzed: 08/30/22						
Ammonia as N	0.488	0.025	0.10	mg/L	0.500		98	80-120	6	25	
Matrix Spike (2207387-MS1)			**Source: 22H1646-03**		Prepared & Analyzed: 08/30/22						
Ammonia as N	0.609	0.025	0.10	mg/L	0.500	0.108	100	75-125			
Matrix Spike Dup (2207387-MSD1)			**Source: 22H1646-03**		Prepared & Analyzed: 08/30/22						
Ammonia as N	0.602	0.025	0.10	mg/L	0.500	0.108	99	75-125	1	25	
Batch 2207388 - General Preparation											
Blank (2207388-BLK1)					Prepared & Analyzed: 08/30/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2207388-BS1)					Prepared & Analyzed: 08/30/22						
Total Phosphorus as P	0.308	0.023	0.050	mg/L	0.300		103	80-120			
LCS Dup (2207388-BSD1)					Prepared & Analyzed: 08/30/22						
Total Phosphorus as P	0.303	0.023	0.050	mg/L	0.300		101	80-120	2	25	
Matrix Spike (2207388-MS1)			**Source: 22H1504-01**		Prepared & Analyzed: 08/30/22						
Total Phosphorus as P	0.308	0.023	0.050	mg/L	0.300	ND	103	75-125			
Matrix Spike Dup (2207388-MSD1)			**Source: 22H1504-01**		Prepared & Analyzed: 08/30/22						
Total Phosphorus as P	0.321	0.023	0.050	mg/L	0.300	ND	107	75-125	4	30	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207406 - General Preparation											
Blank (2207406-BLK1)					Prepared & Analyzed: 08/30/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2207406-BS1)					Prepared & Analyzed: 08/30/22						
Total Kjeldahl Nitrogen	0.514	0.040	0.20	mg/L	0.500		103	80-120			
LCS Dup (2207406-BSD1)					Prepared & Analyzed: 08/30/22						
Total Kjeldahl Nitrogen	0.511	0.040	0.20	mg/L	0.500		102	80-120	0.6	20	
Matrix Spike (2207406-MS1)			**Source: 22H1504-06**		Prepared & Analyzed: 08/30/22						
Total Kjeldahl Nitrogen	0.757	0.040	0.20	mg/L	0.500	0.204	111	75-125			
Matrix Spike Dup (2207406-MSD1)			**Source: 22H1504-06**		Prepared & Analyzed: 08/30/22						
Total Kjeldahl Nitrogen	0.753	0.040	0.20	mg/L	0.500	0.204	110	75-125	0.5	25	
Batch 2207440 - General Prep											
Blank (2207440-BLK1)					Prepared & Analyzed: 08/31/22						
Cyanide (total)	0.00300	0.0012	0.0050	mg/L							
LCS (2207440-BS1)					Prepared & Analyzed: 08/31/22						
Cyanide (total)	0.0958	0.0012	0.0050	mg/L	0.100		96	75-125			
LCS Dup (2207440-BSD1)					Prepared & Analyzed: 08/31/22						
Cyanide (total)	0.0847	0.0012	0.0050	mg/L	0.100		85	75-125	12	25	
Matrix Spike (2207440-MS1)			**Source: 22H1504-01**		Prepared & Analyzed: 08/31/22						
Cyanide (total)	0.0925	0.0012	0.0050	mg/L	0.100	0.00340	89	75-125			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207440 - General Prep											
Matrix Spike Dup (2207440-MSD1)			**Source: 22H1504-01**		Prepared & Analyzed: 08/31/22						
Cyanide (total)	0.0910	0.0012	0.0050	mg/L	0.100	0.00340	88	75-125	2	25	

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22H1504
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207238 - EPA 3510B GCNV											
Blank (2207238-BLK1)					Prepared: 08/24/22 Analyzed: 08/25/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Surrogate: o-Terphenyl	*0.0298*			*"*	*0.0250*		*119*	*65-135*			
LCS (2207238-BS1)					Prepared: 08/24/22 Analyzed: 08/25/22						
Diesel	2.19	0.0021	0.050	mg/L	2.50		87	65-135			
Surrogate: o-Terphenyl	*0.0278*			*"*	*0.0250*		*111*	*65-135*			
LCS Dup (2207238-BSD1)					Prepared: 08/24/22 Analyzed: 08/25/22						
Diesel	1.95	0.0021	0.050	mg/L	2.50		78	65-135	11	30	
Surrogate: o-Terphenyl	*0.0243*			*"*	*0.0250*		*97*	*65-135*			

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COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207240 - EPA 200 Series											
Blank (2207240-BLK1)					Prepared & Analyzed: 08/25/22						
Aluminum	14.4	1.6	20	µg/L							
Barium	ND	0.14	5.0	"							
Manganese	0.382	0.050	2.0	"							
Silver	ND	0.070	0.50	"							
LCS (2207240-BS1)					Prepared & Analyzed: 08/25/22						
Aluminum	536	1.6	20	µg/L	500		107	85-115			
Barium	99.0	0.14	5.0	"	100		99	85-115			
Manganese	97.5	0.050	2.0	"	100		98	85-115			
Silver	97.1	0.070	0.50	"	100		97	85-115			
Matrix Spike (2207240-MS1)			**Source: 22H1462-01**		Prepared & Analyzed: 08/25/22						
Aluminum	559	1.6	20	µg/L	500	87.5	94	70-130			
Barium	150	0.14	5.0	"	100	50.4	99	70-130			
Manganese	101	0.050	2.0	"	100	6.39	94	70-130			
Silver	96.1	0.070	0.50	"	100	ND	96	70-130			
Matrix Spike (2207240-MS2)			**Source: 22H1539-01**		Prepared & Analyzed: 08/25/22						
Aluminum	532	1.6	20	µg/L	500	38.4	99	70-130			
Barium	113	0.14	5.0	"	100	12.4	100	70-130			
Manganese	91.5	0.050	2.0	"	100	1.56	90	70-130			
Silver	92.0	0.070	0.50	"	100	ND	92	70-130			
Batch 2207245 - EPA 200 Series											
Blank (2207245-BLK1)					Prepared & Analyzed: 08/25/22						
Boron	ND	5.3	50	µg/L							
Calcium	ND	27	1000	"							
Iron	ND	9.1	100	"							
Magnesium	ND	21	1000	"							
Manganese	ND	0.92	10	"							
Potassium	670	61	1000	"							
Sodium	479	34	1000	"							

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207245 - EPA 200 Series											
LCS (2207245-BS1)					Prepared & Analyzed: 08/25/22						
Boron	464	5.3	50	µg/L	500		93	85-115			
Calcium	5070	27	1000	"	5000		101	85-115			
Iron	494	9.1	100	"	500		99	85-115			
Magnesium	5050	21	1000	"	5000		101	85-115			
Manganese	491	0.92	10	"	500		98	85-115			
Potassium	4930	61	1000	"	5000		99	85-115			
Sodium	4890	34	1000	"	5000		98	85-115			
Matrix Spike (2207245-MS1)				**Source: 22H1504-01**	Prepared & Analyzed: 08/25/22						
Boron	465	5.3	50	µg/L	500	ND	93	70-130			
Calcium	7630	27	1000	"	5000	2570	101	70-130			
Iron	1130	9.1	100	"	500	606	106	70-130			
Magnesium	5210	21	1000	"	5000	192	100	70-130			
Manganese	519	0.92	10	"	500	21.8	99	70-130			
Potassium	5480	61	1000	"	5000	480	100	70-130			
Sodium	5460	34	1000	"	5000	574	98	70-130			
Matrix Spike (2207245-MS2)				**Source: 22H1579-04**	Prepared & Analyzed: 08/25/22						
Boron	599	5.3	50	µg/L	500	94.0	101	70-130			
Calcium	89700	27	1000	"	5000	84700	101	70-130			
Iron	506	9.1	100	"	500	ND	101	70-130			
Magnesium	38800	21	1000	"	5000	34000	98	70-130			
Manganese	511	0.92	10	"	500	ND	102	70-130			
Potassium	6540	61	1000	"	5000	1350	104	70-130			
Sodium	28000	34	1000	"	5000	23700	86	70-130			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1504**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207263 - EPA 200 No Digestion											
Blank (2207263-BLK1)					Prepared & Analyzed: 08/25/22						
Iron	ND	6.8	100	µg/L							
LCS (2207263-BS1)					Prepared & Analyzed: 08/25/22						
Iron	474	6.8	100	µg/L	500		95	85-115			
Matrix Spike (2207263-MS1)			**Source: 22H1431-01**		Prepared & Analyzed: 08/25/22						
Iron	459	6.8	100	µg/L	500	9.82	90	70-130			
Matrix Spike (2207263-MS2)			**Source: 22H1504-01**		Prepared & Analyzed: 08/25/22						
Iron	481	6.8	100	µg/L	500	7.54	95	70-130			
Batch 2207432 - EPA 200 No Digestion											
Blank (2207432-BLK1)					Prepared & Analyzed: 08/31/22						
Aluminum	ND	0.52	20	µg/L							
Silver	ND	0.15	0.50	"							
LCS (2207432-BS1)					Prepared & Analyzed: 08/31/22						
Aluminum	482	0.52	20	µg/L	500		96	85-115			
Silver	96.3	0.15	0.50	"	100		96	85-115			
Matrix Spike (2207432-MS1)			**Source: 22H1193-01**		Prepared & Analyzed: 08/31/22						
Aluminum	507	0.52	20	µg/L	500	7.29	100	70-130			
Silver	96.9	0.15	0.50	"	100	ND	97	70-130			
Matrix Spike (2207432-MS2)			**Source: 22H1281-01**		Prepared & Analyzed: 08/31/22						
Aluminum	493	0.52	20	µg/L	500	7.48	97	70-130			
Silver	94.2	0.15	0.50	"	100	ND	94	70-130			

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1504
COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207198 - EPA 5030 Water GC											
Blank (2207198-BLK1)					Prepared & Analyzed: 08/24/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*19.8*			"	*20.0*		*99*	*65-135*			
LCS (2207198-BS1)					Prepared & Analyzed: 08/24/22						
Gasoline	426	10	50	µg/L	500		85	70-130			
Surrogate: o-Chlorotoluene (Gas)	*19.6*			"	*20.0*		*98*	*65-135*			
LCS Dup (2207198-BSD1)					Prepared & Analyzed: 08/24/22						
Gasoline	528	10	50	µg/L	500		106	70-130	21	30	
Surrogate: o-Chlorotoluene (Gas)	*20.1*			"	*20.0*		*101*	*65-135*			
Matrix Spike (2207198-MS1)			**Source: 22H1431-01**		Prepared & Analyzed: 08/24/22						
Gasoline	588	10	50	µg/L	500	ND	118	68-132			
Surrogate: o-Chlorotoluene (Gas)	*19.8*			"	*20.0*		*99*	*65-135*			
Matrix Spike Dup (2207198-MSD1)			**Source: 22H1431-01**		Prepared & Analyzed: 08/24/22						
Gasoline	535	10	50	µg/L	500	ND	107	68-132	9	32	
Surrogate: o-Chlorotoluene (Gas)	*19.6*			"	*20.0*		*98*	*65-135*			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1504**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207379 - EPA 3510B GCMS											
Blank (2207379-BLK1)					Prepared & Analyzed: 08/26/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Surrogate: Toluene-d8	*9.85*			"	*10.0*		*99*	*72-125*			
LCS (2207379-BS1)					Prepared & Analyzed: 08/26/22						
Methyl tert-butyl ether	20.9	0.095	0.50	µg/L	20.0		105	52-130			
Surrogate: Toluene-d8	*9.51*			"	*10.0*		*95*	*72-125*			
LCS Dup (2207379-BSD1)					Prepared & Analyzed: 08/26/22						
Methyl tert-butyl ether	21.1	0.095	0.50	µg/L	20.0		105	52-130	0.6	30	
Surrogate: Toluene-d8	*9.54*			"	*10.0*		*95*	*72-125*			
Matrix Spike (2207379-MS1)			**Source: 22H1581-01**		Prepared & Analyzed: 08/26/22						
Methyl tert-butyl ether	19.0	0.095	0.50	µg/L	20.0	ND	95	52-140			
Surrogate: Toluene-d8	*9.60*			"	*10.0*		*96*	*72-125*			
Matrix Spike Dup (2207379-MSD1)			**Source: 22H1581-01**		Prepared & Analyzed: 08/26/22						
Methyl tert-butyl ether	19.7	0.095	0.50	µg/L	20.0	ND	99	52-140	4	30	
Surrogate: Toluene-d8	*9.60*			"	*10.0*		*96*	*72-125*			

09/07/22 13:28

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1504**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 92H504 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[X] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [X] NO [ ]

GLOBAL ID

FIELD CONDITIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	TSS, TDS, Hardness, Alkalinity, NO2-N+NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
8.23	0955	R.Is.8.RR		Surface water			6	X	X	X	X	X	X	X				X	
8.23	1035	Is.1.RR		Surface water			6	X	X	X	X	X	X	X				X	
8.22	12:20	Is.4.GC		Surface water			6	X	X	X	X	X	X	X				X	
8.23	12:34	Is.4.GC.DUP		Surface water			6	X	X	X	X	X	X	X				X	
8.23	13:55	Is.10.SFSC		Surface water			6	X	X	X	X	X	X	X				X	
8.23	1340	Is.10.SFSC.FB		Surface water			6	X	X	X	X	X	X	X				X	
				Surface water			6											X	INVOICE TO
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	**Project No. 750.10 Task 0620.01**
				Surface water			6											X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	ST. WATER SCIENCES	8.23 4:00		

RECEIVED AT LAB BY: DEM DATE/TIME: 8/23/22 1609 CONDITIONS/COMMENTS: 6.3/5.C

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER _____ AIR BILL # _____

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

September 08, 2022

CLS Work Order #: 22H1581
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 08/24/22 16:25. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

09/08/22 15:28

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1581
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-19-BI (22H1581-01) Surface Water	**Sampled: 08/24/22 10:15**		**Received: 08/24/22 16:25**							
Ammonia as N	ND		0.10	mg/L	1	2207387	08/30/22	08/30/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**6.6**		5.0	"	"	2207349	08/29/22	08/29/22	SM2320B	
Carbonate as CaCO3	ND		5.0	"	"	"	"	"	"	
Chloride	ND		0.50	"	"	2207232	08/25/22	08/25/22	EPA 300.0	
Cyanide (total)	ND		0.0050	"	"	2207440	08/31/22	08/31/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND		5.0	"	"	2207315	08/26/22	08/29/22	EPA 1664B	
Hydroxide as CaCO3	ND		5.0	"	"	2207349	08/29/22	08/29/22	SM2320B	
Nitrate/Nitrite as N	ND		0.40	"	"	2207232	08/25/22	08/25/22	EPA 300.0	
Orthophosphate as PO4	ND		0.15	"	"	2207281	08/26/22	08/26/22	SM4500-P E	
Sulfate as SO4	**0.61**		0.50	"	"	2207232	08/25/22	08/25/22	EPA 300.0	
Total Alkalinity	**6.6**		5.0	"	"	2207349	08/29/22	08/29/22	SM2320B	
Total Dissolved Solids	**11**		10	"	"	2207366	08/29/22	08/31/22	SM2540C	
Total Hardness as CaCO3	**5.5**		1.0	"	"	2207362	08/29/22	08/29/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.33**		0.20	"	"	2207406	08/30/22	08/30/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.6**		1.0	"	"	2207465	09/01/22	09/01/22	SM5310B	
Total Phosphorus as P	ND		0.050	"	"	2207416	08/31/22	08/31/22	SM4500-P E	
Total Suspended Solids	ND		5.0	"	"	2207348	08/29/22	08/30/22	SM2540D	
R-IS-19-BIB (22H1581-02) Surface Water	**Sampled: 08/24/22 10:30**		**Received: 08/24/22 16:25**							
Ammonia as N	ND		0.10	mg/L	1	2207387	08/30/22	08/30/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	ND		5.0	"	"	2207349	08/29/22	08/29/22	SM2320B	
Carbonate as CaCO3	ND		5.0	"	"	"	"	"	"	
Chloride	ND		0.50	"	"	2207232	08/25/22	08/25/22	EPA 300.0	
Cyanide (total)	ND		0.0050	"	"	2207440	08/31/22	08/31/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND		5.0	"	"	2207315	08/26/22	08/29/22	EPA 1664B	
Hydroxide as CaCO3	ND		5.0	"	"	2207349	08/29/22	08/29/22	SM2320B	
Nitrate/Nitrite as N	ND		0.40	"	"	2207232	08/25/22	08/25/22	EPA 300.0	
Orthophosphate as PO4	ND		0.15	"	"	2207281	08/26/22	08/26/22	SM4500-P E	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1581
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-19-BIB (22H1581-02) Surface Water	**Sampled: 08/24/22 10:30**		**Received: 08/24/22 16:25**							
Sulfate as SO4	**0.64**		0.50	mg/L	1	2207232	08/25/22	08/25/22	EPA 300.0	
Total Alkalinity	ND		5.0	"	"	2207349	08/29/22	08/29/22	SM2320B	
Total Dissolved Solids	ND		10	"	"	2207366	08/29/22	08/31/22	SM2540C	
Total Hardness as CaCO3	**5.3**		1.0	"	"	2207362	08/29/22	08/29/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.21**		0.20	"	"	2207406	08/30/22	08/30/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.5**		1.0	"	"	2207465	09/01/22	09/01/22	SM5310B	
Total Phosphorus as P	ND		0.050	"	"	2207416	08/31/22	08/31/22	SM4500-P E	
Total Suspended Solids	ND		5.0	"	"	2207348	08/29/22	08/30/22	SM2540D	
IS-3-LRR (22H1581-03) Surface Water	**Sampled: 08/24/22 11:15**		**Received: 08/24/22 16:25**							
Ammonia as N	ND		0.10	mg/L	1	2207387	08/30/22	08/30/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**5.2**		5.0	"	"	2207349	08/29/22	08/29/22	SM2320B	
Carbonate as CaCO3	ND		5.0	"	"	"	"	"	"	
Chloride	ND		0.50	"	"	2207232	08/25/22	08/25/22	EPA 300.0	
Cyanide (total)	ND		0.0050	"	"	2207440	08/31/22	08/31/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND		5.0	"	"	2207315	08/26/22	08/29/22	EPA 1664B	
Hydroxide as CaCO3	ND		5.0	"	"	2207349	08/29/22	08/29/22	SM2320B	
Nitrate/Nitrite as N	ND		0.40	"	"	2207232	08/25/22	08/25/22	EPA 300.0	
Orthophosphate as PO4	ND		0.15	"	"	2207281	08/26/22	08/26/22	SM4500-P E	
Sulfate as SO4	**0.61**		0.50	"	"	2207232	08/25/22	08/25/22	EPA 300.0	
Total Alkalinity	**5.2**		5.0	"	"	2207349	08/29/22	08/29/22	SM2320B	
Total Dissolved Solids	ND		10	"	"	2207366	08/29/22	08/31/22	SM2540C	
Total Hardness as CaCO3	**5.3**		1.0	"	"	2207362	08/29/22	08/29/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.46**		0.20	"	"	2207406	08/30/22	08/30/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.5**		1.0	"	"	2207465	09/01/22	09/01/22	SM5310B	
Total Phosphorus as P	ND		0.050	"	"	2207416	08/31/22	08/31/22	SM4500-P E	
Total Suspended Solids	ND		5.0	"	"	2207348	08/29/22	08/30/22	SM2540D	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1581
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-2-LRR (22H1581-04) Surface Water	**Sampled: 08/24/22 12:35**		**Received: 08/24/22 16:25**							
Ammonia as N	ND		0.10	mg/L	1	2207387	08/30/22	08/30/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**6.2**		5.0	"	"	2207349	08/29/22	08/29/22	SM2320B	
Carbonate as CaCO3	ND		5.0	"	"	"	"	"	"	
Chloride	ND		0.50	"	"	2207232	08/25/22	08/25/22	EPA 300.0	
Cyanide (total)	ND		0.0050	"	"	2207440	08/31/22	08/31/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND		5.0	"	"	2207315	08/26/22	08/29/22	EPA 1664B	
Hydroxide as CaCO3	ND		5.0	"	"	2207349	08/29/22	08/29/22	SM2320B	
Nitrate/Nitrite as N	ND		0.40	"	"	2207232	08/25/22	08/25/22	EPA 300.0	
Orthophosphate as PO4	ND		0.15	"	"	2207281	08/26/22	08/26/22	SM4500-P E	
Sulfate as SO4	**0.50**		0.50	"	"	2207232	08/25/22	08/25/22	EPA 300.0	
Total Alkalinity	**6.2**		5.0	"	"	2207349	08/29/22	08/29/22	SM2320B	
Total Dissolved Solids	ND		10	"	"	2207366	08/29/22	08/31/22	SM2540C	
Total Hardness as CaCO3	**6.8**		1.0	"	"	2207362	08/29/22	08/29/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.46**		0.20	"	"	2207406	08/30/22	08/30/22	SM4500-NH3F-2011	
Total Organic Carbon	**3.4**		1.0	"	"	2207465	09/01/22	09/01/22	SM5310B	
Total Phosphorus as P	ND		0.050	"	"	2207416	08/31/22	08/31/22	SM4500-P E	
Total Suspended Solids	ND		5.0	"	"	2207348	08/29/22	08/30/22	SM2540D	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1581**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-19-BI (22H1581-01) Surface Water Sampled: 08/24/22 10:15 Received: 08/24/22 16:25										
Diesel	ND		0.050	mg/L	1	2207238	08/25/22	08/25/22	EPA 8015M	
Hydraulic Oil	ND		0.050	"	"	"	"	"	"	
Kerosene	ND		0.050	"	"	"	"	"	"	
Mineral Oil	ND		0.050	"	"	"	"	"	"	
Motor Oil	ND		0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*133 %*	*65-135*		"	"	"	"	
R-IS-19-BIB (22H1581-02) Surface Water Sampled: 08/24/22 10:30 Received: 08/24/22 16:25										
Diesel	ND		0.050	mg/L	1	2207238	08/25/22	08/25/22	EPA 8015M	
Hydraulic Oil	ND		0.050	"	"	"	"	"	"	
Kerosene	ND		0.050	"	"	"	"	"	"	
Mineral Oil	ND		0.050	"	"	"	"	"	"	
Motor Oil	ND		0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*109 %*	*65-135*		"	"	"	"	
IS-3-LRR (22H1581-03) Surface Water Sampled: 08/24/22 11:15 Received: 08/24/22 16:25										
Diesel	ND		0.050	mg/L	1	2207238	08/25/22	08/25/22	EPA 8015M	
Hydraulic Oil	ND		0.050	"	"	"	"	"	"	
Kerosene	ND		0.050	"	"	"	"	"	"	
Mineral Oil	ND		0.050	"	"	"	"	"	"	
Motor Oil	ND		0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*116 %*	*65-135*		"	"	"	"	
IS-2-LRR (22H1581-04) Surface Water Sampled: 08/24/22 12:35 Received: 08/24/22 16:25										
Diesel	ND		0.050	mg/L	1	2207238	08/25/22	08/25/22	EPA 8015M	
Hydraulic Oil	ND		0.050	"	"	"	"	"	"	
Kerosene	ND		0.050	"	"	"	"	"	"	
Mineral Oil	ND		0.050	"	"	"	"	"	"	
Motor Oil	ND		0.050	"	"	"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1581**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-2-LRR (22H1581-04) Surface Water	**Sampled: 08/24/22 12:35**		**Received: 08/24/22 16:25**							
Surrogate: o-Terphenyl			*96 %*		*65-135*	*2207238*	"	*08/25/22*	*EPA 8015M*	

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Stillwater Sciences
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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1581
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-19-BI (22H1581-01) Surface Water	**Sampled: 08/24/22 10:15**		**Received: 08/24/22 16:25**							
Aluminum	**26**		20	µg/L	1	2207305	08/26/22	08/26/22	EPA 200.8	
Barium	ND		5.0	"	"	"	"	"	"	
Calcium	**1700**		1000	"	"	2207284	08/26/22	08/26/22	EPA 200.7	
Iron	ND		100	"	"	"	"	"	"	
Magnesium	ND		1000	"	"	"	"	"	"	
Manganese	**7.3**		2.0	"	"	2207305	08/26/22	08/26/22	EPA 200.8	
Potassium	ND		1000	"	"	2207284	08/26/22	08/26/22	EPA 200.7	
Silver	ND		0.50	"	"	2207305	08/26/22	08/26/22	EPA 200.8	
Sodium	ND		1000	"	"	2207284	08/26/22	08/26/22	EPA 200.7	
R-IS-19-BIB (22H1581-02) Surface Water	**Sampled: 08/24/22 10:30**		**Received: 08/24/22 16:25**							
Aluminum	**23**		20	µg/L	1	2207305	08/26/22	08/26/22	EPA 200.8	
Barium	ND		5.0	"	"	"	"	"	"	
Calcium	**1700**		1000	"	"	2207284	08/26/22	08/26/22	EPA 200.7	
Iron	ND		100	"	"	"	"	"	"	
Magnesium	ND		1000	"	"	"	"	"	"	
Manganese	**8.4**		2.0	"	"	2207305	08/26/22	08/26/22	EPA 200.8	
Potassium	ND		1000	"	"	2207284	08/26/22	08/26/22	EPA 200.7	
Silver	ND		0.50	"	"	2207305	08/26/22	08/26/22	EPA 200.8	
Sodium	ND		1000	"	"	2207284	08/26/22	08/26/22	EPA 200.7	
IS-3-LRR (22H1581-03) Surface Water	**Sampled: 08/24/22 11:15**		**Received: 08/24/22 16:25**							
Aluminum	**170**		20	µg/L	1	2207305	08/26/22	08/26/22	EPA 200.8	
Barium	**5.3**		5.0	"	"	"	"	"	"	
Calcium	**2200**		1000	"	"	2207284	08/26/22	08/26/22	EPA 200.7	
Iron	**160**		100	"	"	"	"	"	"	
Magnesium	ND		1000	"	"	"	"	"	"	
Manganese	**42**		2.0	"	"	2207305	08/26/22	08/26/22	EPA 200.8	
Potassium	ND		1000	"	"	2207284	08/26/22	08/26/22	EPA 200.7	
Silver	ND		0.50	"	"	2207305	08/26/22	08/26/22	EPA 200.8	
Sodium	ND		1000	"	"	2207284	08/26/22	08/26/22	EPA 200.7	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1581
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-2-LRR (22H1581-04) Surface Water	**Sampled: 08/24/22 12:35**		**Received: 08/24/22 16:25**							
Aluminum	**29**		20	µg/L	1	2207305	08/26/22	08/26/22	EPA 200.8	
Barium	ND		5.0	"	"	"	"	"	"	
Calcium	**1800**		1000	"	"	2207284	08/26/22	08/26/22	EPA 200.7	
Iron	ND		100	"	"	"	"	"	"	
Magnesium	ND		1000	"	"	"	"	"	"	
Manganese	**8.0**		2.0	"	"	2207305	08/26/22	08/26/22	EPA 200.8	
Potassium	ND		1000	"	"	2207284	08/26/22	08/26/22	EPA 200.7	
Silver	ND		0.50	"	"	2207305	08/26/22	08/26/22	EPA 200.8	
Sodium	ND		1000	"	"	2207284	08/26/22	08/26/22	EPA 200.7	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1581
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-19-BI (22H1581-01) Surface Water	**Sampled: 08/24/22 10:15**		**Received: 08/24/22 16:25**							
Aluminum	ND		20	µg/L	1	2207528	09/02/22	09/07/22	EPA 200.8	
Iron	ND		100	"	"	2207362	08/29/22	08/29/22	EPA 200.7	
Silver	ND		0.50	"	"	2207528	09/02/22	09/07/22	EPA 200.8	
R-IS-19-BIB (22H1581-02) Surface Water	**Sampled: 08/24/22 10:30**		**Received: 08/24/22 16:25**							
Aluminum	ND		20	µg/L	1	2207528	09/02/22	09/07/22	EPA 200.8	
Iron	ND		100	"	"	2207362	08/29/22	08/29/22	EPA 200.7	
Silver	ND		0.50	"	"	2207528	09/02/22	09/07/22	EPA 200.8	
IS-3-LRR (22H1581-03) Surface Water	**Sampled: 08/24/22 11:15**		**Received: 08/24/22 16:25**							
Aluminum	ND		20	µg/L	1	2207528	09/02/22	09/07/22	EPA 200.8	
Iron	ND		100	"	"	2207362	08/29/22	08/29/22	EPA 200.7	
Silver	ND		0.50	"	"	2207528	09/02/22	09/07/22	EPA 200.8	
IS-2-LRR (22H1581-04) Surface Water	**Sampled: 08/24/22 12:35**		**Received: 08/24/22 16:25**							
Aluminum	**26**		20	µg/L	1	2207528	09/02/22	09/07/22	EPA 200.8	
Iron	ND		100	"	"	2207362	08/29/22	08/29/22	EPA 200.7	
Silver	ND		0.50	"	"	2207528	09/02/22	09/07/22	EPA 200.8	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1581**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-19-BI (22H1581-01) Surface Water Sampled: 08/24/22 10:15 Received: 08/24/22 16:25										
Gasoline	ND		50	µg/L	1	2207339	08/26/22	08/26/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*92 %*		*65-135*		"	"	"	"
R-IS-19-BIB (22H1581-02) Surface Water Sampled: 08/24/22 10:30 Received: 08/24/22 16:25										
Gasoline	ND		50	µg/L	1	2207339	08/26/22	08/26/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*92 %*		*65-135*		"	"	"	"
IS-3-LRR (22H1581-03) Surface Water Sampled: 08/24/22 11:15 Received: 08/24/22 16:25										
Gasoline	ND		50	µg/L	1	2207339	08/26/22	08/26/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*96 %*		*65-135*		"	"	"	"
IS-2-LRR (22H1581-04) Surface Water Sampled: 08/24/22 12:35 Received: 08/24/22 16:25										
Gasoline	ND		50	µg/L	1	2207339	08/26/22	08/26/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*98 %*		*65-135*		"	"	"	"

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CLS Work Order #: 22H1581
COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-19-BI (22H1581-01) Surface Water Sampled: 08/24/22 10:15 Received: 08/24/22 16:25										
Methyl tert-butyl ether	ND		0.50	µg/L	1	2207379	08/26/22	08/26/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"
R-IS-19-BIB (22H1581-02) Surface Water Sampled: 08/24/22 10:30 Received: 08/24/22 16:25										
Methyl tert-butyl ether	ND		0.50	µg/L	1	2207379	08/26/22	08/26/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"
IS-3-LRR (22H1581-03) Surface Water Sampled: 08/24/22 11:15 Received: 08/24/22 16:25										
Methyl tert-butyl ether	ND		0.50	µg/L	1	2207379	08/26/22	08/26/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"
IS-2-LRR (22H1581-04) Surface Water Sampled: 08/24/22 12:35 Received: 08/24/22 16:25										
Methyl tert-butyl ether	ND		0.50	µg/L	1	2207379	08/26/22	08/26/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22H1581
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207232 - General Preparation											
Blank (2207232-BLK1)					Prepared & Analyzed: 08/25/22						
Sulfate as SO4	ND		0.50	mg/L							
Chloride	ND		0.50	"							
Nitrate/Nitrite as N	ND		0.40	"							
LCS (2207232-BS1)					Prepared & Analyzed: 08/25/22						
Sulfate as SO4	4.63		0.50	mg/L	5.00		93	80-120			
Chloride	4.64		0.50	"	5.00		93	80-120			
Nitrate/Nitrite as N	3.90		0.40	"	4.00		98	80-120			
LCS Dup (2207232-BSD1)					Prepared & Analyzed: 08/25/22						
Chloride	4.73		0.50	mg/L	5.00		95	80-120	2	20	
Sulfate as SO4	4.70		0.50	"	5.00		94	80-120	1	20	
Nitrate/Nitrite as N	3.96		0.40	"	4.00		99	80-120	1	20	
Matrix Spike (2207232-MS1)			**Source: 22H1581-01**		Prepared & Analyzed: 08/25/22						
Chloride	4.75		0.50	mg/L	5.00	0.350	88	80-120			
Sulfate as SO4	5.21		0.50	"	5.00	0.610	92	80-120			
Nitrate/Nitrite as N	3.90		0.40	"	4.00	ND	97	80-120			
Matrix Spike Dup (2207232-MSD1)			**Source: 22H1581-01**		Prepared & Analyzed: 08/25/22						
Chloride	4.72		0.50	mg/L	5.00	0.350	87	80-120	0.7	20	
Sulfate as SO4	5.17		0.50	"	5.00	0.610	91	80-120	0.6	20	
Nitrate/Nitrite as N	3.87		0.40	"	4.00	ND	97	80-120	0.7	20	
Batch 2207281 - General Preparation											
Blank (2207281-BLK1)					Prepared & Analyzed: 08/26/22						
Orthophosphate as PO4	ND		0.15	mg/L							

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22H1581
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207281 - General Preparation											
LCS (2207281-BS1)					Prepared & Analyzed: 08/26/22						
Orthophosphate as PO4	0.876		0.15	mg/L	0.918		95	80-120			
LCS Dup (2207281-BSD1)					Prepared & Analyzed: 08/26/22						
Orthophosphate as PO4	0.892		0.15	mg/L	0.918		97	80-120	2	20	
Matrix Spike (2207281-MS1)			**Source: 22H1581-01**		Prepared & Analyzed: 08/26/22						
Orthophosphate as PO4	0.819		0.15	mg/L	0.918	ND	89	75-125			
Matrix Spike Dup (2207281-MSD1)			**Source: 22H1581-01**		Prepared & Analyzed: 08/26/22						
Orthophosphate as PO4	0.843		0.15	mg/L	0.918	ND	92	75-125	3	25	
Batch 2207315 - Solvent Extract											
Blank (2207315-BLK1)					Prepared: 08/26/22 Analyzed: 08/29/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND		5.0	mg/L							
LCS (2207315-BS1)					Prepared: 08/26/22 Analyzed: 08/29/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.9		5.0	mg/L	40.0		100	78-114			
LCS Dup (2207315-BSD1)					Prepared: 08/26/22 Analyzed: 08/29/22						
Hexane Extractable Material (HEM, Oil & Grease)	38.0		5.0	mg/L	40.0		95	78-114	5	18	
Batch 2207348 - General Preparation											
Duplicate (2207348-DUP1)			**Source: 22H1558-02**		Prepared: 08/29/22 Analyzed: 08/30/22						
Total Suspended Solids	ND		5.0	mg/L		ND				20	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207349 - General Prep											
Blank (2207349-BLK1)					Prepared & Analyzed: 08/29/22						
Total Alkalinity	ND		5.0	mg/L							
Bicarbonate as CaCO3	ND		5.0	"							
Carbonate as CaCO3	ND		5.0	"							
Hydroxide as CaCO3	ND		5.0	"							
Blank (2207349-BLK2)					Prepared & Analyzed: 08/29/22						
Total Alkalinity	ND		5.0	mg/L							
Bicarbonate as CaCO3	ND		5.0	"							
Carbonate as CaCO3	ND		5.0	"							
Hydroxide as CaCO3	ND		5.0	"							
Duplicate (2207349-DUP1)				**Source: 22H1532-01**	Prepared & Analyzed: 08/29/22						
Total Alkalinity	69.0		5.0	mg/L		71.0			3	20	
Bicarbonate as CaCO3	69.0		5.0	"		71.0			3	20	
Carbonate as CaCO3	ND		5.0	"		ND				20	
Hydroxide as CaCO3	ND		5.0	"		ND				20	
Duplicate (2207349-DUP2)				**Source: 22H1632-01**	Prepared & Analyzed: 08/29/22						
Total Alkalinity	12.0		5.0	mg/L		11.8			2	20	
Bicarbonate as CaCO3	12.0		5.0	"		11.8			2	20	
Carbonate as CaCO3	ND		5.0	"		ND				20	
Hydroxide as CaCO3	ND		5.0	"		ND				20	
Batch 2207362 - EPA 200 No Digestion											
Blank (2207362-BLK1)					Prepared & Analyzed: 08/29/22						
Total Hardness as CaCO3	ND		1.0	mg/L							

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CLS Work Order #: 22H1581
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207362 - EPA 200 No Digestion											
LCS (2207362-BS1)					Prepared & Analyzed: 08/29/22						
Total Hardness as CaCO3	32.0		1.0	mg/L	33.1		97	85-115			
Matrix Spike (2207362-MS1)			**Source: 22H1581-01**		Prepared & Analyzed: 08/29/22						
Total Hardness as CaCO3	36.6		1.0	mg/L	33.1	5.47	94	70-130			
Matrix Spike (2207362-MS2)			**Source: 22H1583-01**		Prepared & Analyzed: 08/29/22						
Total Hardness as CaCO3	72.3		1.0	mg/L	33.1	44.8	83	70-130			
Batch 2207366 - General Preparation											
Blank (2207366-BLK1)					Prepared: 08/29/22 Analyzed: 08/31/22						
Total Dissolved Solids	ND		10	mg/L							
Duplicate (2207366-DUP1)			**Source: 22H1581-01**		Prepared: 08/29/22 Analyzed: 08/31/22						
Total Dissolved Solids	10.0		10	mg/L		11.0			10	20	
Batch 2207387 - General Preparation											
Blank (2207387-BLK1)					Prepared & Analyzed: 08/30/22						
Ammonia as N	ND		0.10	mg/L							
LCS (2207387-BS1)					Prepared & Analyzed: 08/30/22						
Ammonia as N	0.458		0.10	mg/L	0.500		92	80-120			
LCS Dup (2207387-BSD1)					Prepared & Analyzed: 08/30/22						
Ammonia as N	0.488		0.10	mg/L	0.500		98	80-120	6	25	

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22H1581
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207387 - General Preparation											
Matrix Spike (2207387-MS1)			**Source: 22H1646-03**		Prepared & Analyzed: 08/30/22						
Ammonia as N	0.609		0.10	mg/L	0.500	0.108	100	75-125			
Matrix Spike Dup (2207387-MSD1)			**Source: 22H1646-03**		Prepared & Analyzed: 08/30/22						
Ammonia as N	0.602		0.10	mg/L	0.500	0.108	99	75-125	1	25	
Batch 2207406 - General Preparation											
Blank (2207406-BLK1)					Prepared & Analyzed: 08/30/22						
Total Kjeldahl Nitrogen	ND		0.20	mg/L							
LCS (2207406-BS1)					Prepared & Analyzed: 08/30/22						
Total Kjeldahl Nitrogen	0.514		0.20	mg/L	0.500		103	80-120			
LCS Dup (2207406-BSD1)					Prepared & Analyzed: 08/30/22						
Total Kjeldahl Nitrogen	0.511		0.20	mg/L	0.500		102	80-120	0.6	20	
Matrix Spike (2207406-MS1)			**Source: 22H1504-06**		Prepared & Analyzed: 08/30/22						
Total Kjeldahl Nitrogen	0.757		0.20	mg/L	0.500	0.204	111	75-125			
Matrix Spike Dup (2207406-MSD1)			**Source: 22H1504-06**		Prepared & Analyzed: 08/30/22						
Total Kjeldahl Nitrogen	0.753		0.20	mg/L	0.500	0.204	110	75-125	0.5	25	
Batch 2207416 - General Preparation											
Blank (2207416-BLK1)					Prepared & Analyzed: 08/31/22						
Total Phosphorus as P	ND		0.050	mg/L							

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CLS Work Order #: 22H1581
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207416 - General Preparation											
LCS (2207416-BS1)					Prepared & Analyzed: 08/31/22						
Total Phosphorus as P	0.308		0.050	mg/L	0.300		103	80-120			
LCS Dup (2207416-BSD1)					Prepared & Analyzed: 08/31/22						
Total Phosphorus as P	0.302		0.050	mg/L	0.300		101	80-120	2	25	
Matrix Spike (2207416-MS1)			**Source: 22H1579-01**		Prepared & Analyzed: 08/31/22						
Total Phosphorus as P	0.407		0.050	mg/L	0.300	0.103	101	75-125			
Matrix Spike Dup (2207416-MSD1)			**Source: 22H1579-01**		Prepared & Analyzed: 08/31/22						
Total Phosphorus as P	0.413		0.050	mg/L	0.300	0.103	103	75-125	1	30	
Batch 2207440 - General Prep											
Blank (2207440-BLK1)					Prepared & Analyzed: 08/31/22						
Cyanide (total)	ND		0.0050	mg/L							
LCS (2207440-BS1)					Prepared & Analyzed: 08/31/22						
Cyanide (total)	0.0958		0.0050	mg/L	0.100		96	75-125			
LCS Dup (2207440-BSD1)					Prepared & Analyzed: 08/31/22						
Cyanide (total)	0.0847		0.0050	mg/L	0.100		85	75-125	12	25	
Matrix Spike (2207440-MS1)			**Source: 22H1504-01**		Prepared & Analyzed: 08/31/22						
Cyanide (total)	0.0925		0.0050	mg/L	0.100	0.00340	89	75-125			
Matrix Spike Dup (2207440-MSD1)			**Source: 22H1504-01**		Prepared & Analyzed: 08/31/22						
Cyanide (total)	0.0910		0.0050	mg/L	0.100	0.00340	88	75-125	2	25	

09/08/22 15:28

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1581
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207465 - General Prep											
Blank (2207465-BLK1)					Prepared & Analyzed: 09/01/22						
Total Organic Carbon	ND		1.0	mg/L							
LCS (2207465-BS1)					Prepared & Analyzed: 09/01/22						
Total Organic Carbon	11.2		1.0	mg/L	10.0		112	75-125			
LCS Dup (2207465-BSD1)					Prepared & Analyzed: 09/01/22						
Total Organic Carbon	10.9		1.0	mg/L	10.0		109	75-125	3	25	
Matrix Spike (2207465-MS1)			**Source: 22H1581-04**		Prepared & Analyzed: 09/01/22						
Total Organic Carbon	13.6		1.0	mg/L	10.0	3.38	102	75-125			
Matrix Spike Dup (2207465-MSD1)			**Source: 22H1581-04**		Prepared & Analyzed: 09/01/22						
Total Organic Carbon	14.2		1.0	mg/L	10.0	3.38	109	75-125	5	25	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1581**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207238 - EPA 3510B GCNV											
Blank (2207238-BLK1)					Prepared: 08/24/22 Analyzed: 08/25/22						
Diesel	ND		0.050	mg/L							
Motor Oil	ND		0.050	"							
Surrogate: o-Terphenyl	*0.0298*			*"*	*0.0250*		*119*	*65-135*			
LCS (2207238-BS1)					Prepared: 08/24/22 Analyzed: 08/25/22						
Diesel	2.19		0.050	mg/L	2.50		87	65-135			
Surrogate: o-Terphenyl	*0.0278*			*"*	*0.0250*		*111*	*65-135*			
LCS Dup (2207238-BSD1)					Prepared: 08/24/22 Analyzed: 08/25/22						
Diesel	1.95		0.050	mg/L	2.50		78	65-135	11	30	
Surrogate: o-Terphenyl	*0.0243*			*"*	*0.0250*		*97*	*65-135*			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1581**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207284 - EPA 200 Series											
Blank (2207284-BLK1)					Prepared & Analyzed: 08/26/22						
Aluminum	ND		50	µg/L							
Calcium	ND		1000	"							
Iron	ND		100	"							
Magnesium	ND		1000	"							
Potassium	ND		1000	"							
Sodium	ND		1000	"							
LCS (2207284-BS1)					Prepared & Analyzed: 08/26/22						
Aluminum	4820		50	µg/L	5000		96	85-115			
Calcium	5200		1000	"	5000		104	85-115			
Iron	498		100	"	500		100	85-115			
Magnesium	5090		1000	"	5000		102	85-115			
Potassium	5040		1000	"	5000		101	85-115			
Sodium	4990		1000	"	5000		100	85-115			
Matrix Spike (2207284-MS1)			**Source: 22H1584-01**		Prepared & Analyzed: 08/26/22						
Aluminum	4750		50	µg/L	5000	ND	95	70-130			
Calcium	77100		1000	"	5000	71800	106	70-130			
Iron	498		100	"	500	ND	100	70-130			
Magnesium	28300		1000	"	5000	23200	101	70-130			
Potassium	6410		1000	"	5000	921	110	70-130			
Sodium	80300		1000	"	5000	76300	81	70-130			
Matrix Spike (2207284-MS2)			**Source: 22H1586-02**		Prepared & Analyzed: 08/26/22						
Aluminum	4970		50	µg/L	5000	193	96	70-130			
Calcium	83400		1000	"	5000	79700	75	70-130			
Iron	725		100	"	500	306	84	70-130			
Magnesium	71200		1000	"	5000	67000	84	70-130			
Potassium	11000		1000	"	5000	6180	95	70-130			
Sodium	120000		1000	"	5000	119000	24	70-130			QM-4X

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1581**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207305 - EPA 200 Series											
Blank (2207305-BLK1)					Prepared & Analyzed: 08/26/22						
Aluminum	ND		20	µg/L							
Barium	ND		5.0	"							
Manganese	ND		2.0	"							
Silver	ND		0.50	"							
LCS (2207305-BS1)					Prepared & Analyzed: 08/26/22						
Aluminum	516		20	µg/L	500		103	85-115			
Barium	100		5.0	"	100		100	85-115			
Manganese	98.8		2.0	"	100		99	85-115			
Silver	96.9		0.50	"	100		97	85-115			
Matrix Spike (2207305-MS1)			**Source: 22H1560-01**		Prepared & Analyzed: 08/26/22						
Aluminum	1600		20	µg/L	500	807	158	70-130			QM-7
Barium	472		5.0	"	100	374	98	70-130			
Manganese	144		2.0	"	100	48.7	96	70-130			
Silver	94.6		0.50	"	100	ND	95	70-130			
Matrix Spike (2207305-MS2)			**Source: 22H1678-01**		Prepared & Analyzed: 08/26/22						
Aluminum	479		20	µg/L	500	2.78	95	70-130			
Barium	147		5.0	"	100	49.6	97	70-130			
Manganese	89.8		2.0	"	100	0.0780	90	70-130			
Silver	91.4		0.50	"	100	ND	91	70-130			

09/08/22 15:28

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1581
COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207362 - EPA 200 No Digestion											
Blank (2207362-BLK1)					Prepared & Analyzed: 08/29/22						
Iron	ND		100	µg/L							
LCS (2207362-BS1)					Prepared & Analyzed: 08/29/22						
Iron	444		100	µg/L	500		89	85-115			
Matrix Spike (2207362-MS1)			**Source: 22H1581-01**		Prepared & Analyzed: 08/29/22						
Iron	447		100	µg/L	500	21.9	85	70-130			
Matrix Spike (2207362-MS2)			**Source: 22H1583-01**		Prepared & Analyzed: 08/29/22						
Iron	418		100	µg/L	500	19.4	80	70-130			
Batch 2207528 - EPA 200 No Digestion											
Blank (2207528-BLK1)					Prepared: 09/02/22 Analyzed: 09/07/22						
Aluminum	ND		20	µg/L							
Silver	ND		0.50	"							
LCS (2207528-BS1)					Prepared: 09/02/22 Analyzed: 09/08/22						
Aluminum	490		20	µg/L	500		98	85-115			
Silver	96.2		0.50	"	100		96	85-115			
Matrix Spike (2207528-MS1)			**Source: 22H1581-01**		Prepared: 09/02/22 Analyzed: 09/07/22						
Aluminum	562		20	µg/L	500	13.2	110	70-130			
Silver	112		0.50	"	100	ND	112	70-130			
Matrix Spike (2207528-MS2)			**Source: 22H1844-01**		Prepared: 09/02/22 Analyzed: 09/08/22						
Aluminum	469		20	µg/L	500	2.26	93	70-130			
Silver	87.3		0.50	"	100	ND	87	70-130			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1581**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207339 - EPA 5030 Water GC											
Blank (2207339-BLK1)					Prepared & Analyzed: 08/26/22						
Gasoline	ND		50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*20.1*			*"*	*20.0*		*100*	*65-135*			
LCS (2207339-BS1)					Prepared & Analyzed: 08/26/22						
Gasoline	575		50	µg/L	500		115	70-130			
Surrogate: o-Chlorotoluene (Gas)	*21.5*			*"*	*20.0*		*107*	*65-135*			
LCS Dup (2207339-BSD1)					Prepared & Analyzed: 08/26/22						
Gasoline	586		50	µg/L	500		117	70-130	2	30	
Surrogate: o-Chlorotoluene (Gas)	*20.2*			*"*	*20.0*		*101*	*65-135*			
Matrix Spike (2207339-MS1)			**Source: 22H1581-01**		Prepared & Analyzed: 08/26/22						
Gasoline	592		50	µg/L	500	ND	118	68-132			
Surrogate: o-Chlorotoluene (Gas)	*21.2*			*"*	*20.0*		*106*	*65-135*			
Matrix Spike Dup (2207339-MSD1)			**Source: 22H1581-01**		Prepared & Analyzed: 08/26/22						
Gasoline	587		50	µg/L	500	ND	117	68-132	0.7	32	
Surrogate: o-Chlorotoluene (Gas)	*21.2*			*"*	*20.0*		*106*	*65-135*			

09/08/22 15:28

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1581**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207379 - EPA 3510B GCMS											
Blank (2207379-BLK1)					Prepared & Analyzed: 08/26/22						
Di-isopropyl ether	ND		0.50	µg/L							
Ethyl tert-butyl ether	ND		0.50	"							
Methyl tert-butyl ether	ND		0.50	"							
tert-Amyl methyl ether	ND		0.50	"							
tert-Butyl alcohol	ND		5.0	"							
Surrogate: Toluene-d8	*9.85*			"	*10.0*		*99*	*72-125*			
LCS (2207379-BS1)					Prepared & Analyzed: 08/26/22						
Methyl tert-butyl ether	20.9		0.50	µg/L	20.0		105	52-130			
Surrogate: Toluene-d8	*9.51*			"	*10.0*		*95*	*72-125*			
LCS Dup (2207379-BSD1)					Prepared & Analyzed: 08/26/22						
Methyl tert-butyl ether	21.1		0.50	µg/L	20.0		105	52-130	0.6	30	
Surrogate: Toluene-d8	*9.54*			"	*10.0*		*95*	*72-125*			
Matrix Spike (2207379-MS1)			**Source: 22H1581-01**		Prepared & Analyzed: 08/26/22						
Methyl tert-butyl ether	19.0		0.50	µg/L	20.0	ND	95	52-140			
Surrogate: Toluene-d8	*9.60*			"	*10.0*		*96*	*72-125*			
Matrix Spike Dup (2207379-MSD1)			**Source: 22H1581-01**		Prepared & Analyzed: 08/26/22						
Methyl tert-butyl ether	19.7		0.50	µg/L	20.0	ND	99	52-140	4	30	
Surrogate: Toluene-d8	*9.60*			"	*10.0*		*96*	*72-125*			

09/08/22 15:28

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1581**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22H1521 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches.

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[x] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [x] NO [ ]

GLOBAL ID

FIELD CONDITIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	ANALYSIS REQUESTED: TSS, TDS, Hardness, Alkalinity, NO2-N+NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS: 1	2	3	5	SPECIAL INSTRUCTIONS
8.24	10:15	R.IS.19.BI		Surface water			6	x	x	x	x	x	x	x				x	
8.24	10:30	R.IS.19.BIB		Surface water			6		x	x	x	x	x	x				x	
8.24	11:15	IS.3.LRR		Surface water			6	x	x	x	x	x	x	x				x	
8.24	12:55	IS.2.LRR		Surface water			6	x	x	x	x	x	x	x				x	
				Surface water			6											x	
				Surface water			6											x	
				Surface water			6											x	
				Surface water			6											x	INVOICE TO:
				Surface water			6											x	Stillwater Sciences
				Surface water			6											x	Same as above
				Surface water			6											x	
				Surface water			6											x	**Project No. 750.10 Task 0620.01**
				Surface water			6											x	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (2) HNO_3 (3) = COLD (4)= H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Esther Adelstein/ Stillwater	8/24 1625		

RECEIVED AT LAB BY: DATE/TIME: 8/24/22 1625

CONDITIONS/COMMENTS: 1-3 / 0-6

SHIPPED BY: [ ] FEDEX [ ] UPS [ ] OTHER _____ AIR BILL # _____

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

September 15, 2022

CLS Work Order #: 22H1935
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 08/31/22 15:31. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

09/15/22 14:20

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1935
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-21-EB (22H1935-01) Surface Water	**Sampled: 08/31/22 13:15**		**Received: 08/31/22 15:31**							
Ammonia as N	ND	0.025	0.10	mg/L	1	2207530	09/02/22	09/02/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	ND	0.50	5.0	"	"	2207474	09/01/22	09/01/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.27**	0.026	0.50	"	"	2207464	09/01/22	09/01/22	EPA 300.0	J
Cyanide (total)	**0.0026**	0.0012	0.0050	"	"	2207608	09/07/22	09/07/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2207612	09/07/22	09/08/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2207474	09/01/22	09/01/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2207464	09/01/22	09/01/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2207501	09/02/22	09/02/22	SM4500-P E	
Sulfate as SO4	ND	0.038	0.50	"	"	2207464	09/01/22	09/01/22	EPA 300.0	
Total Alkalinity	ND	1.0	5.0	"	"	2207474	09/01/22	09/01/22	SM2320B	
Total Dissolved Solids	ND	5.0	10	"	"	2207495	09/01/22	09/02/22	SM2540C	
Total Hardness as CaCO3	**0.66**	0.19	1.0	"	"	2207498	09/01/22	09/01/22	EPA 200.7	J
Total Kjeldahl Nitrogen	**0.36**	0.040	0.20	"	"	2207563	09/06/22	09/06/22	SM4500-NH3F-2011	
Total Organic Carbon	ND	0.54	1.0	"	"	2207465	09/01/22	09/01/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2207650	09/08/22	09/08/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2207475	09/01/22	09/02/22	SM2540D	

09/15/22 14:20

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1935**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-21-EB (22H1935-01) Surface Water	**Sampled: 08/31/22 13:15**		**Received: 08/31/22 15:31**							
Diesel	ND	0.0021	0.050	mg/L	1	2207441	09/01/22	09/01/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*128 %*		*65-135*	"	"	"	"	

09/15/22 14:20

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1935
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-21-EB (22H1935-01) Surface Water	**Sampled: 08/31/22 13:15**		**Received: 08/31/22 15:31**							
Aluminum	**2.0**	1.6	20	µg/L	1	2207485	09/01/22	09/02/22	EPA 200.8	J
Barium	ND	0.14	5.0	"	"	"	"	"	"	
Calcium	ND	27	1000	"	"	2207487	09/01/22	09/01/22	EPA 200.7	
Iron	ND	9.1	100	"	"	"	"	"	"	
Magnesium	ND	21	1000	"	"	"	"	"	"	
Manganese	ND	0.050	2.0	"	"	2207485	09/01/22	09/02/22	EPA 200.8	
Potassium	**350**	61	1000	"	"	2207487	09/01/22	09/01/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2207485	09/01/22	09/02/22	EPA 200.8	
Sodium	**920**	34	1000	"	"	2207487	09/01/22	09/01/22	EPA 200.7	J

09/15/22 14:20

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1935
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-21-EB (22H1935-01) Surface Water	**Sampled: 08/31/22 13:15**		**Received: 08/31/22 15:31**							
Aluminum	**1.1**	0.52	20	µg/L	1	2207691	09/09/22	09/09/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2207498	09/01/22	09/01/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2207691	09/09/22	09/09/22	EPA 200.8	

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TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-21-EB (22H1935-01) Surface Water	**Sampled: 08/31/22 13:15**		**Received: 08/31/22 15:31**							
Gasoline	ND	10	50	µg/L	1	2207477	09/01/22	09/01/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*98 %*		*65-135*		"	"	"	"

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Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-21-EB (22H1935-01) Surface Water	**Sampled: 08/31/22 13:15**		**Received: 08/31/22 15:31**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2207492	09/01/22	09/01/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207464 - General Preparation											
Blank (2207464-BLK1)					Prepared & Analyzed: 09/01/22						
Sulfate as SO4	ND	0.038	0.50	mg/L							
Chloride	0.279	0.026	0.50	"							J
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2207464-BS1)					Prepared & Analyzed: 09/01/22						
Sulfate as SO4	5.15	0.038	0.50	mg/L	5.00		103	80-120			
Chloride	5.00	0.026	0.50	"	5.00		100	80-120			
Nitrate/Nitrite as N	4.30	0.055	0.40	"	4.00		107	80-120			
LCS Dup (2207464-BSD1)					Prepared & Analyzed: 09/01/22						
Sulfate as SO4	5.16	0.038	0.50	mg/L	5.00		103	80-120	0.2	20	
Chloride	4.96	0.026	0.50	"	5.00		99	80-120	0.8	20	
Nitrate/Nitrite as N	4.26	0.055	0.40	"	4.00		107	80-120	0.7	20	
Matrix Spike (2207464-MS1)			**Source: 22H1935-01**		Prepared & Analyzed: 09/01/22						
Sulfate as SO4	4.70	0.038	0.50	mg/L	5.00	ND	94	80-120			
Chloride	4.51	0.026	0.50	"	5.00	0.274	85	80-120			
Nitrate/Nitrite as N	3.86	0.055	0.40	"	4.00	ND	97	80-120			
Matrix Spike Dup (2207464-MSD1)			**Source: 22H1935-01**		Prepared & Analyzed: 09/01/22						
Chloride	4.61	0.026	0.50	mg/L	5.00	0.274	87	80-120	2	20	
Sulfate as SO4	4.81	0.038	0.50	"	5.00	ND	96	80-120	2	20	
Nitrate/Nitrite as N	3.96	0.055	0.40	"	4.00	ND	99	80-120	3	20	
Batch 2207465 - General Prep											
Blank (2207465-BLK1)					Prepared & Analyzed: 09/01/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207465 - General Prep											
LCS (2207465-BS1)					Prepared & Analyzed: 09/01/22						
Total Organic Carbon	11.2	0.54	1.0	mg/L	10.0		112	75-125			
LCS Dup (2207465-BSD1)					Prepared & Analyzed: 09/01/22						
Total Organic Carbon	10.9	0.54	1.0	mg/L	10.0		109	75-125	3	25	
Matrix Spike (2207465-MS1)			**Source: 22H1581-04**		Prepared & Analyzed: 09/01/22						
Total Organic Carbon	13.6	0.54	1.0	mg/L	10.0	3.38	102	75-125			
Matrix Spike Dup (2207465-MSD1)			**Source: 22H1581-04**		Prepared & Analyzed: 09/01/22						
Total Organic Carbon	14.2	0.54	1.0	mg/L	10.0	3.38	109	75-125	5	25	
Batch 2207474 - General Preparation											
Blank (2207474-BLK1)					Prepared & Analyzed: 09/01/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Duplicate (2207474-DUP1)			**Source: 22I0009-01**		Prepared & Analyzed: 09/01/22						
Total Alkalinity	90.6	1.0	5.0	mg/L		89.0			2	20	
Bicarbonate as CaCO3	90.6	0.50	5.0	"		89.0			2	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Batch 2207475 - General Preparation											
Duplicate (2207475-DUP1)			**Source: 22H1868-02**		Prepared: 09/01/22 Analyzed: 09/02/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	

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COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207495 - General Preparation											
Blank (2207495-BLK1)					Prepared: 09/01/22 Analyzed: 09/02/22						
Total Dissolved Solids	ND	5.0	10	mg/L							
Duplicate (2207495-DUP1)			**Source: 22H1883-01**		Prepared: 09/01/22 Analyzed: 09/02/22						
Total Dissolved Solids	262	5.0	10	mg/L		262			0	20	
Batch 2207498 - EPA 200 No Digestion											
Blank (2207498-BLK1)					Prepared & Analyzed: 09/01/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2207498-BS1)					Prepared & Analyzed: 09/01/22						
Total Hardness as CaCO3	32.3	0.19	1.0	mg/L	33.1		98	85-115			
Matrix Spike (2207498-MS1)			**Source: 22H1935-01**		Prepared & Analyzed: 09/01/22						
Total Hardness as CaCO3	31.8	0.19	1.0	mg/L	33.1	0.657	94	70-130			
Batch 2207501 - General Preparation											
Blank (2207501-BLK1)					Prepared & Analyzed: 09/02/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							
LCS (2207501-BS1)					Prepared & Analyzed: 09/02/22						
Orthophosphate as PO4	0.937	0.0051	0.15	mg/L	0.918		102	80-120			
LCS Dup (2207501-BSD1)					Prepared & Analyzed: 09/02/22						
Orthophosphate as PO4	0.904	0.0051	0.15	mg/L	0.918		98	80-120	4	20	

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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207501 - General Preparation											
Matrix Spike (2207501-MS1)			**Source: 22H1935-01**		Prepared & Analyzed: 09/02/22						
Orthophosphate as PO4	0.924	0.0051	0.15	mg/L	0.918	ND	101	75-125			
Matrix Spike Dup (2207501-MSD1)			**Source: 22H1935-01**		Prepared & Analyzed: 09/02/22						
Orthophosphate as PO4	0.941	0.0051	0.15	mg/L	0.918	ND	102	75-125	2	25	
Batch 2207530 - General Preparation											
Blank (2207530-BLK1)					Prepared & Analyzed: 09/02/22						
Ammonia as N	ND	0.025	0.10	mg/L							
LCS (2207530-BS1)					Prepared & Analyzed: 09/02/22						
Ammonia as N	0.476	0.025	0.10	mg/L	0.500		95	80-120			
LCS Dup (2207530-BSD1)					Prepared & Analyzed: 09/02/22						
Ammonia as N	0.483	0.025	0.10	mg/L	0.500		97	80-120	1	25	
Matrix Spike (2207530-MS1)			**Source: 22H1883-01**		Prepared & Analyzed: 09/02/22						
Ammonia as N	0.443	0.025	0.10	mg/L	0.500	0.0500	79	75-125			
Matrix Spike Dup (2207530-MSD1)			**Source: 22H1883-01**		Prepared & Analyzed: 09/02/22						
Ammonia as N	0.483	0.025	0.10	mg/L	0.500	0.0500	87	75-125	9	25	
Batch 2207563 - General Preparation											
Blank (2207563-BLK1)					Prepared & Analyzed: 09/06/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207563 - General Preparation											
LCS (2207563-BS1)					Prepared & Analyzed: 09/06/22						
Total Kjeldahl Nitrogen	0.636	0.040	0.20	mg/L	0.500		127	80-120			QM-1
LCS Dup (2207563-BSD1)					Prepared & Analyzed: 09/06/22						
Total Kjeldahl Nitrogen	0.638	0.040	0.20	mg/L	0.500		128	80-120	0.3	20	QM-1
Matrix Spike (2207563-MS1)			**Source: 22H1935-01**		Prepared & Analyzed: 09/06/22						
Total Kjeldahl Nitrogen	0.813	0.040	0.20	mg/L	0.500	0.361	90	75-125			
Matrix Spike Dup (2207563-MSD1)			**Source: 22H1935-01**		Prepared & Analyzed: 09/06/22						
Total Kjeldahl Nitrogen	0.840	0.040	0.20	mg/L	0.500	0.361	96	75-125	3	25	
Batch 2207608 - General Preparation											
Blank (2207608-BLK1)					Prepared & Analyzed: 09/07/22						
Cyanide (total)	0.00300	0.0012	0.0050	mg/L							J
LCS (2207608-BS1)					Prepared & Analyzed: 09/07/22						
Cyanide (total)	0.0869	0.0012	0.0050	mg/L	0.100		87	75-125			
LCS Dup (2207608-BSD1)					Prepared & Analyzed: 09/07/22						
Cyanide (total)	0.0839	0.0012	0.0050	mg/L	0.100		84	75-125	4	25	
Matrix Spike (2207608-MS1)			**Source: 22H1935-01**		Prepared & Analyzed: 09/07/22						
Cyanide (total)	0.0887	0.0012	0.0050	mg/L	0.100	0.00260	86	75-125			
Matrix Spike Dup (2207608-MSD1)			**Source: 22H1935-01**		Prepared & Analyzed: 09/07/22						
Cyanide (total)	0.0913	0.0012	0.0050	mg/L	0.100	0.00260	89	75-125	3	25	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207612 - Solvent Extract											
Blank (2207612-BLK1)					Prepared: 09/07/22 Analyzed: 09/08/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2207612-BS1)					Prepared: 09/07/22 Analyzed: 09/08/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.4	1.0	5.0	mg/L	40.0		99	78-114			
LCS Dup (2207612-BSD1)					Prepared: 09/07/22 Analyzed: 09/08/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.7	1.0	5.0	mg/L	40.0		99	78-114	0.8	18	
Batch 2207650 - General Preparation											
Blank (2207650-BLK1)					Prepared & Analyzed: 09/08/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2207650-BS1)					Prepared & Analyzed: 09/08/22						
Total Phosphorus as P	0.295	0.023	0.050	mg/L	0.300		98	80-120			
LCS Dup (2207650-BSD1)					Prepared & Analyzed: 09/08/22						
Total Phosphorus as P	0.296	0.023	0.050	mg/L	0.300		99	80-120	0.5	25	
Matrix Spike (2207650-MS1)			**Source: 22H1935-01**		Prepared & Analyzed: 09/08/22						
Total Phosphorus as P	0.287	0.023	0.050	mg/L	0.300	ND	96	75-125			
Matrix Spike Dup (2207650-MSD1)			**Source: 22H1935-01**		Prepared & Analyzed: 09/08/22						
Total Phosphorus as P	0.289	0.023	0.050	mg/L	0.300	ND	96	75-125	0.5	30	

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Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207441 - EPA 3510B GCNV											
Blank (2207441-BLK1)					Prepared: 08/31/22 Analyzed: 09/01/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Surrogate: o-Terphenyl	*0.0240*			*"*	*0.0250*		*96*	*65-135*			
LCS (2207441-BS1)					Prepared: 08/31/22 Analyzed: 09/01/22						
Diesel	2.18	0.0021	0.050	mg/L	2.50		87	65-135			
Surrogate: o-Terphenyl	*0.0291*			*"*	*0.0250*		*117*	*65-135*			
LCS Dup (2207441-BSD1)					Prepared: 08/31/22 Analyzed: 09/01/22						
Diesel	2.35	0.0021	0.050	mg/L	2.50		94	65-135	7	30	
Surrogate: o-Terphenyl	*0.0289*			*"*	*0.0250*		*115*	*65-135*			
Matrix Spike (2207441-MS1)			**Source: 22H1874-01**		Prepared: 08/31/22 Analyzed: 09/01/22						
Diesel	1.31	0.0021	0.050	mg/L	2.50	ND	52	46-137			
Surrogate: o-Terphenyl	*0.0188*			*"*	*0.0250*		*75*	*65-135*			
Matrix Spike Dup (2207441-MSD1)			**Source: 22H1874-01**		Prepared: 08/31/22 Analyzed: 09/01/22						
Diesel	1.94	0.0021	0.050	mg/L	2.50	ND	78	46-137	39	30	QR-1
Surrogate: o-Terphenyl	*0.0227*			*"*	*0.0250*		*91*	*65-135*			

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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207485 - EPA 200 Series											
Blank (2207485-BLK1)					Prepared: 09/01/22 Analyzed: 09/02/22						
Aluminum	1.74	1.6	20	µg/L							J
Arsenic	ND	0.45	2.0	"							
Barium	ND	0.14	5.0	"							
Cadmium	ND	0.17	0.50	"							
Chromium	0.854	0.14	1.0	"							J
Copper	ND	0.090	2.0	"							
Lead	ND	0.020	5.0	"							
Manganese	0.170	0.050	2.0	"							J
Molybdenum	0.939	0.11	2.0	"							J
Nickel	ND	0.13	2.0	"							
Selenium	0.777	0.75	5.0	"							J
Silver	ND	0.070	0.50	"							
Zinc	0.761	0.27	10	"							J
LCS (2207485-BS1)					Prepared: 09/01/22 Analyzed: 09/02/22						
Aluminum	481	1.6	20	µg/L	500		96	85-115			
Arsenic	94.9	0.45	2.0	"	100		95	85-115			
Barium	97.2	0.14	5.0	"	100		97	85-115			
Cadmium	93.6	0.17	0.50	"	100		94	85-115			
Chromium	95.2	0.14	1.0	"	100		95	85-115			
Copper	95.3	0.090	2.0	"	100		95	85-115			
Lead	94.9	0.020	5.0	"	100		95	85-115			
Manganese	96.7	0.050	2.0	"	100		97	85-115			
Molybdenum	99.3	0.11	2.0	"	100		99	85-115			
Nickel	94.3	0.13	2.0	"	100		94	85-115			
Selenium	88.9	0.75	5.0	"	100		89	85-115			
Silver	93.9	0.070	0.50	"	100		94	85-115			
Zinc	97.3	0.27	10	"	100		97	85-115			

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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207485 - EPA 200 Series											
Matrix Spike (2207485-MS1)			**Source: 22H1892-01**		Prepared: 09/01/22 Analyzed: 09/02/22						
Aluminum	495	1.6	20	µg/L	500	2.06	98	70-130			
Arsenic	90.5	0.45	2.0	"	100	2.21	88	70-130			
Barium	155	0.14	5.0	"	100	52.8	102	70-130			
Cadmium	96.9	0.17	0.50	"	100	ND	97	70-130			
Chromium	89.4	0.14	1.0	"	100	2.34	87	70-130			
Copper	89.7	0.090	2.0	"	100	1.35	88	70-130			
Lead	97.6	0.020	5.0	"	100	0.140	97	70-130			
Manganese	90.3	0.050	2.0	"	100	0.452	90	70-130			
Molybdenum	94.2	0.11	2.0	"	100	1.21	93	70-130			
Nickel	86.9	0.13	2.0	"	100	ND	87	70-130			
Selenium	85.5	0.75	5.0	"	100	ND	85	70-130			
Silver	95.5	0.070	0.50	"	100	ND	95	70-130			
Zinc	232	0.27	10	"	100	143	89	70-130			
Batch 2207487 - EPA 200 Series											
Blank (2207487-BLK1)					Prepared & Analyzed: 09/01/22						
Boron	ND	5.3	50	µg/L							
Calcium	ND	27	1000	"							
Iron	ND	9.1	100	"							
Magnesium	ND	21	1000	"							
Potassium	314	61	1000	"							J
Sodium	488	34	1000	"							J
LCS (2207487-BS1)					Prepared & Analyzed: 09/01/22						
Boron	478	5.3	50	µg/L	500		96	85-115			
Calcium	4930	27	1000	"	5000		99	85-115			
Iron	453	9.1	100	"	500		91	85-115			
Magnesium	5030	21	1000	"	5000		101	85-115			
Potassium	5320	61	1000	"	5000		106	85-115			
Sodium	5570	34	1000	"	5000		111	85-115			

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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207487 - EPA 200 Series											
Matrix Spike (2207487-MS1)			**Source: 22H1923-01**	Prepared & Analyzed: 09/01/22							
Boron	2170	5.3	50	µg/L	500	1740	85	70-130			
Calcium	67400	27	1000	"	5000	64800	52	70-130			QM-4X
Iron	464	9.1	100	"	500	ND	93	70-130			
Magnesium	37000	21	1000	"	5000	33100	79	70-130			
Potassium	6460	61	1000	"	5000	1180	106	70-130			
Sodium	50000	34	1000	"	5000	47100	58	70-130			QM-4X

09/15/22 14:20

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.11 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22H1935
COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207498 - EPA 200 No Digestion											
Blank (2207498-BLK1)					Prepared & Analyzed: 09/01/22						
Iron	ND	6.8	100	µg/L							
LCS (2207498-BS1)					Prepared & Analyzed: 09/01/22						
Iron	450	6.8	100	µg/L	500		90	85-115			
Matrix Spike (2207498-MS1)			**Source: 22H1935-01**		Prepared & Analyzed: 09/01/22						
Iron	397	6.8	100	µg/L	500	ND	79	70-130			
Batch 2207691 - EPA 200 No Digestion											
Blank (2207691-BLK1)					Prepared & Analyzed: 09/09/22						
Aluminum	0.966	0.52	20	µg/L							J
Silver	ND	0.15	0.50	"							
LCS (2207691-BS1)					Prepared & Analyzed: 09/09/22						
Aluminum	479	0.52	20	µg/L	500		96	85-115			
Silver	94.5	0.15	0.50	"	100		94	85-115			
Matrix Spike (2207691-MS1)			**Source: 22H1632-01**		Prepared & Analyzed: 09/09/22						
Aluminum	483	0.52	20	µg/L	500	5.93	95	70-130			
Silver	93.4	0.15	0.50	"	100	ND	93	70-130			

09/15/22 14:20

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1935**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207477 - EPA 5030 Water GC											
Blank (2207477-BLK1)					Prepared & Analyzed: 09/01/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*19.6*			*"*	*20.0*		*98*	*65-135*			
LCS (2207477-BS1)					Prepared & Analyzed: 09/01/22						
Gasoline	517	10	50	µg/L	500		103	70-130			
Surrogate: o-Chlorotoluene (Gas)	*21.6*			*"*	*20.0*		*108*	*65-135*			
LCS Dup (2207477-BSD1)					Prepared & Analyzed: 09/01/22						
Gasoline	526	10	50	µg/L	500		105	70-130	2	30	
Surrogate: o-Chlorotoluene (Gas)	*21.8*			*"*	*20.0*		*109*	*65-135*			
Matrix Spike (2207477-MS1)			**Source: 22H1874-01**		Prepared & Analyzed: 09/01/22						
Gasoline	702	10	50	µg/L	500	ND	140	68-132			QM-7
Surrogate: o-Chlorotoluene (Gas)	*21.4*			*"*	*20.0*		*107*	*65-135*			
Matrix Spike Dup (2207477-MSD1)			**Source: 22H1874-01**		Prepared & Analyzed: 09/01/22						
Gasoline	660	10	50	µg/L	500	ND	132	68-132	6	32	
Surrogate: o-Chlorotoluene (Gas)	*20.4*			*"*	*20.0*		*102*	*65-135*			

09/15/22 14:20

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1935**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2207492 - EPA 3510B GCMS											
Blank (2207492-BLK1)					Prepared & Analyzed: 09/01/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Benzene	ND	0.11	0.50	"							
Toluene	ND	0.11	0.50	"							
Ethylbenzene	ND	0.10	0.50	"							
Xylenes (total)	ND	0.33	1.0	"							
Surrogate: Toluene-d8	*9.86*			*"*	*10.0*		*99*	*72-125*			
LCS (2207492-BS1)					Prepared & Analyzed: 09/01/22						
Methyl tert-butyl ether	22.3	0.095	0.50	µg/L	20.0		111	52-130			
Benzene	19.4	0.11	0.50	"	20.0		97	52-130			
Surrogate: Toluene-d8	*9.58*			*"*	*10.0*		*96*	*72-125*			
LCS Dup (2207492-BSD1)					Prepared & Analyzed: 09/01/22						
Methyl tert-butyl ether	21.9	0.095	0.50	µg/L	20.0		110	52-130	1	30	
Benzene	18.7	0.11	0.50	"	20.0		94	52-130	4	30	
Surrogate: Toluene-d8	*9.53*			*"*	*10.0*		*95*	*72-125*			
Matrix Spike (2207492-MS1)			**Source: 22H1946-01**		Prepared & Analyzed: 09/01/22						
Methyl tert-butyl ether	23.0	0.095	0.50	µg/L	20.0	ND	115	52-140			
Benzene	19.7	0.11	0.50	"	20.0	ND	99	52-140			
Surrogate: Toluene-d8	*10.3*			*"*	*10.0*		*103*	*72-125*			
Matrix Spike Dup (2207492-MSD1)			**Source: 22H1946-01**		Prepared & Analyzed: 09/01/22						
Methyl tert-butyl ether	23.4	0.095	0.50	µg/L	20.0	ND	117	52-140	2	30	
Benzene	20.0	0.11	0.50	"	20.0	ND	100	52-140	1	30	
Surrogate: Toluene-d8	*10.2*			*"*	*10.0*		*102*	*72-125*			

09/15/22 14:20

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0620.01	**CLS Work Order #: 22H1935**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QR-1	The RPD value for the sample duplicate or MS/MSD was outside of the QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery.
QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
QM-1	The spike recovery was outside acceptance limits for the LCS or LCSD. The batch was accepted based on acceptable MS/MSD recoveries & RPD's.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 2241935 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[X] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [X] NO [ ]

GLOBAL ID

FIELD CONDITIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	TSS, TDS, Hardness, Alkalinity, NO2-N+NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
8/31	13:15	R-IS-21-EB		Surface water	1		6											X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	INVOICE TO
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	**Project No. 750.10 Task 0620.01**
				Surface water			6											X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (2) HNO_3 (3) = COLD (4) = H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Stillwater Sciences	8/31/22 15:3		

RECEIVED AT LAB BY: DCR DATE/TIME: 8/31/22 1531 CONDITIONS/COMMENTS: 5-2/6-6

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER _____ AIR BILL # _____

basic laboratory

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02 UARP

Lab No: 22I0012
Reported: 09/19/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22I0012, received on 09/01/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: R-IS-21-EB
Matrix / Type: Surface Water (Grab)
Lab ID: 22I0012-01
Sampled: 08/31/22 13:15
Received: 09/01/22 08:49

Metals - Total

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638	09/08/22	09/07/22	B2I0956 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	ND		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Mercury	ng/l	ND		0.22	0.50	EPA 1631E	09/04/22	09/04/22	B2H1671 / DJC
Methyl Mercury as Mercury	"	ND		0.017	0.050	EPA 1630	09/16/22	09/15/22	B2I1219 / EDM
Nickel	ug/l	ND		0.02	0.10	EPA 1638	09/08/22	09/07/22	B2I0956 / EDM
Selenium	"	ND		0.3	2.0	EPA 200.8	09/13/22	09/06/22	B2I0911 / EDM
Zinc	"	1.06		0.12	0.50	EPA 1638	09/08/22	09/07/22	B2I0956 / EDM

Metals - Dissolved

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	"	09/08/22	09/08/22	B2I1018 / EDM
Cadmium	"	ND		0.02	0.10	"	"	"	"
Copper	"	ND		0.04	0.10	"	"	"	"
Lead	"	ND		0.007	0.050	"	"	"	"
Nickel	"	ND		0.02	0.10	"	"	"	"
Selenium	"	ND		0.3	2.0	EPA 200.8	09/13/22	09/13/22	B2I1128 / EDM
Zinc	"	ND		0.12	0.50	EPA 1638	09/08/22	09/08/22	B2I1018 / EDM

Quality Control Data

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total	**Batch B2H1671 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	10.2	0.50	ng/l	10.0		102	77-123			
Matrix Spike	Source: 22H1133-02									
Mercury	11.1	0.50	ng/l	10.0	0.71	104	71-125			
Matrix Spike	Source: 22H1241-01									
Mercury	11.1	0.50	ng/l	10.0	0.80	103	71-125			
Matrix Spike Dup	Source: 22H1133-02									
Mercury	11.2	0.50	ng/l	10.0	0.71	104	71-125	0.395	24	
Matrix Spike Dup	Source: 22H1241-01									
Mercury	11.4	0.50	ng/l	10.0	0.80	106	71-125	2.35	24	
Metals - Total	**Batch B2I0911 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	207	2.0	ug/l	200		103	85-115			
Duplicate	Source: 22H1398-02									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22I0100-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22H1398-02									
Selenium	200	2.0	ug/l	200	ND	99.8	75-125			
Matrix Spike	Source: 22I0100-01									
Selenium	200	2.0	ug/l	200	ND	99.8	75-125			
Metals - Total	**Batch B2I0956 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total Batch B2I0956 - EPA 1638 - Closed Bottle Oven Digestion										
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.5	50-150			
Cadmium	0.24	0.10	ug/l	0.250		95.7	84-113			
Copper	0.26	0.10	ug/l	0.250		102	51-145			
Lead	0.124	0.050	ug/l	0.125		99.3	72-143			
Nickel	0.26	0.10	ug/l	0.250		103	68-134			
Zinc	1.14	0.50	ug/l	1.25		90.9	46-146			
Matrix Spike	Source: 22H1194-05									
Arsenic	2.40	0.50	ug/l	2.50	ND	95.9	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	99.1	84-113			
Copper	0.62	0.10	ug/l	0.500	0.14	97.2	51-145			
Lead	0.256	0.050	ug/l	0.250	0.012	97.8	72-143			
Nickel	0.53	0.10	ug/l	0.500	0.04	98.7	68-134			
Zinc	2.63	0.50	ug/l	2.50	0.18	97.8	46-146			
Matrix Spike Dup	Source: 22H1194-05									
Arsenic	2.49	0.50	ug/l	2.50	ND	99.7	50-150	3.95	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	96.4	84-113	2.76	20	
Copper	0.63	0.10	ug/l	0.500	0.14	98.3	51-145	0.892	20	
Lead	0.252	0.050	ug/l	0.250	0.012	95.9	72-143	1.93	20	
Nickel	0.53	0.10	ug/l	0.500	0.04	98.3	68-134	0.401	20	
Zinc	2.60	0.50	ug/l	2.50	0.18	96.6	46-146	1.14	20	
Metals - Total Batch B2I1219 - EPA 1630 Distillation (Modified)										
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	1.90	0.050	ng/l	2.00		94.9	67-133			
Matrix Spike	Source: 22H1241-04									
Methyl Mercury as Mercury	1.22	0.050	ng/l	1.00	0.082	113	65-135			
Matrix Spike Dup	Source: 22H1241-04									
Methyl Mercury as Mercury	1.19	0.050	ng/l	1.00	0.082	111	65-135	2.36	35	
Metals - Dissolved Batch B2I1018 - EPA 1638 - Dissolved										
Blank										

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved **Batch B2I1018 - EPA 1638 - Dissolved**										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.24	0.10	ug/l	0.250		96.9	84-113			
Copper	0.26	0.10	ug/l	0.250		104	51-145			
Lead	0.127	0.050	ug/l	0.125		102	72-143			
Nickel	0.27	0.10	ug/l	0.250		108	68-134			
Zinc	1.23	0.50	ug/l	1.25		98.2	46-146			
Matrix Spike	Source: 22H1194-05									
Arsenic	2.57	0.50	ug/l	2.50	ND	103	50-150			
Cadmium	0.49	0.10	ug/l	0.500	ND	97.7	84-113			
Copper	0.63	0.10	ug/l	0.500	0.14	98.4	51-145			
Lead	0.250	0.050	ug/l	0.250	ND	99.8	72-143			
Nickel	0.55	0.10	ug/l	0.500	0.04	102	68-134			
Zinc	2.76	0.50	ug/l	2.50	0.33	97.4	46-146			
Matrix Spike Dup	Source: 22H1194-05									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150	1.60	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.7	84-113	1.98	20	
Copper	0.64	0.10	ug/l	0.500	0.14	101	51-145	1.70	20	
Lead	0.253	0.050	ug/l	0.250	ND	101	72-143	1.24	20	
Nickel	0.56	0.10	ug/l	0.500	0.04	104	68-134	1.58	20	
Zinc	2.76	0.50	ug/l	2.50	0.33	97.2	46-146	0.190	20	
Metals - Dissolved **Batch B2I1128 - EPA 200.8 Diss**										
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	213	2.0	ug/l	200		106	85-115			

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved	**Batch B2I1128 - EPA 200.8 Diss**									
Duplicate	Source: 22I0146-04									
Selenium	0.6	2.0	ug/l		0.4			27.8	20	QR-04, J
Matrix Spike	Source: 22I0146-04									
Selenium	213	2.0	ug/l	200	0.4	106	75-125			

Notes and Definitions

QR-04	Duplicate results are within one reporting limit and pass all necessary QC criteria.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	CA-ELAP does not accredit this analyte or method as of December 2020. *(Newly released 2021 FOA tables may include this analyte or method.)*
Note 1	Received Temperature - according to EPA guidelines, samples for most chemistry methods should be held at ≤6 degrees C after collection, including during transportation, unless samples are received on ice and collected on the same day as delivery. Regulating agencies may invalidate results if temperature requirements are not met.
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

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voice 530.894.8966
fax 530.894.5143

Analytical Report

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen

Ricky Jensen, General Manager
Pace Analytical Services LLC - Redding CA
California ELAP Cert #1677 & 2718

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

2210012

1

LABORATORY WORK ORDER # 22I0012

PAGE 1 OF 1

basic laboratory

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494

☐ 3860 Morrow Lane, Suite F Chico, CA 95928 (530) 894-8966 FAX: (530) 894-5143

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS
279 Coustea Place, Suite 400
Davis, CA 95618

REPORT TO ☐ Email ☐ Mail Hardcopy

NAME / ATTENTION: Emily Applequist

PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED: ☐ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one): ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED		SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	ANALYSES REQUESTED: T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	8/31	1:15	AM (PM)	SW		X	R-IS-21-EB		2						
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												

SAMPLED BY: (please print) APC, CRW²

RELINQUISHED DATE / TIME:

SAMPLING / ANALYSIS COMMENTS

(1) Total and Dissolved LL 1638 Metals

2 Per bottles SM 9.1.22

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME: Adam Cohen SIGNATURE: [signature] DATE: 8/31/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB: SM	DATE/TIME: 9.1.22 08:49	LOGGED BY LAB: MM	DATE/TIME: 9.2.22 08:52

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

For Official Lab Comments Only

FRM-002.1 - Chain of Custody (rev 1.1)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22I0012

SHIPPING INFORMATION

Walk-In ☐
Courier ☐
FedEx ☑
UPS ☐
Other ☐

Cooler Present? Yes ☑ No ☐

Samples Received By: fmm Date: 9.1.22

	Yes	No
Samples received on ice?	☑	☐
Samples received the same day collected?	☐	☑

Ice type? ☑ Wet ☐ Blue ☐ Other completely melted

SAMPLE TEMPERATURES AT RECEIPT Therm. ID (Circle one): (Therm-36) Therm-37 Therm-59 Other: _____

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	4.1	-06		-11		-16	
-02		-07		-12		-17	
-03		-08		-13		-18	
-04		-09		-14		-19	
-05		-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: fmm Date: 9.1.22

	Yes	No	NA
Custody seals present?	☐	☐	☑
Samples in proper containers?	☑	☐	
Sample containers damaged?	☐	☑	
Sufficient sample volume for indicated tests?	☑	☐	
Samples received within holding times?	☑	☐	
Are VOA vials free of headspace?	☐	☐	☑
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☑

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☑	☐	☐
Preserved in the lab?	☑	☐	☐

Lab Preservation Date & Time 9.1.22 08:56

☐ H2SO4 (ID_____) ☑ HNO3 (ID 2G080006) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑
Are proper preservation lables present?	☑	☐	☐

By:_____ Meter ID:_____

Preservation checked at Lab? Date & Time 9.1.22 08:56 Test Strip (ID 2B24019)

Preservation and Preservation Checks performed by: fmm

COMMENTS, DISCREPANCEIS, ANOMALIES

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02

Lab No: 22J0722
Reported: 11/04/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22J0722, received on 10/18/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: R-IS-12-JR
Matrix / Type: Surface Water (Grab)
Lab ID: 22J0722-01
Sampled: 10/17/22 09:00
Received: 10/18/22 08:49

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Copper	ug/l	0.19		0.04	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Mercury	ng/l	0.74		0.22	0.50	EPA 1631E	10/22/22	10/22/22	B2J1416 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	10/21/22	10/20/22	B2J1353 / EDM
Nickel	ug/l	0.12		0.02	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	10/27/22	10/21/22	B2J1361 / EDM
Zinc	ug/l	0.84		0.12	0.50	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Copper	ug/l	0.16		0.04	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Nickel	ug/l	0.10		0.02	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	10/27/22	10/27/22	B2J1532 / EDM
Zinc	ug/l	0.66		0.12	0.50	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM

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Analytical Report

Description: R-IS-12-JR-DUP
Matrix / Type: Surface Water (Grab)
Lab ID: 22J0722-02
Sampled: 10/17/22 10:00
Received: 10/18/22 08:49

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Copper	ug/l	0.18		0.04	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Mercury	ng/l	0.66		0.22	0.50	EPA 1631E	10/22/22	10/22/22	B2J1416 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	10/21/22	10/20/22	B2J1353 / EDM
Nickel	ug/l	0.11		0.02	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	10/27/22	10/21/22	B2J1361 / EDM
Zinc	ug/l	0.34	J	0.12	0.50	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Copper	ug/l	0.18		0.04	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Nickel	ug/l	0.10	J	0.02	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	10/27/22	10/27/22	B2J1532 / EDM
Zinc	ug/l	0.38	J	0.12	0.50	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM

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Analytical Report

Description: R-IS-13-CR
Matrix / Type: Surface Water (Grab)
Lab ID: 22J0722-03
Sampled: 10/17/22 12:10
Received: 10/18/22 08:49

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Copper	ug/l	0.20		0.04	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Lead	ug/l	0.007	J	0.007	0.050	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Mercury	ng/l	0.56		0.22	0.50	EPA 1631E	10/22/22	10/22/22	B2J1416 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	10/21/22	10/20/22	B2J1353 / EDM
Nickel	ug/l	0.10	J	0.02	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	10/27/22	10/21/22	B2J1361 / EDM
Zinc	ug/l	0.17	J	0.12	0.50	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Copper	ug/l	0.20		0.04	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Nickel	ug/l	0.09	J	0.02	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	10/27/22	10/27/22	B2J1532 / EDM
Zinc	ug/l	0.29	J	0.12	0.50	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2J1353 - EPA 1630 Distillation (Modified)**									
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.24	0.050	ng/l	2.00		112	67-133			
Matrix Spike	Source: 22J0516-01									
Methyl Mercury as Mercury	1.17	0.050	ng/l	1.00	0.018	116	65-135			
Matrix Spike Dup	Source: 22J0516-01									
Methyl Mercury as Mercury	1.17	0.050	ng/l	1.00	0.018	115	65-135	0.273	35	
Metals - Total - Redding Location	**Batch B2J1361 - EPA 200.8 Total**									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2J1361 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	204	2.0	ug/l	200		102	85-115			
Duplicate	Source: 22J0722-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22J0781-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22J0722-01									
Selenium	203	2.0	ug/l	200	ND	101	75-125			
Matrix Spike	Source: 22J0781-01									
Selenium	201	2.0	ug/l	200	ND	101	75-125			
Metals - Total - Redding Location	**Batch B2J1416 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	10.0	0.50	ng/l	10.0		100	77-123			
Matrix Spike	Source: 22J0574-01									
Mercury	11.7	0.50	ng/l	10.0	1.58	102	71-125			
Matrix Spike	Source: 22J0797-01									
Mercury	10.6	0.50	ng/l	10.0	0.32	103	71-125			
Matrix Spike Dup	Source: 22J0574-01									
Mercury	11.8	0.50	ng/l	10.0	1.58	102	71-125	0.628	24	
Matrix Spike Dup	Source: 22J0797-01									
Mercury	10.6	0.50	ng/l	10.0	0.32	103	71-125	0.434	24	
Metals - Total - Redding Location	**Batch B2J1487 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2J1487 - EPA 1638 - Closed Bottle Oven Digestion**									
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.19	0.50	ug/l	1.25		94.9	50-150			
Cadmium	0.24	0.10	ug/l	0.250		96.0	84-113			
Copper	0.24	0.10	ug/l	0.250		96.2	51-145			
Lead	0.122	0.050	ug/l	0.125		97.9	72-143			
Nickel	0.27	0.10	ug/l	0.250		106	68-134			
Zinc	1.17	0.50	ug/l	1.25		93.9	46-146			
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.24	0.10	ug/l	0.250		94.7	84-113			
Copper	0.25	0.10	ug/l	0.250		98.5	51-145			
Lead	0.121	0.050	ug/l	0.125		96.6	72-143			
Nickel	0.24	0.10	ug/l	0.250		96.4	68-134			
Zinc	1.21	0.50	ug/l	1.25		96.8	46-146			
Matrix Spike	Source: 22J0722-01									
Arsenic	2.46	0.50	ug/l	2.50	ND	98.4	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.6	84-113			
Copper	0.67	0.10	ug/l	0.500	0.19	97.5	51-145			
Lead	0.253	0.050	ug/l	0.250	ND	101	72-143			
Nickel	0.60	0.10	ug/l	0.500	0.12	95.8	68-134			
Zinc	3.23	0.50	ug/l	2.50	0.84	95.6	46-146			
Matrix Spike	Source: 22J0881-02									
Arsenic	7.49	0.50	ug/l	2.50	4.99	99.9	50-150			
Cadmium	1.87	0.10	ug/l	0.500	1.38	98.2	84-113			
Copper	4.37	0.10	ug/l	0.500	3.90	93.9	51-145			
Lead	1.79	0.050	ug/l	0.250	1.51	110	72-143			
Nickel	3.94	0.10	ug/l	0.500	3.54	79.6	68-134			

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2J1487 - EPA 1638 - Closed Bottle Oven Digestion**									
Zinc	32.2	0.50	ug/l	2.50	30.1	86.0	46-146			
Matrix Spike Dup	Source: 22J0722-01									
Arsenic	2.44	0.50	ug/l	2.50	ND	97.5	50-150	0.905	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	99.0	84-113	2.44	20	
Copper	0.67	0.10	ug/l	0.500	0.19	97.4	51-145	0.0794	20	
Lead	0.251	0.050	ug/l	0.250	ND	101	72-143	0.672	20	
Nickel	0.59	0.10	ug/l	0.500	0.12	92.7	68-134	2.67	20	
Zinc	3.24	0.50	ug/l	2.50	0.84	96.1	46-146	0.438	20	
Matrix Spike Dup	Source: 22J0881-02									
Arsenic	7.56	0.50	ug/l	2.50	4.99	103	50-150	1.05	20	
Cadmium	1.84	0.10	ug/l	0.500	1.38	92.3	84-113	1.59	20	
Copper	4.35	0.10	ug/l	0.500	3.90	90.4	51-145	0.400	20	
Lead	1.77	0.050	ug/l	0.250	1.51	102	72-143	1.15	20	
Nickel	3.91	0.10	ug/l	0.500	3.54	74.8	68-134	0.602	20	
Zinc	31.4	0.50	ug/l	2.50	30.1	51.3	46-146	2.73	20	
Metals - Dissolved - Redding Location	**Batch B2J1532 - EPA 200.8 Diss**									
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	208	2.0	ug/l	200		104	85-115			
Duplicate	Source: 22J0781-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22J0781-01									
Selenium	207	2.0	ug/l	200	ND	104	75-125			
Metals - Dissolved - Redding Location	**Batch B2K0825 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2K0825 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.25	0.10	ug/l	0.250		101	84-113			
Copper	0.26	0.10	ug/l	0.250		105	51-145			
Lead	0.131	0.050	ug/l	0.125		105	72-143			
Nickel	0.24	0.10	ug/l	0.250		95.0	68-134			
Zinc	1.34	0.50	ug/l	1.25		107	46-146			
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.25	0.10	ug/l	0.250		101	84-113			
Copper	0.27	0.10	ug/l	0.250		108	51-145			
Lead	0.122	0.050	ug/l	0.125		97.6	72-143			
Nickel	0.33	0.10	ug/l	0.250		133	68-134			
Matrix Spike	Source: 22J0490-02									
Arsenic	4.45	0.50	ug/l	2.50	2.03	96.9	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113			
Copper	1.41	0.10	ug/l	0.500	0.92	98.6	51-145			
Lead	0.258	0.050	ug/l	0.250	ND	103	72-143			
Nickel	1.04	0.10	ug/l	0.500	0.56	95.5	68-134			
Zinc	3.16	0.50	ug/l	2.50	0.76	96.2	46-146			
Matrix Spike	Source: 22J0875-01									
Arsenic	2.62	0.50	ug/l	2.50	ND	105	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.71	0.10	ug/l	0.500	0.19	105	51-145			
Lead	0.251	0.050	ug/l	0.250	ND	100	72-143			
Nickel	0.61	0.10	ug/l	0.500	0.12	98.6	68-134			
Matrix Spike Dup	Source: 22J0490-02									
Arsenic	4.49	0.50	ug/l	2.50	2.03	98.5	50-150	0.947	20	
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113	0.652	20	
Copper	1.42	0.10	ug/l	0.500	0.92	101	51-145	0.776	20	
Lead	0.254	0.050	ug/l	0.250	ND	102	72-143	1.50	20	
Nickel	1.02	0.10	ug/l	0.500	0.56	91.6	68-134	1.91	20	
Zinc	3.17	0.50	ug/l	2.50	0.76	96.4	46-146	0.124	20	
Matrix Spike Dup	Source: 22J0875-01									
Arsenic	2.62	0.50	ug/l	2.50	ND	105	50-150	0.0536	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	97.2	84-113	3.33	20	
Copper	0.68	0.10	ug/l	0.500	0.19	97.4	51-145	5.11	20	
Lead	0.261	0.050	ug/l	0.250	ND	104	72-143	4.10	20	
Nickel	0.61	0.10	ug/l	0.500	0.12	99.9	68-134	1.00	20	

Notes and Definitions

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Analytical Report

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	The laboratory does not hold CA-ELAP accreditiation for this analyte or method. Accreditation may not be available from CA-ELAP for this analyte or method.
**	The laboratory holds accreditation for this analyte or method with WA-ECY Lab ID: Lab ID C783. Accreditation is not offered for this method by CA-ELAP
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Accreditations Held:
Redding Location: CA-ELAP - Cert # 1677
Chico Location: CA-ELAP - Cert # 2718

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen
Ricky Jensen, Operations Manager
Pace Analytical Services LLC - Redding CA

22J0722

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494
☐ 3860 Morrow Lane, Suite F Chico, CA 95928 (530) 894-8966 FAX: (530) 894-5143

LABORATORY WORK ORDER # 22J0722
PAGE 1 OF 1

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
STILLWATER SCIENCES	SMUD 2022	750.16/620.02	

MAILING ADDRESS
279 COUSTEAU PLACE, SUITE 400
DAVIS, CA 95618

REPORT TO ☑ Email ☐ Mail Hardcopy
NAME / ATTENTION: EMILY APPLEQUIST
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED
☑ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one) ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☐ Yes ☑ No What Type?

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED		SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	T&D Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	10/17/22	0900	AM PM	SW		X	R-IS-12-J2		6	X	X	X	X	X
2	10/17/22	1000	AM PM	SW		X	R-IS-12-J2-DUP		6	X	X	X	X	X
3	10/17/22	1210	AM PM	SW		X	R-IS-13-C2		6	X	X	X	X	X
			AM PM											
			AM PM											
			AM PM											
			AM PM											
			AM PM											
			AM PM											
			AM PM											

SAMPLED BY: (please print) Esther Adelstein

RELINQUISHED DATE / TIME: 10/17/22 1430 (FedEx)

SAMPLING / ANALYSIS COMMENTS

(1) Total and Dissolved LL 1638 Metals

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME	SIGNATURE	DATE
Esther Adelstein		10/17/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
	10.18.22 08:49		10/19/22 1900

For Official Lab Comments Only

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

FRM-002.1 - Chain of Custody (rev 1.1)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22J0722

SHIPPING INFORMATION

Walk-In ☐
Courier ☐
FedEx ☑
UPS ☐
Other ☐

Cooler Present? Yes ☑ No ☐

Samples Received By: mm Date: 10.18.22

	Yes	No	
Samples received on ice?	☑	☐	Ice type? ☑ Wet ☐ Blue ☐ Other
Samples received the same day collected?	☐	☑	

SAMPLE TEMPERATURES AT RECEIPT **Therm. ID (Circle one):** Therm-36 Therm-37 (Therm-59) Other:

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	5.1	-06		-11		-16	
-02	3.7	-07		-12		-17	
-03	4.1	-08		-13		-18	
-04		-09		-14		-19	
-05		-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: mm Date: 10.18.22

	Yes	No	NA
Custody seals present?	☐	☐	☑
Samples in proper containers?	☑	☐	
Sample containers damaged?	☐	☑	
Sufficient sample volume for indicated tests?	☑	☐	
Samples received within holding times?	☑	☐	
Are VOA vials free of headspace?	☐	☐	☑
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☑

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☑	☐	☐
Preserved in the lab?	☑	☐	☐

Lab Preservation Date & Time 10.18.22 09:00

☐ H2SO4 (ID_____) ☑ HNO3 (ID 2I28023) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑ By:_____ Meter ID:_____
Are proper preservation lables present?	☑	☐	☐

Preservation checked at Lab? Date & Time 10.18.22 09:00 Test Strip (ID 2B24019)

Preservation and Preservation Checks performed by: mm

COMMENTS, DISCREPANCEIS, ANOMALIES

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02

Lab No: 22J0797
Reported: 11/07/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22J0797, received on 10/19/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: R-IS-14-SC
Matrix / Type: Surface Water (Grab)
Lab ID: 22J0797-01
Sampled: 10/18/22 09:00
Received: 10/19/22 08:50

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.12	J	0.12	0.50	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Copper	ug/l	0.23		0.04	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Lead	ug/l	0.007	J	0.007	0.050	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Mercury	ng/l	0.32	J	0.22	0.50	EPA 1631E	10/22/22	10/22/22	B2J1416 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	11/04/22	11/03/22	B2K0848 / EDM
Nickel	ug/l	0.10		0.02	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	10/28/22	10/27/22	B2J1498 / EDM
Zinc	ug/l	0.96		0.12	0.50	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.13	J	0.12	0.50	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Copper	ug/l	0.20		0.04	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Nickel	ug/l	0.08	J	0.02	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	10/29/22	10/28/22	B2J1559 / EDM
Zinc	ug/l	1.68		0.12	0.50	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM

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Analytical Report

Description: R-IS-14-SC-B
Matrix / Type: Surface Water (Grab)
Lab ID: 22J0797-02
Sampled: 10/18/22 09:30
Received: 10/19/22 08:50

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.36	J	0.12	0.50	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Cadmium	ug/l	0.03	J	0.02	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Copper	ug/l	1.90		0.04	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Lead	ug/l	1.54		0.007	0.050	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Mercury	ng/l	4.30		0.22	0.50	EPA 1631E	10/22/22	10/22/22	B2J1416 / DJC
Methyl Mercury as Mercury	ng/l	0.444		0.017	0.050	EPA 1630**	11/04/22	11/03/22	B2K0848 / EDM
Nickel	ug/l	0.79		0.02	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	10/28/22	10/27/22	B2J1498 / EDM
Zinc	ug/l	6.00		0.12	0.50	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Copper	ug/l	0.19		0.04	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Nickel	ug/l	0.06	J	0.02	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	10/29/22	10/28/22	B2J1559 / EDM
Zinc	ug/l	0.18	J	0.12	0.50	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM

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Analytical Report

Description: R-IS-15-SC
Matrix / Type: Surface Water (Grab)
Lab ID: 22J0797-03
Sampled: 10/18/22 10:40
Received: 10/19/22 08:50

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Copper	ug/l	0.20		0.04	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Mercury	ng/l	0.38	J	0.22	0.50	EPA 1631E	10/22/22	10/22/22	B2J1416 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	11/04/22	11/03/22	B2K0848 / EDM
Nickel	ug/l	0.07	J	0.02	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	10/28/22	10/27/22	B2J1498 / EDM
Zinc	ug/l	ND		0.12	0.50	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Copper	ug/l	0.19		0.04	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Nickel	ug/l	0.07	J	0.02	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	10/29/22	10/28/22	B2J1559 / EDM
Zinc	ug/l	0.14	J	0.12	0.50	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2J1416 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	10.0	0.50	ng/l	10.0		100	77-123			
Matrix Spike	Source: 22J0574-01									
Mercury	11.7	0.50	ng/l	10.0	1.58	102	71-125			
Matrix Spike	Source: 22J0797-01									
Mercury	10.6	0.50	ng/l	10.0	0.32	103	71-125			
Matrix Spike Dup	Source: 22J0574-01									
Mercury	11.8	0.50	ng/l	10.0	1.58	102	71-125	0.628	24	

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2J1416 - BrCl Digestion**									
Matrix Spike Dup	Source: 22J0797-01									
Mercury	10.6	0.50	ng/l	10.0	0.32	103	71-125	0.434	24	
Metals - Total - Redding Location	**Batch B2J1487 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.19	0.50	ug/l	1.25		94.9	50-150			
Cadmium	0.24	0.10	ug/l	0.250		96.0	84-113			
Copper	0.24	0.10	ug/l	0.250		96.2	51-145			
Lead	0.122	0.050	ug/l	0.125		97.9	72-143			
Nickel	0.27	0.10	ug/l	0.250		106	68-134			
Zinc	1.17	0.50	ug/l	1.25		93.9	46-146			
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.24	0.10	ug/l	0.250		94.7	84-113			
Copper	0.25	0.10	ug/l	0.250		98.5	51-145			

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2J1487 - EPA 1638 - Closed Bottle Oven Digestion**									
Lead	0.121	0.050	ug/l	0.125		96.6	72-143			
Nickel	0.24	0.10	ug/l	0.250		96.4	68-134			
Zinc	1.21	0.50	ug/l	1.25		96.8	46-146			
Matrix Spike	Source: 22J0722-01									
Arsenic	2.46	0.50	ug/l	2.50	ND	98.4	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.6	84-113			
Copper	0.67	0.10	ug/l	0.500	0.19	97.5	51-145			
Lead	0.253	0.050	ug/l	0.250	ND	101	72-143			
Nickel	0.60	0.10	ug/l	0.500	0.12	95.8	68-134			
Zinc	3.23	0.50	ug/l	2.50	0.84	95.6	46-146			
Matrix Spike	Source: 22J0881-02									
Arsenic	7.49	0.50	ug/l	2.50	4.99	99.9	50-150			
Cadmium	1.87	0.10	ug/l	0.500	1.38	98.2	84-113			
Copper	4.37	0.10	ug/l	0.500	3.90	93.9	51-145			
Lead	1.79	0.050	ug/l	0.250	1.51	110	72-143			
Nickel	3.94	0.10	ug/l	0.500	3.54	79.6	68-134			
Zinc	32.2	0.50	ug/l	2.50	30.1	86.0	46-146			
Matrix Spike Dup	Source: 22J0722-01									
Arsenic	2.44	0.50	ug/l	2.50	ND	97.5	50-150	0.905	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	99.0	84-113	2.44	20	
Copper	0.67	0.10	ug/l	0.500	0.19	97.4	51-145	0.0794	20	
Lead	0.251	0.050	ug/l	0.250	ND	101	72-143	0.672	20	
Nickel	0.59	0.10	ug/l	0.500	0.12	92.7	68-134	2.67	20	
Zinc	3.24	0.50	ug/l	2.50	0.84	96.1	46-146	0.438	20	
Matrix Spike Dup	Source: 22J0881-02									
Arsenic	7.56	0.50	ug/l	2.50	4.99	103	50-150	1.05	20	
Cadmium	1.84	0.10	ug/l	0.500	1.38	92.3	84-113	1.59	20	
Copper	4.35	0.10	ug/l	0.500	3.90	90.4	51-145	0.400	20	
Lead	1.77	0.050	ug/l	0.250	1.51	102	72-143	1.15	20	
Nickel	3.91	0.10	ug/l	0.500	3.54	74.8	68-134	0.602	20	
Zinc	31.4	0.50	ug/l	2.50	30.1	51.3	46-146	2.73	20	
Metals - Total - Redding Location	**Batch B2J1498 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	209	2.0	ug/l	200		105	85-115			
Duplicate	Source: 22J0797-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22J0875-03									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22J0797-01									
Selenium	203	2.0	ug/l	200	ND	102	75-125			
Matrix Spike	Source: 22J0875-03									
Selenium	205	2.0	ug/l	200	ND	103	75-125			
Metals - Total - Redding Location	**Batch B2K0848 - EPA 1630 Distillation (Modified)**									
Blank										

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K0848 - EPA 1630 Distillation (Modified)**									
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.27	0.050	ng/l	2.00		114	67-133			
Matrix Spike	Source: 22J0797-01									
Methyl Mercury as Mercury	1.03	0.050	ng/l	1.00	ND	103	65-135			
Matrix Spike	Source: 22J0946-01									
Methyl Mercury as Mercury	1.33	0.050	ng/l	1.00	0.028	130	65-135			
Matrix Spike Dup	Source: 22J0797-01									
Methyl Mercury as Mercury	1.17	0.050	ng/l	1.00	ND	117	65-135	12.0	35	
Matrix Spike Dup	Source: 22J0946-01									
Methyl Mercury as Mercury	1.25	0.050	ng/l	1.00	0.028	122	65-135	6.26	35	
Metals - Dissolved - Redding Location	**Batch B2J1559 - EPA 200.8 Diss**									
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	213	2.0	ug/l	200		106	85-115			
Duplicate	Source: 22J0797-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22J0920-01									
Selenium	ND	10.0	ug/l		ND				20	
Matrix Spike	Source: 22J0797-01									
Selenium	212	2.0	ug/l	200	ND	106	75-125			
Matrix Spike	Source: 22J0920-01									
Selenium	1040	10.1	ug/l	1000	ND	104	75-125			
Metals - Dissolved - Redding Location	**Batch B2K0825 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2K0825 - EPA 1638 - Dissolved**									
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.25	0.10	ug/l	0.250		101	84-113			
Copper	0.26	0.10	ug/l	0.250		105	51-145			
Lead	0.131	0.050	ug/l	0.125		105	72-143			
Nickel	0.24	0.10	ug/l	0.250		95.0	68-134			
Zinc	1.34	0.50	ug/l	1.25		107	46-146			
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.25	0.10	ug/l	0.250		101	84-113			
Copper	0.27	0.10	ug/l	0.250		108	51-145			
Lead	0.122	0.050	ug/l	0.125		97.6	72-143			
Nickel	0.33	0.10	ug/l	0.250		133	68-134			
Matrix Spike	Source: 22J0490-02									
Arsenic	4.45	0.50	ug/l	2.50	2.03	96.9	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113			
Copper	1.41	0.10	ug/l	0.500	0.92	98.6	51-145			
Lead	0.258	0.050	ug/l	0.250	ND	103	72-143			
Nickel	1.04	0.10	ug/l	0.500	0.56	95.5	68-134			
Zinc	3.16	0.50	ug/l	2.50	0.76	96.2	46-146			
Matrix Spike	Source: 22J0875-01									
Arsenic	2.62	0.50	ug/l	2.50	ND	105	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.71	0.10	ug/l	0.500	0.19	105	51-145			
Lead	0.251	0.050	ug/l	0.250	ND	100	72-143			
Nickel	0.61	0.10	ug/l	0.500	0.12	98.6	68-134			
Matrix Spike Dup	Source: 22J0490-02									
Arsenic	4.49	0.50	ug/l	2.50	2.03	98.5	50-150	0.947	20	
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113	0.652	20	
Copper	1.42	0.10	ug/l	0.500	0.92	101	51-145	0.776	20	
Lead	0.254	0.050	ug/l	0.250	ND	102	72-143	1.50	20	
Nickel	1.02	0.10	ug/l	0.500	0.56	91.6	68-134	1.91	20	
Zinc	3.17	0.50	ug/l	2.50	0.76	96.4	46-146	0.124	20	

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2K0825 - EPA 1638 - Dissolved**									
Matrix Spike Dup	Source: 22J0875-01									
Arsenic	2.62	0.50	ug/l	2.50	ND	105	50-150	0.0536	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	97.2	84-113	3.33	20	
Copper	0.68	0.10	ug/l	0.500	0.19	97.4	51-145	5.11	20	
Lead	0.261	0.050	ug/l	0.250	ND	104	72-143	4.10	20	
Nickel	0.61	0.10	ug/l	0.500	0.12	99.9	68-134	1.00	20	

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	The laboratory does not hold CA-ELAP accreditiation for this analyte or method. Accreditation may not be available from CA-ELAP for this analyte or method.
**	The laboratory holds accreditation for this analyte or method with WA-ECY Lab ID: Lab ID C783. Accreditation is not offered for this method by CA-ELAP
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Accreditations Held:
Redding Location: CA-ELAP - Cert # 1677
Chico Location: CA-ELAP - Cert # 2718

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By:
Josh Kirpatrick, Quality Manager
Pace Analytical Services LLC - Redding CA

22J0797

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494
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LABORATORY WORK ORDER # 22J0797
PAGE 1 OF 1

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
STILLWATER SCIENCES	SMUD 2022	750.10/620.02	

MAILING ADDRESS
279 COUSTEAU PLACE, SUITE 400
DAVIS, CA 95618

REPORT TO ☑ Email ☐ Mail Hardcopy
NAME / ATTENTION: EMILY APPLEQUIST
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED
☑ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one) ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☐ Yes ☑ No What Type?

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	T&D Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	10-18-22	0900 AM	SW		X	2-IS-14-SC		6	X	X	X	X	X
2	10-18-22	0930 AM	SW		X	2-IS-14-SC-B		6	X	X	X	X	X
3	10-18-22	1040 AM	SW		X	2-IS-15-SC		6	X	X	X	X	X
~~4~~	~~10-18-22~~	~~1125~~ AM	~~SW~~		X	~~2-IS-16-CB~~		6	X	X	X	X	X
~~5~~	~~10-18-22~~	~~1320~~ AM	~~SW~~		X	~~2-IS-17-CB~~							
	~~10-18~~	AM PM											
		AM PM											
		AM PM											
		AM PM											
		AM PM											

SAMPLED BY: (please print) Esther Adelstein

RELINQUISHED DATE / TIME: ~~10~~ 10/18/22 1500 (Fed Ex)

SAMPLING / ANALYSIS COMMENTS
(1) Total and Dissolved LL 1638 Metals

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME	SIGNATURE	DATE
Esther Adelstein		10/18/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
fmm	10.19.22 08:50	fmm	10.19.22 18:06

For Official Lab Comments Only

*SAMPLE TYPE CODES
DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water
SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

FRM-002.1 - Chain of Custody (rev 1.1)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22J0797

SHIPPING INFORMATION

Walk-In ☐
Courier ☐
FedEx ☑
UPS ☐
Other ☐

Cooler Present? Yes ☑ No ☐

Samples Received By: MM Date: 10.19.22

	Yes	No
Samples received on ice?	☑	☐
Samples received the same day collected?	☐	☑

Ice type? ☑ Wet ☐ Blue ☐ Other _____

SAMPLE TEMPERATURES AT RECEIPT Therm. ID (Circle one): Therm-36 Therm-37 Therm-59 (Other): Therm·41

Cooler temp used for all samples: 3.1°C

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01		-06		-11		-16	
-02		-07		-12		-17	
-03		-08		-13		-18	
-04		-09		-14		-19	
-05		-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: MM Date: 10.19.22

	Yes	No	NA
Custody seals present?	☐	☐	☑
Samples in proper containers?	☑	☐	
Sample containers damaged?	☐	☑	
Sufficient sample volume for indicated tests?	☑	☐	
Samples received within holding times?	☑	☐	
Are VOA vials free of headspace?	☐	☐	☑
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☑

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☑	☐	☐
Preserved in the lab?	☑	☐	☐

Lab Preservation Date & Time 10.19.22 10:58

☐ H2SO4 (ID_____) ☑ HNO3 (ID 2I28023) ☐ NaOH (ID_____)
☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑
Are proper preservation lables present?	☑	☐	☐

By:_____ Meter ID:_____

Preservation checked at Lab? Date & Time 10.19.22 11:00 Test Strip (ID 2B24019)

Preservation and Preservation Checks performed by: MM

COMMENTS, DISCREPANCEIS, ANOMALIES

RE: Samples Received - 10/19/2022

Emily Applequist <eapplequist@stillwatersci.com>
Thu 10/20/2022 14:39

To: Sarah Meng-Cummings <Sarah.Meng-Cummings@pacelabs.com>

Hi Sarah,

Thank you for reaching out.

-Yes, please process that Diss Se sample for R-IS-14-SC-B.
-Please process one of the R-IS-16-CB Diss Se bottles for Diss Se and One for Total Se, as indicated on the COC.

Emily Applequist
Environmental Scientist, Stillwater Sciences
office 530-756-7550 x382
eapplequist@stillwatersci.com

From: Sarah Meng-Cummings <Sarah.Meng-Cummings@pacelabs.com>
Sent: Thursday, October 20, 2022 11:40 AM
To: Emily Applequist <eapplequist@stillwatersci.com>
Subject: Samples Received - 10/19/2022
Importance: High

Good morning Emily,

We received samples from Stillwater yesterday, and I need some clarification from you before I can continue processing a couple of them:

- One container for Diss Se was unidentified on the bottle. By process of elimination with all other bottles being identified, I could assume that the Diss Se is for ID R-IS-14-SC-B. However, I need your approval to do this; let me know what you think.
- We received (2) bottles for ID R-IS-16-CB for Diss Se, and no bottle for Total Se. I want to confirm if we should process both containers for Diss Se, or if we should follow the COC request for Diss Se AND Total Se.

Let me know at your earliest convenience.

Thank you,

Sarah Meng-Cummings

Client Services Tech / Sampling Routes Coordinator

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02

Lab No: 22J0875
Reported: 11/14/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22J0875, received on 10/20/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: R-IS-4-GC
Matrix / Type: Surface Water (Grab)
Lab ID: 22J0875-01
Sampled: 10/19/22 09:30
Received: 10/20/22 09:46

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.12	J	0.12	0.50	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Copper	ug/l	0.21		0.04	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Lead	ug/l	0.015	J	0.007	0.050	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Mercury	ng/l	0.38	J	0.22	0.50	EPA 1631E	10/28/22	10/28/22	B2J1417 / DJC
Methyl Mercury as Mercury	ng/l	0.021	J	0.017	0.050	EPA 1630**	11/04/22	11/03/22	B2K0848 / EDM
Nickel	ug/l	0.14		0.02	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	10/28/22	10/27/22	B2J1498 / EDM
Zinc	ug/l	0.60		0.12	0.50	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Copper	ug/l	0.19		0.04	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Nickel	ug/l	0.12		0.02	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	10/29/22	10/28/22	B2J1559 / EDM
Zinc	ug/l	0.45	J	0.12	0.50	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM

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Analytical Report

Description: R-IS-4-GC-FB
Matrix / Type: Surface Water (Grab)
Lab ID: 22J0875-02
Sampled: 10/19/22 10:00
Received: 10/20/22 09:46

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Copper	ug/l	ND		0.04	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Lead	ug/l	0.011	J	0.007	0.050	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Mercury	ng/l	ND		0.22	0.50	EPA 1631E	10/28/22	10/28/22	B2J1417 / DJC
Methyl Mercury as Mercury	ng/l	0.022	J	0.017	0.050	EPA 1630**	11/04/22	11/03/22	B2K0848 / EDM
Nickel	ug/l	ND		0.02	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	10/28/22	10/27/22	B2J1498 / EDM
Zinc	ug/l	ND		0.12	0.50	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Copper	ug/l	ND		0.04	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Nickel	ug/l	ND		0.02	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	10/29/22	10/28/22	B2J1559 / EDM
Zinc	ug/l	ND		0.12	0.50	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM

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Analytical Report

Description: R-IS-20-BC
Matrix / Type: Surface Water (Grab)
Lab ID: 22J0875-03
Sampled: 10/19/22 12:30
Received: 10/20/22 09:46

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Copper	ug/l	0.09	J	0.04	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Lead	ug/l	0.012	J	0.007	0.050	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Mercury	ng/l	0.22	J	0.22	0.50	EPA 1631E	10/28/22	10/28/22	B2J1417 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	11/04/22	11/03/22	B2K0848 / EDM
Nickel	ug/l	0.06	J	0.02	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	10/29/22	10/27/22	B2J1498 / EDM
Zinc	ug/l	3.16		0.12	0.50	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Copper	ug/l	0.07	J	0.04	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Nickel	ug/l	0.06	J	0.02	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	10/29/22	10/28/22	B2J1559 / EDM
Zinc	ug/l	ND		0.12	0.50	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM

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Analytical Report

Description: R-IS-20-BC-B
Matrix / Type: Surface Water (Grab)
Lab ID: 22J0875-04
Sampled: 10/19/22 13:00
Received: 10/20/22 09:46

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Copper	ug/l	0.16		0.04	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Lead	ug/l	0.025	J	0.007	0.050	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Mercury	ng/l	0.42	J	0.22	0.50	EPA 1631E	10/28/22	10/28/22	B2J1417 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	11/04/22	11/03/22	B2K0848 / EDM
Nickel	ug/l	0.10	J	0.02	0.10	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	10/29/22	10/27/22	B2J1498 / EDM
Zinc	ug/l	0.81		0.12	0.50	EPA 1638**	11/02/22	10/26/22	B2J1487 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Copper	ug/l	0.12		0.04	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Nickel	ug/l	0.08	J	0.02	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	10/29/22	10/28/22	B2J1559 / EDM
Zinc	ug/l	0.84		0.12	0.50	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM

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Analytical Report

Description: R-IS-20-BC-EB
Matrix / Type: Surface Water (Grab)
Lab ID: 22J0875-05
Sampled: 10/19/22 14:00
Received: 10/20/22 09:46

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Copper	ug/l	ND		0.04	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Mercury	ng/l	ND		0.22	0.50	EPA 1631E	10/28/22	10/28/22	B2J1417 / DJC
Methyl Mercury as Mercury	ng/l	0.026	J	0.017	0.050	EPA 1630**	11/04/22	11/03/22	B2K0848 / EDM
Nickel	ug/l	ND		0.02	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	10/29/22	10/27/22	B2J1498 / EDM
Zinc	ug/l	1.06		0.12	0.50	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Copper	ug/l	ND		0.04	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Nickel	ug/l	ND		0.02	0.10	EPA 1638**	11/02/22	11/02/22	B2K0825 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	10/29/22	10/28/22	B2J1559 / EDM
Zinc	ug/l	ND		0.12	0.50	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2J1417 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	10.3	0.50	ng/l	10.0		103	77-123			
Matrix Spike	Source: 22J0801-01									
Mercury	13.1	0.50	ng/l	10.0	2.76	103	71-125			
Matrix Spike	Source: 22J0875-02									
Mercury	10.1	0.50	ng/l	10.0	ND	101	71-125			
Matrix Spike Dup	Source: 22J0801-01									
Mercury	13.2	0.50	ng/l	10.0	2.76	104	71-125	0.503	24	

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2J1417 - BrCl Digestion**									
Matrix Spike Dup	Source: 22J0875-02									
Mercury	10.2	0.50	ng/l	10.0	ND	102	71-125	1.04	24	
Metals - Total - Redding Location	**Batch B2J1487 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.19	0.50	ug/l	1.25		94.9	50-150			
Cadmium	0.24	0.10	ug/l	0.250		96.0	84-113			
Copper	0.24	0.10	ug/l	0.250		96.2	51-145			
Lead	0.122	0.050	ug/l	0.125		97.9	72-143			
Nickel	0.27	0.10	ug/l	0.250		106	68-134			
Zinc	1.17	0.50	ug/l	1.25		93.9	46-146			
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.24	0.10	ug/l	0.250		94.7	84-113			
Copper	0.25	0.10	ug/l	0.250		98.5	51-145			

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2J1487 - EPA 1638 - Closed Bottle Oven Digestion**									
Lead	0.121	0.050	ug/l	0.125		96.6	72-143			
Nickel	0.24	0.10	ug/l	0.250		96.4	68-134			
Zinc	1.21	0.50	ug/l	1.25		96.8	46-146			
Matrix Spike	Source: 22J0722-01									
Arsenic	2.46	0.50	ug/l	2.50	ND	98.4	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.6	84-113			
Copper	0.67	0.10	ug/l	0.500	0.19	97.5	51-145			
Lead	0.253	0.050	ug/l	0.250	ND	101	72-143			
Nickel	0.60	0.10	ug/l	0.500	0.12	95.8	68-134			
Zinc	3.23	0.50	ug/l	2.50	0.84	95.6	46-146			
Matrix Spike	Source: 22J0881-02									
Arsenic	7.49	0.50	ug/l	2.50	4.99	99.9	50-150			
Cadmium	1.87	0.10	ug/l	0.500	1.38	98.2	84-113			
Copper	4.37	0.10	ug/l	0.500	3.90	93.9	51-145			
Lead	1.79	0.050	ug/l	0.250	1.51	110	72-143			
Nickel	3.94	0.10	ug/l	0.500	3.54	79.6	68-134			
Zinc	32.2	0.50	ug/l	2.50	30.1	86.0	46-146			
Matrix Spike Dup	Source: 22J0722-01									
Arsenic	2.44	0.50	ug/l	2.50	ND	97.5	50-150	0.905	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	99.0	84-113	2.44	20	
Copper	0.67	0.10	ug/l	0.500	0.19	97.4	51-145	0.0794	20	
Lead	0.251	0.050	ug/l	0.250	ND	101	72-143	0.672	20	
Nickel	0.59	0.10	ug/l	0.500	0.12	92.7	68-134	2.67	20	
Zinc	3.24	0.50	ug/l	2.50	0.84	96.1	46-146	0.438	20	
Matrix Spike Dup	Source: 22J0881-02									
Arsenic	7.56	0.50	ug/l	2.50	4.99	103	50-150	1.05	20	
Cadmium	1.84	0.10	ug/l	0.500	1.38	92.3	84-113	1.59	20	
Copper	4.35	0.10	ug/l	0.500	3.90	90.4	51-145	0.400	20	
Lead	1.77	0.050	ug/l	0.250	1.51	102	72-143	1.15	20	
Nickel	3.91	0.10	ug/l	0.500	3.54	74.8	68-134	0.602	20	
Zinc	31.4	0.50	ug/l	2.50	30.1	51.3	46-146	2.73	20	
Metals - Total - Redding Location	**Batch B2J1498 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	209	2.0	ug/l	200		105	85-115			
Duplicate	Source: 22J0797-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22J0875-03									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22J0797-01									
Selenium	203	2.0	ug/l	200	ND	102	75-125			
Matrix Spike	Source: 22J0875-03									
Selenium	205	2.0	ug/l	200	ND	103	75-125			
Metals - Total - Redding Location	**Batch B2K0848 - EPA 1630 Distillation (Modified)**									
Blank										

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K0848 - EPA 1630 Distillation (Modified)**									
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.27	0.050	ng/l	2.00		114	67-133			
Matrix Spike	Source: 22J0797-01									
Methyl Mercury as Mercury	1.03	0.050	ng/l	1.00	ND	103	65-135			
Matrix Spike	Source: 22J0946-01									
Methyl Mercury as Mercury	1.33	0.050	ng/l	1.00	0.028	130	65-135			
Matrix Spike Dup	Source: 22J0797-01									
Methyl Mercury as Mercury	1.17	0.050	ng/l	1.00	ND	117	65-135	12.0	35	
Matrix Spike Dup	Source: 22J0946-01									
Methyl Mercury as Mercury	1.25	0.050	ng/l	1.00	0.028	122	65-135	6.26	35	
Metals - Total - Redding Location	**Batch B2K0959 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.6	50-150			

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K0959 - EPA 1638 - Closed Bottle Oven Digestion**									
Cadmium	0.25	0.10	ug/l	0.250		98.3	84-113			
Copper	0.25	0.10	ug/l	0.250		99.3	51-145			
Lead	0.125	0.050	ug/l	0.125		100	72-143			
Nickel	0.25	0.10	ug/l	0.250		99.7	68-134			
Zinc	1.32	0.50	ug/l	1.25		105	46-146			
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.24	0.10	ug/l	0.250		96.3	84-113			
Copper	0.24	0.10	ug/l	0.250		96.2	51-145			
Lead	0.125	0.050	ug/l	0.125		100	72-143			
Nickel	0.24	0.10	ug/l	0.250		95.4	68-134			
Zinc	1.21	0.50	ug/l	1.25		96.5	46-146			
Matrix Spike	Source: 22J1039-01									
Arsenic	2.47	0.50	ug/l	2.50	ND	98.8	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	100	84-113			
Copper	0.69	0.10	ug/l	0.500	0.21	96.1	51-145			
Lead	0.249	0.050	ug/l	0.250	0.009	95.7	72-143			
Nickel	0.57	0.10	ug/l	0.500	0.11	91.5	68-134			
Zinc	2.75	0.50	ug/l	2.50	0.27	99.3	46-146			
Matrix Spike	Source: 22J1110-05									
Arsenic	2.50	0.50	ug/l	2.50	ND	99.8	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.9	84-113			
Copper	0.70	0.10	ug/l	0.500	0.21	98.9	51-145			
Lead	0.256	0.050	ug/l	0.250	ND	102	72-143			
Nickel	0.58	0.10	ug/l	0.500	0.09	97.3	68-134			
Zinc	2.92	0.50	ug/l	2.50	0.46	98.4	46-146			
Matrix Spike Dup	Source: 22J1039-01									
Arsenic	2.55	0.50	ug/l	2.50	ND	102	50-150	3.15	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	100	84-113	0.336	20	
Copper	0.70	0.10	ug/l	0.500	0.21	98.4	51-145	1.63	20	
Lead	0.255	0.050	ug/l	0.250	0.009	98.4	72-143	2.68	20	
Nickel	0.60	0.10	ug/l	0.500	0.11	96.6	68-134	4.41	20	
Zinc	2.75	0.50	ug/l	2.50	0.27	99.4	46-146	0.0748	20	
Matrix Spike Dup	Source: 22J1110-05									
Arsenic	2.52	0.50	ug/l	2.50	ND	101	50-150	0.871	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	96.9	84-113	0.101	20	
Copper	0.68	0.10	ug/l	0.500	0.21	95.4	51-145	2.52	20	
Lead	0.248	0.050	ug/l	0.250	ND	99.3	72-143	3.16	20	
Nickel	0.58	0.10	ug/l	0.500	0.09	97.7	68-134	0.294	20	
Zinc	2.96	0.50	ug/l	2.50	0.46	100	46-146	1.66	20	
Metals - Dissolved - Redding Location	**Batch B2J1559 - EPA 200.8 Diss**									
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										

2218 Railroad Avenue
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voice 530.243.7234
fax 530.243.7494

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2J1559 - EPA 200.8 Diss**									
Selenium	213	2.0	ug/l	200		106	85-115			
Duplicate	Source: 22J0797-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22J0920-01									
Selenium	ND	10.0	ug/l		ND				20	
Matrix Spike	Source: 22J0797-01									
Selenium	212	2.0	ug/l	200	ND	106	75-125			
Matrix Spike	Source: 22J0920-01									
Selenium	1040	10.1	ug/l	1000	ND	104	75-125			
Metals - Dissolved - Redding Location	**Batch B2K0825 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.25	0.10	ug/l	0.250		101	84-113			
Copper	0.26	0.10	ug/l	0.250		105	51-145			
Lead	0.131	0.050	ug/l	0.125		105	72-143			
Nickel	0.24	0.10	ug/l	0.250		95.0	68-134			
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.25	0.10	ug/l	0.250		101	84-113			
Copper	0.27	0.10	ug/l	0.250		108	51-145			
Lead	0.122	0.050	ug/l	0.125		97.6	72-143			
Nickel	0.33	0.10	ug/l	0.250		133	68-134			
Matrix Spike	Source: 22J0490-02									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2K0825 - EPA 1638 - Dissolved**									
Arsenic	4.45	0.50	ug/l	2.50	2.03	96.9	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113			
Copper	1.41	0.10	ug/l	0.500	0.92	98.6	51-145			
Lead	0.258	0.050	ug/l	0.250	ND	103	72-143			
Nickel	1.04	0.10	ug/l	0.500	0.56	95.5	68-134			
Matrix Spike	Source: 22J0875-01									
Arsenic	2.62	0.50	ug/l	2.50	ND	105	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.71	0.10	ug/l	0.500	0.19	105	51-145			
Lead	0.251	0.050	ug/l	0.250	ND	100	72-143			
Nickel	0.61	0.10	ug/l	0.500	0.12	98.6	68-134			
Matrix Spike Dup	Source: 22J0490-02									
Arsenic	4.49	0.50	ug/l	2.50	2.03	98.5	50-150	0.947	20	
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113	0.652	20	
Copper	1.42	0.10	ug/l	0.500	0.92	101	51-145	0.776	20	
Lead	0.254	0.050	ug/l	0.250	ND	102	72-143	1.50	20	
Nickel	1.02	0.10	ug/l	0.500	0.56	91.6	68-134	1.91	20	
Matrix Spike Dup	Source: 22J0875-01									
Arsenic	2.62	0.50	ug/l	2.50	ND	105	50-150	0.0536	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	97.2	84-113	3.33	20	
Copper	0.68	0.10	ug/l	0.500	0.19	97.4	51-145	5.11	20	
Lead	0.261	0.050	ug/l	0.250	ND	104	72-143	4.10	20	
Nickel	0.61	0.10	ug/l	0.500	0.12	99.9	68-134	1.00	20	
Metals - Dissolved - Redding Location	**Batch B2K1056 - EPA 1638 - Dissolved**									
Blank										
Zinc	ND	0.50	ug/l							
Blank										
Zinc	ND	0.50	ug/l							
Blank										
Zinc	ND	0.50	ug/l							
LCS										
Zinc	1.22	0.50	ug/l	1.25		97.9	46-146			
LCS										
Zinc	1.21	0.50	ug/l	1.25		97.2	46-146			
Matrix Spike	Source: 22J1039-01									
Zinc	2.63	0.50	ug/l	2.50	0.16	99.0	46-146			
Matrix Spike	Source: 22J1110-01									
Zinc	2.68	0.50	ug/l	2.50	ND	107	46-146			
Matrix Spike Dup	Source: 22J1039-01									
Zinc	2.63	0.50	ug/l	2.50	0.16	98.8	46-146	0.179	20	
Matrix Spike Dup	Source: 22J1110-01									
Zinc	2.70	0.50	ug/l	2.50	ND	108	46-146	0.633	20	

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Analytical Report

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	The laboratory does not hold CA-ELAP accreditiation for this analyte or method. Accreditation may not be available from CA-ELAP for this analyte or method.
**	The laboratory holds accreditation for this analyte or method with WA-ECY Lab ID: Lab ID C783. Accreditation is not offered for this method by CA-ELAP
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Accreditations Held:
Redding Location: CA-ELAP - Cert # 1677
Chico Location: CA-ELAP - Cert # 2718

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen
Ricky Jensen, Operations Manager
Pace Analytical Services LLC - Redding CA

22J0875

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494
☐ 3860 Morrow Lane, Suite F Chico, CA 95928 (530) 894-8966 FAX: (530) 894-5143

LABORATORY WORK ORDER # 22J0875
PAGE 1 OF 1

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
STILLWATER SCIENCES	SMUD 2022	750.10/20.02	

MAILING ADDRESS
279 COUSTEAU PLACE, SUITE 400
DAVIS, CA 95618

REPORT TO ☑ Email ☐ Mail Hardcopy
NAME / ATTENTION: EMILY APPLEQUIST
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED
☑ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one) ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☐ Yes ☑ No What Type?

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	ANALYSES REQUESTED: T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	T&D Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	10/19/22	0930 AM PM	SW		X	R-IS-4-GC		6	X	X	X	X	X
2	10/19/22	1000 AM PM	SW		X	R-IS-4-GC-FB		6	X	X	X	X	X
3	10/19/22	1230 AM PM	SW		X	R-IS-20-BC		6	X	X	X	X	X
4	10/19/22	1360 AM PM	SW		X	R-IS-20-BC-B		6	X	X	X	X	X
5	10/19/22	1400 AM PM	SW		X	R-IS-20-BC-EB		6	X	X	X	X	X
		AM PM											
		AM PM											
		AM PM											
		AM PM											
		AM PM											

SAMPLED BY: (please print) ERA SEW

RELINQUISHED DATE / TIME: 10/19/22 1530 [FedEx]

SAMPLING / ANALYSIS COMMENTS

(1) Total and Dissolved LL 1638 Metals

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME	SIGNATURE	DATE
Esther Adelstein		10/19/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
	10.20.22 0946		10.20.22 18:23

For Official Lab Comments Only

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

FRM-002.1 - Chain of Custody (rev 1.1)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22J0875

SHIPPING INFORMATION

			Yes	No
Walk-In	☐			
Courier	☐			
FedEx	☑	~~Ground~~ Express		
UPS	☐	RH 10.20.22		
Other	☐	Cooler Present?	☑	☐

Samples Received By: RH Date: 10.20.22

	Yes	No	
Samples received on ice?	☑	☐	Ice type? ☑ Wet ☐ Blue ☐ Other _____
Samples received the same day collected?	☐	☑	mostly melted)

SAMPLE TEMPERATURES AT RECEIPT Therm. ID (Circle one): Therm-36 Therm-37 Therm-59 (Other: Therm - 41)

* Used Cooler Temp for all samples.

Sample ID	Corr Temp (°C)*	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	2.7	-06		-11		-16	
-02	2.7	-07		-12		-17	
-03	2.7	-08		-13		-18	
-04	2.7	-09		-14		-19	
-05	2.7	-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: RH Date: 10.20.22

	Yes	No	NA	
Custody seals present?	☐	☐	☑	
Samples in proper containers?	☑	☐		
Sample containers damaged?	☐	☑		
Sufficient sample volume for indicated tests?	☑	☐		
Samples received within holding times?	☑	☐		
Are VOA vials free of headspace?	☐	☐	☑	
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☑	

SAMPLE PRESERVATION NA ☐

	Yes	No	NA	
Preserved in the field?	☑	☐	☐	
Preserved in the lab?	☑	☐	☐	Lab Preservation Date & Time 10.20.22 1018

☐ H2SO4 (ID_____) ☑ HNO3 (ID 2I28023) ☐ NaOH (ID_____)

☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA	
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑	
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐	
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑	
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑	
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑	By:_____ Meter ID:_____
Are proper preservation lables present?	☑	☐	☐	

Preservation checked at Lab? Date & Time 10.20.22 1019 Test Strip (ID 2B24019)

Preservation and Preservation Checks performed by: RH

COMMENTS, DISCREPANCEIS, ANOMALIES

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

October 24, 2022

CLS Work Order #: 22J0894
COC #:

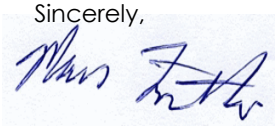
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 10/17/22 14:51. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22J0894 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[x] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [x] NO

GLOBAL ID

FIELD CONDITIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	TSS, TDS, Hardness, Alkalinity, NO2-N+NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
10/17/22	0900	R-JS-12-JR		Surface water			6	X	X	X	X	X	X					X	
10/17/22	1000	R-JS-12-JR-DUP		Surface water			6	X	X	X	X	X	X					X	
10/17/22	1210	R-JS-13-CR		Surface water			6	X	X	X	X	X	X					X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	INVOICE TO
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	Project No. 750.10 Task 0620.01
				Surface water			6											X	QUOTE#

ANALYSIS REQUESTED

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (2) HNO_3 (3) = COLD (4)= H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Jakob Woodall Stillwater	10/17 14:51		

RECEIVED AT LAB BY: DATE/TIME: 10/17 1451 CONDITIONS/COMMENTS: 3.1/2.4

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER AIR BILL #

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0894**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-12-JR (22J0894-01) Water Sampled: 10/17/22 09:00 Received: 10/17/22 14:51									
Ammonia as N	ND	0.10	mg/L	1	2208953	10/19/22	10/19/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**7.6**	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Carbonate as CaCO3	ND	5.0	"	"	"	"	"	"	
Chloride	**0.53**	0.50	"	"	2208902	10/18/22	10/18/22	EPA 300.0	
Cyanide (total)	ND	0.0050	"	"	2208957	10/19/22	10/19/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	5.0	"	"	2208907	10/18/22	10/19/22	EPA 1664B	
Hydroxide as CaCO3	ND	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Nitrate/Nitrite as N	ND	0.40	"	"	2208902	10/18/22	10/18/22	EPA 300.0	
Orthophosphate as PO4	ND	0.15	"	"	2208906	10/18/22	10/18/22	SM4500-P E	
Sulfate as SO4	**0.50**	0.50	"	"	2208902	10/18/22	10/18/22	EPA 300.0	
Total Alkalinity	**7.6**	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Total Dissolved Solids	**14**	10	"	"	2208961	10/19/22	10/21/22	SM2540C	
Total Hardness as CaCO3	**5.6**	1.0	"	"	2208898	10/18/22	10/19/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.38**	0.20	"	"	2208963	10/19/22	10/19/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.2**	1.0	"	"	2208994	10/20/22	10/21/22	SM5310B	
Total Phosphorus as P	ND	5.0	mg/kg	"	2208915	10/18/22	10/18/22	SM4500-P E	
Total Suspended Solids	ND	5.0	mg/L	"	2208925	10/18/22	10/19/22	SM2540D	
R-IS-12-JR-DUP (22J0894-02) Water Sampled: 10/17/22 10:00 Received: 10/17/22 14:51									
Ammonia as N	ND	0.10	mg/L	1	2208953	10/19/22	10/19/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**8.0**	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Carbonate as CaCO3	ND	5.0	"	"	"	"	"	"	
Chloride	**0.53**	0.50	"	"	2208902	10/18/22	10/18/22	EPA 300.0	
Cyanide (total)	ND	0.0050	"	"	2208957	10/19/22	10/19/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	5.0	"	"	2208907	10/18/22	10/19/22	EPA 1664B	
Hydroxide as CaCO3	ND	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Nitrate/Nitrite as N	ND	0.40	"	"	2208902	10/18/22	10/18/22	EPA 300.0	
Orthophosphate as PO4	ND	0.15	"	"	2208906	10/18/22	10/18/22	SM4500-P E	

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0894**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-12-JR-DUP (22J0894-02) Water Sampled: 10/17/22 10:00 Received: 10/17/22 14:51									
Sulfate as SO4	**0.64**	0.50	mg/L	1	2208902	10/18/22	10/18/22	EPA 300.0	
Total Alkalinity	**8.0**	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Total Dissolved Solids	**23**	10	"	"	2208961	10/19/22	10/21/22	SM2540C	
Total Hardness as CaCO3	**5.8**	1.0	"	"	2208898	10/18/22	10/19/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.24**	0.20	"	"	2208963	10/19/22	10/19/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.2**	1.0	"	"	2208994	10/20/22	10/21/22	SM5310B	
Total Phosphorus as P	ND	5.0	mg/kg	"	2208915	10/18/22	10/18/22	SM4500-P E	
Total Suspended Solids	ND	5.0	mg/L	"	2208925	10/18/22	10/19/22	SM2540D	
R-IS-13-CR (22J0894-03) Water Sampled: 10/17/22 12:10 Received: 10/17/22 14:51									
Ammonia as N	ND	0.10	mg/L	1	2208953	10/19/22	10/19/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**7.6**	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Carbonate as CaCO3	ND	5.0	"	"	"	"	"	"	
Chloride	**0.51**	0.50	"	"	2208902	10/18/22	10/18/22	EPA 300.0	
Cyanide (total)	ND	0.0050	"	"	2208957	10/19/22	10/19/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	5.0	"	"	2208907	10/18/22	10/19/22	EPA 1664B	
Hydroxide as CaCO3	ND	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Nitrate/Nitrite as N	ND	0.40	"	"	2208902	10/18/22	10/18/22	EPA 300.0	
Orthophosphate as PO4	ND	0.15	"	"	2208906	10/18/22	10/18/22	SM4500-P E	
Sulfate as SO4	ND	0.50	"	"	2208902	10/18/22	10/18/22	EPA 300.0	
Total Alkalinity	**7.6**	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Total Dissolved Solids	**21**	10	"	"	2208961	10/19/22	10/21/22	SM2540C	
Total Hardness as CaCO3	**5.7**	1.0	"	"	2208898	10/18/22	10/19/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.44**	0.20	"	"	2208963	10/19/22	10/19/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.0**	1.0	"	"	2208994	10/20/22	10/21/22	SM5310B	
Total Phosphorus as P	ND	5.0	mg/kg	"	2208915	10/18/22	10/18/22	SM4500-P E	
Total Suspended Solids	ND	5.0	mg/L	"	2208925	10/18/22	10/19/22	SM2540D	

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0894**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-12-JR (22J0894-01) Water Sampled: 10/17/22 09:00 Received: 10/17/22 14:51									
Diesel	ND	0.050	mg/L	1	2208883	10/18/22	10/18/22	EPA 8015M	
Hydraulic Oil	ND	0.050	"	"	"	"	"	"	
Kerosene	ND	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*104 %*	*65-135*		"	"	"	"	
R-IS-12-JR-DUP (22J0894-02) Water Sampled: 10/17/22 10:00 Received: 10/17/22 14:51									
Diesel	ND	0.050	mg/L	1	2208883	10/18/22	10/18/22	EPA 8015M	
Hydraulic Oil	ND	0.050	"	"	"	"	"	"	
Kerosene	ND	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*102 %*	*65-135*		"	"	"	"	
R-IS-13-CR (22J0894-03) Water Sampled: 10/17/22 12:10 Received: 10/17/22 14:51									
Diesel	ND	0.050	mg/L	1	2208883	10/18/22	10/18/22	EPA 8015M	
Hydraulic Oil	ND	0.050	"	"	"	"	"	"	
Kerosene	ND	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*118 %*	*65-135*		"	"	"	"	

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0894**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Metals by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-12-JR (22J0894-01) Water Sampled: 10/17/22 09:00 Received: 10/17/22 14:51									
Aluminum	**21**	20	µg/L	1	2208896	10/18/22	10/18/22	EPA 200.8	
Barium	**7.5**	5.0	"	"	"	"	"	"	
Calcium	**1700**	1000	"	"	2208898	10/18/22	10/19/22	EPA 200.7	
Iron	ND	100	"	"	"	"	10/20/22	"	
Magnesium	ND	1000	"	"	"	"	10/19/22	"	
Manganese	**9.8**	2.0	"	"	2208896	10/18/22	10/18/22	EPA 200.8	
Potassium	**1300**	1000	"	"	2208898	10/18/22	10/19/22	EPA 200.7	
Silver	ND	0.50	"	"	2208896	10/18/22	10/18/22	EPA 200.8	
Sodium	**2000**	1000	"	"	2208898	10/18/22	10/19/22	EPA 200.7	
R-IS-12-JR-DUP (22J0894-02) Water Sampled: 10/17/22 10:00 Received: 10/17/22 14:51									
Aluminum	ND	20	µg/L	1	2208896	10/18/22	10/18/22	EPA 200.8	
Barium	**7.6**	5.0	"	"	"	"	"	"	
Calcium	**1700**	1000	"	"	2208898	10/18/22	10/19/22	EPA 200.7	
Iron	ND	100	"	"	"	"	10/20/22	"	
Magnesium	ND	1000	"	"	"	"	10/19/22	"	
Manganese	**9.9**	2.0	"	"	2208896	10/18/22	10/18/22	EPA 200.8	
Potassium	**1300**	1000	"	"	2208898	10/18/22	10/19/22	EPA 200.7	
Silver	ND	0.50	"	"	2208896	10/18/22	10/18/22	EPA 200.8	
Sodium	**1600**	1000	"	"	2208898	10/18/22	10/19/22	EPA 200.7	
R-IS-13-CR (22J0894-03) Water Sampled: 10/17/22 12:10 Received: 10/17/22 14:51									
Aluminum	ND	20	µg/L	1	2208896	10/18/22	10/18/22	EPA 200.8	
Barium	**7.8**	5.0	"	"	"	"	"	"	
Calcium	**1700**	1000	"	"	2208898	10/18/22	10/19/22	EPA 200.7	
Iron	ND	100	"	"	"	"	10/20/22	"	
Magnesium	ND	1000	"	"	"	"	10/19/22	"	
Manganese	**7.5**	2.0	"	"	2208896	10/18/22	10/18/22	EPA 200.8	
Potassium	**1200**	1000	"	"	2208898	10/18/22	10/19/22	EPA 200.7	
Silver	ND	0.50	"	"	2208896	10/18/22	10/18/22	EPA 200.8	
Sodium	**1600**	1000	"	"	2208898	10/18/22	10/19/22	EPA 200.7	

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-12-JR (22J0894-01) Water Sampled: 10/17/22 09:00 Received: 10/17/22 14:51									
Aluminum	ND	20	µg/L	1	2208889	10/17/22	10/19/22	EPA 200.8	
Iron	ND	100	"	"	2208998	10/20/22	10/20/22	EPA 200.7	
Silver	ND	0.50	"	"	2208889	10/17/22	10/19/22	EPA 200.8	
R-IS-12-JR-DUP (22J0894-02) Water Sampled: 10/17/22 10:00 Received: 10/17/22 14:51									
Aluminum	ND	20	µg/L	1	2208889	10/17/22	10/19/22	EPA 200.8	
Iron	ND	100	"	"	2208998	10/20/22	10/20/22	EPA 200.7	
Silver	ND	0.50	"	"	2208889	10/17/22	10/19/22	EPA 200.8	
R-IS-13-CR (22J0894-03) Water Sampled: 10/17/22 12:10 Received: 10/17/22 14:51									
Aluminum	ND	20	µg/L	1	2208889	10/17/22	10/19/22	EPA 200.8	
Iron	ND	100	"	"	2208998	10/20/22	10/20/22	EPA 200.7	
Silver	ND	0.50	"	"	2208889	10/17/22	10/19/22	EPA 200.8	

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

TPH-Gasoline by GC FID

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-12-JR (22J0894-01) Water Sampled: 10/17/22 09:00 Received: 10/17/22 14:51									
Gasoline	ND	50	µg/L	1	2208923	10/18/22	10/18/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)		*73 %*	*65-135*		"	"	"	"	
R-IS-12-JR-DUP (22J0894-02) Water Sampled: 10/17/22 10:00 Received: 10/17/22 14:51									
Gasoline	ND	50	µg/L	1	2208923	10/18/22	10/18/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)		*73 %*	*65-135*		"	"	"	"	
R-IS-13-CR (22J0894-03) Water Sampled: 10/17/22 12:10 Received: 10/17/22 14:51									
Gasoline	ND	50	µg/L	1	2208923	10/18/22	10/18/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)		*80 %*	*65-135*		"	"	"	"	

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-12-JR (22J0894-01) Water Sampled: 10/17/22 09:00 Received: 10/17/22 14:51									
Methyl tert-butyl ether	ND	0.50	µg/L	1	2209018	10/18/22	10/18/22	EPA 8260B	
Surrogate: Toluene-d8		*99 %*		*72-125*		"	"	"	"
R-IS-12-JR-DUP (22J0894-02) Water Sampled: 10/17/22 10:00 Received: 10/17/22 14:51									
Methyl tert-butyl ether	ND	0.50	µg/L	1	2209018	10/18/22	10/18/22	EPA 8260B	
Surrogate: Toluene-d8		*99 %*		*72-125*		"	"	"	"
R-IS-13-CR (22J0894-03) Water Sampled: 10/17/22 12:10 Received: 10/17/22 14:51									
Methyl tert-butyl ether	ND	0.50	µg/L	1	2209018	10/18/22	10/18/22	EPA 8260B	
Surrogate: Toluene-d8		*99 %*		*72-125*		"	"	"	"

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0894**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208898 - EPA 200 Series										
Blank (2208898-BLK1)				Prepared: 10/18/22 Analyzed: 10/19/22						
Total Hardness as CaCO3	ND	1.0	mg/L							
LCS (2208898-BS1)				Prepared: 10/18/22 Analyzed: 10/19/22						
Total Hardness as CaCO3	33.6	1.0	mg/L	33.1		102	85-115			
Matrix Spike (2208898-MS1)	**Source: 22J0810-01**			Prepared: 10/18/22 Analyzed: 10/19/22						
Total Hardness as CaCO3	266	1.0	mg/L	33.1	224	125	70-130			
Matrix Spike (2208898-MS2)	**Source: 22J0901-06**			Prepared: 10/18/22 Analyzed: 10/19/22						
Total Hardness as CaCO3	80.6	1.0	mg/L	33.1	47.7	99	70-130			
Batch 2208902 - General Prep										
Blank (2208902-BLK1)				Prepared & Analyzed: 10/18/22						
Sulfate as SO4	ND	0.50	mg/L							
Chloride	ND	0.50	"							
Nitrate/Nitrite as N	ND	0.40	"							
LCS (2208902-BS1)				Prepared & Analyzed: 10/18/22						
Chloride	5.08	0.50	mg/L	5.00		102	80-120			
Sulfate as SO4	5.13	0.50	"	5.00		103	80-120			
Nitrate/Nitrite as N	4.40	0.40	"	4.00		110	80-120			
LCS Dup (2208902-BSD1)				Prepared & Analyzed: 10/18/22						
Sulfate as SO4	5.16	0.50	mg/L	5.00		103	80-120	0.6	20	
Chloride	5.13	0.50	"	5.00		103	80-120	1	20	
Nitrate/Nitrite as N	4.44	0.40	"	4.00		111	80-120	0.8	20	

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208902 - General Prep										
Matrix Spike (2208902-MS1)		**Source: 22J0924-01**		Prepared & Analyzed: 10/18/22						
Chloride	162	0.50	mg/L	5.00	244	NR	80-120			QM-4X
Sulfate as SO4	54.6	0.50	"	5.00	52.0	51	80-120			QM-4X
Nitrate/Nitrite as N	6.16	0.40	"	4.00	1.92	106	80-120			
Matrix Spike Dup (2208902-MSD1)		**Source: 22J0924-01**		Prepared & Analyzed: 10/18/22						
Chloride	162	0.50	mg/L	5.00	244	NR	80-120	0.008	20	QM-4X
Sulfate as SO4	54.6	0.50	"	5.00	52.0	50	80-120	0.09	20	QM-4X
Nitrate/Nitrite as N	6.09	0.40	"	4.00	1.92	104	80-120	1	20	
Batch 2208906 - General Preparation										
Blank (2208906-BLK1)				Prepared & Analyzed: 10/18/22						
Orthophosphate as PO4	ND	0.15	mg/L							
LCS (2208906-BS1)				Prepared & Analyzed: 10/18/22						
Orthophosphate as PO4	0.842	0.15	mg/L	0.918		92	80-120			
LCS Dup (2208906-BSD1)				Prepared & Analyzed: 10/18/22						
Orthophosphate as PO4	0.891	0.15	mg/L	0.918		97	80-120	6	20	
Matrix Spike (2208906-MS1)		**Source: 22J0894-01**		Prepared & Analyzed: 10/18/22						
Orthophosphate as PO4	0.862	0.15	mg/L	0.918	0.0436	89	75-125			
Matrix Spike Dup (2208906-MSD1)		**Source: 22J0894-01**		Prepared & Analyzed: 10/18/22						
Orthophosphate as PO4	0.862	0.15	mg/L	0.918	0.0436	89	75-125	0	25	

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208907 - Solvent Extract										
Blank (2208907-BLK1)				Prepared: 10/18/22 Analyzed: 10/19/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	5.0	mg/L							
LCS (2208907-BS1)				Prepared: 10/18/22 Analyzed: 10/19/22						
Hexane Extractable Material (HEM, Oil & Grease)	38.9	5.0	mg/L	40.0		97	78-114			
LCS Dup (2208907-BSD1)				Prepared: 10/18/22 Analyzed: 10/19/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.0	5.0	mg/L	40.0		98	78-114	0.3	18	
Batch 2208915 - General Preparation										
Blank (2208915-BLK1)				Prepared & Analyzed: 10/18/22						
Total Phosphorus as P	ND	5.0	mg/kg							
LCS (2208915-BS1)				Prepared & Analyzed: 10/18/22						
Total Phosphorus as P	28.2	5.0	mg/kg	30.0		94	75-125			
LCS Dup (2208915-BSD1)				Prepared & Analyzed: 10/18/22						
Total Phosphorus as P	28.7	5.0	mg/kg	30.0		96	75-125	2	25	
Matrix Spike (2208915-MS1)	**Source: 22J0894-01**			Prepared & Analyzed: 10/18/22						
Total Phosphorus as P	30.0	5.0	mg/kg	30.0	ND	100	75-125			
Matrix Spike Dup (2208915-MSD1)	**Source: 22J0894-01**			Prepared & Analyzed: 10/18/22						
Total Phosphorus as P	29.5	5.0	mg/kg	30.0	ND	98	75-125	2	30	
Batch 2208925 - General Preparation										
Duplicate (2208925-DUP1)	**Source: 22J0850-01**			Prepared: 10/18/22 Analyzed: 10/19/22						
Total Suspended Solids	2.25	5.0	mg/L		ND				20	

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208953 - General Preparation										
Blank (2208953-BLK1)				Prepared & Analyzed: 10/19/22						
Ammonia as N	ND	0.10	mg/L							
LCS (2208953-BS1)				Prepared & Analyzed: 10/19/22						
Ammonia as N	0.520	0.10	mg/L	0.500		104	80-120			
LCS Dup (2208953-BSD1)				Prepared & Analyzed: 10/19/22						
Ammonia as N	0.516	0.10	mg/L	0.500		103	80-120	0.8	25	
Matrix Spike (2208953-MS1)		**Source: 22J0725-01**		Prepared & Analyzed: 10/19/22						
Ammonia as N	0.776	0.10	mg/L	0.500	0.0590	143	75-125			QM-5
Matrix Spike Dup (2208953-MSD1)		**Source: 22J0725-01**		Prepared & Analyzed: 10/19/22						
Ammonia as N	0.776	0.10	mg/L	0.500	0.0590	143	75-125	0	25	QM-5
Batch 2208957 - General Prep										
Blank (2208957-BLK1)				Prepared & Analyzed: 10/19/22						
Cyanide (total)	ND	0.0050	mg/L							
LCS (2208957-BS1)				Prepared & Analyzed: 10/19/22						
Cyanide (total)	0.0840	0.0050	mg/L	0.100		84	75-125			
LCS Dup (2208957-BSD1)				Prepared & Analyzed: 10/19/22						
Cyanide (total)	0.0918	0.0050	mg/L	0.100		92	75-125	9	25	
Matrix Spike (2208957-MS1)		**Source: 22J0730-01**		Prepared & Analyzed: 10/19/22						
Cyanide (total)	0.0456	0.0050	mg/L	0.100	0.00380	42	75-125			QM-7

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208957 - General Prep										
Matrix Spike Dup (2208957-MSD1)		**Source: 22J0730-01**		Prepared & Analyzed: 10/19/22						
Cyanide (total)	0.0604	0.0050	mg/L	0.100	0.00380	57	75-125	28	25	QM-7
Batch 2208961 - General Preparation										
Blank (2208961-BLK1)				Prepared: 10/19/22 Analyzed: 10/21/22						
Total Dissolved Solids	ND	10	mg/L							
Duplicate (2208961-DUP1)		**Source: 22J0894-01**		Prepared: 10/19/22 Analyzed: 10/21/22						
Total Dissolved Solids	16.0	10	mg/L		14.0			13	20	
Batch 2208963 - General Preparation										
Blank (2208963-BLK1)				Prepared & Analyzed: 10/19/22						
Total Kjeldahl Nitrogen	ND	0.20	mg/L							
LCS (2208963-BS1)				Prepared & Analyzed: 10/19/22						
Total Kjeldahl Nitrogen	0.463	0.20	mg/L	0.500		93	80-120			
LCS Dup (2208963-BSD1)				Prepared & Analyzed: 10/19/22						
Total Kjeldahl Nitrogen	0.416	0.20	mg/L	0.500		83	80-120	11	20	
Matrix Spike (2208963-MS1)		**Source: 22J0894-01**		Prepared & Analyzed: 10/19/22						
Total Kjeldahl Nitrogen	0.921	0.20	mg/L	0.500	0.379	108	75-125			
Matrix Spike Dup (2208963-MSD1)		**Source: 22J0894-01**		Prepared & Analyzed: 10/19/22						
Total Kjeldahl Nitrogen	0.918	0.20	mg/L	0.500	0.379	108	75-125	0.3	25	

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0894**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208994 - General Prep										
Blank (2208994-BLK1)				Prepared: 10/20/22 Analyzed: 10/21/22						
Total Organic Carbon	ND	1.0	mg/L							
LCS (2208994-BS1)				Prepared: 10/20/22 Analyzed: 10/21/22						
Total Organic Carbon	10.6	1.0	mg/L	10.0		106	75-125			
LCS Dup (2208994-BSD1)				Prepared: 10/20/22 Analyzed: 10/21/22						
Total Organic Carbon	10.7	1.0	mg/L	10.0		107	75-125	0.8	25	
Matrix Spike (2208994-MS1)		**Source: 22J0894-02**		Prepared: 10/20/22 Analyzed: 10/21/22						
Total Organic Carbon	13.4	1.0	mg/L	10.0	2.20	112	75-125			
Matrix Spike Dup (2208994-MSD1)		**Source: 22J0894-02**		Prepared: 10/20/22 Analyzed: 10/21/22						
Total Organic Carbon	12.9	1.0	mg/L	10.0	2.20	107	75-125	4	25	
Batch 2209002 - General Preparation										
Blank (2209002-BLK1)				Prepared & Analyzed: 10/20/22						
Total Alkalinity	ND	5.0	mg/L							
Bicarbonate as CaCO3	ND	5.0	"							
Carbonate as CaCO3	ND	5.0	"							
Hydroxide as CaCO3	ND	5.0	"							
Duplicate (2209002-DUP1)		**Source: 22J0894-01**		Prepared & Analyzed: 10/20/22						
Total Alkalinity	7.80	5.0	mg/L		7.60			3	20	
Bicarbonate as CaCO3	7.80	5.0	"		7.60			3	20	
Carbonate as CaCO3	ND	5.0	"		ND				20	
Hydroxide as CaCO3	ND	5.0	"		ND				20	

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208883 - EPA 3510B GCNV										
Blank (2208883-BLK1)				Prepared: 10/17/22 Analyzed: 10/18/22						
Diesel	ND	0.050	mg/L							
Motor Oil	ND	0.050	"							
Surrogate: o-Terphenyl	*0.0260*		*"*	*0.0250*		*104*	*65-135*			
LCS (2208883-BS1)				Prepared: 10/17/22 Analyzed: 10/18/22						
Diesel	2.80	0.050	mg/L	2.50		112	65-135			
Surrogate: o-Terphenyl	*0.0272*		*"*	*0.0250*		*109*	*65-135*			
LCS Dup (2208883-BSD1)				Prepared: 10/17/22 Analyzed: 10/18/22						
Diesel	3.08	0.050	mg/L	2.50		123	65-135	10	30	
Surrogate: o-Terphenyl	*0.0318*		*"*	*0.0250*		*127*	*65-135*			
Matrix Spike (2208883-MS1)		**Source: 22J0632-01**		Prepared: 10/17/22 Analyzed: 10/18/22						
Diesel	2.83	0.050	mg/L	2.50	ND	113	46-137			
Surrogate: o-Terphenyl	*0.0264*		*"*	*0.0250*		*106*	*65-135*			
Matrix Spike Dup (2208883-MSD1)		**Source: 22J0632-01**		Prepared: 10/17/22 Analyzed: 10/18/22						
Diesel	3.05	0.050	mg/L	2.50	ND	122	46-137	8	30	
Surrogate: o-Terphenyl	*0.0297*		*"*	*0.0250*		*119*	*65-135*			

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0894**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208896 - EPA 200 Series										
Blank (2208896-BLK1)				Prepared & Analyzed: 10/18/22						
Aluminum	ND	20	µg/L							
Barium	ND	5.0	"							
Manganese	ND	2.0	"							
Silver	ND	0.50	"							
LCS (2208896-BS1)				Prepared & Analyzed: 10/18/22						
Aluminum	489	20	µg/L	500		98	85-115			
Barium	106	5.0	"	100		106	85-115			
Manganese	130	2.0	"	100		130	85-115			QM-7
Silver	99.9	0.50	"	100		100	85-115			
Matrix Spike (2208896-MS1)	**Source: 22J0799-03**			Prepared & Analyzed: 10/18/22						
Aluminum	476	20	µg/L	500	2.78	95	70-130			
Barium	126	5.0	"	100	20.2	106	70-130			
Manganese	93.1	2.0	"	100	2.68	90	70-130			
Silver	97.0	0.50	"	100	0.502	97	70-130			
Matrix Spike (2208896-MS2)	**Source: 22J0924-01**			Prepared & Analyzed: 10/18/22						
Aluminum	1220	20	µg/L	500	385	167	70-130			QM-7
Barium	251	5.0	"	100	141	110	70-130			
Manganese	132	2.0	"	100	29.8	102	70-130			
Silver	96.1	0.50	"	100	ND	96	70-130			
Batch 2208898 - EPA 200 Series										
Blank (2208898-BLK1)				Prepared: 10/18/22 Analyzed: 10/19/22						
Calcium	ND	1000	µg/L							
Iron	ND	100	"							
Magnesium	ND	1000	"							
Potassium	ND	1000	"							
Sodium	ND	1000	"							

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208898 - EPA 200 Series										
LCS (2208898-BS1)				Prepared: 10/18/22 Analyzed: 10/19/22						
Calcium	5270	1000	µg/L	5000		105	85-115			
Iron	505	100	"	500		101	85-115			
Magnesium	4970	1000	"	5000		99	85-115			
Potassium	5760	1000	"	5000		115	85-115			
Sodium	5470	1000	"	5000		109	85-115			
Matrix Spike (2208898-MS1)	**Source: 22J0810-01**			Prepared: 10/18/22 Analyzed: 10/19/22						
Calcium	62300	1000	µg/L	5000	53400	178	70-130			QM-4X
Iron	553	100	"	500	24.1	106	70-130			
Magnesium	26700	1000	"	5000	22100	92	70-130			
Potassium	11700	1000	"	5000	5000	135	70-130			QM-7
Sodium	97800	1000	"	5000	92600	104	70-130			
Matrix Spike (2208898-MS2)	**Source: 22J0901-06**			Prepared: 10/18/22 Analyzed: 10/19/22						
Calcium	16500	1000	µg/L	5000	11200	107	70-130			
Iron	608	100	"	500	ND	122	70-130			
Magnesium	9520	1000	"	5000	4780	95	70-130			
Potassium	7210	1000	"	5000	1980	105	70-130			
Sodium	13500	1000	"	5000	8520	100	70-130			

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0894**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208889 - EPA 200 No Digestion										
Blank (2208889-BLK1)				Prepared & Analyzed: 10/17/22						
Aluminum	ND	20	µg/L							
Silver	ND	0.50	"							
LCS (2208889-BS1)				Prepared & Analyzed: 10/17/22						
Aluminum	475	20	µg/L	500		95	85-115			
Silver	95.4	0.50	"	100		95	85-115			
Matrix Spike (2208889-MS1)	**Source: 22J0529-02**			Prepared & Analyzed: 10/17/22						
Aluminum	478	40	µg/L	500	3.02	95	70-130			
Silver	89.7	1.0	"	100	ND	90	70-130			
Matrix Spike (2208889-MS2)	**Source: 22J0894-01**			Prepared: 10/17/22 Analyzed: 10/19/22						
Aluminum	472	20	µg/L	500	8.39	93	70-130			
Silver	102	0.50	"	100	ND	102	70-130			
Batch 2208998 - EPA 200 No Digestion										
Blank (2208998-BLK1)				Prepared & Analyzed: 10/20/22						
Iron	ND	100	µg/L							
LCS (2208998-BS1)				Prepared & Analyzed: 10/20/22						
Iron	488	100	µg/L	500		98	85-115			
Matrix Spike (2208998-MS1)	**Source: 22J0933-04**			Prepared & Analyzed: 10/20/22						
Iron	565	100	µg/L	500	58.2	101	70-130			
Matrix Spike (2208998-MS2)	**Source: 22J1040-06**			Prepared & Analyzed: 10/20/22						
Iron	507	100	µg/L	500	20.7	97	70-130			

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0894**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208923 - EPA 5030 Water GC										
Blank (2208923-BLK1)				Prepared & Analyzed: 10/18/22						
Gasoline	ND	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*14.5*		*"*	*20.0*		*73*	*65-135*			
LCS (2208923-BS1)				Prepared & Analyzed: 10/18/22						
Gasoline	569	50	µg/L	500		114	70-130			
Surrogate: o-Chlorotoluene (Gas)	*16.3*		*"*	*20.0*		*81*	*65-135*			
LCS Dup (2208923-BSD1)				Prepared & Analyzed: 10/18/22						
Gasoline	557	50	µg/L	500		111	70-130	2	30	
Surrogate: o-Chlorotoluene (Gas)	*15.6*		*"*	*20.0*		*78*	*65-135*			
Matrix Spike (2208923-MS1)	**Source: 22J0894-03**			Prepared & Analyzed: 10/18/22						
Gasoline	472	50	µg/L	500	ND	94	68-132			
Surrogate: o-Chlorotoluene (Gas)	*15.7*		*"*	*20.0*		*78*	*65-135*			
Matrix Spike Dup (2208923-MSD1)	**Source: 22J0894-03**			Prepared & Analyzed: 10/18/22						
Gasoline	531	50	µg/L	500	ND	106	68-132	12	32	
Surrogate: o-Chlorotoluene (Gas)	*14.4*		*"*	*20.0*		*72*	*65-135*			

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0894**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209018 - EPA 3510B GCMS										
Blank (2209018-BLK1)				Prepared & Analyzed: 10/18/22						
Di-isopropyl ether	ND	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.50	"							
Methyl tert-butyl ether	ND	0.50	"							
tert-Amyl methyl ether	ND	0.50	"							
tert-Butyl alcohol	ND	5.0	"							
Surrogate: Toluene-d8	*9.90*		"	*10.0*		*99*	*72-125*			
LCS (2209018-BS1)				Prepared & Analyzed: 10/18/22						
Methyl tert-butyl ether	19.3	0.50	µg/L	20.0		96	52-130			
Surrogate: Toluene-d8	*10.6*		"	*10.0*		*106*	*72-125*			
LCS Dup (2209018-BSD1)				Prepared & Analyzed: 10/18/22						
Methyl tert-butyl ether	20.9	0.50	µg/L	20.0		104	52-130	8	30	
Surrogate: Toluene-d8	*10.4*		"	*10.0*		*104*	*72-125*			
Matrix Spike (2209018-MS1)	**Source: 22J0894-01**			Prepared & Analyzed: 10/18/22						
Methyl tert-butyl ether	18.4	0.50	µg/L	20.0	ND	92	52-140			
Surrogate: Toluene-d8	*10.4*		"	*10.0*		*104*	*72-125*			
Matrix Spike Dup (2209018-MSD1)	**Source: 22J0894-01**			Prepared & Analyzed: 10/18/22						
Methyl tert-butyl ether	18.9	0.50	µg/L	20.0	ND	95	52-140	3	30	
Surrogate: Toluene-d8	*10.3*		"	*10.0*		*103*	*72-125*			

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0894**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
QM-5	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

October 25, 2022

CLS Work Order #: 22J0953
COC #:

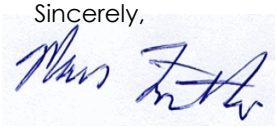
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 10/18/22 14:54. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22J0157 (__1__ of __1__)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By
ERA, JEW

Job Description
Monitor water chemistry in UARP reaches.

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[X] **CLS** (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] **OTHER**

GEOTRACKER

EDF REPORT YES [X] NO [ ]

GLOBAL ID:

FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	ANALYSIS REQUESTED: TSS, TDS, Hardness, Alkalinity, NO2-N+NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS: 1	2	3	5	SPECIAL INSTRUCTIONS
10/14/22	0900	R-IS-14-SC		Surface water			6	X	X	X	X	X	X	X				X	
10/14/22	0930	R-IS-14-SC-B		Surface water			6	X	X	X	X	X	X	X				X	
10/14/22	1040	R-IS-15-SC		Surface water			6	X	X	X	X	X	X	X				X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	INVOICE TO:
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	**Project No. 750.10 Task 0620.01**
				Surface water			6											X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Jakob Woodall Stillwater	10/18 14:54		

RECEIVED AT LAB BY: **DATE/TIME:** 10/18/22 1454 **CONDITIONS/COMMENTS:** N.I | 6.4

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER _____ **AIR BILL #** _____

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0953**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-14-SC (22J0953-01) Water Sampled: 10/18/22 09:00 Received: 10/18/22 14:54									
Ammonia as N	ND	0.10	mg/L	1	2209001	10/20/22	10/20/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**10**	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Carbonate as CaCO3	ND	5.0	"	"	"	"	"	"	
Chloride	**1.3**	0.50	"	"	2208936	10/19/22	10/19/22	EPA 300.0	
Cyanide (total)	ND	0.0050	"	"	2208957	10/19/22	10/19/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	5.0	"	"	2208907	10/19/22	10/19/22	EPA 1664B	
Hydroxide as CaCO3	ND	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Nitrate/Nitrite as N	ND	0.40	"	"	2208936	10/19/22	10/19/22	EPA 300.0	
Orthophosphate as PO4	**0.16**	0.15	"	"	2208987	10/20/22	10/20/22	SM4500-P E	
Sulfate as SO4	**0.51**	0.50	"	"	2208936	10/19/22	10/19/22	EPA 300.0	
Total Alkalinity	**10**	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Total Dissolved Solids	**25**	10	"	"	2208961	10/19/22	10/21/22	SM2540C	
Total Hardness as CaCO3	**8.1**	1.0	"	"	2208998	10/20/22	10/20/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.32**	0.20	"	"	2209046	10/21/22	10/21/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.1**	1.0	"	"	2208994	10/20/22	10/21/22	SM5310B	
Total Phosphorus as P	ND	0.050	"	"	2209082	10/24/22	10/24/22	SM4500-P E	
Total Suspended Solids	ND	5.0	"	"	2208955	10/19/22	10/21/22	SM2540D	
R-IS-14-SC-B (22J0953-02) Water Sampled: 10/18/22 09:30 Received: 10/18/22 14:54									
Ammonia as N	ND	0.10	mg/L	1	2209001	10/20/22	10/20/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**9.6**	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Carbonate as CaCO3	ND	5.0	"	"	"	"	"	"	
Chloride	**1.2**	0.50	"	"	2208936	10/19/22	10/19/22	EPA 300.0	
Cyanide (total)	ND	0.0050	"	"	2208957	10/19/22	10/19/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	5.0	"	"	2208907	10/19/22	10/19/22	EPA 1664B	
Hydroxide as CaCO3	ND	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Nitrate/Nitrite as N	ND	0.40	"	"	2208936	10/19/22	10/19/22	EPA 300.0	
Orthophosphate as PO4	ND	0.15	"	"	2208987	10/20/22	10/20/22	SM4500-P E	

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0953**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-14-SC-B (22J0953-02) Water Sampled: 10/18/22 09:30 Received: 10/18/22 14:54									
Sulfate as SO4	ND	0.50	mg/L	1	2208936	10/19/22	10/19/22	EPA 300.0	
Total Alkalinity	**9.6**	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Total Dissolved Solids	**20**	10	"	"	2208961	10/19/22	10/21/22	SM2540C	
Total Hardness as CaCO3	**7.3**	1.0	"	"	2208998	10/20/22	10/20/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.30**	0.20	"	"	2209046	10/21/22	10/21/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.1**	1.0	"	"	2208994	10/20/22	10/21/22	SM5310B	
Total Phosphorus as P	ND	0.050	"	"	2209082	10/24/22	10/24/22	SM4500-P E	
Total Suspended Solids	ND	5.0	"	"	2208955	10/19/22	10/21/22	SM2540D	
R-IS-15-SC (22J0953-03) Water Sampled: 10/18/22 10:40 Received: 10/18/22 14:54									
Ammonia as N	ND	0.10	mg/L	1	2209001	10/20/22	10/20/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**10**	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Carbonate as CaCO3	ND	5.0	"	"	"	"	"	"	
Chloride	**1.3**	0.50	"	"	2208936	10/19/22	10/19/22	EPA 300.0	
Cyanide (total)	ND	0.0050	"	"	2208957	10/19/22	10/19/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	5.0	"	"	2208907	10/19/22	10/19/22	EPA 1664B	
Hydroxide as CaCO3	ND	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Nitrate/Nitrite as N	ND	0.40	"	"	2208936	10/19/22	10/19/22	EPA 300.0	
Orthophosphate as PO4	ND	0.15	"	"	2208987	10/20/22	10/20/22	SM4500-P E	
Sulfate as SO4	**0.51**	0.50	"	"	2208936	10/19/22	10/19/22	EPA 300.0	
Total Alkalinity	**10**	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Total Dissolved Solids	**24**	10	"	"	2208961	10/19/22	10/21/22	SM2540C	
Total Hardness as CaCO3	**8.3**	1.0	"	"	2208998	10/20/22	10/20/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.31**	0.20	"	"	2209046	10/21/22	10/21/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.0**	1.0	"	"	2208994	10/20/22	10/21/22	SM5310B	
Total Phosphorus as P	ND	0.050	"	"	2209082	10/24/22	10/24/22	SM4500-P E	
Total Suspended Solids	ND	5.0	"	"	2208955	10/19/22	10/21/22	SM2540D	

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0953**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-14-SC (22J0953-01) Water Sampled: 10/18/22 09:00 Received: 10/18/22 14:54									
Diesel	ND	0.050	mg/L	1	2208997	10/20/22	10/21/22	EPA 8015M	
Hydraulic Oil	ND	0.050	"	"	"	"	"	"	
Kerosene	ND	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*101 %*	*65-135*		"	"	"	"	
R-IS-14-SC-B (22J0953-02) Water Sampled: 10/18/22 09:30 Received: 10/18/22 14:54									
Diesel	ND	0.050	mg/L	1	2208997	10/20/22	10/21/22	EPA 8015M	
Hydraulic Oil	ND	0.050	"	"	"	"	"	"	
Kerosene	ND	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*95 %*	*65-135*		"	"	"	"	
R-IS-15-SC (22J0953-03) Water Sampled: 10/18/22 10:40 Received: 10/18/22 14:54									
Diesel	ND	0.050	mg/L	1	2208997	10/20/22	10/21/22	EPA 8015M	
Hydraulic Oil	ND	0.050	"	"	"	"	"	"	
Kerosene	ND	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl		*115 %*	*65-135*		"	"	"	"	

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0953**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Metals by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-14-SC (22J0953-01) Water Sampled: 10/18/22 09:00 Received: 10/18/22 14:54									
Aluminum	**25**	20	µg/L	1	2208982	10/20/22	10/21/22	EPA 200.8	
Barium	**9.8**	5.0	"	"	"	"	"	"	
Calcium	**2400**	1000	"	"	2208985	10/20/22	10/20/22	EPA 200.7	
Iron	ND	100	"	"	"	"	"	"	
Magnesium	ND	1000	"	"	"	"	"	"	
Manganese	**12**	2.0	"	"	2208982	10/20/22	10/21/22	EPA 200.8	
Potassium	ND	1000	"	"	2208985	10/20/22	10/20/22	EPA 200.7	
Silver	ND	0.50	"	"	2208982	10/20/22	10/21/22	EPA 200.8	
Sodium	**1700**	1000	"	"	2208985	10/20/22	10/20/22	EPA 200.7	
R-IS-14-SC-B (22J0953-02) Water Sampled: 10/18/22 09:30 Received: 10/18/22 14:54									
Aluminum	**28**	20	µg/L	1	2208982	10/20/22	10/21/22	EPA 200.8	
Barium	**9.2**	5.0	"	"	"	"	"	"	
Calcium	**2200**	1000	"	"	2208985	10/20/22	10/20/22	EPA 200.7	
Iron	ND	100	"	"	"	"	"	"	
Magnesium	ND	1000	"	"	"	"	"	"	
Manganese	**9.3**	2.0	"	"	2208982	10/20/22	10/21/22	EPA 200.8	
Potassium	ND	1000	"	"	2208985	10/20/22	10/20/22	EPA 200.7	
Silver	ND	0.50	"	"	2208982	10/20/22	10/21/22	EPA 200.8	
Sodium	**1600**	1000	"	"	2208985	10/20/22	10/20/22	EPA 200.7	
R-IS-15-SC (22J0953-03) Water Sampled: 10/18/22 10:40 Received: 10/18/22 14:54									
Aluminum	ND	20	µg/L	1	2208982	10/20/22	10/21/22	EPA 200.8	
Barium	**10**	5.0	"	"	"	"	"	"	
Calcium	**2400**	1000	"	"	2208985	10/20/22	10/20/22	EPA 200.7	
Iron	ND	100	"	"	"	"	"	"	
Magnesium	ND	1000	"	"	"	"	"	"	
Manganese	**5.0**	2.0	"	"	2208982	10/20/22	10/21/22	EPA 200.8	
Potassium	ND	1000	"	"	2208985	10/20/22	10/20/22	EPA 200.7	
Silver	ND	0.50	"	"	2208982	10/20/22	10/21/22	EPA 200.8	
Sodium	**1700**	1000	"	"	2208985	10/20/22	10/20/22	EPA 200.7	

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0953**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-14-SC (22J0953-01) Water Sampled: 10/18/22 09:00 Received: 10/18/22 14:54									
Aluminum	ND	20	µg/L	1	2209110	10/24/22	10/24/22	EPA 200.8	
Iron	ND	100	"	"	2208998	10/20/22	10/20/22	EPA 200.7	
Silver	ND	0.50	"	"	2209110	10/24/22	10/24/22	EPA 200.8	
R-IS-14-SC-B (22J0953-02) Water Sampled: 10/18/22 09:30 Received: 10/18/22 14:54									
Aluminum	ND	20	µg/L	1	2209110	10/24/22	10/24/22	EPA 200.8	
Iron	ND	100	"	"	2208998	10/20/22	10/20/22	EPA 200.7	
Silver	ND	0.50	"	"	2209110	10/24/22	10/24/22	EPA 200.8	
R-IS-15-SC (22J0953-03) Water Sampled: 10/18/22 10:40 Received: 10/18/22 14:54									
Aluminum	ND	20	µg/L	1	2209110	10/24/22	10/24/22	EPA 200.8	
Iron	ND	100	"	"	2208998	10/20/22	10/20/22	EPA 200.7	
Silver	ND	0.50	"	"	2209110	10/24/22	10/24/22	EPA 200.8	

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0953**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

TPH-Gasoline by GC FID

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-14-SC (22J0953-01) Water Sampled: 10/18/22 09:00 Received: 10/18/22 14:54									
Gasoline	ND	50	µg/L	1	2209106	10/24/22	10/24/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)		*79 %*	*65-135*		"	"	"	"	
R-IS-14-SC-B (22J0953-02) Water Sampled: 10/18/22 09:30 Received: 10/18/22 14:54									
Gasoline	ND	50	µg/L	1	2209106	10/24/22	10/24/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)		*80 %*	*65-135*		"	"	"	"	
R-IS-15-SC (22J0953-03) Water Sampled: 10/18/22 10:40 Received: 10/18/22 14:54									
Gasoline	ND	50	µg/L	1	2209106	10/24/22	10/24/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)		*78 %*	*65-135*		"	"	"	"	

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0953**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-14-SC (22J0953-01) Water Sampled: 10/18/22 09:00 Received: 10/18/22 14:54									
Methyl tert-butyl ether	ND	0.50	µg/L	1	2209123	10/21/22	10/21/22	EPA 8260B	
Surrogate: Toluene-d8		*99 %*		*72-125*		"	"	"	"
R-IS-14-SC-B (22J0953-02) Water Sampled: 10/18/22 09:30 Received: 10/18/22 14:54									
Methyl tert-butyl ether	ND	0.50	µg/L	1	2209123	10/21/22	10/21/22	EPA 8260B	
Surrogate: Toluene-d8		*98 %*		*72-125*		"	"	"	"
R-IS-15-SC (22J0953-03) Water Sampled: 10/18/22 10:40 Received: 10/18/22 14:54									
Methyl tert-butyl ether	ND	0.50	µg/L	1	2209123	10/21/22	10/21/22	EPA 8260B	
Surrogate: Toluene-d8		*99 %*		*72-125*		"	"	"	"

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0953**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208907 - Solvent Extract										
Blank (2208907-BLK1)				Prepared: 10/18/22 Analyzed: 10/19/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	5.0	mg/L							
LCS (2208907-BS1)				Prepared: 10/18/22 Analyzed: 10/19/22						
Hexane Extractable Material (HEM, Oil & Grease)	38.9	5.0	mg/L	40.0		97	78-114			
LCS Dup (2208907-BSD1)				Prepared: 10/18/22 Analyzed: 10/19/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.0	5.0	mg/L	40.0		98	78-114	0.3	18	
Batch 2208936 - General Preparation										
Blank (2208936-BLK1)				Prepared & Analyzed: 10/19/22						
Sulfate as SO4	ND	0.50	mg/L							
Chloride	ND	0.50	"							
Nitrate/Nitrite as N	ND	0.40	"							
LCS (2208936-BS1)				Prepared & Analyzed: 10/19/22						
Sulfate as SO4	5.42	0.50	mg/L	5.00		108	80-120			
Chloride	5.38	0.50	"	5.00		108	80-120			
Nitrate/Nitrite as N	4.61	0.40	"	4.00		115	80-120			
LCS Dup (2208936-BSD1)				Prepared & Analyzed: 10/19/22						
Chloride	5.02	0.50	mg/L	5.00		100	80-120	7	20	
Sulfate as SO4	5.08	0.50	"	5.00		102	80-120	7	20	
Nitrate/Nitrite as N	4.36	0.40	"	4.00		109	80-120	6	20	
Matrix Spike (2208936-MS1)	**Source: 22J0952-01**			Prepared & Analyzed: 10/19/22						
Sulfate as SO4	5.82	0.50	mg/L	5.00	0.785	101	80-120			
Chloride	6.36	0.50	"	5.00	1.35	100	80-120			
Nitrate/Nitrite as N	4.31	0.40	"	4.00	ND	108	80-120			

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0953**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208936 - General Preparation										
Matrix Spike Dup (2208936-MSD1)		**Source: 22J0952-01**		Prepared & Analyzed: 10/19/22						
Sulfate as SO4	5.82	0.50	mg/L	5.00	0.785	101	80-120	0.08	20	
Chloride	6.36	0.50	"	5.00	1.35	100	80-120	0.01	20	
Nitrate/Nitrite as N	4.31	0.40	"	4.00	ND	108	80-120	0.2	20	
Batch 2208955 - General Preparation										
Duplicate (2208955-DUP1)		**Source: 22J0899-01**		Prepared: 10/19/22 Analyzed: 10/21/22						
Total Suspended Solids	ND	5.0	mg/L		ND				20	
Batch 2208957 - General Prep										
Blank (2208957-BLK1)				Prepared & Analyzed: 10/19/22						
Cyanide (total)	ND	0.0050	mg/L							
LCS (2208957-BS1)				Prepared & Analyzed: 10/19/22						
Cyanide (total)	0.0840	0.0050	mg/L	0.100		84	75-125			
LCS Dup (2208957-BSD1)				Prepared & Analyzed: 10/19/22						
Cyanide (total)	0.0918	0.0050	mg/L	0.100		92	75-125	9	25	
Matrix Spike (2208957-MS1)		**Source: 22J0730-01**		Prepared & Analyzed: 10/19/22						
Cyanide (total)	0.0456	0.0050	mg/L	0.100	0.00380	42	75-125			QM-7
Matrix Spike Dup (2208957-MSD1)		**Source: 22J0730-01**		Prepared & Analyzed: 10/19/22						
Cyanide (total)	0.0604	0.0050	mg/L	0.100	0.00380	57	75-125	28	25	QM-7

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0953**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208961 - General Preparation										
Blank (2208961-BLK1)				Prepared: 10/19/22 Analyzed: 10/21/22						
Total Dissolved Solids	ND	10	mg/L							
Duplicate (2208961-DUP1)		**Source: 22J0894-01**		Prepared: 10/19/22 Analyzed: 10/21/22						
Total Dissolved Solids	16.0	10	mg/L		14.0			13	20	
Batch 2208987 - General Preparation										
Blank (2208987-BLK1)				Prepared & Analyzed: 10/20/22						
Orthophosphate as PO4	ND	0.15	mg/L							
LCS (2208987-BS1)				Prepared & Analyzed: 10/20/22						
Orthophosphate as PO4	0.899	0.15	mg/L	0.918		98	80-120			
LCS Dup (2208987-BSD1)				Prepared & Analyzed: 10/20/22						
Orthophosphate as PO4	1.09	0.15	mg/L	0.918		118	80-120	19	20	
Matrix Spike (2208987-MS1)		**Source: 22J0952-01**		Prepared & Analyzed: 10/20/22						
Orthophosphate as PO4	0.850	0.15	mg/L	0.918	ND	93	75-125			
Matrix Spike Dup (2208987-MSD1)		**Source: 22J0952-01**		Prepared & Analyzed: 10/20/22						
Orthophosphate as PO4	0.920	0.15	mg/L	0.918	ND	100	75-125	8	25	
Batch 2208994 - General Prep										
Blank (2208994-BLK1)				Prepared: 10/20/22 Analyzed: 10/21/22						
Total Organic Carbon	ND	1.0	mg/L							

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0953**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208994 - General Prep										
LCS (2208994-BS1)				Prepared: 10/20/22 Analyzed: 10/21/22						
Total Organic Carbon	10.6	1.0	mg/L	10.0		106	75-125			
LCS Dup (2208994-BSD1)				Prepared: 10/20/22 Analyzed: 10/21/22						
Total Organic Carbon	10.7	1.0	mg/L	10.0		107	75-125	0.8	25	
Matrix Spike (2208994-MS1)		**Source: 22J0894-02**		Prepared: 10/20/22 Analyzed: 10/21/22						
Total Organic Carbon	13.4	1.0	mg/L	10.0	2.20	112	75-125			
Matrix Spike Dup (2208994-MSD1)		**Source: 22J0894-02**		Prepared: 10/20/22 Analyzed: 10/21/22						
Total Organic Carbon	12.9	1.0	mg/L	10.0	2.20	107	75-125	4	25	
Batch 2208998 - EPA 200 No Digestion										
Blank (2208998-BLK1)				Prepared & Analyzed: 10/20/22						
Total Hardness as CaCO3	ND	1.0	mg/L							
LCS (2208998-BS1)				Prepared & Analyzed: 10/20/22						
Total Hardness as CaCO3	32.2	1.0	mg/L	33.1		97	85-115			
Matrix Spike (2208998-MS1)		**Source: 22J0933-04**		Prepared & Analyzed: 10/20/22						
Total Hardness as CaCO3	32.8	1.0	mg/L	33.1	1.15	96	70-130			
Matrix Spike (2208998-MS2)		**Source: 22J1040-06**		Prepared & Analyzed: 10/20/22						
Total Hardness as CaCO3	297	1.0	mg/L	33.1	266	93	70-130			
Batch 2209001 - General Preparation										
Blank (2209001-BLK1)				Prepared & Analyzed: 10/20/22						
Ammonia as N	ND	0.10	mg/L							

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring
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Berkeley, CA 94705	Project Manager:	Emily Applequist

CLS Work Order #: 22J0953
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209001 - General Preparation										
LCS (2209001-BS1)				Prepared & Analyzed: 10/20/22						
Ammonia as N	0.506	0.10	mg/L	0.500		101	80-120			
LCS Dup (2209001-BSD1)				Prepared & Analyzed: 10/20/22						
Ammonia as N	0.516	0.10	mg/L	0.500		103	80-120	2	25	
Matrix Spike (2209001-MS1)		**Source: 22J0953-01**		Prepared & Analyzed: 10/20/22						
Ammonia as N	0.548	0.10	mg/L	0.500	0.0370	102	75-125			
Matrix Spike Dup (2209001-MSD1)		**Source: 22J0953-01**		Prepared & Analyzed: 10/20/22						
Ammonia as N	0.549	0.10	mg/L	0.500	0.0370	102	75-125	0.2	25	
Batch 2209002 - General Preparation										
Blank (2209002-BLK1)				Prepared & Analyzed: 10/20/22						
Total Alkalinity	ND	5.0	mg/L							
Bicarbonate as CaCO3	ND	5.0	"							
Carbonate as CaCO3	ND	5.0	"							
Hydroxide as CaCO3	ND	5.0	"							
Duplicate (2209002-DUP1)		**Source: 22J0894-01**		Prepared & Analyzed: 10/20/22						
Total Alkalinity	7.80	5.0	mg/L		7.60			3	20	
Bicarbonate as CaCO3	7.80	5.0	"		7.60			3	20	
Carbonate as CaCO3	ND	5.0	"		ND				20	
Hydroxide as CaCO3	ND	5.0	"		ND				20	
Batch 2209046 - General Preparation										
Blank (2209046-BLK1)				Prepared & Analyzed: 10/21/22						
Total Kjeldahl Nitrogen	ND	0.20	mg/L							

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0953**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209046 - General Preparation										
LCS (2209046-BS1)				Prepared & Analyzed: 10/21/22						
Total Kjeldahl Nitrogen	0.519	0.20	mg/L	0.500		104	80-120			
LCS Dup (2209046-BSD1)				Prepared & Analyzed: 10/21/22						
Total Kjeldahl Nitrogen	0.531	0.20	mg/L	0.500		106	80-120	2	20	
Matrix Spike (2209046-MS1)		**Source: 22J0889-01**		Prepared & Analyzed: 10/21/22						
Total Kjeldahl Nitrogen	0.0740	0.20	mg/L	0.500	0.114	NR	75-125			QM-7
Matrix Spike Dup (2209046-MSD1)		**Source: 22J0889-01**		Prepared & Analyzed: 10/21/22						
Total Kjeldahl Nitrogen	0.0750	0.20	mg/L	0.500	0.114	NR	75-125	1	25	QM-7
Batch 2209082 - General Preparation										
Blank (2209082-BLK1)				Prepared & Analyzed: 10/24/22						
Total Phosphorus as P	ND	0.050	mg/L							
LCS (2209082-BS1)				Prepared & Analyzed: 10/24/22						
Total Phosphorus as P	0.311	0.050	mg/L	0.300		104	80-120			
LCS Dup (2209082-BSD1)				Prepared & Analyzed: 10/24/22						
Total Phosphorus as P	0.295	0.050	mg/L	0.300		98	80-120	5	25	
Matrix Spike (2209082-MS1)		**Source: 22J0952-01**		Prepared & Analyzed: 10/24/22						
Total Phosphorus as P	0.296	0.050	mg/L	0.300	ND	99	75-125			
Matrix Spike Dup (2209082-MSD1)		**Source: 22J0952-01**		Prepared & Analyzed: 10/24/22						
Total Phosphorus as P	ND	0.050	mg/L	0.300	ND		75-125		30	QM-7

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208997 - EPA 3510B GCNV										
Blank (2208997-BLK1)				Prepared: 10/20/22 Analyzed: 10/21/22						
Diesel	ND	0.050	mg/L							
Motor Oil	ND	0.050	"							
Surrogate: o-Terphenyl	*0.0263*		*"*	*0.0250*		*105*	*65-135*			
LCS (2208997-BS1)				Prepared: 10/20/22 Analyzed: 10/21/22						
Diesel	2.94	0.050	mg/L	2.50		117	65-135			
Surrogate: o-Terphenyl	*0.0275*		*"*	*0.0250*		*110*	*65-135*			
LCS Dup (2208997-BSD1)				Prepared: 10/20/22 Analyzed: 10/21/22						
Diesel	2.42	0.050	mg/L	2.50		97	65-135	19	30	
Surrogate: o-Terphenyl	*0.0228*		*"*	*0.0250*		*91*	*65-135*			
Matrix Spike (2208997-MS1)		**Source: 22J0973-01**		Prepared: 10/20/22 Analyzed: 10/21/22						
Diesel	2.66	0.050	mg/L	2.50	ND	107	46-137			
Surrogate: o-Terphenyl	*0.0222*		*"*	*0.0250*		*89*	*65-135*			
Matrix Spike Dup (2208997-MSD1)		**Source: 22J0973-01**		Prepared: 10/20/22 Analyzed: 10/21/22						
Diesel	2.70	0.050	mg/L	2.50	ND	108	46-137	1	30	
Surrogate: o-Terphenyl	*0.0235*		*"*	*0.0250*		*94*	*65-135*			

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01
Berkeley, CA 94705	Project Manager:	Emily Applequist

CLS Work Order #: 22J0953
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208982 - EPA 200 Series										
Blank (2208982-BLK1)				Prepared: 10/20/22 Analyzed: 10/21/22						
Aluminum	ND	20	µg/L							
Arsenic	ND	2.0	"							
Barium	ND	5.0	"							
Chromium	ND	1.0	"							
Copper	ND	2.0	"							
Manganese	ND	2.0	"							
Nickel	ND	2.0	"							
Silver	ND	0.50	"							
LCS (2208982-BS1)				Prepared: 10/20/22 Analyzed: 10/21/22						
Aluminum	516	20	µg/L	500		103	85-115			
Arsenic	99.3	2.0	"	100		99	85-115			
Barium	103	5.0	"	100		103	85-115			
Chromium	103	1.0	"	100		103	85-115			
Copper	101	2.0	"	100		101	85-115			
Manganese	102	2.0	"	100		102	85-115			
Nickel	99.0	2.0	"	100		99	85-115			
Silver	96.4	0.50	"	100		96	85-115			
Matrix Spike (2208982-MS1)	**Source: 22J0944-01**			Prepared: 10/20/22 Analyzed: 10/21/22						
Aluminum	641	20	µg/L	500	98.2	109	70-130			
Arsenic	686	2.0	"	100	570	115	70-130			
Barium	112	5.0	"	100	5.27	106	70-130			
Chromium	104	1.0	"	100	1.34	103	70-130			
Copper	295	2.0	"	100	187	108	70-130			
Manganese	112	2.0	"	100	9.87	102	70-130			
Nickel	101	2.0	"	100	2.00	99	70-130			
Silver	99.2	0.50	"	100	0.0770	99	70-130			

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0953**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208982 - EPA 200 Series										
Matrix Spike (2208982-MS2)	**Source: 22J1042-01**			Prepared: 10/20/22 Analyzed: 10/21/22						
Aluminum	553	20	µg/L	500	12.8	108	70-130			
Arsenic	97.7	2.0	"	100	0.608	97	70-130			
Barium	111	5.0	"	100	5.37	105	70-130			
Chromium	102	1.0	"	100	0.382	102	70-130			
Copper	98.5	2.0	"	100	ND	98	70-130			
Manganese	113	2.0	"	100	12.1	100	70-130			
Nickel	96.6	2.0	"	100	ND	97	70-130			
Silver	97.8	0.50	"	100	ND	98	70-130			
Batch 2208985 - EPA 200 Series										
Blank (2208985-BLK1)				Prepared & Analyzed: 10/20/22						
Calcium	ND	1000	µg/L							
Iron	ND	100	"							
Magnesium	ND	1000	"							
Potassium	ND	1000	"							
Sodium	ND	1000	"							
LCS (2208985-BS1)				Prepared & Analyzed: 10/20/22						
Calcium	4930	1000	µg/L	5000		99	85-115			
Iron	489	100	"	500		98	85-115			
Magnesium	4890	1000	"	5000		98	85-115			
Potassium	4820	1000	"	5000		96	85-115			
Sodium	4880	1000	"	5000		98	85-115			
Matrix Spike (2208985-MS1)	**Source: 22J0933-03**			Prepared & Analyzed: 10/20/22						
Calcium	5110	1000	µg/L	5000	131	100	70-130			
Iron	655	100	"	500	148	101	70-130			
Magnesium	4890	1000	"	5000	36.9	97	70-130			
Potassium	8440	1000	"	5000	3510	99	70-130			
Sodium	55200	1000	"	5000	50900	84	70-130			

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0953**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208985 - EPA 200 Series										
Matrix Spike (2208985-MS2)	**Source: 22J1042-05**			Prepared & Analyzed: 10/20/22						
Calcium	5090	1000	µg/L	5000	ND	102	70-130			
Iron	506	100	"	500	ND	101	70-130			
Magnesium	5020	1000	"	5000	ND	100	70-130			
Potassium	5060	1000	"	5000	ND	101	70-130			
Sodium	5070	1000	"	5000	ND	101	70-130			

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0953**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208998 - EPA 200 No Digestion										
Blank (2208998-BLK1)				Prepared & Analyzed: 10/20/22						
Iron	ND	100	µg/L							
LCS (2208998-BS1)				Prepared & Analyzed: 10/20/22						
Iron	488	100	µg/L	500		98	85-115			
Matrix Spike (2208998-MS1)	**Source: 22J0933-04**			Prepared & Analyzed: 10/20/22						
Iron	565	100	µg/L	500	58.2	101	70-130			
Matrix Spike (2208998-MS2)	**Source: 22J1040-06**			Prepared & Analyzed: 10/20/22						
Iron	507	100	µg/L	500	20.7	97	70-130			
Batch 2209110 - EPA 200 No Digestion										
Blank (2209110-BLK1)				Prepared & Analyzed: 10/24/22						
Aluminum	ND	20	µg/L							
Silver	ND	0.50	"							
LCS (2209110-BS1)				Prepared & Analyzed: 10/24/22						
Aluminum	460	20	µg/L	500		92	85-115			
Silver	101	0.50	"	100		101	85-115			
Matrix Spike (2209110-MS1)	**Source: 22J0952-01**			Prepared & Analyzed: 10/24/22						
Aluminum	490	20	µg/L	500	8.61	96	70-130			
Silver	101	0.50	"	100	ND	101	70-130			
Matrix Spike (2209110-MS2)	**Source: 22J1159-01**			Prepared & Analyzed: 10/24/22						
Aluminum	507	20	µg/L	500	3.90	101	70-130			
Silver	79.9	0.50	"	100	ND	80	70-130			

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0953**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209106 - EPA 5030 Water GC										
Blank (2209106-BLK1)				Prepared & Analyzed: 10/24/22						
Gasoline	ND	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*16.2*		*"*	*20.0*		*81*	*65-135*			
LCS (2209106-BS1)				Prepared & Analyzed: 10/24/22						
Gasoline	539	50	µg/L	500		108	70-130			
Surrogate: o-Chlorotoluene (Gas)	*14.9*		*"*	*20.0*		*74*	*65-135*			
LCS Dup (2209106-BSD1)				Prepared & Analyzed: 10/24/22						
Gasoline	543	50	µg/L	500		109	70-130	0.7	30	
Surrogate: o-Chlorotoluene (Gas)	*14.6*		*"*	*20.0*		*73*	*65-135*			
Matrix Spike (2209106-MS1)	**Source: 22J1042-05**			Prepared & Analyzed: 10/24/22						
Gasoline	482	50	µg/L	500	ND	96	68-132			
Surrogate: o-Chlorotoluene (Gas)	*16.1*		*"*	*20.0*		*81*	*65-135*			
Matrix Spike Dup (2209106-MSD1)	**Source: 22J1042-05**			Prepared & Analyzed: 10/24/22						
Gasoline	520	50	µg/L	500	ND	104	68-132	8	32	
Surrogate: o-Chlorotoluene (Gas)	*15.3*		*"*	*20.0*		*76*	*65-135*			

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0953**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209123 - EPA 3510B GCMS										
Blank (2209123-BLK1)				Prepared & Analyzed: 10/21/22						
Di-isopropyl ether	ND	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.50	"							
Methyl tert-butyl ether	ND	0.50	"							
tert-Amyl methyl ether	ND	0.50	"							
tert-Butyl alcohol	ND	5.0	"							
Surrogate: Toluene-d8	*9.88*		"	*10.0*		*99*	*72-125*			
LCS (2209123-BS1)				Prepared & Analyzed: 10/21/22						
Methyl tert-butyl ether	19.6	0.50	µg/L	20.0		98	52-130			
Surrogate: Toluene-d8	*10.5*		"	*10.0*		*105*	*72-125*			
LCS Dup (2209123-BSD1)				Prepared & Analyzed: 10/21/22						
Methyl tert-butyl ether	19.4	0.50	µg/L	20.0		97	52-130	1	30	
Surrogate: Toluene-d8	*10.4*		"	*10.0*		*104*	*72-125*			
Matrix Spike (2209123-MS1)	**Source: 22J0952-02**			Prepared: 10/21/22 Analyzed: 10/23/22						
Methyl tert-butyl ether	22.1	0.50	µg/L	20.0	ND	110	52-140			
Surrogate: Toluene-d8	*10.6*		"	*10.0*		*106*	*72-125*			
Matrix Spike Dup (2209123-MSD1)	**Source: 22J0952-02**			Prepared: 10/21/22 Analyzed: 10/23/22						
Methyl tert-butyl ether	17.9	0.50	µg/L	20.0	ND	90	52-140	21	30	
Surrogate: Toluene-d8	*10.2*		"	*10.0*		*102*	*72-125*			

Stillwater Sciences	Project:	SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0620.01	**CLS Work Order #: 22J0953**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CALIFORNIA LABORATORY SERVICES
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October 26, 2022

CLS Work Order #: 22J1042
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 10/19/22 16:10. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

10/26/22 14:53

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1042
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-4-GC (22J1042-01) Water Sampled: 10/19/22 09:30 Received: 10/19/22 16:10										
Ammonia as N	**0.080**	0.025	0.10	mg/L	1	2209001	10/20/22	10/20/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**6.4**	0.50	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.60**	0.026	0.50	"	"	2208976	10/20/22	10/20/22	EPA 300.0	
Cyanide (total)	**0.0038**	0.0012	0.0050	"	"	2209097	10/24/22	10/24/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2208964	10/20/22	10/20/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2208976	10/20/22	10/20/22	EPA 300.0	
Orthophosphate as PO4	**0.11**	0.0051	0.15	"	"	2208987	10/20/22	10/20/22	SM4500-P E	J
Sulfate as SO4	**0.62**	0.038	0.50	"	"	2208976	10/20/22	10/20/22	EPA 300.0	
Total Alkalinity	**6.4**	1.0	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Total Dissolved Solids	ND	5.0	10	"	"	2209061	10/21/22	10/24/22	SM2540C	
Total Hardness as CaCO3	**5.2**	0.19	1.0	"	"	2208998	10/20/22	10/20/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.27**	0.040	0.20	"	"	2209060	10/21/22	10/21/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.0**	0.54	1.0	"	"	2208994	10/20/22	10/21/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209082	10/24/22	10/24/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209054	10/21/22	10/21/22	SM2540D	
R-IS-4-GC-FB (22J1042-02) Water Sampled: 10/19/22 10:00 Received: 10/19/22 16:10										
Ammonia as N	**0.037**	0.025	0.10	mg/L	1	2209001	10/20/22	10/20/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**1.8**	0.50	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	J
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.20**	0.026	0.50	"	"	2208976	10/20/22	10/20/22	EPA 300.0	J
Cyanide (total)	**0.0034**	0.0012	0.0050	"	"	2209097	10/24/22	10/24/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2208964	10/20/22	10/20/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2208976	10/20/22	10/20/22	EPA 300.0	
Orthophosphate as PO4	**0.26**	0.0051	0.15	"	"	2208987	10/20/22	10/20/22	SM4500-P E	

10/26/22 14:53

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1042
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-4-GC-FB (22J1042-02) Water	**Sampled: 10/19/22 10:00**	**Received: 10/19/22 16:10**								
Sulfate as SO4	ND	0.038	0.50	mg/L	1	2208976	10/20/22	10/20/22	EPA 300.0	
Total Alkalinity	**1.8**	1.0	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	J
Total Dissolved Solids	ND	5.0	10	"	"	2209061	10/21/22	10/24/22	SM2540C	
Total Hardness as CaCO3	**0.28**	0.19	1.0	"	"	2208998	10/20/22	10/20/22	EPA 200.7	J
Total Kjeldahl Nitrogen	**0.18**	0.040	0.20	"	"	2209060	10/21/22	10/21/22	SM4500-NH3F-2011	J
Total Organic Carbon	ND	0.54	1.0	"	"	2208994	10/20/22	10/21/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209082	10/24/22	10/24/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209054	10/21/22	10/21/22	SM2540D	
R-IS-20-BC (22J1042-03) Water	**Sampled: 10/19/22 12:30**	**Received: 10/19/22 16:10**								
Ammonia as N	**0.031**	0.025	0.10	mg/L	1	2209001	10/20/22	10/20/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**9.4**	0.50	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**1.0**	0.026	0.50	"	"	2208976	10/20/22	10/20/22	EPA 300.0	
Cyanide (total)	**0.0038**	0.0012	0.0050	"	"	2209097	10/24/22	10/24/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2208964	10/20/22	10/20/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2208976	10/20/22	10/20/22	EPA 300.0	
Orthophosphate as PO4	**0.18**	0.0051	0.15	"	"	2208987	10/20/22	10/20/22	SM4500-P E	
Sulfate as SO4	**0.46**	0.038	0.50	"	"	2208976	10/20/22	10/20/22	EPA 300.0	J
Total Alkalinity	**9.4**	1.0	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Total Dissolved Solids	**11**	5.0	10	"	"	2209061	10/21/22	10/24/22	SM2540C	
Total Hardness as CaCO3	**8.9**	0.19	1.0	"	"	2208998	10/20/22	10/20/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.22**	0.040	0.20	"	"	2209060	10/21/22	10/21/22	SM4500-NH3F-2011	
Total Organic Carbon	**0.95**	0.54	1.0	"	"	2208994	10/20/22	10/21/22	SM5310B	J
Total Phosphorus as P	ND	0.023	0.050	"	"	2209082	10/24/22	10/24/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209054	10/21/22	10/21/22	SM2540D	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1042
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-20-BC-B (22J1042-04) Water	**Sampled: 10/19/22 13:00**		**Received: 10/19/22 16:10**							
Ammonia as N	**0.035**	0.025	0.10	mg/L	1	2209001	10/20/22	10/20/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**9.4**	0.50	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.68**	0.026	0.50	"	"	2208976	10/20/22	10/20/22	EPA 300.0	
Cyanide (total)	**0.0042**	0.0012	0.0050	"	"	2209097	10/24/22	10/24/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2208964	10/20/22	10/20/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2208976	10/20/22	10/20/22	EPA 300.0	
Orthophosphate as PO4	**0.085**	0.0051	0.15	"	"	2208987	10/20/22	10/20/22	SM4500-P E	J
Sulfate as SO4	**0.46**	0.038	0.50	"	"	2208976	10/20/22	10/20/22	EPA 300.0	J
Total Alkalinity	**9.4**	1.0	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Total Dissolved Solids	**9.0**	5.0	10	"	"	2209061	10/21/22	10/24/22	SM2540C	J
Total Hardness as CaCO3	**7.2**	0.19	1.0	"	"	2208998	10/20/22	10/20/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.088**	0.040	0.20	"	"	2209060	10/21/22	10/21/22	SM4500-NH3F-2011	J
Total Organic Carbon	**1.6**	0.54	1.0	"	"	2208994	10/20/22	10/21/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209082	10/24/22	10/24/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209054	10/21/22	10/21/22	SM2540D	
R-IS-20-BC-EB (22J1042-05) Water	**Sampled: 10/19/22 14:00**		**Received: 10/19/22 16:10**							
Ammonia as N	ND	0.025	0.10	mg/L	1	2209001	10/20/22	10/20/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**1.4**	0.50	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	J
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.54**	0.026	0.50	"	"	2208976	10/20/22	10/20/22	EPA 300.0	
Cyanide (total)	ND	0.0012	0.0050	"	"	2209097	10/24/22	10/24/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2208964	10/20/22	10/20/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2208976	10/20/22	10/20/22	EPA 300.0	
Orthophosphate as PO4	**0.13**	0.0051	0.15	"	"	2208987	10/20/22	10/20/22	SM4500-P E	J

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Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1042
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-20-BC-EB (22J1042-05) Water	**Sampled: 10/19/22 14:00**		**Received: 10/19/22 16:10**							
Sulfate as SO4	ND	0.038	0.50	mg/L	1	2208976	10/20/22	10/20/22	EPA 300.0	
Total Alkalinity	**1.4**	1.0	5.0	"	"	2209002	10/20/22	10/20/22	SM2320B	J
Total Dissolved Solids	ND	5.0	10	"	"	2209061	10/21/22	10/24/22	SM2540C	
Total Hardness as CaCO3	ND	0.19	1.0	"	"	2208998	10/20/22	10/20/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.17**	0.040	0.20	"	"	2209060	10/21/22	10/21/22	SM4500-NH3F-2011	J
Total Organic Carbon	ND	0.54	1.0	"	"	2208994	10/20/22	10/21/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209082	10/24/22	10/24/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209054	10/21/22	10/21/22	SM2540D	

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22J1042
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-4-GC (22J1042-01) Water Sampled: 10/19/22 09:30 Received: 10/19/22 16:10										
Diesel	ND	0.0021	0.050	mg/L	1	2208997	10/20/22	10/21/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*89 %*	*65-135*		"	"	"	"	
R-IS-4-GC-FB (22J1042-02) Water Sampled: 10/19/22 10:00 Received: 10/19/22 16:10										
Diesel	ND	0.0021	0.050	mg/L	1	2208997	10/20/22	10/21/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*100 %*	*65-135*		"	"	"	"	
R-IS-20-BC (22J1042-03) Water Sampled: 10/19/22 12:30 Received: 10/19/22 16:10										
Diesel	ND	0.0021	0.050	mg/L	1	2208997	10/20/22	10/21/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*120 %*	*65-135*		"	"	"	"	
R-IS-20-BC-B (22J1042-04) Water Sampled: 10/19/22 13:00 Received: 10/19/22 16:10										
Diesel	ND	0.0021	0.050	mg/L	1	2208997	10/20/22	10/21/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22J1042**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-20-BC-B (22J1042-04) Water Sampled: 10/19/22 13:00 Received: 10/19/22 16:10										
Surrogate: o-Terphenyl			*95 %*		*65-135*	*2208997*	"	*10/21/22*	*EPA 8015M*	
R-IS-20-BC-EB (22J1042-05) Water Sampled: 10/19/22 14:00 Received: 10/19/22 16:10										
Diesel	ND	0.0021	0.050	mg/L	1	2208997	10/20/22	10/21/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*110 %*		*65-135*	*"*	"	*"*	*"*	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1042
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-4-GC (22J1042-01) Water Sampled: 10/19/22 09:30 Received: 10/19/22 16:10										
Aluminum	**13**	1.6	20	µg/L	1	2208982	10/20/22	10/21/22	EPA 200.8	QC-2H, J
Barium	**5.4**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1800**	27	1000	"	"	2208985	10/20/22	10/20/22	EPA 200.7	
Iron	**150**	9.1	100	"	"	"	"	"	"	
Magnesium	**200**	21	1000	"	"	"	"	"	"	J
Manganese	**12**	0.050	2.0	"	"	2208982	10/20/22	10/21/22	EPA 200.8	
Potassium	**240**	61	1000	"	"	2208985	10/20/22	10/20/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2208982	10/20/22	10/21/22	EPA 200.8	
Sodium	**960**	34	1000	"	"	2208985	10/20/22	10/20/22	EPA 200.7	J
R-IS-4-GC-FB (22J1042-02) Water Sampled: 10/19/22 10:00 Received: 10/19/22 16:10										
Aluminum	ND	1.6	20	µg/L	1	2208982	10/20/22	10/21/22	EPA 200.8	QC-2H
Barium	ND	0.14	5.0	"	"	"	"	"	"	
Calcium	ND	27	1000	"	"	2208985	10/20/22	10/20/22	EPA 200.7	
Iron	ND	9.1	100	"	"	"	"	"	"	
Magnesium	ND	21	1000	"	"	"	"	"	"	
Manganese	**0.33**	0.050	2.0	"	"	2208982	10/20/22	10/21/22	EPA 200.8	J
Potassium	ND	61	1000	"	"	2208985	10/20/22	10/20/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2208982	10/20/22	10/21/22	EPA 200.8	
Sodium	**65**	34	1000	"	"	2208985	10/20/22	10/20/22	EPA 200.7	J
R-IS-20-BC (22J1042-03) Water Sampled: 10/19/22 12:30 Received: 10/19/22 16:10										
Aluminum	**9.0**	1.6	20	µg/L	1	2208982	10/20/22	10/21/22	EPA 200.8	QC-2H, J
Barium	**13**	0.14	5.0	"	"	"	"	"	"	
Calcium	**2300**	27	1000	"	"	2208985	10/20/22	10/20/22	EPA 200.7	
Iron	**33**	9.1	100	"	"	"	"	"	"	J
Magnesium	**790**	21	1000	"	"	"	"	"	"	J
Manganese	**7.1**	0.050	2.0	"	"	2208982	10/20/22	10/21/22	EPA 200.8	
Potassium	**430**	61	1000	"	"	2208985	10/20/22	10/20/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2208982	10/20/22	10/21/22	EPA 200.8	
Sodium	**1700**	34	1000	"	"	2208985	10/20/22	10/20/22	EPA 200.7	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1042
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-20-BC-B (22J1042-04) Water Sampled: 10/19/22 13:00 Received: 10/19/22 16:10										
Aluminum	**21**	1.6	20	µg/L	1	2208982	10/20/22	10/24/22	EPA 200.8	
Barium	**11**	0.14	5.0	"	"	"	"	10/21/22	"	
Calcium	**2000**	27	1000	"	"	2208985	10/20/22	10/20/22	EPA 200.7	
Iron	**74**	9.1	100	"	"	"	"	"	"	J
Magnesium	**570**	21	1000	"	"	"	"	"	"	J
Manganese	**30**	0.050	2.0	"	"	2208982	10/20/22	10/21/22	EPA 200.8	
Potassium	**310**	61	1000	"	"	2208985	10/20/22	10/20/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2208982	10/20/22	10/21/22	EPA 200.8	
Sodium	**1400**	34	1000	"	"	2208985	10/20/22	10/20/22	EPA 200.7	
R-IS-20-BC-EB (22J1042-05) Water Sampled: 10/19/22 14:00 Received: 10/19/22 16:10										
Aluminum	**1.8**	1.6	20	µg/L	1	2208982	10/20/22	10/21/22	EPA 200.8	QC-2H, J
Barium	ND	0.14	5.0	"	"	"	"	"	"	
Calcium	ND	27	1000	"	"	2208985	10/20/22	10/20/22	EPA 200.7	
Iron	ND	9.1	100	"	"	"	"	"	"	
Magnesium	ND	21	1000	"	"	"	"	"	"	
Manganese	**0.47**	0.050	2.0	"	"	2208982	10/20/22	10/21/22	EPA 200.8	J
Potassium	ND	61	1000	"	"	2208985	10/20/22	10/20/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2208982	10/20/22	10/21/22	EPA 200.8	
Sodium	ND	34	1000	"	"	2208985	10/20/22	10/20/22	EPA 200.7	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22J1042**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-4-GC (22J1042-01) Water Sampled: 10/19/22 09:30 Received: 10/19/22 16:10										
Aluminum	**4.5**	0.52	20	µg/L	1	2209110	10/24/22	10/24/22	EPA 200.8	J
Iron	**9.5**	6.8	100	"	"	2208998	10/20/22	10/20/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2209110	10/24/22	10/24/22	EPA 200.8	
R-IS-4-GC-FB (22J1042-02) Water Sampled: 10/19/22 10:00 Received: 10/19/22 16:10										
Aluminum	**1.2**	0.52	20	µg/L	1	2209110	10/24/22	10/24/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2208998	10/20/22	10/20/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2209110	10/24/22	10/24/22	EPA 200.8	
R-IS-20-BC (22J1042-03) Water Sampled: 10/19/22 12:30 Received: 10/19/22 16:10										
Aluminum	**3.1**	0.52	20	µg/L	1	2209110	10/24/22	10/24/22	EPA 200.8	J
Iron	**7.2**	6.8	100	"	"	2208998	10/20/22	10/20/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2209110	10/24/22	10/24/22	EPA 200.8	
R-IS-20-BC-B (22J1042-04) Water Sampled: 10/19/22 13:00 Received: 10/19/22 16:10										
Aluminum	**21**	0.52	20	µg/L	1	2209110	10/24/22	10/24/22	EPA 200.8	
Iron	**6.9**	6.8	100	"	"	2208998	10/20/22	10/20/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2209110	10/24/22	10/24/22	EPA 200.8	
R-IS-20-BC-EB (22J1042-05) Water Sampled: 10/19/22 14:00 Received: 10/19/22 16:10										
Aluminum	**15**	0.52	20	µg/L	1	2209110	10/24/22	10/24/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2208998	10/20/22	10/20/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2209110	10/24/22	10/24/22	EPA 200.8	

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22J1042
COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-4-GC (22J1042-01) Water Sampled: 10/19/22 09:30 Received: 10/19/22 16:10										
Gasoline	ND	10	50	µg/L	1	2209106	10/24/22	10/24/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*77 %*	*65-135*		"	"	"	"	
R-IS-4-GC-FB (22J1042-02) Water Sampled: 10/19/22 10:00 Received: 10/19/22 16:10										
Gasoline	ND	10	50	µg/L	1	2209106	10/24/22	10/24/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*76 %*	*65-135*		"	"	"	"	
R-IS-20-BC (22J1042-03) Water Sampled: 10/19/22 12:30 Received: 10/19/22 16:10										
Gasoline	ND	10	50	µg/L	1	2209106	10/24/22	10/24/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*77 %*	*65-135*		"	"	"	"	
R-IS-20-BC-B (22J1042-04) Water Sampled: 10/19/22 13:00 Received: 10/19/22 16:10										
Gasoline	ND	10	50	µg/L	1	2209106	10/24/22	10/24/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*79 %*	*65-135*		"	"	"	"	
R-IS-20-BC-EB (22J1042-05) Water Sampled: 10/19/22 14:00 Received: 10/19/22 16:10										
Gasoline	ND	10	50	µg/L	1	2209106	10/24/22	10/24/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*73 %*	*65-135*		"	"	"	"	

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CLS Work Order #: 22J1042
COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-4-GC (22J1042-01) Water Sampled: 10/19/22 09:30 Received: 10/19/22 16:10										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209123	10/21/22	10/21/22	EPA 8260B	
Surrogate: Toluene-d8			*98 %*		*72-125*		"	"	"	"
R-IS-4-GC-FB (22J1042-02) Water Sampled: 10/19/22 10:00 Received: 10/19/22 16:10										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209123	10/21/22	10/21/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"
R-IS-20-BC (22J1042-03) Water Sampled: 10/19/22 12:30 Received: 10/19/22 16:10										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209123	10/21/22	10/21/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"
R-IS-20-BC-B (22J1042-04) Water Sampled: 10/19/22 13:00 Received: 10/19/22 16:10										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209123	10/21/22	10/21/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"
R-IS-20-BC-EB (22J1042-05) Water Sampled: 10/19/22 14:00 Received: 10/19/22 16:10										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209123	10/21/22	10/21/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"

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2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1042
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208964 - Solvent Extract											
Blank (2208964-BLK1)					Prepared: 10/19/22 Analyzed: 10/20/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2208964-BS1)					Prepared: 10/19/22 Analyzed: 10/20/22						
Hexane Extractable Material (HEM, Oil & Grease)	38.8	1.0	5.0	mg/L	40.0		97	78-114			
LCS Dup (2208964-BSD1)					Prepared: 10/19/22 Analyzed: 10/20/22						
Hexane Extractable Material (HEM, Oil & Grease)	38.1	1.0	5.0	mg/L	40.0		95	78-114	2	18	
Batch 2208976 - General Prep											
Blank (2208976-BLK1)					Prepared & Analyzed: 10/20/22						
Sulfate as SO4	ND	0.038	0.50	mg/L							
Chloride	0.205	0.026	0.50	"							J
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2208976-BS1)					Prepared & Analyzed: 10/20/22						
Sulfate as SO4	5.41	0.038	0.50	mg/L	5.00		108	80-120			
Chloride	5.38	0.026	0.50	"	5.00		108	80-120			
Nitrate/Nitrite as N	4.65	0.055	0.40	"	4.00		116	80-120			
LCS Dup (2208976-BSD1)					Prepared & Analyzed: 10/20/22						
Sulfate as SO4	5.22	0.038	0.50	mg/L	5.00		104	80-120	3	20	
Chloride	5.17	0.026	0.50	"	5.00		103	80-120	4	20	
Nitrate/Nitrite as N	4.49	0.055	0.40	"	4.00		112	80-120	4	20	
Matrix Spike (2208976-MS1)			**Source: 22J1042-01**		Prepared: 10/20/22 Analyzed: 10/21/22						
Sulfate as SO4	5.73	0.038	0.50	mg/L	5.00	0.615	102	80-120			
Chloride	5.60	0.026	0.50	"	5.00	0.602	100	80-120			
Nitrate/Nitrite as N	4.40	0.055	0.40	"	4.00	ND	110	80-120			

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208976 - General Prep											
Matrix Spike Dup (2208976-MSD1)			**Source: 22J1042-01**		Prepared: 10/20/22 Analyzed: 10/21/22						
Sulfate as SO4	5.67	0.038	0.50	mg/L	5.00	0.615	101	80-120	1	20	
Chloride	5.50	0.026	0.50	"	5.00	0.602	98	80-120	2	20	
Nitrate/Nitrite as N	4.32	0.055	0.40	"	4.00	ND	108	80-120	2	20	
Batch 2208987 - General Preparation											
Blank (2208987-BLK1)					Prepared & Analyzed: 10/20/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							
LCS (2208987-BS1)					Prepared & Analyzed: 10/20/22						
Orthophosphate as PO4	0.899	0.0051	0.15	mg/L	0.918		98	80-120			
LCS Dup (2208987-BSD1)					Prepared & Analyzed: 10/20/22						
Orthophosphate as PO4	1.09	0.0051	0.15	mg/L	0.918		118	80-120	19	20	
Matrix Spike (2208987-MS1)			**Source: 22J0952-01**		Prepared & Analyzed: 10/20/22						
Orthophosphate as PO4	0.850	0.0051	0.15	mg/L	0.918	ND	93	75-125			
Matrix Spike Dup (2208987-MSD1)			**Source: 22J0952-01**		Prepared & Analyzed: 10/20/22						
Orthophosphate as PO4	0.920	0.0051	0.15	mg/L	0.918	ND	100	75-125	8	25	
Batch 2208994 - General Prep											
Blank (2208994-BLK1)					Prepared: 10/20/22 Analyzed: 10/21/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208994 - General Prep											
LCS (2208994-BS1)					Prepared: 10/20/22 Analyzed: 10/21/22						
Total Organic Carbon	10.6	0.54	1.0	mg/L	10.0		106	75-125			
LCS Dup (2208994-BSD1)					Prepared: 10/20/22 Analyzed: 10/21/22						
Total Organic Carbon	10.7	0.54	1.0	mg/L	10.0		107	75-125	0.8	25	
Matrix Spike (2208994-MS1)			**Source: 22J0894-02**		Prepared: 10/20/22 Analyzed: 10/21/22						
Total Organic Carbon	13.4	0.54	1.0	mg/L	10.0	2.20	112	75-125			
Matrix Spike Dup (2208994-MSD1)			**Source: 22J0894-02**		Prepared: 10/20/22 Analyzed: 10/21/22						
Total Organic Carbon	12.9	0.54	1.0	mg/L	10.0	2.20	107	75-125	4	25	
Batch 2208998 - EPA 200 No Digestion											
Blank (2208998-BLK1)					Prepared & Analyzed: 10/20/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2208998-BS1)					Prepared & Analyzed: 10/20/22						
Total Hardness as CaCO3	32.2	0.19	1.0	mg/L	33.1		97	85-115			
Matrix Spike (2208998-MS1)			**Source: 22J0933-04**		Prepared & Analyzed: 10/20/22						
Total Hardness as CaCO3	32.8	0.19	1.0	mg/L	33.1	1.15	96	70-130			
Matrix Spike (2208998-MS2)			**Source: 22J1040-06**		Prepared & Analyzed: 10/20/22						
Total Hardness as CaCO3	297	0.19	1.0	mg/L	33.1	266	93	70-130			
Batch 2209001 - General Preparation											
Blank (2209001-BLK1)					Prepared & Analyzed: 10/20/22						
Ammonia as N	ND	0.025	0.10	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209001 - General Preparation											
LCS (2209001-BS1)					Prepared & Analyzed: 10/20/22						
Ammonia as N	0.506	0.025	0.10	mg/L	0.500		101	80-120			
LCS Dup (2209001-BSD1)					Prepared & Analyzed: 10/20/22						
Ammonia as N	0.516	0.025	0.10	mg/L	0.500		103	80-120	2	25	
Matrix Spike (2209001-MS1)			**Source: 22J0953-01**		Prepared & Analyzed: 10/20/22						
Ammonia as N	0.548	0.025	0.10	mg/L	0.500	0.0370	102	75-125			
Matrix Spike Dup (2209001-MSD1)			**Source: 22J0953-01**		Prepared & Analyzed: 10/20/22						
Ammonia as N	0.549	0.025	0.10	mg/L	0.500	0.0370	102	75-125	0.2	25	
Batch 2209002 - General Preparation											
Blank (2209002-BLK1)					Prepared & Analyzed: 10/20/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Duplicate (2209002-DUP1)			**Source: 22J0894-01**		Prepared & Analyzed: 10/20/22						
Total Alkalinity	7.80	1.0	5.0	mg/L		7.60			3	20	
Bicarbonate as CaCO3	7.80	0.50	5.0	"		7.60			3	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Batch 2209054 - General Preparation											
Blank (2209054-BLK1)					Prepared & Analyzed: 10/21/22						
Total Suspended Solids	ND	2.0	5.0	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209054 - General Preparation											
Duplicate (2209054-DUP1)			**Source: 22J1042-01**		Prepared & Analyzed: 10/21/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	
Batch 2209060 - General Preparation											
Blank (2209060-BLK1)					Prepared & Analyzed: 10/21/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2209060-BS1)					Prepared & Analyzed: 10/21/22						
Total Kjeldahl Nitrogen	0.561	0.040	0.20	mg/L	0.500		112	80-120			
LCS Dup (2209060-BSD1)					Prepared & Analyzed: 10/21/22						
Total Kjeldahl Nitrogen	0.559	0.040	0.20	mg/L	0.500		112	80-120	0.4	20	
Matrix Spike (2209060-MS1)			**Source: 22J1067-01**		Prepared & Analyzed: 10/21/22						
Total Kjeldahl Nitrogen	0.680	0.040	0.20	mg/L	0.500	0.276	81	75-125			
Matrix Spike Dup (2209060-MSD1)			**Source: 22J1067-01**		Prepared & Analyzed: 10/21/22						
Total Kjeldahl Nitrogen	0.678	0.040	0.20	mg/L	0.500	0.276	80	75-125	0.3	25	
Batch 2209061 - General Preparation											
Blank (2209061-BLK1)					Prepared: 10/21/22 Analyzed: 10/24/22						
Total Dissolved Solids	ND	5.0	10	mg/L							
Duplicate (2209061-DUP1)			**Source: 22J1020-01**		Prepared: 10/21/22 Analyzed: 10/24/22						
Total Dissolved Solids	249	5.0	10	mg/L		247			0.8	20	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209082 - General Preparation											
Blank (2209082-BLK1)					Prepared & Analyzed: 10/24/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2209082-BS1)					Prepared & Analyzed: 10/24/22						
Total Phosphorus as P	0.311	0.023	0.050	mg/L	0.300		104	80-120			
LCS Dup (2209082-BSD1)					Prepared & Analyzed: 10/24/22						
Total Phosphorus as P	0.295	0.023	0.050	mg/L	0.300		98	80-120	5	25	
Matrix Spike (2209082-MS1)			**Source: 22J0952-01**		Prepared & Analyzed: 10/24/22						
Total Phosphorus as P	0.296	0.023	0.050	mg/L	0.300	ND	99	75-125			
Matrix Spike Dup (2209082-MSD1)			**Source: 22J0952-01**		Prepared & Analyzed: 10/24/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L	0.300	ND		75-125		30	QM-7
Batch 2209097 - General Preparation											
Blank (2209097-BLK1)					Prepared & Analyzed: 10/24/22						
Cyanide (total)	ND	0.0012	0.0050	mg/L							
LCS (2209097-BS1)					Prepared & Analyzed: 10/24/22						
Cyanide (total)	0.0837	0.0012	0.0050	mg/L	0.100		84	75-125			
LCS Dup (2209097-BSD1)					Prepared & Analyzed: 10/24/22						
Cyanide (total)	0.0866	0.0012	0.0050	mg/L	0.100		87	75-125	3	25	
Matrix Spike (2209097-MS1)			**Source: 22J0952-01**		Prepared & Analyzed: 10/24/22						
Cyanide (total)	0.0929	0.0012	0.0050	mg/L	0.100	0.00380	89	75-125			

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209097 - General Preparation											
Matrix Spike Dup (2209097-MSD1)			**Source: 22J0952-01**		Prepared & Analyzed: 10/24/22						
Cyanide (total)	0.0929	0.0012	0.0050	mg/L	0.100	0.00380	89	75-125	0	25	

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Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208997 - EPA 3510B GCNV											
Blank (2208997-BLK1)					Prepared: 10/20/22 Analyzed: 10/21/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Surrogate: o-Terphenyl	*0.0263*			*"*	*0.0250*		*105*	*65-135*			
LCS (2208997-BS1)					Prepared: 10/20/22 Analyzed: 10/21/22						
Diesel	2.94	0.0021	0.050	mg/L	2.50		117	65-135			
Surrogate: o-Terphenyl	*0.0275*			*"*	*0.0250*		*110*	*65-135*			
LCS Dup (2208997-BSD1)					Prepared: 10/20/22 Analyzed: 10/21/22						
Diesel	2.42	0.0021	0.050	mg/L	2.50		97	65-135	19	30	
Surrogate: o-Terphenyl	*0.0228*			*"*	*0.0250*		*91*	*65-135*			
Matrix Spike (2208997-MS1)			**Source: 22J0973-01**		Prepared: 10/20/22 Analyzed: 10/21/22						
Diesel	2.66	0.0021	0.050	mg/L	2.50	ND	107	46-137			
Surrogate: o-Terphenyl	*0.0222*			*"*	*0.0250*		*89*	*65-135*			
Matrix Spike Dup (2208997-MSD1)			**Source: 22J0973-01**		Prepared: 10/20/22 Analyzed: 10/21/22						
Diesel	2.70	0.0021	0.050	mg/L	2.50	ND	108	46-137	1	30	
Surrogate: o-Terphenyl	*0.0235*			*"*	*0.0250*		*94*	*65-135*			

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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208982 - EPA 200 Series											
Blank (2208982-BLK1)					Prepared: 10/20/22 Analyzed: 10/21/22						
Aluminum	ND	1.6	20	µg/L							
Arsenic	ND	0.45	2.0	"							
Barium	ND	0.14	5.0	"							
Chromium	0.328	0.14	1.0	"							J
Copper	ND	0.090	2.0	"							
Manganese	0.665	0.050	2.0	"							J
Nickel	ND	0.13	2.0	"							
Silver	ND	0.070	0.50	"							
LCS (2208982-BS1)					Prepared: 10/20/22 Analyzed: 10/21/22						
Aluminum	516	1.6	20	µg/L	500		103	85-115			
Arsenic	99.3	0.45	2.0	"	100		99	85-115			
Barium	103	0.14	5.0	"	100		103	85-115			
Chromium	103	0.14	1.0	"	100		103	85-115			
Copper	101	0.090	2.0	"	100		101	85-115			
Manganese	102	0.050	2.0	"	100		102	85-115			
Nickel	99.0	0.13	2.0	"	100		99	85-115			
Silver	96.4	0.070	0.50	"	100		96	85-115			
Matrix Spike (2208982-MS1)			**Source: 22J0944-01**		Prepared: 10/20/22 Analyzed: 10/21/22						
Aluminum	641	1.6	20	µg/L	500	98.2	109	70-130			
Arsenic	686	0.45	2.0	"	100	570	115	70-130			
Barium	112	0.14	5.0	"	100	5.27	106	70-130			
Chromium	104	0.14	1.0	"	100	1.34	103	70-130			
Copper	295	0.090	2.0	"	100	187	108	70-130			
Manganese	112	0.050	2.0	"	100	9.87	102	70-130			
Nickel	101	0.13	2.0	"	100	2.00	99	70-130			
Silver	99.2	0.070	0.50	"	100	0.0770	99	70-130			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208982 - EPA 200 Series											
Matrix Spike (2208982-MS2)			**Source: 22J1042-01**		Prepared: 10/20/22 Analyzed: 10/21/22						
Aluminum	553	1.6	20	µg/L	500	12.8	108	70-130			
Arsenic	97.7	0.45	2.0	"	100	0.608	97	70-130			
Barium	111	0.14	5.0	"	100	5.37	105	70-130			
Chromium	102	0.14	1.0	"	100	0.382	102	70-130			
Copper	98.5	0.090	2.0	"	100	ND	98	70-130			
Manganese	113	0.050	2.0	"	100	12.1	100	70-130			
Nickel	96.6	0.13	2.0	"	100	ND	97	70-130			
Silver	97.8	0.070	0.50	"	100	ND	98	70-130			
Batch 2208985 - EPA 200 Series											
Blank (2208985-BLK1)					Prepared & Analyzed: 10/20/22						
Calcium	ND	27	1000	µg/L							
Iron	ND	9.1	100	"							
Magnesium	ND	21	1000	"							
Potassium	ND	61	1000	"							
Sodium	48.3	34	1000	"							J
LCS (2208985-BS1)					Prepared & Analyzed: 10/20/22						
Calcium	4930	27	1000	µg/L	5000		99	85-115			
Iron	489	9.1	100	"	500		98	85-115			
Magnesium	4890	21	1000	"	5000		98	85-115			
Potassium	4820	61	1000	"	5000		96	85-115			
Sodium	4880	34	1000	"	5000		98	85-115			
Matrix Spike (2208985-MS1)			**Source: 22J0933-03**		Prepared & Analyzed: 10/20/22						
Calcium	5110	27	1000	µg/L	5000	131	100	70-130			
Iron	655	9.1	100	"	500	148	101	70-130			
Magnesium	4890	21	1000	"	5000	36.9	97	70-130			
Potassium	8440	61	1000	"	5000	3510	99	70-130			
Sodium	55200	34	1000	"	5000	50900	84	70-130			

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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208985 - EPA 200 Series											
Matrix Spike (2208985-MS2)			**Source: 22J1042-05**		Prepared & Analyzed: 10/20/22						
Calcium	5090	27	1000	µg/L	5000	ND	102	70-130			
Iron	506	9.1	100	"	500	ND	101	70-130			
Magnesium	5020	21	1000	"	5000	ND	100	70-130			
Potassium	5060	61	1000	"	5000	ND	101	70-130			
Sodium	5070	34	1000	"	5000	ND	101	70-130			

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CLS Work Order #: 22J1042
COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2208998 - EPA 200 No Digestion											
Blank (2208998-BLK1)					Prepared & Analyzed: 10/20/22						
Iron	ND	6.8	100	µg/L							
LCS (2208998-BS1)					Prepared & Analyzed: 10/20/22						
Iron	488	6.8	100	µg/L	500		98	85-115			
Matrix Spike (2208998-MS1)			**Source: 22J0933-04**		Prepared & Analyzed: 10/20/22						
Iron	565	6.8	100	µg/L	500	58.2	101	70-130			
Matrix Spike (2208998-MS2)			**Source: 22J1040-06**		Prepared & Analyzed: 10/20/22						
Iron	507	6.8	100	µg/L	500	20.7	97	70-130			
Batch 2209110 - EPA 200 No Digestion											
Blank (2209110-BLK1)					Prepared & Analyzed: 10/24/22						
Aluminum	1.65	0.52	20	µg/L							J
Silver	ND	0.15	0.50	"							
LCS (2209110-BS1)					Prepared & Analyzed: 10/24/22						
Aluminum	460	0.52	20	µg/L	500		92	85-115			
Silver	101	0.15	0.50	"	100		101	85-115			
Matrix Spike (2209110-MS1)			**Source: 22J0952-01**		Prepared & Analyzed: 10/24/22						
Aluminum	490	0.52	20	µg/L	500	8.61	96	70-130			
Silver	101	0.15	0.50	"	100	ND	101	70-130			
Matrix Spike (2209110-MS2)			**Source: 22J1159-01**		Prepared & Analyzed: 10/24/22						
Aluminum	507	0.52	20	µg/L	500	3.90	101	70-130			
Silver	79.9	0.15	0.50	"	100	ND	80	70-130			

10/26/22 14:53

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1042
COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209106 - EPA 5030 Water GC											
Blank (2209106-BLK1)					Prepared & Analyzed: 10/24/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*16.2*			"	*20.0*		*81*	*65-135*			
LCS (2209106-BS1)					Prepared & Analyzed: 10/24/22						
Gasoline	539	10	50	µg/L	500		108	70-130			
Surrogate: o-Chlorotoluene (Gas)	*14.9*			"	*20.0*		*74*	*65-135*			
LCS Dup (2209106-BSD1)					Prepared & Analyzed: 10/24/22						
Gasoline	543	10	50	µg/L	500		109	70-130	0.7	30	
Surrogate: o-Chlorotoluene (Gas)	*14.6*			"	*20.0*		*73*	*65-135*			
Matrix Spike (2209106-MS1)			**Source: 22J1042-05**		Prepared & Analyzed: 10/24/22						
Gasoline	482	10	50	µg/L	500	ND	96	68-132			
Surrogate: o-Chlorotoluene (Gas)	*16.1*			"	*20.0*		*81*	*65-135*			
Matrix Spike Dup (2209106-MSD1)			**Source: 22J1042-05**		Prepared & Analyzed: 10/24/22						
Gasoline	520	10	50	µg/L	500	ND	104	68-132	8	32	
Surrogate: o-Chlorotoluene (Gas)	*15.3*			"	*20.0*		*76*	*65-135*			

10/26/22 14:53

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22J1042**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209123 - EPA 3510B GCMS											
Blank (2209123-BLK1)					Prepared & Analyzed: 10/21/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Surrogate: Toluene-d8	*9.88*			"	*10.0*		*99*	*72-125*			
LCS (2209123-BS1)					Prepared & Analyzed: 10/21/22						
Methyl tert-butyl ether	19.6	0.095	0.50	µg/L	20.0		98	52-130			
Surrogate: Toluene-d8	*10.5*			"	*10.0*		*105*	*72-125*			
LCS Dup (2209123-BSD1)					Prepared & Analyzed: 10/21/22						
Methyl tert-butyl ether	19.4	0.095	0.50	µg/L	20.0		97	52-130	1	30	
Surrogate: Toluene-d8	*10.4*			"	*10.0*		*104*	*72-125*			
Matrix Spike (2209123-MS1)			**Source: 22J0952-02**		Prepared: 10/21/22 Analyzed: 10/23/22						
Methyl tert-butyl ether	22.1	0.095	0.50	µg/L	20.0	ND	110	52-140			
Surrogate: Toluene-d8	*10.6*			"	*10.0*		*106*	*72-125*			
Matrix Spike Dup (2209123-MSD1)			**Source: 22J0952-02**		Prepared: 10/21/22 Analyzed: 10/23/22						
Methyl tert-butyl ether	17.9	0.095	0.50	µg/L	20.0	ND	90	52-140	21	30	
Surrogate: Toluene-d8	*10.2*			"	*10.0*		*102*	*72-125*			

10/26/22 14:53

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22J1042**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
QC-2H	The recovery of one CCV was greater than the acceptance limit. However, all analytes in the associated samples were ND; therefore a reanalysis was not performed.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22J1042 (__1__ of __1__)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By
ERA , JEN

Job Description
Monitor water chemistry in UARP reaches.

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[X] **CLS** (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] **OTHER**

GEOTRACKER

EDF REPORT YES [X] NO [ ]

GLOBAL ID:

FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES ▼	ANALYSIS REQUESTED: Cl, SO4	TSS, TDS, Hardness, Alkalinity, NO2-N+NO3-N, Diss Metals	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS: 1	2	3	5	SPECIAL INSTRUCTIONS
10/19/22	0930	R-IS-4-GC		Surface water			6	X	X	X	X	X	X	X	X				X	
10/19/22	1000	R-IS-4-GC-FB		Surface water			6	X	X	X	X	X	X	X	X				X	
10/19/22	1230	R-IS-20-BC		Surface water			6	X	X	X	X	X	X	X	X				X	
10/19/22	1300	R-IS-20-BC-B		Surface water			6	X	X	X	X	X	X	X	X				X	
10/19/22	1400	R-IS-20-BC-EB		Surface water			6	X	X	X	X	X	X	X	X				X	
				Surface water			6												X	
				Surface water			6												X	INVOICE TO:
				Surface water			6												X	Stillwater Sciences
				Surface water			6												X	Same as above
				Surface water			6												X	
				Surface water			6												X	**Project No. 750.10 Task 0620.01**
				Surface water			6												X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Jakob Wardall Stillwater	10/19 16:10		

RECEIVED AT LAB BY: **DATE/TIME:** 10/19/22 1610 **CONDITIONS/COMMENTS:** 1.4/0.7

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER _____ **AIR BILL #** _____

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02

Lab No: 22J1110
Reported: 11/17/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22J1110, received on 10/26/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: R-IS-7-UVR
Matrix / Type: Surface Water (Grab)
Lab ID: 22J1110-01
Sampled: 10/25/22 08:40
Received: 10/26/22 09:34

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Copper	ug/l	0.18		0.04	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Mercury	ng/l	0.42	J	0.22	0.50	EPA 1631E	11/06/22	11/06/22	B2K0914 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	11/16/22	11/15/22	B2K1110 / EDM
Nickel	ug/l	0.09	J	0.02	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/09/22	11/07/22	B2K0884 / EDM
Zinc	ug/l	ND		0.12	0.50	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Copper	ug/l	0.16		0.04	0.10	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Nickel	ug/l	0.07	J	0.02	0.10	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/09/22	11/09/22	B2K0999 / EDM
Zinc	ug/l	ND		0.12	0.50	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM

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Analytical Report

Description: R-IS-7-UVR-B
Matrix / Type: Surface Water (Grab)
Lab ID: 22J1110-02
Sampled: 10/25/22 08:55
Received: 10/26/22 09:34

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Copper	ug/l	0.24		0.04	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Lead	ug/l	0.057		0.007	0.050	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Mercury	ng/l	5.90		0.22	0.50	EPA 1631E	11/06/22	11/06/22	B2K0914 / DJC
Methyl Mercury as Mercury	ng/l	0.025	J	0.017	0.050	EPA 1630**	11/16/22	11/15/22	B2K1110 / EDM
Nickel	ug/l	0.14		0.02	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/09/22	11/07/22	B2K0884 / EDM
Zinc	ug/l	1.00		0.12	0.50	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Copper	ug/l	0.14		0.04	0.10	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Nickel	ug/l	0.09	J	0.02	0.10	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/09/22	11/09/22	B2K0999 / EDM
Zinc	ug/l	0.52		0.12	0.50	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM

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Analytical Report

Description: R-IS-8-UVR
Matrix / Type: Surface Water (Grab)
Lab ID: 22J1110-03
Sampled: 10/25/22 11:10
Received: 10/26/22 09:34

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Copper	ug/l	0.18		0.04	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Mercury	ng/l	0.51		0.22	0.50	EPA 1631E	11/06/22	11/06/22	B2K0914 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	11/16/22	11/15/22	B2K1110 / EDM
Nickel	ug/l	0.09	J	0.02	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/09/22	11/07/22	B2K0884 / EDM
Zinc	ug/l	0.13	J	0.12	0.50	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Copper	ug/l	0.16		0.04	0.10	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Nickel	ug/l	0.07	J	0.02	0.10	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/09/22	11/09/22	B2K0999 / EDM
Zinc	ug/l	ND		0.12	0.50	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM

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Analytical Report

Description: R-IS-6-UVR-B
Matrix / Type: Surface Water (Grab)
Lab ID: 22J1110-04
Sampled: 10/25/22 09:45
Received: 10/26/22 09:34

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Copper	ug/l	0.16		0.04	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Mercury	ng/l	0.57		0.22	0.50	EPA 1631E	11/06/22	11/06/22	B2K0914 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	11/16/22	11/15/22	B2K1110 / EDM
Nickel	ug/l	0.10		0.02	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/09/22	11/07/22	B2K0884 / EDM
Zinc	ug/l	0.29	J	0.12	0.50	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Copper	ug/l	0.15		0.04	0.10	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Nickel	ug/l	0.09	J	0.02	0.10	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/09/22	11/09/22	B2K0999 / EDM
Zinc	ug/l	0.36	J	0.12	0.50	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM

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Analytical Report

Description: R-IS-6-UVR
Matrix / Type: Surface Water (Grab)
Lab ID: 22J1110-05
Sampled: 10/25/22 10:00
Received: 10/26/22 09:34

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Copper	ug/l	0.21		0.04	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Mercury	ng/l	0.29	J	0.22	0.50	EPA 1631E	11/06/22	11/06/22	B2K0914 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	11/16/22	11/15/22	B2K1110 / EDM
Nickel	ug/l	0.09	J	0.02	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/09/22	11/07/22	B2K0884 / EDM
Zinc	ug/l	0.46	J	0.12	0.50	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Copper	ug/l	0.15		0.04	0.10	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Nickel	ug/l	0.07	J	0.02	0.10	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/09/22	11/09/22	B2K0999 / EDM
Zinc	ug/l	0.36	J	0.12	0.50	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K0884 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	206	2.0	ug/l	200		103	85-115			
Duplicate	Source: 22J1110-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22J1171-02									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22J1110-01									
Selenium	200	2.0	ug/l	200	ND	99.9	75-125			
Matrix Spike	Source: 22J1171-02									
Selenium	202	2.0	ug/l	200	ND	101	75-125			
Metals - Total - Redding Location	**Batch B2K0914 - BrCl Digestion**									

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K0914 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	10.2	0.50	ng/l	10.0		102	77-123			
Matrix Spike	Source: 22J1110-01									
Mercury	10.9	0.50	ng/l	10.0	0.42	105	71-125			
Matrix Spike	Source: 22J1150-01									
Mercury	11.7	0.50	ng/l	10.0	1.68	101	71-125			
Matrix Spike Dup	Source: 22J1110-01									
Mercury	11.0	0.50	ng/l	10.0	0.42	106	71-125	0.968	24	
Matrix Spike Dup	Source: 22J1150-01									
Mercury	12.2	0.50	ng/l	10.0	1.68	105	71-125	3.63	24	
Metals - Total - Redding Location	**Batch B2K0959 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K0959 - EPA 1638 - Closed Bottle Oven Digestion**									
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.6	50-150			
Cadmium	0.25	0.10	ug/l	0.250		98.3	84-113			
Copper	0.25	0.10	ug/l	0.250		99.3	51-145			
Lead	0.125	0.050	ug/l	0.125		100	72-143			
Nickel	0.25	0.10	ug/l	0.250		99.7	68-134			
Zinc	1.32	0.50	ug/l	1.25		105	46-146			
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.24	0.10	ug/l	0.250		96.3	84-113			
Copper	0.24	0.10	ug/l	0.250		96.2	51-145			
Lead	0.125	0.050	ug/l	0.125		100	72-143			
Nickel	0.24	0.10	ug/l	0.250		95.4	68-134			
Zinc	1.21	0.50	ug/l	1.25		96.5	46-146			
Matrix Spike	Source: 22J1039-01									
Arsenic	2.47	0.50	ug/l	2.50	ND	98.8	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	100	84-113			
Copper	0.69	0.10	ug/l	0.500	0.21	96.1	51-145			
Lead	0.249	0.050	ug/l	0.250	0.009	95.7	72-143			
Nickel	0.57	0.10	ug/l	0.500	0.11	91.5	68-134			
Zinc	2.75	0.50	ug/l	2.50	0.27	99.3	46-146			
Matrix Spike	Source: 22J1110-05									
Arsenic	2.50	0.50	ug/l	2.50	ND	99.8	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.9	84-113			
Copper	0.70	0.10	ug/l	0.500	0.21	98.9	51-145			
Lead	0.256	0.050	ug/l	0.250	ND	102	72-143			
Nickel	0.58	0.10	ug/l	0.500	0.09	97.3	68-134			
Zinc	2.92	0.50	ug/l	2.50	0.46	98.4	46-146			
Matrix Spike Dup	Source: 22J1039-01									
Arsenic	2.55	0.50	ug/l	2.50	ND	102	50-150	3.15	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	100	84-113	0.336	20	
Copper	0.70	0.10	ug/l	0.500	0.21	98.4	51-145	1.63	20	
Lead	0.255	0.050	ug/l	0.250	0.009	98.4	72-143	2.68	20	
Nickel	0.60	0.10	ug/l	0.500	0.11	96.6	68-134	4.41	20	
Zinc	2.75	0.50	ug/l	2.50	0.27	99.4	46-146	0.0748	20	
Matrix Spike Dup	Source: 22J1110-05									
Arsenic	2.52	0.50	ug/l	2.50	ND	101	50-150	0.871	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	96.9	84-113	0.101	20	
Copper	0.68	0.10	ug/l	0.500	0.21	95.4	51-145	2.52	20	
Lead	0.248	0.050	ug/l	0.250	ND	99.3	72-143	3.16	20	
Nickel	0.58	0.10	ug/l	0.500	0.09	97.7	68-134	0.294	20	
Zinc	2.96	0.50	ug/l	2.50	0.46	100	46-146	1.66	20	
Metals - Total - Redding Location	**Batch B2K1110 - EPA 1630 Distillation (Modified)**									
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1110 - EPA 1630 Distillation (Modified)**									
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	1.82	0.050	ng/l	2.00		90.9	67-133			
Matrix Spike	Source: 22J1039-03									
Methyl Mercury as Mercury	1.16	0.050	ng/l	1.00	ND	116	65-135			
Matrix Spike	Source: 22J1171-01									
Methyl Mercury as Mercury	1.16	0.050	ng/l	1.00	ND	116	65-135			
Matrix Spike Dup	Source: 22J1039-03									
Methyl Mercury as Mercury	1.09	0.050	ng/l	1.00	ND	109	65-135	6.26	35	
Matrix Spike Dup	Source: 22J1171-01									
Methyl Mercury as Mercury	1.10	0.050	ng/l	1.00	ND	110	65-135	5.57	35	
Metals - Dissolved - Redding Location	**Batch B2K0999 - EPA 200.8 Diss**									
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	208	2.0	ug/l	200		104	85-115			
Duplicate	Source: 22J1110-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22J1171-04									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22J1110-01									
Selenium	207	2.0	ug/l	200	ND	103	75-125			
Matrix Spike	Source: 22J1171-04									
Selenium	208	2.0	ug/l	200	ND	104	75-125			
Metals - Dissolved - Redding Location	**Batch B2K1056 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2K1056 - EPA 1638 - Dissolved**									
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.28	0.50	ug/l	1.25		102	50-150			
Cadmium	0.24	0.10	ug/l	0.250		97.2	84-113			
Copper	0.25	0.10	ug/l	0.250		99.4	51-145			
Lead	0.127	0.050	ug/l	0.125		102	72-143			
Nickel	0.26	0.10	ug/l	0.250		102	68-134			
Zinc	1.22	0.50	ug/l	1.25		97.9	46-146			
LCS										
Arsenic	1.29	0.50	ug/l	1.25		103	50-150			
Cadmium	0.26	0.10	ug/l	0.250		104	84-113			
Copper	0.27	0.10	ug/l	0.250		106	51-145			
Lead	0.126	0.050	ug/l	0.125		101	72-143			
Nickel	0.26	0.10	ug/l	0.250		106	68-134			
Zinc	1.21	0.50	ug/l	1.25		97.2	46-146			
Matrix Spike	Source: 22J1039-01									
Arsenic	2.64	0.50	ug/l	2.50	ND	105	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.70	0.10	ug/l	0.500	0.19	102	51-145			
Lead	0.247	0.050	ug/l	0.250	ND	98.8	72-143			
Nickel	0.58	0.10	ug/l	0.500	0.07	101	68-134			
Zinc	2.63	0.50	ug/l	2.50	0.16	99.0	46-146			
Matrix Spike	Source: 22J1110-01									
Arsenic	2.66	0.50	ug/l	2.50	ND	106	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	99.1	84-113			
Copper	0.69	0.10	ug/l	0.500	0.16	106	51-145			
Lead	0.254	0.050	ug/l	0.250	ND	102	72-143			
Nickel	0.59	0.10	ug/l	0.500	0.07	105	68-134			
Zinc	2.68	0.50	ug/l	2.50	ND	107	46-146			
Matrix Spike Dup	Source: 22J1039-01									
Arsenic	2.60	0.50	ug/l	2.50	ND	104	50-150	1.41	20	
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113	1.44	20	
Copper	0.69	0.10	ug/l	0.500	0.19	101	51-145	0.659	20	
Lead	0.257	0.050	ug/l	0.250	ND	103	72-143	3.85	20	
Nickel	0.58	0.10	ug/l	0.500	0.07	101	68-134	0.0627	20	
Zinc	2.63	0.50	ug/l	2.50	0.16	98.8	46-146	0.179	20	
Matrix Spike Dup	Source: 22J1110-01									
Arsenic	2.65	0.50	ug/l	2.50	ND	106	50-150	0.376	20	
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113	3.10	20	
Copper	0.69	0.10	ug/l	0.500	0.16	106	51-145	0.350	20	
Lead	0.254	0.050	ug/l	0.250	ND	102	72-143	0.0206	20	
Nickel	0.59	0.10	ug/l	0.500	0.07	104	68-134	1.32	20	
Zinc	2.70	0.50	ug/l	2.50	ND	108	46-146	0.633	20	

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Analytical Report

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	The laboratory does not hold CA-ELAP accreditiation for this analyte or method. Accreditation may not be available from CA-ELAP for this analyte or method.
**	The laboratory holds accreditation for this analyte or method with WA-ECY Lab ID: Lab ID C783. Accreditation is not offered for this method by CA-ELAP
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Accreditations Held:
Redding Location: CA-ELAP - Cert # 1677
Chico Location: CA-ELAP - Cert # 2718

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen
Ricky Jensen, Operations Manager
Pace Analytical Services LLC - Redding CA

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494
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LABORATORY WORK ORDER # 22J1110

PAGE 1 OF 1

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
STILLWATER SCIENCES	SMUD 2022	750.10 1620.02	

MAILING ADDRESS
279 COUSTEAU PLACE, SUITE 400
DAVIS, CA 95618

REPORT TO ☑ Email ☐ Mail Hardcopy
NAME / ATTENTION: EMILY APPLEQUIST
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED
☑ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one) ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☐ Yes ☑ No What Type?

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	ANALYSES REQUESTED: T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	T&D Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	10/25	8:40 AM PM	SW			R·IS·7·LVR		6	Y	X	X	Y	X
2	10/25	8:55 AM PM	"			R·IS·7·LVR·B		6	Y	X	Y	Y	X
3	10/25	11:10 AM PM	"			R·IS·8·LVR		6	Y	X	X	X	X
4	10/25	9:45 AM PM	"			R·IS·6·LVR·B		6	Y	X	X	Y	X
5	10/25	10:00 AM PM	↓			R·IS·6·LVR		6	Y	X	X	Y	X
		AM PM											
		AM PM											
		AM PM											
		AM PM											
		AM PM											

SAMPLED BY: (please print) BH, JW

RELINQUISHED DATE / TIME:

SAMPLING / ANALYSIS COMMENTS
1 per bottles RH 10·25·22(1) Total and Dissolved LL 1638 Metals

☒ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME	SIGNATURE	DATE
BRUCE HITCH		10/25

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY/LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
	10·26·22 0934		10·27·22 0944

For Official Lab Comments Only

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22J1110

SHIPPING INFORMATION

			Yes	No
Walk-In	☐			
Courier	☐			
FedEx	☑	Express	Cooler Present?	☑ ☐
UPS	☐			
Other	☐			

Samples Received By: RH Date: 10·25·22 RH 10·26·22

Samples received on ice? ☑ Yes ☐ No

Samples received the same day collected? ☐ Yes ☑ No

Ice type? ☑ Wet ☐ Blue ☐ Other ____ mostly melted

SAMPLE TEMPERATURES AT RECEIPT Therm. ID (Circle one): Therm-36 Therm-37 Therm-59 (Other) Therm-41

Used Cooler Temp for all samples

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	3.7	-06		-11		-16	
-02	3.7	-07		-12		-17	
-03	3.7	-08		-13		-18	
-04	3.7	-09		-14		-19	
-05	3.7	-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: RH Date: 10·26·22

	Yes	No	NA
Custody seals present?	☐	☐	☑
Samples in proper containers?	☑	☐	
Sample containers damaged?	☐	☑	
Sufficient sample volume for indicated tests?	☑	☐	
Samples received within holding times?	☑	☐	
Are VOA vials free of headspace?	☐	☐	☑
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☑

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☑	☑ RH 10·26·22	☐
Preserved in the lab?	☐	☑	☐

Lab Preservation Date & Time 10·26·22 0953

☐ H2SO4 (ID_____) ☑ HNO3 (ID 2I28023) ☐ NaOH (ID_____)

☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑ By:_____ Meter ID:_____
Are proper preservation lables present?	☑	☐	☐

Preservation checked at Lab? Date & Time 10·26·22 0954 Test Strip (ID 2B24019)

Preservation and Preservation Checks performed by: RH

COMMENTS, DISCREPANCEIS, ANOMALIES

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02

Lab No: 22J1171
Reported: 12/15/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22J1171, received on 10/27/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: R-IS-9-IHR
Matrix / Type: Surface Water (Grab)
Lab ID: 22J1171-01
Sampled: 10/26/22 08:50
Received: 10/27/22 10:21

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Copper	ug/l	0.14		0.04	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Mercury	ng/l	0.31	J	0.22	0.50	EPA 1631E	11/09/22	11/09/22	B2K0997 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	11/16/22	11/15/22	B2K1110 / EDM
Nickel	ug/l	0.04	J	0.02	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/09/22	11/07/22	B2K0884 / EDM
Zinc	ug/l	ND		0.12	0.50	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Copper	ug/l	0.14		0.04	0.10	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Nickel	ug/l	0.03	J	0.02	0.10	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/09/22	11/09/22	B2K0999 / EDM
Zinc	ug/l	0.16	J	0.12	0.50	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM

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Analytical Report

Description: R-IS-9-IHR-B
Matrix / Type: Surface Water (Grab)
Lab ID: 22J1171-02
Sampled: 10/26/22 09:05
Received: 10/27/22 10:21

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Copper	ug/l	0.13		0.04	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Lead	ug/l	0.017	J	0.007	0.050	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Mercury	ng/l	2.24		0.22	0.50	EPA 1631E	11/09/22	11/09/22	B2K0997 / DJC
Methyl Mercury as Mercury	ng/l	0.072		0.017	0.050	EPA 1630**	11/16/22	11/15/22	B2K1110 / EDM
Nickel	ug/l	0.08	J	0.02	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/09/22	11/07/22	B2K0884 / EDM
Zinc	ug/l	0.60		0.12	0.50	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Copper	ug/l	0.09	J	0.04	0.10	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Nickel	ug/l	0.08	J	0.02	0.10	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/09/22	11/09/22	B2K0999 / EDM
Zinc	ug/l	0.77		0.12	0.50	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM

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Analytical Report

Description: R-IS-10-IHR
Matrix / Type: Surface Water (Grab)
Lab ID: 22J1171-03
Sampled: 10/26/22 09:35
Received: 10/27/22 10:21

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Copper	ug/l	0.13		0.04	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Mercury	ng/l	0.28	J	0.22	0.50	EPA 1631E	11/09/22	11/09/22	B2K0997 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	11/16/22	11/15/22	B2K1110 / EDM
Nickel	ug/l	0.06	J	0.02	0.10	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/09/22	11/07/22	B2K0884 / EDM
Zinc	ug/l	1.35		0.12	0.50	EPA 1638**	11/11/22	11/10/22	B2K0959 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Copper	ug/l	0.12		0.04	0.10	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Nickel	ug/l	0.03	J	0.02	0.10	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/09/22	11/09/22	B2K0999 / EDM
Zinc	ug/l	0.14	J	0.12	0.50	EPA 1638**	11/11/22	11/11/22	B2K1056 / EDM

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Analytical Report

Description: R-IS-10-IHR-B
Matrix / Type: Surface Water (Grab)
Lab ID: 22J1171-04
Sampled: 10/26/22 09:50
Received: 10/27/22 10:21

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Copper	ug/l	0.12		0.04	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Mercury	ng/l	0.30	J	0.22	0.50	EPA 1631E	11/09/22	11/09/22	B2K0997 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	11/23/22	11/22/22	B2K1294 / EDM
Nickel	ug/l	0.05	J	0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/09/22	11/07/22	B2K0884 / EDM
Zinc	ug/l	0.25	J	0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Copper	ug/l	0.09	J	0.04	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Nickel	ug/l	0.04	J	0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/09/22	11/09/22	B2K0999 / EDM
Zinc	ug/l	0.28	J	0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm

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Analytical Report

Description: R-IS-11-IHR
Matrix / Type: Surface Water (Grab)
Lab ID: 22J1171-05
Sampled: 10/26/22 10:30
Received: 10/27/22 10:21

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Copper	ug/l	0.13		0.04	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Mercury	ng/l	0.44	J	0.22	0.50	EPA 1631E	11/09/22	11/09/22	B2K0997 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	11/23/22	11/22/22	B2K1294 / EDM
Nickel	ug/l	0.04	J	0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/09/22	11/07/22	B2K0884 / EDM
Zinc	ug/l	0.95		0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Copper	ug/l	0.10		0.04	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Nickel	ug/l	0.04	J	0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/09/22	11/09/22	B2K0999 / EDM
Zinc	ug/l	0.15	J	0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm

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Analytical Report

Description: R-IS-11-IHR-B
Matrix / Type: Surface Water (Grab)
Lab ID: 22J1171-06
Sampled: 10/26/22 10:45
Received: 10/27/22 10:21

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Copper	ug/l	0.12		0.04	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Lead	ug/l	0.008	J	0.007	0.050	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Mercury	ng/l	0.46	J	0.22	0.50	EPA 1631E	11/09/22	11/09/22	B2K0997 / DJC
Methyl Mercury as Mercury	ng/l	0.017	J	0.017	0.050	EPA 1630**	11/23/22	11/22/22	B2K1294 / EDM
Nickel	ug/l	0.05	J	0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/09/22	11/07/22	B2K0884 / EDM
Zinc	ug/l	0.35	J	0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Copper	ug/l	0.11		0.04	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Nickel	ug/l	0.04	J	0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/09/22	11/09/22	B2K0999 / EDM
Zinc	ug/l	0.39	J	0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K0884 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	206	2.0	ug/l	200		103	85-115			
Duplicate	Source: 22J1110-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22J1171-02									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22J1110-01									
Selenium	200	2.0	ug/l	200	ND	99.9	75-125			
Matrix Spike	Source: 22J1171-02									
Selenium	202	2.0	ug/l	200	ND	101	75-125			
Metals - Total - Redding Location	**Batch B2K0959 - EPA 1638 - Closed Bottle Oven Digestion**									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K0959 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.6	50-150			
Cadmium	0.25	0.10	ug/l	0.250		98.3	84-113			
Copper	0.25	0.10	ug/l	0.250		99.3	51-145			
Lead	0.125	0.050	ug/l	0.125		100	72-143			
Nickel	0.25	0.10	ug/l	0.250		99.7	68-134			
Zinc	1.32	0.50	ug/l	1.25		105	46-146			
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.24	0.10	ug/l	0.250		96.3	84-113			
Copper	0.24	0.10	ug/l	0.250		96.2	51-145			
Lead	0.125	0.050	ug/l	0.125		100	72-143			
Nickel	0.24	0.10	ug/l	0.250		95.4	68-134			
Zinc	1.21	0.50	ug/l	1.25		96.5	46-146			
Matrix Spike	Source: 22J1039-01									
Arsenic	2.47	0.50	ug/l	2.50	ND	98.8	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	100	84-113			
Copper	0.69	0.10	ug/l	0.500	0.21	96.1	51-145			
Lead	0.249	0.050	ug/l	0.250	0.009	95.7	72-143			
Nickel	0.57	0.10	ug/l	0.500	0.11	91.5	68-134			
Zinc	2.75	0.50	ug/l	2.50	0.27	99.3	46-146			
Matrix Spike	Source: 22J1110-05									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K0959 - EPA 1638 - Closed Bottle Oven Digestion**									
Arsenic	2.50	0.50	ug/l	2.50	ND	99.8	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.9	84-113			
Copper	0.70	0.10	ug/l	0.500	0.21	98.9	51-145			
Lead	0.256	0.050	ug/l	0.250	ND	102	72-143			
Nickel	0.58	0.10	ug/l	0.500	0.09	97.3	68-134			
Zinc	2.92	0.50	ug/l	2.50	0.46	98.4	46-146			
Matrix Spike Dup	Source: 22J1039-01									
Arsenic	2.55	0.50	ug/l	2.50	ND	102	50-150	3.15	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	100	84-113	0.336	20	
Copper	0.70	0.10	ug/l	0.500	0.21	98.4	51-145	1.63	20	
Lead	0.255	0.050	ug/l	0.250	0.009	98.4	72-143	2.68	20	
Nickel	0.60	0.10	ug/l	0.500	0.11	96.6	68-134	4.41	20	
Zinc	2.75	0.50	ug/l	2.50	0.27	99.4	46-146	0.0748	20	
Matrix Spike Dup	Source: 22J1110-05									
Arsenic	2.52	0.50	ug/l	2.50	ND	101	50-150	0.871	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	96.9	84-113	0.101	20	
Copper	0.68	0.10	ug/l	0.500	0.21	95.4	51-145	2.52	20	
Lead	0.248	0.050	ug/l	0.250	ND	99.3	72-143	3.16	20	
Nickel	0.58	0.10	ug/l	0.500	0.09	97.7	68-134	0.294	20	
Zinc	2.96	0.50	ug/l	2.50	0.46	100	46-146	1.66	20	
Metals - Total - Redding Location	**Batch B2K0997 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	10.4	0.50	ng/l	10.0		104	77-123			
Matrix Spike	Source: 22J1171-01									
Mercury	11.0	0.50	ng/l	10.0	0.31	107	71-125			
Matrix Spike	Source: 22K0109-01									
Mercury	11.9	0.50	ng/l	10.0	2.35	95.2	71-125			
Matrix Spike Dup	Source: 22J1171-01									
Mercury	10.7	0.50	ng/l	10.0	0.31	104	71-125	2.52	24	
Matrix Spike Dup	Source: 22K0109-01									
Mercury	11.8	0.50	ng/l	10.0	2.35	94.2	71-125	0.871	24	
Metals - Total - Redding Location	**Batch B2K1110 - EPA 1630 Distillation (Modified)**									
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1110 - EPA 1630 Distillation (Modified)**									
LCS										
Methyl Mercury as Mercury	1.82	0.050	ng/l	2.00		90.9	67-133			
Matrix Spike	Source: 22J1039-03									
Methyl Mercury as Mercury	1.16	0.050	ng/l	1.00	ND	116	65-135			
Matrix Spike	Source: 22J1171-01									
Methyl Mercury as Mercury	1.16	0.050	ng/l	1.00	ND	116	65-135			
Matrix Spike Dup	Source: 22J1039-03									
Methyl Mercury as Mercury	1.09	0.050	ng/l	1.00	ND	109	65-135	6.26	35	
Matrix Spike Dup	Source: 22J1171-01									
Methyl Mercury as Mercury	1.10	0.050	ng/l	1.00	ND	110	65-135	5.57	35	
Metals - Total - Redding Location	**Batch B2K1294 - EPA 1630 Distillation (Modified)**									
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.17	0.050	ng/l	2.00		108	67-133			
Matrix Spike	Source: 22J1171-04									
Methyl Mercury as Mercury	1.18	0.050	ng/l	1.00	ND	118	65-135			
Matrix Spike	Source: 22K0215-01									
Methyl Mercury as Mercury	1.05	0.050	ng/l	1.00	0.021	102	65-135			
Matrix Spike Dup	Source: 22J1171-04									
Methyl Mercury as Mercury	1.20	0.050	ng/l	1.00	ND	120	65-135	0.983	35	
Matrix Spike Dup	Source: 22K0215-01									
Methyl Mercury as Mercury	1.03	0.050	ng/l	1.00	0.021	100	65-135	2.02	35	
Metals - Total - Redding Location	**Batch B2K1441 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1441 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.19	0.50	ug/l	1.25		95.0	50-150			
Cadmium	0.26	0.10	ug/l	0.250		103	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.124	0.050	ug/l	0.125		98.9	72-143			
Nickel	0.25	0.10	ug/l	0.250		99.6	68-134			
Zinc	1.26	0.50	ug/l	1.25		101	46-146			
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.7	50-150			
Cadmium	0.25	0.10	ug/l	0.250		99.4	84-113			
Copper	0.24	0.10	ug/l	0.250		97.0	51-145			
Lead	0.124	0.050	ug/l	0.125		99.3	72-143			
Nickel	0.26	0.10	ug/l	0.250		104	68-134			
Zinc	1.27	0.50	ug/l	1.25		101	46-146			
Matrix Spike	Source: 22J1171-04									
Arsenic	2.47	0.50	ug/l	2.50	ND	98.8	50-150			
Cadmium	0.49	0.10	ug/l	0.500	ND	97.7	84-113			
Copper	0.61	0.10	ug/l	0.500	0.12	98.0	51-145			
Lead	0.255	0.050	ug/l	0.250	ND	102	72-143			
Nickel	0.53	0.10	ug/l	0.500	0.05	97.1	68-134			
Zinc	2.76	0.50	ug/l	2.50	0.25	100	46-146			
Matrix Spike	Source: 22K0215-03									
Arsenic	2.55	0.50	ug/l	2.50	ND	102	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.66	0.10	ug/l	0.500	0.15	102	51-145			
Lead	0.322	0.050	ug/l	0.250	0.076	98.4	72-143			
Nickel	0.63	0.10	ug/l	0.500	0.13	101	68-134			
Zinc	2.76	0.50	ug/l	2.50	0.30	98.3	46-146			
Matrix Spike Dup	Source: 22J1171-04									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1441 - EPA 1638 - Closed Bottle Oven Digestion**									
Arsenic	2.49	0.50	ug/l	2.50	ND	99.5	50-150	0.698	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	101	84-113	3.14	20	
Copper	0.60	0.10	ug/l	0.500	0.12	97.4	51-145	0.475	20	
Lead	0.246	0.050	ug/l	0.250	ND	98.2	72-143	3.61	20	
Nickel	0.53	0.10	ug/l	0.500	0.05	97.4	68-134	0.248	20	
Zinc	2.71	0.50	ug/l	2.50	0.25	98.1	46-146	2.06	20	
Matrix Spike Dup	Source: 22K0215-03									
Arsenic	2.50	0.50	ug/l	2.50	ND	100	50-150	1.88	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	95.7	84-113	5.00	20	
Copper	0.65	0.10	ug/l	0.500	0.15	100	51-145	1.70	20	
Lead	0.323	0.050	ug/l	0.250	0.076	98.8	72-143	0.292	20	
Nickel	0.63	0.10	ug/l	0.500	0.13	99.8	68-134	0.748	20	
Zinc	2.60	0.50	ug/l	2.50	0.30	91.9	46-146	6.03	20	
Metals - Dissolved - Redding Location	**Batch B2K0999 - EPA 200.8 Diss**									
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	208	2.0	ug/l	200		104	85-115			
Duplicate	Source: 22J1110-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22J1171-04									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22J1110-01									
Selenium	207	2.0	ug/l	200	ND	103	75-125			
Matrix Spike	Source: 22J1171-04									
Selenium	208	2.0	ug/l	200	ND	104	75-125			
Metals - Dissolved - Redding Location	**Batch B2K1056 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2K1056 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.28	0.50	ug/l	1.25		102	50-150			
Cadmium	0.24	0.10	ug/l	0.250		97.2	84-113			
Copper	0.25	0.10	ug/l	0.250		99.4	51-145			
Lead	0.127	0.050	ug/l	0.125		102	72-143			
Nickel	0.26	0.10	ug/l	0.250		102	68-134			
Zinc	1.22	0.50	ug/l	1.25		97.9	46-146			
LCS										
Arsenic	1.29	0.50	ug/l	1.25		103	50-150			
Cadmium	0.26	0.10	ug/l	0.250		104	84-113			
Copper	0.27	0.10	ug/l	0.250		106	51-145			
Lead	0.126	0.050	ug/l	0.125		101	72-143			
Nickel	0.26	0.10	ug/l	0.250		106	68-134			
Zinc	1.21	0.50	ug/l	1.25		97.2	46-146			
Matrix Spike	Source: 22J1039-01									
Arsenic	2.64	0.50	ug/l	2.50	ND	105	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.70	0.10	ug/l	0.500	0.19	102	51-145			
Lead	0.247	0.050	ug/l	0.250	ND	98.8	72-143			
Nickel	0.58	0.10	ug/l	0.500	0.07	101	68-134			
Zinc	2.63	0.50	ug/l	2.50	0.16	99.0	46-146			
Matrix Spike	Source: 22J1110-01									
Arsenic	2.66	0.50	ug/l	2.50	ND	106	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	99.1	84-113			
Copper	0.69	0.10	ug/l	0.500	0.16	106	51-145			
Lead	0.254	0.050	ug/l	0.250	ND	102	72-143			
Nickel	0.59	0.10	ug/l	0.500	0.07	105	68-134			
Zinc	2.68	0.50	ug/l	2.50	ND	107	46-146			
Matrix Spike Dup	Source: 22J1039-01									
Arsenic	2.60	0.50	ug/l	2.50	ND	104	50-150	1.41	20	
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113	1.44	20	
Copper	0.69	0.10	ug/l	0.500	0.19	101	51-145	0.659	20	
Lead	0.257	0.050	ug/l	0.250	ND	103	72-143	3.85	20	
Nickel	0.58	0.10	ug/l	0.500	0.07	101	68-134	0.0627	20	
Zinc	2.63	0.50	ug/l	2.50	0.16	98.8	46-146	0.179	20	
Matrix Spike Dup	Source: 22J1110-01									
Arsenic	2.65	0.50	ug/l	2.50	ND	106	50-150	0.376	20	
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113	3.10	20	
Copper	0.69	0.10	ug/l	0.500	0.16	106	51-145	0.350	20	
Lead	0.254	0.050	ug/l	0.250	ND	102	72-143	0.0206	20	
Nickel	0.59	0.10	ug/l	0.500	0.07	104	68-134	1.32	20	
Zinc	2.70	0.50	ug/l	2.50	ND	108	46-146	0.633	20	
Metals - Dissolved - Redding Location	**Batch B2L1116 - EPA 1638 - Dissolved**									

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2L1116 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	0.12	0.50	ug/l							QB-05, J
Cadmium	0.02	0.10	ug/l							QB-05, J
Copper	ND	0.10	ug/l							
Lead	0.014	0.050	ug/l							QB-05, J
Nickel	0.02	0.10	ug/l							QB-05, J
Zinc	0.16	0.50	ug/l							QB-05, J
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.21	0.50	ug/l	1.25		97.2	50-150			
Cadmium	0.24	0.10	ug/l	0.250		96.8	84-113			
Copper	0.27	0.10	ug/l	0.250		109	51-145			
Lead	0.123	0.050	ug/l	0.125		98.7	72-143			
Nickel	0.25	0.10	ug/l	0.250		98.7	68-134			
Zinc	1.27	0.50	ug/l	1.25		101	46-146			
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.2	50-150			
Cadmium	0.23	0.10	ug/l	0.250		93.9	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.123	0.050	ug/l	0.125		98.0	72-143			
Nickel	0.24	0.10	ug/l	0.250		95.8	68-134			
Zinc	1.28	0.50	ug/l	1.25		103	46-146			
Matrix Spike	Source: 22J1171-04									

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2L1116 - EPA 1638 - Dissolved**									
Arsenic	2.41	0.50	ug/l	2.50	ND	96.2	50-150			
Cadmium	0.49	0.10	ug/l	0.500	ND	97.3	84-113			
Copper	0.58	0.10	ug/l	0.500	0.09	97.5	51-145			
Lead	0.240	0.050	ug/l	0.250	ND	96.0	72-143			
Nickel	0.54	0.10	ug/l	0.500	0.04	99.5	68-134			
Zinc	2.68	0.50	ug/l	2.50	0.28	95.8	46-146			
Matrix Spike	Source: 22K0215-03									
Arsenic	2.43	0.50	ug/l	2.50	ND	97.2	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.4	84-113			
Copper	0.57	0.10	ug/l	0.500	0.08	96.5	51-145			
Lead	0.239	0.050	ug/l	0.250	ND	95.5	72-143			
Nickel	0.56	0.10	ug/l	0.500	0.07	98.6	68-134			
Zinc	2.53	0.50	ug/l	2.50	ND	101	46-146			
Matrix Spike Dup	Source: 22J1171-04									
Arsenic	2.42	0.50	ug/l	2.50	ND	96.8	50-150	0.578	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	97.8	84-113	0.477	20	
Copper	0.57	0.10	ug/l	0.500	0.09	95.4	51-145	1.85	20	
Lead	0.235	0.050	ug/l	0.250	ND	94.1	72-143	1.98	20	
Nickel	0.53	0.10	ug/l	0.500	0.04	97.7	68-134	1.66	20	
Zinc	2.72	0.50	ug/l	2.50	0.28	97.5	46-146	1.49	20	
Matrix Spike Dup	Source: 22K0215-03									
Arsenic	2.45	0.50	ug/l	2.50	ND	98.2	50-150	0.981	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	95.5	84-113	0.943	20	
Copper	0.57	0.10	ug/l	0.500	0.08	96.5	51-145	0.0620	20	
Lead	0.249	0.050	ug/l	0.250	ND	99.8	72-143	4.44	20	
Nickel	0.56	0.10	ug/l	0.500	0.07	97.7	68-134	0.790	20	
Zinc	2.52	0.50	ug/l	2.50	ND	101	46-146	0.613	20	

Notes and Definitions

QB-05	The method blank contains the analyte at a concentration level above the MDL, but below the MRL.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	The laboratory does not hold CA-ELAP accreditiation for this analyte or method. Accreditation may not be available from CA-ELAP for this analyte or method.
**	The laboratory holds accreditation for this analyte or method with WA-ECY Lab ID: Lab ID C783. Accreditation is not offered for this method by CA-ELAP
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Accreditations Held:
Redding Location: CA-ELAP - Cert # 1677
Chico Location: CA-ELAP - Cert # 2718

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Analytical Report

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen
Ricky Jensen, Operations Manager
Pace Analytical Services LLC - Redding CA

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

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LABORATORY WORK ORDER # 22J1171
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22J1171
b lab atory

CLIENT NAME: STILLWATER SCIENCES
PROJECT NAME: SMUD 2022
PROJECT / PO #: 750.10/620.02
PWS # (If Applicable):

MAILING ADDRESS: 279 COUSTEAU PLACE, SUITE 400, DAVIS, CA 95618

REPORT TO ☑ Email ☐ Mail Hardcopy
NAME / ATTENTION: EMILY APPLEQUIST
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED: ☐ Standard ☐ Rush _____

INVOICE TO: same
EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#:

☑ Regulatory ☐ Non-Regulatory
QC Reported? (check one): ☐ None ☑ STD ☐ Other
Do you require Electronic Data Deliverables (EDD)? ☐ Yes ☑ No What Type?

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	T&D Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	10/26	8:50 AM PM	SW			R-IS-9-IHR		6	✓	✓	✓	✓	✓
2	10/26	9:05 AM PM				R-IS-9-IHR-B		6	✓	✓	✓	✓	✓
3	10/26	9:35 AM PM				R-IS-10-IHR		6	✓	✓	✓	✓	✓
4	10/26	9:50 AM PM				R-IS-10-IHR-B		6	✓	✓	✓	✓	✓
5	10/26	10:30 AM PM				R-IS-11-IHR		6	✓	✓	✓	✓	✓
6	10/26	10:45 AM PM				R-IS-11-IHR-B		6	✓	✓	✓	✓	✓
		AM PM											
		AM PM											
		AM PM											
		AM PM											

SAMPLED BY: (please print) BH, JW

RELINQUISHED DATE / TIME:

SAMPLING / ANALYSIS COMMENTS: 1 per bottles RH 10.27.22 (1) Total and Dissolved LL 1638 Metals

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME: BRUCE HAMILTON
SIGNATURE:
DATE: 10/26

*SAMPLE TYPE CODES
DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water
SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
	10.27.22 1021		10.27.22 1725

For Official Lab Comments Only

FRM-002.1 - Chain of Custody (rev 1.1)

SAMPLE RECEIPT CHECKLIST

basic laboratory

WO NUMBER 22J1171

SHIPPING INFORMATION

			Yes	No
Walk-In	☐			
Courier	☐			
FedEx	☑	Express		
UPS	☐	Cooler Present?	☑	☐
Other	☐			

Samples Received By: RH Date: 10·27·22

	Yes	No	
Samples received on ice?	☑	☐	Ice type? ☑ Wet ☐ Blue ☐ Other
Samples received the same day collected?	☐	☑	mostly melted

SAMPLE TEMPERATURES AT RECEIPT **Therm. ID (Circle one):** Therm-36 Therm-37 ~~Therm-59~~ Other: Therm-41

Used Cooler Temp for all Samples RH 10·27·22

Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)	Sample ID	Corr Temp (°C)
-01	1.7	-06	1.7	-11		-16	
-02	1.7	-07		-12		-17	
-03	1.7	-08		-13		-18	
-04	1.7	-09		-14		-19	
-05	1.7	-10		-15		-20	

SAMPLE CONDITION AND PROCESSING

Samples Processed and Labeled By: RH Date: 10·27·22

	Yes	No	NA
Custody seals present?	☐	☐	☑
Samples in proper containers?	☑	☐	
Sample containers damaged?	☐	☑	
Sufficient sample volume for indicated tests?	☑	☐	
Samples received within holding times?	☑	☐	
Are VOA vials free of headspace?	☐	☐	☑
Dechlor. agent labels present (i.e., colilert, TTHMs)?	☐	☐	☑

SAMPLE PRESERVATION NA ☐

	Yes	No	NA
Preserved in the field?	☑	☐	☐
Preserved in the lab?	☑	☐	☐

Lab Preservation Date & Time 10·28·22 1057 RH 10·27·22

☐ H2SO4 (ID_____) ☑ HNO3 (ID 2I28023) ☐ NaOH (ID_____)

☐ Other (ID_____) ☐ Other (ID_____) ☐ Other (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑
Are proper preservation lables present?	☑	☐	☐

By:_____ Meter ID:_____

Preservation checked at Lab? Date & Time 10·27·22 1058 Test Strip (ID 2J12028)

Preservation and Preservation Checks performed by: RH

COMMENTS, DISCREPANCEIS, ANOMALIES

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

October 31, 2022

CLS Work Order #: 22J1292
COC #:

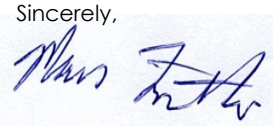
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 10/24/22 15:52. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

10/31/22 14:49

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1292
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-2-LL (22J1292-01) Water Sampled: 10/24/22 10:20 Received: 10/24/22 15:52										
Ammonia as N	ND	0.025	0.10	mg/L	1	2209197	10/26/22	10/26/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**8.2**	0.50	5.0	"	"	2209145	10/25/22	10/25/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.33**	0.026	0.50	"	"	2209115	10/25/22	10/25/22	EPA 300.0	J
Cyanide (total)	**0.0038**	0.0012	0.0050	"	"	2209138	10/25/22	10/27/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209132	10/25/22	10/25/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209145	10/25/22	10/25/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209115	10/25/22	10/25/22	EPA 300.0	
Orthophosphate as PO4	**0.023**	0.0051	0.15	"	"	2209117	10/25/22	10/25/22	SM4500-P E	J
Sulfate as SO4	**0.54**	0.038	0.50	"	"	2209115	10/25/22	10/25/22	EPA 300.0	
Total Alkalinity	**8.2**	1.0	5.0	"	"	2209145	10/25/22	10/25/22	SM2320B	
Total Dissolved Solids	**11**	5.0	10	"	"	2209238	10/27/22	10/31/22	SM2540C	
Total Hardness as CaCO3	**3.9**	0.19	1.0	"	"	2209224	10/27/22	10/27/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.28**	0.040	0.20	"	"	2209286	10/28/22	10/28/22	SM4500-NH3F-2011	
Total Organic Carbon	**1.9**	0.54	1.0	"	"	2209220	10/27/22	10/28/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209214	10/27/22	10/27/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209219	10/27/22	10/31/22	SM2540D	
R-IS-3-LL (22J1292-02) Water Sampled: 10/24/22 10:45 Received: 10/24/22 15:52										
Ammonia as N	ND	0.025	0.10	mg/L	1	2209197	10/26/22	10/26/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**5.4**	0.50	5.0	"	"	2209145	10/25/22	10/25/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.34**	0.026	0.50	"	"	2209115	10/25/22	10/25/22	EPA 300.0	J
Cyanide (total)	ND	0.0012	0.0050	"	"	2209138	10/25/22	10/27/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209132	10/25/22	10/25/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209145	10/25/22	10/25/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209115	10/25/22	10/25/22	EPA 300.0	
Orthophosphate as PO4	**0.0066**	0.0051	0.15	"	"	2209117	10/25/22	10/25/22	SM4500-P E	J

10/31/22 14:49

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1292
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-3-LL (22J1292-02) Water Sampled: 10/24/22 10:45 Received: 10/24/22 15:52										
Sulfate as SO4	**0.58**	0.038	0.50	mg/L	1	2209115	10/25/22	10/25/22	EPA 300.0	
Total Alkalinity	**5.4**	1.0	5.0	"	"	2209145	10/25/22	10/25/22	SM2320B	
Total Dissolved Solids	**8.0**	5.0	10	"	"	2209238	10/27/22	10/31/22	SM2540C	J
Total Hardness as CaCO3	**3.9**	0.19	1.0	"	"	2209224	10/27/22	10/27/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.046**	0.040	0.20	"	"	2209286	10/28/22	10/28/22	SM4500-NH3F-2011	J
Total Organic Carbon	**1.9**	0.54	1.0	"	"	2209220	10/27/22	10/28/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209214	10/27/22	10/27/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209219	10/27/22	10/31/22	SM2540D	
R-IS-5-UVR (22J1292-03) Water Sampled: 10/24/22 13:00 Received: 10/24/22 15:52										
Ammonia as N	**0.035**	0.025	0.10	mg/L	1	2209197	10/26/22	10/26/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**11**	0.50	5.0	"	"	2209145	10/25/22	10/25/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.45**	0.026	0.50	"	"	2209115	10/25/22	10/25/22	EPA 300.0	J
Cyanide (total)	**0.0016**	0.0012	0.0050	"	"	2209138	10/25/22	10/27/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209132	10/25/22	10/25/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209145	10/25/22	10/25/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209115	10/25/22	10/25/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2209117	10/25/22	10/25/22	SM4500-P E	
Sulfate as SO4	**0.36**	0.038	0.50	"	"	2209115	10/25/22	10/25/22	EPA 300.0	J
Total Alkalinity	**11**	1.0	5.0	"	"	2209145	10/25/22	10/25/22	SM2320B	
Total Dissolved Solids	**17**	5.0	10	"	"	2209238	10/27/22	10/31/22	SM2540C	
Total Hardness as CaCO3	**4.8**	0.19	1.0	"	"	2209224	10/27/22	10/27/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.18**	0.040	0.20	"	"	2209286	10/28/22	10/28/22	SM4500-NH3F-2011	J
Total Organic Carbon	**2.3**	0.54	1.0	"	"	2209220	10/27/22	10/28/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209214	10/27/22	10/27/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209219	10/27/22	10/31/22	SM2540D	

10/31/22 14:49

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1292
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-1-LL (22J1292-04) Water Sampled: 10/24/22 09:00 Received: 10/24/22 15:52										
Ammonia as N	ND	0.025	0.10	mg/L	1	2209197	10/26/22	10/26/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**5.4**	0.50	5.0	"	"	2209145	10/25/22	10/25/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.33**	0.026	0.50	"	"	2209115	10/25/22	10/25/22	EPA 300.0	J
Cyanide (total)	**0.0034**	0.0012	0.0050	"	"	2209138	10/25/22	10/27/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209132	10/25/22	10/25/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209145	10/25/22	10/25/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209115	10/25/22	10/25/22	EPA 300.0	
Orthophosphate as PO4	**0.015**	0.0051	0.15	"	"	2209117	10/25/22	10/25/22	SM4500-P E	J
Sulfate as SO4	**0.54**	0.038	0.50	"	"	2209115	10/25/22	10/25/22	EPA 300.0	
Total Alkalinity	**5.4**	1.0	5.0	"	"	2209145	10/25/22	10/25/22	SM2320B	
Total Dissolved Solids	**8.0**	5.0	10	"	"	2209238	10/27/22	10/31/22	SM2540C	J
Total Hardness as CaCO3	**4.2**	0.19	1.0	"	"	2209224	10/27/22	10/27/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.51**	0.040	0.20	"	"	2209286	10/28/22	10/28/22	SM4500-NH3F-2011	
Total Organic Carbon	**1.9**	0.54	1.0	"	"	2209220	10/27/22	10/28/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209214	10/27/22	10/27/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209219	10/27/22	10/31/22	SM2540D	
R-IS-1-LL-B (22J1292-05) Water Sampled: 10/24/22 09:15 Received: 10/24/22 15:52										
Ammonia as N	**0.038**	0.025	0.10	mg/L	1	2209197	10/26/22	10/26/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**6.2**	0.50	5.0	"	"	2209145	10/25/22	10/25/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.41**	0.026	0.50	"	"	2209115	10/25/22	10/25/22	EPA 300.0	J
Cyanide (total)	**0.0090**	0.0012	0.0050	"	"	2209138	10/25/22	10/27/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209132	10/25/22	10/25/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209145	10/25/22	10/25/22	SM2320B	
Nitrate/Nitrite as N	**0.073**	0.055	0.40	"	"	2209115	10/25/22	10/25/22	EPA 300.0	J
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2209117	10/25/22	10/25/22	SM4500-P E	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1292
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-1-LL-B (22J1292-05) Water	**Sampled: 10/24/22 09:15**		**Received: 10/24/22 15:52**							
Sulfate as SO4	**0.51**	0.038	0.50	mg/L	1	2209115	10/25/22	10/25/22	EPA 300.0	
Total Alkalinity	**6.2**	1.0	5.0	"	"	2209145	10/25/22	10/25/22	SM2320B	
Total Dissolved Solids	**16**	5.0	10	"	"	2209238	10/27/22	10/31/22	SM2540C	
Total Hardness as CaCO3	**4.7**	0.19	1.0	"	"	2209224	10/27/22	10/27/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.38**	0.040	0.20	"	"	2209286	10/28/22	10/28/22	SM4500-NH3F-2011	
Total Organic Carbon	**1.8**	0.54	1.0	"	"	2209220	10/27/22	10/28/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209214	10/27/22	10/27/22	SM4500-P E	
Total Suspended Solids	**19**	2.0	5.0	"	"	2209219	10/27/22	10/31/22	SM2540D	

10/31/22 14:49

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1292
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-2-LL (22J1292-01) Water Sampled: 10/24/22 10:20 Received: 10/24/22 15:52										
Diesel	ND	0.0021	0.050	mg/L	1	2209150	10/25/22	10/26/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*103 %*	*65-135*		"	"	"	"	
R-IS-3-LL (22J1292-02) Water Sampled: 10/24/22 10:45 Received: 10/24/22 15:52										
Diesel	ND	0.0021	0.050	mg/L	1	2209150	10/25/22	10/26/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*98 %*	*65-135*		"	"	"	"	
R-IS-5-UVR (22J1292-03) Water Sampled: 10/24/22 13:00 Received: 10/24/22 15:52										
Diesel	**1.6**	0.0021	0.050	mg/L	1	2209150	10/25/22	10/26/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	**1.3**	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*115 %*	*65-135*		"	"	"	"	
R-IS-1-LL (22J1292-04) Water Sampled: 10/24/22 09:00 Received: 10/24/22 15:52										
Diesel	ND	0.0021	0.050	mg/L	1	2209150	10/25/22	10/26/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	

10/31/22 14:49

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22J1292**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-1-LL (22J1292-04) Water Sampled: 10/24/22 09:00 Received: 10/24/22 15:52										
Surrogate: o-Terphenyl			*125 %*	*65-135*		*2209150*	"	*10/26/22*	*EPA 8015M*	
R-IS-1-LL-B (22J1292-05) Water Sampled: 10/24/22 09:15 Received: 10/24/22 15:52										
Diesel	ND	0.0021	0.050	mg/L	1	2209150	10/25/22	10/26/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*122 %*	*65-135*		*"*	"	*"*	*"*	

10/31/22 14:49

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1292
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-2-LL (22J1292-01) Water Sampled: 10/24/22 10:20 Received: 10/24/22 15:52										
Aluminum	**15**	1.6	20	µg/L	1	2209151	10/25/22	10/26/22	EPA 200.8	J
Barium	**4.0**	0.14	5.0	"	"	"	"	10/26/22	"	J
Calcium	**1300**	27	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	
Iron	**42**	9.1	100	"	"	"	"	"	"	J
Magnesium	**130**	21	1000	"	"	"	"	"	"	J
Manganese	**17**	0.050	2.0	"	"	2209151	10/25/22	10/26/22	EPA 200.8	
Potassium	**580**	61	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209151	10/25/22	10/26/22	EPA 200.8	
Sodium	**660**	34	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	J
R-IS-3-LL (22J1292-02) Water Sampled: 10/24/22 10:45 Received: 10/24/22 15:52										
Aluminum	**18**	1.6	20	µg/L	1	2209151	10/25/22	10/26/22	EPA 200.8	J
Barium	**4.0**	0.14	5.0	"	"	"	"	10/26/22	"	J
Calcium	**1400**	27	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	
Iron	**41**	9.1	100	"	"	"	"	"	"	J
Magnesium	**130**	21	1000	"	"	"	"	"	"	J
Manganese	**12**	0.050	2.0	"	"	2209151	10/25/22	10/26/22	EPA 200.8	
Potassium	**610**	61	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209151	10/25/22	10/26/22	EPA 200.8	
Sodium	**550**	34	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	J
R-IS-5-UVR (22J1292-03) Water Sampled: 10/24/22 13:00 Received: 10/24/22 15:52										
Aluminum	**230**	1.6	20	µg/L	1	2209151	10/25/22	10/26/22	EPA 200.8	
Barium	**6.8**	0.14	5.0	"	"	"	"	10/26/22	"	
Calcium	**1500**	27	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	
Iron	**1200**	9.1	100	"	"	"	"	"	"	
Magnesium	**200**	21	1000	"	"	"	"	"	"	J
Manganese	**160**	0.050	2.0	"	"	2209151	10/25/22	10/26/22	EPA 200.8	
Potassium	**420**	61	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209151	10/25/22	10/26/22	EPA 200.8	
Sodium	**660**	34	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	J

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1292
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-1-LL (22J1292-04) Water Sampled: 10/24/22 09:00 Received: 10/24/22 15:52										
Aluminum	**19**	1.6	20	µg/L	1	2209151	10/25/22	10/26/22	EPA 200.8	J
Barium	**4.2**	0.14	5.0	"	"	"	"	10/26/22	"	J
Calcium	**1300**	27	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	
Iron	**42**	9.1	100	"	"	"	"	"	"	J
Magnesium	**130**	21	1000	"	"	"	"	"	"	J
Manganese	**13**	0.050	2.0	"	"	2209151	10/25/22	10/26/22	EPA 200.8	
Potassium	**340**	61	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209151	10/25/22	10/26/22	EPA 200.8	
Sodium	**560**	34	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	J
R-IS-1-LL-B (22J1292-05) Water Sampled: 10/24/22 09:15 Received: 10/24/22 15:52										
Aluminum	**22**	1.6	20	µg/L	1	2209151	10/25/22	10/26/22	EPA 200.8	
Barium	**6.4**	0.14	5.0	"	"	"	"	10/26/22	"	
Calcium	**1500**	27	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	
Iron	**33**	9.1	100	"	"	"	"	"	"	J
Magnesium	**300**	21	1000	"	"	"	"	"	"	J
Manganese	**5.6**	0.050	2.0	"	"	2209151	10/25/22	10/26/22	EPA 200.8	
Potassium	**400**	61	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209151	10/25/22	10/26/22	EPA 200.8	
Sodium	**1100**	34	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22J1292**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-2-LL (22J1292-01) Water Sampled: 10/24/22 10:20 Received: 10/24/22 15:52										
Aluminum	**5.4**	0.52	20	µg/L	1	2209246	10/27/22	10/27/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2209224	10/27/22	10/27/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2209246	10/27/22	10/27/22	EPA 200.8	
R-IS-3-LL (22J1292-02) Water Sampled: 10/24/22 10:45 Received: 10/24/22 15:52										
Aluminum	**4.9**	0.52	20	µg/L	1	2209246	10/27/22	10/27/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2209224	10/27/22	10/27/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2209246	10/27/22	10/27/22	EPA 200.8	
R-IS-5-UVR (22J1292-03) Water Sampled: 10/24/22 13:00 Received: 10/24/22 15:52										
Aluminum	**5.8**	0.52	20	µg/L	1	2209246	10/27/22	10/27/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2209224	10/27/22	10/27/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2209246	10/27/22	10/27/22	EPA 200.8	
R-IS-1-LL (22J1292-04) Water Sampled: 10/24/22 09:00 Received: 10/24/22 15:52										
Aluminum	**4.8**	0.52	20	µg/L	1	2209246	10/27/22	10/27/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2209224	10/27/22	10/27/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2209246	10/27/22	10/27/22	EPA 200.8	
R-IS-1-LL-B (22J1292-05) Water Sampled: 10/24/22 09:15 Received: 10/24/22 15:52										
Aluminum	**4.0**	0.52	20	µg/L	1	2209246	10/27/22	10/27/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2209224	10/27/22	10/27/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2209246	10/27/22	10/27/22	EPA 200.8	

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Stillwater Sciences
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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22J1292
COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-2-LL (22J1292-01) Water Sampled: 10/24/22 10:20 Received: 10/24/22 15:52										
Gasoline	ND	10	50	µg/L	1	2209149	10/25/22	10/25/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*72 %*	*65-135*		"	"	"	"	
R-IS-3-LL (22J1292-02) Water Sampled: 10/24/22 10:45 Received: 10/24/22 15:52										
Gasoline	ND	10	50	µg/L	1	2209149	10/25/22	10/25/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*72 %*	*65-135*		"	"	"	"	
R-IS-5-UVR (22J1292-03) Water Sampled: 10/24/22 13:00 Received: 10/24/22 15:52										
Gasoline	ND	10	50	µg/L	1	2209149	10/25/22	10/25/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*72 %*	*65-135*		"	"	"	"	
R-IS-1-LL (22J1292-04) Water Sampled: 10/24/22 09:00 Received: 10/24/22 15:52										
Gasoline	ND	10	50	µg/L	1	2209149	10/25/22	10/25/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*80 %*	*65-135*		"	"	"	"	
R-IS-1-LL-B (22J1292-05) Water Sampled: 10/24/22 09:15 Received: 10/24/22 15:52										
Gasoline	ND	10	50	µg/L	1	2209149	10/25/22	10/25/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*79 %*	*65-135*		"	"	"	"	

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CLS Work Order #: 22J1292
COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-2-LL (22J1292-01) Water Sampled: 10/24/22 10:20 Received: 10/24/22 15:52										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209258	10/27/22	10/27/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"
R-IS-3-LL (22J1292-02) Water Sampled: 10/24/22 10:45 Received: 10/24/22 15:52										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209258	10/27/22	10/27/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"
R-IS-5-UVR (22J1292-03) Water Sampled: 10/24/22 13:00 Received: 10/24/22 15:52										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209258	10/27/22	10/27/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"
R-IS-1-LL (22J1292-04) Water Sampled: 10/24/22 09:00 Received: 10/24/22 15:52										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209258	10/27/22	10/27/22	EPA 8260B	
Surrogate: Toluene-d8			*98 %*		*72-125*		"	"	"	"
R-IS-1-LL-B (22J1292-05) Water Sampled: 10/24/22 09:15 Received: 10/24/22 15:52										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209258	10/27/22	10/27/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209115 - General Prep											
Blank (2209115-BLK1)					Prepared & Analyzed: 10/25/22						
Sulfate as SO4	ND	0.038	0.50	mg/L							
Chloride	0.206	0.026	0.50	"							J
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2209115-BS1)					Prepared & Analyzed: 10/25/22						
Sulfate as SO4	4.83	0.038	0.50	mg/L	5.00		97	80-120			
Chloride	4.79	0.026	0.50	"	5.00		96	80-120			
Nitrate/Nitrite as N	4.16	0.055	0.40	"	4.00		104	80-120			
LCS Dup (2209115-BSD1)					Prepared & Analyzed: 10/25/22						
Chloride	4.90	0.026	0.50	mg/L	5.00		98	80-120	2	20	
Sulfate as SO4	4.94	0.038	0.50	"	5.00		99	80-120	2	20	
Nitrate/Nitrite as N	4.25	0.055	0.40	"	4.00		106	80-120	2	20	
Matrix Spike (2209115-MS1)			**Source: 22J1239-01**		Prepared & Analyzed: 10/25/22						
Sulfate as SO4	5.60	0.038	0.50	mg/L	5.00	222	NR	80-120			QM-7
Chloride	5.18	0.026	0.50	"	5.00	572	NR	80-120			QM-7
Nitrate/Nitrite as N	4.34	0.055	0.40	"	4.00	1.81	63	80-120			QM-7
Matrix Spike Dup (2209115-MSD1)			**Source: 22J1239-01**		Prepared & Analyzed: 10/25/22						
Sulfate as SO4	5.50	0.038	0.50	mg/L	5.00	222	NR	80-120	2	20	QM-7
Chloride	5.01	0.026	0.50	"	5.00	572	NR	80-120	3	20	QM-7
Nitrate/Nitrite as N	4.20	0.055	0.40	"	4.00	1.81	60	80-120	3	20	QM-7
Batch 2209117 - General Preparation											
Blank (2209117-BLK1)					Prepared & Analyzed: 10/25/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209117 - General Preparation											
LCS (2209117-BS1)					Prepared & Analyzed: 10/25/22						
Orthophosphate as PO4	0.908	0.0051	0.15	mg/L	0.918		99	80-120			
LCS Dup (2209117-BSD1)					Prepared & Analyzed: 10/25/22						
Orthophosphate as PO4	0.879	0.0051	0.15	mg/L	0.918		96	80-120	3	20	
Matrix Spike (2209117-MS1)			**Source: 22J1292-01**		Prepared & Analyzed: 10/25/22						
Orthophosphate as PO4	0.941	0.0051	0.15	mg/L	0.918	0.0230	100	75-125			
Matrix Spike Dup (2209117-MSD1)			**Source: 22J1292-01**		Prepared & Analyzed: 10/25/22						
Orthophosphate as PO4	0.916	0.0051	0.15	mg/L	0.918	0.0230	97	75-125	3	25	
Batch 2209132 - Solvent Extract											
Blank (2209132-BLK1)					Prepared & Analyzed: 10/25/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2209132-BS1)					Prepared & Analyzed: 10/25/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.1	1.0	5.0	mg/L	40.0		98	78-114			
LCS Dup (2209132-BSD1)					Prepared & Analyzed: 10/25/22						
Hexane Extractable Material (HEM, Oil & Grease)	38.2	1.0	5.0	mg/L	40.0		96	78-114	2	18	
Batch 2209138 - General Preparation											
Blank (2209138-BLK1)					Prepared: 10/25/22 Analyzed: 10/27/22						
Cyanide (total)	0.00340	0.0012	0.0050	mg/L							J

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209138 - General Preparation											
LCS (2209138-BS1)					Prepared: 10/25/22 Analyzed: 10/27/22						
Cyanide (total)	0.0811	0.0012	0.0050	mg/L	0.100		81	75-125			
LCS Dup (2209138-BSD1)					Prepared: 10/25/22 Analyzed: 10/27/22						
Cyanide (total)	0.0733	0.0012	0.0050	mg/L	0.100		73	75-125	10	25	QM-1
Matrix Spike (2209138-MS1)			**Source: 22J1285-01**		Prepared: 10/25/22 Analyzed: 10/27/22						
Cyanide (total)	0.0807	0.0012	0.0050	mg/L	0.100	0.00450	76	75-125			
Matrix Spike Dup (2209138-MSD1)			**Source: 22J1285-01**		Prepared: 10/25/22 Analyzed: 10/27/22						
Cyanide (total)	0.0796	0.0012	0.0050	mg/L	0.100	0.00450	75	75-125	1	25	
Batch 2209145 - General Preparation											
Blank (2209145-BLK1)					Prepared & Analyzed: 10/25/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Duplicate (2209145-DUP1)			**Source: 22J1084-01**		Prepared & Analyzed: 10/25/22						
Total Alkalinity	202	1.0	5.0	mg/L		196			3	20	
Bicarbonate as CaCO3	202	0.50	5.0	"		196			3	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Batch 2209197 - General Preparation											
Blank (2209197-BLK1)					Prepared & Analyzed: 10/26/22						
Ammonia as N	0.0480	0.025	0.10	mg/L							J

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209197 - General Preparation											
LCS (2209197-BS1)					Prepared & Analyzed: 10/26/22						
Ammonia as N	0.441	0.025	0.10	mg/L	0.500		88	80-120			
LCS Dup (2209197-BSD1)					Prepared & Analyzed: 10/26/22						
Ammonia as N	0.483	0.025	0.10	mg/L	0.500		97	80-120	9	25	
Matrix Spike (2209197-MS1)			**Source: 22J1292-01**		Prepared & Analyzed: 10/26/22						
Ammonia as N	0.377	0.025	0.10	mg/L	0.500	ND	75	75-125			
Matrix Spike Dup (2209197-MSD1)			**Source: 22J1292-01**		Prepared & Analyzed: 10/26/22						
Ammonia as N	0.461	0.025	0.10	mg/L	0.500	ND	92	75-125	20	25	
Batch 2209214 - General Preparation											
Blank (2209214-BLK1)					Prepared & Analyzed: 10/27/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2209214-BS1)					Prepared & Analyzed: 10/27/22						
Total Phosphorus as P	0.295	0.023	0.050	mg/L	0.300		98	80-120			
LCS Dup (2209214-BSD1)					Prepared & Analyzed: 10/27/22						
Total Phosphorus as P	0.283	0.023	0.050	mg/L	0.300		94	80-120	4	25	
Matrix Spike (2209214-MS1)			**Source: 22J1292-02**		Prepared & Analyzed: 10/27/22						
Total Phosphorus as P	0.282	0.023	0.050	mg/L	0.300	ND	94	75-125			
Matrix Spike Dup (2209214-MSD1)			**Source: 22J1292-02**		Prepared & Analyzed: 10/27/22						
Total Phosphorus as P	0.287	0.023	0.050	mg/L	0.300	ND	96	75-125	2	30	

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CLS Work Order #: 22J1292
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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209219 - General Preparation											
Duplicate (2209219-DUP1)			**Source: 22J1288-01**		Prepared: 10/27/22 Analyzed: 10/31/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	
Batch 2209220 - General Preparation											
Blank (2209220-BLK1)					Prepared: 10/27/22 Analyzed: 10/28/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							
LCS (2209220-BS1)					Prepared: 10/27/22 Analyzed: 10/28/22						
Total Organic Carbon	10.8	0.54	1.0	mg/L	10.0		108	75-125			
LCS Dup (2209220-BSD1)					Prepared: 10/27/22 Analyzed: 10/28/22						
Total Organic Carbon	10.6	0.54	1.0	mg/L	10.0		106	75-125	1	25	
Matrix Spike (2209220-MS1)			**Source: 22J1292-04**		Prepared: 10/27/22 Analyzed: 10/28/22						
Total Organic Carbon	15.4	0.54	1.0	mg/L	10.0	1.88	135	75-125			QM-7
Matrix Spike Dup (2209220-MSD1)			**Source: 22J1292-04**		Prepared: 10/27/22 Analyzed: 10/28/22						
Total Organic Carbon	15.2	0.54	1.0	mg/L	10.0	1.88	133	75-125	0.8	25	QM-7
Batch 2209224 - EPA 200 No Digestion											
Blank (2209224-BLK1)					Prepared & Analyzed: 10/27/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2209224-BS1)					Prepared & Analyzed: 10/27/22						
Total Hardness as CaCO3	32.7	0.19	1.0	mg/L	33.1		99	85-115			

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1292
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209224 - EPA 200 No Digestion											
Matrix Spike (2209224-MS1)			**Source: 22J1292-01**		Prepared & Analyzed: 10/27/22						
Total Hardness as CaCO3	35.8	0.19	1.0	mg/L	33.1	3.86	96	70-130			
Matrix Spike (2209224-MS2)			**Source: 22J1342-01**		Prepared & Analyzed: 10/27/22						
Total Hardness as CaCO3	36.8	0.19	1.0	mg/L	33.1	4.94	96	70-130			
Batch 2209238 - General Preparation											
Blank (2209238-BLK1)					Prepared: 10/27/22 Analyzed: 10/31/22						
Total Dissolved Solids	ND	5.0	10	mg/L							
Duplicate (2209238-DUP1)			**Source: 22J1229-01**		Prepared: 10/27/22 Analyzed: 10/31/22						
Total Dissolved Solids	ND	5.0	10	mg/L		ND				20	
Batch 2209286 - General Preparation											
Blank (2209286-BLK1)					Prepared & Analyzed: 10/28/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2209286-BS1)					Prepared & Analyzed: 10/28/22						
Total Kjeldahl Nitrogen	0.492	0.040	0.20	mg/L	0.500		98	80-120			
LCS Dup (2209286-BSD1)					Prepared & Analyzed: 10/28/22						
Total Kjeldahl Nitrogen	0.502	0.040	0.20	mg/L	0.500		100	80-120	2	20	
Matrix Spike (2209286-MS1)			**Source: 22J1292-05**		Prepared & Analyzed: 10/28/22						
Total Kjeldahl Nitrogen	0.933	0.040	0.20	mg/L	0.500	0.383	110	75-125			

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CLS Work Order #: 22J1292
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209286 - General Preparation											
Matrix Spike Dup (2209286-MSD1)			**Source: 22J1292-05**		Prepared & Analyzed: 10/28/22						
Total Kjeldahl Nitrogen	0.946	0.040	0.20	mg/L	0.500	0.383	113	75-125	1	25	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1292
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209150 - EPA 3510B GCNV											
Blank (2209150-BLK1)					Prepared & Analyzed: 10/25/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Surrogate: o-Terphenyl	*0.0264*			*"*	*0.0250*		*106*	*65-135*			
LCS (2209150-BS1)					Prepared & Analyzed: 10/25/22						
Diesel	2.09	0.0021	0.050	mg/L	2.50		84	65-135			
Surrogate: o-Terphenyl	*0.0245*			*"*	*0.0250*		*98*	*65-135*			
LCS Dup (2209150-BSD1)					Prepared & Analyzed: 10/25/22						
Diesel	2.73	0.0021	0.050	mg/L	2.50		109	65-135	27	30	
Surrogate: o-Terphenyl	*0.0292*			*"*	*0.0250*		*117*	*65-135*			
Matrix Spike (2209150-MS1)			**Source: 22J1285-02**		Prepared & Analyzed: 10/25/22						
Diesel	2.86	0.0021	0.050	mg/L	2.50	ND	115	46-137			
Surrogate: o-Terphenyl	*0.0246*			*"*	*0.0250*		*98*	*65-135*			
Matrix Spike Dup (2209150-MSD1)			**Source: 22J1285-02**		Prepared & Analyzed: 10/25/22						
Diesel	2.61	0.0021	0.050	mg/L	2.50	ND	105	46-137	9	30	
Surrogate: o-Terphenyl	*0.0249*			*"*	*0.0250*		*100*	*65-135*			

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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1292
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209151 - EPA 200 Series											
Blank (2209151-BLK1)					Prepared: 10/25/22 Analyzed: 10/26/22						
Aluminum	1.69	1.6	20	µg/L							J
Barium	ND	0.14	5.0	"							
Manganese	ND	0.050	2.0	"							
Silver	ND	0.070	0.50	"							
LCS (2209151-BS1)					Prepared: 10/25/22 Analyzed: 10/26/22						
Aluminum	481	1.6	20	µg/L	500		96	85-115			
Barium	105	0.14	5.0	"	100		105	85-115			
Manganese	101	0.050	2.0	"	100		101	85-115			
Silver	102	0.070	0.50	"	100		102	85-115			
Matrix Spike (2209151-MS1)			**Source: 22J1285-01**		Prepared: 10/25/22 Analyzed: 10/26/22						
Aluminum	495	1.6	20	µg/L	500	4.72	98	70-130			
Barium	567	0.14	5.0	"	100	455	112	70-130			
Manganese	1160	0.050	2.0	"	100	1020	132	70-130			QM-4X
Silver	97.3	0.070	0.50	"	100	ND	97	70-130			
Matrix Spike (2209151-MS2)			**Source: 22J1292-05**		Prepared: 10/25/22 Analyzed: 10/26/22						
Aluminum	511	1.6	20	µg/L	500	21.9	98	70-130			
Barium	109	0.14	5.0	"	100	6.38	103	70-130			
Manganese	102	0.050	2.0	"	100	5.56	96	70-130			
Silver	101	0.070	0.50	"	100	ND	101	70-130			
Batch 2209187 - EPA 200 Series											
Blank (2209187-BLK1)					Prepared & Analyzed: 10/26/22						
Boron	ND	5.3	50	µg/L							
Cadmium	ND	2.2	10	"							
Calcium	ND	27	1000	"							
Chromium	ND	6.1	10	"							
Copper	ND	3.4	10	"							
Iron	ND	9.1	100	"							
Lead	ND	20	25	"							

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22J1292**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209187 - EPA 200 Series											
Blank (2209187-BLK1)					Prepared & Analyzed: 10/26/22						
Magnesium	ND	21	1000	µg/L							
Manganese	ND	0.92	10	"							
Nickel	ND	3.1	20	"							
Potassium	112	61	1000	"							J
Silver	ND	3.3	10	"							
Sodium	ND	34	1000	"							
Zinc	ND	1.7	20	"							
LCS (2209187-BS1)					Prepared & Analyzed: 10/26/22						
Boron	496	5.3	50	µg/L	500		99	85-115			
Cadmium	522	2.2	10	"	500		104	85-115			
Calcium	5300	27	1000	"	5000		106	85-115			
Chromium	545	6.1	10	"	500		109	85-115			
Copper	518	3.4	10	"	500		104	85-115			
Iron	524	9.1	100	"	500		105	85-115			
Lead	537	20	25	"	500		107	85-115			
Magnesium	4990	21	1000	"	5000		100	85-115			
Manganese	548	0.92	10	"	500		110	85-115			
Nickel	537	3.1	20	"	500		107	85-115			
Potassium	5400	61	1000	"	5000		108	85-115			
Silver	518	3.3	10	"	500		104	85-115			
Sodium	5190	34	1000	"	5000		104	85-115			
Zinc	508	1.7	20	"	500		102	85-115			
Matrix Spike (2209187-MS1)			**Source: 22J1286-01**		Prepared & Analyzed: 10/26/22						
Boron	530	5.3	50	µg/L	500	18.1	102	70-130			
Cadmium	524	2.2	10	"	500	ND	105	70-130			
Calcium	16400	27	1000	"	5000	11300	101	70-130			
Chromium	535	6.1	10	"	500	ND	107	70-130			
Copper	518	3.4	10	"	500	ND	104	70-130			
Iron	1170	9.1	100	"	500	630	108	70-130			
Lead	526	20	25	"	500	ND	105	70-130			

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1292
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209187 - EPA 200 Series											
Matrix Spike (2209187-MS1)			**Source: 22J1286-01**		Prepared & Analyzed: 10/26/22						
Magnesium	8260	21	1000	µg/L	5000	3410	97	70-130			
Manganese	615	0.92	10	"	500	76.8	108	70-130			
Nickel	532	3.1	20	"	500	ND	106	70-130			
Potassium	12600	61	1000	"	5000	7440	104	70-130			
Silver	534	3.3	10	"	500	ND	107	70-130			
Sodium	56500	34	1000	"	5000	52300	84	70-130			
Zinc	524	1.7	20	"	500	5.55	104	70-130			
Matrix Spike (2209187-MS2)			**Source: 22J1292-01**		Prepared & Analyzed: 10/26/22						
Boron	502	5.3	50	µg/L	500	ND	100	70-130			
Cadmium	531	2.2	10	"	500	ND	106	70-130			
Calcium	6860	27	1000	"	5000	1340	110	70-130			
Chromium	567	6.1	10	"	500	ND	113	70-130			
Copper	530	3.4	10	"	500	ND	106	70-130			
Iron	607	9.1	100	"	500	41.7	113	70-130			
Lead	547	20	25	"	500	ND	109	70-130			
Magnesium	5160	21	1000	"	5000	131	101	70-130			
Manganese	578	0.92	10	"	500	17.2	112	70-130			
Nickel	549	3.1	20	"	500	ND	110	70-130			
Potassium	6020	61	1000	"	5000	581	109	70-130			
Silver	535	3.3	10	"	500	ND	107	70-130			
Sodium	5860	34	1000	"	5000	663	104	70-130			
Zinc	518	1.7	20	"	500	ND	104	70-130			

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Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1292
COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209224 - EPA 200 No Digestion											
Blank (2209224-BLK1)					Prepared & Analyzed: 10/27/22						
Iron	ND	6.8	100	µg/L							
LCS (2209224-BS1)					Prepared & Analyzed: 10/27/22						
Iron	491	6.8	100	µg/L	500		98	85-115			
Matrix Spike (2209224-MS1)			**Source: 22J1292-01**		Prepared & Analyzed: 10/27/22						
Iron	483	6.8	100	µg/L	500	ND	97	70-130			
Matrix Spike (2209224-MS2)			**Source: 22J1342-01**		Prepared & Analyzed: 10/27/22						
Iron	481	6.8	100	µg/L	500	ND	96	70-130			
Batch 2209246 - EPA 200 No Digestion											
Blank (2209246-BLK1)					Prepared & Analyzed: 10/27/22						
Aluminum	ND	0.52	20	µg/L							
Silver	ND	0.15	0.50	"							
LCS (2209246-BS1)					Prepared & Analyzed: 10/27/22						
Aluminum	468	0.52	20	µg/L	500		94	85-115			
Silver	99.7	0.15	0.50	"	100		100	85-115			
Matrix Spike (2209246-MS1)			**Source: 22J1292-01**		Prepared & Analyzed: 10/27/22						
Aluminum	448	0.52	20	µg/L	500	5.44	89	70-130			
Silver	92.0	0.15	0.50	"	100	ND	92	70-130			
Matrix Spike (2209246-MS2)			**Source: 22J1410-01**		Prepared & Analyzed: 10/27/22						
Aluminum	483	0.52	20	µg/L	500	7.32	95	70-130			
Silver	101	0.15	0.50	"	100	ND	101	70-130			

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Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1292
COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209149 - EPA 5030 Water GC											
Blank (2209149-BLK1)					Prepared & Analyzed: 10/25/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*16.1*			*"*	*20.0*		*81*	*65-135*			
LCS (2209149-BS1)					Prepared & Analyzed: 10/25/22						
Gasoline	534	10	50	µg/L	500		107	70-130			
Surrogate: o-Chlorotoluene (Gas)	*15.4*			*"*	*20.0*		*77*	*65-135*			
LCS Dup (2209149-BSD1)					Prepared & Analyzed: 10/25/22						
Gasoline	523	10	50	µg/L	500		105	70-130	2	30	
Surrogate: o-Chlorotoluene (Gas)	*14.5*			*"*	*20.0*		*73*	*65-135*			
Matrix Spike (2209149-MS1)			**Source: 22J1292-05**		Prepared & Analyzed: 10/25/22						
Gasoline	465	10	50	µg/L	500	ND	93	68-132			
Surrogate: o-Chlorotoluene (Gas)	*14.5*			*"*	*20.0*		*73*	*65-135*			
Matrix Spike Dup (2209149-MSD1)			**Source: 22J1292-05**		Prepared & Analyzed: 10/25/22						
Gasoline	457	10	50	µg/L	500	ND	91	68-132	2	32	
Surrogate: o-Chlorotoluene (Gas)	*15.7*			*"*	*20.0*		*79*	*65-135*			

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1292
COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209258 - EPA 3510B GCMS											
Blank (2209258-BLK1)					Prepared & Analyzed: 10/27/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Surrogate: Toluene-d8	*9.75*			"	*10.0*		*98*	*72-125*			
LCS (2209258-BS1)					Prepared & Analyzed: 10/27/22						
Methyl tert-butyl ether	18.2	0.095	0.50	µg/L	20.0		91	52-130			
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			
LCS Dup (2209258-BSD1)					Prepared & Analyzed: 10/27/22						
Methyl tert-butyl ether	18.4	0.095	0.50	µg/L	20.0		92	52-130	1	30	
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			
Matrix Spike (2209258-MS1)			**Source: 22J1292-01**		Prepared: 10/27/22 Analyzed: 10/28/22						
Methyl tert-butyl ether	19.2	0.095	0.50	µg/L	20.0	ND	96	52-140			
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			
Matrix Spike Dup (2209258-MSD1)			**Source: 22J1292-01**		Prepared: 10/27/22 Analyzed: 10/28/22						
Methyl tert-butyl ether	18.3	0.095	0.50	µg/L	20.0	ND	91	52-140	5	30	
Surrogate: Toluene-d8	*10.0*			"	*10.0*		*100*	*72-125*			

10/31/22 14:49

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22J1292**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
QM-1	The spike recovery was outside acceptance limits for the LCS or LCSD. The batch was accepted based on acceptable MS/MSD recoveries & RPD's.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22J1292 (__1__ of __1__)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[X] **CLS** (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] **OTHER**

ANALYSIS REQUESTED

PRESERVATIVES ▼

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES ▼	Cl, SO4	TSS, TDS, Hardness, Alkalinity, NO2-N+NO3-N, Diss Metals	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
10/24	10:20	R·IS·2·LL		Surface water			6	X	X	X	V	V	V	X	V				X	
10/24	10:45	R·IS·3·LL		Surface water			6	X	X	X	X	X	X	X	X				X	
10/24	1:00	R·IS·5·UVR		Surface water			6	X	X	X	V	X	X	X	X				X	
10/24	09:00	R·IS·1·LL		Surface water			6	X	X	V	V	X	V	V	X				X	
10/24	09:15	R·IS·1·LL·B		Surface water			6	X	X	X	X	X	X	X	X				X	
				Surface water			6												X	
				Surface water			6												X	INVOICE TO:
				Surface water			6												X	Stillwater Sciences
				Surface water			6												X	Same as above
				Surface water			6												X	
				Surface water			6												X	**Project No. 750.10 Task 0620.01**
				Surface water			6												X	QUOTE#

GEOTRACKER

EDF REPORT YES [X] NO [ ]

GLOBAL ID:

FIELD CONDITIONS:

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	STILLWATER SCIENCES / Sakoo Woods	10/24/15:52		

RECEIVED AT LAB BY: ~~[illegible]~~ **DATE/TIME:** 10/24/22 1552 **CONDITIONS/COMMENTS:** 0.9/0.2

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER _____ **AIR BILL #** _____

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

November 01, 2022

CLS Work Order #: 22J1342
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 10/25/22 13:52. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1342
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-7-UVR (22J1342-01) Water Sampled: 10/25/22 08:40 Received: 10/25/22 13:52										
Ammonia as N	ND	0.025	0.10	mg/L	1	2209281	10/28/22	10/28/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**7.8**	0.50	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.45**	0.026	0.50	"	"	2209176	10/26/22	10/26/22	EPA 300.0	J
Cyanide (total)	**0.0034**	0.0012	0.0050	"	"	2209179	10/26/22	10/28/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209199	10/26/22	10/27/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209176	10/26/22	10/26/22	EPA 300.0	
Orthophosphate as PO4	**0.011**	0.0051	0.15	"	"	2209180	10/26/22	10/26/22	SM4500-P E	J
Sulfate as SO4	**0.35**	0.038	0.50	"	"	2209176	10/26/22	10/26/22	EPA 300.0	J
Total Alkalinity	**7.8**	1.0	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Total Dissolved Solids	**17**	5.0	10	"	"	2209238	10/27/22	10/31/22	SM2540C	
Total Hardness as CaCO3	**4.9**	0.19	1.0	"	"	2209224	10/27/22	10/27/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.28**	0.040	0.20	"	"	2209286	10/28/22	10/28/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.3**	0.54	1.0	"	"	2209220	10/27/22	10/28/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209214	10/27/22	10/27/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209273	10/28/22	11/01/22	SM2540D	
R-IS-7-UVR-B (22J1342-02) Water Sampled: 10/25/22 08:55 Received: 10/25/22 13:52										
Ammonia as N	**0.074**	0.025	0.10	mg/L	1	2209281	10/28/22	10/28/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**8.0**	0.50	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.45**	0.026	0.50	"	"	2209176	10/26/22	10/26/22	EPA 300.0	J
Cyanide (total)	**0.0031**	0.0012	0.0050	"	"	2209179	10/26/22	10/28/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209199	10/26/22	10/27/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209176	10/26/22	10/26/22	EPA 300.0	
Orthophosphate as PO4	**0.011**	0.0051	0.15	"	"	2209180	10/26/22	10/26/22	SM4500-P E	J

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Stillwater Sciences
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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1342
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-7-UVR-B (22J1342-02) Water Sampled: 10/25/22 08:55 Received: 10/25/22 13:52										
Sulfate as SO4	**0.33**	0.038	0.50	mg/L	1	2209176	10/26/22	10/26/22	EPA 300.0	J
Total Alkalinity	**8.0**	1.0	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Total Dissolved Solids	**18**	5.0	10	"	"	2209238	10/27/22	10/31/22	SM2540C	
Total Hardness as CaCO3	**5.0**	0.19	1.0	"	"	2209224	10/27/22	10/27/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.33**	0.040	0.20	"	"	2209286	10/28/22	10/28/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.3**	0.54	1.0	"	"	2209220	10/27/22	10/28/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209214	10/27/22	10/27/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209273	10/28/22	11/01/22	SM2540D	
R-IS-8-UVR (22J1342-03) Water Sampled: 10/25/22 11:10 Received: 10/25/22 13:52										
Ammonia as N	**0.026**	0.025	0.10	mg/L	1	2209281	10/28/22	10/28/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**7.8**	0.50	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.45**	0.026	0.50	"	"	2209176	10/26/22	10/26/22	EPA 300.0	J
Cyanide (total)	**0.0031**	0.0012	0.0050	"	"	2209179	10/26/22	10/28/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209199	10/26/22	10/27/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209176	10/26/22	10/26/22	EPA 300.0	
Orthophosphate as PO4	**0.019**	0.0051	0.15	"	"	2209180	10/26/22	10/26/22	SM4500-P E	J
Sulfate as SO4	**0.35**	0.038	0.50	"	"	2209176	10/26/22	10/26/22	EPA 300.0	J
Total Alkalinity	**7.8**	1.0	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Total Dissolved Solids	**15**	5.0	10	"	"	2209238	10/27/22	10/31/22	SM2540C	
Total Hardness as CaCO3	**4.9**	0.19	1.0	"	"	2209224	10/27/22	10/27/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.35**	0.040	0.20	"	"	2209286	10/28/22	10/28/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.3**	0.54	1.0	"	"	2209220	10/27/22	10/28/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209214	10/27/22	10/27/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209273	10/28/22	11/01/22	SM2540D	

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CLS Work Order #: 22J1342
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-6-UVR-B (22J1342-04) Water	**Sampled: 10/25/22 09:45**		**Received: 10/25/22 13:52**							
Ammonia as N	**0.15**	0.025	0.10	mg/L	1	2209281	10/28/22	10/28/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**17**	0.50	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.46**	0.026	0.50	"	"	2209176	10/26/22	10/26/22	EPA 300.0	J
Cyanide (total)	**0.0023**	0.0012	0.0050	"	"	2209179	10/26/22	10/28/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209199	10/26/22	10/27/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209176	10/26/22	10/26/22	EPA 300.0	
Orthophosphate as PO4	**0.011**	0.0051	0.15	"	"	2209180	10/26/22	10/26/22	SM4500-P E	J
Sulfate as SO4	**0.34**	0.038	0.50	"	"	2209176	10/26/22	10/26/22	EPA 300.0	J
Total Alkalinity	**17**	1.0	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Total Dissolved Solids	**13**	5.0	10	"	"	2209238	10/27/22	10/31/22	SM2540C	
Total Hardness as CaCO3	**5.3**	0.19	1.0	"	"	2209224	10/27/22	10/27/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.44**	0.040	0.20	"	"	2209286	10/28/22	10/28/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.3**	0.54	1.0	"	"	2209220	10/27/22	10/28/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209214	10/27/22	10/27/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209273	10/28/22	11/01/22	SM2540D	
R-IS-6-UVR (22J1342-05) Water	**Sampled: 10/25/22 10:00**		**Received: 10/25/22 13:52**							
Ammonia as N	**0.29**	0.025	0.10	mg/L	1	2209281	10/28/22	10/28/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**8.4**	0.50	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.46**	0.026	0.50	"	"	2209176	10/26/22	10/26/22	EPA 300.0	J
Cyanide (total)	**0.0023**	0.0012	0.0050	"	"	2209179	10/26/22	10/28/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209199	10/26/22	10/27/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209176	10/26/22	10/26/22	EPA 300.0	
Orthophosphate as PO4	**0.0066**	0.0051	0.15	"	"	2209180	10/26/22	10/26/22	SM4500-P E	J

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COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-6-UVR (22J1342-05) Water	**Sampled: 10/25/22 10:00**		**Received: 10/25/22 13:52**							
Sulfate as SO4	**0.34**	0.038	0.50	mg/L	1	2209176	10/26/22	10/26/22	EPA 300.0	J
Total Alkalinity	**8.4**	1.0	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Total Dissolved Solids	**12**	5.0	10	"	"	2209238	10/27/22	10/31/22	SM2540C	
Total Hardness as CaCO3	**5.0**	0.19	1.0	"	"	2209224	10/27/22	10/27/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.43**	0.040	0.20	"	"	2209286	10/28/22	10/28/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.3**	0.54	1.0	"	"	2209220	10/27/22	10/28/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209214	10/27/22	10/27/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209273	10/28/22	11/01/22	SM2540D	

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CLS Work Order #: 22J1342
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-7-UVR (22J1342-01) Water Sampled: 10/25/22 08:40 Received: 10/25/22 13:52										
Diesel	ND	0.0021	0.050	mg/L	1	2209150	10/25/22	10/26/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*85 %*	*65-135*		"	"	"	"	
R-IS-7-UVR-B (22J1342-02) Water Sampled: 10/25/22 08:55 Received: 10/25/22 13:52										
Diesel	ND	0.0021	0.050	mg/L	1	2209150	10/25/22	10/26/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*91 %*	*65-135*		"	"	"	"	
R-IS-8-UVR (22J1342-03) Water Sampled: 10/25/22 11:10 Received: 10/25/22 13:52										
Diesel	ND	0.0021	0.050	mg/L	1	2209150	10/25/22	10/26/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*97 %*	*65-135*		"	"	"	"	
R-IS-6-UVR-B (22J1342-04) Water Sampled: 10/25/22 09:45 Received: 10/25/22 13:52										
Diesel	ND	0.0021	0.050	mg/L	1	2209150	10/25/22	10/26/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-6-UVR-B (22J1342-04) Water Sampled: 10/25/22 09:45 Received: 10/25/22 13:52										
Surrogate: o-Terphenyl			*83 %*	*65-135*		*2209150*	"	*10/26/22*	*EPA 8015M*	
R-IS-6-UVR (22J1342-05) Water Sampled: 10/25/22 10:00 Received: 10/25/22 13:52										
Diesel	ND	0.0021	0.050	mg/L	1	2209150	10/25/22	10/26/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*76 %*	*65-135*		*"*	"	*"*	*"*	

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Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-7-UVR (22J1342-01) Water Sampled: 10/25/22 08:40 Received: 10/25/22 13:52										
Aluminum	**28**	1.6	20	µg/L	1	2209186	10/26/22	10/26/22	EPA 200.8	
Barium	**6.6**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1500**	27	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	
Iron	**22**	9.1	100	"	"	"	"	"	"	J
Magnesium	**300**	21	1000	"	"	"	"	"	"	J
Manganese	**5.0**	0.050	2.0	"	"	2209186	10/26/22	10/26/22	EPA 200.8	
Potassium	**650**	61	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209186	10/26/22	10/26/22	EPA 200.8	
Sodium	**1200**	34	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	
R-IS-7-UVR-B (22J1342-02) Water Sampled: 10/25/22 08:55 Received: 10/25/22 13:52										
Aluminum	**81**	1.6	20	µg/L	1	2209186	10/26/22	10/26/22	EPA 200.8	
Barium	**8.0**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1400**	27	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	
Iron	**280**	9.1	100	"	"	"	"	"	"	
Magnesium	**300**	21	1000	"	"	"	"	"	"	J
Manganese	**31**	0.050	2.0	"	"	2209186	10/26/22	10/26/22	EPA 200.8	
Potassium	**350**	61	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209186	10/26/22	10/26/22	EPA 200.8	
Sodium	**1000**	34	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	
R-IS-8-UVR (22J1342-03) Water Sampled: 10/25/22 11:10 Received: 10/25/22 13:52										
Aluminum	**27**	1.6	20	µg/L	1	2209186	10/26/22	10/26/22	EPA 200.8	
Barium	**6.6**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1400**	27	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	
Iron	**18**	9.1	100	"	"	"	"	"	"	J
Magnesium	**300**	21	1000	"	"	"	"	"	"	J
Manganese	**3.7**	0.050	2.0	"	"	2209186	10/26/22	10/26/22	EPA 200.8	
Potassium	**440**	61	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209186	10/26/22	10/26/22	EPA 200.8	
Sodium	**1100**	34	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	

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Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-6-UVR-B (22J1342-04) Water Sampled: 10/25/22 09:45 Received: 10/25/22 13:52										
Aluminum	**21**	1.6	20	µg/L	1	2209186	10/26/22	10/26/22	EPA 200.8	
Barium	**6.5**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1400**	27	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	
Iron	**110**	9.1	100	"	"	"	"	"	"	
Magnesium	**310**	21	1000	"	"	"	"	"	"	J
Manganese	**37**	0.050	2.0	"	"	2209186	10/26/22	10/26/22	EPA 200.8	
Potassium	**470**	61	1000	"	"	2209187	10/26/22	10/27/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209186	10/26/22	10/26/22	EPA 200.8	
Sodium	**1000**	34	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	
R-IS-6-UVR (22J1342-05) Water Sampled: 10/25/22 10:00 Received: 10/25/22 13:52										
Aluminum	**24**	1.6	20	µg/L	1	2209186	10/26/22	10/26/22	EPA 200.8	
Barium	**6.2**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1500**	27	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	
Iron	**17**	9.1	100	"	"	"	"	"	"	J
Magnesium	**310**	21	1000	"	"	"	"	"	"	J
Manganese	**3.8**	0.050	2.0	"	"	2209186	10/26/22	10/26/22	EPA 200.8	
Potassium	**320**	61	1000	"	"	2209187	10/26/22	10/27/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209186	10/26/22	10/26/22	EPA 200.8	
Sodium	**1100**	34	1000	"	"	2209187	10/26/22	10/26/22	EPA 200.7	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1342
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-7-UVR (22J1342-01) Water Sampled: 10/25/22 08:40 Received: 10/25/22 13:52										
Aluminum	**7.9**	0.52	20	µg/L	1	2209246	10/27/22	10/27/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2209224	10/27/22	10/27/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2209246	10/27/22	10/27/22	EPA 200.8	
R-IS-7-UVR-B (22J1342-02) Water Sampled: 10/25/22 08:55 Received: 10/25/22 13:52										
Aluminum	**9.8**	0.52	20	µg/L	1	2209246	10/27/22	10/27/22	EPA 200.8	J
Iron	**39**	6.8	100	"	"	2209224	10/27/22	10/27/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2209246	10/27/22	10/27/22	EPA 200.8	
R-IS-8-UVR (22J1342-03) Water Sampled: 10/25/22 11:10 Received: 10/25/22 13:52										
Aluminum	**7.4**	0.52	20	µg/L	1	2209246	10/27/22	10/27/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2209224	10/27/22	10/27/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2209246	10/27/22	10/27/22	EPA 200.8	
R-IS-6-UVR-B (22J1342-04) Water Sampled: 10/25/22 09:45 Received: 10/25/22 13:52										
Aluminum	**11**	0.52	20	µg/L	1	2209246	10/27/22	10/27/22	EPA 200.8	J
Iron	**7.3**	6.8	100	"	"	2209224	10/27/22	10/27/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2209246	10/27/22	10/27/22	EPA 200.8	
R-IS-6-UVR (22J1342-05) Water Sampled: 10/25/22 10:00 Received: 10/25/22 13:52										
Aluminum	**6.8**	0.52	20	µg/L	1	2209246	10/27/22	10/27/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2209224	10/27/22	10/27/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2209246	10/27/22	10/27/22	EPA 200.8	

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COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-7-UVR (22J1342-01) Water Sampled: 10/25/22 08:40 Received: 10/25/22 13:52										
Gasoline	ND	10	50	µg/L	1	2209328	10/31/22	10/31/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*85 %*		*65-135*		"	"	"	"
R-IS-7-UVR-B (22J1342-02) Water Sampled: 10/25/22 08:55 Received: 10/25/22 13:52										
Gasoline	ND	10	50	µg/L	1	2209328	10/31/22	10/31/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*79 %*		*65-135*		"	"	"	"
R-IS-8-UVR (22J1342-03) Water Sampled: 10/25/22 11:10 Received: 10/25/22 13:52										
Gasoline	ND	10	50	µg/L	1	2209328	10/31/22	10/31/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*75 %*		*65-135*		"	"	"	"
R-IS-6-UVR-B (22J1342-04) Water Sampled: 10/25/22 09:45 Received: 10/25/22 13:52										
Gasoline	ND	10	50	µg/L	1	2209328	10/31/22	10/31/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*86 %*		*65-135*		"	"	"	"
R-IS-6-UVR (22J1342-05) Water Sampled: 10/25/22 10:00 Received: 10/25/22 13:52										
Gasoline	ND	10	50	µg/L	1	2209328	10/31/22	10/31/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*77 %*		*65-135*		"	"	"	"

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CLS Work Order #: 22J1342
COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-7-UVR (22J1342-01) Water Sampled: 10/25/22 08:40 Received: 10/25/22 13:52										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209258	10/27/22	10/27/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"
R-IS-7-UVR-B (22J1342-02) Water Sampled: 10/25/22 08:55 Received: 10/25/22 13:52										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209258	10/27/22	10/27/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"
R-IS-8-UVR (22J1342-03) Water Sampled: 10/25/22 11:10 Received: 10/25/22 13:52										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209258	10/27/22	10/27/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"
R-IS-6-UVR-B (22J1342-04) Water Sampled: 10/25/22 09:45 Received: 10/25/22 13:52										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209258	10/27/22	10/27/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"
R-IS-6-UVR (22J1342-05) Water Sampled: 10/25/22 10:00 Received: 10/25/22 13:52										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209258	10/27/22	10/27/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"

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CLS Work Order #: 22J1342
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209176 - General Prep											
Blank (2209176-BLK1)					Prepared & Analyzed: 10/26/22						
Sulfate as SO4	ND	0.038	0.50	mg/L							
Chloride	0.201	0.026	0.50	"							J
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2209176-BS1)					Prepared & Analyzed: 10/26/22						
Chloride	5.03	0.026	0.50	mg/L	5.00		101	80-120			
Sulfate as SO4	5.07	0.038	0.50	"	5.00		101	80-120			
Nitrate/Nitrite as N	4.36	0.055	0.40	"	4.00		109	80-120			
LCS Dup (2209176-BSD1)					Prepared & Analyzed: 10/26/22						
Sulfate as SO4	5.00	0.038	0.50	mg/L	5.00		100	80-120	1	20	
Chloride	4.98	0.026	0.50	"	5.00		100	80-120	1	20	
Nitrate/Nitrite as N	4.32	0.055	0.40	"	4.00		108	80-120	1	20	
Matrix Spike (2209176-MS1)			**Source: 22J1342-01**		Prepared & Analyzed: 10/26/22						
Sulfate as SO4	5.34	0.038	0.50	mg/L	5.00	0.346	100	80-120			
Chloride	5.30	0.026	0.50	"	5.00	0.450	97	80-120			
Nitrate/Nitrite as N	4.29	0.055	0.40	"	4.00	ND	107	80-120			
Matrix Spike Dup (2209176-MSD1)			**Source: 22J1342-01**		Prepared & Analyzed: 10/26/22						
Chloride	5.08	0.026	0.50	mg/L	5.00	0.450	93	80-120	4	20	
Sulfate as SO4	5.13	0.038	0.50	"	5.00	0.346	96	80-120	4	20	
Nitrate/Nitrite as N	4.12	0.055	0.40	"	4.00	ND	103	80-120	4	20	
Batch 2209179 - General Preparation											
Blank (2209179-BLK1)					Prepared: 10/26/22 Analyzed: 10/28/22						
Cyanide (total)	0.00120	0.0012	0.0050	mg/L							J

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COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209179 - General Preparation											
LCS (2209179-BS1)					Prepared: 10/26/22 Analyzed: 10/28/22						
Cyanide (total)	0.0759	0.0012	0.0050	mg/L	0.100		76	75-125			
LCS Dup (2209179-BSD1)					Prepared: 10/26/22 Analyzed: 10/28/22						
Cyanide (total)	0.0755	0.0012	0.0050	mg/L	0.100		76	75-125	0.5	25	
Matrix Spike (2209179-MS1)			**Source: 22J1365-01**		Prepared: 10/26/22 Analyzed: 10/28/22						
Cyanide (total)	0.0678	0.0012	0.0050	mg/L	0.100	0.00270	65	75-125			QM-7
Matrix Spike Dup (2209179-MSD1)			**Source: 22J1365-01**		Prepared: 10/26/22 Analyzed: 10/28/22						
Cyanide (total)	0.0678	0.0012	0.0050	mg/L	0.100	0.00270	65	75-125	0	25	QM-7
Batch 2209180 - General Preparation											
Blank (2209180-BLK1)					Prepared & Analyzed: 10/26/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							
LCS (2209180-BS1)					Prepared & Analyzed: 10/26/22						
Orthophosphate as PO4	0.908	0.0051	0.15	mg/L	0.918		99	80-120			
LCS Dup (2209180-BSD1)					Prepared & Analyzed: 10/26/22						
Orthophosphate as PO4	0.867	0.0051	0.15	mg/L	0.918		94	80-120	5	20	
Matrix Spike (2209180-MS1)			**Source: 22J1342-01**		Prepared & Analyzed: 10/26/22						
Orthophosphate as PO4	0.883	0.0051	0.15	mg/L	0.918	0.0107	95	75-125			
Matrix Spike Dup (2209180-MSD1)			**Source: 22J1342-01**		Prepared & Analyzed: 10/26/22						
Orthophosphate as PO4	0.912	0.0051	0.15	mg/L	0.918	0.0107	98	75-125	3	25	

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CLS Work Order #: 22J1342
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209199 - Solvent Extract											
Blank (2209199-BLK1)					Prepared: 10/26/22 Analyzed: 10/27/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2209199-BS1)					Prepared: 10/26/22 Analyzed: 10/27/22						
Hexane Extractable Material (HEM, Oil & Grease)	40.0	1.0	5.0	mg/L	40.0		100	78-114			
LCS Dup (2209199-BSD1)					Prepared: 10/26/22 Analyzed: 10/27/22						
Hexane Extractable Material (HEM, Oil & Grease)	40.4	1.0	5.0	mg/L	40.0		101	78-114	1	18	
Batch 2209214 - General Preparation											
Blank (2209214-BLK1)					Prepared & Analyzed: 10/27/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2209214-BS1)					Prepared & Analyzed: 10/27/22						
Total Phosphorus as P	0.295	0.023	0.050	mg/L	0.300		98	80-120			
LCS Dup (2209214-BSD1)					Prepared & Analyzed: 10/27/22						
Total Phosphorus as P	0.283	0.023	0.050	mg/L	0.300		94	80-120	4	25	
Matrix Spike (2209214-MS1)			**Source: 22J1292-02**		Prepared & Analyzed: 10/27/22						
Total Phosphorus as P	0.282	0.023	0.050	mg/L	0.300	ND	94	75-125			
Matrix Spike Dup (2209214-MSD1)			**Source: 22J1292-02**		Prepared & Analyzed: 10/27/22						
Total Phosphorus as P	0.287	0.023	0.050	mg/L	0.300	ND	96	75-125	2	30	
Batch 2209220 - General Preparation											
Blank (2209220-BLK1)					Prepared: 10/27/22 Analyzed: 10/28/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209220 - General Preparation											
LCS (2209220-BS1)					Prepared: 10/27/22 Analyzed: 10/28/22						
Total Organic Carbon	10.8	0.54	1.0	mg/L	10.0		108	75-125			
LCS Dup (2209220-BSD1)					Prepared: 10/27/22 Analyzed: 10/28/22						
Total Organic Carbon	10.6	0.54	1.0	mg/L	10.0		106	75-125	1	25	
Matrix Spike (2209220-MS1)			**Source: 22J1292-04**		Prepared: 10/27/22 Analyzed: 10/28/22						
Total Organic Carbon	15.4	0.54	1.0	mg/L	10.0	1.88	135	75-125			QM-7
Matrix Spike Dup (2209220-MSD1)			**Source: 22J1292-04**		Prepared: 10/27/22 Analyzed: 10/28/22						
Total Organic Carbon	15.2	0.54	1.0	mg/L	10.0	1.88	133	75-125	0.8	25	QM-7
Batch 2209224 - EPA 200 No Digestion											
Blank (2209224-BLK1)					Prepared & Analyzed: 10/27/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2209224-BS1)					Prepared & Analyzed: 10/27/22						
Total Hardness as CaCO3	32.7	0.19	1.0	mg/L	33.1		99	85-115			
Matrix Spike (2209224-MS1)			**Source: 22J1292-01**		Prepared & Analyzed: 10/27/22						
Total Hardness as CaCO3	35.8	0.19	1.0	mg/L	33.1	3.86	96	70-130			
Matrix Spike (2209224-MS2)			**Source: 22J1342-01**		Prepared & Analyzed: 10/27/22						
Total Hardness as CaCO3	36.8	0.19	1.0	mg/L	33.1	4.94	96	70-130			
Batch 2209238 - General Preparation											
Blank (2209238-BLK1)					Prepared: 10/27/22 Analyzed: 10/31/22						
Total Dissolved Solids	ND	5.0	10	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209238 - General Preparation											
Duplicate (2209238-DUP1)			**Source: 22J1229-01**		Prepared: 10/27/22 Analyzed: 10/31/22						
Total Dissolved Solids	ND	5.0	10	mg/L		ND				20	
Batch 2209273 - General Preparation											
Duplicate (2209273-DUP1)			**Source: 22J1342-01**		Prepared: 10/28/22 Analyzed: 11/01/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	
Batch 2209280 - General Preparation											
Blank (2209280-BLK1)					Prepared & Analyzed: 10/28/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Duplicate (2209280-DUP1)			**Source: 22J1342-01**		Prepared & Analyzed: 10/28/22						
Total Alkalinity	8.80	1.0	5.0	mg/L		7.80			12	20	
Bicarbonate as CaCO3	8.80	0.50	5.0	"		7.80			12	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Batch 2209281 - General Preparation											
Blank (2209281-BLK1)					Prepared & Analyzed: 10/28/22						
Ammonia as N	ND	0.025	0.10	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209281 - General Preparation											
LCS (2209281-BS1)					Prepared & Analyzed: 10/28/22						
Ammonia as N	0.450	0.025	0.10	mg/L	0.500		90	80-120			
LCS Dup (2209281-BSD1)					Prepared & Analyzed: 10/28/22						
Ammonia as N	0.441	0.025	0.10	mg/L	0.500		88	80-120	2	25	
Matrix Spike (2209281-MS1)			**Source: 22J1410-01**		Prepared & Analyzed: 10/28/22						
Ammonia as N	0.436	0.025	0.10	mg/L	0.500	0.0260	82	75-125			
Matrix Spike Dup (2209281-MSD1)			**Source: 22J1410-01**		Prepared & Analyzed: 10/28/22						
Ammonia as N	0.465	0.025	0.10	mg/L	0.500	0.0260	88	75-125	6	25	
Batch 2209286 - General Preparation											
Blank (2209286-BLK1)					Prepared & Analyzed: 10/28/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2209286-BS1)					Prepared & Analyzed: 10/28/22						
Total Kjeldahl Nitrogen	0.492	0.040	0.20	mg/L	0.500		98	80-120			
LCS Dup (2209286-BSD1)					Prepared & Analyzed: 10/28/22						
Total Kjeldahl Nitrogen	0.502	0.040	0.20	mg/L	0.500		100	80-120	2	20	
Matrix Spike (2209286-MS1)			**Source: 22J1292-05**		Prepared & Analyzed: 10/28/22						
Total Kjeldahl Nitrogen	0.933	0.040	0.20	mg/L	0.500	0.383	110	75-125			
Matrix Spike Dup (2209286-MSD1)			**Source: 22J1292-05**		Prepared & Analyzed: 10/28/22						
Total Kjeldahl Nitrogen	0.946	0.040	0.20	mg/L	0.500	0.383	113	75-125	1	25	

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Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209150 - EPA 3510B GCNV											
Blank (2209150-BLK1)					Prepared & Analyzed: 10/25/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Surrogate: o-Terphenyl	*0.0264*			*"*	*0.0250*		*106*	*65-135*			
LCS (2209150-BS1)					Prepared & Analyzed: 10/25/22						
Diesel	2.09	0.0021	0.050	mg/L	2.50		84	65-135			
Surrogate: o-Terphenyl	*0.0245*			*"*	*0.0250*		*98*	*65-135*			
LCS Dup (2209150-BSD1)					Prepared & Analyzed: 10/25/22						
Diesel	2.73	0.0021	0.050	mg/L	2.50		109	65-135	27	30	
Surrogate: o-Terphenyl	*0.0292*			*"*	*0.0250*		*117*	*65-135*			
Matrix Spike (2209150-MS1)			**Source: 22J1285-02**		Prepared & Analyzed: 10/25/22						
Diesel	2.86	0.0021	0.050	mg/L	2.50	ND	115	46-137			
Surrogate: o-Terphenyl	*0.0246*			*"*	*0.0250*		*98*	*65-135*			
Matrix Spike Dup (2209150-MSD1)			**Source: 22J1285-02**		Prepared & Analyzed: 10/25/22						
Diesel	2.61	0.0021	0.050	mg/L	2.50	ND	105	46-137	9	30	
Surrogate: o-Terphenyl	*0.0249*			*"*	*0.0250*		*100*	*65-135*			

11/01/22 12:41

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1342
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209186 - EPA 200 Series											
Blank (2209186-BLK1)					Prepared & Analyzed: 10/26/22						
Aluminum	3.99	1.6	20	µg/L							J
Barium	ND	0.14	5.0	"							
Manganese	0.115	0.050	2.0	"							J
Silver	ND	0.070	0.50	"							
LCS (2209186-BS1)					Prepared & Analyzed: 10/26/22						
Aluminum	480	1.6	20	µg/L	500		96	85-115			
Barium	107	0.14	5.0	"	100		107	85-115			
Manganese	102	0.050	2.0	"	100		102	85-115			
Silver	105	0.070	0.50	"	100		105	85-115			
Matrix Spike (2209186-MS1)			**Source: 22J1366-02**		Prepared & Analyzed: 10/26/22						
Aluminum	519	1.6	20	µg/L	500	36.2	96	70-130			
Barium	239	0.14	5.0	"	100	130	109	70-130			
Manganese	317	0.050	2.0	"	100	221	96	70-130			
Silver	104	0.070	0.50	"	100	ND	104	70-130			
Batch 2209187 - EPA 200 Series											
Blank (2209187-BLK1)					Prepared & Analyzed: 10/26/22						
Boron	ND	5.3	50	µg/L							
Cadmium	ND	2.2	10	"							
Calcium	ND	27	1000	"							
Chromium	ND	6.1	10	"							
Copper	ND	3.4	10	"							
Iron	ND	9.1	100	"							
Lead	ND	20	25	"							
Magnesium	ND	21	1000	"							
Manganese	ND	0.92	10	"							
Nickel	ND	3.1	20	"							
Potassium	112	61	1000	"							J
Silver	ND	3.3	10	"							
Sodium	ND	34	1000	"							

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CLS Work Order #: 22J1342
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209187 - EPA 200 Series											
Blank (2209187-BLK1)					Prepared & Analyzed: 10/26/22						
Zinc	ND	1.7	20	µg/L							
LCS (2209187-BS1)					Prepared & Analyzed: 10/26/22						
Boron	496	5.3	50	µg/L	500		99	85-115			
Cadmium	522	2.2	10	"	500		104	85-115			
Calcium	5300	27	1000	"	5000		106	85-115			
Chromium	545	6.1	10	"	500		109	85-115			
Copper	518	3.4	10	"	500		104	85-115			
Iron	524	9.1	100	"	500		105	85-115			
Lead	537	20	25	"	500		107	85-115			
Magnesium	4990	21	1000	"	5000		100	85-115			
Manganese	548	0.92	10	"	500		110	85-115			
Nickel	537	3.1	20	"	500		107	85-115			
Potassium	5400	61	1000	"	5000		108	85-115			
Silver	518	3.3	10	"	500		104	85-115			
Sodium	5190	34	1000	"	5000		104	85-115			
Zinc	508	1.7	20	"	500		102	85-115			
Matrix Spike (2209187-MS1)			**Source: 22J1286-01**		Prepared & Analyzed: 10/26/22						
Boron	530	5.3	50	µg/L	500	18.1	102	70-130			
Cadmium	524	2.2	10	"	500	ND	105	70-130			
Calcium	16400	27	1000	"	5000	11300	101	70-130			
Chromium	535	6.1	10	"	500	ND	107	70-130			
Copper	518	3.4	10	"	500	ND	104	70-130			
Iron	1170	9.1	100	"	500	630	108	70-130			
Lead	526	20	25	"	500	ND	105	70-130			
Magnesium	8260	21	1000	"	5000	3410	97	70-130			
Manganese	615	0.92	10	"	500	76.8	108	70-130			
Nickel	532	3.1	20	"	500	ND	106	70-130			
Potassium	12600	61	1000	"	5000	7440	104	70-130			
Silver	534	3.3	10	"	500	ND	107	70-130			
Sodium	56500	34	1000	"	5000	52300	84	70-130			

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1342
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209187 - EPA 200 Series											
Matrix Spike (2209187-MS1)			**Source: 22J1286-01**		Prepared & Analyzed: 10/26/22						
Zinc	524	1.7	20	µg/L	500	5.55	104	70-130			
Matrix Spike (2209187-MS2)			**Source: 22J1292-01**		Prepared & Analyzed: 10/26/22						
Boron	502	5.3	50	µg/L	500	ND	100	70-130			
Cadmium	531	2.2	10	"	500	ND	106	70-130			
Calcium	6860	27	1000	"	5000	1340	110	70-130			
Chromium	567	6.1	10	"	500	ND	113	70-130			
Copper	530	3.4	10	"	500	ND	106	70-130			
Iron	607	9.1	100	"	500	41.7	113	70-130			
Lead	547	20	25	"	500	ND	109	70-130			
Magnesium	5160	21	1000	"	5000	131	101	70-130			
Manganese	578	0.92	10	"	500	17.2	112	70-130			
Nickel	549	3.1	20	"	500	ND	110	70-130			
Potassium	6020	61	1000	"	5000	581	109	70-130			
Silver	535	3.3	10	"	500	ND	107	70-130			
Sodium	5860	34	1000	"	5000	663	104	70-130			
Zinc	518	1.7	20	"	500	ND	104	70-130			

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1342
COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209224 - EPA 200 No Digestion											
Blank (2209224-BLK1)					Prepared & Analyzed: 10/27/22						
Iron	ND	6.8	100	µg/L							
LCS (2209224-BS1)					Prepared & Analyzed: 10/27/22						
Iron	491	6.8	100	µg/L	500		98	85-115			
Matrix Spike (2209224-MS1)			**Source: 22J1292-01**		Prepared & Analyzed: 10/27/22						
Iron	483	6.8	100	µg/L	500	ND	97	70-130			
Matrix Spike (2209224-MS2)			**Source: 22J1342-01**		Prepared & Analyzed: 10/27/22						
Iron	481	6.8	100	µg/L	500	ND	96	70-130			
Batch 2209246 - EPA 200 No Digestion											
Blank (2209246-BLK1)					Prepared & Analyzed: 10/27/22						
Aluminum	ND	0.52	20	µg/L							
Silver	ND	0.15	0.50	"							
LCS (2209246-BS1)					Prepared & Analyzed: 10/27/22						
Aluminum	468	0.52	20	µg/L	500		94	85-115			
Silver	99.7	0.15	0.50	"	100		100	85-115			
Matrix Spike (2209246-MS1)			**Source: 22J1292-01**		Prepared & Analyzed: 10/27/22						
Aluminum	448	0.52	20	µg/L	500	5.44	89	70-130			
Silver	92.0	0.15	0.50	"	100	ND	92	70-130			
Matrix Spike (2209246-MS2)			**Source: 22J1410-01**		Prepared & Analyzed: 10/27/22						
Aluminum	483	0.52	20	µg/L	500	7.32	95	70-130			
Silver	101	0.15	0.50	"	100	ND	101	70-130			

11/01/22 12:41

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22J1342**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209328 - EPA 5030 Water GC											
Blank (2209328-BLK1)					Prepared & Analyzed: 10/31/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*17.2*			"	*20.0*		*86*	*65-135*			
LCS (2209328-BS1)					Prepared & Analyzed: 10/31/22						
Gasoline	540	10	50	µg/L	500		108	70-130			
Surrogate: o-Chlorotoluene (Gas)	*14.9*			"	*20.0*		*75*	*65-135*			
LCS Dup (2209328-BSD1)					Prepared & Analyzed: 10/31/22						
Gasoline	537	10	50	µg/L	500		107	70-130	0.6	30	
Surrogate: o-Chlorotoluene (Gas)	*15.8*			"	*20.0*		*79*	*65-135*			
Matrix Spike (2209328-MS1)			**Source: 22J1342-01**		Prepared & Analyzed: 10/31/22						
Gasoline	479	10	50	µg/L	500	ND	96	68-132			
Surrogate: o-Chlorotoluene (Gas)	*15.5*			"	*20.0*		*78*	*65-135*			
Matrix Spike Dup (2209328-MSD1)			**Source: 22J1342-01**		Prepared & Analyzed: 10/31/22						
Gasoline	492	10	50	µg/L	500	ND	98	68-132	3	32	
Surrogate: o-Chlorotoluene (Gas)	*16.6*			"	*20.0*		*83*	*65-135*			

11/01/22 12:41

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1342
COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209258 - EPA 3510B GCMS											
Blank (2209258-BLK1)					Prepared & Analyzed: 10/27/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Surrogate: Toluene-d8	*9.75*			"	*10.0*		*98*	*72-125*			
LCS (2209258-BS1)					Prepared & Analyzed: 10/27/22						
Methyl tert-butyl ether	18.2	0.095	0.50	µg/L	20.0		91	52-130			
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			
LCS Dup (2209258-BSD1)					Prepared & Analyzed: 10/27/22						
Methyl tert-butyl ether	18.4	0.095	0.50	µg/L	20.0		92	52-130	1	30	
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			
Matrix Spike (2209258-MS1)			**Source: 22J1292-01**		Prepared: 10/27/22 Analyzed: 10/28/22						
Methyl tert-butyl ether	19.2	0.095	0.50	µg/L	20.0	ND	96	52-140			
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			
Matrix Spike Dup (2209258-MSD1)			**Source: 22J1292-01**		Prepared: 10/27/22 Analyzed: 10/28/22						
Methyl tert-butyl ether	18.3	0.095	0.50	µg/L	20.0	ND	91	52-140	5	30	
Surrogate: Toluene-d8	*10.0*			"	*10.0*		*100*	*72-125*			

11/01/22 12:41

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22J1342**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22J1342 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches.

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[X] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [X] NO [ ]

GLOBAL ID

FIELD CONDITIONS:

ANALYSIS REQUESTED

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	TSS, TDS, Hardness, Alkalinity, NO2-N+NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TAT 1	TAT 2	TAT 3	TAT 5	SPECIAL INSTRUCTIONS
10/25	8:40	R-IS 7 UVR		Surface water			6	X	X	X	X	X	X	X				X	
10/25	8:55	R-IS-7-UVR-B		Surface water			6	X	X	X	X	X	X	X				X	
10/25	11:10	R-IS 8-UVR		Surface water			6	X	X	X	X	X	X	X				X	
10/25	9:45	R-IS-6-UVR-B		Surface water			6	X	X	X	X	X	X	X				X	
10/25	10:00	R-IS-6 UVR		Surface water			6	X	X	X	X	X	X	X				X	
				Surface water			6											X	
				Surface water			6											X	INVOICE TO:
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	**Project No. 750.10 Task 0620.01**
				Surface water			6											X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (2) HNO_3 (3) = COLD (4)= H2SO4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
[signature]	Sonia Waddell / STILLWATER SCIENCES	10/25 13:52		

RECEIVED AT LAB BY: [signature] DATE/TIME: 10/25/22 1352 CONDITIONS/COMMENTS: 1.9/1.2

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER ____ AIR BILL # ____

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

November 02, 2022

CLS Work Order #: 22J1410
COC #:

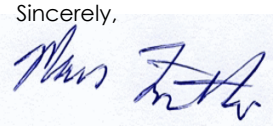
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 10/26/22 13:53. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

11/02/22 15:46

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1410
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-9-IHR (22J1410-01) Water Sampled: 10/26/22 08:50 Received: 10/26/22 13:53										
Ammonia as N	**0.026**	0.025	0.10	mg/L	1	2209281	10/28/22	10/28/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**8.2**	0.50	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.46**	0.026	0.50	"	"	2209207	10/27/22	10/27/22	EPA 300.0	J
Cyanide (total)	**0.0016**	0.0012	0.0050	"	"	2209346	11/01/22	11/01/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209308	10/31/22	10/31/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209207	10/27/22	10/27/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2209248	10/27/22	10/27/22	SM4500-P E	
Sulfate as SO4	**0.58**	0.038	0.50	"	"	2209207	10/27/22	10/27/22	EPA 300.0	
Total Alkalinity	**8.2**	1.0	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Total Dissolved Solids	**23**	5.0	10	"	"	2209290	10/28/22	11/02/22	SM2540C	
Total Hardness as CaCO3	**4.6**	0.19	1.0	"	"	2209267	10/27/22	10/27/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.24**	0.040	0.20	"	"	2209316	10/31/22	10/31/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.7**	0.54	1.0	"	"	2209220	10/27/22	10/28/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209214	10/27/22	10/27/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209335	10/31/22	11/02/22	SM2540D	
R-IS-9-IHR-B (22J1410-02) Water Sampled: 10/26/22 09:05 Received: 10/26/22 13:53										
Ammonia as N	**0.038**	0.025	0.10	mg/L	1	2209281	10/28/22	10/28/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**9.2**	0.50	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.48**	0.026	0.50	"	"	2209207	10/27/22	10/27/22	EPA 300.0	J
Cyanide (total)	**0.0064**	0.0012	0.0050	"	"	2209346	11/01/22	11/01/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209308	10/31/22	10/31/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209207	10/27/22	10/27/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2209248	10/27/22	10/27/22	SM4500-P E	

11/02/22 15:46

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1410
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-9-IHR-B (22J1410-02) Water	**Sampled: 10/26/22 09:05**		**Received: 10/26/22 13:53**							
Sulfate as SO4	**0.79**	0.038	0.50	mg/L	1	2209207	10/27/22	10/27/22	EPA 300.0	
Total Alkalinity	**9.2**	1.0	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Total Dissolved Solids	**29**	5.0	10	"	"	2209290	10/28/22	11/02/22	SM2540C	
Total Hardness as CaCO3	**5.8**	0.19	1.0	"	"	2209267	10/27/22	10/27/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.17**	0.040	0.20	"	"	2209316	10/31/22	10/31/22	SM4500-NH3F-2011	J
Total Organic Carbon	**2.4**	0.54	1.0	"	"	2209220	10/27/22	10/28/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209214	10/27/22	10/27/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209335	10/31/22	11/02/22	SM2540D	
R-IS-10-IHR (22J1410-03) Water	**Sampled: 10/26/22 09:35**		**Received: 10/26/22 13:53**							
Ammonia as N	**0.026**	0.025	0.10	mg/L	1	2209281	10/28/22	10/28/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**7.8**	0.50	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.46**	0.026	0.50	"	"	2209207	10/27/22	10/27/22	EPA 300.0	J
Cyanide (total)	ND	0.0012	0.0050	"	"	2209346	11/01/22	11/01/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.1	5.6	"	"	2209308	10/31/22	10/31/22	EPA 1664B	QRL-2
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209207	10/27/22	10/27/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2209248	10/27/22	10/27/22	SM4500-P E	
Sulfate as SO4	**0.59**	0.038	0.50	"	"	2209207	10/27/22	10/27/22	EPA 300.0	
Total Alkalinity	**7.8**	1.0	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Total Dissolved Solids	**6.0**	5.0	10	"	"	2209290	10/28/22	11/02/22	SM2540C	J
Total Hardness as CaCO3	**4.8**	0.19	1.0	"	"	2209267	10/27/22	10/27/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.23**	0.040	0.20	"	"	2209316	10/31/22	10/31/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.7**	0.54	1.0	"	"	2209220	10/27/22	10/28/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209214	10/27/22	10/27/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209335	10/31/22	11/02/22	SM2540D	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1410
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-10-IHR-B (22J1410-04) Water	**Sampled: 10/26/22 09:50**	**Received: 10/26/22 13:53**								
Ammonia as N	**0.026**	0.025	0.10	mg/L	1	2209281	10/28/22	10/28/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**8.4**	0.50	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.45**	0.026	0.50	"	"	2209207	10/27/22	10/27/22	EPA 300.0	J
Cyanide (total)	ND	0.0012	0.0050	"	"	2209346	11/01/22	11/01/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209308	10/31/22	10/31/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209207	10/27/22	10/27/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2209248	10/27/22	10/27/22	SM4500-P E	
Sulfate as SO4	**0.59**	0.038	0.50	"	"	2209207	10/27/22	10/27/22	EPA 300.0	
Total Alkalinity	**8.4**	1.0	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Total Dissolved Solids	**28**	5.0	10	"	"	2209290	10/28/22	11/02/22	SM2540C	
Total Hardness as CaCO3	**4.8**	0.19	1.0	"	"	2209267	10/27/22	10/27/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.29**	0.040	0.20	"	"	2209316	10/31/22	10/31/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.6**	0.54	1.0	"	"	2209220	10/27/22	10/28/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209214	10/27/22	10/27/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209335	10/31/22	11/02/22	SM2540D	
R-IS-11-IHR (22J1410-05) Water	**Sampled: 10/26/22 10:30**	**Received: 10/26/22 13:53**								
Ammonia as N	**0.040**	0.025	0.10	mg/L	1	2209281	10/28/22	10/28/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**8.2**	0.50	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.45**	0.026	0.50	"	"	2209207	10/27/22	10/27/22	EPA 300.0	J
Cyanide (total)	**0.0034**	0.0012	0.0050	"	"	2209346	11/01/22	11/01/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209308	10/31/22	10/31/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209207	10/27/22	10/27/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2209248	10/27/22	10/27/22	SM4500-P E	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1410
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-11-IHR (22J1410-05) Water	**Sampled: 10/26/22 10:30**		**Received: 10/26/22 13:53**							
Sulfate as SO4	**0.59**	0.038	0.50	mg/L	1	2209207	10/27/22	10/27/22	EPA 300.0	
Total Alkalinity	**8.2**	1.0	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Total Dissolved Solids	**28**	5.0	10	"	"	2209290	10/28/22	11/02/22	SM2540C	
Total Hardness as CaCO3	**4.8**	0.19	1.0	"	"	2209267	10/27/22	10/27/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.25**	0.040	0.20	"	"	2209316	10/31/22	10/31/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.6**	0.54	1.0	"	"	2209220	10/27/22	10/28/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209214	10/27/22	10/27/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209335	10/31/22	11/02/22	SM2540D	
R-IS-11-IHRB (22J1410-06) Water	**Sampled: 10/26/22 10:45**		**Received: 10/26/22 13:53**							
Ammonia as N	**0.037**	0.025	0.10	mg/L	1	2209281	10/28/22	10/28/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**7.0**	0.50	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.48**	0.026	0.50	"	"	2209207	10/27/22	10/27/22	EPA 300.0	J
Cyanide (total)	**0.0016**	0.0012	0.0050	"	"	2209346	11/01/22	11/01/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209308	10/31/22	10/31/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Nitrate/Nitrite as N	**0.061**	0.055	0.40	"	"	2209207	10/27/22	10/27/22	EPA 300.0	J
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2209248	10/27/22	10/27/22	SM4500-P E	
Sulfate as SO4	**0.82**	0.038	0.50	"	"	2209207	10/27/22	10/27/22	EPA 300.0	
Total Alkalinity	**7.0**	1.0	5.0	"	"	2209280	10/28/22	10/28/22	SM2320B	
Total Dissolved Solids	**23**	5.0	10	"	"	2209290	10/28/22	11/02/22	SM2540C	
Total Hardness as CaCO3	**5.0**	0.19	1.0	"	"	2209267	10/27/22	10/27/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.19**	0.040	0.20	"	"	2209316	10/31/22	10/31/22	SM4500-NH3F-2011	J
Total Organic Carbon	**2.1**	0.54	1.0	"	"	2209220	10/27/22	10/28/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209214	10/27/22	10/27/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209335	10/31/22	11/02/22	SM2540D	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1410
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-9-IHR (22J1410-01) Water Sampled: 10/26/22 08:50 Received: 10/26/22 13:53										
Diesel	ND	0.0021	0.050	mg/L	1	2209243	10/27/22	10/28/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*84 %*	*65-135*		"	"	"	"	
R-IS-9-IHR-B (22J1410-02) Water Sampled: 10/26/22 09:05 Received: 10/26/22 13:53										
Diesel	ND	0.0021	0.050	mg/L	1	2209243	10/27/22	10/28/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*104 %*	*65-135*		"	"	"	"	
R-IS-10-IHR (22J1410-03) Water Sampled: 10/26/22 09:35 Received: 10/26/22 13:53										
Diesel	ND	0.0021	0.050	mg/L	1	2209243	10/27/22	10/28/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*107 %*	*65-135*		"	"	"	"	
R-IS-10-IHR-B (22J1410-04) Water Sampled: 10/26/22 09:50 Received: 10/26/22 13:53										
Diesel	ND	0.0021	0.050	mg/L	1	2209243	10/27/22	10/28/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22J1410**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-10-IHR-B (22J1410-04) Water Sampled: 10/26/22 09:50 Received: 10/26/22 13:53										
Surrogate: o-Terphenyl			*92 %*	*65-135*		*2209243*	"	*10/28/22*	*EPA 8015M*	
R-IS-11-IHR (22J1410-05) Water Sampled: 10/26/22 10:30 Received: 10/26/22 13:53										
Diesel	ND	0.0021	0.050	mg/L	1	2209243	10/27/22	10/28/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*97 %*	*65-135*		"	"	"	"	
R-IS-11-IHRB (22J1410-06) Water Sampled: 10/26/22 10:45 Received: 10/26/22 13:53										
Diesel	ND	0.0021	0.050	mg/L	1	2209243	10/27/22	10/28/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*79 %*	*65-135*		"	"	"	"	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1410
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-9-IHR (22J1410-01) Water Sampled: 10/26/22 08:50 Received: 10/26/22 13:53										
Aluminum	**27**	1.6	20	µg/L	1	2209227	10/27/22	10/28/22	EPA 200.8	
Barium	**6.4**	0.14	5.0	"	"	"	"	10/27/22	"	
Calcium	**1500**	27	1000	"	"	2209228	10/27/22	10/27/22	EPA 200.7	
Iron	**28**	9.1	100	"	"	"	"	"	"	J
Magnesium	**260**	21	1000	"	"	"	"	"	"	J
Manganese	**6.1**	0.050	2.0	"	"	2209227	10/27/22	10/27/22	EPA 200.8	
Potassium	**710**	61	1000	"	"	2209228	10/27/22	10/27/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209227	10/27/22	10/27/22	EPA 200.8	
Sodium	**1200**	34	1000	"	"	2209228	10/27/22	10/27/22	EPA 200.7	
R-IS-9-IHR-B (22J1410-02) Water Sampled: 10/26/22 09:05 Received: 10/26/22 13:53										
Aluminum	**28**	1.6	20	µg/L	1	2209227	10/27/22	10/28/22	EPA 200.8	
Barium	**12**	0.14	5.0	"	"	"	"	10/27/22	"	
Calcium	**1700**	27	1000	"	"	2209228	10/27/22	10/27/22	EPA 200.7	
Iron	**1000**	9.1	100	"	"	"	"	"	"	
Magnesium	**300**	21	1000	"	"	"	"	"	"	J
Manganese	**410**	0.050	2.0	"	"	2209227	10/27/22	10/27/22	EPA 200.8	
Potassium	**570**	61	1000	"	"	2209228	10/27/22	10/27/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209227	10/27/22	10/27/22	EPA 200.8	
Sodium	**970**	34	1000	"	"	2209228	10/27/22	10/27/22	EPA 200.7	J
R-IS-10-IHR (22J1410-03) Water Sampled: 10/26/22 09:35 Received: 10/26/22 13:53										
Aluminum	**26**	1.6	20	µg/L	1	2209227	10/27/22	10/28/22	EPA 200.8	
Barium	**6.6**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1500**	27	1000	"	"	2209228	10/27/22	10/27/22	EPA 200.7	
Iron	**17**	9.1	100	"	"	"	"	"	"	J
Magnesium	**260**	21	1000	"	"	"	"	"	"	J
Manganese	**5.0**	0.050	2.0	"	"	2209227	10/27/22	10/28/22	EPA 200.8	
Potassium	**680**	61	1000	"	"	2209228	10/27/22	10/27/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209227	10/27/22	10/28/22	EPA 200.8	
Sodium	**990**	34	1000	"	"	2209228	10/27/22	10/27/22	EPA 200.7	J

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1410
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-10-IHR-B (22J1410-04) Water Sampled: 10/26/22 09:50 Received: 10/26/22 13:53										
Aluminum	**32**	1.6	20	µg/L	1	2209227	10/27/22	10/28/22	EPA 200.8	
Barium	**6.7**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1400**	27	1000	"	"	2209228	10/27/22	10/27/22	EPA 200.7	
Iron	**21**	9.1	100	"	"	"	"	"	"	J
Magnesium	**240**	21	1000	"	"	"	"	"	"	J
Manganese	**6.8**	0.050	2.0	"	"	2209227	10/27/22	10/28/22	EPA 200.8	
Potassium	**510**	61	1000	"	"	2209228	10/27/22	10/27/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209227	10/27/22	10/28/22	EPA 200.8	
Sodium	**880**	34	1000	"	"	2209228	10/27/22	10/27/22	EPA 200.7	J
R-IS-11-IHR (22J1410-05) Water Sampled: 10/26/22 10:30 Received: 10/26/22 13:53										
Aluminum	**43**	1.6	20	µg/L	1	2209227	10/27/22	10/28/22	EPA 200.8	
Barium	**6.3**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1400**	27	1000	"	"	2209228	10/27/22	10/27/22	EPA 200.7	
Iron	**14**	9.1	100	"	"	"	"	"	"	J
Magnesium	**250**	21	1000	"	"	"	"	"	"	J
Manganese	**4.7**	0.050	2.0	"	"	2209227	10/27/22	10/28/22	EPA 200.8	
Potassium	**500**	61	1000	"	"	2209228	10/27/22	10/27/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209227	10/27/22	10/28/22	EPA 200.8	
Sodium	**910**	34	1000	"	"	2209228	10/27/22	10/27/22	EPA 200.7	J
R-IS-11-IHRB (22J1410-06) Water Sampled: 10/26/22 10:45 Received: 10/26/22 13:53										
Aluminum	**27**	1.6	20	µg/L	1	2209227	10/27/22	10/28/22	EPA 200.8	
Barium	**9.4**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1500**	27	1000	"	"	2209228	10/27/22	10/27/22	EPA 200.7	
Iron	**56**	9.1	100	"	"	"	"	"	"	J
Magnesium	**260**	21	1000	"	"	"	"	"	"	J
Manganese	**59**	0.050	2.0	"	"	2209227	10/27/22	10/28/22	EPA 200.8	
Potassium	**550**	61	1000	"	"	2209228	10/27/22	10/27/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209227	10/27/22	10/28/22	EPA 200.8	
Sodium	**990**	34	1000	"	"	2209228	10/27/22	10/27/22	EPA 200.7	J

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1410
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-9-IHR (22J1410-01) Water Sampled: 10/26/22 08:50 Received: 10/26/22 13:53										
Aluminum	**7.3**	0.52	20	µg/L	1	2209246	10/27/22	10/27/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2209267	10/27/22	10/27/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2209246	10/27/22	10/27/22	EPA 200.8	
R-IS-9-IHR-B (22J1410-02) Water Sampled: 10/26/22 09:05 Received: 10/26/22 13:53										
Aluminum	**3.6**	0.52	20	µg/L	1	2209246	10/27/22	10/27/22	EPA 200.8	J
Iron	**12**	6.8	100	"	"	2209267	10/27/22	10/27/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2209246	10/27/22	10/27/22	EPA 200.8	
R-IS-10-IHR (22J1410-03) Water Sampled: 10/26/22 09:35 Received: 10/26/22 13:53										
Aluminum	**7.7**	0.52	20	µg/L	1	2209246	10/27/22	10/27/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2209267	10/27/22	10/27/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2209246	10/27/22	10/27/22	EPA 200.8	
R-IS-10-IHR-B (22J1410-04) Water Sampled: 10/26/22 09:50 Received: 10/26/22 13:53										
Aluminum	**6.0**	0.52	20	µg/L	1	2209246	10/27/22	10/27/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2209267	10/27/22	10/27/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2209246	10/27/22	10/27/22	EPA 200.8	
R-IS-11-IHR (22J1410-05) Water Sampled: 10/26/22 10:30 Received: 10/26/22 13:53										
Aluminum	**6.9**	0.52	20	µg/L	1	2209246	10/27/22	10/27/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2209267	10/27/22	10/27/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2209246	10/27/22	10/27/22	EPA 200.8	
R-IS-11-IHRB (22J1410-06) Water Sampled: 10/26/22 10:45 Received: 10/26/22 13:53										
Aluminum	**8.8**	0.52	20	µg/L	1	2209246	10/27/22	10/27/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2209267	10/27/22	10/27/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2209246	10/27/22	10/27/22	EPA 200.8	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22J1410**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-9-IHR (22J1410-01) Water Sampled: 10/26/22 08:50 Received: 10/26/22 13:53										
Gasoline	ND	10	50	µg/L	1	2209328	10/31/22	10/31/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*75 %*		*65-135*		"	"	"	"
R-IS-9-IHR-B (22J1410-02) Water Sampled: 10/26/22 09:05 Received: 10/26/22 13:53										
Gasoline	ND	10	50	µg/L	1	2209328	10/31/22	10/31/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*84 %*		*65-135*		"	"	"	"
R-IS-10-IHR (22J1410-03) Water Sampled: 10/26/22 09:35 Received: 10/26/22 13:53										
Gasoline	ND	10	50	µg/L	1	2209328	10/31/22	10/31/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*77 %*		*65-135*		"	"	"	"
R-IS-10-IHR-B (22J1410-04) Water Sampled: 10/26/22 09:50 Received: 10/26/22 13:53										
Gasoline	ND	10	50	µg/L	1	2209328	10/31/22	10/31/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*83 %*		*65-135*		"	"	"	"
R-IS-11-IHR (22J1410-05) Water Sampled: 10/26/22 10:30 Received: 10/26/22 13:53										
Gasoline	ND	10	50	µg/L	1	2209328	10/31/22	10/31/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*81 %*		*65-135*		"	"	"	"
R-IS-11-IHRB (22J1410-06) Water Sampled: 10/26/22 10:45 Received: 10/26/22 13:53										
Gasoline	ND	10	50	µg/L	1	2209328	10/31/22	10/31/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*86 %*		*65-135*		"	"	"	"

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22J1410**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-9-IHR (22J1410-01) Water Sampled: 10/26/22 08:50 Received: 10/26/22 13:53										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209387	10/28/22	10/28/22	EPA 8260B	
Surrogate: Toluene-d8			*98 %*	*72-125*		"	"	"	"	
R-IS-9-IHR-B (22J1410-02) Water Sampled: 10/26/22 09:05 Received: 10/26/22 13:53										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209387	10/28/22	10/28/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*	*72-125*		"	"	"	"	
R-IS-10-IHR (22J1410-03) Water Sampled: 10/26/22 09:35 Received: 10/26/22 13:53										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209387	10/28/22	10/28/22	EPA 8260B	
Surrogate: Toluene-d8			*98 %*	*72-125*		"	"	"	"	
R-IS-10-IHR-B (22J1410-04) Water Sampled: 10/26/22 09:50 Received: 10/26/22 13:53										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209387	10/28/22	10/28/22	EPA 8260B	
Surrogate: Toluene-d8			*98 %*	*72-125*		"	"	"	"	
R-IS-11-IHR (22J1410-05) Water Sampled: 10/26/22 10:30 Received: 10/26/22 13:53										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209387	10/28/22	10/28/22	EPA 8260B	
Surrogate: Toluene-d8			*98 %*	*72-125*		"	"	"	"	
R-IS-11-IHRB (22J1410-06) Water Sampled: 10/26/22 10:45 Received: 10/26/22 13:53										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209387	10/28/22	10/28/22	EPA 8260B	
Surrogate: Toluene-d8			*98 %*	*72-125*		"	"	"	"	

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CLS Work Order #: 22J1410
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209207 - General Prep											
Blank (2209207-BLK1)					Prepared & Analyzed: 10/27/22						
Chloride	0.203	0.026	0.50	mg/L							J
Sulfate as SO4	ND	0.038	0.50	"							
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2209207-BS1)					Prepared & Analyzed: 10/27/22						
Sulfate as SO4	4.73	0.038	0.50	mg/L	5.00		95	80-120			
Chloride	4.66	0.026	0.50	"	5.00		93	80-120			
Nitrate/Nitrite as N	4.25	0.055	0.40	"	4.00		106	80-120			
LCS Dup (2209207-BSD1)					Prepared & Analyzed: 10/27/22						
Sulfate as SO4	4.75	0.038	0.50	mg/L	5.00		95	80-120	0.4	20	
Chloride	4.67	0.026	0.50	"	5.00		93	80-120	0.1	20	
Nitrate/Nitrite as N	4.24	0.055	0.40	"	4.00		106	80-120	0.1	20	
Matrix Spike (2209207-MS1)			**Source: 22J1410-01**		Prepared & Analyzed: 10/27/22						
Sulfate as SO4	5.31	0.038	0.50	mg/L	5.00	0.576	95	80-120			
Chloride	4.97	0.026	0.50	"	5.00	0.459	90	80-120			
Nitrate/Nitrite as N	4.22	0.055	0.40	"	4.00	ND	106	80-120			
Matrix Spike Dup (2209207-MSD1)			**Source: 22J1410-01**		Prepared & Analyzed: 10/27/22						
Chloride	4.89	0.026	0.50	mg/L	5.00	0.459	89	80-120	2	20	
Sulfate as SO4	5.25	0.038	0.50	"	5.00	0.576	93	80-120	1	20	
Nitrate/Nitrite as N	4.15	0.055	0.40	"	4.00	ND	104	80-120	2	20	
Batch 2209214 - General Preparation											
Blank (2209214-BLK1)					Prepared & Analyzed: 10/27/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							

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CLS Work Order #: 22J1410
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209214 - General Preparation											
LCS (2209214-BS1)					Prepared & Analyzed: 10/27/22						
Total Phosphorus as P	0.295	0.023	0.050	mg/L	0.300		98	80-120			
LCS Dup (2209214-BSD1)					Prepared & Analyzed: 10/27/22						
Total Phosphorus as P	0.283	0.023	0.050	mg/L	0.300		94	80-120	4	25	
Matrix Spike (2209214-MS1)			**Source: 22J1292-02**		Prepared & Analyzed: 10/27/22						
Total Phosphorus as P	0.282	0.023	0.050	mg/L	0.300	ND	94	75-125			
Matrix Spike Dup (2209214-MSD1)			**Source: 22J1292-02**		Prepared & Analyzed: 10/27/22						
Total Phosphorus as P	0.287	0.023	0.050	mg/L	0.300	ND	96	75-125	2	30	
Batch 2209220 - General Preparation											
Blank (2209220-BLK1)					Prepared: 10/27/22 Analyzed: 10/28/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							
LCS (2209220-BS1)					Prepared: 10/27/22 Analyzed: 10/28/22						
Total Organic Carbon	10.8	0.54	1.0	mg/L	10.0		108	75-125			
LCS Dup (2209220-BSD1)					Prepared: 10/27/22 Analyzed: 10/28/22						
Total Organic Carbon	10.6	0.54	1.0	mg/L	10.0		106	75-125	1	25	
Matrix Spike (2209220-MS1)			**Source: 22J1292-04**		Prepared: 10/27/22 Analyzed: 10/28/22						
Total Organic Carbon	15.4	0.54	1.0	mg/L	10.0	1.88	135	75-125			QM-7
Matrix Spike Dup (2209220-MSD1)			**Source: 22J1292-04**		Prepared: 10/27/22 Analyzed: 10/28/22						
Total Organic Carbon	15.2	0.54	1.0	mg/L	10.0	1.88	133	75-125	0.8	25	QM-7

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COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209248 - General Preparation											
Blank (2209248-BLK1)					Prepared & Analyzed: 10/27/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							
LCS (2209248-BS1)					Prepared & Analyzed: 10/27/22						
Orthophosphate as PO4	0.850	0.0051	0.15	mg/L	0.918		93	80-120			
LCS Dup (2209248-BSD1)					Prepared & Analyzed: 10/27/22						
Orthophosphate as PO4	0.825	0.0051	0.15	mg/L	0.918		90	80-120	3	20	
Matrix Spike (2209248-MS1)			**Source: 22J1410-01**		Prepared & Analyzed: 10/27/22						
Orthophosphate as PO4	0.809	0.0051	0.15	mg/L	0.918	ND	88	75-125			
Matrix Spike Dup (2209248-MSD1)			**Source: 22J1410-01**		Prepared & Analyzed: 10/27/22						
Orthophosphate as PO4	0.924	0.0051	0.15	mg/L	0.918	ND	101	75-125	13	25	
Batch 2209267 - EPA 200 No Digestion											
Blank (2209267-BLK1)					Prepared & Analyzed: 10/27/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2209267-BS1)					Prepared & Analyzed: 10/27/22						
Total Hardness as CaCO3	33.0	0.19	1.0	mg/L	33.1		100	85-115			
Matrix Spike (2209267-MS1)			**Source: 22J1410-01**		Prepared & Analyzed: 10/27/22						
Total Hardness as CaCO3	37.3	0.19	1.0	mg/L	33.1	4.65	99	70-130			
Batch 2209280 - General Preparation											
Blank (2209280-BLK1)					Prepared & Analyzed: 10/28/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1410
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209280 - General Preparation											
Duplicate (2209280-DUP1)			**Source: 22J1342-01**		Prepared & Analyzed: 10/28/22						
Total Alkalinity	8.80	1.0	5.0	mg/L		7.80			12	20	
Bicarbonate as CaCO3	8.80	0.50	5.0	"		7.80			12	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Batch 2209281 - General Preparation											
Blank (2209281-BLK1)					Prepared & Analyzed: 10/28/22						
Ammonia as N	ND	0.025	0.10	mg/L							
LCS (2209281-BS1)					Prepared & Analyzed: 10/28/22						
Ammonia as N	0.450	0.025	0.10	mg/L	0.500		90	80-120			
LCS Dup (2209281-BSD1)					Prepared & Analyzed: 10/28/22						
Ammonia as N	0.441	0.025	0.10	mg/L	0.500		88	80-120	2	25	
Matrix Spike (2209281-MS1)			**Source: 22J1410-01**		Prepared & Analyzed: 10/28/22						
Ammonia as N	0.436	0.025	0.10	mg/L	0.500	0.0260	82	75-125			
Matrix Spike Dup (2209281-MSD1)			**Source: 22J1410-01**		Prepared & Analyzed: 10/28/22						
Ammonia as N	0.465	0.025	0.10	mg/L	0.500	0.0260	88	75-125	6	25	
Batch 2209290 - General Preparation											
Blank (2209290-BLK1)					Prepared: 10/28/22 Analyzed: 11/02/22						
Total Dissolved Solids	ND	5.0	10	mg/L							

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22J1410
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209290 - General Preparation											
Duplicate (2209290-DUP1)			**Source: 22J1407-01**		Prepared: 10/28/22 Analyzed: 11/02/22						
Total Dissolved Solids	385	5.0	10	mg/L		383			0.5	20	
Batch 2209308 - Solvent Extract											
Blank (2209308-BLK1)					Prepared & Analyzed: 10/31/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2209308-BS1)					Prepared & Analyzed: 10/31/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.0	1.0	5.0	mg/L	40.0		98	78-114			
LCS Dup (2209308-BSD1)					Prepared & Analyzed: 10/31/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.6	1.0	5.0	mg/L	40.0		99	78-114	2	18	
Batch 2209316 - General Preparation											
Blank (2209316-BLK1)					Prepared & Analyzed: 10/31/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2209316-BS1)					Prepared & Analyzed: 10/31/22						
Total Kjeldahl Nitrogen	0.468	0.040	0.20	mg/L	0.500		94	80-120			
LCS Dup (2209316-BSD1)					Prepared & Analyzed: 10/31/22						
Total Kjeldahl Nitrogen	0.466	0.040	0.20	mg/L	0.500		93	80-120	0.4	20	
Matrix Spike (2209316-MS1)			**Source: 22J1410-06**		Prepared & Analyzed: 10/31/22						
Total Kjeldahl Nitrogen	0.803	0.040	0.20	mg/L	0.500	0.193	122	75-125			

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CLS Work Order #: 22J1410
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209316 - General Preparation											
Matrix Spike Dup (2209316-MSD1)			**Source: 22J1410-06**		Prepared & Analyzed: 10/31/22						
Total Kjeldahl Nitrogen	0.827	0.040	0.20	mg/L	0.500	0.193	127	75-125	3	25	QM-7
Batch 2209335 - General Preparation											
Duplicate (2209335-DUP1)			**Source: 22J1410-01**		Prepared: 10/31/22 Analyzed: 11/02/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	
Batch 2209346 - General Preparation											
Blank (2209346-BLK1)					Prepared & Analyzed: 11/01/22						
Cyanide (total)	0.00340	0.0012	0.0050	mg/L							J
LCS (2209346-BS1)					Prepared & Analyzed: 11/01/22						
Cyanide (total)	0.117	0.0012	0.0050	mg/L	0.100		117	75-125			
LCS Dup (2209346-BSD1)					Prepared & Analyzed: 11/01/22						
Cyanide (total)	0.0811	0.0012	0.0050	mg/L	0.100		81	75-125	36	25	QR-2
Matrix Spike (2209346-MS1)			**Source: 22J1410-01**		Prepared & Analyzed: 11/01/22						
Cyanide (total)	0.0763	0.0012	0.0050	mg/L	0.100	0.00160	75	75-125			
Matrix Spike Dup (2209346-MSD1)			**Source: 22J1410-01**		Prepared & Analyzed: 11/01/22						
Cyanide (total)	0.0767	0.0012	0.0050	mg/L	0.100	0.00160	75	75-125	0.5	25	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1410
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209243 - EPA 3510B GCNV											
Blank (2209243-BLK1)					Prepared: 10/27/22 Analyzed: 10/28/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Surrogate: o-Terphenyl	*0.0253*			*"*	*0.0250*		*101*	*65-135*			
LCS (2209243-BS1)					Prepared: 10/27/22 Analyzed: 10/28/22						
Diesel	1.64	0.0021	0.050	mg/L	2.50		66	65-135			
Surrogate: o-Terphenyl	*0.0186*			*"*	*0.0250*		*74*	*65-135*			
LCS Dup (2209243-BSD1)					Prepared: 10/27/22 Analyzed: 10/28/22						
Diesel	1.67	0.0021	0.050	mg/L	2.50		67	65-135	2	30	
Surrogate: o-Terphenyl	*0.0197*			*"*	*0.0250*		*79*	*65-135*			
Matrix Spike (2209243-MS1)			**Source: 22J1406-01**		Prepared: 10/27/22 Analyzed: 10/28/22						
Diesel	1.76	0.0021	0.050	mg/L	2.50	ND	71	46-137			
Surrogate: o-Terphenyl	*0.0232*			*"*	*0.0250*		*93*	*65-135*			
Matrix Spike Dup (2209243-MSD1)			**Source: 22J1406-01**		Prepared: 10/27/22 Analyzed: 10/28/22						
Diesel	2.10	0.0021	0.050	mg/L	2.50	ND	84	46-137	17	30	
Surrogate: o-Terphenyl	*0.0210*			*"*	*0.0250*		*84*	*65-135*			

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1410
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209227 - EPA 200 Series											
Blank (2209227-BLK1)					Prepared: 10/27/22 Analyzed: 10/28/22						
Aluminum	7.55	1.6	20	µg/L							J
Barium	0.175	0.14	5.0	"							J
Manganese	0.457	0.050	2.0	"							J
Silver	ND	0.070	0.50	"							
LCS (2209227-BS1)					Prepared: 10/27/22 Analyzed: 10/28/22						
Aluminum	522	1.6	20	µg/L	500		104	85-115			
Barium	107	0.14	5.0	"	100		107	85-115			
Manganese	102	0.050	2.0	"	100		102	85-115			
Silver	105	0.070	0.50	"	100		105	85-115			
Matrix Spike (2209227-MS1)			**Source: 22J1407-01**		Prepared: 10/27/22 Analyzed: 10/28/22						
Aluminum	648	1.6	20	µg/L	500	134	103	70-130			
Barium	185	0.14	5.0	"	100	76.0	109	70-130			
Manganese	108	0.050	2.0	"	100	10.1	98	70-130			
Silver	104	0.070	0.50	"	100	ND	104	70-130			
Matrix Spike (2209227-MS2)			**Source: 22J1410-01**		Prepared: 10/27/22 Analyzed: 10/28/22						
Aluminum	527	1.6	20	µg/L	500	26.7	100	70-130			
Barium	111	0.14	5.0	"	100	6.40	104	70-130			
Manganese	102	0.050	2.0	"	100	6.09	96	70-130			
Silver	102	0.070	0.50	"	100	ND	102	70-130			
Batch 2209228 - EPA 200 Series											
Blank (2209228-BLK1)					Prepared & Analyzed: 10/27/22						
Calcium	ND	27	1000	µg/L							
Iron	ND	9.1	100	"							
Magnesium	ND	21	1000	"							
Potassium	165	61	1000	"							J
Sodium	ND	34	1000	"							

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CLS Work Order #: 22J1410
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209228 - EPA 200 Series											
LCS (2209228-BS1)					Prepared & Analyzed: 10/27/22						
Calcium	4770	27	1000	µg/L	5000		95	85-115			
Iron	478	9.1	100	"	500		96	85-115			
Magnesium	4720	21	1000	"	5000		94	85-115			
Potassium	4720	61	1000	"	5000		94	85-115			
Sodium	4800	34	1000	"	5000		96	85-115			
Matrix Spike (2209228-MS1)			**Source: 22J1390-01**		Prepared & Analyzed: 10/27/22						
Calcium	22300	27	1000	µg/L	5000	18200	83	70-130			
Iron	595	9.1	100	"	500	118	95	70-130			
Magnesium	7880	21	1000	"	5000	3310	91	70-130			
Potassium	6380	61	1000	"	5000	1660	94	70-130			
Sodium	12900	34	1000	"	5000	8490	89	70-130			
Matrix Spike (2209228-MS2)			**Source: 22J1410-06**		Prepared & Analyzed: 10/27/22						
Calcium	6200	27	1000	µg/L	5000	1450	95	70-130			
Iron	521	9.1	100	"	500	56.4	93	70-130			
Magnesium	4980	21	1000	"	5000	258	94	70-130			
Potassium	5170	61	1000	"	5000	553	92	70-130			
Sodium	5580	34	1000	"	5000	987	92	70-130			

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Stillwater Sciences
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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1410
COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209246 - EPA 200 No Digestion											
Blank (2209246-BLK1)					Prepared & Analyzed: 10/27/22						
Aluminum	ND	0.52	20	µg/L							
Silver	ND	0.15	0.50	"							
LCS (2209246-BS1)					Prepared & Analyzed: 10/27/22						
Aluminum	468	0.52	20	µg/L	500		94	85-115			
Silver	99.7	0.15	0.50	"	100		100	85-115			
Matrix Spike (2209246-MS1)			**Source: 22J1292-01**		Prepared & Analyzed: 10/27/22						
Aluminum	448	0.52	20	µg/L	500	5.44	89	70-130			
Silver	92.0	0.15	0.50	"	100	ND	92	70-130			
Matrix Spike (2209246-MS2)			**Source: 22J1410-01**		Prepared & Analyzed: 10/27/22						
Aluminum	483	0.52	20	µg/L	500	7.32	95	70-130			
Silver	101	0.15	0.50	"	100	ND	101	70-130			
Batch 2209267 - EPA 200 No Digestion											
Blank (2209267-BLK1)					Prepared & Analyzed: 10/27/22						
Iron	ND	6.8	100	µg/L							
LCS (2209267-BS1)					Prepared & Analyzed: 10/27/22						
Iron	490	6.8	100	µg/L	500		98	85-115			
Matrix Spike (2209267-MS1)			**Source: 22J1410-01**		Prepared & Analyzed: 10/27/22						
Iron	490	6.8	100	µg/L	500	ND	98	70-130			

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Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22J1410
COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209328 - EPA 5030 Water GC											
Blank (2209328-BLK1)					Prepared & Analyzed: 10/31/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*17.2*			"	*20.0*		*86*	*65-135*			
LCS (2209328-BS1)					Prepared & Analyzed: 10/31/22						
Gasoline	540	10	50	µg/L	500		108	70-130			
Surrogate: o-Chlorotoluene (Gas)	*14.9*			"	*20.0*		*75*	*65-135*			
LCS Dup (2209328-BSD1)					Prepared & Analyzed: 10/31/22						
Gasoline	537	10	50	µg/L	500		107	70-130	0.6	30	
Surrogate: o-Chlorotoluene (Gas)	*15.8*			"	*20.0*		*79*	*65-135*			
Matrix Spike (2209328-MS1)			**Source: 22J1342-01**		Prepared & Analyzed: 10/31/22						
Gasoline	479	10	50	µg/L	500	ND	96	68-132			
Surrogate: o-Chlorotoluene (Gas)	*15.5*			"	*20.0*		*78*	*65-135*			
Matrix Spike Dup (2209328-MSD1)			**Source: 22J1342-01**		Prepared & Analyzed: 10/31/22						
Gasoline	492	10	50	µg/L	500	ND	98	68-132	3	32	
Surrogate: o-Chlorotoluene (Gas)	*16.6*			"	*20.0*		*83*	*65-135*			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22J1410**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209387 - EPA 3510B GCMS											
Blank (2209387-BLK1)					Prepared & Analyzed: 10/28/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Surrogate: Toluene-d8	*9.76*			"	*10.0*		*98*	*72-125*			
LCS (2209387-BS1)					Prepared & Analyzed: 10/28/22						
Methyl tert-butyl ether	21.6	0.095	0.50	µg/L	20.0		108	52-130			
Surrogate: Toluene-d8	*9.88*			"	*10.0*		*99*	*72-125*			
LCS Dup (2209387-BSD1)					Prepared & Analyzed: 10/28/22						
Methyl tert-butyl ether	22.5	0.095	0.50	µg/L	20.0		112	52-130	4	30	
Surrogate: Toluene-d8	*9.94*			"	*10.0*		*99*	*72-125*			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22J1410**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QRL-2	Elevated reporting limits due to limited sample volume.
QR-2	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22410 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[x] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [x] NO [ ]

GLOBAL ID

FIELD CONDITIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	ANALYSIS REQUESTED: TSS, TDS, Hardness, Alkalinity, NO2-N+NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS: 1	2	3	5	SPECIAL INSTRUCTIONS
10/26	8:50	R·IS·9·IHR		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
10/26	9:05	R·IS·9·IHR·B		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
10/26	9:35	R·IS·10·IHR		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
10/26	9:50	R·IS·10·IHR·B		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
10/26	10:30	R·IS·11·IHR		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
10/26	10:45	R·IS·11·IHR·B		Surface water			6	✓	✓	✓	✓	✓	✓	✓				X	
				Surface water			6											X	INVOICE TO
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	**Project No. 750.10 Task 0620.01**
				Surface water			6											X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (2) HNO_3 (3) = COLD (4) = H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
[signature]	Jakob Woodall STILLWATER SCIENCES	10/26 13:53		

RECEIVED AT LAB BY: [signature] DATE/TIME: 10/26 1383

CONDITIONS/COMMENTS: 3.0/2.3

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER AIR BILL #

2218 Railroad Avenue
Redding, California 96001
voice 530.243.7234
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3860 Morrow Lane, Suite F
Chico, California 95928
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fax 530.894.5143

Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02

Lab No: 22K0176
Reported: 12/15/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22K0176, received on 11/03/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: IS-10-SFSC
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0176-01
Sampled: 11/02/22 08:00
Received: 11/03/22 11:32

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Copper	ug/l	0.14		0.04	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Lead	ug/l	0.015	J	0.007	0.050	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Mercury	ng/l	4.04		0.22	0.50	EPA 1631E	11/13/22	11/13/22	B2K1077 / DJC
Methyl Mercury as Mercury	ng/l	0.032	J	0.017	0.050	EPA 1630**	11/23/22	11/22/22	B2K1294 / EDM
Nickel	ug/l	0.06	J	0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Selenium	ug/l	0.4	J	0.3	2.0	EPA 200.8	11/17/22	11/10/22	B2K0939 / EDM
Zinc	ug/l	0.27	J	0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Copper	ug/l	0.11		0.04	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Nickel	ug/l	0.04	J	0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/30/22	11/30/22	B2K1408 / EDM
Zinc	ug/l	0.17	J	0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm

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Analytical Report

Description: IS-11-SFSC
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0176-02
Sampled: 11/02/22 09:45
Received: 11/03/22 11:32

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Copper	ug/l	0.13		0.04	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Lead	ug/l	0.016	J	0.007	0.050	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Mercury	ng/l	0.85		0.22	0.50	EPA 1631E	11/13/22	11/13/22	B2K1077 / DJC
Methyl Mercury as Mercury	ng/l	0.021	J	0.017	0.050	EPA 1630**	11/23/22	11/22/22	B2K1294 / EDM
Nickel	ug/l	0.07	J	0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Selenium	ug/l	0.4	J	0.3	2.0	EPA 200.8	11/17/22	11/10/22	B2K0939 / EDM
Zinc	ug/l	0.20	J	0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Copper	ug/l	0.12		0.04	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Lead	ug/l	0.008	J	0.007	0.050	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Nickel	ug/l	0.07	J	0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/30/22	11/30/22	B2K1408 / EDM
Zinc	ug/l	0.24	J	0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm

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Analytical Report

Description: IS-12-SC
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0176-03
Sampled: 11/02/22 10:30
Received: 11/03/22 11:32

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Copper	ug/l	0.18		0.04	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Lead	ug/l	0.011	J	0.007	0.050	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Mercury	ng/l	0.71		0.22	0.50	EPA 1631E	11/13/22	11/13/22	B2K1077 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	11/23/22	11/22/22	B2K1294 / EDM
Nickel	ug/l	0.10	J	0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Selenium	ug/l	0.3	J	0.3	2.0	EPA 200.8	11/17/22	11/10/22	B2K0939 / EDM
Zinc	ug/l	0.17	J	0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Copper	ug/l	0.16		0.04	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Nickel	ug/l	0.07	J	0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/30/22	11/30/22	B2K1408 / EDM
Zinc	ug/l	0.16	J	0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm

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Analytical Report

Description: IS-13-SC
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0176-04
Sampled: 11/02/22 13:30
Received: 11/03/22 11:32

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Copper	ug/l	0.22		0.04	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Lead	ug/l	0.015	J	0.007	0.050	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Mercury	ng/l	0.92		0.22	0.50	EPA 1631E	11/13/22	11/13/22	B2K1077 / DJC
Methyl Mercury as Mercury	ng/l	0.020	J	0.017	0.050	EPA 1630**	11/23/22	11/22/22	B2K1294 / EDM
Nickel	ug/l	0.19		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Selenium	ug/l	0.3	J	0.3	2.0	EPA 200.8	11/17/22	11/10/22	B2K0939 / EDM
Zinc	ug/l	0.25	J	0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Copper	ug/l	0.19		0.04	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Lead	ug/l	0.011	J	0.007	0.050	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Nickel	ug/l	0.14		0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/30/22	11/30/22	B2K1408 / EDM
Zinc	ug/l	0.21	J	0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm

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Analytical Report

Description: IS-14-SC
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0176-05
Sampled: 11/02/22 12:30
Received: 11/03/22 11:32

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Copper	ug/l	0.24		0.04	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Lead	ug/l	0.020	J	0.007	0.050	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Mercury	ng/l	0.64		0.22	0.50	EPA 1631E	11/13/22	11/13/22	B2K1077 / DJC
Methyl Mercury as Mercury	ng/l	0.027	J	0.017	0.050	EPA 1630**	11/23/22	11/22/22	B2K1294 / EDM
Nickel	ug/l	0.12		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Selenium	ug/l	0.4	J	0.3	2.0	EPA 200.8	11/17/22	11/10/22	B2K0939 / EDM
Zinc	ug/l	0.46	J	0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Copper	ug/l	0.21		0.04	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Nickel	ug/l	0.10	J	0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/30/22	11/30/22	B2K1408 / EDM
Zinc	ug/l	0.44	J	0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K0939 - EPA 200.8 Total**									
Blank										
Selenium	0.5	2.0	ug/l							J
LCS										
Selenium	202	2.0	ug/l	200		101	85-115			
Duplicate	Source: 22K0167-02									
Selenium	0.7	2.0	ug/l		0.7			2.05	20	J
Duplicate	Source: 22K0176-05									
Selenium	0.3	2.0	ug/l		0.4			8.72	20	J
Matrix Spike	Source: 22K0167-02									
Selenium	194	2.0	ug/l	200	0.7	96.5	75-125			
Matrix Spike	Source: 22K0176-05									
Selenium	197	2.0	ug/l	200	0.4	98.4	75-125			
Metals - Total - Redding Location	**Batch B2K1077 - BrCl Digestion**									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1077 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	9.89	0.50	ng/l	10.0		98.9	77-123			
Matrix Spike	Source: 22K0172-01									
Mercury	10.7	0.50	ng/l	10.0	0.27	105	71-125			
Matrix Spike	Source: 22K0215-04									
Mercury	11.1	0.50	ng/l	10.0	0.43	106	71-125			
Matrix Spike Dup	Source: 22K0172-01									
Mercury	10.8	0.50	ng/l	10.0	0.27	105	71-125	0.464	24	
Matrix Spike Dup	Source: 22K0215-04									
Mercury	10.7	0.50	ng/l	10.0	0.43	102	71-125	3.76	24	
Metals - Total - Redding Location	**Batch B2K1294 - EPA 1630 Distillation (Modified)**									
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.17	0.050	ng/l	2.00		108	67-133			
Matrix Spike	Source: 22J1171-04									
Methyl Mercury as Mercury	1.18	0.050	ng/l	1.00	ND	118	65-135			
Matrix Spike	Source: 22K0215-01									
Methyl Mercury as Mercury	1.05	0.050	ng/l	1.00	0.021	102	65-135			
Matrix Spike Dup	Source: 22J1171-04									
Methyl Mercury as Mercury	1.20	0.050	ng/l	1.00	ND	120	65-135	0.983	35	
Matrix Spike Dup	Source: 22K0215-01									
Methyl Mercury as Mercury	1.03	0.050	ng/l	1.00	0.021	100	65-135	2.02	35	
Metals - Total - Redding Location	**Batch B2K1441 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1441 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.19	0.50	ug/l	1.25		95.0	50-150			
Cadmium	0.26	0.10	ug/l	0.250		103	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.124	0.050	ug/l	0.125		98.9	72-143			
Nickel	0.25	0.10	ug/l	0.250		99.6	68-134			
Zinc	1.26	0.50	ug/l	1.25		101	46-146			
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.7	50-150			
Cadmium	0.25	0.10	ug/l	0.250		99.4	84-113			
Copper	0.24	0.10	ug/l	0.250		97.0	51-145			
Lead	0.124	0.050	ug/l	0.125		99.3	72-143			
Nickel	0.26	0.10	ug/l	0.250		104	68-134			
Zinc	1.27	0.50	ug/l	1.25		101	46-146			
Matrix Spike	Source: 22J1171-04									
Arsenic	2.47	0.50	ug/l	2.50	ND	98.8	50-150			
Cadmium	0.49	0.10	ug/l	0.500	ND	97.7	84-113			
Copper	0.61	0.10	ug/l	0.500	0.12	98.0	51-145			
Lead	0.255	0.050	ug/l	0.250	ND	102	72-143			
Nickel	0.53	0.10	ug/l	0.500	0.05	97.1	68-134			
Zinc	2.76	0.50	ug/l	2.50	0.25	100	46-146			
Matrix Spike	Source: 22K0215-03									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1441 - EPA 1638 - Closed Bottle Oven Digestion**									
Arsenic	2.55	0.50	ug/l	2.50	ND	102	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.66	0.10	ug/l	0.500	0.15	102	51-145			
Lead	0.322	0.050	ug/l	0.250	0.076	98.4	72-143			
Nickel	0.63	0.10	ug/l	0.500	0.13	101	68-134			
Zinc	2.76	0.50	ug/l	2.50	0.30	98.3	46-146			
Matrix Spike Dup	Source: 22J1171-04									
Arsenic	2.49	0.50	ug/l	2.50	ND	99.5	50-150	0.698	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	101	84-113	3.14	20	
Copper	0.60	0.10	ug/l	0.500	0.12	97.4	51-145	0.475	20	
Lead	0.246	0.050	ug/l	0.250	ND	98.2	72-143	3.61	20	
Nickel	0.53	0.10	ug/l	0.500	0.05	97.4	68-134	0.248	20	
Zinc	2.71	0.50	ug/l	2.50	0.25	98.1	46-146	2.06	20	
Matrix Spike Dup	Source: 22K0215-03									
Arsenic	2.50	0.50	ug/l	2.50	ND	100	50-150	1.88	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	95.7	84-113	5.00	20	
Copper	0.65	0.10	ug/l	0.500	0.15	100	51-145	1.70	20	
Lead	0.323	0.050	ug/l	0.250	0.076	98.8	72-143	0.292	20	
Nickel	0.63	0.10	ug/l	0.500	0.13	99.8	68-134	0.748	20	
Zinc	2.60	0.50	ug/l	2.50	0.30	91.9	46-146	6.03	20	
Metals - Dissolved - Redding Location	**Batch B2K1408 - EPA 200.8 Diss**									
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	204	2.0	ug/l	200		102	85-115			
Duplicate	Source: 22K0167-04									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22K0276-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22K0167-04									
Selenium	205	2.0	ug/l	200	ND	103	75-125			
Matrix Spike	Source: 22K0276-01									
Selenium	207	2.0	ug/l	200	ND	103	75-125			
Metals - Dissolved - Redding Location	**Batch B2L1116 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2L1116 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	0.12	0.50	ug/l							QB-05, J
Cadmium	0.02	0.10	ug/l							QB-05, J
Copper	ND	0.10	ug/l							
Lead	0.014	0.050	ug/l							QB-05, J
Nickel	0.02	0.10	ug/l							QB-05, J
Zinc	0.16	0.50	ug/l							QB-05, J
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.21	0.50	ug/l	1.25		97.2	50-150			
Cadmium	0.24	0.10	ug/l	0.250		96.8	84-113			
Copper	0.27	0.10	ug/l	0.250		109	51-145			
Lead	0.123	0.050	ug/l	0.125		98.7	72-143			
Nickel	0.25	0.10	ug/l	0.250		98.7	68-134			
Zinc	1.27	0.50	ug/l	1.25		101	46-146			
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.2	50-150			
Cadmium	0.23	0.10	ug/l	0.250		93.9	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.123	0.050	ug/l	0.125		98.0	72-143			
Nickel	0.24	0.10	ug/l	0.250		95.8	68-134			
Zinc	1.28	0.50	ug/l	1.25		103	46-146			
Matrix Spike	Source: 22J1171-04									
Arsenic	2.41	0.50	ug/l	2.50	ND	96.2	50-150			
Cadmium	0.49	0.10	ug/l	0.500	ND	97.3	84-113			
Copper	0.58	0.10	ug/l	0.500	0.09	97.5	51-145			
Lead	0.240	0.050	ug/l	0.250	ND	96.0	72-143			
Nickel	0.54	0.10	ug/l	0.500	0.04	99.5	68-134			
Zinc	2.68	0.50	ug/l	2.50	0.28	95.8	46-146			
Matrix Spike	Source: 22K0215-03									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2L1116 - EPA 1638 - Dissolved**									
Arsenic	2.43	0.50	ug/l	2.50	ND	97.2	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.4	84-113			
Copper	0.57	0.10	ug/l	0.500	0.08	96.5	51-145			
Lead	0.239	0.050	ug/l	0.250	ND	95.5	72-143			
Nickel	0.56	0.10	ug/l	0.500	0.07	98.6	68-134			
Zinc	2.53	0.50	ug/l	2.50	ND	101	46-146			
Matrix Spike Dup	Source: 22J1171-04									
Arsenic	2.42	0.50	ug/l	2.50	ND	96.8	50-150	0.578	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	97.8	84-113	0.477	20	
Copper	0.57	0.10	ug/l	0.500	0.09	95.4	51-145	1.85	20	
Lead	0.235	0.050	ug/l	0.250	ND	94.1	72-143	1.98	20	
Nickel	0.53	0.10	ug/l	0.500	0.04	97.7	68-134	1.66	20	
Zinc	2.72	0.50	ug/l	2.50	0.28	97.5	46-146	1.49	20	
Matrix Spike Dup	Source: 22K0215-03									
Arsenic	2.45	0.50	ug/l	2.50	ND	98.2	50-150	0.981	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	95.5	84-113	0.943	20	
Copper	0.57	0.10	ug/l	0.500	0.08	96.5	51-145	0.0620	20	
Lead	0.249	0.050	ug/l	0.250	ND	99.8	72-143	4.44	20	
Nickel	0.56	0.10	ug/l	0.500	0.07	97.7	68-134	0.790	20	
Zinc	2.52	0.50	ug/l	2.50	ND	101	46-146	0.613	20	

Notes and Definitions

QB-05	The method blank contains the analyte at a concentration level above the MDL, but below the MRL.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	The laboratory does not hold CA-ELAP accreditiation for this analyte or method. Accreditation may not be available from CA-ELAP for this analyte or method.
**	The laboratory holds accreditation for this analyte or method with WA-ECY Lab ID: Lab ID C783. Accreditation is not offered for this method by CA-ELAP
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Accreditations Held:
Redding Location: CA-ELAP - Cert # 1677
Chico Location: CA-ELAP - Cert # 2718

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Analytical Report

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen
Ricky Jensen, Operations Manager
Pace Analytical Services LLC - Redding CA

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

LABORATORY WORK ORDER # 22K0176

PAGE 1 OF 1

basic laboratory

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CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
STILLWATER SCIENCES	SMUD 2022	750.10/620.02	

MAILING ADDRESS
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DAVIS, CA 95618

REPORT TO ☑ Email ☐ Mail Hardcopy

NAME / ATTENTION: EMILY APPLEQUIST

PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED: ☐ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one) ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☐ Yes ☑ No What Type?

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED			SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	T&D Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	11/2/22	0800	AM	PM	SW			IS-10-SFSC		6	✓	✓	✓	✓	✓
2	11/2/22	0945	AM	PM				IS-11-SFSC		6	✓	✓	✓	✓	✓
3	11/2/22	1030	AM	PM				IS-12-SC		6	✓	✓	✓	✓	✓
4	11/2/22	1330	AM	PM				IS-13-SC		6	✓	✓	✓	✓	✓
5	11/2/22	1230	AM	PM				IS-14-SC		6	✓	✓	✓	✓	✓
			AM	PM											
			AM	PM											
			AM	PM											
			AM	PM											
			AM	PM											

SAMPLED BY: (please print) BH/EA

RELINQUISHED DATE / TIME:

SAMPLING / ANALYSIS COMMENTS

(1) Total and Dissolved LL 1638 Metals

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME	SIGNATURE	DATE
BRUCE HITCH		11/2/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
	11/3/22 1132		11/3/22 1339

For Official Lab Comments Only

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

SAMPLE RECEIPT CHECKLIST

WO NUMBER 22K0176

Samples Received Via:

Fed-Ex ☑ Client Walk-In ☐ Courier ☐
UPS ☐ Pace Field Service ☐ Other ☐

Samples Received By: RH Date: 11/3/22 Time: 1132
Are samples for regulatory compliance? Yes ☑ No ☐

THERMAL PRESERVATION

Were samples received in a cooler? Yes ☑ No ☐ If no, take temperature of representative sample container and record below.
If no, do they require thermal preservation? Yes ☐ No ☐ If no, why not? Non-regulatory ☐ Not Required by Method ☐
Samples received on ice? Yes ☑ No ☐ Ice type? Wet ☑ Ice Packs ☐ Other _____
Samples received the same day collected? Yes ☑ RH 11/3/22 No ☑ RH 11/3/22

Therm. ID (Circle one): Therm-36(IR) Therm-37(IR) Therm-59(IR) Therm-41(Stick) Other: _____

Cooler #1 Init. Temp °C 4.7 Correction °C -0.3 Corrected Temp °C 4.4
Cooler #2 Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
Cooler #3 Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
No Cooler - Representative Sample Temperature: Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____

Do samples received meet thermal preservation requirements? Yes ☑ No ☐ N/A ☐

Thermal Preservation Notes/Discrepancies/Nonconformances:

SAMPLE CONDITION AND PROCESSING

Do all sample IDs on labels match the COC? Yes ☑ No ☐
Custody seals present? Yes ☐ No ☐ N/A ☑
Samples in proper containers? Yes ☑ No ☐
Sample containers damaged? Yes ☐ No ☑
Sufficient sample volume for indicated tests? Yes ☑ No ☐
Samples received with sufficient holding time? Yes ☑ No ☐
Are VOA vials free of headspace? Yes ☐ No ☐ N/A ☑

CHEMICAL PRESERVATION

Were samples received with proper chemical preservation? Yes ☑ No ☐ N/A ☐ For pH checks done by analysts, were preservative labels present? Yes ☑ No ☐
Were samples received properly dechlorinated? Yes ☐ No ☐ N/A ☐ For Dechlorination checks done by analysts, were dechlor. agent labels present? Yes ☐ No ☐
Preservation checked by Sample Receiving? Initials RH Date & Time 11/3/22 1202 Test Strip (ID 2J12028)
Dechlorination checked by Sample Receiving? Initials _____ Date & Time _____ Test Strip (ID _____)

	Yes	No	N/A
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☑ RH 11/3/22	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑ In Lab By:_____ Meter ID:_____

Were any additional preservatives added after receipt? Yes ☐ No ☐ Initial pH: _____ Final pH _____
If yes, is addition of preservatives allowed by the method? Yes ☐ No ☐

List preservatives added:

Type: _____ Volume Added:_____ ID:_____ Type: _____ Volume Added:_____ ID:_____
Type: _____ Volume Added:_____ ID:_____ Type: _____ Volume Added:_____ ID:_____

COMMENTS, DISCREPANCEIS, ANOMALIES, NONCONFORMANCES

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02

Lab No: 22K0215
Reported: 12/15/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22K0215, received on 11/04/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: IS-15-SFAR
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0215-01
Sampled: 11/03/22 09:45
Received: 11/04/22 08:56

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.29	J	0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Copper	ug/l	0.26		0.04	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Lead	ug/l	0.027	J	0.007	0.050	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Mercury	ng/l	0.64		0.22	0.50	EPA 1631E	11/13/22	11/13/22	B2K1077 / DJC
Methyl Mercury as Mercury	ng/l	0.021	J	0.017	0.050	EPA 1630**	11/23/22	11/22/22	B2K1294 / EDM
Nickel	ug/l	0.10	J	0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Selenium	ug/l	0.4	J	0.3	2.0	EPA 200.8	11/17/22	11/10/22	B2K0939 / EDM
Zinc	ug/l	1.43		0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.26	J	0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Copper	ug/l	0.20		0.04	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Lead	ug/l	0.007	J	0.007	0.050	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Nickel	ug/l	0.07	J	0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/30/22	11/30/22	B2K1408 / EDM
Zinc	ug/l	0.45	J	0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm

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Analytical Report

Description: IS-16-SFAR
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0215-02
Sampled: 11/03/22 10:30
Received: 11/04/22 08:56

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Copper	ug/l	0.28		0.04	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Lead	ug/l	0.018	J	0.007	0.050	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Mercury	ng/l	0.69		0.22	0.50	EPA 1631E	11/13/22	11/13/22	B2K1077 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	11/23/22	11/22/22	B2K1294 / EDM
Nickel	ug/l	0.12		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Selenium	ug/l	0.4	J	0.3	2.0	EPA 200.8	11/17/22	11/10/22	B2K0939 / EDM
Zinc	ug/l	0.27	J	0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Copper	ug/l	0.23		0.04	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Nickel	ug/l	0.10	J	0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/30/22	11/30/22	B2K1408 / EDM
Zinc	ug/l	0.29	J	0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm

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Analytical Report

Description: IS-17-BC
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0215-03
Sampled: 11/03/22 08:45
Received: 11/04/22 08:56

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Copper	ug/l	0.15		0.04	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Lead	ug/l	0.076		0.007	0.050	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Mercury	ng/l	0.36	J	0.22	0.50	EPA 1631E	11/13/22	11/13/22	B2K1077 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	11/23/22	11/22/22	B2K1294 / EDM
Nickel	ug/l	0.13		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Selenium	ug/l	0.4	J	0.3	2.0	EPA 200.8	11/17/22	11/10/22	B2K0939 / EDM
Zinc	ug/l	0.30	J	0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Copper	ug/l	0.08	J	0.04	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Nickel	ug/l	0.07	J	0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/30/22	11/30/22	B2K1408 / EDM
Zinc	ug/l	ND		0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm

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Analytical Report

Description: IS-19-SFAR
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0215-04
Sampled: 11/03/22 11:45
Received: 11/04/22 08:56

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Copper	ug/l	0.37		0.04	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Lead	ug/l	0.094		0.007	0.050	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Mercury	ng/l	0.43	J	0.22	0.50	EPA 1631E	11/13/22	11/13/22	B2K1077 / DJC
Methyl Mercury as Mercury	ng/l	0.030	J	0.017	0.050	EPA 1630**	11/23/22	11/22/22	B2K1294 / EDM
Nickel	ug/l	0.14		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Selenium	ug/l	0.4	J	0.3	2.0	EPA 200.8	11/17/22	11/10/22	B2K0939 / EDM
Zinc	ug/l	1.55		0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Copper	ug/l	0.18		0.04	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Nickel	ug/l	0.06	J	0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/30/22	11/30/22	B2K1408 / EDM
Zinc	ug/l	0.31	J	0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K0939 - EPA 200.8 Total**									
Blank										
Selenium	0.5	2.0	ug/l							J
LCS										
Selenium	202	2.0	ug/l	200		101	85-115			
Duplicate	Source: 22K0167-02									
Selenium	0.7	2.0	ug/l		0.7			2.05	20	J
Duplicate	Source: 22K0176-05									
Selenium	0.3	2.0	ug/l		0.4			8.72	20	J
Matrix Spike	Source: 22K0167-02									
Selenium	194	2.0	ug/l	200	0.7	96.5	75-125			
Matrix Spike	Source: 22K0176-05									
Selenium	197	2.0	ug/l	200	0.4	98.4	75-125			
Metals - Total - Redding Location	**Batch B2K1077 - BrCl Digestion**									

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1077 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	9.89	0.50	ng/l	10.0		98.9	77-123			
Matrix Spike	Source: 22K0172-01									
Mercury	10.7	0.50	ng/l	10.0	0.27	105	71-125			
Matrix Spike	Source: 22K0215-04									
Mercury	11.1	0.50	ng/l	10.0	0.43	106	71-125			
Matrix Spike Dup	Source: 22K0172-01									
Mercury	10.8	0.50	ng/l	10.0	0.27	105	71-125	0.464	24	
Matrix Spike Dup	Source: 22K0215-04									
Mercury	10.7	0.50	ng/l	10.0	0.43	102	71-125	3.76	24	
Metals - Total - Redding Location	**Batch B2K1294 - EPA 1630 Distillation (Modified)**									
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.17	0.050	ng/l	2.00		108	67-133			
Matrix Spike	Source: 22J1171-04									
Methyl Mercury as Mercury	1.18	0.050	ng/l	1.00	ND	118	65-135			
Matrix Spike	Source: 22K0215-01									
Methyl Mercury as Mercury	1.05	0.050	ng/l	1.00	0.021	102	65-135			
Matrix Spike Dup	Source: 22J1171-04									
Methyl Mercury as Mercury	1.20	0.050	ng/l	1.00	ND	120	65-135	0.983	35	
Matrix Spike Dup	Source: 22K0215-01									
Methyl Mercury as Mercury	1.03	0.050	ng/l	1.00	0.021	100	65-135	2.02	35	
Metals - Total - Redding Location	**Batch B2K1441 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1441 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.19	0.50	ug/l	1.25		95.0	50-150			
Cadmium	0.26	0.10	ug/l	0.250		103	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.124	0.050	ug/l	0.125		98.9	72-143			
Nickel	0.25	0.10	ug/l	0.250		99.6	68-134			
Zinc	1.26	0.50	ug/l	1.25		101	46-146			
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.7	50-150			
Cadmium	0.25	0.10	ug/l	0.250		99.4	84-113			
Copper	0.24	0.10	ug/l	0.250		97.0	51-145			
Lead	0.124	0.050	ug/l	0.125		99.3	72-143			
Nickel	0.26	0.10	ug/l	0.250		104	68-134			
Zinc	1.27	0.50	ug/l	1.25		101	46-146			
Matrix Spike	Source: 22J1171-04									
Arsenic	2.47	0.50	ug/l	2.50	ND	98.8	50-150			
Cadmium	0.49	0.10	ug/l	0.500	ND	97.7	84-113			
Copper	0.61	0.10	ug/l	0.500	0.12	98.0	51-145			
Lead	0.255	0.050	ug/l	0.250	ND	102	72-143			
Nickel	0.53	0.10	ug/l	0.500	0.05	97.1	68-134			
Zinc	2.76	0.50	ug/l	2.50	0.25	100	46-146			
Matrix Spike	Source: 22K0215-03									

2218 Railroad Avenue
Redding, California 96001
voice 530.243.7234
fax 530.243.7494

3860 Morrow Lane, Suite F
Chico, California 95928
voice 530.894.8966
fax 530.894.5143

Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1441 - EPA 1638 - Closed Bottle Oven Digestion**									
Arsenic	2.55	0.50	ug/l	2.50	ND	102	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.66	0.10	ug/l	0.500	0.15	102	51-145			
Lead	0.322	0.050	ug/l	0.250	0.076	98.4	72-143			
Nickel	0.63	0.10	ug/l	0.500	0.13	101	68-134			
Zinc	2.76	0.50	ug/l	2.50	0.30	98.3	46-146			
Matrix Spike Dup	Source: 22J1171-04									
Arsenic	2.49	0.50	ug/l	2.50	ND	99.5	50-150	0.698	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	101	84-113	3.14	20	
Copper	0.60	0.10	ug/l	0.500	0.12	97.4	51-145	0.475	20	
Lead	0.246	0.050	ug/l	0.250	ND	98.2	72-143	3.61	20	
Nickel	0.53	0.10	ug/l	0.500	0.05	97.4	68-134	0.248	20	
Zinc	2.71	0.50	ug/l	2.50	0.25	98.1	46-146	2.06	20	
Matrix Spike Dup	Source: 22K0215-03									
Arsenic	2.50	0.50	ug/l	2.50	ND	100	50-150	1.88	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	95.7	84-113	5.00	20	
Copper	0.65	0.10	ug/l	0.500	0.15	100	51-145	1.70	20	
Lead	0.323	0.050	ug/l	0.250	0.076	98.8	72-143	0.292	20	
Nickel	0.63	0.10	ug/l	0.500	0.13	99.8	68-134	0.748	20	
Zinc	2.60	0.50	ug/l	2.50	0.30	91.9	46-146	6.03	20	
Metals - Dissolved - Redding Location	**Batch B2K1408 - EPA 200.8 Diss**									
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	204	2.0	ug/l	200		102	85-115			
Duplicate	Source: 22K0167-04									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22K0276-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22K0167-04									
Selenium	205	2.0	ug/l	200	ND	103	75-125			
Matrix Spike	Source: 22K0276-01									
Selenium	207	2.0	ug/l	200	ND	103	75-125			
Metals - Dissolved - Redding Location	**Batch B2L1116 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2L1116 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	0.12	0.50	ug/l							QB-05, J
Cadmium	0.02	0.10	ug/l							QB-05, J
Copper	ND	0.10	ug/l							
Lead	0.014	0.050	ug/l							QB-05, J
Nickel	0.02	0.10	ug/l							QB-05, J
Zinc	0.16	0.50	ug/l							QB-05, J
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.21	0.50	ug/l	1.25		97.2	50-150			
Cadmium	0.24	0.10	ug/l	0.250		96.8	84-113			
Copper	0.27	0.10	ug/l	0.250		109	51-145			
Lead	0.123	0.050	ug/l	0.125		98.7	72-143			
Nickel	0.25	0.10	ug/l	0.250		98.7	68-134			
Zinc	1.27	0.50	ug/l	1.25		101	46-146			
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.2	50-150			
Cadmium	0.23	0.10	ug/l	0.250		93.9	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.123	0.050	ug/l	0.125		98.0	72-143			
Nickel	0.24	0.10	ug/l	0.250		95.8	68-134			
Zinc	1.28	0.50	ug/l	1.25		103	46-146			
Matrix Spike	Source: 22J1171-04									
Arsenic	2.41	0.50	ug/l	2.50	ND	96.2	50-150			
Cadmium	0.49	0.10	ug/l	0.500	ND	97.3	84-113			
Copper	0.58	0.10	ug/l	0.500	0.09	97.5	51-145			
Lead	0.240	0.050	ug/l	0.250	ND	96.0	72-143			
Nickel	0.54	0.10	ug/l	0.500	0.04	99.5	68-134			
Zinc	2.68	0.50	ug/l	2.50	0.28	95.8	46-146			
Matrix Spike	Source: 22K0215-03									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2L1116 - EPA 1638 - Dissolved**									
Arsenic	2.43	0.50	ug/l	2.50	ND	97.2	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.4	84-113			
Copper	0.57	0.10	ug/l	0.500	0.08	96.5	51-145			
Lead	0.239	0.050	ug/l	0.250	ND	95.5	72-143			
Nickel	0.56	0.10	ug/l	0.500	0.07	98.6	68-134			
Zinc	2.53	0.50	ug/l	2.50	ND	101	46-146			
Matrix Spike Dup	Source: 22J1171-04									
Arsenic	2.42	0.50	ug/l	2.50	ND	96.8	50-150	0.578	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	97.8	84-113	0.477	20	
Copper	0.57	0.10	ug/l	0.500	0.09	95.4	51-145	1.85	20	
Lead	0.235	0.050	ug/l	0.250	ND	94.1	72-143	1.98	20	
Nickel	0.53	0.10	ug/l	0.500	0.04	97.7	68-134	1.66	20	
Zinc	2.72	0.50	ug/l	2.50	0.28	97.5	46-146	1.49	20	
Matrix Spike Dup	Source: 22K0215-03									
Arsenic	2.45	0.50	ug/l	2.50	ND	98.2	50-150	0.981	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	95.5	84-113	0.943	20	
Copper	0.57	0.10	ug/l	0.500	0.08	96.5	51-145	0.0620	20	
Lead	0.249	0.050	ug/l	0.250	ND	99.8	72-143	4.44	20	
Nickel	0.56	0.10	ug/l	0.500	0.07	97.7	68-134	0.790	20	
Zinc	2.52	0.50	ug/l	2.50	ND	101	46-146	0.613	20	

Notes and Definitions

QB-05	The method blank contains the analyte at a concentration level above the MDL, but below the MRL.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	The laboratory does not hold CA-ELAP accreditiation for this analyte or method. Accreditation may not be available from CA-ELAP for this analyte or method.
**	The laboratory holds accreditation for this analyte or method with WA-ECY Lab ID: Lab ID C783. Accreditation is not offered for this method by CA-ELAP
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Accreditations Held:
Redding Location: CA-ELAP - Cert # 1677
Chico Location: CA-ELAP - Cert # 2718

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Analytical Report

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen
Ricky Jensen, Operations Manager
Pace Analytical Services LLC - Redding CA

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494
☐ 3860 Morrow Lane, Suite F Chico, CA 95928 (530) 894-8966 FAX: (530) 894-5143

LABORATORY WORK ORDER # 22K0215
PAGE 1 OF 1

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS: 279 Cousteau Place, Suite 400, Davis, CA 95618

REPORT TO ☐ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED: ☐ Standard ☐ Rush _____

INVOICE TO: same
EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#:
☑ Regulatory ☐ Non-Regulatory
QC Reported? (check one): ☐ None ☑ STD ☐ Other
Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	ANALYSES REQUESTED: T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	11/3	0945 AM PM	SW		X	IS-15-SFAR		6	X	X	X	X	X	X
2	11/3	1036 AM PM	SW		X	IS-16-SFAR		6	X	X	X	X	X	X
3	11/3	0845 AM PM	SW		X	IS-17-BL		6	X	X	X	X	X	X
4	11/3	1145 AM PM	SW		X	IS-19-SFAR		6	X	X	X	X	X	X
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												

SAMPLED BY: (please print) BH EA

RELINQUISHED DATE / TIME: 11/3 1300 (FedEx)

SAMPLING / ANALYSIS COMMENTS: (1) Total and Dissolved LL 1638 Metals

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME	SIGNATURE	DATE
Esther Adelstein		11/3/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
	11/4/22 0856		11/4/22 1532

For Official Lab Comments Only

*SAMPLE TYPE CODES
DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water
SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

SAMPLE RECEIPT CHECKLIST

WO NUMBER 22K0215

Samples Received Via:
Fed-Ex ☑ Client Walk-In ☐ Courier ☐
UPS ☐ Pace Field Service ☐ Other ☐

Samples Received By: RH Date: 11/4/22 Time: 0856
Are samples for regulatory compliance? Yes ☐ No ☐

THERMAL PRESERVATION

Were samples received in a cooler? Yes ☑ No ☐ If no, take temperature of representative sample container and record below.
If no, do they require thermal preservation? Yes ☐ No ☐ If no, why not? Non-regulatory ☐ Not Required by Method ☐
Samples received on ice? Yes ☑ No ☐ Ice type? Wet ☑ Ice Packs ☐ Other _____
Samples received the same day collected? Yes ☑ No ☑ RH 11/4/22

Therm. ID (Circle one): Therm-36(IR) Therm-37(IR) Therm-59(IR) (Therm-41(Stick)) Other: _____

Cooler #1 Init. Temp °C 1.0 Correction °C -0.3 Corrected Temp °C 0.7
Cooler #2 Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
Cooler #3 Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
No Cooler - Representative Sample Temperature: Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____

Do samples received meet thermal preservation requirements? Yes ☑ No ☐ N/A ☐

Thermal Preservation Notes/Discrepancies/Nonconformances:

SAMPLE CONDITION AND PROCESSING

Do all sample IDs on labels match the COC? Yes ☐ No ☐
Custody seals present? Yes ☐ No ☐ N/A ☐
Samples in proper containers? Yes ☐ No ☐
Sample containers damaged? Yes ☐ No ☐
Sufficient sample volume for indicated tests? Yes ☐ No ☐
Samples received with sufficient holding time? Yes ☐ No ☐
Are VOA vials free of headspace? Yes ☐ No ☐ N/A ☐

CHEMICAL PRESERVATION

Were samples received with proper chemical preservation? Yes ☑ No ☐ N/A ☐ For pH checks done by analysts, were preservative labels present? Yes ☑ No ☐
Were samples received properly dechlorinated? Yes ☐ No ☐ N/A ☐ For Dechlorination checks done by analysts, were dechlor. agent labels present? Yes ☐ No ☐
Preservation checked by Sample Receiving? Initials RH Date & Time 11/4/22 1014 Test Strip (ID 2J12028)
Dechlorination checked by Sample Receiving? Initials_____ Date & Time _____ Test Strip (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑

Added upon sample receipt? Yes ☐ No ☐
In Lab By:_____ Meter ID:_____

Were any additional preservatives added after receipt? Yes ☐ No ☐ Initial pH: _____ Final pH _____
If yes, is addition of preservatives allowed by the method? Yes ☐ No ☐

List preservatives added at receipt:
Type: _____ Volume Added:_____ ID:_____ Type: _____ Volume Added:_____ ID:_____
Type: _____ Volume Added:_____ ID:_____ Type: _____ Volume Added:_____ ID:_____

COMMENTS, DISCREPANCEIS, ANOMALIES, NONCONFORMANCES

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

November 10, 2022

CLS Work Order #: 22K0276
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 11/03/22 14:00. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

11/10/22 14:58

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0276
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-15-SFAR (22K0276-01) Water Sampled: 11/03/22 09:45 Received: 11/03/22 14:00										
Ammonia as N	ND	0.025	0.10	mg/L	1	2209623	11/08/22	11/08/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**20**	0.50	5.0	"	"	2209546	11/07/22	11/07/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**7.0**	0.026	0.50	"	"	2209478	11/04/22	11/04/22	EPA 300.0	
Cyanide (total)	**0.0045**	0.0012	0.0050	"	"	2209497	11/04/22	11/05/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209596	11/08/22	11/09/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209546	11/07/22	11/07/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209478	11/04/22	11/04/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2209482	11/04/22	11/04/22	SM4500-P E	
Sulfate as SO4	**0.91**	0.038	0.50	"	"	2209478	11/04/22	11/04/22	EPA 300.0	
Total Alkalinity	**20**	1.0	5.0	"	"	2209546	11/07/22	11/07/22	SM2320B	
Total Dissolved Solids	**48**	5.0	10	"	"	2209573	11/07/22	11/08/22	SM2540C	
Total Hardness as CaCO3	**20**	0.19	1.0	"	"	2209576	11/07/22	11/07/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.40**	0.040	0.20	"	"	2209543	11/04/22	11/04/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.3**	0.54	1.0	"	"	2209479	11/04/22	11/04/22	SM5310B	
Total Phosphorus as P	**0.045**	0.023	0.050	"	"	2209501	11/04/22	11/04/22	SM4500-P E	J
Total Suspended Solids	ND	2.0	5.0	"	"	2209605	11/08/22	11/08/22	SM2540D	
IS-16-SFAR (22K0276-02) Water Sampled: 11/03/22 10:30 Received: 11/03/22 14:00										
Ammonia as N	ND	0.025	0.10	mg/L	1	2209623	11/08/22	11/08/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**11**	0.50	5.0	"	"	2209546	11/07/22	11/07/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**2.2**	0.026	0.50	"	"	2209478	11/04/22	11/04/22	EPA 300.0	
Cyanide (total)	**0.0038**	0.0012	0.0050	"	"	2209497	11/04/22	11/05/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209596	11/08/22	11/09/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209546	11/07/22	11/07/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209478	11/04/22	11/04/22	EPA 300.0	
Orthophosphate as PO4	**0.011**	0.0051	0.15	"	"	2209482	11/04/22	11/04/22	SM4500-P E	J

11/10/22 14:58

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0276
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-16-SFAR (22K0276-02) Water Sampled: 11/03/22 10:30 Received: 11/03/22 14:00										
Sulfate as SO4	**0.63**	0.038	0.50	mg/L	1	2209478	11/04/22	11/04/22	EPA 300.0	
Total Alkalinity	**11**	1.0	5.0	"	"	2209546	11/07/22	11/07/22	SM2320B	
Total Dissolved Solids	**27**	5.0	10	"	"	2209573	11/07/22	11/08/22	SM2540C	
Total Hardness as CaCO3	**9.7**	0.19	1.0	"	"	2209576	11/07/22	11/07/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.34**	0.040	0.20	"	"	2209543	11/04/22	11/04/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.1**	0.54	1.0	"	"	2209479	11/04/22	11/04/22	SM5310B	
Total Phosphorus as P	**0.026**	0.023	0.050	"	"	2209501	11/04/22	11/04/22	SM4500-P E	J
Total Suspended Solids	ND	2.0	5.0	"	"	2209605	11/08/22	11/08/22	SM2540D	
IS-17-BC (22K0276-03) Water Sampled: 11/03/22 08:45 Received: 11/03/22 14:00										
Ammonia as N	ND	0.025	0.10	mg/L	1	2209623	11/08/22	11/08/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**13**	0.50	5.0	"	"	2209546	11/07/22	11/07/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.86**	0.026	0.50	"	"	2209478	11/04/22	11/04/22	EPA 300.0	
Cyanide (total)	**0.0027**	0.0012	0.0050	"	"	2209497	11/04/22	11/05/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209596	11/08/22	11/09/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209546	11/07/22	11/07/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209478	11/04/22	11/04/22	EPA 300.0	
Orthophosphate as PO4	**0.0066**	0.0051	0.15	"	"	2209482	11/04/22	11/04/22	SM4500-P E	J
Sulfate as SO4	**0.45**	0.038	0.50	"	"	2209478	11/04/22	11/04/22	EPA 300.0	J
Total Alkalinity	**13**	1.0	5.0	"	"	2209546	11/07/22	11/07/22	SM2320B	
Total Dissolved Solids	**25**	5.0	10	"	"	2209573	11/07/22	11/08/22	SM2540C	
Total Hardness as CaCO3	**9.8**	0.19	1.0	"	"	2209576	11/07/22	11/07/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.44**	0.040	0.20	"	"	2209543	11/04/22	11/04/22	SM4500-NH3F-2011	
Total Organic Carbon	**1.1**	0.54	1.0	"	"	2209479	11/04/22	11/05/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209501	11/04/22	11/04/22	SM4500-P E	
Total Suspended Solids	**3.8**	2.0	5.0	"	"	2209605	11/08/22	11/08/22	SM2540D	J

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2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0276
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-19-SFAR (22K0276-04) Water Sampled: 11/03/22 11:45 Received: 11/03/22 14:00										
Ammonia as N	ND	0.025	0.10	mg/L	1	2209623	11/08/22	11/08/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**11**	0.50	5.0	"	"	2209546	11/07/22	11/07/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**1.6**	0.026	0.50	"	"	2209478	11/04/22	11/04/22	EPA 300.0	
Cyanide (total)	**0.0020**	0.0012	0.0050	"	"	2209497	11/04/22	11/05/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209596	11/08/22	11/09/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209546	11/07/22	11/07/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209478	11/04/22	11/04/22	EPA 300.0	
Orthophosphate as PO4	**0.025**	0.0051	0.15	"	"	2209482	11/04/22	11/04/22	SM4500-P E	J
Sulfate as SO4	**0.52**	0.038	0.50	"	"	2209478	11/04/22	11/04/22	EPA 300.0	
Total Alkalinity	**11**	1.0	5.0	"	"	2209546	11/07/22	11/07/22	SM2320B	
Total Dissolved Solids	**32**	5.0	10	"	"	2209573	11/07/22	11/08/22	SM2540C	
Total Hardness as CaCO3	**9.1**	0.19	1.0	"	"	2209576	11/07/22	11/07/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.41**	0.040	0.20	"	"	2209543	11/04/22	11/04/22	SM4500-NH3F-2011	
Total Organic Carbon	**3.3**	0.54	1.0	"	"	2209479	11/04/22	11/05/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209501	11/04/22	11/04/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209605	11/08/22	11/08/22	SM2540D	

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22K0276
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-15-SFAR (22K0276-01) Water Sampled: 11/03/22 09:45 Received: 11/03/22 14:00										
Diesel	ND	0.0021	0.050	mg/L	1	2209511	11/04/22	11/05/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*66 %*	*65-135*		"	"	"	"	
IS-16-SFAR (22K0276-02) Water Sampled: 11/03/22 10:30 Received: 11/03/22 14:00										
Diesel	ND	0.0021	0.050	mg/L	1	2209511	11/04/22	11/05/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*57 %*	*65-135*		"	"	"	"	*QS-4*
IS-17-BC (22K0276-03) Water Sampled: 11/03/22 08:45 Received: 11/03/22 14:00										
Diesel	ND	0.0021	0.050	mg/L	1	2209511	11/04/22	11/05/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*52 %*	*65-135*		"	"	"	"	*QS-4*
IS-19-SFAR (22K0276-04) Water Sampled: 11/03/22 11:45 Received: 11/03/22 14:00										
Diesel	ND	0.0021	0.050	mg/L	1	2209511	11/04/22	11/05/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K0276**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-19-SFAR (22K0276-04) Water Sampled: 11/03/22 11:45 Received: 11/03/22 14:00										
Surrogate: o-Terphenyl			*41 %*		*65-135*	*2209511*	"	*11/05/22*	*EPA 8015M*	*QS-4*

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0276
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-15-SFAR (22K0276-01) Water Sampled: 11/03/22 09:45 Received: 11/03/22 14:00										
Aluminum	**30**	1.6	20	µg/L	1	2209569	11/07/22	11/09/22	EPA 200.8	
Barium	**17**	0.14	5.0	"	"	"	"	11/07/22	"	
Calcium	**6000**	27	1000	"	"	2209570	11/07/22	11/08/22	EPA 200.7	
Iron	**59**	9.1	100	"	"	"	"	11/07/22	"	J
Magnesium	**1200**	21	1000	"	"	"	"	"	"	
Manganese	**10**	0.050	2.0	"	"	2209569	11/07/22	11/09/22	EPA 200.8	
Potassium	**1500**	61	1000	"	"	2209570	11/07/22	11/07/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2209569	11/07/22	11/07/22	EPA 200.8	
Sodium	**5100**	34	1000	"	"	2209570	11/07/22	11/07/22	EPA 200.7	
IS-16-SFAR (22K0276-02) Water Sampled: 11/03/22 10:30 Received: 11/03/22 14:00										
Aluminum	**21**	1.6	20	µg/L	1	2209569	11/07/22	11/09/22	EPA 200.8	
Barium	**11**	0.14	5.0	"	"	"	"	11/07/22	"	
Calcium	**3000**	27	1000	"	"	2209570	11/07/22	11/08/22	EPA 200.7	
Iron	**54**	9.1	100	"	"	"	"	11/07/22	"	J
Magnesium	**630**	21	1000	"	"	"	"	"	"	J
Manganese	**9.9**	0.050	2.0	"	"	2209569	11/07/22	11/09/22	EPA 200.8	
Potassium	**800**	61	1000	"	"	2209570	11/07/22	11/07/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209569	11/07/22	11/07/22	EPA 200.8	
Sodium	**2300**	34	1000	"	"	2209570	11/07/22	11/07/22	EPA 200.7	
IS-17-BC (22K0276-03) Water Sampled: 11/03/22 08:45 Received: 11/03/22 14:00										
Aluminum	**38**	1.6	20	µg/L	1	2209569	11/07/22	11/09/22	EPA 200.8	
Barium	**14**	0.14	5.0	"	"	"	"	11/07/22	"	
Calcium	**2500**	27	1000	"	"	2209570	11/07/22	11/08/22	EPA 200.7	
Iron	**170**	9.1	100	"	"	"	"	11/07/22	"	
Magnesium	**760**	21	1000	"	"	"	"	"	"	J
Manganese	**64**	0.050	2.0	"	"	2209569	11/07/22	11/09/22	EPA 200.8	
Potassium	**790**	61	1000	"	"	2209570	11/07/22	11/07/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209569	11/07/22	11/07/22	EPA 200.8	
Sodium	**1600**	34	1000	"	"	2209570	11/07/22	11/07/22	EPA 200.7	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0276
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-19-SFAR (22K0276-04) Water	**Sampled: 11/03/22 11:45**		**Received: 11/03/22 14:00**							
Aluminum	**44**	1.6	20	µg/L	1	2209569	11/07/22	11/09/22	EPA 200.8	
Barium	**10**	0.14	5.0	"	"	"	"	11/07/22	"	
Calcium	**2700**	27	1000	"	"	2209570	11/07/22	11/07/22	EPA 200.7	
Iron	**69**	9.1	100	"	"	"	"	"	"	J
Magnesium	**550**	21	1000	"	"	"	"	"	"	J
Manganese	**19**	0.050	2.0	"	"	2209569	11/07/22	11/09/22	EPA 200.8	
Potassium	**790**	61	1000	"	"	2209570	11/07/22	11/07/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209569	11/07/22	11/07/22	EPA 200.8	
Sodium	**1900**	34	1000	"	"	2209570	11/07/22	11/07/22	EPA 200.7	

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Project: SMUD In situ & Chemistry Monitoring
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Project Manager: Emily Applequist

CLS Work Order #: 22K0276
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-15-SFAR (22K0276-01) Water Sampled: 11/03/22 09:45 Received: 11/03/22 14:00										
Aluminum	**9.2**	0.52	20	µg/L	1	2209638	11/09/22	11/09/22	EPA 200.8	J
Iron	**14**	6.8	100	"	"	2209576	11/07/22	11/07/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2209638	11/09/22	11/09/22	EPA 200.8	
IS-16-SFAR (22K0276-02) Water Sampled: 11/03/22 10:30 Received: 11/03/22 14:00										
Aluminum	**9.1**	0.52	20	µg/L	1	2209638	11/09/22	11/09/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2209576	11/07/22	11/07/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2209638	11/09/22	11/09/22	EPA 200.8	
IS-17-BC (22K0276-03) Water Sampled: 11/03/22 08:45 Received: 11/03/22 14:00										
Aluminum	**3.3**	0.52	20	µg/L	1	2209638	11/09/22	11/09/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2209576	11/07/22	11/07/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2209638	11/09/22	11/09/22	EPA 200.8	
IS-19-SFAR (22K0276-04) Water Sampled: 11/03/22 11:45 Received: 11/03/22 14:00										
Aluminum	**8.3**	0.52	20	µg/L	1	2209638	11/09/22	11/09/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2209576	11/07/22	11/07/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2209638	11/09/22	11/09/22	EPA 200.8	

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CLS Work Order #: 22K0276
COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-15-SFAR (22K0276-01) Water Sampled: 11/03/22 09:45 Received: 11/03/22 14:00										
Gasoline	ND	10	50	µg/L	1	2209585	11/07/22	11/08/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*76 %*	*65-135*		"	"	"	"	
IS-16-SFAR (22K0276-02) Water Sampled: 11/03/22 10:30 Received: 11/03/22 14:00										
Gasoline	ND	10	50	µg/L	1	2209585	11/07/22	11/08/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*75 %*	*65-135*		"	"	"	"	
IS-17-BC (22K0276-03) Water Sampled: 11/03/22 08:45 Received: 11/03/22 14:00										
Gasoline	ND	10	50	µg/L	1	2209585	11/07/22	11/08/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*76 %*	*65-135*		"	"	"	"	
IS-19-SFAR (22K0276-04) Water Sampled: 11/03/22 11:45 Received: 11/03/22 14:00										
Gasoline	ND	10	50	µg/L	1	2209585	11/07/22	11/08/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*83 %*	*65-135*		"	"	"	"	

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COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-15-SFAR (22K0276-01) Water Sampled: 11/03/22 09:45 Received: 11/03/22 14:00										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209677	11/05/22	11/05/22	EPA 8260B	
Surrogate: Toluene-d8			*83 %*		*72-125*		"	"	"	"
IS-16-SFAR (22K0276-02) Water Sampled: 11/03/22 10:30 Received: 11/03/22 14:00										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209677	11/05/22	11/05/22	EPA 8260B	
Surrogate: Toluene-d8			*79 %*		*72-125*		"	"	"	"
IS-17-BC (22K0276-03) Water Sampled: 11/03/22 08:45 Received: 11/03/22 14:00										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209677	11/05/22	11/05/22	EPA 8260B	
Surrogate: Toluene-d8			*85 %*		*72-125*		"	"	"	"
IS-19-SFAR (22K0276-04) Water Sampled: 11/03/22 11:45 Received: 11/03/22 14:00										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209677	11/05/22	11/05/22	EPA 8260B	
Surrogate: Toluene-d8			*85 %*		*72-125*		"	"	"	"

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209478 - General Prep											
Blank (2209478-BLK1)					Prepared & Analyzed: 11/04/22						
Sulfate as SO4	0.0392	0.038	0.50	mg/L							J
Chloride	0.209	0.026	0.50	"							J
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2209478-BS1)					Prepared & Analyzed: 11/04/22						
Sulfate as SO4	4.84	0.038	0.50	mg/L	5.00		97	80-120			
Chloride	4.77	0.026	0.50	"	5.00		95	80-120			
Nitrate/Nitrite as N	4.19	0.055	0.40	"	4.00		105	80-120			
LCS Dup (2209478-BSD1)					Prepared & Analyzed: 11/04/22						
Sulfate as SO4	4.87	0.038	0.50	mg/L	5.00		97	80-120	0.6	20	
Chloride	4.80	0.026	0.50	"	5.00		96	80-120	0.7	20	
Nitrate/Nitrite as N	4.21	0.055	0.40	"	4.00		105	80-120	0.5	20	
Matrix Spike (2209478-MS1)			**Source: 22K0276-01**		Prepared & Analyzed: 11/04/22						
Chloride	12.1	0.026	0.50	mg/L	5.00	6.98	103	80-120			
Sulfate as SO4	5.93	0.038	0.50	"	5.00	0.911	100	80-120			
Nitrate/Nitrite as N	4.26	0.055	0.40	"	4.00	ND	107	80-120			
Matrix Spike Dup (2209478-MSD1)			**Source: 22K0276-01**		Prepared & Analyzed: 11/04/22						
Sulfate as SO4	6.00	0.038	0.50	mg/L	5.00	0.911	102	80-120	1	20	
Chloride	12.2	0.026	0.50	"	5.00	6.98	104	80-120	0.6	20	
Nitrate/Nitrite as N	4.32	0.055	0.40	"	4.00	ND	108	80-120	1	20	
Batch 2209479 - General Preparation											
Blank (2209479-BLK1)					Prepared & Analyzed: 11/04/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209479 - General Preparation											
LCS (2209479-BS1)					Prepared & Analyzed: 11/04/22						
Total Organic Carbon	10.5	0.54	1.0	mg/L	10.0		105	75-125			
LCS Dup (2209479-BSD1)					Prepared & Analyzed: 11/04/22						
Total Organic Carbon	10.3	0.54	1.0	mg/L	10.0		103	75-125	2	25	
Matrix Spike (2209479-MS1)			**Source: 22K0276-01**		Prepared & Analyzed: 11/04/22						
Total Organic Carbon	18.8	0.54	1.0	mg/L	10.0	2.26	165	75-125			QM-7
Matrix Spike Dup (2209479-MSD1)			**Source: 22K0276-01**		Prepared & Analyzed: 11/04/22						
Total Organic Carbon	17.8	0.54	1.0	mg/L	10.0	2.26	155	75-125	5	25	QM-7
Batch 2209482 - General Preparation											
Blank (2209482-BLK1)					Prepared & Analyzed: 11/04/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							
LCS (2209482-BS1)					Prepared & Analyzed: 11/04/22						
Orthophosphate as PO4	0.912	0.0051	0.15	mg/L	0.918		99	80-120			
LCS Dup (2209482-BSD1)					Prepared & Analyzed: 11/04/22						
Orthophosphate as PO4	0.875	0.0051	0.15	mg/L	0.918		95	80-120	4	20	
Matrix Spike (2209482-MS1)			**Source: 22K0276-01**		Prepared & Analyzed: 11/04/22						
Orthophosphate as PO4	0.887	0.0051	0.15	mg/L	0.918	ND	97	75-125			
Matrix Spike Dup (2209482-MSD1)			**Source: 22K0276-01**		Prepared & Analyzed: 11/04/22						
Orthophosphate as PO4	0.891	0.0051	0.15	mg/L	0.918	ND	97	75-125	0.5	25	

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CLS Work Order #: 22K0276
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209497 - General Preparation											
Blank (2209497-BLK1)					Prepared: 11/04/22 Analyzed: 11/05/22						
Cyanide (total)	0.00270	0.0012	0.0050	mg/L							J
LCS (2209497-BS1)					Prepared: 11/04/22 Analyzed: 11/05/22						
Cyanide (total)	0.0759	0.0012	0.0050	mg/L	0.100		76	75-125			
LCS Dup (2209497-BSD1)					Prepared: 11/04/22 Analyzed: 11/05/22						
Cyanide (total)	0.0755	0.0012	0.0050	mg/L	0.100		76	75-125	0.5	25	
Matrix Spike (2209497-MS1)			**Source: 22K0164-01**		Prepared: 11/04/22 Analyzed: 11/05/22						
Cyanide (total)	0.0567	0.0012	0.0050	mg/L	0.100	0.00200	55	75-125			QM-7
Matrix Spike Dup (2209497-MSD1)			**Source: 22K0164-01**		Prepared: 11/04/22 Analyzed: 11/05/22						
Cyanide (total)	0.0615	0.0012	0.0050	mg/L	0.100	0.00200	60	75-125	8	25	QM-7
Batch 2209501 - General Preparation											
Blank (2209501-BLK1)					Prepared & Analyzed: 11/04/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2209501-BS1)					Prepared & Analyzed: 11/04/22						
Total Phosphorus as P	0.303	0.023	0.050	mg/L	0.300		101	80-120			
LCS Dup (2209501-BSD1)					Prepared & Analyzed: 11/04/22						
Total Phosphorus as P	0.302	0.023	0.050	mg/L	0.300		101	80-120	0.5	25	
Matrix Spike (2209501-MS1)			**Source: 22K0164-02**		Prepared & Analyzed: 11/04/22						
Total Phosphorus as P	0.292	0.023	0.050	mg/L	0.300	ND	97	75-125			

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209501 - General Preparation											
Matrix Spike Dup (2209501-MSD1)			**Source: 22K0164-02**		Prepared & Analyzed: 11/04/22						
Total Phosphorus as P	0.300	0.023	0.050	mg/L	0.300	ND	100	75-125	3	30	
Batch 2209543 - General Preparation											
Blank (2209543-BLK1)					Prepared & Analyzed: 11/04/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2209543-BS1)					Prepared & Analyzed: 11/04/22						
Total Kjeldahl Nitrogen	0.524	0.040	0.20	mg/L	0.500		105	80-120			
LCS Dup (2209543-BSD1)					Prepared & Analyzed: 11/04/22						
Total Kjeldahl Nitrogen	0.548	0.040	0.20	mg/L	0.500		110	80-120	4	20	
Matrix Spike (2209543-MS1)			**Source: 22K0164-01**		Prepared & Analyzed: 11/04/22						
Total Kjeldahl Nitrogen	0.806	0.040	0.20	mg/L	0.500	0.350	91	75-125			
Matrix Spike Dup (2209543-MSD1)			**Source: 22K0164-01**		Prepared & Analyzed: 11/04/22						
Total Kjeldahl Nitrogen	0.803	0.040	0.20	mg/L	0.500	0.350	91	75-125	0.4	25	
Batch 2209546 - General Preparation											
Blank (2209546-BLK1)					Prepared & Analyzed: 11/07/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209546 - General Preparation											
Duplicate (2209546-DUP1)			**Source: 22K0276-04**		Prepared & Analyzed: 11/07/22						
Total Alkalinity	10.8	1.0	5.0	mg/L		11.0			2	20	
Bicarbonate as CaCO3	10.8	0.50	5.0	"		11.0			2	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Batch 2209573 - General Preparation											
Blank (2209573-BLK1)					Prepared: 11/07/22 Analyzed: 11/08/22						
Total Dissolved Solids	ND	5.0	10	mg/L							
Duplicate (2209573-DUP1)			**Source: 22K0276-01**		Prepared: 11/07/22 Analyzed: 11/08/22						
Total Dissolved Solids	50.0	5.0	10	mg/L		48.0			4	20	
Batch 2209576 - EPA 200 No Digestion											
Blank (2209576-BLK1)					Prepared & Analyzed: 11/07/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2209576-BS1)					Prepared & Analyzed: 11/07/22						
Total Hardness as CaCO3	33.4	0.19	1.0	mg/L	33.1		101	85-115			
Matrix Spike (2209576-MS1)			**Source: 22K0054-03**		Prepared & Analyzed: 11/07/22						
Total Hardness as CaCO3	86.5	0.19	1.0	mg/L	33.1	55.1	95	70-130			
Matrix Spike (2209576-MS2)			**Source: 22K0168-01**		Prepared & Analyzed: 11/07/22						
Total Hardness as CaCO3	114	0.19	1.0	mg/L	33.1	81.6	96	70-130			

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209596 - Solvent Extract											
Blank (2209596-BLK1)					Prepared: 11/08/22 Analyzed: 11/09/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2209596-BS1)					Prepared: 11/08/22 Analyzed: 11/09/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.1	1.0	5.0	mg/L	40.0		98	78-114			
LCS Dup (2209596-BSD1)					Prepared: 11/08/22 Analyzed: 11/09/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.6	1.0	5.0	mg/L	40.0		99	78-114	1	18	
Batch 2209605 - General Preparation											
Blank (2209605-BLK1)					Prepared & Analyzed: 11/08/22						
Total Suspended Solids	ND	2.0	5.0	mg/L							
Duplicate (2209605-DUP1)			**Source: 22K0276-01**		Prepared & Analyzed: 11/08/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	
Batch 2209623 - General Preparation											
Blank (2209623-BLK1)					Prepared & Analyzed: 11/08/22						
Ammonia as N	ND	0.025	0.10	mg/L							
LCS (2209623-BS1)					Prepared & Analyzed: 11/08/22						
Ammonia as N	0.496	0.025	0.10	mg/L	0.500		99	80-120			
LCS Dup (2209623-BSD1)					Prepared & Analyzed: 11/08/22						
Ammonia as N	0.513	0.025	0.10	mg/L	0.500		103	80-120	3	25	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209623 - General Preparation											
Matrix Spike (2209623-MS1)			**Source: 22K0253-01**		Prepared & Analyzed: 11/08/22						
Ammonia as N	0.537	0.025	0.10	mg/L	0.500	0.0940	89	75-125			
Matrix Spike Dup (2209623-MSD1)			**Source: 22K0253-01**		Prepared & Analyzed: 11/08/22						
Ammonia as N	0.542	0.025	0.10	mg/L	0.500	0.0940	90	75-125	0.9	25	

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COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209511 - EPA 3510B GCNV											
Blank (2209511-BLK1)					Prepared: 11/04/22 Analyzed: 11/05/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Surrogate: o-Terphenyl	*0.0134*			*"*	*0.0125*		*107*	*65-135*			
LCS (2209511-BS1)					Prepared: 11/04/22 Analyzed: 11/05/22						
Diesel	1.31	0.0021	0.050	mg/L	1.25		105	65-135			
Surrogate: o-Terphenyl	*0.0175*			*"*	*0.0250*		*70*	*65-135*			
LCS Dup (2209511-BSD1)					Prepared: 11/04/22 Analyzed: 11/05/22						
Diesel	1.10	0.0021	0.050	mg/L	1.25		88	65-135	17	30	
Surrogate: o-Terphenyl	*0.0195*			*"*	*0.0250*		*78*	*65-135*			
Matrix Spike (2209511-MS1)			**Source: 22K0145-01**		Prepared: 11/04/22 Analyzed: 11/05/22						
Diesel	1.34	0.0021	0.050	mg/L	1.25	ND	107	46-137			
Surrogate: o-Terphenyl	*0.0287*			*"*	*0.0250*		*115*	*65-135*			
Matrix Spike Dup (2209511-MSD1)			**Source: 22K0145-01**		Prepared: 11/04/22 Analyzed: 11/05/22						
Diesel	1.25	0.0021	0.050	mg/L	1.25	ND	100	46-137	7	30	
Surrogate: o-Terphenyl	*0.0248*			*"*	*0.0250*		*99*	*65-135*			

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CLS Work Order #: 22K0276
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209569 - EPA 200 Series											
Blank (2209569-BLK1)					Prepared: 11/07/22 Analyzed: 11/09/22						
Aluminum	2.28	1.6	20	µg/L							J
Barium	ND	0.14	5.0	"							
Manganese	0.279	0.050	2.0	"							J
Silver	ND	0.070	0.50	"							
LCS (2209569-BS1)					Prepared: 11/07/22 Analyzed: 11/09/22						
Aluminum	500	1.6	20	µg/L	500		100	85-115			
Barium	103	0.14	5.0	"	100		103	85-115			
Manganese	106	0.050	2.0	"	100		106	85-115			
Silver	105	0.070	0.50	"	100		105	85-115			
Matrix Spike (2209569-MS1)			**Source: 22K0275-01**		Prepared: 11/07/22 Analyzed: 11/09/22						
Aluminum	724	1.6	20	µg/L	500	210	103	70-130			
Barium	116	0.14	5.0	"	100	10.1	106	70-130			
Manganese	110	0.050	2.0	"	100	9.03	101	70-130			
Silver	104	0.070	0.50	"	100	ND	104	70-130			
Matrix Spike (2209569-MS2)			**Source: 22K0292-01**		Prepared: 11/07/22 Analyzed: 11/09/22						
Aluminum	513	1.6	20	µg/L	500	22.5	98	70-130			
Barium	134	0.14	5.0	"	100	29.9	104	70-130			
Manganese	99.9	0.050	2.0	"	100	1.61	98	70-130			
Silver	101	0.070	0.50	"	100	ND	101	70-130			
Batch 2209570 - EPA 200 Series											
Blank (2209570-BLK1)					Prepared: 11/07/22 Analyzed: 11/08/22						
Calcium	ND	27	1000	µg/L							
Iron	ND	9.1	100	"							
Magnesium	ND	21	1000	"							
Potassium	337	61	1000	"							J
Sodium	46.8	34	1000	"							J

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COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209570 - EPA 200 Series											
LCS (2209570-BS1)					Prepared: 11/07/22 Analyzed: 11/08/22						
Calcium	5180	27	1000	µg/L	5000		104	85-115			
Iron	507	9.1	100	"	500		101	85-115			
Magnesium	5190	21	1000	"	5000		104	85-115			
Potassium	5510	61	1000	"	5000		110	85-115			
Sodium	5210	34	1000	"	5000		104	85-115			
Matrix Spike (2209570-MS1)			**Source: 22K0271-01**		Prepared: 11/07/22 Analyzed: 11/08/22						
Calcium	7460	27	1000	µg/L	5000	2350	102	70-130			
Iron	701	9.1	100	"	500	239	92	70-130			
Magnesium	5410	21	1000	"	5000	287	103	70-130			
Potassium	6070	61	1000	"	5000	995	102	70-130			
Sodium	6370	34	1000	"	5000	1280	102	70-130			
Matrix Spike (2209570-MS2)			**Source: 22K0333-01**		Prepared & Analyzed: 11/07/22						
Calcium	12500	27	1000	µg/L	5000	6760	115	70-130			
Iron	1660	9.1	100	"	500	817	168	70-130			QM-7
Magnesium	5790	21	1000	"	5000	467	106	70-130			
Potassium	6500	61	1000	"	5000	857	113	70-130			
Sodium	9220	34	1000	"	5000	3830	108	70-130			

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Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209576 - EPA 200 No Digestion											
Blank (2209576-BLK1)					Prepared & Analyzed: 11/07/22						
Iron	ND	6.8	100	µg/L							
LCS (2209576-BS1)					Prepared & Analyzed: 11/07/22						
Iron	480	6.8	100	µg/L	500		96	85-115			
Matrix Spike (2209576-MS1)			**Source: 22K0054-03**		Prepared & Analyzed: 11/07/22						
Iron	509	6.8	100	µg/L	500	26.2	97	70-130			
Matrix Spike (2209576-MS2)			**Source: 22K0168-01**		Prepared & Analyzed: 11/07/22						
Iron	523	6.8	100	µg/L	500	29.4	99	70-130			
Batch 2209638 - EPA 200 No Digestion											
Blank (2209638-BLK1)					Prepared & Analyzed: 11/09/22						
Aluminum	3.35	0.52	20	µg/L							J
Silver	ND	0.15	0.50	"							
LCS (2209638-BS1)					Prepared & Analyzed: 11/09/22						
Aluminum	468	0.52	20	µg/L	500		94	85-115			
Silver	99.5	0.15	0.50	"	100		99	85-115			
Matrix Spike (2209638-MS1)			**Source: 22K0164-01**		Prepared & Analyzed: 11/09/22						
Aluminum	484	0.52	20	µg/L	500	9.92	95	70-130			
Silver	101	0.15	0.50	"	100	ND	101	70-130			
Matrix Spike (2209638-MS2)			**Source: 22K0375-01**		Prepared & Analyzed: 11/09/22						
Aluminum	477	0.52	20	µg/L	500	6.26	94	70-130			
Silver	97.9	0.15	0.50	"	100	ND	98	70-130			

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COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209585 - EPA 5030 Water GC											
Blank (2209585-BLK1)					Prepared: 11/07/22 Analyzed: 11/08/22						
JP-4	0.00			µg/L							
Gasoline	ND	10	50	"							
Surrogate: o-Chlorotoluene (Gas)	*15.5*			"	*20.0*		*78*	*65-135*			
LCS (2209585-BS1)					Prepared: 11/07/22 Analyzed: 11/08/22						
Gasoline	530	10	50	µg/L	500		106	70-130			
Surrogate: o-Chlorotoluene (Gas)	*15.4*			"	*20.0*		*77*	*65-135*			
LCS Dup (2209585-BSD1)					Prepared: 11/07/22 Analyzed: 11/08/22						
Gasoline	571	10	50	µg/L	500		114	70-130	8	30	
Surrogate: o-Chlorotoluene (Gas)	*15.4*			"	*20.0*		*77*	*65-135*			
Matrix Spike (2209585-MS1)			**Source: 22K0335-06**		Prepared: 11/07/22 Analyzed: 11/08/22						
Gasoline	426	10	50	µg/L	500	ND	85	68-132			
Surrogate: o-Chlorotoluene (Gas)	*14.8*			"	*20.0*		*74*	*65-135*			
Matrix Spike Dup (2209585-MSD1)			**Source: 22K0335-06**		Prepared: 11/07/22 Analyzed: 11/08/22						
Gasoline	435	10	50	µg/L	500	ND	87	68-132	2	32	
Surrogate: o-Chlorotoluene (Gas)	*16.5*			"	*20.0*		*83*	*65-135*			

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Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209677 - EPA 3510B GCMS											
Blank (2209677-BLK1)					Prepared & Analyzed: 11/05/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Surrogate: Toluene-d8	*9.11*			"	*10.0*		*91*	*72-125*			
LCS (2209677-BS1)					Prepared & Analyzed: 11/05/22						
Methyl tert-butyl ether	18.6	0.095	0.50	µg/L	20.0		93	52-130			
Surrogate: Toluene-d8	*8.65*			"	*10.0*		*87*	*72-125*			
LCS Dup (2209677-BSD1)					Prepared & Analyzed: 11/05/22						
Methyl tert-butyl ether	19.1	0.095	0.50	µg/L	20.0		95	52-130	2	30	
Surrogate: Toluene-d8	*8.91*			"	*10.0*		*89*	*72-125*			
Matrix Spike (2209677-MS1)			**Source: 22K0276-03**		Prepared & Analyzed: 11/05/22						
Methyl tert-butyl ether	23.2	0.095	0.50	µg/L	20.0	ND	116	52-140			
Surrogate: Toluene-d8	*8.62*			"	*10.0*		*86*	*72-125*			
Matrix Spike Dup (2209677-MSD1)			**Source: 22K0276-03**		Prepared & Analyzed: 11/05/22						
Methyl tert-butyl ether	21.5	0.095	0.50	µg/L	20.0	ND	107	52-140	8	30	
Surrogate: Toluene-d8	*8.51*			"	*10.0*		*85*	*72-125*			

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Notes and Definitions

QS-4	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22k0274 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By
BM EA

Job Description
Monitor water chemistry in UARP reaches

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[x] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [x] NO [ ]

GLOBAL ID

FIELD CONDITIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	ANALYSIS REQUESTED: TSS, TDS, Hardness, Alkalinity, NO2-N+NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS: 1	2	3	5	SPECIAL INSTRUCTIONS
11/3	0945	IS-15-SFAR		Surface water			6	X	X	X	X	X	X	X				X	
11/3	1030	IS-16-SFAR		Surface water			6	X	X	X	X	X	X	X				X	
11/3	0845	IS-17-BC		Surface water			6	X	X	X	X	X	X	X				X	
11/3	1145	IS-19-SFAR		Surface water			6	X	X	X	X	X	X	X				X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	INVOICE TO
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	Project No. 750.10 Task 0620.01
				Surface water			6											X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4) = H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Esther Adelstein / Stillwater	11/3/22		

RECEIVED AT LAB BY: DATE/TIME: 11/3/22 1420 CONDITIONS/COMMENTS: 6.1 / 5.4

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER AIR BILL #

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Redding, California 96001
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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.11/620.02

Lab No: 22K0332
Reported: 12/23/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22K0332, received on 11/08/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: IS-18-SFAR
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0332-01
Sampled: 11/07/22 08:30
Received: 11/08/22 11:52

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Copper	ug/l	0.31		0.04	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Lead	ug/l	0.032	J	0.007	0.050	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Mercury	ng/l	0.65		0.22	0.50	EPA 1631E	11/20/22	11/20/22	B2K1154 / DJC
Methyl Mercury as Mercury	ng/l	0.022	J	0.017	0.050	EPA 1630**	12/22/22	12/20/22	B2L1251 / EDM
Nickel	ug/l	0.21		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/30/22	11/21/22	B2K1251 / EDM
Zinc	ug/l	0.45	J	0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Copper	ug/l	0.26		0.04	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Lead	ug/l	0.008	J	0.007	0.050	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Nickel	ug/l	0.25		0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/30/22	11/30/22	B2K1453 / EDM
Zinc	ug/l	0.66		0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm

Quality Control Data

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1154 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	0.46	0.50	ng/l							J
LCS										
Mercury	9.55	0.50	ng/l	10.0		95.5	77-123			
Matrix Spike	Source: 22K0242-01									
Mercury	19.1	0.50	ng/l	10.0	7.79	114	71-125			
Matrix Spike	Source: 22K0332-01									
Mercury	11.6	0.50	ng/l	10.0	0.65	110	71-125			
Matrix Spike Dup	Source: 22K0242-01									
Mercury	18.2	0.50	ng/l	10.0	7.79	104	71-125	5.17	24	
Matrix Spike Dup	Source: 22K0332-01									
Mercury	11.4	0.50	ng/l	10.0	0.65	108	71-125	1.41	24	
Metals - Total - Redding Location	**Batch B2K1251 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	202	2.0	ug/l	200		101	85-115			
Duplicate	Source: 22K0331-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22K0717-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22K0331-01									
Selenium	196	2.0	ug/l	200	ND	98.2	75-125			
Matrix Spike	Source: 22K0717-01									
Selenium	199	2.0	ug/l	200	ND	99.4	75-125			
Metals - Total - Redding Location	**Batch B2K1441 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1441 - EPA 1638 - Closed Bottle Oven Digestion**									
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.19	0.50	ug/l	1.25		95.0	50-150			
Cadmium	0.26	0.10	ug/l	0.250		103	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.124	0.050	ug/l	0.125		98.9	72-143			
Nickel	0.25	0.10	ug/l	0.250		99.6	68-134			
Zinc	1.26	0.50	ug/l	1.25		101	46-146			
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.7	50-150			
Cadmium	0.25	0.10	ug/l	0.250		99.4	84-113			
Copper	0.24	0.10	ug/l	0.250		97.0	51-145			
Lead	0.124	0.050	ug/l	0.125		99.3	72-143			
Nickel	0.26	0.10	ug/l	0.250		104	68-134			
Zinc	1.27	0.50	ug/l	1.25		101	46-146			
Matrix Spike	Source: 22J1171-04									
Arsenic	2.47	0.50	ug/l	2.50	ND	98.8	50-150			
Cadmium	0.49	0.10	ug/l	0.500	ND	97.7	84-113			
Copper	0.61	0.10	ug/l	0.500	0.12	98.0	51-145			
Lead	0.255	0.050	ug/l	0.250	ND	102	72-143			
Nickel	0.53	0.10	ug/l	0.500	0.05	97.1	68-134			
Zinc	2.76	0.50	ug/l	2.50	0.25	100	46-146			
Matrix Spike	Source: 22K0215-03									
Arsenic	2.55	0.50	ug/l	2.50	ND	102	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.66	0.10	ug/l	0.500	0.15	102	51-145			
Lead	0.322	0.050	ug/l	0.250	0.076	98.4	72-143			
Nickel	0.63	0.10	ug/l	0.500	0.13	101	68-134			

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1441 - EPA 1638 - Closed Bottle Oven Digestion**									
Zinc	2.76	0.50	ug/l	2.50	0.30	98.3	46-146			
Matrix Spike Dup	Source: 22J1171-04									
Arsenic	2.49	0.50	ug/l	2.50	ND	99.5	50-150	0.698	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	101	84-113	3.14	20	
Copper	0.60	0.10	ug/l	0.500	0.12	97.4	51-145	0.475	20	
Lead	0.246	0.050	ug/l	0.250	ND	98.2	72-143	3.61	20	
Nickel	0.53	0.10	ug/l	0.500	0.05	97.4	68-134	0.248	20	
Zinc	2.71	0.50	ug/l	2.50	0.25	98.1	46-146	2.06	20	
Matrix Spike Dup	Source: 22K0215-03									
Arsenic	2.50	0.50	ug/l	2.50	ND	100	50-150	1.88	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	95.7	84-113	5.00	20	
Copper	0.65	0.10	ug/l	0.500	0.15	100	51-145	1.70	20	
Lead	0.323	0.050	ug/l	0.250	0.076	98.8	72-143	0.292	20	
Nickel	0.63	0.10	ug/l	0.500	0.13	99.8	68-134	0.748	20	
Zinc	2.60	0.50	ug/l	2.50	0.30	91.9	46-146	6.03	20	
Metals - Total - Redding Location	**Batch B2L1251 - EPA 1630 Distillation (Modified)**									
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.16	0.050	ng/l	2.00		108	67-133			
Matrix Spike	Source: 22K0331-01									
Methyl Mercury as Mercury	1.27	0.050	ng/l	1.00	0.056	121	65-135			
Matrix Spike	Source: 22K0460-03									
Methyl Mercury as Mercury	1.26	0.050	ng/l	1.00	0.020	124	65-135			
Matrix Spike Dup	Source: 22K0331-01									
Methyl Mercury as Mercury	1.24	0.050	ng/l	1.00	0.056	118	65-135	2.79	35	
Matrix Spike Dup	Source: 22K0460-03									
Methyl Mercury as Mercury	1.28	0.050	ng/l	1.00	0.020	126	65-135	1.80	35	
Metals - Dissolved - Redding Location	**Batch B2K1453 - EPA 200.8 Diss**									
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	207	2.0	ug/l	200		104	85-115			
Duplicate	Source: 22K0331-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22K0331-01									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2K1453 - EPA 200.8 Diss**									
Selenium	209	2.0	ug/l	200	ND	104	75-125			
Metals - Dissolved - Redding Location	**Batch B2L1116 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	0.12	0.50	ug/l							QB-05, J
Cadmium	0.02	0.10	ug/l							QB-05, J
Copper	ND	0.10	ug/l							
Lead	0.014	0.050	ug/l							QB-05, J
Nickel	0.02	0.10	ug/l							QB-05, J
Zinc	0.16	0.50	ug/l							QB-05, J
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.21	0.50	ug/l	1.25		97.2	50-150			
Cadmium	0.24	0.10	ug/l	0.250		96.8	84-113			
Copper	0.27	0.10	ug/l	0.250		109	51-145			
Lead	0.123	0.050	ug/l	0.125		98.7	72-143			
Nickel	0.25	0.10	ug/l	0.250		98.7	68-134			
Zinc	1.27	0.50	ug/l	1.25		101	46-146			
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.2	50-150			
Cadmium	0.23	0.10	ug/l	0.250		93.9	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.123	0.050	ug/l	0.125		98.0	72-143			
Nickel	0.24	0.10	ug/l	0.250		95.8	68-134			

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2L1116 - EPA 1638 - Dissolved**									
Zinc	1.28	0.50	ug/l	1.25		103	46-146			
Matrix Spike	Source: 22J1171-04									
Arsenic	2.41	0.50	ug/l	2.50	ND	96.2	50-150			
Cadmium	0.49	0.10	ug/l	0.500	ND	97.3	84-113			
Copper	0.58	0.10	ug/l	0.500	0.09	97.5	51-145			
Lead	0.240	0.050	ug/l	0.250	ND	96.0	72-143			
Nickel	0.54	0.10	ug/l	0.500	0.04	99.5	68-134			
Zinc	2.68	0.50	ug/l	2.50	0.28	95.8	46-146			
Matrix Spike	Source: 22K0215-03									
Arsenic	2.43	0.50	ug/l	2.50	ND	97.2	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.4	84-113			
Copper	0.57	0.10	ug/l	0.500	0.08	96.5	51-145			
Lead	0.239	0.050	ug/l	0.250	ND	95.5	72-143			
Nickel	0.56	0.10	ug/l	0.500	0.07	98.6	68-134			
Zinc	2.53	0.50	ug/l	2.50	ND	101	46-146			
Matrix Spike Dup	Source: 22J1171-04									
Arsenic	2.42	0.50	ug/l	2.50	ND	96.8	50-150	0.578	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	97.8	84-113	0.477	20	
Copper	0.57	0.10	ug/l	0.500	0.09	95.4	51-145	1.85	20	
Lead	0.235	0.050	ug/l	0.250	ND	94.1	72-143	1.98	20	
Nickel	0.53	0.10	ug/l	0.500	0.04	97.7	68-134	1.66	20	
Zinc	2.72	0.50	ug/l	2.50	0.28	97.5	46-146	1.49	20	
Matrix Spike Dup	Source: 22K0215-03									
Arsenic	2.45	0.50	ug/l	2.50	ND	98.2	50-150	0.981	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	95.5	84-113	0.943	20	
Copper	0.57	0.10	ug/l	0.500	0.08	96.5	51-145	0.0620	20	
Lead	0.249	0.050	ug/l	0.250	ND	99.8	72-143	4.44	20	
Nickel	0.56	0.10	ug/l	0.500	0.07	97.7	68-134	0.790	20	
Zinc	2.52	0.50	ug/l	2.50	ND	101	46-146	0.613	20	

Notes and Definitions

QB-05	The method blank contains the analyte at a concentration level above the MDL, but below the MRL.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	The laboratory does not hold CA-ELAP accreditiation for this analyte or method. Accreditation may not be available from CA-ELAP for this analyte or method.
**	The laboratory holds accreditation for this analyte or method with WA-ECY Lab ID: Lab ID C783. Accreditation is not offered for this method by CA-ELAP
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

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Analytical Report

Accreditations Held:
Redding Location: CA-ELAP - Cert # 1677
Chico Location: CA-ELAP - Cert # 2718

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen
Ricky Jensen, Operations Manager
Pace Analytical Services LLC - Redding CA

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

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☐ 3860 Morrow Lane, Suite F Chico, CA 95928 (530) 894-8966 FAX: (530) 894-5143

LABORATORY WORK ORDER # 22K0332 — PAGE 1 OF 1

22K0332

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS: 279 Cousteau Place, Suite 400, Davis, CA 95618

REPORT TO: ☒ Email ☐ Mail Hardcopy

NAME / ATTENTION: Emily Applequist

PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED: ☐ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one): ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED		SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	11/7/22	0830	AM PM	SW		X	IS-18-SFAR		6	X	X	X	X	X	X
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												

SAMPLED BY: (please print) BRL, ERA

RELINQUISHED DATE / TIME: 11/7 1300 (FedEx)

SAMPLING / ANALYSIS COMMENTS: (1) Total and Dissolved LL 1638 Metals

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME	SIGNATURE	DATE
ESTHER ADELSTEIN		11/7/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
	11/8/22 1152		11/10/22 1029

For Official Lab Comments Only

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water
SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

SAMPLE RECEIPT CHECKLIST

WO NUMBER 22K0332

Samples Received Via:

Fed-Ex ☑ Client Walk-In ☐ Courier ☐
UPS ☐ Pace Field Service ☐ Other ☐

Samples Received By: KM Date: 11/8/22 Time: 1152
Are samples for regulatory compliance? Yes ☑ No ☐

THERMAL PRESERVATION

Were samples received in a cooler? Yes ☑ No ☐ If no, take temperature of representative sample container and record below.
If no, do they require thermal preservation? Yes ☐ No ☐ If no, why not? Non-regulatory ☐ Not Required by Method ☐
Samples received on ice? Yes ☑ No ☐ Ice type? Wet ☑ Ice Packs ☐ Other _____
Samples received the same day collected? Yes ☐ No ☑

Therm. ID (Circle one): Therm-36(IR) Therm-37(IR) (Therm-59(IR)) Therm-41(Stick) Other: _____

Cooler #1 Init. Temp °C 5.9 Correction °C +0.1 Corrected Temp °C 6.0
Cooler #2 Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
Cooler #3 Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
No Cooler - Representative Sample Temperature: Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____

Do samples received meet thermal preservation requirements? Yes ☑ No ☐ N/A ☐

Thermal Preservation Notes/Discrepancies/Nonconformances:

SAMPLE CONDITION AND PROCESSING

Do all sample IDs on labels match the COC? Yes ☑ No ☐
Custody seals present? Yes ☐ No ☐ N/A ☑
Samples in proper containers? Yes ☑ No ☐
Sample containers damaged? Yes ☐ No ☑
Sufficient sample volume for indicated tests? Yes ☑ No ☐
Samples received with sufficient holding time? Yes ☑ No ☐
Are VOA vials free of headspace? Yes ☐ No ☐ N/A ☑

CHEMICAL PRESERVATION

Were samples received with proper chemical preservation? Yes ☑ No ☐ N/A ☐ For pH checks done by analysts, were preservative labels present? Yes ☑ No ☐
Were samples received properly dechlorinated? Yes ☐ No ☐ N/A ☐ For Dechlorination checks done by analysts, were dechlor. agent labels present? Yes ☐ No ☐
Preservation checked by Sample Receiving? Initials KM Date & Time 11.8.22 12:52 Test Strip (ID 2J12028)
Dechlorination checked by Sample Receiving? Initials_____ Date & Time _____ Test Strip (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑

Added upon sample receipt? Yes ☑ No ☐
In Lab By:_____ Meter ID:_____

Were any additional preservatives added after receipt? Yes ☐ No ☐ Initial pH: _____ Final pH _____
If yes, is addition of preservatives allowed by the method? Yes ☐ No ☐

List preservatives added at receipt:
Type: HNO3 Volume Added: ~2ml ID: 2I28023 Type: _____ Volume Added:_____ ID:_____
Type: _____ Volume Added:_____ ID:_____ Type: _____ Volume Added:_____ ID:_____

COMMENTS, DISCREPANCEIS, ANOMALIES, NONCONFORMANCES

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

November 15, 2022

CLS Work Order #: 22K0376
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 11/07/22 13:00. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

11/15/22 12:37

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0376
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-18-SFAR (22K0376-01) Water	**Sampled: 11/07/22 08:30**		**Received: 11/07/22 13:00**							
Ammonia as N	ND	0.025	0.10	mg/L	1	2209623	11/08/22	11/08/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**15**	0.50	5.0	"	"	2209622	11/08/22	11/08/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**2.2**	0.026	0.50	"	"	2209591	11/08/22	11/08/22	EPA 300.0	
Cyanide (total)	**0.0049**	0.0012	0.0050	"	"	2209702	11/10/22	11/14/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.2	6.0	"	"	2209645	11/09/22	11/09/22	EPA 1664B	QRL-2
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209622	11/08/22	11/08/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209591	11/08/22	11/08/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2209604	11/08/22	11/08/22	SM4500-P E	
Sulfate as SO4	**1.2**	0.038	0.50	"	"	2209591	11/08/22	11/08/22	EPA 300.0	
Total Alkalinity	**15**	1.0	5.0	"	"	2209622	11/08/22	11/08/22	SM2320B	
Total Dissolved Solids	**18**	5.0	10	"	"	2209665	11/09/22	11/10/22	SM2540C	
Total Hardness as CaCO3	**12**	0.19	1.0	"	"	2209606	11/08/22	11/08/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.43**	0.040	0.20	"	"	2209651	11/09/22	11/09/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.2**	0.54	1.0	"	"	2209641	11/09/22	11/09/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209736	11/11/22	11/11/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209605	11/08/22	11/08/22	SM2540D	

11/15/22 12:37

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K0376**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-18-SFAR (22K0376-01) Water Sampled: 11/07/22 08:30 Received: 11/07/22 13:00										
Diesel	ND	0.0021	0.050	mg/L	1	2209616	11/08/22	11/08/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*28 %*	*65-135*		"	"	"	"	*QS-4*

11/15/22 12:37

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0376
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-18-SFAR (22K0376-01) Water	**Sampled: 11/07/22 08:30**		**Received: 11/07/22 13:00**							
Aluminum	**25**	1.6	20	µg/L	1	2209636	11/09/22	11/09/22	EPA 200.8	
Barium	**14**	0.14	5.0	"	"	"	"	"	"	
Calcium	**3400**	27	1000	"	"	2209637	11/09/22	11/09/22	EPA 200.7	
Iron	**51**	9.1	100	"	"	"	"	"	"	J
Magnesium	**890**	21	1000	"	"	"	"	"	"	J
Manganese	**9.3**	0.050	2.0	"	"	2209636	11/09/22	11/09/22	EPA 200.8	
Potassium	**970**	61	1000	"	"	2209637	11/09/22	11/09/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209636	11/09/22	11/09/22	EPA 200.8	
Sodium	**2900**	34	1000	"	"	2209637	11/09/22	11/09/22	EPA 200.7	

11/15/22 12:37

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K0376**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-18-SFAR (22K0376-01) Water	**Sampled: 11/07/22 08:30**		**Received: 11/07/22 13:00**							
Aluminum	**7.3**	0.52	20	µg/L	1	2209638	11/09/22	11/09/22	EPA 200.8	J
Iron	**13**	6.8	100	"	"	2209606	11/08/22	11/08/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2209638	11/09/22	11/09/22	EPA 200.8	

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11/15/22 12:37

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K0376**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-18-SFAR (22K0376-01) Water	**Sampled: 11/07/22 08:30**		**Received: 11/07/22 13:00**							
Gasoline	ND	10	50	µg/L	1	2209715	11/10/22	11/11/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*79 %*		*65-135*		"	"	"	"

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0376
COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-18-SFAR (22K0376-01) Water	**Sampled: 11/07/22 08:30**		**Received: 11/07/22 13:00**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209735	11/09/22	11/09/22	EPA 8260B	
Surrogate: Toluene-d8			*98 %*		*72-125*		"	"	"	"

11/15/22 12:37

Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0376
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209591 - General Prep											
Blank (2209591-BLK1)					Prepared: 11/08/22 Analyzed: 11/09/22						
Sulfate as SO4	ND	0.038	0.50	mg/L							
Chloride	ND	0.026	0.50	"							
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2209591-BS1)					Prepared: 11/08/22 Analyzed: 11/09/22						
Sulfate as SO4	4.81	0.038	0.50	mg/L	5.00		96	80-120			
Chloride	4.76	0.026	0.50	"	5.00		95	80-120			
Nitrate/Nitrite as N	4.17	0.055	0.40	"	4.00		104	80-120			
LCS Dup (2209591-BSD1)					Prepared: 11/08/22 Analyzed: 11/09/22						
Chloride	4.84	0.026	0.50	mg/L	5.00		97	80-120	2	20	
Sulfate as SO4	4.90	0.038	0.50	"	5.00		98	80-120	2	20	
Nitrate/Nitrite as N	4.25	0.055	0.40	"	4.00		106	80-120	2	20	
Matrix Spike (2209591-MS1)			**Source: 22K0371-05**		Prepared: 11/08/22 Analyzed: 11/09/22						
Chloride	63.5	0.026	0.50	mg/L	5.00	67.0	NR	80-120			QM-7
Sulfate as SO4	47.9	0.038	0.50	"	5.00	ND	957	80-120			QM-7
Nitrate/Nitrite as N	5.97	0.055	0.40	"	4.00	0.0933	147	80-120			QM-7
Matrix Spike Dup (2209591-MSD1)			**Source: 22K0371-05**		Prepared: 11/08/22 Analyzed: 11/09/22						
Sulfate as SO4	48.1	0.038	0.50	mg/L	5.00	ND	961	80-120	0.4	20	QM-7
Chloride	63.6	0.026	0.50	"	5.00	67.0	NR	80-120	0.2	20	QM-7
Nitrate/Nitrite as N	6.12	0.055	0.40	"	4.00	0.0933	151	80-120	2	20	QM-7
Batch 2209604 - General Preparation											
Blank (2209604-BLK1)					Prepared & Analyzed: 11/08/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							

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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0376
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209604 - General Preparation											
LCS (2209604-BS1)					Prepared & Analyzed: 11/08/22						
Orthophosphate as PO4	0.883	0.0051	0.15	mg/L	0.918		96	80-120			
LCS Dup (2209604-BSD1)					Prepared & Analyzed: 11/08/22						
Orthophosphate as PO4	0.862	0.0051	0.15	mg/L	0.918		94	80-120	2	20	
Matrix Spike (2209604-MS1)			**Source: 22K0376-01**		Prepared & Analyzed: 11/08/22						
Orthophosphate as PO4	0.887	0.0051	0.15	mg/L	0.918	ND	97	75-125			
Matrix Spike Dup (2209604-MSD1)			**Source: 22K0376-01**		Prepared & Analyzed: 11/08/22						
Orthophosphate as PO4	0.891	0.0051	0.15	mg/L	0.918	ND	97	75-125	0.5	25	
Batch 2209605 - General Preparation											
Blank (2209605-BLK1)					Prepared & Analyzed: 11/08/22						
Total Suspended Solids	ND	2.0	5.0	mg/L							
Duplicate (2209605-DUP1)			**Source: 22K0276-01**		Prepared & Analyzed: 11/08/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	
Batch 2209606 - EPA 200 No Digestion											
Blank (2209606-BLK1)					Prepared & Analyzed: 11/08/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2209606-BS1)					Prepared & Analyzed: 11/08/22						
Total Hardness as CaCO3	32.5	0.19	1.0	mg/L	33.1		98	85-115			

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Stillwater Sciences
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Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0376
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209606 - EPA 200 No Digestion											
Matrix Spike (2209606-MS1)			**Source: 22K0371-02**		Prepared & Analyzed: 11/08/22						
Total Hardness as CaCO3	665	0.19	1.0	mg/L	33.1	641	70	70-130			
Batch 2209622 - General Preparation											
Blank (2209622-BLK1)					Prepared & Analyzed: 11/08/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Duplicate (2209622-DUP1)			**Source: 22K0375-01**		Prepared & Analyzed: 11/08/22						
Total Alkalinity	11.0	1.0	5.0	mg/L		11.4			4	20	
Bicarbonate as CaCO3	11.0	0.50	5.0	"		11.4			4	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Batch 2209623 - General Preparation											
Blank (2209623-BLK1)					Prepared & Analyzed: 11/08/22						
Ammonia as N	ND	0.025	0.10	mg/L							
LCS (2209623-BS1)					Prepared & Analyzed: 11/08/22						
Ammonia as N	0.496	0.025	0.10	mg/L	0.500		99	80-120			
LCS Dup (2209623-BSD1)					Prepared & Analyzed: 11/08/22						
Ammonia as N	0.513	0.025	0.10	mg/L	0.500		103	80-120	3	25	

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COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209623 - General Preparation											
Matrix Spike (2209623-MS1)			**Source: 22K0253-01**		Prepared & Analyzed: 11/08/22						
Ammonia as N	0.537	0.025	0.10	mg/L	0.500	0.0940	89	75-125			
Matrix Spike Dup (2209623-MSD1)			**Source: 22K0253-01**		Prepared & Analyzed: 11/08/22						
Ammonia as N	0.542	0.025	0.10	mg/L	0.500	0.0940	90	75-125	0.9	25	
Batch 2209641 - General Preparation											
Blank (2209641-BLK1)					Prepared & Analyzed: 11/09/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							
LCS (2209641-BS1)					Prepared & Analyzed: 11/09/22						
Total Organic Carbon	10.5	0.54	1.0	mg/L	10.0		105	75-125			
LCS Dup (2209641-BSD1)					Prepared & Analyzed: 11/09/22						
Total Organic Carbon	10.6	0.54	1.0	mg/L	10.0		106	75-125	0.5	25	
Matrix Spike (2209641-MS1)			**Source: 22K0375-02**		Prepared & Analyzed: 11/09/22						
Total Organic Carbon	16.7	0.54	1.0	mg/L	10.0	2.01	146	75-125			QM-7
Matrix Spike Dup (2209641-MSD1)			**Source: 22K0375-02**		Prepared & Analyzed: 11/09/22						
Total Organic Carbon	17.0	0.54	1.0	mg/L	10.0	2.01	150	75-125	2	25	QM-7
Batch 2209645 - Solvent Extract											
Blank (2209645-BLK1)					Prepared & Analyzed: 11/09/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							

11/15/22 12:37

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Project Manager: Emily Applequist

CLS Work Order #: 22K0376
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209645 - Solvent Extract											
LCS (2209645-BS1)					Prepared & Analyzed: 11/09/22						
Hexane Extractable Material (HEM, Oil & Grease)	38.3	1.0	5.0	mg/L	40.0		96	78-114			
LCS Dup (2209645-BSD1)					Prepared & Analyzed: 11/09/22						
Hexane Extractable Material (HEM, Oil & Grease)	37.8	1.0	5.0	mg/L	40.0		95	78-114	1	18	
Batch 2209651 - General Preparation											
Blank (2209651-BLK1)					Prepared & Analyzed: 11/09/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2209651-BS1)					Prepared & Analyzed: 11/09/22						
Total Kjeldahl Nitrogen	0.499	0.040	0.20	mg/L	0.500		100	80-120			
LCS Dup (2209651-BSD1)					Prepared & Analyzed: 11/09/22						
Total Kjeldahl Nitrogen	0.475	0.040	0.20	mg/L	0.500		95	80-120	5	20	
Matrix Spike (2209651-MS1)			**Source: 22K0375-01**		Prepared & Analyzed: 11/09/22						
Total Kjeldahl Nitrogen	0.827	0.040	0.20	mg/L	0.500	0.249	116	75-125			
Matrix Spike Dup (2209651-MSD1)			**Source: 22K0375-01**		Prepared & Analyzed: 11/09/22						**QM-7**
Total Kjeldahl Nitrogen	0.951	0.040	0.20	mg/L	0.500	0.249	140	75-125	14	25	
Batch 2209665 - General Preparation											
Duplicate (2209665-DUP1)			**Source: 22K0371-05**		Prepared: 11/09/22 Analyzed: 11/10/22						
Total Dissolved Solids	523	5.0	10	mg/L		515			2	20	

11/15/22 12:37

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0376
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209702 - General Preparation											
Blank (2209702-BLK1)					Prepared: 11/10/22 Analyzed: 11/14/22						
Cyanide (total)	0.00380	0.0012	0.0050	mg/L							J
LCS (2209702-BS1)					Prepared: 11/10/22 Analyzed: 11/14/22						
Cyanide (total)	0.0752	0.0012	0.0050	mg/L	0.100		75	75-125			
LCS Dup (2209702-BSD1)					Prepared: 11/10/22 Analyzed: 11/14/22						
Cyanide (total)	0.0759	0.0012	0.0050	mg/L	0.100		76	75-125	0.9	25	
Matrix Spike (2209702-MS1)			**Source: 22K0375-01**		Prepared: 11/10/22 Analyzed: 11/14/22						
Cyanide (total)	0.0415	0.0012	0.0050	mg/L	0.100	0.00530	36	75-125			QM-7
Matrix Spike Dup (2209702-MSD1)			**Source: 22K0375-01**		Prepared: 11/10/22 Analyzed: 11/14/22						
Cyanide (total)	0.0434	0.0012	0.0050	mg/L	0.100	0.00530	38	75-125	4	25	QM-7
Batch 2209736 - General Preparation											
Blank (2209736-BLK1)					Prepared & Analyzed: 11/11/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2209736-BS1)					Prepared & Analyzed: 11/11/22						
Total Phosphorus as P	0.313	0.023	0.050	mg/L	0.300		104	80-120			
LCS Dup (2209736-BSD1)					Prepared & Analyzed: 11/11/22						
Total Phosphorus as P	0.286	0.023	0.050	mg/L	0.300		95	80-120	9	25	
Matrix Spike (2209736-MS1)			**Source: 22K0375-02**		Prepared & Analyzed: 11/11/22						
Total Phosphorus as P	0.313	0.023	0.050	mg/L	0.300	ND	104	75-125			

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Project: SMUD In situ & Chemistry Monitoring
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Project Manager: Emily Applequist

CLS Work Order #: 22K0376
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209736 - General Preparation											
Matrix Spike Dup (2209736-MSD1)			**Source: 22K0375-02**		Prepared & Analyzed: 11/11/22						
Total Phosphorus as P	0.322	0.023	0.050	mg/L	0.300	ND	107	75-125	3	30	

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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0376
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209616 - EPA 3510B GCNV											
Blank (2209616-BLK1)					Prepared: 11/07/22 Analyzed: 11/08/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Hydraulic Oil	ND	0.030	0.050	"							
Mineral Oil	ND	0.020	0.050	"							
Kerosene	ND	0.0036	0.050	"							
Surrogate: o-Terphenyl	*0.0189*			"	*0.0250*		*76*	*65-135*			
LCS (2209616-BS1)					Prepared: 11/07/22 Analyzed: 11/08/22						
Diesel	1.95	0.0021	0.050	mg/L	2.50		78	65-135			
Surrogate: o-Terphenyl	*0.0191*			"	*0.0250*		*76*	*65-135*			
LCS Dup (2209616-BSD1)					Prepared: 11/07/22 Analyzed: 11/08/22						
Diesel	2.47	0.0021	0.050	mg/L	2.50		99	65-135	24	30	
Surrogate: o-Terphenyl	*0.0328*			"	*0.0250*		*131*	*65-135*			
Matrix Spike (2209616-MS1)			**Source: 22K0335-02**		Prepared: 11/07/22 Analyzed: 11/08/22						
Diesel	1.08	0.0021	0.050	mg/L	2.50	ND	43	46-137			QM-7
Surrogate: o-Terphenyl	*0.0142*			"	*0.0125*		*113*	*65-135*			
Matrix Spike Dup (2209616-MSD1)			**Source: 22K0335-02**		Prepared: 11/07/22 Analyzed: 11/08/22						
Diesel	0.963	0.0021	0.050	mg/L	2.50	ND	39	46-137	11	30	QM-7
Surrogate: o-Terphenyl	*0.0140*			"	*0.0125*		*112*	*65-135*			

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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0376
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209636 - EPA 200 Series											
Blank (2209636-BLK1)					Prepared & Analyzed: 11/09/22						
Aluminum	2.33	1.6	20	µg/L							J
Barium	ND	0.14	5.0	"							
Manganese	0.382	0.050	2.0	"							J
Selenium	ND	0.75	5.0	"							
Silver	ND	0.070	0.50	"							
Thallium	ND	0.030	1.0	"							
LCS (2209636-BS1)					Prepared & Analyzed: 11/09/22						
Aluminum	506	1.6	20	µg/L	500		101	85-115			
Barium	112	0.14	5.0	"	100		112	85-115			
Manganese	105	0.050	2.0	"	100		105	85-115			
Selenium	106	0.75	5.0	"	100		106	85-115			
Silver	107	0.070	0.50	"	100		107	85-115			
Thallium	105	0.030	1.0	"	100		105	85-115			
Matrix Spike (2209636-MS1)				**Source: 22K0256-01**	Prepared & Analyzed: 11/09/22						
Aluminum	484	1.6	20	µg/L	500	2.69	96	70-130			
Barium	107	0.14	5.0	"	100	0.808	106	70-130			
Manganese	100	0.050	2.0	"	100	3.36	97	70-130			
Selenium	102	0.75	5.0	"	100	2.16	99	70-130			
Silver	102	0.070	0.50	"	100	ND	102	70-130			
Thallium	102	0.030	1.0	"	100	0.102	102	70-130			
Matrix Spike (2209636-MS2)				**Source: 22K0466-01**	Prepared & Analyzed: 11/09/22						
Aluminum	682	1.6	20	µg/L	500	135	109	70-130			
Barium	120	0.14	5.0	"	100	6.15	114	70-130			
Manganese	112	0.050	2.0	"	100	6.60	106	70-130			
Selenium	108	0.75	5.0	"	100	ND	108	70-130			
Silver	109	0.070	0.50	"	100	ND	109	70-130			
Thallium	107	0.030	1.0	"	100	ND	107	70-130			

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0376
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209637 - EPA 200 Series											
Blank (2209637-BLK1)					Prepared & Analyzed: 11/09/22						
Calcium	40.5	27	1000	µg/L							J
Iron	ND	9.1	100	"							
Magnesium	ND	21	1000	"							
Potassium	1250	61	1000	"							
Sodium	5370	34	1000	"							
LCS (2209637-BS1)					Prepared & Analyzed: 11/09/22						
Calcium	5240	27	1000	µg/L	5000		105	85-115			
Iron	530	9.1	100	"	500		106	85-115			
Magnesium	5030	21	1000	"	5000		101	85-115			
Potassium	6420	61	1000	"	5000		128	85-115			
Sodium	6740	34	1000	"	5000		135	85-115			
Matrix Spike (2209637-MS1)			**Source: 22K0375-01**		Prepared & Analyzed: 11/09/22						
Calcium	8110	27	1000	µg/L	5000	3240	97	70-130			
Iron	570	9.1	100	"	500	72.0	100	70-130			
Magnesium	5550	21	1000	"	5000	662	98	70-130			
Potassium	6310	61	1000	"	5000	1380	98	70-130			
Sodium	6340	34	1000	"	5000	4080	45	70-130			
Matrix Spike (2209637-MS2)			**Source: 22K0465-01**		Prepared & Analyzed: 11/09/22						
Calcium	51200	27	1000	µg/L	5000	47000	85	70-130			
Iron	983	9.1	100	"	500	461	104	70-130			
Magnesium	13800	21	1000	"	5000	8920	98	70-130			
Potassium	9750	61	1000	"	5000	4510	105	70-130			
Sodium	17400	34	1000	"	5000	14600	57	70-130			

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Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0376
COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209606 - EPA 200 No Digestion											
Blank (2209606-BLK1)					Prepared & Analyzed: 11/08/22						
Iron	ND	6.8	100	µg/L							
LCS (2209606-BS1)					Prepared & Analyzed: 11/08/22						
Iron	473	6.8	100	µg/L	500		95	85-115			
Matrix Spike (2209606-MS1)			**Source: 22K0371-02**		Prepared & Analyzed: 11/08/22						
Iron	483	6.8	100	µg/L	500	ND	97	70-130			
Batch 2209638 - EPA 200 No Digestion											
Blank (2209638-BLK1)					Prepared & Analyzed: 11/09/22						
Aluminum	3.35	0.52	20	µg/L							J
Silver	ND	0.15	0.50	"							
LCS (2209638-BS1)					Prepared & Analyzed: 11/09/22						
Aluminum	468	0.52	20	µg/L	500		94	85-115			
Silver	99.5	0.15	0.50	"	100		99	85-115			
Matrix Spike (2209638-MS1)			**Source: 22K0164-01**		Prepared & Analyzed: 11/09/22						
Aluminum	484	0.52	20	µg/L	500	9.92	95	70-130			
Silver	101	0.15	0.50	"	100	ND	101	70-130			
Matrix Spike (2209638-MS2)			**Source: 22K0375-01**		Prepared & Analyzed: 11/09/22						
Aluminum	477	0.52	20	µg/L	500	6.26	94	70-130			
Silver	97.9	0.15	0.50	"	100	ND	98	70-130			

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Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0376
COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209715 - EPA 5030 Water GC											
Blank (2209715-BLK1)					Prepared: 11/10/22 Analyzed: 11/11/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*15.8*			"	*20.0*		*79*	*65-135*			
LCS (2209715-BS1)					Prepared: 11/10/22 Analyzed: 11/11/22						
Gasoline	512	10	50	µg/L	500		102	70-130			
Surrogate: o-Chlorotoluene (Gas)	*14.9*			"	*20.0*		*75*	*65-135*			
LCS Dup (2209715-BSD1)					Prepared: 11/10/22 Analyzed: 11/11/22						
Gasoline	476	10	50	µg/L	500		95	70-130	7	30	
Surrogate: o-Chlorotoluene (Gas)	*16.5*			"	*20.0*		*83*	*65-135*			
Matrix Spike (2209715-MS1)				**Source: 22K0375-03**	Prepared: 11/10/22 Analyzed: 11/11/22						
Gasoline	467	10	50	µg/L	500	ND	93	68-132			
Surrogate: o-Chlorotoluene (Gas)	*15.8*			"	*20.0*		*79*	*65-135*			
Matrix Spike Dup (2209715-MSD1)				**Source: 22K0375-03**	Prepared: 11/10/22 Analyzed: 11/11/22						
Gasoline	448	10	50	µg/L	500	ND	90	68-132	4	32	
Surrogate: o-Chlorotoluene (Gas)	*14.5*			"	*20.0*		*72*	*65-135*			

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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0376
COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209735 - EPA 3510B GCMS											
Blank (2209735-BLK1)					Prepared & Analyzed: 11/09/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Benzene	ND	0.11	0.50	"							
Toluene	ND	0.11	0.50	"							
Ethylbenzene	ND	0.10	0.50	"							
Xylenes (total)	ND	0.33	1.0	"							
Surrogate: Toluene-d8	*9.69*			*"*	*10.0*		*97*	*72-125*			
LCS (2209735-BS1)					Prepared & Analyzed: 11/09/22						
Methyl tert-butyl ether	20.3	0.095	0.50	µg/L	20.0		102	52-130			
Benzene	16.0	0.11	0.50	"	20.0		80	52-130			
Surrogate: Toluene-d8	*9.85*			*"*	*10.0*		*99*	*72-125*			
LCS Dup (2209735-BSD1)					Prepared & Analyzed: 11/09/22						
Methyl tert-butyl ether	20.6	0.095	0.50	µg/L	20.0		103	52-130	1	30	
Benzene	18.1	0.11	0.50	"	20.0		90	52-130	12	30	
Surrogate: Toluene-d8	*9.93*			*"*	*10.0*		*99*	*72-125*			
Matrix Spike (2209735-MS1)			**Source: 22K0375-01**		Prepared & Analyzed: 11/09/22						
Methyl tert-butyl ether	25.7	0.095	0.50	µg/L	20.0	ND	128	52-140			
Benzene	24.0	0.11	0.50	"	20.0	ND	120	52-140			
Surrogate: Toluene-d8	*10.2*			*"*	*10.0*		*102*	*72-125*			
Matrix Spike Dup (2209735-MSD1)			**Source: 22K0375-01**		Prepared & Analyzed: 11/09/22						
Methyl tert-butyl ether	28.4	0.095	0.50	µg/L	20.0	ND	142	52-140	10	30	QM-7
Benzene	24.9	0.11	0.50	"	20.0	ND	124	52-140	3	30	
Surrogate: Toluene-d8	*10.0*			*"*	*10.0*		*100*	*72-125*			

11/15/22 12:37

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K0376**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QS-4	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QRL-2	Elevated reporting limits due to limited sample volume.
QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22K0376 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By: Bethany Leach, Esther A.

Job Description
Monitor water chemistry in UARP reaches

Site Location: Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[x] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [x] NO [ ]

GLOBAL ID

FIELD CONDITIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	TSS, TDS, Hardness, Alkalinity, NO2-N+NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
11/7/22	0830	ES-18-SPAR		Surface water			6	x	x	x	x	x	x	x				x	
				Surface water			6											x	
				Surface water			6											x	
				Surface water			6											x	
				Surface water			6											x	
				Surface water			6											x	
				Surface water			6											x	INVOICE TO
				Surface water			6											x	Stillwater Sciences
				Surface water			6											x	Same as above
				Surface water			6											x	
				Surface water			6											x	**Project No. 750.10 Task 0620.01**
				Surface water			6											x	QUOTE#

ANALYSIS REQUESTED

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) COLD (2) HNO_3 (4) H_2SO_4 (5) NH_4OH (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Bethany Leach Stillwater	11/7/22 13:00		

RECEIVED AT LAB BY: DATE/TIME: 11/7/22 1320 CONDITIONS/COMMENTS: 8.3/N.4

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER AIR BILL #

2218 Railroad Avenue
Redding, California 96001
voice 530.243.7234
fax 530.243.7494

3860 Morrow Lane, Suite F
Chico, California 95928
voice 530.894.8966
fax 530.894.5143

Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.11/620.02

Lab No: 22K0402
Reported: 12/23/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22K0402, received on 11/09/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: IS-15-SFAR
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0402-01
Sampled: 11/08/22 09:00
Received: 11/09/22 08:50

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.26	J	0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Copper	ug/l	0.36		0.04	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Lead	ug/l	0.080		0.007	0.050	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Mercury	ng/l	1.36		0.22	0.50	EPA 1631E	11/27/22	11/27/22	B2K1327 / DJC
Methyl Mercury as Mercury	ng/l	0.044	J	0.017	0.050	EPA 1630**	12/22/22	12/20/22	B2L1251 / EDM
Nickel	ug/l	0.13		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/05/22	11/16/22	B2K1143 / BDL
Zinc	ug/l	0.50	J	0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.21	J	0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Copper	ug/l	0.24		0.04	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Lead	ug/l	0.012	J	0.007	0.050	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Nickel	ug/l	0.08	J	0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/05/22	12/05/22	B2L0859 / BDL
Zinc	ug/l	0.25	J	0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm

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Analytical Report

Description: IS-16-SFAR
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0402-02
Sampled: 11/08/22 09:30
Received: 11/09/22 08:50

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.15	J	0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Copper	ug/l	0.33		0.04	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Lead	ug/l	0.045	J	0.007	0.050	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Mercury	ng/l	1.01		0.22	0.50	EPA 1631E	11/27/22	11/27/22	B2K1327 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	12/22/22	12/20/22	B2L1251 / EDM
Nickel	ug/l	0.14		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/05/22	11/16/22	B2K1143 / BDL
Zinc	ug/l	0.50		0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.13	J	0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Copper	ug/l	0.25		0.04	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Lead	ug/l	0.007	J	0.007	0.050	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Nickel	ug/l	0.10	J	0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/05/22	12/05/22	B2L0859 / BDL
Zinc	ug/l	0.27	J	0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm

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Analytical Report

Description: IS-19-SFAR
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0402-03
Sampled: 11/08/22 11:00
Received: 11/09/22 08:50

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Copper	ug/l	0.33		0.04	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Lead	ug/l	0.042	J	0.007	0.050	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Mercury	ng/l	0.64		0.22	0.50	EPA 1631E	11/27/22	11/27/22	B2K1327 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	12/22/22	12/20/22	B2L1251 / EDM
Nickel	ug/l	0.12		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/05/22	11/16/22	B2K1143 / BDL
Zinc	ug/l	0.74		0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Copper	ug/l	0.23		0.04	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Nickel	ug/l	0.08	J	0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/05/22	12/05/22	B2L0859 / BDL
Zinc	ug/l	0.36	J	0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1143 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	202	2.0	ug/l	200		101	85-115			
Duplicate	Source: 22K0355-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22K0576-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22K0355-01									
Selenium	197	2.0	ug/l	200	ND	98.5	75-125			
Matrix Spike	Source: 22K0576-01									
Selenium	195	2.0	ug/l	200	ND	97.4	75-125			
Metals - Total - Redding Location	**Batch B2K1327 - BrCl Digestion**									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1327 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	10.7	0.50	ng/l	10.0		107	77-123			
Matrix Spike	Source: 22K0331-02									
Mercury	11.3	0.50	ng/l	10.0	0.77	106	71-125			
Matrix Spike	Source: 22K0421-01									
Mercury	11.6	0.50	ng/l	10.0	0.87	108	71-125			
Matrix Spike Dup	Source: 22K0331-02									
Mercury	11.4	0.50	ng/l	10.0	0.77	106	71-125	0.432	24	
Matrix Spike Dup	Source: 22K0421-01									
Mercury	11.9	0.50	ng/l	10.0	0.87	110	71-125	2.19	24	
Metals - Total - Redding Location	**Batch B2K1441 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1441 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.19	0.50	ug/l	1.25		95.0	50-150			
Cadmium	0.26	0.10	ug/l	0.250		103	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.124	0.050	ug/l	0.125		98.9	72-143			
Nickel	0.25	0.10	ug/l	0.250		99.6	68-134			
Zinc	1.26	0.50	ug/l	1.25		101	46-146			
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.7	50-150			
Cadmium	0.25	0.10	ug/l	0.250		99.4	84-113			
Copper	0.24	0.10	ug/l	0.250		97.0	51-145			
Lead	0.124	0.050	ug/l	0.125		99.3	72-143			
Nickel	0.26	0.10	ug/l	0.250		104	68-134			
Zinc	1.27	0.50	ug/l	1.25		101	46-146			
Matrix Spike	Source: 22J1171-04									
Arsenic	2.47	0.50	ug/l	2.50	ND	98.8	50-150			
Cadmium	0.49	0.10	ug/l	0.500	ND	97.7	84-113			
Copper	0.61	0.10	ug/l	0.500	0.12	98.0	51-145			
Lead	0.255	0.050	ug/l	0.250	ND	102	72-143			
Nickel	0.53	0.10	ug/l	0.500	0.05	97.1	68-134			
Zinc	2.76	0.50	ug/l	2.50	0.25	100	46-146			
Matrix Spike	Source: 22K0215-03									
Arsenic	2.55	0.50	ug/l	2.50	ND	102	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.66	0.10	ug/l	0.500	0.15	102	51-145			
Lead	0.322	0.050	ug/l	0.250	0.076	98.4	72-143			
Nickel	0.63	0.10	ug/l	0.500	0.13	101	68-134			
Zinc	2.76	0.50	ug/l	2.50	0.30	98.3	46-146			
Matrix Spike Dup	Source: 22J1171-04									
Arsenic	2.49	0.50	ug/l	2.50	ND	99.5	50-150	0.698	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	101	84-113	3.14	20	
Copper	0.60	0.10	ug/l	0.500	0.12	97.4	51-145	0.475	20	
Lead	0.246	0.050	ug/l	0.250	ND	98.2	72-143	3.61	20	
Nickel	0.53	0.10	ug/l	0.500	0.05	97.4	68-134	0.248	20	
Zinc	2.71	0.50	ug/l	2.50	0.25	98.1	46-146	2.06	20	
Matrix Spike Dup	Source: 22K0215-03									
Arsenic	2.50	0.50	ug/l	2.50	ND	100	50-150	1.88	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	95.7	84-113	5.00	20	
Copper	0.65	0.10	ug/l	0.500	0.15	100	51-145	1.70	20	
Lead	0.323	0.050	ug/l	0.250	0.076	98.8	72-143	0.292	20	
Nickel	0.63	0.10	ug/l	0.500	0.13	99.8	68-134	0.748	20	
Zinc	2.60	0.50	ug/l	2.50	0.30	91.9	46-146	6.03	20	
Metals - Total - Redding Location	**Batch B2L1251 - EPA 1630 Distillation (Modified)**									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2L1251 - EPA 1630 Distillation (Modified)**									
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.16	0.050	ng/l	2.00		108	67-133			
Matrix Spike	Source: 22K0331-01									
Methyl Mercury as Mercury	1.27	0.050	ng/l	1.00	0.056	121	65-135			
Matrix Spike	Source: 22K0460-03									
Methyl Mercury as Mercury	1.26	0.050	ng/l	1.00	0.020	124	65-135			
Matrix Spike Dup	Source: 22K0331-01									
Methyl Mercury as Mercury	1.24	0.050	ng/l	1.00	0.056	118	65-135	2.79	35	
Matrix Spike Dup	Source: 22K0460-03									
Methyl Mercury as Mercury	1.28	0.050	ng/l	1.00	0.020	126	65-135	1.80	35	
Metals - Dissolved - Redding Location	**Batch B2L0859 - EPA 200.8 Diss**									
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	189	2.0	ug/l	200		94.4	85-115			
Duplicate	Source: 22K0402-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22K0402-01									
Selenium	190	2.0	ug/l	200	ND	95.2	75-125			
Metals - Dissolved - Redding Location	**Batch B2L1116 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2L1116 - EPA 1638 - Dissolved**									
Blank										
Arsenic	0.12	0.50	ug/l							QB-05, J
Cadmium	0.02	0.10	ug/l							QB-05, J
Copper	ND	0.10	ug/l							
Lead	0.014	0.050	ug/l							QB-05, J
Nickel	0.02	0.10	ug/l							QB-05, J
Zinc	0.16	0.50	ug/l							QB-05, J
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.21	0.50	ug/l	1.25		97.2	50-150			
Cadmium	0.24	0.10	ug/l	0.250		96.8	84-113			
Copper	0.27	0.10	ug/l	0.250		109	51-145			
Lead	0.123	0.050	ug/l	0.125		98.7	72-143			
Nickel	0.25	0.10	ug/l	0.250		98.7	68-134			
Zinc	1.27	0.50	ug/l	1.25		101	46-146			
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.2	50-150			
Cadmium	0.23	0.10	ug/l	0.250		93.9	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.123	0.050	ug/l	0.125		98.0	72-143			
Nickel	0.24	0.10	ug/l	0.250		95.8	68-134			
Zinc	1.28	0.50	ug/l	1.25		103	46-146			
Matrix Spike	Source: 22J1171-04									
Arsenic	2.41	0.50	ug/l	2.50	ND	96.2	50-150			
Cadmium	0.49	0.10	ug/l	0.500	ND	97.3	84-113			
Copper	0.58	0.10	ug/l	0.500	0.09	97.5	51-145			
Lead	0.240	0.050	ug/l	0.250	ND	96.0	72-143			
Nickel	0.54	0.10	ug/l	0.500	0.04	99.5	68-134			
Zinc	2.68	0.50	ug/l	2.50	0.28	95.8	46-146			
Matrix Spike	Source: 22K0215-03									
Arsenic	2.43	0.50	ug/l	2.50	ND	97.2	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.4	84-113			
Copper	0.57	0.10	ug/l	0.500	0.08	96.5	51-145			
Lead	0.239	0.050	ug/l	0.250	ND	95.5	72-143			
Nickel	0.56	0.10	ug/l	0.500	0.07	98.6	68-134			
Zinc	2.53	0.50	ug/l	2.50	ND	101	46-146			
Matrix Spike Dup	Source: 22J1171-04									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2L1116 - EPA 1638 - Dissolved**									
Arsenic	2.42	0.50	ug/l	2.50	ND	96.8	50-150	0.578	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	97.8	84-113	0.477	20	
Copper	0.57	0.10	ug/l	0.500	0.09	95.4	51-145	1.85	20	
Lead	0.235	0.050	ug/l	0.250	ND	94.1	72-143	1.98	20	
Nickel	0.53	0.10	ug/l	0.500	0.04	97.7	68-134	1.66	20	
Zinc	2.72	0.50	ug/l	2.50	0.28	97.5	46-146	1.49	20	
Matrix Spike Dup	Source: 22K0215-03									
Arsenic	2.45	0.50	ug/l	2.50	ND	98.2	50-150	0.981	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	95.5	84-113	0.943	20	
Copper	0.57	0.10	ug/l	0.500	0.08	96.5	51-145	0.0620	20	
Lead	0.249	0.050	ug/l	0.250	ND	99.8	72-143	4.44	20	
Nickel	0.56	0.10	ug/l	0.500	0.07	97.7	68-134	0.790	20	
Zinc	2.52	0.50	ug/l	2.50	ND	101	46-146	0.613	20	

Notes and Definitions

QB-05	The method blank contains the analyte at a concentration level above the MDL, but below the MRL.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	The laboratory does not hold CA-ELAP accreditiation for this analyte or method. Accreditation may not be available from CA-ELAP for this analyte or method.
**	The laboratory holds accreditation for this analyte or method with WA-ECY Lab ID: Lab ID C783. Accreditation is not offered for this method by CA-ELAP
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Accreditations Held:
Redding Location: CA-ELAP - Cert # 1677
Chico Location: CA-ELAP - Cert # 2718

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen
Ricky Jensen, Operations Manager
Pace Analytical Services LLC - Redding CA

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Analytical Report

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

22K0402

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494
☐ 3860 Morrow Lane, Suite F Chico, CA 95928 (530) 894-8966 FAX: (530) 894-5143

LABORATORY WORK ORDER # 22K402
PAGE 1 OF 1

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS
279 Cousteau Place, Suite 400
Davis, CA 95618

REPORT TO ☐ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED
☐ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one) ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	11/4/22	0900 AM PM	SW		X	IS-15-SFAR		6	X	X	X	X	X	X
2	11/8/22	0930 AM PM	SW		X	IS-16-SFAR		6	X	X	X	X	X	X
3	11/8/22	1100 AM PM	SW		X	IS-19-SFAR		6	✓	✓	✓	✓	✓	✓
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												

SAMPLED BY: (please print) BRL ERA

RELINQUISHED DATE / TIME: 11/8/22, 1300 (Fed Ex)

SAMPLING / ANALYSIS COMMENTS

(1) Total and Dissolved LL 1638 Metals
2Per bottles received at project. SMM 11.9.22

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME	SIGNATURE	DATE
ESTHER ADELSTEIN		11/8/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
	11/9/22 0850		11/14/22 1413

For Official Lab Comments Only

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

FRM-002.1 - Chain of Custody (rev 1.1)

SAMPLE RECEIPT CHECKLIST

WO NUMBER 22K0402

Samples Received Via:

Fed-Ex ☑ Client Walk-In ☐ Courier ☐
UPS ☐ Pace Field Service ☐ Other ☐

Samples Received By: NSA Date: 11.9.22 Time: 08:50
Are samples for regulatory compliance? Yes ☑ No ☐

THERMAL PRESERVATION

Were samples received in a cooler? Yes ☑ No ☐ If no, take temperature of representative sample container and record below.
If no, do they require thermal preservation? Yes ☐ No ☐ If no, why not? Non-regulatory ☐ Not Required by Method ☐
Samples received on ice? Yes ☑ No ☐ Ice type? Wet ☑ Ice Packs ☐ Other _____
Samples received the same day collected? Yes ☐ No ☑

Therm. ID (Circle one): Therm-36(IR) Therm-37(IR) Therm-59(IR) Therm-41(Stick) Other: _____

Cooler #1 Init. Temp °C 4.8 Correction °C +0.1 Corrected Temp °C 4.9
Cooler #2 Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
Cooler #3 Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
No Cooler - Representative Sample Temperature: Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____

Do samples received meet thermal preservation requirements? Yes ☑ No ☐ N/A ☐

Thermal Preservation Notes/Discrepancies/Nonconformances:

SAMPLE CONDITION AND PROCESSING

Do all sample IDs on labels match the COC? Yes ☑ No ☐
Custody seals present? Yes ☐ No ☐ N/A ☑
Samples in proper containers? Yes ☑ No ☐
Sample containers damaged? Yes ☐ No ☑
Sufficient sample volume for indicated tests? Yes ☑ No ☐
Samples received with sufficient holding time? Yes ☑ No ☐
Are VOA vials free of headspace? Yes ☐ No ☐ N/A ☑

CHEMICAL PRESERVATION

Were samples received with proper chemical preservation? Yes ☑ No ☑ N/A ☐ For pH checks done by analysts, were preservative labels present? Yes ☑ No ☐
Were samples received properly dechlorinated? Yes ☐ No ☐ N/A ☐ For Dechlorination checks done by analysts, were dechlor. agent labels present? Yes ☐ No ☐
Preservation checked by Sample Receiving? Initials JMA Date & Time 11.9.22 10:22 Test Strip (ID 2T12028)
Dechlorination checked by Sample Receiving? Initials_____ Date & Time _____ Test Strip (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑

Added upon sample receipt? Yes ☑ No ☐
In Lab By:_____ Meter ID:_____

Were any additional preservatives added after receipt? Yes ☑ No ☐ Initial pH: _____ Final pH _____
If yes, is addition of preservatives allowed by the method? Yes ☐ No ☐

List preservatives added at receipt:
Type: HNO_3 Volume Added: ~2mL ID: 2I28023 Type: _____ Volume Added:_____ ID:_____
Type: _____ Volume Added:_____ ID:_____ Type: _____ Volume Added:_____ ID:_____

COMMENTS, DISCREPANCEIS, ANOMALIES, NONCONFORMANCES

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02

Lab No: 22K0459
Reported: 12/23/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22K0459, received on 11/10/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: IS-18-SFAR
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0459-01
Sampled: 11/09/22 10:00
Received: 11/10/22 09:03

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.14	J	0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Copper	ug/l	0.50		0.04	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Lead	ug/l	0.071		0.007	0.050	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Mercury	ng/l	1.93		0.22	0.50	EPA 1631E	11/13/22	11/13/22	B2K1077 / DJC
Methyl Mercury as Mercury	ng/l	0.043	J	0.017	0.050	EPA 1630**	12/22/22	12/20/22	B2L1251 / EDM
Nickel	ug/l	0.52		0.02	0.10	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/30/22	11/15/22	B2K1078 / EDM
Zinc	ug/l	0.66		0.12	0.50	EPA 1638**	12/01/22	11/30/22	B2K1441 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.14	J	0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Copper	ug/l	0.47		0.04	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Lead	ug/l	0.027	J	0.007	0.050	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Nickel	ug/l	0.52		0.02	0.10	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/08/22	B2L0962 / edm
Zinc	ug/l	0.85		0.12	0.50	EPA 1638**	12/14/22	12/14/22	B2L1116 / edm

Quality Control Data

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1077 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	9.89	0.50	ng/l	10.0		98.9	77-123			
Matrix Spike	Source: 22K0172-01									
Mercury	10.7	0.50	ng/l	10.0	0.27	105	71-125			
Matrix Spike	Source: 22K0215-04									
Mercury	11.1	0.50	ng/l	10.0	0.43	106	71-125			
Matrix Spike Dup	Source: 22K0172-01									
Mercury	10.8	0.50	ng/l	10.0	0.27	105	71-125	0.464	24	
Matrix Spike Dup	Source: 22K0215-04									
Mercury	10.7	0.50	ng/l	10.0	0.43	102	71-125	3.76	24	
Metals - Total - Redding Location	**Batch B2K1078 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	202	2.0	ug/l	200		101	85-115			
Duplicate	Source: 22K0309-06									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22K0459-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22K0309-06									
Selenium	193	2.0	ug/l	200	ND	96.3	75-125			
Matrix Spike	Source: 22K0459-01									
Selenium	196	2.0	ug/l	200	ND	97.8	75-125			
Metals - Total - Redding Location	**Batch B2K1441 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1441 - EPA 1638 - Closed Bottle Oven Digestion**									
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.19	0.50	ug/l	1.25		95.0	50-150			
Cadmium	0.26	0.10	ug/l	0.250		103	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.124	0.050	ug/l	0.125		98.9	72-143			
Nickel	0.25	0.10	ug/l	0.250		99.6	68-134			
Zinc	1.26	0.50	ug/l	1.25		101	46-146			
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.7	50-150			
Cadmium	0.25	0.10	ug/l	0.250		99.4	84-113			
Copper	0.24	0.10	ug/l	0.250		97.0	51-145			
Lead	0.124	0.050	ug/l	0.125		99.3	72-143			
Nickel	0.26	0.10	ug/l	0.250		104	68-134			
Zinc	1.27	0.50	ug/l	1.25		101	46-146			
Matrix Spike	Source: 22J1171-04									
Arsenic	2.47	0.50	ug/l	2.50	ND	98.8	50-150			
Cadmium	0.49	0.10	ug/l	0.500	ND	97.7	84-113			
Copper	0.61	0.10	ug/l	0.500	0.12	98.0	51-145			
Lead	0.255	0.050	ug/l	0.250	ND	102	72-143			
Nickel	0.53	0.10	ug/l	0.500	0.05	97.1	68-134			
Zinc	2.76	0.50	ug/l	2.50	0.25	100	46-146			
Matrix Spike	Source: 22K0215-03									
Arsenic	2.55	0.50	ug/l	2.50	ND	102	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.66	0.10	ug/l	0.500	0.15	102	51-145			
Lead	0.322	0.050	ug/l	0.250	0.076	98.4	72-143			
Nickel	0.63	0.10	ug/l	0.500	0.13	101	68-134			

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1441 - EPA 1638 - Closed Bottle Oven Digestion**									
Zinc	2.76	0.50	ug/l	2.50	0.30	98.3	46-146			
Matrix Spike Dup	Source: 22J1171-04									
Arsenic	2.49	0.50	ug/l	2.50	ND	99.5	50-150	0.698	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	101	84-113	3.14	20	
Copper	0.60	0.10	ug/l	0.500	0.12	97.4	51-145	0.475	20	
Lead	0.246	0.050	ug/l	0.250	ND	98.2	72-143	3.61	20	
Nickel	0.53	0.10	ug/l	0.500	0.05	97.4	68-134	0.248	20	
Zinc	2.71	0.50	ug/l	2.50	0.25	98.1	46-146	2.06	20	
Matrix Spike Dup	Source: 22K0215-03									
Arsenic	2.50	0.50	ug/l	2.50	ND	100	50-150	1.88	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	95.7	84-113	5.00	20	
Copper	0.65	0.10	ug/l	0.500	0.15	100	51-145	1.70	20	
Lead	0.323	0.050	ug/l	0.250	0.076	98.8	72-143	0.292	20	
Nickel	0.63	0.10	ug/l	0.500	0.13	99.8	68-134	0.748	20	
Zinc	2.60	0.50	ug/l	2.50	0.30	91.9	46-146	6.03	20	
Metals - Total - Redding Location	**Batch B2L1251 - EPA 1630 Distillation (Modified)**									
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.16	0.050	ng/l	2.00		108	67-133			
Matrix Spike	Source: 22K0331-01									
Methyl Mercury as Mercury	1.27	0.050	ng/l	1.00	0.056	121	65-135			
Matrix Spike	Source: 22K0460-03									
Methyl Mercury as Mercury	1.26	0.050	ng/l	1.00	0.020	124	65-135			
Matrix Spike Dup	Source: 22K0331-01									
Methyl Mercury as Mercury	1.24	0.050	ng/l	1.00	0.056	118	65-135	2.79	35	
Matrix Spike Dup	Source: 22K0460-03									
Methyl Mercury as Mercury	1.28	0.050	ng/l	1.00	0.020	126	65-135	1.80	35	
Metals - Dissolved - Redding Location	**Batch B2L0962 - EPA 200.8 Diss**									
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2L0962 - EPA 200.8 Diss**									
Selenium	ND	2.0	ug/l							
LCS										
Selenium	213	2.0	ug/l	200		107	85-115			
Duplicate	Source: 22K0576-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22K0717-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22K0576-01									
Selenium	218	2.0	ug/l	200	ND	109	75-125			
Matrix Spike	Source: 22K0717-01									
Selenium	215	2.0	ug/l	200	ND	107	75-125			
Metals - Dissolved - Redding Location	**Batch B2L1116 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	0.12	0.50	ug/l							QB-05, J
Cadmium	0.02	0.10	ug/l							QB-05, J
Copper	ND	0.10	ug/l							
Lead	0.014	0.050	ug/l							QB-05, J
Nickel	0.02	0.10	ug/l							QB-05, J
Zinc	0.16	0.50	ug/l							QB-05, J
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2L1116 - EPA 1638 - Dissolved**									
LCS										
Arsenic	1.21	0.50	ug/l	1.25		97.2	50-150			
Cadmium	0.24	0.10	ug/l	0.250		96.8	84-113			
Copper	0.27	0.10	ug/l	0.250		109	51-145			
Lead	0.123	0.050	ug/l	0.125		98.7	72-143			
Nickel	0.25	0.10	ug/l	0.250		98.7	68-134			
Zinc	1.27	0.50	ug/l	1.25		101	46-146			
LCS										
Arsenic	1.22	0.50	ug/l	1.25		97.2	50-150			
Cadmium	0.23	0.10	ug/l	0.250		93.9	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.123	0.050	ug/l	0.125		98.0	72-143			
Nickel	0.24	0.10	ug/l	0.250		95.8	68-134			
Zinc	1.28	0.50	ug/l	1.25		103	46-146			
Matrix Spike	Source: 22J1171-04									
Arsenic	2.41	0.50	ug/l	2.50	ND	96.2	50-150			
Cadmium	0.49	0.10	ug/l	0.500	ND	97.3	84-113			
Copper	0.58	0.10	ug/l	0.500	0.09	97.5	51-145			
Lead	0.240	0.050	ug/l	0.250	ND	96.0	72-143			
Nickel	0.54	0.10	ug/l	0.500	0.04	99.5	68-134			
Zinc	2.68	0.50	ug/l	2.50	0.28	95.8	46-146			
Matrix Spike	Source: 22K0215-03									
Arsenic	2.43	0.50	ug/l	2.50	ND	97.2	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.4	84-113			
Copper	0.57	0.10	ug/l	0.500	0.08	96.5	51-145			
Lead	0.239	0.050	ug/l	0.250	ND	95.5	72-143			
Nickel	0.56	0.10	ug/l	0.500	0.07	98.6	68-134			
Zinc	2.53	0.50	ug/l	2.50	ND	101	46-146			
Matrix Spike Dup	Source: 22J1171-04									
Arsenic	2.42	0.50	ug/l	2.50	ND	96.8	50-150	0.578	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	97.8	84-113	0.477	20	
Copper	0.57	0.10	ug/l	0.500	0.09	95.4	51-145	1.85	20	
Lead	0.235	0.050	ug/l	0.250	ND	94.1	72-143	1.98	20	
Nickel	0.53	0.10	ug/l	0.500	0.04	97.7	68-134	1.66	20	
Zinc	2.72	0.50	ug/l	2.50	0.28	97.5	46-146	1.49	20	
Matrix Spike Dup	Source: 22K0215-03									
Arsenic	2.45	0.50	ug/l	2.50	ND	98.2	50-150	0.981	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	95.5	84-113	0.943	20	
Copper	0.57	0.10	ug/l	0.500	0.08	96.5	51-145	0.0620	20	
Lead	0.249	0.050	ug/l	0.250	ND	99.8	72-143	4.44	20	
Nickel	0.56	0.10	ug/l	0.500	0.07	97.7	68-134	0.790	20	
Zinc	2.52	0.50	ug/l	2.50	ND	101	46-146	0.613	20	

Notes and Definitions

QB-05	The method blank contains the analyte at a concentration level above the MDL, but below the MRL.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.

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Analytical Report

ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	The laboratory does not hold CA-ELAP accreditiation for this analyte or method. Accreditation may not be available from CA-ELAP for this analyte or method.
**	The laboratory holds accreditation for this analyte or method with WA-ECY Lab ID: Lab ID C783. Accreditation is not offered for this method by CA-ELAP
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Accreditations Held:
Redding Location: CA-ELAP - Cert # 1677
Chico Location: CA-ELAP - Cert # 2718

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen
Ricky Jensen, Operations Manager
Pace Analytical Services LLC - Redding CA

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494
☐ 3860 Morrow Lane, Suite F Chico, CA 95928 (530) 894-8966 FAX: (530) 894-5143

LABORATORY WORK ORDER # 22K0459
PAGE 1 OF 1

22K0459

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS
279 Cousteau Place, Suite 400
Davis, CA 95618

REPORT TO ☑ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED
☐ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one): ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED		SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	ANALYSES REQUESTED: T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	11/9/22	1000	AM PM	SW		X	IS-18-SFAR		6	X	X	X	X	X	X
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												

SAMPLED BY: (please print) BRL, ERA

RELINQUISHED DATE / TIME: 11/9/22, 1400 (FedEx)

SAMPLING / ANALYSIS COMMENTS

(1) Total and Dissolved LL 1638 Metals

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME	SIGNATURE	DATE
ESTHER ADELSTEIN		11/9/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
	11/10/22 0903		11/10/22 0930

For Official Lab Comments Only

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

SAMPLE RECEIPT CHECKLIST

WO NUMBER 22K0459

Samples Received Via:

Fed-Ex ☑ Client Walk-In ☐ Courier ☐
UPS ☐ Pace Field Service ☐ Other ☐

Samples Received By: RH Date: 11/10/22 Time: 0903
Are samples for regulatory compliance? Yes ☑ No ☐

THERMAL PRESERVATION

Were samples received in a cooler? Yes ☑ No ☐ If no, take temperature of representative sample container and record below.
If no, do they require thermal preservation? Yes ☐ No ☐ If no, why not? Non-regulatory ☐ Not Required by Method ☐
Samples received on ice? Yes ☑ No ☐ Ice type? Wet ☑ Ice Packs ☐ Other _____
Samples received the same day collected? Yes ☐ No ☑

Therm. ID (Circle one): Therm-36(IR) Therm-37(IR) Therm-59(IR) (Therm-41(Stick)) Therm-C01(IR) Therm-C02(IR) Other: _____

Cooler #1 Init. Temp °C 0.7 Correction °C -0.3 Corrected Temp °C 0.4
Cooler #2 Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
Cooler #3 Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
No Cooler - Representative Sample Temperature: Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
Do samples received meet thermal preservation requirements? Yes ☑ No ☐ N/A ☐

Thermal Preservation Notes/Discrepancies/Nonconformances:

SAMPLE CONDITION AND PROCESSING

Do all sample IDs on labels match the COC? Yes ☑ No ☐
Custody seals present? Yes ☐ No ☐ N/A ☑
Samples in proper containers? Yes ☑ No ☐
Sample containers damaged? Yes ☐ No ☑
Sufficient sample volume for indicated tests? Yes ☑ No ☐
Samples received with sufficient holding time? Yes ☑ No ☐
Are VOA vials free of headspace? Yes ☐ No ☐ N/A ☑

CHEMICAL PRESERVATION

Were the sample containers received with labels that indicate that appropriate preservatives were present for the indicated tests? Yes ☑ No ☐ N/A ☐
Were samples received properly dechlorinated? Yes ☐ No ☐ N/A ☐ For Dechlorination checks done by analysts, were dechlor. agent labels present? Yes ☐ No ☐
Preservation checked by Sample Receiving? Initials RH Date & Time 11/10/22 0922 Test Strip (ID 2J12028)
Dechlorination checked by Sample Receiving? Initials_____ Date & Time _____ Test Strip (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑

Added upon sample receipt? Yes ☑ No ☐
In Lab By:_____ Meter ID:_____

Were any additional preservatives added after receipt? Yes ☐ No ☐ Initial pH: _____ Final pH _____
If yes, is addition of preservatives allowed by the method? Yes ☐ No ☐

List preservatives added at receipt:
Type: _____ Volume Added:_____ ID:_____ Type: _____ Volume Added:_____ ID:_____
Type: _____ Volume Added:_____ ID:_____ Type: _____ Volume Added:_____ ID:_____

COMMENTS, DISCREPANCEIS, ANOMALIES, NONCONFORMANCES

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02

Lab No: 22K0516
Reported: 12/27/22
Phone: 530-756-7550

Included in this report are laboratory results for work order 22K0516, received on 11/11/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: R-IS-20-BC
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0516-01
Sampled: 11/10/22 10:30
Received: 11/11/22 09:03

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Copper	ug/l	0.11		0.04	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Lead	ug/l	0.020	J	0.007	0.050	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Mercury	ng/l	0.29	J	0.22	0.50	EPA 1631E	11/13/22	11/13/22	B2K1077 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	12/22/22	12/20/22	B2L1251 / EDM
Nickel	ug/l	0.08	J	0.02	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/30/22	11/15/22	B2K1078 / EDM
Zinc	ug/l	0.95		0.12	0.50	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Copper	ug/l	0.07	J	0.04	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Nickel	ug/l	0.20		0.02	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/08/22	B2L0962 / edm
Zinc	ug/l	0.70		0.12	0.50	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM

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Analytical Report

Description: IS-17-BC
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0516-02
Sampled: 11/10/22 12:00
Received: 11/11/22 09:03

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Copper	ug/l	0.11		0.04	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Lead	ug/l	0.055		0.007	0.050	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Mercury	ng/l	0.41	J	0.22	0.50	EPA 1631E	11/13/22	11/13/22	B2K1077 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	12/22/22	12/20/22	B2L1251 / EDM
Nickel	ug/l	0.11		0.02	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/30/22	11/15/22	B2K1078 / EDM
Zinc	ug/l	0.19	J	0.12	0.50	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Copper	ug/l	0.06	J	0.04	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Nickel	ug/l	0.06	J	0.02	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/08/22	B2L0962 / edm
Zinc	ug/l	ND		0.12	0.50	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1077 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	9.89	0.50	ng/l	10.0		98.9	77-123			
Matrix Spike	Source: 22K0172-01									
Mercury	10.7	0.50	ng/l	10.0	0.27	105	71-125			
Matrix Spike	Source: 22K0215-04									
Mercury	11.1	0.50	ng/l	10.0	0.43	106	71-125			
Matrix Spike Dup	Source: 22K0172-01									
Mercury	10.8	0.50	ng/l	10.0	0.27	105	71-125	0.464	24	

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1077 - BrCl Digestion**									
Matrix Spike Dup	Source: 22K0215-04									
Mercury	10.7	0.50	ng/l	10.0	0.43	102	71-125	3.76	24	
Metals - Total - Redding Location	**Batch B2K1078 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	202	2.0	ug/l	200		101	85-115			
Duplicate	Source: 22K0309-06									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22K0459-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22K0309-06									
Selenium	193	2.0	ug/l	200	ND	96.3	75-125			
Matrix Spike	Source: 22K0459-01									
Selenium	196	2.0	ug/l	200	ND	97.8	75-125			
Metals - Total - Redding Location	**Batch B2L1251 - EPA 1630 Distillation (Modified)**									
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.16	0.050	ng/l	2.00		108	67-133			
Matrix Spike	Source: 22K0331-01									
Methyl Mercury as Mercury	1.27	0.050	ng/l	1.00	0.056	121	65-135			
Matrix Spike	Source: 22K0460-03									
Methyl Mercury as Mercury	1.26	0.050	ng/l	1.00	0.020	124	65-135			
Matrix Spike Dup	Source: 22K0331-01									
Methyl Mercury as Mercury	1.24	0.050	ng/l	1.00	0.056	118	65-135	2.79	35	
Matrix Spike Dup	Source: 22K0460-03									
Methyl Mercury as Mercury	1.28	0.050	ng/l	1.00	0.020	126	65-135	1.80	35	
Metals - Total - Redding Location	**Batch B2L1305 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2L1305 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.1	50-150			
Cadmium	0.24	0.10	ug/l	0.250		96.5	84-113			
Copper	0.23	0.10	ug/l	0.250		91.2	51-145			
Lead	0.121	0.050	ug/l	0.125		96.6	72-143			
Nickel	0.24	0.10	ug/l	0.250		94.7	68-134			
Zinc	1.19	0.50	ug/l	1.25		95.4	46-146			
LCS										
Arsenic	1.17	0.50	ug/l	1.25		93.7	50-150			
Cadmium	0.23	0.10	ug/l	0.250		92.0	84-113			
Copper	0.23	0.10	ug/l	0.250		92.5	51-145			
Lead	0.120	0.050	ug/l	0.125		96.3	72-143			
Nickel	0.26	0.10	ug/l	0.250		103	68-134			
Zinc	1.18	0.50	ug/l	1.25		94.2	46-146			
Matrix Spike	Source: 22K0516-01									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2L1305 - EPA 1638 - Closed Bottle Oven Digestion**									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.8	84-113			
Copper	0.60	0.10	ug/l	0.500	0.11	97.5	51-145			
Lead	0.265	0.050	ug/l	0.250	0.020	97.8	72-143			
Nickel	0.57	0.10	ug/l	0.500	0.08	98.4	68-134			
Zinc	3.33	0.50	ug/l	2.50	0.95	95.2	46-146			
Matrix Spike	Source: 22K0717-01									
Arsenic	2.41	0.50	ug/l	2.50	ND	96.3	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	100	84-113			
Copper	0.60	0.10	ug/l	0.500	0.12	96.0	51-145			
Lead	0.247	0.050	ug/l	0.250	ND	98.8	72-143			
Nickel	0.53	0.10	ug/l	0.500	0.04	97.5	68-134			
Zinc	2.49	0.50	ug/l	2.50	ND	99.4	46-146			
Matrix Spike Dup	Source: 22K0516-01									
Arsenic	2.37	0.50	ug/l	2.50	ND	94.9	50-150	6.45	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	98.5	84-113	1.77	20	
Copper	0.59	0.10	ug/l	0.500	0.11	95.9	51-145	1.29	20	
Lead	0.258	0.050	ug/l	0.250	0.020	95.1	72-143	2.61	20	
Nickel	0.57	0.10	ug/l	0.500	0.08	97.5	68-134	0.753	20	
Zinc	3.31	0.50	ug/l	2.50	0.95	94.5	46-146	0.558	20	
Matrix Spike Dup	Source: 22K0717-01									
Arsenic	2.43	0.50	ug/l	2.50	ND	97.0	50-150	0.752	20	
Cadmium	0.47	0.10	ug/l	0.500	ND	94.6	84-113	5.67	20	
Copper	0.63	0.10	ug/l	0.500	0.12	103	51-145	5.26	20	
Lead	0.250	0.050	ug/l	0.250	ND	99.9	72-143	1.07	20	
Nickel	0.53	0.10	ug/l	0.500	0.04	97.6	68-134	0.132	20	
Zinc	2.51	0.50	ug/l	2.50	ND	100	46-146	0.831	20	
Metals - Dissolved - Redding Location	**Batch B2L0962 - EPA 200.8 Diss**									
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	213	2.0	ug/l	200		107	85-115			
Duplicate	Source: 22K0576-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22K0717-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22K0576-01									
Selenium	218	2.0	ug/l	200	ND	109	75-125			

2218 Railroad Avenue
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voice 530.243.7234
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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2L0962 - EPA 200.8 Diss**									
Matrix Spike	Source: 22K0717-01									
Selenium	215	2.0	ug/l	200	ND	107	75-125			
Metals - Dissolved - Redding Location	**Batch B2L1325 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.27	0.50	ug/l	1.25		102	50-150			
Cadmium	0.26	0.10	ug/l	0.250		103	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.125	0.050	ug/l	0.125		100	72-143			
Nickel	0.26	0.10	ug/l	0.250		103	68-134			
Zinc	1.32	0.50	ug/l	1.25		105	46-146			
LCS										
Arsenic	1.31	0.50	ug/l	1.25		105	50-150			
Cadmium	0.25	0.10	ug/l	0.250		99.3	84-113			
Copper	0.26	0.10	ug/l	0.250		104	51-145			

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2L1325 - EPA 1638 - Dissolved**									
Lead	0.128	0.050	ug/l	0.125		102	72-143			
Nickel	0.26	0.10	ug/l	0.250		104	68-134			
Zinc	1.37	0.50	ug/l	1.25		110	46-146			
Matrix Spike	Source: 22K0516-01									
Arsenic	2.49	0.50	ug/l	2.50	ND	99.6	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	95.7	84-113			
Copper	0.56	0.10	ug/l	0.500	0.07	99.1	51-145			
Lead	0.253	0.050	ug/l	0.250	ND	101	72-143			
Nickel	0.73	0.10	ug/l	0.500	0.20	105	68-134			
Zinc	3.13	0.50	ug/l	2.50	0.70	96.9	46-146			
Matrix Spike	Source: 22K0717-03									
Arsenic	2.45	0.50	ug/l	2.50	ND	98.0	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	99.0	84-113			
Copper	0.60	0.10	ug/l	0.500	0.11	98.4	51-145			
Lead	0.242	0.050	ug/l	0.250	ND	96.8	72-143			
Nickel	0.52	0.10	ug/l	0.500	0.04	96.2	68-134			
Zinc	2.50	0.50	ug/l	2.50	ND	100	46-146			
Matrix Spike Dup	Source: 22K0516-01									
Arsenic	2.50	0.50	ug/l	2.50	ND	99.9	50-150	0.283	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	96.3	84-113	0.561	20	
Copper	0.56	0.10	ug/l	0.500	0.07	98.1	51-145	0.874	20	
Lead	0.239	0.050	ug/l	0.250	ND	95.6	72-143	5.51	20	
Nickel	0.70	0.10	ug/l	0.500	0.20	99.5	68-134	3.81	20	
Zinc	3.16	0.50	ug/l	2.50	0.70	98.3	46-146	1.12	20	
Matrix Spike Dup	Source: 22K0717-03									
Arsenic	2.43	0.50	ug/l	2.50	ND	97.0	50-150	1.05	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	95.1	84-113	4.05	20	
Copper	0.59	0.10	ug/l	0.500	0.11	97.4	51-145	0.775	20	
Lead	0.239	0.050	ug/l	0.250	ND	95.5	72-143	1.33	20	
Nickel	0.52	0.10	ug/l	0.500	0.04	97.0	68-134	0.762	20	
Zinc	2.56	0.50	ug/l	2.50	ND	103	46-146	2.30	20	

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	The laboratory does not hold CA-ELAP accreditiation for this analyte or method. Accreditation may not be available from CA-ELAP for this analyte or method.
**	The laboratory holds accreditation for this analyte or method with WA-ECY Lab ID: Lab ID C783. Accreditation is not offered for this method by CA-ELAP
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

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Analytical Report

Accreditations Held:
Redding Location: CA-ELAP - Cert # 1677
Chico Location: CA-ELAP - Cert # 2718

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen
Ricky Jensen, Operations Manager
Pace Analytical Services LLC - Redding CA

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494

☐ 3860 Morrow Lane, Suite F Chico, CA 95928 (530) 894-8966 FAX: (530) 894-5143

LABORATORY WORK ORDER # 22K0516

PAGE 1 OF 1

22K0516

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS: 279 Cousteau Place, Suite 400, Davis, CA 95618

REPORT TO ☑ Email ☐ Mail Hardcopy

NAME / ATTENTION: Emily Applequist

PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED: ☐ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one) ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED		SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	ANALYSES REQUESTED: T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	11/10/22	1030	(AM) PM	SW		X	R-IS-20-BC		6	X	X	X	X	X	X
2	11/10/22	1260	AM (PM)	SW		X	IS-17-BC		6	X	X	X	X	X	X
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												

SAMPLED BY: (please print) BRL ERA

RELINQUISHED DATE / TIME: 11/10/22 1300 (FedEx)

SAMPLING / ANALYSIS COMMENTS: (1) Total and Dissolved LL 1638 Metals

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME	SIGNATURE	DATE
ESTHER ADELSTEIN		11/10/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
	11/11/22 0903		11/11/22 1112

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

For Official Lab Comments Only

SAMPLE RECEIPT CHECKLIST

WO NUMBER 22K0516

Samples Received Via:

Fed-Ex ☑ Client Walk-In ☐ Courier ☐
UPS ☐ Pace Field Service ☐ Other ☐

Samples Received By: RH Date: 11/11/22 Time: 0903
Are samples for regulatory compliance? Yes ☑ No ☐

THERMAL PRESERVATION

Were samples received in a cooler? Yes ☑ No ☐ If no, take temperature of representative sample container and record below.
If no, do they require thermal preservation? Yes ☐ No ☐ If no, why not? Non-regulatory ☐ Not Required by Method ☐
Samples received on ice? Yes ☑ No ☐ Ice type? Wet ☑ Ice Packs ☐ Other _____
Samples received the same day collected? Yes ☐ No ☑

Therm. ID (Circle one): Therm-36(IR) Therm-37(IR) Therm-59(IR) (Therm-41(Stick)) Therm-C01(IR) Therm-C02(IR) Other: _____

Cooler #1 Init. Temp °C 1.0 Correction °C -0.3 Corrected Temp °C 0.7
Cooler #2 Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
Cooler #3 Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
No Cooler - Representative Sample Temperature: Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
Do samples received meet thermal preservation requirements? Yes ☑ No ☐ N/A ☐

Thermal Preservation Notes/Discrepancies/Nonconformances:

SAMPLE CONDITION AND PROCESSING

Do all sample IDs on labels match the COC? Yes ☑ No ☐
Custody seals present? Yes ☐ No ☐ N/A ☑
Samples in proper containers? Yes ☑ No ☐
Sample containers damaged? Yes ☐ No ☑
Sufficient sample volume for indicated tests? Yes ☑ No ☐
Samples received with sufficient holding time? Yes ☑ No ☐
Are VOA vials free of headspace? Yes ☐ No ☐ N/A ☑

CHEMICAL PRESERVATION

Were the sample containers received with labels that indicate that appropriate preservatives were present for the indicated tests? Yes ☑ No ☐ N/A ☐
Were samples received properly dechlorinated? Yes ☐ No ☐ N/A ☐ For Dechlorination checks done by analysts, were dechlor. agent labels present? Yes ☐ No ☐
Preservation checked by Sample Receiving? Initials RH Date & Time 11/11/22 0918 Test Strip (ID 2512028)
Dechlorination checked by Sample Receiving? Initials_____ Date & Time _____ Test Strip (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑

Added upon sample receipt? Yes ☑ No ☐
In Lab By:_____ Meter ID:_____

Were any additional preservatives added after receipt? Yes ☐ No ☐ Initial pH: _____ Final pH _____
If yes, is addition of preservatives allowed by the method? Yes ☐ No ☐

List preservatives added at receipt:
Type: _____ Volume Added:_____ ID:_____ Type: _____ Volume Added:_____ ID:_____
Type: _____ Volume Added:_____ ID:_____ Type: _____ Volume Added:_____ ID:_____

COMMENTS, DISCREPANCEIS, ANOMALIES, NONCONFORMANCES

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

November 17, 2022

CLS Work Order #: 22K0519
COC #:

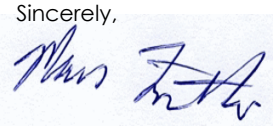
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 11/08/22 13:05. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

11/17/22 13:05

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0519
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-15-SFAR (22K0519-01) Water Sampled: 11/08/22 09:00 Received: 11/08/22 13:05										
Ammonia as N	ND	0.025	0.10	mg/L	1	2209662	11/09/22	11/09/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**18**	0.50	5.0	"	"	2209778	11/11/22	11/14/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**5.7**	0.026	0.50	"	"	2209633	11/09/22	11/09/22	EPA 300.0	
Cyanide (total)	**0.0049**	0.0012	0.0050	"	"	2209702	11/10/22	11/14/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209720	11/10/22	11/14/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209778	11/11/22	11/14/22	SM2320B	
Nitrate/Nitrite as N	**0.14**	0.055	0.40	"	"	2209633	11/09/22	11/09/22	EPA 300.0	J
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2209649	11/09/22	11/09/22	SM4500-P E	
Sulfate as SO4	**0.90**	0.038	0.50	"	"	2209633	11/09/22	11/09/22	EPA 300.0	
Total Alkalinity	**18**	1.0	5.0	"	"	2209778	11/11/22	11/14/22	SM2320B	
Total Dissolved Solids	**35**	5.0	10	"	"	2209665	11/09/22	11/10/22	SM2540C	
Total Hardness as CaCO3	**16**	0.19	1.0	"	"	2209680	11/10/22	11/11/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.42**	0.040	0.20	"	"	2209763	11/11/22	11/11/22	SM4500-NH3F-2011	
Total Organic Carbon	**3.4**	0.54	1.0	"	"	2209641	11/09/22	11/09/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209736	11/11/22	11/11/22	SM4500-P E	
Total Suspended Solids	**2.5**	2.0	5.0	"	"	2209703	11/10/22	11/10/22	SM2540D	J
IS-16-SFAR (22K0519-02) Water Sampled: 11/08/22 09:30 Received: 11/08/22 13:05										
Ammonia as N	**0.026**	0.025	0.10	mg/L	1	2209662	11/09/22	11/09/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**18**	0.50	5.0	"	"	2209778	11/11/22	11/14/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**2.9**	0.026	0.50	"	"	2209633	11/09/22	11/09/22	EPA 300.0	
Cyanide (total)	**0.0023**	0.0012	0.0050	"	"	2209702	11/10/22	11/14/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209720	11/10/22	11/14/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209778	11/11/22	11/14/22	SM2320B	
Nitrate/Nitrite as N	**0.081**	0.055	0.40	"	"	2209633	11/09/22	11/09/22	EPA 300.0	J
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2209649	11/09/22	11/09/22	SM4500-P E	

11/17/22 13:05

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0519
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-16-SFAR (22K0519-02) Water	**Sampled: 11/08/22 09:30**		**Received: 11/08/22 13:05**							
Sulfate as SO4	**0.64**	0.038	0.50	mg/L	1	2209633	11/09/22	11/09/22	EPA 300.0	
Total Alkalinity	**18**	1.0	5.0	"	"	2209778	11/11/22	11/14/22	SM2320B	
Total Dissolved Solids	**29**	5.0	10	"	"	2209665	11/09/22	11/10/22	SM2540C	
Total Hardness as CaCO3	**11**	0.19	1.0	"	"	2209680	11/10/22	11/11/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.26**	0.040	0.20	"	"	2209763	11/11/22	11/11/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.7**	0.54	1.0	"	"	2209641	11/09/22	11/09/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209736	11/11/22	11/11/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209703	11/10/22	11/10/22	SM2540D	
IS-19-SFAR (22K0519-03) Water	**Sampled: 11/08/22 11:00**		**Received: 11/08/22 13:05**							
Ammonia as N	**0.029**	0.025	0.10	mg/L	1	2209662	11/09/22	11/09/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**11**	0.50	5.0	"	"	2209778	11/11/22	11/14/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**1.9**	0.026	0.50	"	"	2209633	11/09/22	11/09/22	EPA 300.0	
Cyanide (total)	**0.0038**	0.0012	0.0050	"	"	2209702	11/10/22	11/14/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209720	11/10/22	11/14/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209778	11/11/22	11/14/22	SM2320B	
Nitrate/Nitrite as N	**0.068**	0.055	0.40	"	"	2209633	11/09/22	11/09/22	EPA 300.0	J
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2209649	11/09/22	11/09/22	SM4500-P E	
Sulfate as SO4	**0.63**	0.038	0.50	"	"	2209633	11/09/22	11/09/22	EPA 300.0	
Total Alkalinity	**11**	1.0	5.0	"	"	2209778	11/11/22	11/14/22	SM2320B	
Total Dissolved Solids	**17**	5.0	10	"	"	2209665	11/09/22	11/10/22	SM2540C	
Total Hardness as CaCO3	**9.1**	0.19	1.0	"	"	2209680	11/10/22	11/11/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.44**	0.040	0.20	"	"	2209763	11/11/22	11/11/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.0**	0.54	1.0	"	"	2209641	11/09/22	11/09/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209736	11/11/22	11/11/22	SM4500-P E	
Total Suspended Solids	**3.1**	2.0	5.0	"	"	2209703	11/10/22	11/10/22	SM2540D	J

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K0519**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-15-SFAR (22K0519-01) Water Sampled: 11/08/22 09:00 Received: 11/08/22 13:05										
Diesel	ND	0.0021	0.050	mg/L	1	2209670	11/09/22	11/09/22	EPA 8015M	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*122 %*	*65-135*		"	"	"	"	
IS-16-SFAR (22K0519-02) Water Sampled: 11/08/22 09:30 Received: 11/08/22 13:05										
Diesel	ND	0.0021	0.050	mg/L	1	2209670	11/09/22	11/09/22	EPA 8015M	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*95 %*	*65-135*		"	"	"	"	
IS-19-SFAR (22K0519-03) Water Sampled: 11/08/22 11:00 Received: 11/08/22 13:05										
Diesel	ND	0.0021	0.050	mg/L	1	2209670	11/09/22	11/09/22	EPA 8015M	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*68 %*	*65-135*		"	"	"	"	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0519
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-15-SFAR (22K0519-01) Water	**Sampled: 11/08/22 09:00**		**Received: 11/08/22 13:05**							
Aluminum	**65**	1.6	20	µg/L	1	2209678	11/10/22	11/14/22	EPA 200.8	
Barium	**17**	0.14	5.0	"	"	"	"	"	"	
Calcium	**4800**	27	1000	"	"	2209680	11/10/22	11/11/22	EPA 200.7	
Iron	**170**	9.1	100	"	"	"	"	"	"	
Magnesium	**1000**	21	1000	"	"	"	"	"	"	
Manganese	**14**	0.050	2.0	"	"	2209678	11/10/22	11/14/22	EPA 200.8	
Potassium	**1400**	61	1000	"	"	2209680	11/10/22	11/11/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2209678	11/10/22	11/14/22	EPA 200.8	
Sodium	**4400**	34	1000	"	"	2209680	11/10/22	11/16/22	EPA 200.7	
IS-16-SFAR (22K0519-02) Water	**Sampled: 11/08/22 09:30**		**Received: 11/08/22 13:05**							
Aluminum	**67**	1.6	20	µg/L	1	2209678	11/10/22	11/14/22	EPA 200.8	
Barium	**12**	0.14	5.0	"	"	"	"	"	"	
Calcium	**3300**	27	1000	"	"	2209680	11/10/22	11/11/22	EPA 200.7	
Iron	**110**	9.1	100	"	"	"	"	"	"	
Magnesium	**690**	21	1000	"	"	"	"	"	"	J
Manganese	**11**	0.050	2.0	"	"	2209678	11/10/22	11/14/22	EPA 200.8	
Potassium	**1200**	61	1000	"	"	2209680	11/10/22	11/11/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2209678	11/10/22	11/14/22	EPA 200.8	
Sodium	**2700**	34	1000	"	"	2209680	11/10/22	11/16/22	EPA 200.7	
IS-19-SFAR (22K0519-03) Water	**Sampled: 11/08/22 11:00**		**Received: 11/08/22 13:05**							
Aluminum	**97**	1.6	20	µg/L	1	2209678	11/10/22	11/14/22	EPA 200.8	
Barium	**12**	0.14	5.0	"	"	"	"	"	"	
Calcium	**2700**	27	1000	"	"	2209680	11/10/22	11/11/22	EPA 200.7	
Iron	**130**	9.1	100	"	"	"	"	"	"	
Magnesium	**570**	21	1000	"	"	"	"	"	"	J
Manganese	**39**	0.050	2.0	"	"	2209678	11/10/22	11/14/22	EPA 200.8	
Potassium	**950**	61	1000	"	"	2209680	11/10/22	11/11/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209678	11/10/22	11/14/22	EPA 200.8	
Sodium	**1900**	34	1000	"	"	2209680	11/10/22	11/16/22	EPA 200.7	

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Project: SMUD In situ & Chemistry Monitoring
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Project Manager: Emily Applequist

CLS Work Order #: 22K0519
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-15-SFAR (22K0519-01) Water	**Sampled: 11/08/22 09:00**		**Received: 11/08/22 13:05**							
Aluminum	**11**	0.52	20	µg/L	1	2209825	11/14/22	11/14/22	EPA 200.8	J
Iron	**14**	6.8	100	"	"	2209826	11/14/22	11/15/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2209825	11/14/22	11/14/22	EPA 200.8	
IS-16-SFAR (22K0519-02) Water	**Sampled: 11/08/22 09:30**		**Received: 11/08/22 13:05**							
Aluminum	**6.7**	0.52	20	µg/L	1	2209825	11/14/22	11/14/22	EPA 200.8	J
Iron	**20**	6.8	100	"	"	2209826	11/14/22	11/15/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2209825	11/14/22	11/14/22	EPA 200.8	
IS-19-SFAR (22K0519-03) Water	**Sampled: 11/08/22 11:00**		**Received: 11/08/22 13:05**							
Aluminum	**4.5**	0.52	20	µg/L	1	2209825	11/14/22	11/14/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2209826	11/14/22	11/15/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2209825	11/14/22	11/14/22	EPA 200.8	

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22K0519
COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-15-SFAR (22K0519-01) Water	**Sampled: 11/08/22 09:00**		**Received: 11/08/22 13:05**							
Gasoline	ND	10	50	µg/L	1	2209715	11/10/22	11/11/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*79 %*	*65-135*		"	"	"	"	
IS-16-SFAR (22K0519-02) Water	**Sampled: 11/08/22 09:30**		**Received: 11/08/22 13:05**							
Gasoline	ND	10	50	µg/L	1	2209715	11/10/22	11/11/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*73 %*	*65-135*		"	"	"	"	
IS-19-SFAR (22K0519-03) Water	**Sampled: 11/08/22 11:00**		**Received: 11/08/22 13:05**							
Gasoline	ND	10	50	µg/L	1	2209715	11/10/22	11/11/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*72 %*	*65-135*		"	"	"	"	

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CLS Work Order #: 22K0519
COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-15-SFAR (22K0519-01) Water	**Sampled: 11/08/22 09:00**		**Received: 11/08/22 13:05**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209735	11/09/22	11/09/22	EPA 8260B	
Surrogate: Toluene-d8			*97 %*	*72-125*		"	"	"	"	
IS-16-SFAR (22K0519-02) Water	**Sampled: 11/08/22 09:30**		**Received: 11/08/22 13:05**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209735	11/09/22	11/09/22	EPA 8260B	
Surrogate: Toluene-d8			*98 %*	*72-125*		"	"	"	"	
IS-19-SFAR (22K0519-03) Water	**Sampled: 11/08/22 11:00**		**Received: 11/08/22 13:05**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209735	11/09/22	11/09/22	EPA 8260B	
Surrogate: Toluene-d8			*98 %*	*72-125*		"	"	"	"	

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CLS Work Order #: 22K0519
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209633 - General Prep											
Blank (2209633-BLK1)					Prepared & Analyzed: 11/09/22						
Chloride	ND	0.026	0.50	mg/L							
Sulfate as SO4	ND	0.038	0.50	"							
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2209633-BS1)					Prepared & Analyzed: 11/09/22						
Chloride	4.79	0.026	0.50	mg/L	5.00		96	80-120			
Sulfate as SO4	4.85	0.038	0.50	"	5.00		97	80-120			
Nitrate/Nitrite as N	4.19	0.055	0.40	"	4.00		105	80-120			
LCS Dup (2209633-BSD1)					Prepared & Analyzed: 11/09/22						
Chloride	4.96	0.026	0.50	mg/L	5.00		99	80-120	4	20	
Sulfate as SO4	4.93	0.038	0.50	"	5.00		99	80-120	2	20	
Nitrate/Nitrite as N	3.02	0.055	0.40	"	4.00		76	80-120	32	20	QM-1
Matrix Spike (2209633-MS1)			**Source: 22K0490-01**		Prepared & Analyzed: 11/09/22						
Chloride	8.00	0.026	0.50	mg/L	5.00	2.96	101	80-120			
Sulfate as SO4	7.95	0.038	0.50	"	5.00	2.87	102	80-120			
Nitrate/Nitrite as N	4.20	0.055	0.40	"	4.00	ND	105	80-120			
Matrix Spike Dup (2209633-MSD1)			**Source: 22K0490-01**		Prepared & Analyzed: 11/09/22						
Sulfate as SO4	8.07	0.038	0.50	mg/L	5.00	2.87	104	80-120	2	20	
Chloride	8.09	0.026	0.50	"	5.00	2.96	103	80-120	1	20	
Nitrate/Nitrite as N	4.29	0.055	0.40	"	4.00	ND	107	80-120	2	20	
Batch 2209641 - General Preparation											
Blank (2209641-BLK1)					Prepared & Analyzed: 11/09/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							

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CLS Work Order #: 22K0519
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209641 - General Preparation											
LCS (2209641-BS1)					Prepared & Analyzed: 11/09/22						
Total Organic Carbon	10.5	0.54	1.0	mg/L	10.0		105	75-125			
LCS Dup (2209641-BSD1)					Prepared & Analyzed: 11/09/22						
Total Organic Carbon	10.6	0.54	1.0	mg/L	10.0		106	75-125	0.5	25	
Matrix Spike (2209641-MS1)			**Source: 22K0375-02**		Prepared & Analyzed: 11/09/22						
Total Organic Carbon	16.7	0.54	1.0	mg/L	10.0	2.01	146	75-125			QM-7
Matrix Spike Dup (2209641-MSD1)			**Source: 22K0375-02**		Prepared & Analyzed: 11/09/22						
Total Organic Carbon	17.0	0.54	1.0	mg/L	10.0	2.01	150	75-125	2	25	QM-7
Batch 2209649 - General Preparation											
Blank (2209649-BLK1)					Prepared & Analyzed: 11/09/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							
LCS (2209649-BS1)					Prepared & Analyzed: 11/09/22						
Orthophosphate as PO4	0.854	0.0051	0.15	mg/L	0.918		93	80-120			
LCS Dup (2209649-BSD1)					Prepared & Analyzed: 11/09/22						
Orthophosphate as PO4	0.862	0.0051	0.15	mg/L	0.918		94	80-120	1	20	
Matrix Spike (2209649-MS1)			**Source: 22K0519-01**		Prepared & Analyzed: 11/09/22						
Orthophosphate as PO4	0.883	0.0051	0.15	mg/L	0.918	ND	96	75-125			
Matrix Spike Dup (2209649-MSD1)			**Source: 22K0519-01**		Prepared & Analyzed: 11/09/22						
Orthophosphate as PO4	0.871	0.0051	0.15	mg/L	0.918	ND	95	75-125	1	25	

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CLS Work Order #: 22K0519
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209662 - General Preparation											
Blank (2209662-BLK1)					Prepared & Analyzed: 11/09/22						
Ammonia as N	ND	0.025	0.10	mg/L							
LCS (2209662-BS1)					Prepared & Analyzed: 11/09/22						
Ammonia as N	0.525	0.025	0.10	mg/L	0.500		105	80-120			
LCS Dup (2209662-BSD1)					Prepared & Analyzed: 11/09/22						
Ammonia as N	0.526	0.025	0.10	mg/L	0.500		105	80-120	0.2	25	
Matrix Spike (2209662-MS1)			**Source: 22K0519-01**		Prepared & Analyzed: 11/09/22						
Ammonia as N	0.504	0.025	0.10	mg/L	0.500	ND	101	75-125			
Matrix Spike Dup (2209662-MSD1)			**Source: 22K0519-01**		Prepared & Analyzed: 11/09/22						
Ammonia as N	0.529	0.025	0.10	mg/L	0.500	ND	106	75-125	5	25	
Batch 2209665 - General Preparation											
Duplicate (2209665-DUP1)			**Source: 22K0371-05**		Prepared: 11/09/22 Analyzed: 11/10/22						
Total Dissolved Solids	523	5.0	10	mg/L		515			2	20	
Batch 2209680 - EPA 200 Series											
Blank (2209680-BLK1)					Prepared: 11/10/22 Analyzed: 11/11/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2209680-BS1)					Prepared: 11/10/22 Analyzed: 11/11/22						
Total Hardness as CaCO3	34.8	0.19	1.0	mg/L	33.1		105	85-115			

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209680 - EPA 200 Series											
Matrix Spike (2209680-MS1)			**Source: 22K0475-01**		Prepared: 11/10/22 Analyzed: 11/11/22						
Total Hardness as CaCO3	46.4	0.19	1.0	mg/L	33.1	10.9	107	70-130			
Matrix Spike (2209680-MS2)			**Source: 22K0490-01**		Prepared: 11/10/22 Analyzed: 11/11/22						
Total Hardness as CaCO3	90.9	0.19	1.0	mg/L	33.1	59.9	94	70-130			
Batch 2209702 - General Preparation											
Blank (2209702-BLK1)					Prepared: 11/10/22 Analyzed: 11/14/22						
Cyanide (total)	0.00380	0.0012	0.0050	mg/L							J
LCS (2209702-BS1)					Prepared: 11/10/22 Analyzed: 11/14/22						
Cyanide (total)	0.0752	0.0012	0.0050	mg/L	0.100		75	75-125			
LCS Dup (2209702-BSD1)					Prepared: 11/10/22 Analyzed: 11/14/22						
Cyanide (total)	0.0759	0.0012	0.0050	mg/L	0.100		76	75-125	0.9	25	
Matrix Spike (2209702-MS1)			**Source: 22K0375-01**		Prepared: 11/10/22 Analyzed: 11/14/22						
Cyanide (total)	0.0415	0.0012	0.0050	mg/L	0.100	0.00530	36	75-125			QM-7
Matrix Spike Dup (2209702-MSD1)			**Source: 22K0375-01**		Prepared: 11/10/22 Analyzed: 11/14/22						
Cyanide (total)	0.0434	0.0012	0.0050	mg/L	0.100	0.00530	38	75-125	4	25	QM-7
Batch 2209703 - General Preparation											
Blank (2209703-BLK1)					Prepared & Analyzed: 11/10/22						
Total Suspended Solids	ND	2.0	5.0	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209703 - General Preparation											
Duplicate (2209703-DUP1)				**Source: 22K0491-02**	Prepared & Analyzed: 11/10/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	
Batch 2209720 - Solvent Extract											
Blank (2209720-BLK1)					Prepared: 11/10/22 Analyzed: 11/14/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2209720-BS1)					Prepared: 11/10/22 Analyzed: 11/14/22						
Hexane Extractable Material (HEM, Oil & Grease)	37.5	1.0	5.0	mg/L	40.0		94	78-114			
LCS Dup (2209720-BSD1)					Prepared: 11/10/22 Analyzed: 11/14/22						
Hexane Extractable Material (HEM, Oil & Grease)	36.5	1.0	5.0	mg/L	40.0		91	78-114	3	18	
Batch 2209736 - General Preparation											
Blank (2209736-BLK1)					Prepared & Analyzed: 11/11/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2209736-BS1)					Prepared & Analyzed: 11/11/22						
Total Phosphorus as P	0.313	0.023	0.050	mg/L	0.300		104	80-120			
LCS Dup (2209736-BSD1)					Prepared & Analyzed: 11/11/22						
Total Phosphorus as P	0.286	0.023	0.050	mg/L	0.300		95	80-120	9	25	
Matrix Spike (2209736-MS1)				**Source: 22K0375-02**	Prepared & Analyzed: 11/11/22						
Total Phosphorus as P	0.313	0.023	0.050	mg/L	0.300	ND	104	75-125			

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209736 - General Preparation											
Matrix Spike Dup (2209736-MSD1)			**Source: 22K0375-02**		Prepared & Analyzed: 11/11/22						
Total Phosphorus as P	0.322	0.023	0.050	mg/L	0.300	ND	107	75-125	3	30	
Batch 2209763 - General Preparation											
Blank (2209763-BLK1)					Prepared & Analyzed: 11/11/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2209763-BS1)					Prepared & Analyzed: 11/11/22						
Total Kjeldahl Nitrogen	0.662	0.040	0.20	mg/L	0.500		132	80-120			QM-1
LCS Dup (2209763-BSD1)					Prepared & Analyzed: 11/11/22						
Total Kjeldahl Nitrogen	0.616	0.040	0.20	mg/L	0.500		123	80-120	7	20	QM-1
Matrix Spike (2209763-MS1)			**Source: 22K0519-01**		Prepared & Analyzed: 11/11/22						
Total Kjeldahl Nitrogen	0.886	0.040	0.20	mg/L	0.500	0.418	94	75-125			
Matrix Spike Dup (2209763-MSD1)			**Source: 22K0519-01**		Prepared & Analyzed: 11/11/22						
Total Kjeldahl Nitrogen	0.837	0.040	0.20	mg/L	0.500	0.418	84	75-125	6	25	
Batch 2209778 - General Preparation											
Blank (2209778-BLK1)					Prepared: 11/11/22 Analyzed: 11/14/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0519
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209778 - General Preparation											
Duplicate (2209778-DUP1)				**Source: 22K0490-01**	Prepared: 11/11/22 Analyzed: 11/14/22						
Total Alkalinity	67.4	1.0	5.0	mg/L		73.8			9	20	
Bicarbonate as CaCO3	67.4	0.50	5.0	"		73.8			9	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K0519**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209670 - EPA 3510B GCNV											
Blank (2209670-BLK1)					Prepared & Analyzed: 11/09/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Surrogate: o-Terphenyl	*0.0193*			*"*	*0.0250*		*77*	*65-135*			
LCS (2209670-BS1)					Prepared & Analyzed: 11/09/22						
Diesel	2.20	0.0021	0.050	mg/L	2.50		88	65-135			
Surrogate: o-Terphenyl	*0.0259*			*"*	*0.0250*		*104*	*65-135*			
LCS Dup (2209670-BSD1)					Prepared & Analyzed: 11/09/22						
Diesel	1.90	0.0021	0.050	mg/L	2.50		76	65-135	15	30	
Surrogate: o-Terphenyl	*0.0172*			*"*	*0.0250*		*69*	*65-135*			

11/17/22 13:05

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0519
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209678 - EPA 200 Series											
Blank (2209678-BLK1)					Prepared: 11/10/22 Analyzed: 11/15/22						
Aluminum	1.58	1.6	20	µg/L							J
Barium	ND	0.14	5.0	"							
Manganese	0.110	0.050	2.0	"							J
Silver	ND	0.070	0.50	"							
LCS (2209678-BS1)					Prepared: 11/10/22 Analyzed: 11/15/22						
Aluminum	491	1.6	20	µg/L	500		98	85-115			
Barium	110	0.14	5.0	"	100		110	85-115			
Manganese	105	0.050	2.0	"	100		105	85-115			
Silver	107	0.070	0.50	"	100		107	85-115			
Matrix Spike (2209678-MS1)			**Source: 22K0477-01**		Prepared: 11/10/22 Analyzed: 11/15/22						
Aluminum	496	1.6	20	µg/L	500	8.88	97	70-130			
Barium	131	0.14	5.0	"	100	21.1	110	70-130			
Manganese	103	0.050	2.0	"	100	0.659	102	70-130			
Silver	106	0.070	0.50	"	100	ND	106	70-130			
Matrix Spike (2209678-MS2)			**Source: 22K0537-01**		Prepared: 11/10/22 Analyzed: 11/14/22						
Aluminum	499	1.6	20	µg/L	500	25.9	95	70-130			
Barium	197	0.14	5.0	"	100	90.0	107	70-130			
Manganese	96.4	0.050	2.0	"	100	0.299	96	70-130			
Silver	102	0.070	0.50	"	100	ND	102	70-130			
Batch 2209680 - EPA 200 Series											
Blank (2209680-BLK1)					Prepared: 11/10/22 Analyzed: 11/11/22						
Calcium	ND	27	1000	µg/L							
Iron	ND	9.1	100	"							
Magnesium	ND	21	1000	"							
Potassium	547	61	1000	"							J
Sodium	93.9	34	1000	"							J

11/17/22 13:05

Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0519
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209680 - EPA 200 Series											
LCS (2209680-BS1)					Prepared: 11/10/22 Analyzed: 11/11/22						
Calcium	5320	27	1000	µg/L	5000		106	85-115			
Iron	517	9.1	100	"	500		103	85-115			
Magnesium	5220	21	1000	"	5000		104	85-115			
Potassium	5390	61	1000	"	5000		108	85-115			
Sodium	4840	34	1000	"	5000		97	85-115			
Matrix Spike (2209680-MS1)			**Source: 22K0475-01**		Prepared: 11/10/22 Analyzed: 11/11/22						
Calcium	8690	27	1000	µg/L	5000	3210	110	70-130			
Iron	1670	9.1	100	"	500	1090	115	70-130			
Magnesium	5990	21	1000	"	5000	694	106	70-130			
Potassium	6030	61	1000	"	5000	1030	100	70-130			
Sodium	8240	34	1000	"	5000	3730	90	70-130			
Matrix Spike (2209680-MS2)			**Source: 22K0490-01**		Prepared: 11/10/22 Analyzed: 11/11/22						
Calcium	15800	27	1000	µg/L	5000	11200	93	70-130			
Iron	721	9.1	100	"	500	247	95	70-130			
Magnesium	12400	21	1000	"	5000	7730	94	70-130			
Potassium	7320	61	1000	"	5000	2820	90	70-130			
Sodium	9120	34	1000	"	5000	7380	35	70-130			QM-7

11/17/22 13:05

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0519
COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209825 - EPA 200 No Digestion											
Blank (2209825-BLK1)					Prepared & Analyzed: 11/14/22						
Aluminum	ND	0.52	20	µg/L							
Silver	ND	0.15	0.50	"							
LCS (2209825-BS1)					Prepared & Analyzed: 11/14/22						
Aluminum	435	0.52	20	µg/L	500		87	85-115			
Silver	95.8	0.15	0.50	"	100		96	85-115			
Matrix Spike (2209825-MS1)			**Source: 22K0519-01**		Prepared & Analyzed: 11/14/22						
Aluminum	455	0.52	20	µg/L	500	10.6	89	70-130			
Silver	95.1	0.15	0.50	"	100	ND	95	70-130			
Batch 2209826 - EPA 200 No Digestion											
Blank (2209826-BLK1)					Prepared: 11/14/22 Analyzed: 11/15/22						
Iron	ND	6.8	100	µg/L							
LCS (2209826-BS1)					Prepared: 11/14/22 Analyzed: 11/15/22						
Iron	490	6.8	100	µg/L	500		98	85-115			
Matrix Spike (2209826-MS1)			**Source: 22K0475-02**		Prepared: 11/14/22 Analyzed: 11/15/22						
Iron	499	6.8	100	µg/L	500	ND	100	70-130			
Matrix Spike (2209826-MS2)			**Source: 22K0590-01**		Prepared: 11/14/22 Analyzed: 11/15/22						
Iron	487	6.8	100	µg/L	500	ND	97	70-130			

11/17/22 13:05

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0519
COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209715 - EPA 5030 Water GC											
Blank (2209715-BLK1)					Prepared: 11/10/22 Analyzed: 11/11/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*15.8*			"	*20.0*		*79*	*65-135*			
LCS (2209715-BS1)					Prepared: 11/10/22 Analyzed: 11/11/22						
Gasoline	512	10	50	µg/L	500		102	70-130			
Surrogate: o-Chlorotoluene (Gas)	*14.9*			"	*20.0*		*75*	*65-135*			
LCS Dup (2209715-BSD1)					Prepared: 11/10/22 Analyzed: 11/11/22						
Gasoline	476	10	50	µg/L	500		95	70-130	7	30	
Surrogate: o-Chlorotoluene (Gas)	*16.5*			"	*20.0*		*83*	*65-135*			
Matrix Spike (2209715-MS1)				**Source: 22K0375-03**	Prepared: 11/10/22 Analyzed: 11/11/22						
Gasoline	467	10	50	µg/L	500	ND	93	68-132			
Surrogate: o-Chlorotoluene (Gas)	*15.8*			"	*20.0*		*79*	*65-135*			
Matrix Spike Dup (2209715-MSD1)				**Source: 22K0375-03**	Prepared: 11/10/22 Analyzed: 11/11/22						
Gasoline	448	10	50	µg/L	500	ND	90	68-132	4	32	
Surrogate: o-Chlorotoluene (Gas)	*14.5*			"	*20.0*		*72*	*65-135*			

11/17/22 13:05

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0519
COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209735 - EPA 3510B GCMS											
Blank (2209735-BLK1)					Prepared & Analyzed: 11/09/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Benzene	ND	0.11	0.50	"							
Toluene	ND	0.11	0.50	"							
Ethylbenzene	ND	0.10	0.50	"							
Xylenes (total)	ND	0.33	1.0	"							
Surrogate: Toluene-d8	*9.69*			*"*	*10.0*		*97*	*72-125*			
LCS (2209735-BS1)					Prepared & Analyzed: 11/09/22						
Methyl tert-butyl ether	20.3	0.095	0.50	µg/L	20.0		102	52-130			
Benzene	16.0	0.11	0.50	"	20.0		80	52-130			
Surrogate: Toluene-d8	*9.85*			*"*	*10.0*		*99*	*72-125*			
LCS Dup (2209735-BSD1)					Prepared & Analyzed: 11/09/22						
Methyl tert-butyl ether	20.6	0.095	0.50	µg/L	20.0		103	52-130	1	30	
Benzene	18.1	0.11	0.50	"	20.0		90	52-130	12	30	
Surrogate: Toluene-d8	*9.93*			*"*	*10.0*		*99*	*72-125*			
Matrix Spike (2209735-MS1)			**Source: 22K0375-01**		Prepared & Analyzed: 11/09/22						
Methyl tert-butyl ether	25.7	0.095	0.50	µg/L	20.0	ND	128	52-140			
Benzene	24.0	0.11	0.50	"	20.0	ND	120	52-140			
Surrogate: Toluene-d8	*10.2*			*"*	*10.0*		*102*	*72-125*			
Matrix Spike Dup (2209735-MSD1)			**Source: 22K0375-01**		Prepared & Analyzed: 11/09/22						
Methyl tert-butyl ether	28.4	0.095	0.50	µg/L	20.0	ND	142	52-140	10	30	QM-7
Benzene	24.9	0.11	0.50	"	20.0	ND	124	52-140	3	30	
Surrogate: Toluene-d8	*10.0*			*"*	*10.0*		*100*	*72-125*			

11/17/22 13:05

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K0519**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
QM-1	The spike recovery was outside acceptance limits for the LCS or LCSD. The batch was accepted based on acceptable MS/MSD recoveries & RPD's.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22K0579 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager: Emily Applequist eapplequist@stillwatersci.com

Project Name: SMUD In situ & Chemistry Monitoring

Sampled By: Bethany Leach, Esther A.

Job Description: Monitor water chemistry in UARP reaches

Site Location: Upper American River Project Sites

Client Job Number: 750.10 Task 0620.01

Destination Laboratory: Rancho Cordova

[x] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [x] NO [ ]

GLOBAL ID

FIELD CONDITIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES ▼	TSS, TDS, Hardness, Alkalinity, NO2-N+NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
11/8/22	0900	IS-15-SFAR		Surface water			6	X	X	X	X	X	X	X				X	
11/8/22	0930	IS-16-SFAR		Surface water			6	X	X	X	X	X	X	X				X	
11/8/22	1100	IS-19-SFAR		Surface water			6	X	X	X	X	X	X	X				X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	INVOICE TO
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	Project No. 750.10 Task 0620.01
				Surface water			6											X	QUOTE#

ANALYSIS REQUESTED

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (2) HNO_3 (3) = COLD (4)= H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Bethany Leach / Stillwater	11/8/13:05		
RECEIVED AT LAB BY:		DATE/TIME 11/8 1325	CONDITIONS/COMMENTS: 4.6 / 3.9	
SHIPPED BY:	[ ] FED EX [ ] UPS [ ] OTHER		AIR BILL #	

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

November 17, 2022

CLS Work Order #: 22K0592
COC #:

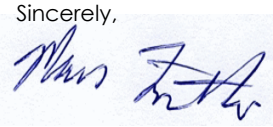
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 11/09/22 14:25. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

11/17/22 13:09

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0592
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-18-SFAR (22K0592-01) Water	**Sampled: 11/09/22 10:00**		**Received: 11/09/22 14:25**							
Ammonia as N	**0.055**	0.025	0.10	mg/L	1	2209769	11/11/22	11/11/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**17**	0.50	5.0	"	"	2209778	11/11/22	11/14/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**2.0**	0.026	0.50	"	"	2209681	11/10/22	11/10/22	EPA 300.0	
Cyanide (total)	**0.0020**	0.0012	0.0050	"	"	2209854	11/15/22	11/16/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209761	11/11/22	11/15/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209778	11/11/22	11/14/22	SM2320B	
Nitrate/Nitrite as N	**0.079**	0.055	0.40	"	"	2209681	11/10/22	11/10/22	EPA 300.0	J
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2209698	11/10/22	11/10/22	SM4500-P E	
Sulfate as SO4	**2.7**	0.038	0.50	"	"	2209681	11/10/22	11/10/22	EPA 300.0	
Total Alkalinity	**17**	1.0	5.0	"	"	2209778	11/11/22	11/14/22	SM2320B	
Total Dissolved Solids	**43**	5.0	10	"	"	2209774	11/11/22	11/11/22	SM2540C	
Total Hardness as CaCO3	**17**	0.19	1.0	"	"	2209754	11/11/22	11/14/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.16**	0.040	0.20	"	"	2209821	11/14/22	11/14/22	SM4500-NH3F-2011	J
Total Organic Carbon	**3.9**	0.54	1.0	"	"	2209685	11/10/22	11/11/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209736	11/11/22	11/11/22	SM4500-P E	
Total Suspended Solids	**3.0**	2.0	5.0	"	"	2209855	11/15/22	11/16/22	SM2540D	J

11/17/22 13:09

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0592
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-18-SFAR (22K0592-01) Water Sampled: 11/09/22 10:00 Received: 11/09/22 14:25										
Diesel	ND	0.0021	0.050	mg/L	1	2209814	11/14/22	11/14/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
JP-5/JP-8	ND	0.020	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*65 %*		*65-135*	"	"	"	"	

11/17/22 13:09

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0592
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-18-SFAR (22K0592-01) Water	**Sampled: 11/09/22 10:00**		**Received: 11/09/22 14:25**							
Aluminum	**130**	1.6	20	µg/L	1	2209747	11/11/22	11/14/22	EPA 200.8	
Barium	**17**	0.14	5.0	"	"	"	"	"	"	
Calcium	**4100**	27	1000	"	"	2209754	11/11/22	11/14/22	EPA 200.7	
Iron	**270**	9.1	100	"	"	"	"	"	"	
Magnesium	**1600**	21	1000	"	"	"	"	"	"	
Manganese	**23**	0.050	2.0	"	"	2209747	11/11/22	11/14/22	EPA 200.8	
Potassium	**970**	61	1000	"	"	2209754	11/11/22	11/14/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209747	11/11/22	11/14/22	EPA 200.8	
Sodium	**2200**	34	1000	"	"	2209754	11/11/22	11/16/22	EPA 200.7	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K0592**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-18-SFAR (22K0592-01) Water	**Sampled: 11/09/22 10:00**		**Received: 11/09/22 14:25**							
Aluminum	**15**	0.52	20	µg/L	1	2209825	11/14/22	11/14/22	EPA 200.8	J
Iron	**33**	6.8	100	"	"	2209826	11/14/22	11/15/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2209825	11/14/22	11/14/22	EPA 200.8	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K0592**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-18-SFAR (22K0592-01) Water Sampled: 11/09/22 10:00 Received: 11/09/22 14:25										
Gasoline	ND	10	50	µg/L	1	2209715	11/10/22	11/11/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*70 %*		*65-135*		"	"	"	"

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Project Manager: Emily Applequist

CLS Work Order #: 22K0592
COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-18-SFAR (22K0592-01) Water	**Sampled: 11/09/22 10:00**		**Received: 11/09/22 14:25**							
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209794	11/10/22	11/10/22	EPA 8260B	
Surrogate: Toluene-d8			*98 %*		*72-125*		"	"	"	"

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Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0592
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209681 - General Prep											
Blank (2209681-BLK1)					Prepared & Analyzed: 11/10/22						
Sulfate as SO4	ND	0.038	0.50	mg/L							
Chloride	ND	0.026	0.50	"							
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2209681-BS1)					Prepared & Analyzed: 11/10/22						
Sulfate as SO4	4.85	0.038	0.50	mg/L	5.00		97	80-120			
Chloride	4.81	0.026	0.50	"	5.00		96	80-120			
Nitrate/Nitrite as N	4.19	0.055	0.40	"	4.00		105	80-120			
LCS Dup (2209681-BSD1)					Prepared & Analyzed: 11/10/22						
Chloride	4.80	0.026	0.50	mg/L	5.00		96	80-120	0.2	20	
Sulfate as SO4	4.90	0.038	0.50	"	5.00		98	80-120	1	20	
Nitrate/Nitrite as N	4.18	0.055	0.40	"	4.00		104	80-120	0.2	20	
Matrix Spike (2209681-MS1)			**Source: 22K0590-01**		Prepared & Analyzed: 11/10/22						
Chloride	35.3	0.026	0.50	mg/L	5.00	2.21	662	80-120			QM-7
Sulfate as SO4	13.4	0.038	0.50	"	5.00	0.776	252	80-120			QM-7
Nitrate/Nitrite as N	6.21	0.055	0.40	"	4.00	ND	155	80-120			QM-7
Matrix Spike Dup (2209681-MSD1)			**Source: 22K0590-01**		Prepared & Analyzed: 11/10/22						
Chloride	35.4	0.026	0.50	mg/L	5.00	2.21	664	80-120	0.3	20	QM-7
Sulfate as SO4	13.4	0.038	0.50	"	5.00	0.776	253	80-120	0.5	20	QM-7
Nitrate/Nitrite as N	6.26	0.055	0.40	"	4.00	ND	156	80-120	0.8	20	QM-7
Batch 2209685 - General Preparation											
Blank (2209685-BLK1)					Prepared & Analyzed: 11/10/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							

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CLS Work Order #: 22K0592
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209685 - General Preparation											
LCS (2209685-BS1)					Prepared & Analyzed: 11/10/22						
Total Organic Carbon	10.5	0.54	1.0	mg/L	10.0		105	75-125			
LCS Dup (2209685-BSD1)					Prepared & Analyzed: 11/10/22						
Total Organic Carbon	10.4	0.54	1.0	mg/L	10.0		104	75-125	0.9	25	
Matrix Spike (2209685-MS1)			**Source: 22K0590-01**		Prepared: 11/10/22 Analyzed: 11/11/22						
Total Organic Carbon	19.6	0.54	1.0	mg/L	10.0	2.17	175	75-125			QM-7
Matrix Spike Dup (2209685-MSD1)			**Source: 22K0590-01**		Prepared: 11/10/22 Analyzed: 11/11/22						
Total Organic Carbon	21.2	0.54	1.0	mg/L	10.0	2.17	190	75-125	8	25	QM-7
Batch 2209698 - General Preparation											
Blank (2209698-BLK1)					Prepared & Analyzed: 11/10/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							
LCS (2209698-BS1)					Prepared & Analyzed: 11/10/22						
Orthophosphate as PO4	0.912	0.0051	0.15	mg/L	0.918		99	80-120			
LCS Dup (2209698-BSD1)					Prepared & Analyzed: 11/10/22						
Orthophosphate as PO4	0.850	0.0051	0.15	mg/L	0.918		93	80-120	7	20	
Matrix Spike (2209698-MS1)			**Source: 22K0590-01**		Prepared & Analyzed: 11/10/22						
Orthophosphate as PO4	0.879	0.0051	0.15	mg/L	0.918	ND	96	75-125			
Matrix Spike Dup (2209698-MSD1)			**Source: 22K0590-01**		Prepared & Analyzed: 11/10/22						
Orthophosphate as PO4	0.858	0.0051	0.15	mg/L	0.918	ND	93	75-125	2	25	

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CLS Work Order #: 22K0592
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209736 - General Preparation											
Blank (2209736-BLK1)					Prepared & Analyzed: 11/11/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2209736-BS1)					Prepared & Analyzed: 11/11/22						
Total Phosphorus as P	0.313	0.023	0.050	mg/L	0.300		104	80-120			
LCS Dup (2209736-BSD1)					Prepared & Analyzed: 11/11/22						
Total Phosphorus as P	0.286	0.023	0.050	mg/L	0.300		95	80-120	9	25	
Matrix Spike (2209736-MS1)			**Source: 22K0375-02**		Prepared & Analyzed: 11/11/22						
Total Phosphorus as P	0.313	0.023	0.050	mg/L	0.300	ND	104	75-125			
Matrix Spike Dup (2209736-MSD1)			**Source: 22K0375-02**		Prepared & Analyzed: 11/11/22						
Total Phosphorus as P	0.322	0.023	0.050	mg/L	0.300	ND	107	75-125	3	30	
Batch 2209754 - EPA 200 Series											
Blank (2209754-BLK1)					Prepared: 11/11/22 Analyzed: 11/14/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2209754-BS1)					Prepared: 11/11/22 Analyzed: 11/14/22						
Total Hardness as CaCO3	33.9	0.19	1.0	mg/L	33.1		102	85-115			
Matrix Spike (2209754-MS1)			**Source: 22K0558-01**		Prepared: 11/11/22 Analyzed: 11/14/22						
Total Hardness as CaCO3	46.1	0.19	1.0	mg/L	33.1	13.2	99	70-130			
Matrix Spike (2209754-MS2)			**Source: 22K0635-02**		Prepared: 11/11/22 Analyzed: 11/14/22						
Total Hardness as CaCO3	190	0.19	1.0	mg/L	33.1	152	113	70-130			

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COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209761 - Solvent Extract											
Blank (2209761-BLK1)					Prepared: 11/11/22 Analyzed: 11/15/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2209761-BS1)					Prepared: 11/11/22 Analyzed: 11/15/22						
Hexane Extractable Material (HEM, Oil & Grease)	37.4	1.0	5.0	mg/L	40.0		94	78-114			
LCS Dup (2209761-BSD1)					Prepared: 11/11/22 Analyzed: 11/15/22						
Hexane Extractable Material (HEM, Oil & Grease)	37.1	1.0	5.0	mg/L	40.0		93	78-114	0.8	18	
Batch 2209769 - General Preparation											
Blank (2209769-BLK1)					Prepared & Analyzed: 11/11/22						
Ammonia as N	ND	0.025	0.10	mg/L							
LCS (2209769-BS1)					Prepared & Analyzed: 11/11/22						
Ammonia as N	0.559	0.025	0.10	mg/L	0.500		112	80-120			
LCS Dup (2209769-BSD1)					Prepared & Analyzed: 11/11/22						
Ammonia as N	0.596	0.025	0.10	mg/L	0.500		119	80-120	6	25	
Matrix Spike (2209769-MS1)			**Source: 22K0590-01**		Prepared & Analyzed: 11/11/22						
Ammonia as N	0.653	0.025	0.10	mg/L	0.500	0.0390	123	75-125			
Matrix Spike Dup (2209769-MSD1)			**Source: 22K0590-01**		Prepared & Analyzed: 11/11/22						
Ammonia as N	0.583	0.025	0.10	mg/L	0.500	0.0390	109	75-125	11	25	
Batch 2209774 - General Preparation											
Blank (2209774-BLK1)					Prepared & Analyzed: 11/11/22						
Total Dissolved Solids	ND	5.0	10	mg/L							

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CLS Work Order #: 22K0592
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209774 - General Preparation											
Duplicate (2209774-DUP1)			**Source: 22K0590-01**		Prepared & Analyzed: 11/11/22						
Total Dissolved Solids	17.0	5.0	10	mg/L		19.0			11	20	
Batch 2209778 - General Preparation											
Blank (2209778-BLK1)					Prepared: 11/11/22 Analyzed: 11/14/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Duplicate (2209778-DUP1)			**Source: 22K0490-01**		Prepared: 11/11/22 Analyzed: 11/14/22						
Total Alkalinity	67.4	1.0	5.0	mg/L		73.8			9	20	
Bicarbonate as CaCO3	67.4	0.50	5.0	"		73.8			9	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Batch 2209821 - General Preparation											
Blank (2209821-BLK1)					Prepared & Analyzed: 11/14/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2209821-BS1)					Prepared & Analyzed: 11/14/22						
Total Kjeldahl Nitrogen	0.506	0.040	0.20	mg/L	0.500		101	80-120			
LCS Dup (2209821-BSD1)					Prepared & Analyzed: 11/14/22						
Total Kjeldahl Nitrogen	0.461	0.040	0.20	mg/L	0.500		92	80-120	9	20	

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CLS Work Order #: 22K0592
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209821 - General Preparation											
Matrix Spike (2209821-MS1)			**Source: 22K0592-01**		Prepared & Analyzed: 11/14/22						
Total Kjeldahl Nitrogen	0.689	0.040	0.20	mg/L	0.500	0.162	105	75-125			
Matrix Spike Dup (2209821-MSD1)			**Source: 22K0592-01**		Prepared & Analyzed: 11/14/22						
Total Kjeldahl Nitrogen	0.656	0.040	0.20	mg/L	0.500	0.162	99	75-125	5	25	
Batch 2209854 - General Preparation											
Blank (2209854-BLK1)					Prepared: 11/15/22 Analyzed: 11/16/22						
Cyanide (total)	0.00270	0.0012	0.0050	mg/L							J
LCS (2209854-BS1)					Prepared: 11/15/22 Analyzed: 11/16/22						
Cyanide (total)	0.0752	0.0012	0.0050	mg/L	0.100		75	75-125			
LCS Dup (2209854-BSD1)					Prepared: 11/15/22 Analyzed: 11/16/22						
Cyanide (total)	0.0767	0.0012	0.0050	mg/L	0.100		77	75-125	2	25	
Matrix Spike (2209854-MS1)			**Source: 22K0590-01**		Prepared: 11/15/22 Analyzed: 11/16/22						
Cyanide (total)	0.0763	0.0012	0.0050	mg/L	0.100	0.00230	74	75-125			QM-7
Matrix Spike Dup (2209854-MSD1)			**Source: 22K0590-01**		Prepared: 11/15/22 Analyzed: 11/16/22						
Cyanide (total)	0.0792	0.0012	0.0050	mg/L	0.100	0.00230	77	75-125	4	25	
Batch 2209855 - General Preparation											
Duplicate (2209855-DUP1)			**Source: 22K0558-01**		Prepared: 11/15/22 Analyzed: 11/16/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	

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CLS Work Order #: 22K0592
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209814 - EPA 3510B GCNV											
Blank (2209814-BLK1)					Prepared & Analyzed: 11/14/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
JP-5/JP-8	ND	0.020	0.050	"							
Surrogate: o-Terphenyl	*0.0267*			"	*0.0250*		*107*	*65-135*			
LCS (2209814-BS1)					Prepared & Analyzed: 11/14/22						
Diesel	1.68	0.0021	0.050	mg/L	2.50		67	65-135			
Surrogate: o-Terphenyl	*0.0184*			"	*0.0250*		*74*	*65-135*			
LCS Dup (2209814-BSD1)					Prepared & Analyzed: 11/14/22						
Diesel	1.64	0.0021	0.050	mg/L	2.50		65	65-135	3	30	
Surrogate: o-Terphenyl	*0.0199*			"	*0.0250*		*80*	*65-135*			
Matrix Spike (2209814-MS1)			**Source: 22K0665-01**		Prepared & Analyzed: 11/14/22						
Diesel	1.45	0.0021	0.050	mg/L	2.50	ND	58	46-137			
Surrogate: o-Terphenyl	*0.0142*			"	*0.0250*		*57*	*65-135*			*QS-4*
Matrix Spike Dup (2209814-MSD1)			**Source: 22K0665-01**		Prepared & Analyzed: 11/14/22						
Diesel	1.47	0.0021	0.050	mg/L	2.50	ND	59	46-137	2	30	
Surrogate: o-Terphenyl	*0.0174*			"	*0.0250*		*70*	*65-135*			

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CLS Work Order #: 22K0592
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209747 - EPA 200 Series											
Blank (2209747-BLK1)					Prepared: 11/11/22 Analyzed: 11/14/22						
Aluminum	ND	1.6	20	µg/L							
Barium	ND	0.14	5.0	"							
Manganese	ND	0.050	2.0	"							
Silver	ND	0.070	0.50	"							
LCS (2209747-BS1)					Prepared: 11/11/22 Analyzed: 11/14/22						
Aluminum	473	1.6	20	µg/L	500		95	85-115			
Barium	108	0.14	5.0	"	100		108	85-115			
Manganese	97.7	0.050	2.0	"	100		98	85-115			
Silver	101	0.070	0.50	"	100		101	85-115			
Matrix Spike (2209747-MS1)			**Source: 22K0535-01**		Prepared: 11/11/22 Analyzed: 11/14/22						
Aluminum	560	1.6	20	µg/L	500	94.0	93	70-130			
Barium	111	0.14	5.0	"	100	3.61	107	70-130			
Manganese	104	0.050	2.0	"	100	8.59	95	70-130			
Silver	101	0.070	0.50	"	100	ND	101	70-130			
Matrix Spike (2209747-MS2)			**Source: 22K0592-01**		Prepared: 11/11/22 Analyzed: 11/14/22						
Aluminum	593	1.6	20	µg/L	500	128	93	70-130			
Barium	120	0.14	5.0	"	100	16.6	104	70-130			
Manganese	115	0.050	2.0	"	100	23.2	91	70-130			
Silver	98.0	0.070	0.50	"	100	ND	98	70-130			
Batch 2209754 - EPA 200 Series											
Blank (2209754-BLK1)					Prepared: 11/11/22 Analyzed: 11/14/22						
Calcium	ND	27	1000	µg/L							
Iron	ND	9.1	100	"							
Magnesium	ND	21	1000	"							
Potassium	476	61	1000	"							J
Sodium	77.2	34	1000	"							J

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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209754 - EPA 200 Series											
LCS (2209754-BS1)					Prepared: 11/11/22 Analyzed: 11/14/22						
Calcium	5050	27	1000	µg/L	5000		101	85-115			
Iron	501	9.1	100	"	500		100	85-115			
Magnesium	5150	21	1000	"	5000		103	85-115			
Potassium	5470	61	1000	"	5000		109	85-115			
Sodium	4800	34	1000	"	5000		96	85-115			
Matrix Spike (2209754-MS1)			**Source: 22K0558-01**		Prepared: 11/11/22 Analyzed: 11/14/22						
Calcium	7890	27	1000	µg/L	5000	3200	94	70-130			
Iron	466	9.1	100	"	500	ND	93	70-130			
Magnesium	6390	21	1000	"	5000	1270	102	70-130			
Potassium	5200	61	1000	"	5000	360	97	70-130			
Sodium	6060	34	1000	"	5000	2870	64	70-130			QM-7
Matrix Spike (2209754-MS2)			**Source: 22K0635-02**		Prepared: 11/11/22 Analyzed: 11/14/22						
Calcium	51000	27	1000	µg/L	5000	45400	110	70-130			
Iron	1430	9.1	100	"	500	914	102	70-130			
Magnesium	15100	21	1000	"	5000	9360	114	70-130			
Potassium	8660	61	1000	"	5000	3280	108	70-130			
Sodium	13100	34	1000	"	5000	8410	94	70-130			

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22K0592
COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209825 - EPA 200 No Digestion											
Blank (2209825-BLK1)					Prepared & Analyzed: 11/14/22						
Aluminum	ND	0.52	20	µg/L							
Silver	ND	0.15	0.50	"							
LCS (2209825-BS1)					Prepared & Analyzed: 11/14/22						
Aluminum	435	0.52	20	µg/L	500		87	85-115			
Silver	95.8	0.15	0.50	"	100		96	85-115			
Matrix Spike (2209825-MS1)			**Source: 22K0519-01**		Prepared & Analyzed: 11/14/22						
Aluminum	455	0.52	20	µg/L	500	10.6	89	70-130			
Silver	95.1	0.15	0.50	"	100	ND	95	70-130			
Batch 2209826 - EPA 200 No Digestion											
Blank (2209826-BLK1)					Prepared: 11/14/22 Analyzed: 11/15/22						
Iron	ND	6.8	100	µg/L							
LCS (2209826-BS1)					Prepared: 11/14/22 Analyzed: 11/15/22						
Iron	490	6.8	100	µg/L	500		98	85-115			
Matrix Spike (2209826-MS1)			**Source: 22K0475-02**		Prepared: 11/14/22 Analyzed: 11/15/22						
Iron	499	6.8	100	µg/L	500	ND	100	70-130			
Matrix Spike (2209826-MS2)			**Source: 22K0590-01**		Prepared: 11/14/22 Analyzed: 11/15/22						
Iron	487	6.8	100	µg/L	500	ND	97	70-130			

11/17/22 13:09

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0592
COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209715 - EPA 5030 Water GC											
Blank (2209715-BLK1)					Prepared: 11/10/22 Analyzed: 11/11/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*15.8*			*"*	*20.0*		*79*	*65-135*			
LCS (2209715-BS1)					Prepared: 11/10/22 Analyzed: 11/11/22						
Gasoline	512	10	50	µg/L	500		102	70-130			
Surrogate: o-Chlorotoluene (Gas)	*14.9*			*"*	*20.0*		*75*	*65-135*			
LCS Dup (2209715-BSD1)					Prepared: 11/10/22 Analyzed: 11/11/22						
Gasoline	476	10	50	µg/L	500		95	70-130	7	30	
Surrogate: o-Chlorotoluene (Gas)	*16.5*			*"*	*20.0*		*83*	*65-135*			
Matrix Spike (2209715-MS1)				**Source: 22K0375-03**	Prepared: 11/10/22 Analyzed: 11/11/22						
Gasoline	467	10	50	µg/L	500	ND	93	68-132			
Surrogate: o-Chlorotoluene (Gas)	*15.8*			*"*	*20.0*		*79*	*65-135*			
Matrix Spike Dup (2209715-MSD1)				**Source: 22K0375-03**	Prepared: 11/10/22 Analyzed: 11/11/22						
Gasoline	448	10	50	µg/L	500	ND	90	68-132	4	32	
Surrogate: o-Chlorotoluene (Gas)	*14.5*			*"*	*20.0*		*72*	*65-135*			

11/17/22 13:09

Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0592
COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209794 - EPA 3510B GCMS											
Blank (2209794-BLK1)					Prepared & Analyzed: 11/10/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Surrogate: Toluene-d8	*9.74*			"	*10.0*		*97*	*72-125*			
LCS (2209794-BS1)					Prepared & Analyzed: 11/10/22						
Methyl tert-butyl ether	22.5	0.095	0.50	µg/L	20.0		112	52-130			
Surrogate: Toluene-d8	*9.94*			"	*10.0*		*99*	*72-125*			
LCS Dup (2209794-BSD1)					Prepared & Analyzed: 11/10/22						
Methyl tert-butyl ether	21.7	0.095	0.50	µg/L	20.0		109	52-130	3	30	
Surrogate: Toluene-d8	*9.92*			"	*10.0*		*99*	*72-125*			
Matrix Spike (2209794-MS1)			**Source: 22K0649-01**		Prepared: 11/10/22 Analyzed: 11/11/22						
Methyl tert-butyl ether	13.7	0.095	0.50	µg/L	20.0	ND	69	52-140			
Surrogate: Toluene-d8	*10.3*			"	*10.0*		*103*	*72-125*			
Matrix Spike Dup (2209794-MSD1)			**Source: 22K0649-01**		Prepared: 11/10/22 Analyzed: 11/11/22						
Methyl tert-butyl ether	14.2	0.095	0.50	µg/L	20.0	ND	71	52-140	3	30	
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			

11/17/22 13:09

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K0592**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QS-4	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 2210592 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By
BJL ERA

Job Description
Monitor water chemistry in UARP reaches.

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[X] **CLS** (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] **OTHER**

GEOTRACKER

EDF REPORT YES [X] NO [ ]

GLOBAL ID:

FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	CONTAINER MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	ANALYSIS REQUESTED: Cl, SO4	TSS, TDS, Hardness, Alkalinity, NO2-N+NO3-N, Diss Metals,	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS: 1	2	3	5	SPECIAL INSTRUCTIONS
11/9/22	1000	IS-18-SEAR		Surface water			6	x	x	x	x	x	x	x	x				x	
				Surface water			6												x	
				Surface water			6												x	
				Surface water			6												x	
				Surface water			6												x	
				Surface water			6												x	
				Surface water			6												x	INVOICE TO:
				Surface water			6												x	Stillwater Sciences
				Surface water			6												x	Same as above
				Surface water			6												x	
				Surface water			6												x	**Project No. 750.10 Task 0620.01**
				Surface water			6												x	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
BJL	Bethany Leach / Stillwater	11/9/1425		

RECEIVED AT LAB BY: DOS DATE/TIME: 11/9/22 1425 CONDITIONS/COMMENTS: 07/81

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER _____ AIR BILL # _____

2218 Railroad Avenue
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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02

Lab No: 22K0642
Reported: 01/04/23
Phone: 530-756-7550

Included in this report are laboratory results for work order 22K0642, received on 11/15/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: R-IS-5-UVR
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0642-01
Sampled: 11/14/22 08:45
Received: 11/15/22 10:33

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Copper	ug/l	0.17		0.04	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Mercury	ng/l	0.42	J	0.22	0.50	EPA 1631E	11/27/22	11/27/22	B2K1327 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	12/30/22	12/29/22	B2L1402 / EDM
Nickel	ug/l	0.09	J	0.02	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/30/22	11/21/22	B2K1251 / EDM
Zinc	ug/l	ND		0.12	0.50	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Copper	ug/l	0.16		0.04	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Nickel	ug/l	0.09	J	0.02	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/30/22	11/30/22	B2K1453 / EDM
Zinc	ug/l	0.16	J	0.12	0.50	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM

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Analytical Report

Description: R-IS-6-UVR
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0642-02
Sampled: 11/14/22 10:15
Received: 11/15/22 10:33

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Copper	ug/l	0.17		0.04	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Mercury	ng/l	0.34	J	0.22	0.50	EPA 1631E	11/27/22	11/27/22	B2K1327 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	12/30/22	12/29/22	B2L1402 / EDM
Nickel	ug/l	0.08	J	0.02	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/30/22	11/21/22	B2K1251 / EDM
Zinc	ug/l	ND		0.12	0.50	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Copper	ug/l	0.15		0.04	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Nickel	ug/l	0.06	J	0.02	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/30/22	11/30/22	B2K1453 / EDM
Zinc	ug/l	ND		0.12	0.50	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM

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Analytical Report

Description: R-IS-7-UVR
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0642-03
Sampled: 11/14/22 09:30
Received: 11/15/22 10:33

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Copper	ug/l	0.18		0.04	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Mercury	ng/l	0.34	J	0.22	0.50	EPA 1631E	11/27/22	11/27/22	B2K1327 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	12/30/22	12/29/22	B2L1402 / EDM
Nickel	ug/l	0.09	J	0.02	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/30/22	11/21/22	B2K1251 / EDM
Zinc	ug/l	0.16	J	0.12	0.50	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Copper	ug/l	0.16		0.04	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Nickel	ug/l	0.08	J	0.02	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/30/22	11/30/22	B2K1453 / EDM
Zinc	ug/l	0.19	J	0.12	0.50	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM

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Analytical Report

Description: R-IS-8-UVR
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0642-04
Sampled: 11/14/22 11:45
Received: 11/15/22 10:33

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Copper	ug/l	0.18		0.04	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Mercury	ng/l	0.42	J	0.22	0.50	EPA 1631E	11/27/22	11/27/22	B2K1327 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	12/30/22	12/29/22	B2L1402 / EDM
Nickel	ug/l	0.10		0.02	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/30/22	11/21/22	B2K1251 / EDM
Zinc	ug/l	ND		0.12	0.50	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Copper	ug/l	0.17		0.04	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Nickel	ug/l	0.07	J	0.02	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/30/22	11/30/22	B2K1453 / EDM
Zinc	ug/l	0.13	J	0.12	0.50	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1251 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	202	2.0	ug/l	200		101	85-115			
Duplicate	Source: 22K0331-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22K0717-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22K0331-01									
Selenium	196	2.0	ug/l	200	ND	98.2	75-125			
Matrix Spike	Source: 22K0717-01									
Selenium	199	2.0	ug/l	200	ND	99.4	75-125			
Metals - Total - Redding Location	**Batch B2K1327 - BrCl Digestion**									

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1327 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	10.7	0.50	ng/l	10.0		107	77-123			
Matrix Spike	Source: 22K0331-02									
Mercury	11.3	0.50	ng/l	10.0	0.77	106	71-125			
Matrix Spike	Source: 22K0421-01									
Mercury	11.6	0.50	ng/l	10.0	0.87	108	71-125			
Matrix Spike Dup	Source: 22K0331-02									
Mercury	11.4	0.50	ng/l	10.0	0.77	106	71-125	0.432	24	
Matrix Spike Dup	Source: 22K0421-01									
Mercury	11.9	0.50	ng/l	10.0	0.87	110	71-125	2.19	24	
Metals - Total - Redding Location	**Batch B2L1305 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2L1305 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.1	50-150			
Cadmium	0.24	0.10	ug/l	0.250		96.5	84-113			
Copper	0.23	0.10	ug/l	0.250		91.2	51-145			
Lead	0.121	0.050	ug/l	0.125		96.6	72-143			
Nickel	0.24	0.10	ug/l	0.250		94.7	68-134			
Zinc	1.19	0.50	ug/l	1.25		95.4	46-146			
LCS										
Arsenic	1.17	0.50	ug/l	1.25		93.7	50-150			
Cadmium	0.23	0.10	ug/l	0.250		92.0	84-113			
Copper	0.23	0.10	ug/l	0.250		92.5	51-145			
Lead	0.120	0.050	ug/l	0.125		96.3	72-143			
Nickel	0.26	0.10	ug/l	0.250		103	68-134			
Zinc	1.18	0.50	ug/l	1.25		94.2	46-146			
Matrix Spike	Source: 22K0516-01									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.8	84-113			
Copper	0.60	0.10	ug/l	0.500	0.11	97.5	51-145			
Lead	0.265	0.050	ug/l	0.250	0.020	97.8	72-143			
Nickel	0.57	0.10	ug/l	0.500	0.08	98.4	68-134			
Zinc	3.33	0.50	ug/l	2.50	0.95	95.2	46-146			
Matrix Spike	Source: 22K0717-01									
Arsenic	2.41	0.50	ug/l	2.50	ND	96.3	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	100	84-113			
Copper	0.60	0.10	ug/l	0.500	0.12	96.0	51-145			
Lead	0.247	0.050	ug/l	0.250	ND	98.8	72-143			
Nickel	0.53	0.10	ug/l	0.500	0.04	97.5	68-134			
Zinc	2.49	0.50	ug/l	2.50	ND	99.4	46-146			
Matrix Spike Dup	Source: 22K0516-01									
Arsenic	2.37	0.50	ug/l	2.50	ND	94.9	50-150	6.45	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	98.5	84-113	1.77	20	
Copper	0.59	0.10	ug/l	0.500	0.11	95.9	51-145	1.29	20	
Lead	0.258	0.050	ug/l	0.250	0.020	95.1	72-143	2.61	20	
Nickel	0.57	0.10	ug/l	0.500	0.08	97.5	68-134	0.753	20	
Zinc	3.31	0.50	ug/l	2.50	0.95	94.5	46-146	0.558	20	
Matrix Spike Dup	Source: 22K0717-01									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2L1305 - EPA 1638 - Closed Bottle Oven Digestion**									
Arsenic	2.43	0.50	ug/l	2.50	ND	97.0	50-150	0.752	20	
Cadmium	0.47	0.10	ug/l	0.500	ND	94.6	84-113	5.67	20	
Copper	0.63	0.10	ug/l	0.500	0.12	103	51-145	5.26	20	
Lead	0.250	0.050	ug/l	0.250	ND	99.9	72-143	1.07	20	
Nickel	0.53	0.10	ug/l	0.500	0.04	97.6	68-134	0.132	20	
Zinc	2.51	0.50	ug/l	2.50	ND	100	46-146	0.831	20	
Metals - Total - Redding Location	**Batch B2L1402 - EPA 1630 Distillation (Modified)**									
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.21	0.050	ng/l	2.00		111	67-133			
Matrix Spike	Source: 22K0642-01									
Methyl Mercury as Mercury	0.976	0.050	ng/l	1.00	ND	97.6	65-135			
Matrix Spike	Source: 22K0820-04									
Methyl Mercury as Mercury	1.12	0.050	ng/l	1.00	ND	112	65-135			
Matrix Spike Dup	Source: 22K0642-01									
Methyl Mercury as Mercury	1.16	0.050	ng/l	1.00	ND	116	65-135	17.6	35	
Matrix Spike Dup	Source: 22K0820-04									
Methyl Mercury as Mercury	1.17	0.050	ng/l	1.00	ND	117	65-135	4.38	35	
Metals - Dissolved - Redding Location	**Batch B2K1453 - EPA 200.8 Diss**									
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	207	2.0	ug/l	200		104	85-115			
Duplicate	Source: 22K0331-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22K0331-01									
Selenium	209	2.0	ug/l	200	ND	104	75-125			
Metals - Dissolved - Redding Location	**Batch B2L1325 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2L1325 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.27	0.50	ug/l	1.25		102	50-150			
Cadmium	0.26	0.10	ug/l	0.250		103	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.125	0.050	ug/l	0.125		100	72-143			
Nickel	0.26	0.10	ug/l	0.250		103	68-134			
Zinc	1.32	0.50	ug/l	1.25		105	46-146			
LCS										
Arsenic	1.31	0.50	ug/l	1.25		105	50-150			
Cadmium	0.25	0.10	ug/l	0.250		99.3	84-113			
Copper	0.26	0.10	ug/l	0.250		104	51-145			
Lead	0.128	0.050	ug/l	0.125		102	72-143			
Nickel	0.26	0.10	ug/l	0.250		104	68-134			
Zinc	1.37	0.50	ug/l	1.25		110	46-146			
Matrix Spike	Source: 22K0516-01									
Arsenic	2.49	0.50	ug/l	2.50	ND	99.6	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	95.7	84-113			
Copper	0.56	0.10	ug/l	0.500	0.07	99.1	51-145			
Lead	0.253	0.050	ug/l	0.250	ND	101	72-143			
Nickel	0.73	0.10	ug/l	0.500	0.20	105	68-134			
Zinc	3.13	0.50	ug/l	2.50	0.70	96.9	46-146			
Matrix Spike	Source: 22K0717-03									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2L1325 - EPA 1638 - Dissolved**									
Arsenic	2.45	0.50	ug/l	2.50	ND	98.0	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	99.0	84-113			
Copper	0.60	0.10	ug/l	0.500	0.11	98.4	51-145			
Lead	0.242	0.050	ug/l	0.250	ND	96.8	72-143			
Nickel	0.52	0.10	ug/l	0.500	0.04	96.2	68-134			
Zinc	2.50	0.50	ug/l	2.50	ND	100	46-146			
Matrix Spike Dup	Source: 22K0516-01									
Arsenic	2.50	0.50	ug/l	2.50	ND	99.9	50-150	0.283	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	96.3	84-113	0.561	20	
Copper	0.56	0.10	ug/l	0.500	0.07	98.1	51-145	0.874	20	
Lead	0.239	0.050	ug/l	0.250	ND	95.6	72-143	5.51	20	
Nickel	0.70	0.10	ug/l	0.500	0.20	99.5	68-134	3.81	20	
Zinc	3.16	0.50	ug/l	2.50	0.70	98.3	46-146	1.12	20	
Matrix Spike Dup	Source: 22K0717-03									
Arsenic	2.43	0.50	ug/l	2.50	ND	97.0	50-150	1.05	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	95.1	84-113	4.05	20	
Copper	0.59	0.10	ug/l	0.500	0.11	97.4	51-145	0.775	20	
Lead	0.239	0.050	ug/l	0.250	ND	95.5	72-143	1.33	20	
Nickel	0.52	0.10	ug/l	0.500	0.04	97.0	68-134	0.762	20	
Zinc	2.56	0.50	ug/l	2.50	ND	103	46-146	2.30	20	

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	The laboratory does not hold CA-ELAP accreditiation for this analyte or method. Accreditation may not be available from CA-ELAP for this analyte or method.
**	The laboratory holds accreditation for this analyte or method with WA-ECY Lab ID: Lab ID C783. Accreditation is not offered for this method by CA-ELAP
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Accreditations Held:
Redding Location: CA-ELAP - Cert # 1677
Chico Location: CA-ELAP - Cert # 2718

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Analytical Report

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen
Ricky Jensen, Operations Manager
Pace Analytical Services LLC - Redding CA

22K0642

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494
☐ 3860 Morrow Lane, Suite F Chico, CA 95928 (530) 894-8966 FAX: (530) 894-5143

LABORATORY WORK ORDER # 22K0642
PAGE 1 OF 1

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS
279 Cousteau Place, Suite 400
Davis, CA 95618

REPORT TO ☐ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED
☐ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one): ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	11/14/22	08:45 AM PM	SW			R-IS-5-UVR		6	X	X	X	X	X	X
2	11/14/22	10:15 AM PM				R-IS-6-UVR		6	X	X	X	X	X	X
3	11/14/22	09:30 AM PM				R-IS-7-UVR		6	X	X	X	X	X	X
4	11/14/22	11:45 AM PM	↓			R-IS-8-UVR		6	X	X	X	X	X	X
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												

SAMPLED BY: (please print) Jakob Woodall / Bruce Hitch

RELINQUISHED DATE / TIME: 12:45 11/14/2022

SAMPLING / ANALYSIS COMMENTS
(1) Total and Dissolved LL 1638 Metals

☒ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME: Jakob Woodall SIGNATURE: [signature] DATE: 11/14/2022

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB: [signature]	DATE/TIME: 11/15/22 1033	LOGGED BY LAB: [signature]	DATE/TIME: 11/16/22 1201

For Official Lab Comments Only

*SAMPLE TYPE CODES
DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water
SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

SAMPLE RECEIPT CHECKLIST

WO NUMBER 22K0642

Samples Received Via:
Fed-Ex ☑ Client Walk-In ☑ RH 11/15/22 Courier ☐
UPS ☐ Pace Field Service ☐ Other ☐

Samples Received By: RH Date: 11/15/22 Time: 1033
Are samples for regulatory compliance? Yes ☑ No ☐

THERMAL PRESERVATION

Were samples received in a cooler? Yes ☑ No ☐ If no, take temperature of representative sample container and record below.
If no, do they require thermal preservation? Yes ☐ No ☐ If no, why not? Non-regulatory ☐ Not Required by Method ☐
Samples received on ice? Yes ☑ No ☐ Ice type? Wet ☑ Ice Packs ☐ Other _____
Samples received the same day collected? Yes ☐ No ☑

Therm. ID (Circle one): Therm-36(IR) Therm-37(IR) (Therm-59(IR)) Therm-41(Stick) Therm-C01(IR) Therm-C02(IR) Other: _____

Cooler #1 Init. Temp °C 3.3 Correction °C +0.1 Corrected Temp °C 3.4
Cooler #2 Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
Cooler #3 Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
No Cooler - Representative Sample Temperature: Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____

Do samples received meet thermal preservation requirements? Yes ☑ No ☐ N/A ☐

Thermal Preservation Notes/Discrepancies/Nonconformances:

SAMPLE CONDITION AND PROCESSING

Do all sample IDs on labels match the COC? Yes ☑ No ☐
Custody seals present? Yes ☐ No ☐ N/A ☑
Samples in proper containers? Yes ☑ No ☐
Sample containers damaged? Yes ☐ No ☑
Sufficient sample volume for indicated tests? Yes ☑ No ☐
Samples received with sufficient holding time? Yes ☑ No ☐
Are VOA vials free of headspace? Yes ☐ No ☐ N/A ☑

CHEMICAL PRESERVATION

Were the sample containers received with labels that indicate that appropriate preservatives were present for the indicated tests? Yes ☑ No ☐ N/A ☐
Were samples received properly dechlorinated? Yes ☐ No ☐ N/A ☐ For Dechlorination checks done by analysts, were dechlor. agent labels present? Yes ☐ No ☐
Preservation checked by Sample Receiving? Initials RH Date & Time 11/15/22 1103 Test Strip (ID 2J12028)
Dechlorination checked by Sample Receiving? Initials _____ Date & Time _____ Test Strip (ID _____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑

Added upon sample receipt? Yes ☐ No ☐
In Lab By: _____ Meter ID: _____

Were any additional preservatives added after receipt? Yes ☐ No ☐ Initial pH: _____ Final pH _____
If yes, is addition of preservatives allowed by the method? Yes ☐ No ☐

List preservatives added at receipt:
Type: HNO3 Volume Added: ~2 mL ID: 2I28023 Type: _____ Volume Added: _____ ID: _____
Type: _____ Volume Added: _____ ID: _____ Type: _____ Volume Added: _____ ID: _____

COMMENTS, DISCREPANCEIS, ANOMALIES, NONCONFORMANCES

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02

Lab No: 22K0717
Reported: 01/04/23
Phone: 530-756-7550

Included in this report are laboratory results for work order 22K0717, received on 11/16/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: R-IS-9-IHR
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0717-01
Sampled: 11/15/22 09:45
Received: 11/16/22 10:45

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Copper	ug/l	0.12		0.04	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Mercury	ng/l	0.31	J	0.22	0.50	EPA 1631E	11/27/22	11/27/22	B2K1369 / DJC
Methyl Mercury as Mercury	ng/l	0.018	J	0.017	0.050	EPA 1630**	12/30/22	12/29/22	B2L1402 / EDM
Nickel	ug/l	0.04	J	0.02	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/30/22	11/21/22	B2K1251 / EDM
Zinc	ug/l	ND		0.12	0.50	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Copper	ug/l	0.18		0.04	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Nickel	ug/l	0.06	J	0.02	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/08/22	B2L0962 / edm
Zinc	ug/l	0.63		0.12	0.50	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM

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Analytical Report

Description: R-IS-10-IHR
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0717-02
Sampled: 11/15/22 10:45
Received: 11/16/22 10:45

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Copper	ug/l	0.11		0.04	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Mercury	ng/l	0.43	J	0.22	0.50	EPA 1631E	11/27/22	11/27/22	B2K1369 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	12/30/22	12/29/22	B2L1402 / EDM
Nickel	ug/l	0.04	J	0.02	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/30/22	11/21/22	B2K1251 / EDM
Zinc	ug/l	0.19	J	0.12	0.50	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Copper	ug/l	0.11		0.04	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Nickel	ug/l	0.03	J	0.02	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/08/22	B2L0962 / edm
Zinc	ug/l	0.14	J	0.12	0.50	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM

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Analytical Report

Description: R-IS-11-IHR
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0717-03
Sampled: 11/15/22 11:30
Received: 11/16/22 10:45

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Copper	ug/l	0.12		0.04	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Mercury	ng/l	0.40	J	0.22	0.50	EPA 1631E	11/27/22	11/27/22	B2K1369 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	12/30/22	12/29/22	B2L1402 / EDM
Nickel	ug/l	0.04	J	0.02	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/30/22	11/21/22	B2K1251 / EDM
Zinc	ug/l	ND		0.12	0.50	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Copper	ug/l	0.11		0.04	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Nickel	ug/l	0.04	J	0.02	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/08/22	B2L0962 / edm
Zinc	ug/l	ND		0.12	0.50	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM

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Analytical Report

Description: R-IS-10-SFSC
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0717-04
Sampled: 11/15/22 12:30
Received: 11/16/22 10:45

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Copper	ug/l	0.14		0.04	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Lead	ug/l	0.019	J	0.007	0.050	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Mercury	ng/l	0.78		0.22	0.50	EPA 1631E	11/27/22	11/27/22	B2K1369 / DJC
Methyl Mercury as Mercury	ng/l	0.038	J	0.017	0.050	EPA 1630**	12/30/22	12/29/22	B2L1402 / EDM
Nickel	ug/l	0.06	J	0.02	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	11/30/22	11/21/22	B2K1251 / EDM
Zinc	ug/l	0.34	J	0.12	0.50	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Copper	ug/l	0.10	J	0.04	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Nickel	ug/l	0.04	J	0.02	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/08/22	B2L0962 / edm
Zinc	ug/l	0.21	J	0.12	0.50	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1251 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	202	2.0	ug/l	200		101	85-115			
Duplicate	Source: 22K0331-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22K0717-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22K0331-01									
Selenium	196	2.0	ug/l	200	ND	98.2	75-125			
Matrix Spike	Source: 22K0717-01									
Selenium	199	2.0	ug/l	200	ND	99.4	75-125			
Metals - Total - Redding Location	**Batch B2K1369 - BrCl Digestion**									

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1369 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	10.7	0.50	ng/l	10.0		107	77-123			
Matrix Spike	Source: 22K0717-01									
Mercury	11.4	0.50	ng/l	10.0	0.31	110	71-125			
Matrix Spike Dup	Source: 22K0717-01									
Mercury	11.1	0.50	ng/l	10.0	0.31	108	71-125	2.59	24	
Metals - Total - Redding Location	**Batch B2L1305 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2L1305 - EPA 1638 - Closed Bottle Oven Digestion**									
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.1	50-150			
Cadmium	0.24	0.10	ug/l	0.250		96.5	84-113			
Copper	0.23	0.10	ug/l	0.250		91.2	51-145			
Lead	0.121	0.050	ug/l	0.125		96.6	72-143			
Nickel	0.24	0.10	ug/l	0.250		94.7	68-134			
Zinc	1.19	0.50	ug/l	1.25		95.4	46-146			
LCS										
Arsenic	1.17	0.50	ug/l	1.25		93.7	50-150			
Cadmium	0.23	0.10	ug/l	0.250		92.0	84-113			
Copper	0.23	0.10	ug/l	0.250		92.5	51-145			
Lead	0.120	0.050	ug/l	0.125		96.3	72-143			
Nickel	0.26	0.10	ug/l	0.250		103	68-134			
Zinc	1.18	0.50	ug/l	1.25		94.2	46-146			
Matrix Spike	Source: 22K0516-01									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.8	84-113			
Copper	0.60	0.10	ug/l	0.500	0.11	97.5	51-145			
Lead	0.265	0.050	ug/l	0.250	0.020	97.8	72-143			
Nickel	0.57	0.10	ug/l	0.500	0.08	98.4	68-134			
Zinc	3.33	0.50	ug/l	2.50	0.95	95.2	46-146			
Matrix Spike	Source: 22K0717-01									
Arsenic	2.41	0.50	ug/l	2.50	ND	96.3	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	100	84-113			
Copper	0.60	0.10	ug/l	0.500	0.12	96.0	51-145			
Lead	0.247	0.050	ug/l	0.250	ND	98.8	72-143			
Nickel	0.53	0.10	ug/l	0.500	0.04	97.5	68-134			
Zinc	2.49	0.50	ug/l	2.50	ND	99.4	46-146			
Matrix Spike Dup	Source: 22K0516-01									
Arsenic	2.37	0.50	ug/l	2.50	ND	94.9	50-150	6.45	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	98.5	84-113	1.77	20	
Copper	0.59	0.10	ug/l	0.500	0.11	95.9	51-145	1.29	20	
Lead	0.258	0.050	ug/l	0.250	0.020	95.1	72-143	2.61	20	
Nickel	0.57	0.10	ug/l	0.500	0.08	97.5	68-134	0.753	20	
Zinc	3.31	0.50	ug/l	2.50	0.95	94.5	46-146	0.558	20	
Matrix Spike Dup	Source: 22K0717-01									
Arsenic	2.43	0.50	ug/l	2.50	ND	97.0	50-150	0.752	20	
Cadmium	0.47	0.10	ug/l	0.500	ND	94.6	84-113	5.67	20	
Copper	0.63	0.10	ug/l	0.500	0.12	103	51-145	5.26	20	
Lead	0.250	0.050	ug/l	0.250	ND	99.9	72-143	1.07	20	
Nickel	0.53	0.10	ug/l	0.500	0.04	97.6	68-134	0.132	20	
Zinc	2.51	0.50	ug/l	2.50	ND	100	46-146	0.831	20	

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2L1402 - EPA 1630 Distillation (Modified)**									
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.21	0.050	ng/l	2.00		111	67-133			
Matrix Spike	Source: 22K0642-01									
Methyl Mercury as Mercury	0.976	0.050	ng/l	1.00	ND	97.6	65-135			
Matrix Spike	Source: 22K0820-04									
Methyl Mercury as Mercury	1.12	0.050	ng/l	1.00	ND	112	65-135			
Matrix Spike Dup	Source: 22K0642-01									
Methyl Mercury as Mercury	1.16	0.050	ng/l	1.00	ND	116	65-135	17.6	35	
Matrix Spike Dup	Source: 22K0820-04									
Methyl Mercury as Mercury	1.17	0.050	ng/l	1.00	ND	117	65-135	4.38	35	
Metals - Dissolved - Redding Location	**Batch B2L0962 - EPA 200.8 Diss**									
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	213	2.0	ug/l	200		107	85-115			
Duplicate	Source: 22K0576-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22K0717-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22K0576-01									
Selenium	218	2.0	ug/l	200	ND	109	75-125			
Matrix Spike	Source: 22K0717-01									
Selenium	215	2.0	ug/l	200	ND	107	75-125			
Metals - Dissolved - Redding Location	**Batch B2L1325 - EPA 1638 - Dissolved**									
Blank										

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2L1325 - EPA 1638 - Dissolved**									
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.27	0.50	ug/l	1.25		102	50-150			
Cadmium	0.26	0.10	ug/l	0.250		103	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.125	0.050	ug/l	0.125		100	72-143			
Nickel	0.26	0.10	ug/l	0.250		103	68-134			
Zinc	1.32	0.50	ug/l	1.25		105	46-146			
LCS										
Arsenic	1.31	0.50	ug/l	1.25		105	50-150			
Cadmium	0.25	0.10	ug/l	0.250		99.3	84-113			
Copper	0.26	0.10	ug/l	0.250		104	51-145			
Lead	0.128	0.050	ug/l	0.125		102	72-143			
Nickel	0.26	0.10	ug/l	0.250		104	68-134			
Zinc	1.37	0.50	ug/l	1.25		110	46-146			
Matrix Spike	Source: 22K0516-01									
Arsenic	2.49	0.50	ug/l	2.50	ND	99.6	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	95.7	84-113			

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2L1325 - EPA 1638 - Dissolved**									
Copper	0.56	0.10	ug/l	0.500	0.07	99.1	51-145			
Lead	0.253	0.050	ug/l	0.250	ND	101	72-143			
Nickel	0.73	0.10	ug/l	0.500	0.20	105	68-134			
Zinc	3.13	0.50	ug/l	2.50	0.70	96.9	46-146			
Matrix Spike	Source: 22K0717-03									
Arsenic	2.45	0.50	ug/l	2.50	ND	98.0	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	99.0	84-113			
Copper	0.60	0.10	ug/l	0.500	0.11	98.4	51-145			
Lead	0.242	0.050	ug/l	0.250	ND	96.8	72-143			
Nickel	0.52	0.10	ug/l	0.500	0.04	96.2	68-134			
Zinc	2.50	0.50	ug/l	2.50	ND	100	46-146			
Matrix Spike Dup	Source: 22K0516-01									
Arsenic	2.50	0.50	ug/l	2.50	ND	99.9	50-150	0.283	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	96.3	84-113	0.561	20	
Copper	0.56	0.10	ug/l	0.500	0.07	98.1	51-145	0.874	20	
Lead	0.239	0.050	ug/l	0.250	ND	95.6	72-143	5.51	20	
Nickel	0.70	0.10	ug/l	0.500	0.20	99.5	68-134	3.81	20	
Zinc	3.16	0.50	ug/l	2.50	0.70	98.3	46-146	1.12	20	
Matrix Spike Dup	Source: 22K0717-03									
Arsenic	2.43	0.50	ug/l	2.50	ND	97.0	50-150	1.05	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	95.1	84-113	4.05	20	
Copper	0.59	0.10	ug/l	0.500	0.11	97.4	51-145	0.775	20	
Lead	0.239	0.050	ug/l	0.250	ND	95.5	72-143	1.33	20	
Nickel	0.52	0.10	ug/l	0.500	0.04	97.0	68-134	0.762	20	
Zinc	2.56	0.50	ug/l	2.50	ND	103	46-146	2.30	20	

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	The laboratory does not hold CA-ELAP accreditiation for this analyte or method. Accreditation may not be available from CA-ELAP for this analyte or method.
**	The laboratory holds accreditation for this analyte or method with WA-ECY Lab ID: Lab ID C783. Accreditation is not offered for this method by CA-ELAP
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Accreditations Held:
Redding Location: CA-ELAP - Cert # 1677
Chico Location: CA-ELAP - Cert # 2718

2218 Railroad Avenue
Redding, California 96001
voice 530.243.7234
fax 530.243.7494

3860 Morrow Lane, Suite F
Chico, California 95928
voice 530.894.8966
fax 530.894.5143

Analytical Report

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen
Ricky Jensen, Operations Manager
Pace Analytical Services LLC - Redding CA

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

LABORATORY WORK ORDER # 22K0717

PAGE 1 OF 1

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494

☐ 3860 Morrow Lane, Suite F Chico, CA 95928 (530) 894-8966 FAX: (530) 894-5143

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS
279 Cousteau Place, Suite 400
Davis, CA 95618

REPORT TO ☐ Email ☐ Mail Hardcopy

NAME / ATTENTION: Emily Applequist

PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED ☐ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one) ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED		SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	11/15/22	09:45	AM PM	SW			R-IS-9-IHR		6	x	x	x	x	x	x
2	11/15/22	10:45	AM PM	↓			R-IS-10-IHR		6	x	x	x	x	x	x
3	11/15/22	11:30	AM PM	↓			R-IS-11-IHR		6	x	x	x	x	x	x
4	11/15/22	12:30	AM PM	↓			R-IS-10-SFSC		6	x	x	x	x	x	x
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												

SAMPLED BY: (please print) BRUCE HITCH, JAKE WOODALL

RELINQUISHED DATE / TIME: 11/15/22

SAMPLING / ANALYSIS COMMENTS

(1) Total and Dissolved LL 1638 Metals

☐ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME	SIGNATURE	DATE
BRUCE HITCH		11/15/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
	11/16/22 1045		11/17/22 1059

For Official Lab Comments Only

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

FRM-002.1 - Chain of Custody (rev 1.1)

SAMPLE RECEIPT CHECKLIST

WO NUMBER 22K0717

Samples Received Via:
Fed-Ex ☑ Client Walk-In ☐ Courier ☐
UPS ☐ Pace Field Service ☐ Other ☐

Samples Received By: RH Date: 11/16/22 Time: 1045
Are samples for regulatory compliance? Yes ☑ No ☐

THERMAL PRESERVATION

Were samples received in a cooler? Yes ☑ No ☐ If no, take temperature of representative sample container and record below.
If no, do they require thermal preservation? Yes ☐ No ☐ If no, why not? Non-regulatory ☐ Not Required by Method ☐
Samples received on ice? Yes ☑ No ☐ Ice type? Wet ☑ Ice Packs ☐ Other _____
Samples received the same day collected? Yes ☑ No ☐

Therm. ID (Circle one): Therm-36(IR) Therm-37(IR) Therm-59(IR) Therm-41(Stick) Therm-C01(IR) Therm-C02(IR) Other: _____

Cooler #1 Init. Temp °C 0.4 Correction °C +0.1 Corrected Temp °C 0.5
Cooler #2 Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
Cooler #3 Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
No Cooler - Representative Sample Temperature: Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
Do samples received meet thermal preservation requirements? Yes ☐ No ☐ N/A ☐

Thermal Preservation Notes/Discrepancies/Nonconformances:

SAMPLE CONDITION AND PROCESSING

Do all sample IDs on labels match the COC? Yes ☑ No ☐
Custody seals present? Yes ☐ No ☐ N/A ☑
Samples in proper containers? Yes ☑ No ☐
Sample containers damaged? Yes ☐ No ☑
Sufficient sample volume for indicated tests? Yes ☑ No ☐
Samples received with sufficient holding time? Yes ☑ No ☐
Are VOA vials free of headspace? Yes ☐ No ☐ N/A ☑

CHEMICAL PRESERVATION

Were the sample containers received with labels that indicate that appropriate preservatives were present for the indicated tests? Yes ☐ No ☑ N/A ☐
Were samples received properly dechlorinated? Yes ☐ No ☐ N/A ☐ For Dechlorination checks done by analysts, were dechlor. agent labels present? Yes ☐ No ☐
Preservation checked by Sample Receiving? Initials MM Date & Time 11/16/22 1400 Test Strip (ID 22J12023)
Dechlorination checked by Sample Receiving? Initials _____ Date & Time _____ Test Strip (ID _____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☒
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☒
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☒
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☒

Added upon sample receipt? Yes ☑ No ☐
In Lab By: _____ Meter ID: _____

Were any additional preservatives added after receipt? Yes ☐ No ☐ Initial pH: _____ Final pH _____
If yes, is addition of preservatives allowed by the method? Yes ☐ No ☐

List preservatives added at receipt:
Type: HNO3 Volume Added: ~2mL ID: 22J12023 Type: _____ Volume Added: _____ ID: _____
Type: _____ Volume Added: _____ ID: _____ Type: _____ Volume Added: _____ ID: _____

COMMENTS, DISCREPANCEIS, ANOMALIES, NONCONFORMANCES

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

November 28, 2022

CLS Work Order #: 22K0761
COC #:

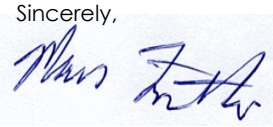
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 11/10/22 15:00. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

11/28/22 16:52

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0761
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-17-BC (22K0761-01) Water Sampled: 11/10/22 12:00 Received: 11/10/22 15:00										
Ammonia as N	**0.041**	0.025	0.10	mg/L	1	2209853	11/15/22	11/15/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**11**	0.50	5.0	"	"	2209856	11/15/22	11/15/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.93**	0.026	0.50	"	"	2209765	11/11/22	11/11/22	EPA 300.0	
Cyanide (total)	**0.0038**	0.0012	0.0050	"	"	2209971	11/18/22	11/21/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209902	11/16/22	11/17/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209856	11/15/22	11/15/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209765	11/11/22	11/11/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2209743	11/11/22	11/11/22	SM4500-P E	
Sulfate as SO4	**0.46**	0.038	0.50	"	"	2209765	11/11/22	11/11/22	EPA 300.0	
Total Alkalinity	**11**	1.0	5.0	"	"	2209856	11/15/22	11/15/22	SM2320B	
Total Dissolved Solids	**23**	5.0	10	"	"	2209905	11/16/22	11/16/22	SM2540C	
Total Hardness as CaCO3	**9.3**	0.19	1.0	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.24**	0.040	0.20	"	"	2209899	11/16/22	11/16/22	SM4500-NH3F-2011	
Total Organic Carbon	**0.98**	0.54	1.0	"	"	2209973	11/18/22	11/18/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209736	11/11/22	11/11/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209866	11/16/22	11/17/22	SM2540D	
R-IS-20-BC (22K0761-02) Water Sampled: 11/10/22 10:30 Received: 11/10/22 15:00										
Ammonia as N	**0.045**	0.025	0.10	mg/L	1	2209853	11/15/22	11/15/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**12**	0.50	5.0	"	"	2209856	11/15/22	11/15/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.94**	0.026	0.50	"	"	2209765	11/11/22	11/11/22	EPA 300.0	
Cyanide (total)	**0.0042**	0.0012	0.0050	"	"	2209971	11/18/22	11/21/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209902	11/16/22	11/17/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209856	11/15/22	11/15/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209765	11/11/22	11/11/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2209743	11/11/22	11/11/22	SM4500-P E	

11/28/22 16:52

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0761
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-20-BC (22K0761-02) Water	**Sampled: 11/10/22 10:30**		**Received: 11/10/22 15:00**							
Sulfate as SO4	**0.46**	0.038	0.50	mg/L	1	2209765	11/11/22	11/11/22	EPA 300.0	
Total Alkalinity	**12**	1.0	5.0	"	"	2209856	11/15/22	11/15/22	SM2320B	
Total Dissolved Solids	**34**	5.0	10	"	"	2209905	11/16/22	11/16/22	SM2540C	
Total Hardness as CaCO3	**8.6**	0.19	1.0	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.23**	0.040	0.20	"	"	2209899	11/16/22	11/16/22	SM4500-NH3F-2011	
Total Organic Carbon	**1.1**	0.54	1.0	"	"	2209973	11/18/22	11/18/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209736	11/11/22	11/11/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209866	11/16/22	11/17/22	SM2540D	

11/28/22 16:52

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0761
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-17-BC (22K0761-01) Water Sampled: 11/10/22 12:00 Received: 11/10/22 15:00										
Diesel	ND	0.0021	0.050	mg/L	1	2209814	11/14/22	11/14/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
JP-5/JP-8	ND	0.020	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*74 %*	*65-135*		"	"	"	"	
R-IS-20-BC (22K0761-02) Water Sampled: 11/10/22 10:30 Received: 11/10/22 15:00										
Diesel	ND	0.0021	0.050	mg/L	1	2209814	11/14/22	11/14/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
JP-5/JP-8	ND	0.020	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*60 %*	*65-135*		"	"	"	"	*QS-4*

11/28/22 16:52

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0761
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-17-BC (22K0761-01) Water Sampled: 11/10/22 12:00 Received: 11/10/22 15:00										
Aluminum	**30**	1.6	20	µg/L	1	2209837	11/15/22	11/16/22	EPA 200.8	
Barium	**13**	0.14	5.0	"	"	"	"	"	"	
Calcium	**2500**	27	1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
Iron	**110**	9.1	100	"	"	"	"	"	"	
Magnesium	**770**	21	1000	"	"	"	"	"	"	
Manganese	**32**	0.050	2.0	"	"	2209837	11/15/22	11/16/22	EPA 200.8	
Potassium	**550**	61	1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2209837	11/15/22	11/16/22	EPA 200.8	
Sodium	**1700**	34	1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
R-IS-20-BC (22K0761-02) Water Sampled: 11/10/22 10:30 Received: 11/10/22 15:00										
Aluminum	**15**	1.6	20	µg/L	1	2209837	11/15/22	11/16/22	EPA 200.8	
Barium	**13**	0.14	5.0	"	"	"	"	"	"	
Calcium	**2200**	27	1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
Iron	**44**	9.1	100	"	"	"	"	"	"	
Magnesium	**730**	21	1000	"	"	"	"	"	"	
Manganese	**12**	0.050	2.0	"	"	2209837	11/15/22	11/16/22	EPA 200.8	
Potassium	**390**	61	1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2209837	11/15/22	11/16/22	EPA 200.8	
Sodium	**1600**	34	1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	

11/28/22 16:52

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0761
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-17-BC (22K0761-01) Water Sampled: 11/10/22 12:00 Received: 11/10/22 15:00										
Aluminum	**2.5**	0.52	20	µg/L	1	2209937	11/17/22	11/17/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2209934	11/17/22	11/17/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2209937	11/17/22	11/17/22	EPA 200.8	
R-IS-20-BC (22K0761-02) Water Sampled: 11/10/22 10:30 Received: 11/10/22 15:00										
Aluminum	**1.6**	0.52	20	µg/L	1	2209937	11/17/22	11/17/22	EPA 200.8	
Iron	ND	6.8	100	"	"	2209934	11/17/22	11/17/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2209937	11/17/22	11/17/22	EPA 200.8	

11/28/22 16:52

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K0761**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-17-BC (22K0761-01) Water Sampled: 11/10/22 12:00 Received: 11/10/22 15:00										
Gasoline	ND	10	50	µg/L	1	2209835	11/15/22	11/15/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*84 %*	*65-135*		"	"	"	"	
R-IS-20-BC (22K0761-02) Water Sampled: 11/10/22 10:30 Received: 11/10/22 15:00										
Gasoline	ND	10	50	µg/L	1	2209835	11/15/22	11/15/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*74 %*	*65-135*		"	"	"	"	

11/28/22 16:52

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0761
COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-17-BC (22K0761-01) Water Sampled: 11/10/22 12:00 Received: 11/10/22 15:00										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209810	11/11/22	11/11/22	EPA 8260B	
Surrogate: Toluene-d8			*85 %*		*72-125*		"	"	"	"
R-IS-20-BC (22K0761-02) Water Sampled: 11/10/22 10:30 Received: 11/10/22 15:00										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209810	11/11/22	11/11/22	EPA 8260B	
Surrogate: Toluene-d8			*86 %*		*72-125*		"	"	"	"

11/28/22 16:52

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0761
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209736 - General Preparation											
Blank (2209736-BLK1)					Prepared & Analyzed: 11/11/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2209736-BS1)					Prepared & Analyzed: 11/11/22						
Total Phosphorus as P	0.313	0.023	0.050	mg/L	0.300		104	80-120			
LCS Dup (2209736-BSD1)					Prepared & Analyzed: 11/11/22						
Total Phosphorus as P	0.286	0.023	0.050	mg/L	0.300		95	80-120	9	25	
Matrix Spike (2209736-MS1)			**Source: 22K0375-02**		Prepared & Analyzed: 11/11/22						
Total Phosphorus as P	0.313	0.023	0.050	mg/L	0.300	ND	104	75-125			
Matrix Spike Dup (2209736-MSD1)			**Source: 22K0375-02**		Prepared & Analyzed: 11/11/22						
Total Phosphorus as P	0.322	0.023	0.050	mg/L	0.300	ND	107	75-125	3	30	
Batch 2209743 - General Preparation											
Blank (2209743-BLK1)					Prepared & Analyzed: 11/11/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							
LCS (2209743-BS1)					Prepared & Analyzed: 11/11/22						
Orthophosphate as PO4	0.904	0.0051	0.15	mg/L	0.918		98	80-120			
LCS Dup (2209743-BSD1)					Prepared & Analyzed: 11/11/22						
Orthophosphate as PO4	0.842	0.0051	0.15	mg/L	0.918		92	80-120	7	20	
Matrix Spike (2209743-MS1)			**Source: 22K0761-01**		Prepared & Analyzed: 11/11/22						
Orthophosphate as PO4	0.941	0.0051	0.15	mg/L	0.918	ND	102	75-125			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K0761**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209743 - General Preparation											
Matrix Spike Dup (2209743-MSD1)			**Source: 22K0761-01**		Prepared & Analyzed: 11/11/22						
Orthophosphate as PO4	0.924	0.0051	0.15	mg/L	0.918	ND	101	75-125	2	25	
Batch 2209765 - General Prep											
Blank (2209765-BLK1)					Prepared & Analyzed: 11/11/22						
Chloride	ND	0.026	0.50	mg/L							
Sulfate as SO4	ND	0.038	0.50	"							
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2209765-BS1)					Prepared & Analyzed: 11/11/22						
Sulfate as SO4	5.13	0.038	0.50	mg/L	5.00		103	80-120			
Chloride	5.18	0.026	0.50	"	5.00		104	80-120			
Nitrate/Nitrite as N	4.52	0.055	0.40	"	4.00		113	80-120			
Matrix Spike (2209765-MS1)			**Source: 22K0761-01**		Prepared & Analyzed: 11/11/22						
Chloride	6.01	0.026	0.50	mg/L	5.00	0.933	102	80-120			
Sulfate as SO4	5.51	0.038	0.50	"	5.00	0.465	101	80-120			
Nitrate/Nitrite as N	4.45	0.055	0.40	"	4.00	ND	111	80-120			
Matrix Spike Dup (2209765-MSD1)			**Source: 22K0761-01**		Prepared & Analyzed: 11/11/22						
Sulfate as SO4	5.49	0.038	0.50	mg/L	5.00	0.465	101	80-120	0.3	20	
Chloride	5.96	0.026	0.50	"	5.00	0.933	101	80-120	0.9	20	
Nitrate/Nitrite as N	4.44	0.055	0.40	"	4.00	ND	111	80-120	0.3	20	
Batch 2209853 - General Preparation											
Blank (2209853-BLK1)					Prepared & Analyzed: 11/15/22						
Ammonia as N	ND	0.025	0.10	mg/L							

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0761
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209853 - General Preparation											
LCS (2209853-BS1)					Prepared & Analyzed: 11/15/22						
Ammonia as N	0.501	0.025	0.10	mg/L	0.500		100	80-120			
LCS Dup (2209853-BSD1)					Prepared & Analyzed: 11/15/22						
Ammonia as N	0.502	0.025	0.10	mg/L	0.500		100	80-120	0.2	25	
Matrix Spike (2209853-MS1)			**Source: 22K0733-01**		Prepared & Analyzed: 11/15/22						
Ammonia as N	0.649	0.025	0.10	mg/L	0.500	0.0520	119	75-125			
Matrix Spike Dup (2209853-MSD1)			**Source: 22K0733-01**		Prepared & Analyzed: 11/15/22						
Ammonia as N	0.678	0.025	0.10	mg/L	0.500	0.0520	125	75-125	4	25	
Batch 2209856 - General Preparation											
Blank (2209856-BLK1)					Prepared & Analyzed: 11/15/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Duplicate (2209856-DUP1)			**Source: 22K0753-01**		Prepared & Analyzed: 11/15/22						
Total Alkalinity	228	1.0	5.0	mg/L		212			7	20	
Bicarbonate as CaCO3	228	0.50	5.0	"		212			7	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Batch 2209866 - General Preparation											
Blank (2209866-BLK1)					Prepared: 11/16/22 Analyzed: 11/17/22						
Total Suspended Solids	ND	2.0	5.0	mg/L							

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Project Manager: Emily Applequist

CLS Work Order #: 22K0761
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209866 - General Preparation											
Duplicate (2209866-DUP1)			**Source: 22K0541-01**		Prepared: 11/16/22 Analyzed: 11/17/22						
Total Suspended Solids	14.8	2.0	5.0	mg/L		14.5			2	20	
Batch 2209897 - EPA 200 Series											
Blank (2209897-BLK1)					Prepared & Analyzed: 11/16/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2209897-BS1)					Prepared & Analyzed: 11/16/22						
Total Hardness as CaCO3	33.4	0.19	1.0	mg/L	33.1		101	85-115			
Matrix Spike (2209897-MS1)			**Source: 22K0757-03**		Prepared & Analyzed: 11/16/22						
Total Hardness as CaCO3	33.9	0.19	1.0	mg/L	33.1	0.700	100	70-130			
Matrix Spike (2209897-MS2)			**Source: 22K0985-03**		Prepared: 11/16/22 Analyzed: 11/17/22						
Total Hardness as CaCO3	540	0.19	1.0	mg/L	33.1	507	101	70-130			
Batch 2209899 - General Preparation											
Blank (2209899-BLK1)					Prepared & Analyzed: 11/16/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2209899-BS1)					Prepared & Analyzed: 11/16/22						
Total Kjeldahl Nitrogen	0.585	0.040	0.20	mg/L	0.500		117	80-120			QR-2
LCS Dup (2209899-BSD1)					Prepared & Analyzed: 11/16/22						
Total Kjeldahl Nitrogen	0.408	0.040	0.20	mg/L	0.500		82	80-120	36	20	QR-2

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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209899 - General Preparation											
Matrix Spike (2209899-MS1)			**Source: 22K0761-01**		Prepared & Analyzed: 11/16/22						
Total Kjeldahl Nitrogen	0.702	0.040	0.20	mg/L	0.500	0.240	92	75-125			
Matrix Spike Dup (2209899-MSD1)			**Source: 22K0761-01**		Prepared & Analyzed: 11/16/22						
Total Kjeldahl Nitrogen	0.711	0.040	0.20	mg/L	0.500	0.240	94	75-125	1	25	
Batch 2209902 - Solvent Extract											
Blank (2209902-BLK1)					Prepared: 11/16/22 Analyzed: 11/17/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2209902-BS1)					Prepared: 11/16/22 Analyzed: 11/17/22						
Hexane Extractable Material (HEM, Oil & Grease)	37.2	1.0	5.0	mg/L	40.0		93	78-114			
LCS Dup (2209902-BSD1)					Prepared: 11/16/22 Analyzed: 11/17/22						
Hexane Extractable Material (HEM, Oil & Grease)	35.9	1.0	5.0	mg/L	40.0		90	78-114	4	18	
Batch 2209905 - General Preparation											
Blank (2209905-BLK1)					Prepared & Analyzed: 11/16/22						
Total Dissolved Solids	ND	5.0	10	mg/L							
Duplicate (2209905-DUP1)			**Source: 22K0753-01**		Prepared & Analyzed: 11/16/22						
Total Dissolved Solids	378	5.0	10	mg/L		374			1	20	
Batch 2209971 - General Preparation											
Blank (2209971-BLK1)					Prepared: 11/18/22 Analyzed: 11/21/22						
Cyanide (total)	0.00380	0.0012	0.0050	mg/L							

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COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209971 - General Preparation											
LCS (2209971-BS1)					Prepared: 11/18/22 Analyzed: 11/21/22						
Cyanide (total)	0.0759	0.0012	0.0050	mg/L	0.100		76	75-125			
LCS Dup (2209971-BSD1)					Prepared: 11/18/22 Analyzed: 11/21/22						
Cyanide (total)	0.0767	0.0012	0.0050	mg/L	0.100		77	75-125	1	25	
Matrix Spike (2209971-MS1)			**Source: 22K0761-01**		Prepared: 11/18/22 Analyzed: 11/21/22						
Cyanide (total)	0.0767	0.0012	0.0050	mg/L	0.100	0.00380	73	75-125			QM-7
Matrix Spike Dup (2209971-MSD1)			**Source: 22K0761-01**		Prepared: 11/18/22 Analyzed: 11/21/22						
Cyanide (total)	0.0748	0.0012	0.0050	mg/L	0.100	0.00380	71	75-125	3	25	QM-7
Batch 2209973 - General Preparation											
Blank (2209973-BLK1)					Prepared & Analyzed: 11/18/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							
LCS (2209973-BS1)					Prepared & Analyzed: 11/18/22						
Total Organic Carbon	10.0	0.54	1.0	mg/L	10.0		100	75-125			
LCS Dup (2209973-BSD1)					Prepared & Analyzed: 11/18/22						
Total Organic Carbon	10.3	0.54	1.0	mg/L	10.0		103	75-125	2	25	
Matrix Spike (2209973-MS1)			**Source: 22K0904-04**		Prepared & Analyzed: 11/18/22						
Total Organic Carbon	17.0	0.54	1.0	mg/L	10.0	2.16	149	75-125			QM-7
Matrix Spike Dup (2209973-MSD1)			**Source: 22K0904-04**		Prepared & Analyzed: 11/18/22						
Total Organic Carbon	17.1	0.54	1.0	mg/L	10.0	2.16	150	75-125	0.6	25	QM-7

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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209814 - EPA 3510B GCNV											
Blank (2209814-BLK1)					Prepared & Analyzed: 11/14/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
JP-5/JP-8	ND	0.020	0.050	"							
Surrogate: o-Terphenyl	*0.0267*			"	*0.0250*		*107*	*65-135*			
LCS (2209814-BS1)					Prepared & Analyzed: 11/14/22						
Diesel	1.68	0.0021	0.050	mg/L	2.50		67	65-135			
Surrogate: o-Terphenyl	*0.0184*			"	*0.0250*		*74*	*65-135*			
LCS Dup (2209814-BSD1)					Prepared & Analyzed: 11/14/22						
Diesel	1.64	0.0021	0.050	mg/L	2.50		65	65-135	3	30	
Surrogate: o-Terphenyl	*0.0199*			"	*0.0250*		*80*	*65-135*			
Matrix Spike (2209814-MS1)			**Source: 22K0665-01**		Prepared & Analyzed: 11/14/22						
Diesel	1.45	0.0021	0.050	mg/L	2.50	ND	58	46-137			
Surrogate: o-Terphenyl	*0.0142*			"	*0.0250*		*57*	*65-135*			*QS-4*
Matrix Spike Dup (2209814-MSD1)			**Source: 22K0665-01**		Prepared & Analyzed: 11/14/22						
Diesel	1.47	0.0021	0.050	mg/L	2.50	ND	59	46-137	2	30	
Surrogate: o-Terphenyl	*0.0174*			"	*0.0250*		*70*	*65-135*			

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0761
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209837 - EPA 200 Series											
Blank (2209837-BLK1)					Prepared: 11/15/22 Analyzed: 11/16/22						
Aluminum	1.69	1.6	20	µg/L							
Antimony	ND	0.34	6.0	"							
Arsenic	0.536	0.45	2.0	"							
Barium	ND	0.14	5.0	"							
Lead	ND	0.020	5.0	"							
Manganese	0.0650	0.050	2.0	"							
Selenium	ND	0.75	5.0	"							
Silver	ND	0.070	0.50	"							
Thallium	ND	0.030	1.0	"							
LCS (2209837-BS1)					Prepared: 11/15/22 Analyzed: 11/16/22						
Aluminum	485	1.6	20	µg/L	500		97	85-115			
Antimony	100	0.34	6.0	"	100		100	85-115			
Arsenic	102	0.45	2.0	"	100		102	85-115			
Barium	104	0.14	5.0	"	100		104	85-115			
Lead	96.9	0.020	5.0	"	100		97	85-115			
Manganese	101	0.050	2.0	"	100		101	85-115			
Selenium	105	0.75	5.0	"	100		105	85-115			
Silver	99.5	0.070	0.50	"	100		100	85-115			
Thallium	102	0.030	1.0	"	100		102	85-115			
Matrix Spike (2209837-MS1)				**Source: 22K0761-01**	Prepared: 11/15/22 Analyzed: 11/16/22						
Aluminum	518	1.6	20	µg/L	500	30.4	98	70-130			
Antimony	99.5	0.34	6.0	"	100	ND	99	70-130			
Arsenic	97.6	0.45	2.0	"	100	ND	98	70-130			
Barium	117	0.14	5.0	"	100	13.4	104	70-130			
Lead	96.1	0.020	5.0	"	100	0.0320	96	70-130			
Manganese	131	0.050	2.0	"	100	31.7	99	70-130			
Selenium	95.8	0.75	5.0	"	100	ND	96	70-130			
Silver	98.3	0.070	0.50	"	100	ND	98	70-130			
Thallium	101	0.030	1.0	"	100	ND	101	70-130			

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Project: SMUD In situ & Chemistry Monitoring
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COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209837 - EPA 200 Series											
Matrix Spike (2209837-MS2)			**Source: 22K0902-03**		Prepared: 11/15/22 Analyzed: 11/16/22						
Aluminum	498	1.6	20	µg/L	500	3.91	99	70-130			
Antimony	101	0.34	6.0	"	100	ND	101	70-130			
Arsenic	102	0.45	2.0	"	100	2.88	99	70-130			
Barium	221	0.14	5.0	"	100	114	106	70-130			
Lead	98.2	0.020	5.0	"	100	0.163	98	70-130			
Manganese	349	0.050	2.0	"	100	261	88	70-130			
Selenium	97.2	0.75	5.0	"	100	0.930	96	70-130			
Silver	98.7	0.070	0.50	"	100	ND	99	70-130			
Thallium	103	0.030	1.0	"	100	ND	103	70-130			
Batch 2209897 - EPA 200 Series											
Blank (2209897-BLK1)					Prepared & Analyzed: 11/16/22						
Barium	ND	1.1	20	µg/L							
Beryllium	ND	0.29	5.0	"							
Boron	ND	5.3	50	"							
Cadmium	ND	2.2	10	"							
Calcium	29.2	27	1000	"							
Copper	ND	3.4	10	"							
Iron	18.7	9.1	100	"							
Magnesium	ND	21	1000	"							
Manganese	ND	0.92	10	"							
Nickel	ND	3.1	20	"							
Potassium	ND	61	1000	"							
Silver	ND	3.3	10	"							
Sodium	ND	34	1000	"							
Zinc	ND	1.7	20	"							

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COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209897 - EPA 200 Series											
LCS (2209897-BS1)					Prepared & Analyzed: 11/16/22						
Barium	504	1.1	20	µg/L	500		101	85-115			
Beryllium	531	0.29	5.0	"	500		106	85-115			
Boron	497	5.3	50	"	500		99	85-115			
Cadmium	503	2.2	10	"	500		101	85-115			
Calcium	5140	27	1000	"	5000		103	85-115			
Copper	500	3.4	10	"	500		100	85-115			
Iron	502	9.1	100	"	500		100	85-115			
Magnesium	4990	21	1000	"	5000		100	85-115			
Manganese	516	0.92	10	"	500		103	85-115			
Nickel	513	3.1	20	"	500		103	85-115			
Potassium	5180	61	1000	"	5000		104	85-115			
Silver	534	3.3	10	"	500		107	85-115			
Sodium	5140	34	1000	"	5000		103	85-115			
Zinc	503	1.7	20	"	500		101	85-115			
Matrix Spike (2209897-MS1)					**Source: 22K0757-03** Prepared & Analyzed: 11/16/22						
Barium	511	1.1	20	µg/L	500	4.38	101	70-130			
Beryllium	535	0.29	5.0	"	500	ND	107	70-130			
Boron	493	5.3	50	"	500	7.73	97	70-130			
Cadmium	496	2.2	10	"	500	ND	99	70-130			
Calcium	5390	27	1000	"	5000	210	104	70-130			
Copper	496	3.4	10	"	500	ND	99	70-130			
Iron	586	9.1	100	"	500	65.6	104	70-130			
Magnesium	4950	21	1000	"	5000	42.6	98	70-130			
Manganese	517	0.92	10	"	500	2.79	103	70-130			
Nickel	508	3.1	20	"	500	ND	102	70-130			
Potassium	5170	61	1000	"	5000	ND	103	70-130			
Silver	549	3.3	10	"	500	ND	110	70-130			
Sodium	5330	34	1000	"	5000	178	103	70-130			
Zinc	509	1.7	20	"	500	18.4	98	70-130			

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22K0761
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209897 - EPA 200 Series											
Matrix Spike (2209897-MS2)			**Source: 22K0985-03**	Prepared: 11/16/22 Analyzed: 11/17/22							
Barium	798	1.1	20	µg/L	500	294	101	70-130			
Beryllium	542	0.29	5.0	"	500	ND	108	70-130			
Boron	593	5.3	50	"	500	81.2	102	70-130			
Cadmium	504	2.2	10	"	500	ND	101	70-130			
Calcium	127000	27	1000	"	5000	122000	103	70-130			
Copper	493	3.4	10	"	500	ND	99	70-130			
Iron	511	9.1	100	"	500	ND	102	70-130			
Magnesium	53900	21	1000	"	5000	49000	99	70-130			
Manganese	515	0.92	10	"	500	ND	103	70-130			
Nickel	499	3.1	20	"	500	ND	100	70-130			
Potassium	8010	61	1000	"	5000	2760	105	70-130			
Silver	545	3.3	10	"	500	ND	109	70-130			
Sodium	75500	34	1000	"	5000	70900	93	70-130			
Zinc	516	1.7	20	"	500	ND	103	70-130			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209934 - EPA 200 No Digestion											
Blank (2209934-BLK1)					Prepared & Analyzed: 11/17/22						
Iron	ND	6.8	100	µg/L							
LCS (2209934-BS1)					Prepared & Analyzed: 11/17/22						
Iron	472	6.8	100	µg/L	500		94	85-115			
Matrix Spike (2209934-MS1)			**Source: 22K0649-01**		Prepared & Analyzed: 11/17/22						
Iron	457	6.8	100	µg/L	500	8.23	90	70-130			
Matrix Spike (2209934-MS2)			**Source: 22K0904-01**		Prepared & Analyzed: 11/17/22						
Iron	547	6.8	100	µg/L	500	9.88	107	70-130			
Batch 2209937 - EPA 200 No Digestion											
Blank (2209937-BLK1)					Prepared & Analyzed: 11/17/22						
Aluminum	ND	0.52	20	µg/L							
Silver	ND	0.15	0.50	"							
LCS (2209937-BS1)					Prepared & Analyzed: 11/17/22						
Aluminum	494	0.52	20	µg/L	500		99	85-115			
Silver	98.3	0.15	0.50	"	100		98	85-115			
Matrix Spike (2209937-MS1)			**Source: 22K0822-01**		Prepared & Analyzed: 11/17/22						
Aluminum	498	0.52	20	µg/L	500	6.27	98	70-130			
Silver	96.8	0.15	0.50	"	100	ND	97	70-130			
Matrix Spike (2209937-MS2)			**Source: 22K0904-01**		Prepared & Analyzed: 11/17/22						
Aluminum	510	0.52	20	µg/L	500	4.86	101	70-130			
Silver	97.1	0.15	0.50	"	100	ND	97	70-130			

11/28/22 16:52

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2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0761
COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209835 - EPA 5030 Water GC											
Blank (2209835-BLK1)					Prepared & Analyzed: 11/15/22						
JP-4	0.00			µg/L							
Gasoline	ND	10	50	"							
Surrogate: o-Chlorotoluene (Gas)	*16.6*			"	*20.0*		*83*	*65-135*			
LCS (2209835-BS1)					Prepared & Analyzed: 11/15/22						
Gasoline	538	10	50	µg/L	500		108	70-130			
Surrogate: o-Chlorotoluene (Gas)	*16.4*			"	*20.0*		*82*	*65-135*			
LCS Dup (2209835-BSD1)					Prepared & Analyzed: 11/15/22						
Gasoline	538	10	50	µg/L	500		108	70-130	0.1	30	
Surrogate: o-Chlorotoluene (Gas)	*14.8*			"	*20.0*		*74*	*65-135*			
Matrix Spike (2209835-MS1)				**Source: 22K0761-02**	Prepared & Analyzed: 11/15/22						
Gasoline	483	10	50	µg/L	500	ND	97	68-132			
Surrogate: o-Chlorotoluene (Gas)	*16.4*			"	*20.0*		*82*	*65-135*			
Matrix Spike Dup (2209835-MSD1)				**Source: 22K0761-02**	Prepared & Analyzed: 11/15/22						
Gasoline	514	10	50	µg/L	500	ND	103	68-132	6	32	
Surrogate: o-Chlorotoluene (Gas)	*14.9*			"	*20.0*		*74*	*65-135*			

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0761
COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209810 - EPA 3510B GCMS											
Blank (2209810-BLK1)					Prepared & Analyzed: 11/11/22						
Methyl tert-butyl ether	ND	0.095	0.50	µg/L							
Surrogate: Toluene-d8	*8.54*			"	*10.0*		*85*	*72-125*			
LCS (2209810-BS1)					Prepared & Analyzed: 11/11/22						
Methyl tert-butyl ether	17.2	0.095	0.50	µg/L	20.0		86	52-130			
Surrogate: Toluene-d8	*11.3*			"	*10.0*		*113*	*72-125*			
LCS Dup (2209810-BSD1)					Prepared & Analyzed: 11/11/22						
Methyl tert-butyl ether	15.8	0.095	0.50	µg/L	20.0		79	52-130	8	30	
Surrogate: Toluene-d8	*10.6*			"	*10.0*		*106*	*72-125*			
Matrix Spike (2209810-MS1)			**Source: 22K0761-01**		Prepared: 11/11/22 Analyzed: 11/12/22						
Methyl tert-butyl ether	16.7	0.095	0.50	µg/L	20.0	ND	84	52-140			
Surrogate: Toluene-d8	*11.3*			"	*10.0*		*113*	*72-125*			
Matrix Spike Dup (2209810-MSD1)			**Source: 22K0761-01**		Prepared: 11/11/22 Analyzed: 11/12/22						
Methyl tert-butyl ether	19.7	0.095	0.50	µg/L	20.0	ND	99	52-140	17	30	
Surrogate: Toluene-d8	*10.8*			"	*10.0*		*108*	*72-125*			

11/28/22 16:52

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K0761**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QS-4	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QR-2	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22K0761 (1 of 1)

Report To:	Client Job Number 750.10 Task 0620.01	ANALYSIS REQUESTED	GEOTRACKER
Stillwater Sciences 279 Cousteau Place Suite 400 Davis, CA 95618	Destination Laboratory Rancho Cordova		EDF REPORT YES [X] NO [ ]
Project Manager Emily Applequist eapplequist@stillwatersci.com	[X] CLS (916) 638-7301 3249 Fitzgerald Road Rancho Cordova, CA 95742 www.californialab.com		GLOBAL ID
Project Name SMUD In situ & Chemistry Monitoring	[ ] OTHER		FIELD CONDITIONS:
Sampled By BRL, ERA			
Job Description Monitor water chemistry in UARP reaches.			
Site Location Upper American River Project Sites			TURNAROUND TIME IN DAYS / SPECIAL INSTRUCTIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	TSS, TDS, Hardness, Alkalinity, NO2-N+NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TAT 1	TAT 2	TAT 3	TAT 5	SPECIAL INSTRUCTIONS
~~11/10/22~~	~~1030~~	~~R-IS-20-BC~~		~~Surface water~~			~~6~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~				X	
11/10/22	1200	IS-17-BC		Surface water			6	x	x	x	x	x	x	x				X	
11/10/22	1030	R-IS-20-BC		Surface water			6	x	x	x	x	x	x	x				X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	INVOICE TO:
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	Project No. 750.10 Task 0620.01
				Surface water			6											X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (2) HNO_3 (3) = COLD (4)= H2SO4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
[signature]	Bethany Leach/Stillwater	11/10/22 /1500		

RECEIVED AT LAB BY: [signature] DATE/TIME: 11/10/22 1500 CONDITIONS/COMMENTS: 0.8/2.2

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER ______ AIR BILL # ______

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02

Lab No: 22K0820
Reported: 01/10/23
Phone: 530-756-7550

Included in this report are laboratory results for work order 22K0820, received on 11/17/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: IS-13-SC
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0820-01
Sampled: 11/16/22 11:00
Received: 11/17/22 08:30

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Copper	ug/l	0.19		0.04	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Lead	ug/l	0.019	J	0.007	0.050	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Mercury	ng/l	0.70		0.22	0.50	EPA 1631E	12/11/22	12/11/22	B2L1032 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	12/30/22	12/29/22	B2L1402 / EDM
Nickel	ug/l	0.16		0.02	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	11/22/22	B2K1252 / edm
Zinc	ug/l	0.25	J	0.12	0.50	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Copper	ug/l	0.16		0.04	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Nickel	ug/l	0.13		0.02	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/08/22	B2L0962 / edm
Zinc	ug/l	0.25	J	0.12	0.50	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM

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Analytical Report

Description: IS-14-SC
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0820-02
Sampled: 11/16/22 12:00
Received: 11/17/22 08:30

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Copper	ug/l	0.22		0.04	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Lead	ug/l	0.020	J	0.007	0.050	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Mercury	ng/l	0.79		0.22	0.50	EPA 1631E	12/11/22	12/11/22	B2L1032 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	12/30/22	12/29/22	B2L1402 / EDM
Nickel	ug/l	0.15		0.02	0.10	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	11/22/22	B2K1252 / edm
Zinc	ug/l	0.29	J	0.12	0.50	EPA 1638**	12/23/22	12/22/22	B2L1305 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Copper	ug/l	0.19		0.04	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Nickel	ug/l	0.11		0.02	0.10	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/08/22	B2L0962 / edm
Zinc	ug/l	0.27	J	0.12	0.50	EPA 1638**	12/24/22	12/24/22	B2L1325 / EDM

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Analytical Report

Description: IS-14-SC-FB
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0820-03
Sampled: 11/16/22 12:00
Received: 11/17/22 08:30

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Copper	ug/l	ND		0.04	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Mercury	ng/l	1.25		0.22	0.50	EPA 1631E	12/11/22	12/11/22	B2L1032 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	12/30/22	12/29/22	B2L1402 / EDM
Nickel	ug/l	ND		0.02	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	11/22/22	B2K1252 / edm
Zinc	ug/l	ND		0.12	0.50	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Copper	ug/l	ND		0.04	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Nickel	ug/l	ND		0.02	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/08/22	B2L0962 / edm
Zinc	ug/l	ND		0.12	0.50	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM

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Analytical Report

Description: R-IS-13-CR
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0820-04
Sampled: 11/16/22 13:00
Received: 11/17/22 08:30

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Copper	ug/l	0.22		0.04	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Lead	ug/l	0.009	J	0.007	0.050	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Mercury	ng/l	0.65		0.22	0.50	EPA 1631E	12/11/22	12/11/22	B2L1032 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	12/30/22	12/29/22	B2L1402 / EDM
Nickel	ug/l	0.14		0.02	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	11/22/22	B2K1252 / edm
Zinc	ug/l	0.23	J	0.12	0.50	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Copper	ug/l	0.20		0.04	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Nickel	ug/l	0.13		0.02	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/08/22	B2L0962 / edm
Zinc	ug/l	0.23	J	0.12	0.50	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM

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Analytical Report

Description: R-IS-13-CR-DUP
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0820-05
Sampled: 11/16/22 13:00
Received: 11/17/22 08:30

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Copper	ug/l	0.22		0.04	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Lead	ug/l	0.009	J	0.007	0.050	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Mercury	ng/l	0.61		0.22	0.50	EPA 1631E	12/11/22	12/11/22	B2L1032 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	12/30/22	12/29/22	B2L1402 / EDM
Nickel	ug/l	0.14		0.02	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	11/22/22	B2K1252 / edm
Zinc	ug/l	0.21	J	0.12	0.50	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Copper	ug/l	0.21		0.04	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Nickel	ug/l	0.12		0.02	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/08/22	B2L0962 / edm
Zinc	ug/l	0.25	J	0.12	0.50	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1252 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	207	2.0	ug/l	200		104	85-115			
Duplicate	Source: 22K0744-04									
Selenium	ND	10.0	ug/l		ND				20	
Duplicate	Source: 22K0820-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22K0744-04									
Selenium	205	10.0	ug/l	200	ND	102	75-125			
Matrix Spike	Source: 22K0820-01									
Selenium	206	2.0	ug/l	200	ND	103	75-125			
Metals - Total - Redding Location	**Batch B2L1032 - BrCl Digestion**									

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2L1032 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	10.4	0.50	ng/l	10.0		104	77-123			
Matrix Spike	Source: 22K0820-01									
Mercury	11.1	0.50	ng/l	10.0	0.70	103	71-125			
Matrix Spike	Source: 22K1100-01									
Mercury	12.4	0.50	ng/l	10.0	1.76	106	71-125			
Matrix Spike Dup	Source: 22K0820-01									
Mercury	11.3	0.50	ng/l	10.0	0.70	106	71-125	2.47	24	
Matrix Spike Dup	Source: 22K1100-01									
Mercury	12.0	0.50	ng/l	10.0	1.76	103	71-125	2.84	24	
Metals - Total - Redding Location	**Batch B2L1305 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2L1305 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.1	50-150			
Cadmium	0.24	0.10	ug/l	0.250		96.5	84-113			
Copper	0.23	0.10	ug/l	0.250		91.2	51-145			
Lead	0.121	0.050	ug/l	0.125		96.6	72-143			
Nickel	0.24	0.10	ug/l	0.250		94.7	68-134			
Zinc	1.19	0.50	ug/l	1.25		95.4	46-146			
LCS										
Arsenic	1.17	0.50	ug/l	1.25		93.7	50-150			
Cadmium	0.23	0.10	ug/l	0.250		92.0	84-113			
Copper	0.23	0.10	ug/l	0.250		92.5	51-145			
Lead	0.120	0.050	ug/l	0.125		96.3	72-143			
Nickel	0.26	0.10	ug/l	0.250		103	68-134			
Zinc	1.18	0.50	ug/l	1.25		94.2	46-146			
Matrix Spike	Source: 22K0516-01									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	96.8	84-113			
Copper	0.60	0.10	ug/l	0.500	0.11	97.5	51-145			
Lead	0.265	0.050	ug/l	0.250	0.020	97.8	72-143			
Nickel	0.57	0.10	ug/l	0.500	0.08	98.4	68-134			
Zinc	3.33	0.50	ug/l	2.50	0.95	95.2	46-146			
Matrix Spike	Source: 22K0717-01									
Arsenic	2.41	0.50	ug/l	2.50	ND	96.3	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	100	84-113			
Copper	0.60	0.10	ug/l	0.500	0.12	96.0	51-145			
Lead	0.247	0.050	ug/l	0.250	ND	98.8	72-143			
Nickel	0.53	0.10	ug/l	0.500	0.04	97.5	68-134			
Zinc	2.49	0.50	ug/l	2.50	ND	99.4	46-146			
Matrix Spike Dup	Source: 22K0516-01									
Arsenic	2.37	0.50	ug/l	2.50	ND	94.9	50-150	6.45	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	98.5	84-113	1.77	20	
Copper	0.59	0.10	ug/l	0.500	0.11	95.9	51-145	1.29	20	
Lead	0.258	0.050	ug/l	0.250	0.020	95.1	72-143	2.61	20	
Nickel	0.57	0.10	ug/l	0.500	0.08	97.5	68-134	0.753	20	
Zinc	3.31	0.50	ug/l	2.50	0.95	94.5	46-146	0.558	20	
Matrix Spike Dup	Source: 22K0717-01									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2L1305 - EPA 1638 - Closed Bottle Oven Digestion**									
Arsenic	2.43	0.50	ug/l	2.50	ND	97.0	50-150	0.752	20	
Cadmium	0.47	0.10	ug/l	0.500	ND	94.6	84-113	5.67	20	
Copper	0.63	0.10	ug/l	0.500	0.12	103	51-145	5.26	20	
Lead	0.250	0.050	ug/l	0.250	ND	99.9	72-143	1.07	20	
Nickel	0.53	0.10	ug/l	0.500	0.04	97.6	68-134	0.132	20	
Zinc	2.51	0.50	ug/l	2.50	ND	100	46-146	0.831	20	
Metals - Total - Redding Location	**Batch B2L1402 - EPA 1630 Distillation (Modified)**									
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.21	0.050	ng/l	2.00		111	67-133			
Matrix Spike	Source: 22K0642-01									
Methyl Mercury as Mercury	0.976	0.050	ng/l	1.00	ND	97.6	65-135			
Matrix Spike	Source: 22K0820-04									
Methyl Mercury as Mercury	1.12	0.050	ng/l	1.00	ND	112	65-135			
Matrix Spike Dup	Source: 22K0642-01									
Methyl Mercury as Mercury	1.16	0.050	ng/l	1.00	ND	116	65-135	17.6	35	
Matrix Spike Dup	Source: 22K0820-04									
Methyl Mercury as Mercury	1.17	0.050	ng/l	1.00	ND	117	65-135	4.38	35	
Metals - Total - Redding Location	**Batch B3A0934 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B3A0934 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.2	50-150			
Cadmium	0.24	0.10	ug/l	0.250		97.8	84-113			
Copper	0.26	0.10	ug/l	0.250		103	51-145			
Lead	0.122	0.050	ug/l	0.125		97.2	72-143			
Nickel	0.25	0.10	ug/l	0.250		99.9	68-134			
Zinc	1.23	0.50	ug/l	1.25		98.7	46-146			
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.3	50-150			
Cadmium	0.25	0.10	ug/l	0.250		99.7	84-113			
Copper	0.25	0.10	ug/l	0.250		98.6	51-145			
Lead	0.122	0.050	ug/l	0.125		97.9	72-143			
Nickel	0.25	0.10	ug/l	0.250		101	68-134			
Zinc	1.25	0.50	ug/l	1.25		99.9	46-146			
Matrix Spike	Source: 22K0820-03									
Arsenic	2.50	0.50	ug/l	2.50	ND	99.9	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	103	84-113			
Copper	0.52	0.10	ug/l	0.500	ND	103	51-145			
Lead	0.252	0.050	ug/l	0.250	ND	101	72-143			
Nickel	0.51	0.10	ug/l	0.500	ND	101	68-134			
Zinc	2.59	0.50	ug/l	2.50	ND	104	46-146			
Matrix Spike	Source: 22L0732-01									
Arsenic	3.86	0.50	ug/l	2.50	1.33	101	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	99.0	84-113			
Copper	1.44	0.10	ug/l	0.500	0.97	94.2	51-145			
Lead	0.306	0.050	ug/l	0.250	0.049	103	72-143			
Nickel	1.30	0.10	ug/l	0.500	0.83	93.8	68-134			
Zinc	4.87	0.50	ug/l	2.50	2.54	93.3	46-146			
Matrix Spike Dup	Source: 22K0820-03									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150	1.18	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.9	84-113	2.89	20	
Copper	0.53	0.10	ug/l	0.500	ND	105	51-145	2.16	20	
Lead	0.258	0.050	ug/l	0.250	ND	103	72-143	2.41	20	
Nickel	0.50	0.10	ug/l	0.500	ND	101	68-134	0.453	20	
Zinc	2.53	0.50	ug/l	2.50	ND	101	46-146	2.59	20	
Matrix Spike Dup	Source: 22L0732-01									
Arsenic	3.87	0.50	ug/l	2.50	1.33	102	50-150	0.276	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	97.8	84-113	1.24	20	
Copper	1.44	0.10	ug/l	0.500	0.97	94.8	51-145	0.217	20	
Lead	0.318	0.050	ug/l	0.250	0.049	107	72-143	3.92	20	
Nickel	1.32	0.10	ug/l	0.500	0.83	99.7	68-134	2.23	20	
Zinc	4.98	0.50	ug/l	2.50	2.54	97.5	46-146	2.14	20	
Metals - Dissolved - Redding Location	**Batch B2L0962 - EPA 200.8 Diss**									

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2L0962 - EPA 200.8 Diss**									
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	213	2.0	ug/l	200		107	85-115			
Duplicate	Source: 22K0576-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22K0717-01									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22K0576-01									
Selenium	218	2.0	ug/l	200	ND	109	75-125			
Matrix Spike	Source: 22K0717-01									
Selenium	215	2.0	ug/l	200	ND	107	75-125			
Metals - Dissolved - Redding Location	**Batch B2L1325 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2L1325 - EPA 1638 - Dissolved**									
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.27	0.50	ug/l	1.25		102	50-150			
Cadmium	0.26	0.10	ug/l	0.250		103	84-113			
Copper	0.25	0.10	ug/l	0.250		101	51-145			
Lead	0.125	0.050	ug/l	0.125		100	72-143			
Nickel	0.26	0.10	ug/l	0.250		103	68-134			
Zinc	1.32	0.50	ug/l	1.25		105	46-146			
LCS										
Arsenic	1.31	0.50	ug/l	1.25		105	50-150			
Cadmium	0.25	0.10	ug/l	0.250		99.3	84-113			
Copper	0.26	0.10	ug/l	0.250		104	51-145			
Lead	0.128	0.050	ug/l	0.125		102	72-143			
Nickel	0.26	0.10	ug/l	0.250		104	68-134			
Zinc	1.37	0.50	ug/l	1.25		110	46-146			
Matrix Spike	Source: 22K0516-01									
Arsenic	2.49	0.50	ug/l	2.50	ND	99.6	50-150			
Cadmium	0.48	0.10	ug/l	0.500	ND	95.7	84-113			
Copper	0.56	0.10	ug/l	0.500	0.07	99.1	51-145			
Lead	0.253	0.050	ug/l	0.250	ND	101	72-143			
Nickel	0.73	0.10	ug/l	0.500	0.20	105	68-134			
Zinc	3.13	0.50	ug/l	2.50	0.70	96.9	46-146			
Matrix Spike	Source: 22K0717-03									
Arsenic	2.45	0.50	ug/l	2.50	ND	98.0	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	99.0	84-113			
Copper	0.60	0.10	ug/l	0.500	0.11	98.4	51-145			
Lead	0.242	0.050	ug/l	0.250	ND	96.8	72-143			
Nickel	0.52	0.10	ug/l	0.500	0.04	96.2	68-134			
Zinc	2.50	0.50	ug/l	2.50	ND	100	46-146			
Matrix Spike Dup	Source: 22K0516-01									
Arsenic	2.50	0.50	ug/l	2.50	ND	99.9	50-150	0.283	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	96.3	84-113	0.561	20	
Copper	0.56	0.10	ug/l	0.500	0.07	98.1	51-145	0.874	20	
Lead	0.239	0.050	ug/l	0.250	ND	95.6	72-143	5.51	20	
Nickel	0.70	0.10	ug/l	0.500	0.20	99.5	68-134	3.81	20	
Zinc	3.16	0.50	ug/l	2.50	0.70	98.3	46-146	1.12	20	
Matrix Spike Dup	Source: 22K0717-03									
Arsenic	2.43	0.50	ug/l	2.50	ND	97.0	50-150	1.05	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	95.1	84-113	4.05	20	
Copper	0.59	0.10	ug/l	0.500	0.11	97.4	51-145	0.775	20	

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Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2L1325 - EPA 1638 - Dissolved**									
Lead	0.239	0.050	ug/l	0.250	ND	95.5	72-143	1.33	20	
Nickel	0.52	0.10	ug/l	0.500	0.04	97.0	68-134	0.762	20	
Zinc	2.56	0.50	ug/l	2.50	ND	103	46-146	2.30	20	
Metals - Dissolved - Redding Location	**Batch B3A0952 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.24	0.10	ug/l	0.250		95.0	84-113			
Copper	0.27	0.10	ug/l	0.250		107	51-145			
Lead	0.129	0.050	ug/l	0.125		104	72-143			
Nickel	0.25	0.10	ug/l	0.250		101	68-134			
Zinc	1.27	0.50	ug/l	1.25		102	46-146			
LCS										
Arsenic	1.28	0.50	ug/l	1.25		102	50-150			
Cadmium	0.25	0.10	ug/l	0.250		100	84-113			
Copper	0.26	0.10	ug/l	0.250		106	51-145			
Lead	0.131	0.050	ug/l	0.125		105	72-143			
Nickel	0.28	0.10	ug/l	0.250		113	68-134			
Matrix Spike	Source: 22K0820-03									
Arsenic	2.51	0.50	ug/l	2.50	ND	100	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113			
Copper	0.52	0.10	ug/l	0.500	ND	103	51-145			
Lead	0.250	0.050	ug/l	0.250	ND	100	72-143			
Nickel	0.52	0.10	ug/l	0.500	ND	104	68-134			
Zinc	2.54	0.50	ug/l	2.50	ND	102	46-146			
Matrix Spike	Source: 22K1046-02									
Arsenic	2.69	0.50	ug/l	2.50	ND	108	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.71	0.10	ug/l	0.500	0.19	103	51-145			
Lead	0.261	0.050	ug/l	0.250	ND	104	72-143			
Nickel	0.56	0.10	ug/l	0.500	0.06	99.7	68-134			

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B3A0952 - EPA 1638 - Dissolved**									
Matrix Spike Dup	Source: 22K0820-03									
Arsenic	2.55	0.50	ug/l	2.50	ND	102	50-150	1.71	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	96.2	84-113	5.94	20	
Copper	0.51	0.10	ug/l	0.500	ND	102	51-145	1.72	20	
Lead	0.252	0.050	ug/l	0.250	ND	101	72-143	0.991	20	
Nickel	0.51	0.10	ug/l	0.500	ND	103	68-134	1.20	20	
Zinc	2.61	0.50	ug/l	2.50	ND	104	46-146	2.66	20	
Matrix Spike Dup	Source: 22K1046-02									
Arsenic	2.74	0.50	ug/l	2.50	ND	109	50-150	1.64	20	
Cadmium	0.51	0.10	ug/l	0.500	ND	101	84-113	0.103	20	
Copper	0.71	0.10	ug/l	0.500	0.19	103	51-145	0.0936	20	
Lead	0.261	0.050	ug/l	0.250	ND	104	72-143	0.0734	20	
Nickel	0.61	0.10	ug/l	0.500	0.06	110	68-134	9.11	20	

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	The laboratory does not hold CA-ELAP accreditiation for this analyte or method. Accreditation may not be available from CA-ELAP for this analyte or method.
**	The laboratory holds accreditation for this analyte or method with WA-ECY Lab ID: Lab ID C783. Accreditation is not offered for this method by CA-ELAP
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Accreditations Held:
Redding Location: CA-ELAP - Cert # 1677
Chico Location: CA-ELAP - Cert # 2718

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen
Ricky Jensen, Operations Manager
Pace Analytical Services LLC - Redding CA

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Analytical Report

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

LABORATORY WORK ORDER # 22K0820 | PAGE 1 OF 1 | 22K0820

basic laboratory

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494
☐ 3860 Morrow Lane, Suite F Chico, CA 95928 (530) 894-8966 FAX: (530) 894-5143

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS: 279 Cousteau Place, Suite 400, Davis, CA 95618

REPORT TO ☐ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED: ☐ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one): ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	11/16/22	11:00 AM PM	SW			IS-13-SC		6	✓	✓	✓	✓	✓	✓
2	11/16/22	12:00 AM PM				IS-14-SC		6	✓	✓	✓	✓	✓	✓
3	11/16/22	12:00 AM PM				IS-14-SC-FB		6	✓	✓	✓	✓	✓	✓
4	11/16/22	1:00 AM PM				R-IS-13-CR		6	✓	✓	✓	✓	✓	✓
5	11/16/22	1:00 AM PM				R-IS-13-CR-DUP		6	✓	✓	✓	✓	✓	✓
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												

ANALYSES REQUESTED

SAMPLED BY: (please print) Jakob Woodall

RELINQUISHED DATE / TIME: 11/16/22 / 3:00pm

SAMPLING / ANALYSIS COMMENTS: (1) Total and Dissolved LL 1638 Metals

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME	SIGNATURE	DATE
Jakob Woodall		11/16/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
	11/17/22 0830 1407		11/18/22 1516

For Official Lab Comments Only

RH 11/17/22

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

SAMPLE RECEIPT CHECKLIST

WO NUMBER 22K0820

Samples Received Via:
Fed-Ex ☑ Client Walk-In ☐ Courier ☐
UPS ☐ Pace Field Service ☐ Other ☐

Samples Received By: RH Date: 11/17/22 Time: 0830
Are samples for regulatory compliance? Yes ☐ No ☐

THERMAL PRESERVATION

Were samples received in a cooler? Yes ☑ No ☐ If no, take temperature of representative sample container and record below.
If no, do they require thermal preservation? Yes ☐ No ☐ If no, why not? Non-regulatory ☐ Not Required by Method ☐
Samples received on ice? Yes ☑ No ☐ Ice type? Wet ☑ Ice Packs ☐ Other _____
Samples received the same day collected? Yes ☐ No ☑

Therm. ID (Circle one): Therm-36(IR) Therm-37(IR) (Therm-59(IR)) Therm-41(Stick) Therm-C01(IR) Therm-C02(IR) Other: _____

Cooler #1 Init. Temp °C 4.3 Correction °C +0.1 Corrected Temp °C 4.4
Cooler #2 Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
Cooler #3 Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
No Cooler - Representative Sample Temperature: Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
Do samples received meet thermal preservation requirements? Yes ☑ No ☐ N/A ☐

Thermal Preservation Notes/Discrepancies/Nonconformances:

SAMPLE CONDITION AND PROCESSING

Do all sample IDs on labels match the COC? Yes ☑ No ☐
Custody seals present? Yes ☐ No ☐ N/A ☑
Samples in proper containers? Yes ☑ No ☐
Sample containers damaged? Yes ☐ No ☑
Sufficient sample volume for indicated tests? Yes ☑ No ☐
Samples received with sufficient holding time? Yes ☑ No ☐
Are VOA vials free of headspace? Yes ☐ No ☐ N/A ☑

CHEMICAL PRESERVATION

Were the sample containers received with labels that indicate that appropriate preservatives were present for the indicated tests? Yes ☑ No ☐ N/A ☐
Were samples received properly dechlorinated? Yes ☐ No ☐ N/A ☐ For Dechlorination checks done by analysts, were dechlor. agent labels present? Yes ☐ No ☐
Preservation checked by Sample Receiving? Initials RH Date & Time 11/17/22 1433 Test Strip (ID 2J12028)
Dechlorination checked by Sample Receiving? Initials_____ Date & Time _____ Test Strip (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑

Added upon sample receipt? Yes ☑ No ☐
In Lab By:_____ Meter ID:_____

Were any additional preservatives added after receipt? Yes ☐ No ☐ Initial pH: _____ Final pH _____
If yes, is addition of preservatives allowed by the method? Yes ☐ No ☐

List preservatives added at receipt:
Type: HNO3 Volume Added: ~2mL ID: 2J28023 Type: _____ Volume Added:_____ ID:_____
Type: _____ Volume Added:_____ ID:_____ Type: _____ Volume Added:_____ ID:_____

COMMENTS, DISCREPANCEIS, ANOMALIES, NONCONFORMANCES

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02

Lab No: 22K0844
Reported: 01/12/23
Phone: 530-756-7550

Included in this report are laboratory results for work order 22K0844, received on 11/18/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: R-IS-19-BI
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0844-01
Sampled: 11/17/22 10:00
Received: 11/18/22 08:30

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.23	J	0.12	0.50	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Copper	ug/l	0.20		0.04	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Lead	ug/l	0.021	J	0.007	0.050	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Mercury	ng/l	0.49	J	0.22	0.50	EPA 1631E	12/11/22	12/11/22	B2L1032 / DJC
Methyl Mercury as Mercury	ng/l	0.026	J	0.017	0.050	EPA 1630**	12/30/22	12/29/22	B2L1402 / EDM
Nickel	ug/l	0.06	J	0.02	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/01/22	B2K1455 / edm
Zinc	ug/l	0.63		0.12	0.50	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.24	J	0.12	0.50	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Copper	ug/l	0.20		0.04	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Lead	ug/l	0.016	J	0.007	0.050	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Nickel	ug/l	0.08	J	0.02	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/08/22	B2L0963 / edm
Zinc	ug/l	0.83		0.12	0.50	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM

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Analytical Report

Description: IS-3-LRR
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0844-02
Sampled: 11/17/22 11:00
Received: 11/18/22 08:30

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.24	J	0.12	0.50	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Copper	ug/l	0.24		0.04	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Lead	ug/l	0.042	J	0.007	0.050	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Mercury	ng/l	0.61		0.22	0.50	EPA 1631E	12/11/22	12/11/22	B2L1032 / DJC
Methyl Mercury as Mercury	ng/l	0.023	J	0.017	0.050	EPA 1630**	01/11/23	01/10/23	B3A1023 / EDM
Nickel	ug/l	0.06	J	0.02	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/01/22	B2K1455 / edm
Zinc	ug/l	0.22	J	0.12	0.50	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.21	J	0.12	0.50	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Copper	ug/l	0.20		0.04	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Lead	ug/l	0.016	J	0.007	0.050	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Nickel	ug/l	0.04	J	0.02	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/08/22	B2L0963 / edm
Zinc	ug/l	0.26	J	0.12	0.50	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1455 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	211	2.0	ug/l	200		105	85-115			
Duplicate	Source: 22K0707-02									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22K0987-03									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22K0707-02									
Selenium	202	2.0	ug/l	200	ND	101	75-125			
Matrix Spike	Source: 22K0987-03									
Selenium	207	2.0	ug/l	200	ND	103	75-125			
Metals - Total - Redding Location	**Batch B2L1032 - BrCl Digestion**									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2L1032 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	10.4	0.50	ng/l	10.0		104	77-123			
Matrix Spike	Source: 22K0820-01									
Mercury	11.1	0.50	ng/l	10.0	0.70	103	71-125			
Matrix Spike	Source: 22K1100-01									
Mercury	12.4	0.50	ng/l	10.0	1.76	106	71-125			
Matrix Spike Dup	Source: 22K0820-01									
Mercury	11.3	0.50	ng/l	10.0	0.70	106	71-125	2.47	24	
Matrix Spike Dup	Source: 22K1100-01									
Mercury	12.0	0.50	ng/l	10.0	1.76	103	71-125	2.84	24	
Metals - Total - Redding Location	**Batch B2L1402 - EPA 1630 Distillation (Modified)**									
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.21	0.050	ng/l	2.00		111	67-133			
Matrix Spike	Source: 22K0642-01									
Methyl Mercury as Mercury	0.976	0.050	ng/l	1.00	ND	97.6	65-135			
Matrix Spike	Source: 22K0820-04									
Methyl Mercury as Mercury	1.12	0.050	ng/l	1.00	ND	112	65-135			
Matrix Spike Dup	Source: 22K0642-01									
Methyl Mercury as Mercury	1.16	0.050	ng/l	1.00	ND	116	65-135	17.6	35	
Matrix Spike Dup	Source: 22K0820-04									
Methyl Mercury as Mercury	1.17	0.050	ng/l	1.00	ND	117	65-135	4.38	35	
Metals - Total - Redding Location	**Batch B3A0934 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B3A0934 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.2	50-150			
Cadmium	0.24	0.10	ug/l	0.250		97.8	84-113			
Copper	0.26	0.10	ug/l	0.250		103	51-145			
Lead	0.122	0.050	ug/l	0.125		97.2	72-143			
Nickel	0.25	0.10	ug/l	0.250		99.9	68-134			
Zinc	1.23	0.50	ug/l	1.25		98.7	46-146			
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.3	50-150			
Cadmium	0.25	0.10	ug/l	0.250		99.7	84-113			
Copper	0.25	0.10	ug/l	0.250		98.6	51-145			
Lead	0.122	0.050	ug/l	0.125		97.9	72-143			
Nickel	0.25	0.10	ug/l	0.250		101	68-134			
Zinc	1.25	0.50	ug/l	1.25		99.9	46-146			
Matrix Spike	Source: 22K0820-03									
Arsenic	2.50	0.50	ug/l	2.50	ND	99.9	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	103	84-113			
Copper	0.52	0.10	ug/l	0.500	ND	103	51-145			
Lead	0.252	0.050	ug/l	0.250	ND	101	72-143			
Nickel	0.51	0.10	ug/l	0.500	ND	101	68-134			
Zinc	2.59	0.50	ug/l	2.50	ND	104	46-146			
Matrix Spike	Source: 22L0732-01									
Arsenic	3.86	0.50	ug/l	2.50	1.33	101	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	99.0	84-113			
Copper	1.44	0.10	ug/l	0.500	0.97	94.2	51-145			
Lead	0.306	0.050	ug/l	0.250	0.049	103	72-143			
Nickel	1.30	0.10	ug/l	0.500	0.83	93.8	68-134			
Zinc	4.87	0.50	ug/l	2.50	2.54	93.3	46-146			
Matrix Spike Dup	Source: 22K0820-03									

2218 Railroad Avenue
Redding, California 96001
voice 530.243.7234
fax 530.243.7494

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Chico, California 95928
voice 530.894.8966
fax 530.894.5143

Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B3A0934 - EPA 1638 - Closed Bottle Oven Digestion**									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150	1.18	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.9	84-113	2.89	20	
Copper	0.53	0.10	ug/l	0.500	ND	105	51-145	2.16	20	
Lead	0.258	0.050	ug/l	0.250	ND	103	72-143	2.41	20	
Nickel	0.50	0.10	ug/l	0.500	ND	101	68-134	0.453	20	
Zinc	2.53	0.50	ug/l	2.50	ND	101	46-146	2.59	20	
Matrix Spike Dup	Source: 22L0732-01									
Arsenic	3.87	0.50	ug/l	2.50	1.33	102	50-150	0.276	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	97.8	84-113	1.24	20	
Copper	1.44	0.10	ug/l	0.500	0.97	94.8	51-145	0.217	20	
Lead	0.318	0.050	ug/l	0.250	0.049	107	72-143	3.92	20	
Nickel	1.32	0.10	ug/l	0.500	0.83	99.7	68-134	2.23	20	
Zinc	4.98	0.50	ug/l	2.50	2.54	97.5	46-146	2.14	20	
Metals - Total - Redding Location	**Batch B3A1023 - EPA 1630 Distillation (Modified)**									
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.12	0.050	ng/l	2.00		106	67-133			
Matrix Spike	Source: 22K0844-02									
Methyl Mercury as Mercury	1.28	0.050	ng/l	1.00	0.023	125	65-135			
Matrix Spike	Source: 22L0150-01									
Methyl Mercury as Mercury	1.26	0.050	ng/l	1.00	0.019	124	65-135			
Matrix Spike Dup	Source: 22K0844-02									
Methyl Mercury as Mercury	1.24	0.050	ng/l	1.00	0.023	122	65-135	2.81	35	
Matrix Spike Dup	Source: 22L0150-01									
Methyl Mercury as Mercury	1.26	0.050	ng/l	1.00	0.019	125	65-135	0.277	35	
Metals - Dissolved - Redding Location	**Batch B2L0963 - EPA 200.8 Diss**									
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B2L0963 - EPA 200.8 Diss**									
Selenium	215	2.0	ug/l	200		107	85-115			
Duplicate	Source: 22K0824-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22K0903-04									
Selenium	0.5	2.0	ug/l		0.5			0.502	20	J
Matrix Spike	Source: 22K0824-01									
Selenium	212	2.0	ug/l	200	ND	106	75-125			
Matrix Spike	Source: 22K0903-04									
Selenium	209	2.0	ug/l	200	0.5	104	75-125			
Metals - Dissolved - Redding Location	**Batch B3A0952 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.24	0.10	ug/l	0.250		95.0	84-113			
Copper	0.27	0.10	ug/l	0.250		107	51-145			
Lead	0.129	0.050	ug/l	0.125		104	72-143			
Nickel	0.25	0.10	ug/l	0.250		101	68-134			
Zinc	1.27	0.50	ug/l	1.25		102	46-146			
LCS										
Arsenic	1.28	0.50	ug/l	1.25		102	50-150			
Cadmium	0.25	0.10	ug/l	0.250		100	84-113			
Copper	0.26	0.10	ug/l	0.250		106	51-145			
Lead	0.131	0.050	ug/l	0.125		105	72-143			
Nickel	0.28	0.10	ug/l	0.250		113	68-134			
Matrix Spike	Source: 22K0820-03									
Arsenic	2.51	0.50	ug/l	2.50	ND	100	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113			
Copper	0.52	0.10	ug/l	0.500	ND	103	51-145			

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B3A0952 - EPA 1638 - Dissolved**									
Lead	0.250	0.050	ug/l	0.250	ND	100	72-143			
Nickel	0.52	0.10	ug/l	0.500	ND	104	68-134			
Zinc	2.54	0.50	ug/l	2.50	ND	102	46-146			
Matrix Spike	Source: 22K1046-02									
Arsenic	2.69	0.50	ug/l	2.50	ND	108	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.71	0.10	ug/l	0.500	0.19	103	51-145			
Lead	0.261	0.050	ug/l	0.250	ND	104	72-143			
Nickel	0.56	0.10	ug/l	0.500	0.06	99.7	68-134			
Matrix Spike Dup	Source: 22K0820-03									
Arsenic	2.55	0.50	ug/l	2.50	ND	102	50-150	1.71	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	96.2	84-113	5.94	20	
Copper	0.51	0.10	ug/l	0.500	ND	102	51-145	1.72	20	
Lead	0.252	0.050	ug/l	0.250	ND	101	72-143	0.991	20	
Nickel	0.51	0.10	ug/l	0.500	ND	103	68-134	1.20	20	
Zinc	2.61	0.50	ug/l	2.50	ND	104	46-146	2.66	20	
Matrix Spike Dup	Source: 22K1046-02									
Arsenic	2.74	0.50	ug/l	2.50	ND	109	50-150	1.64	20	
Cadmium	0.51	0.10	ug/l	0.500	ND	101	84-113	0.103	20	
Copper	0.71	0.10	ug/l	0.500	0.19	103	51-145	0.0936	20	
Lead	0.261	0.050	ug/l	0.250	ND	104	72-143	0.0734	20	
Nickel	0.61	0.10	ug/l	0.500	0.06	110	68-134	9.11	20	

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	The laboratory does not hold CA-ELAP accreditiation for this analyte or method. Accreditation may not be available from CA-ELAP for this analyte or method.
**	The laboratory holds accreditation for this analyte or method with WA-ECY Lab ID: Lab ID C783. Accreditation is not offered for this method by CA-ELAP
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Accreditations Held:
Redding Location: CA-ELAP - Cert # 1677
Chico Location: CA-ELAP - Cert # 2718

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Analytical Report

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen
Ricky Jensen, Operations Manager
Pace Analytical Services LLC - Redding CA

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494

☐ 3860 Morrow Lane, Suite F Chico, CA 95928 (530) 894-8966 FAX: (530) 894-5143

LABORATORY WORK ORDER # 22K0844

PAGE 1 OF 1

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS
279 Cousteau Place, Suite 400
Davis, CA 95618

REPORT TO ☐ Email ☐ Mail Hardcopy

NAME / ATTENTION: Emily Applequist

PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED: ☐ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one): ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	ANALYSES REQUESTED: T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	11/17/22	10:09 AM PM	SW			R-IS-19-BI		6	X	X	X	X	X	X
2	11/17/22	11:00 AM PM	SW			IS-3-LRR		6	X	X	X	X	X	X
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												

SAMPLED BY: (please print) Jakob Woodall

RELINQUISHED DATE / TIME: 1:00pm 11/17/22

SAMPLING / ANALYSIS COMMENTS

(1) Total and Dissolved LL 1638 Metals

☒ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME	SIGNATURE	DATE
Jakob Woodall		11/17/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
	11/18/22 0830		11/21/22 1733

For Official Lab Comments Only

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

SAMPLE RECEIPT CHECKLIST

WO NUMBER 22k0844

Samples Received Via:
Fed-Ex ☑ Client Walk-In ☐ Courier ☐
UPS ☐ Pace Field Service ☐ Other ☐

Samples Received By: RU Date: 11/18/22 Time: 0830
Are samples for regulatory compliance? Yes ☑ No ☐

THERMAL PRESERVATION

Were samples received in a cooler? Yes ☑ No ☐ If no, take temperature of representative sample container and record below.
If no, do they require thermal preservation? Yes ☐ No ☐ If no, why not? Non-regulatory ☐ Not Required by Method ☐
Samples received on ice? Yes ☑ No ☐ Ice type? Wet ☑ Ice Packs ☐ Other _____
Samples received the same day collected? Yes ☐ No ☑

Therm. ID (Circle one): Therm-36(IR) Therm-37(IR) (Therm-59(IR)) Therm-41(Stick) Therm-C01(IR) Therm-C02(IR) Other: _____

Cooler #1 Init. Temp °C 5.0 Correction °C +0.1 Corrected Temp °C 5.1
Cooler #2 Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
Cooler #3 Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
No Cooler - Representative Sample Temperature: Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____

Do samples received meet thermal preservation requirements? Yes ☑ No ☐ N/A ☐

Thermal Preservation Notes/Discrepancies/Nonconformances:

SAMPLE CONDITION AND PROCESSING

Do all sample IDs on labels match the COC? Yes ☑ No ☐
Custody seals present? Yes ☐ No ☐ N/A ☑
Samples in proper containers? Yes ☑ No ☐
Sample containers damaged? Yes ☐ No ☑
Sufficient sample volume for indicated tests? Yes ☑ No ☐
Samples received with sufficient holding time? Yes ☑ No ☐
Are VOA vials free of headspace? Yes ☐ No ☐ N/A ☑

CHEMICAL PRESERVATION

Were the sample containers received with labels that indicate that appropriate preservatives were present for the indicated tests? Yes ☑ No ☐ N/A ☐
Were samples received properly dechlorinated? Yes ☐ No ☐ N/A ☐ For Dechlorination checks done by analysts, were dechlor. agent labels present? Yes ☐ No ☐
Preservation checked by Sample Receiving? Initials RU Date & Time 11/18/22 1043 Test Strip (ID 2J12028)
Dechlorination checked by Sample Receiving? Initials_____ Date & Time _____ Test Strip (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑

Added upon sample receipt? Yes ☑ No ☐
In Lab By:_____ Meter ID:_____

Were any additional preservatives added after receipt? Yes ☐ No ☐ Initial pH: _____ Final pH _____
If yes, is addition of preservatives allowed by the method? Yes ☐ No ☐

List preservatives added at receipt:
Type: HNO3 Volume Added: ~2mL ID: 2I28023 Type: _____ Volume Added:_____ ID:_____
Type: _____ Volume Added:_____ ID:_____ Type: _____ Volume Added:_____ ID:_____

COMMENTS, DISCREPANCEIS, ANOMALIES, NONCONFORMANCES

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

November 30, 2022

CLS Work Order #: 22K0904
COC #:

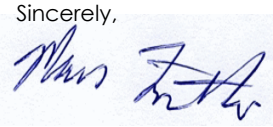
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 11/14/22 14:09. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

11/30/22 13:26

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0904
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-5-UVR (22K0904-01) Water	**Sampled: 11/14/22 08:45**		**Received: 11/14/22 14:09**							
Ammonia as N	**0.031**	0.025	0.10	mg/L	1	2209903	11/16/22	11/16/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**7.6**	0.50	5.0	"	"	2209856	11/15/22	11/15/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.45**	0.026	0.50	"	"	2209836	11/15/22	11/15/22	EPA 300.0	J
Cyanide (total)	**0.0038**	0.0012	0.0050	"	"	2209971	11/18/22	11/21/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209944	11/17/22	11/22/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209856	11/15/22	11/15/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209836	11/15/22	11/15/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2209843	11/15/22	11/15/22	SM4500-P E	
Sulfate as SO4	**0.33**	0.038	0.50	"	"	2209836	11/15/22	11/15/22	EPA 300.0	J
Total Alkalinity	**7.6**	1.0	5.0	"	"	2209856	11/15/22	11/15/22	SM2320B	
Total Dissolved Solids	**19**	5.0	10	"	"	2209905	11/16/22	11/16/22	SM2540C	
Total Hardness as CaCO3	**4.8**	0.19	1.0	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.21**	0.040	0.20	"	"	2209946	11/17/22	11/17/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.3**	0.54	1.0	"	"	2209973	11/18/22	11/18/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209982	11/18/22	11/18/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209969	11/18/22	11/18/22	SM2540D	
R-IS-6-UVR (22K0904-02) Water	**Sampled: 11/14/22 10:15**		**Received: 11/14/22 14:09**							
Ammonia as N	**0.073**	0.025	0.10	mg/L	1	2209903	11/16/22	11/16/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**7.6**	0.50	5.0	"	"	2209856	11/15/22	11/15/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.44**	0.026	0.50	"	"	2209836	11/15/22	11/15/22	EPA 300.0	J
Cyanide (total)	**0.0049**	0.0012	0.0050	"	"	2209971	11/18/22	11/21/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209944	11/17/22	11/22/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209856	11/15/22	11/15/22	SM2320B	
Nitrate/Nitrite as N	**0.15**	0.055	0.40	"	"	2209836	11/15/22	11/15/22	EPA 300.0	J
Orthophosphate as PO4	**0.0066**	0.0051	0.15	"	"	2209843	11/15/22	11/15/22	SM4500-P E	J

11/30/22 13:26

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0904
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-6-UVR (22K0904-02) Water	**Sampled: 11/14/22 10:15**		**Received: 11/14/22 14:09**							
Sulfate as SO4	**0.33**	0.038	0.50	mg/L	1	2209836	11/15/22	11/15/22	EPA 300.0	J
Total Alkalinity	**7.6**	1.0	5.0	"	"	2209856	11/15/22	11/15/22	SM2320B	
Total Dissolved Solids	**19**	5.0	10	"	"	2209905	11/16/22	11/16/22	SM2540C	
Total Hardness as CaCO3	**4.9**	0.19	1.0	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.16**	0.040	0.20	"	"	2209946	11/17/22	11/17/22	SM4500-NH3F-2011	J
Total Organic Carbon	**2.2**	0.54	1.0	"	"	2209973	11/18/22	11/18/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209982	11/18/22	11/18/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209969	11/18/22	11/18/22	SM2540D	
R-IS-7-UVR (22K0904-03) Water	**Sampled: 11/14/22 09:30**		**Received: 11/14/22 14:09**							
Ammonia as N	**0.051**	0.025	0.10	mg/L	1	2209903	11/16/22	11/16/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**7.2**	0.50	5.0	"	"	2209856	11/15/22	11/15/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.44**	0.026	0.50	"	"	2209836	11/15/22	11/15/22	EPA 300.0	J
Cyanide (total)	**0.0060**	0.0012	0.0050	"	"	2209971	11/18/22	11/21/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209944	11/17/22	11/22/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209856	11/15/22	11/15/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209836	11/15/22	11/15/22	EPA 300.0	
Orthophosphate as PO4	**0.023**	0.0051	0.15	"	"	2209843	11/15/22	11/15/22	SM4500-P E	J
Sulfate as SO4	**0.34**	0.038	0.50	"	"	2209836	11/15/22	11/15/22	EPA 300.0	J
Total Alkalinity	**7.2**	1.0	5.0	"	"	2209856	11/15/22	11/15/22	SM2320B	
Total Dissolved Solids	**24**	5.0	10	"	"	2209905	11/16/22	11/16/22	SM2540C	
Total Hardness as CaCO3	**4.8**	0.19	1.0	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.23**	0.040	0.20	"	"	2209946	11/17/22	11/17/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.2**	0.54	1.0	"	"	2209973	11/18/22	11/18/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209982	11/18/22	11/18/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209969	11/18/22	11/18/22	SM2540D	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0904
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-8-UVR (22K0904-04) Water	**Sampled: 11/14/22 11:45**		**Received: 11/14/22 14:09**							
Ammonia as N	**0.027**	0.025	0.10	mg/L	1	2209903	11/16/22	11/16/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**7.4**	0.50	5.0	"	"	2209856	11/15/22	11/15/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.44**	0.026	0.50	"	"	2209836	11/15/22	11/15/22	EPA 300.0	J
Cyanide (total)	**0.0049**	0.0012	0.0050	"	"	2209971	11/18/22	11/21/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209944	11/17/22	11/22/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2209856	11/15/22	11/15/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209836	11/15/22	11/15/22	EPA 300.0	
Orthophosphate as PO4	**0.0066**	0.0051	0.15	"	"	2209843	11/15/22	11/15/22	SM4500-P E	J
Sulfate as SO4	**0.34**	0.038	0.50	"	"	2209836	11/15/22	11/15/22	EPA 300.0	J
Total Alkalinity	**7.4**	1.0	5.0	"	"	2209856	11/15/22	11/15/22	SM2320B	
Total Dissolved Solids	**23**	5.0	10	"	"	2209905	11/16/22	11/16/22	SM2540C	
Total Hardness as CaCO3	**4.9**	0.19	1.0	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.24**	0.040	0.20	"	"	2209946	11/17/22	11/17/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.2**	0.54	1.0	"	"	2209973	11/18/22	11/18/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209982	11/18/22	11/18/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2209969	11/18/22	11/18/22	SM2540D	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0904
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-5-UVR (22K0904-01) Water Sampled: 11/14/22 08:45 Received: 11/14/22 14:09										
Diesel	ND	0.0021	0.050	mg/L	1	2209814	11/15/22	11/15/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*69 %*	*65-135*		"	"	"	"	
R-IS-6-UVR (22K0904-02) Water Sampled: 11/14/22 10:15 Received: 11/14/22 14:09										
Diesel	ND	0.0021	0.050	mg/L	1	2209814	11/15/22	11/15/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*87 %*	*65-135*		"	"	"	"	
R-IS-7-UVR (22K0904-03) Water Sampled: 11/14/22 09:30 Received: 11/14/22 14:09										
Diesel	ND	0.0021	0.050	mg/L	1	2209814	11/15/22	11/15/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*69 %*	*65-135*		"	"	"	"	
R-IS-8-UVR (22K0904-04) Water Sampled: 11/14/22 11:45 Received: 11/14/22 14:09										
Diesel	ND	0.0021	0.050	mg/L	1	2209814	11/15/22	11/15/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K0904**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-8-UVR (22K0904-04) Water Sampled: 11/14/22 11:45 Received: 11/14/22 14:09										
Surrogate: o-Terphenyl			*93 %*		*65-135*	*2209814*	"	*11/15/22*	*EPA 8015M*	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0904
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-5-UVR (22K0904-01) Water	**Sampled: 11/14/22 08:45**		**Received: 11/14/22 14:09**							
Aluminum	**17**	1.6	20	µg/L	1	2209837	11/15/22	11/16/22	EPA 200.8	J
Barium	**6.4**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1500**	27	1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
Iron	**23**	9.1	100	"	"	"	"	"	"	J
Magnesium	**290**	21	1000	"	"	"	"	"	"	J
Manganese	**5.7**	0.050	2.0	"	"	2209837	11/15/22	11/16/22	EPA 200.8	
Potassium	**400**	61	1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209837	11/15/22	11/16/22	EPA 200.8	
Sodium	**1100**	34	1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
R-IS-6-UVR (22K0904-02) Water	**Sampled: 11/14/22 10:15**		**Received: 11/14/22 14:09**							
Aluminum	**18**	1.6	20	µg/L	1	2209837	11/15/22	11/16/22	EPA 200.8	J
Barium	**6.3**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1500**	27	1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
Iron	**25**	9.1	100	"	"	"	"	"	"	J
Magnesium	**280**	21	1000	"	"	"	"	"	"	J
Manganese	**7.3**	0.050	2.0	"	"	2209837	11/15/22	11/16/22	EPA 200.8	
Potassium	**320**	61	1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209837	11/15/22	11/16/22	EPA 200.8	
Sodium	**1000**	34	1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
R-IS-7-UVR (22K0904-03) Water	**Sampled: 11/14/22 09:30**		**Received: 11/14/22 14:09**							
Aluminum	**18**	1.6	20	µg/L	1	2209837	11/15/22	11/16/22	EPA 200.8	J
Barium	**6.3**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1400**	27	1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
Iron	**24**	9.1	100	"	"	"	"	"	"	J
Magnesium	**290**	21	1000	"	"	"	"	"	"	J
Manganese	**6.1**	0.050	2.0	"	"	2209837	11/15/22	11/16/22	EPA 200.8	
Potassium	**280**	61	1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209837	11/15/22	11/16/22	EPA 200.8	
Sodium	**1000**	34	1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0904
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-8-UVR (22K0904-04) Water	**Sampled: 11/14/22 11:45**		**Received: 11/14/22 14:09**							
Aluminum	**18**	1.6	20	µg/L	1	2209837	11/15/22	11/16/22	EPA 200.8	J
Barium	**6.5**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1500**	27	1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
Iron	**24**	9.1	100	"	"	"	"	"	"	J
Magnesium	**290**	21	1000	"	"	"	"	"	"	J
Manganese	**7.1**	0.050	2.0	"	"	2209837	11/15/22	11/16/22	EPA 200.8	
Potassium	**220**	61	1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209837	11/15/22	11/16/22	EPA 200.8	
Sodium	**1000**	34	1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22K0904
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-5-UVR (22K0904-01) Water	**Sampled: 11/14/22 08:45**		**Received: 11/14/22 14:09**							
Aluminum	**4.9**	0.52	20	µg/L	1	2209937	11/17/22	11/17/22	EPA 200.8	J
Iron	**9.9**	6.8	100	"	"	2209934	11/17/22	11/17/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2209937	11/17/22	11/17/22	EPA 200.8	
R-IS-6-UVR (22K0904-02) Water	**Sampled: 11/14/22 10:15**		**Received: 11/14/22 14:09**							
Aluminum	**5.7**	0.52	20	µg/L	1	2209937	11/17/22	11/17/22	EPA 200.8	J
Iron	**8.8**	6.8	100	"	"	2209934	11/17/22	11/17/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2209937	11/17/22	11/17/22	EPA 200.8	
R-IS-7-UVR (22K0904-03) Water	**Sampled: 11/14/22 09:30**		**Received: 11/14/22 14:09**							
Aluminum	**3.6**	0.52	20	µg/L	1	2209937	11/17/22	11/17/22	EPA 200.8	J
Iron	**15**	6.8	100	"	"	2209934	11/17/22	11/17/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2209937	11/17/22	11/17/22	EPA 200.8	
R-IS-8-UVR (22K0904-04) Water	**Sampled: 11/14/22 11:45**		**Received: 11/14/22 14:09**							
Aluminum	**6.1**	0.52	20	µg/L	1	2209937	11/17/22	11/17/22	EPA 200.8	J
Iron	**8.0**	6.8	100	"	"	2209934	11/17/22	11/17/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2209937	11/17/22	11/17/22	EPA 200.8	

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CLS Work Order #: 22K0904
COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-5-UVR (22K0904-01) Water	**Sampled: 11/14/22 08:45**		**Received: 11/14/22 14:09**							
Gasoline	ND	10	50	µg/L	1	2209835	11/15/22	11/15/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*74 %*	*65-135*		"	"	"	"	
R-IS-6-UVR (22K0904-02) Water	**Sampled: 11/14/22 10:15**		**Received: 11/14/22 14:09**							
Gasoline	ND	10	50	µg/L	1	2209835	11/15/22	11/15/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*75 %*	*65-135*		"	"	"	"	
R-IS-7-UVR (22K0904-03) Water	**Sampled: 11/14/22 09:30**		**Received: 11/14/22 14:09**							
Gasoline	ND	10	50	µg/L	1	2209835	11/15/22	11/15/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*74 %*	*65-135*		"	"	"	"	
R-IS-8-UVR (22K0904-04) Water	**Sampled: 11/14/22 11:45**		**Received: 11/14/22 14:09**							
Gasoline	ND	10	50	µg/L	1	2209835	11/15/22	11/15/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*74 %*	*65-135*		"	"	"	"	

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CLS Work Order #: 22K0904
COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-5-UVR (22K0904-01) Water Sampled: 11/14/22 08:45 Received: 11/14/22 14:09										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209860	11/15/22	11/15/22	EPA 8260B	
Surrogate: Toluene-d8			*98 %*		*72-125*		"	"	"	"
R-IS-6-UVR (22K0904-02) Water Sampled: 11/14/22 10:15 Received: 11/14/22 14:09										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209860	11/15/22	11/15/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"
R-IS-7-UVR (22K0904-03) Water Sampled: 11/14/22 09:30 Received: 11/14/22 14:09										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209860	11/15/22	11/15/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"
R-IS-8-UVR (22K0904-04) Water Sampled: 11/14/22 11:45 Received: 11/14/22 14:09										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2209860	11/15/22	11/15/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"

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CLS Work Order #: 22K0904
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209836 - General Prep											
Blank (2209836-BLK1)					Prepared & Analyzed: 11/15/22						
Sulfate as SO4	ND	0.038	0.50	mg/L							
Chloride	ND	0.026	0.50	"							
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2209836-BS1)					Prepared & Analyzed: 11/15/22						
Sulfate as SO4	4.84	0.038	0.50	mg/L	5.00		97	80-120			
Chloride	4.90	0.026	0.50	"	5.00		98	80-120			
Nitrate/Nitrite as N	4.25	0.055	0.40	"	4.00		106	80-120			
LCS Dup (2209836-BSD1)					Prepared & Analyzed: 11/15/22						
Chloride	4.95	0.026	0.50	mg/L	5.00		99	80-120	0.9	20	
Sulfate as SO4	4.86	0.038	0.50	"	5.00		97	80-120	0.4	20	
Nitrate/Nitrite as N	4.32	0.055	0.40	"	4.00		108	80-120	2	20	
Matrix Spike (2209836-MS1)			**Source: 22K0904-04**		Prepared & Analyzed: 11/15/22						
Sulfate as SO4	5.29	0.038	0.50	mg/L	5.00	0.340	99	80-120			
Chloride	5.34	0.026	0.50	"	5.00	0.441	98	80-120			
Nitrate/Nitrite as N	4.37	0.055	0.40	"	4.00	ND	109	80-120			
Matrix Spike Dup (2209836-MSD1)			**Source: 22K0904-04**		Prepared & Analyzed: 11/15/22						
Sulfate as SO4	5.33	0.038	0.50	mg/L	5.00	0.340	100	80-120	0.8	20	
Chloride	5.38	0.026	0.50	"	5.00	0.441	99	80-120	0.7	20	
Nitrate/Nitrite as N	4.41	0.055	0.40	"	4.00	ND	110	80-120	0.9	20	
Batch 2209843 - General Preparation											
Blank (2209843-BLK1)					Prepared & Analyzed: 11/15/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							

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CLS Work Order #: 22K0904
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209843 - General Preparation											
LCS (2209843-BS1)					Prepared & Analyzed: 11/15/22						
Orthophosphate as PO4	0.871	0.0051	0.15	mg/L	0.918		95	80-120			
LCS Dup (2209843-BSD1)					Prepared & Analyzed: 11/15/22						
Orthophosphate as PO4	0.830	0.0051	0.15	mg/L	0.918		90	80-120	5	20	
Matrix Spike (2209843-MS1)			**Source: 22K0904-01**		Prepared & Analyzed: 11/15/22						
Orthophosphate as PO4	1.01	0.0051	0.15	mg/L	0.918	ND	111	75-125			
Matrix Spike Dup (2209843-MSD1)			**Source: 22K0904-01**		Prepared & Analyzed: 11/15/22						
Orthophosphate as PO4	0.945	0.0051	0.15	mg/L	0.918	ND	103	75-125	7	25	
Batch 2209856 - General Preparation											
Blank (2209856-BLK1)					Prepared & Analyzed: 11/15/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Duplicate (2209856-DUP1)			**Source: 22K0753-01**		Prepared & Analyzed: 11/15/22						
Total Alkalinity	228	1.0	5.0	mg/L		212			7	20	
Bicarbonate as CaCO3	228	0.50	5.0	"		212			7	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Batch 2209897 - EPA 200 Series											
Blank (2209897-BLK1)					Prepared & Analyzed: 11/16/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0904
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209897 - EPA 200 Series											
LCS (2209897-BS1)					Prepared & Analyzed: 11/16/22						
Total Hardness as CaCO3	33.4	0.19	1.0	mg/L	33.1		101	85-115			
Matrix Spike (2209897-MS1)			**Source: 22K0757-03**		Prepared & Analyzed: 11/16/22						
Total Hardness as CaCO3	33.9	0.19	1.0	mg/L	33.1	0.700	100	70-130			
Matrix Spike (2209897-MS2)			**Source: 22K0985-03**		Prepared: 11/16/22 Analyzed: 11/17/22						
Total Hardness as CaCO3	540	0.19	1.0	mg/L	33.1	507	101	70-130			
Batch 2209903 - General Preparation											
Blank (2209903-BLK1)					Prepared & Analyzed: 11/16/22						
Ammonia as N	ND	0.025	0.10	mg/L							
LCS (2209903-BS1)					Prepared & Analyzed: 11/16/22						
Ammonia as N	0.564	0.025	0.10	mg/L	0.500		113	80-120			
LCS Dup (2209903-BSD1)					Prepared & Analyzed: 11/16/22						
Ammonia as N	0.566	0.025	0.10	mg/L	0.500		113	80-120	0.4	25	
Matrix Spike (2209903-MS1)			**Source: 22K0904-01**		Prepared & Analyzed: 11/16/22						
Ammonia as N	0.591	0.025	0.10	mg/L	0.500	0.0310	112	75-125			
Matrix Spike Dup (2209903-MSD1)			**Source: 22K0904-01**		Prepared & Analyzed: 11/16/22						
Ammonia as N	0.583	0.025	0.10	mg/L	0.500	0.0310	110	75-125	1	25	
Batch 2209905 - General Preparation											
Blank (2209905-BLK1)					Prepared & Analyzed: 11/16/22						
Total Dissolved Solids	ND	5.0	10	mg/L							

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CLS Work Order #: 22K0904
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209905 - General Preparation											
Duplicate (2209905-DUP1)			**Source: 22K0753-01**		Prepared & Analyzed: 11/16/22						
Total Dissolved Solids	378	5.0	10	mg/L		374			1	20	
Batch 2209944 - Solvent Extract											
Blank (2209944-BLK1)					Prepared: 11/17/22 Analyzed: 11/22/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2209944-BS1)					Prepared: 11/17/22 Analyzed: 11/22/22						
Hexane Extractable Material (HEM, Oil & Grease)	38.2	1.0	5.0	mg/L	40.0		96	78-114			
LCS Dup (2209944-BSD1)					Prepared: 11/17/22 Analyzed: 11/22/22						
Hexane Extractable Material (HEM, Oil & Grease)	38.8	1.0	5.0	mg/L	40.0		97	78-114	2	18	
Batch 2209946 - General Preparation											
Blank (2209946-BLK1)					Prepared & Analyzed: 11/17/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2209946-BS1)					Prepared & Analyzed: 11/17/22						
Total Kjeldahl Nitrogen	0.574	0.040	0.20	mg/L	0.500		115	80-120			
LCS Dup (2209946-BSD1)					Prepared & Analyzed: 11/17/22						
Total Kjeldahl Nitrogen	0.516	0.040	0.20	mg/L	0.500		103	80-120	11	20	
Matrix Spike (2209946-MS1)			**Source: 22K0904-01**		Prepared & Analyzed: 11/17/22						
Total Kjeldahl Nitrogen	0.754	0.040	0.20	mg/L	0.500	0.209	109	75-125			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209946 - General Preparation											
Matrix Spike Dup (2209946-MSD1)			**Source: 22K0904-01**		Prepared & Analyzed: 11/17/22						
Total Kjeldahl Nitrogen	0.826	0.040	0.20	mg/L	0.500	0.209	123	75-125	9	25	
Batch 2209969 - General Preparation											
Blank (2209969-BLK1)					Prepared & Analyzed: 11/18/22						
Total Suspended Solids	ND	2.0	5.0	mg/L							
Duplicate (2209969-DUP1)			**Source: 22K0900-02**		Prepared & Analyzed: 11/18/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	
Batch 2209971 - General Preparation											
Blank (2209971-BLK1)					Prepared: 11/18/22 Analyzed: 11/21/22						
Cyanide (total)	0.00380	0.0012	0.0050	mg/L							J
LCS (2209971-BS1)					Prepared: 11/18/22 Analyzed: 11/21/22						
Cyanide (total)	0.0759	0.0012	0.0050	mg/L	0.100		76	75-125			
LCS Dup (2209971-BSD1)					Prepared: 11/18/22 Analyzed: 11/21/22						
Cyanide (total)	0.0767	0.0012	0.0050	mg/L	0.100		77	75-125	1	25	
Matrix Spike (2209971-MS1)			**Source: 22K0761-01**		Prepared: 11/18/22 Analyzed: 11/21/22						
Cyanide (total)	0.0767	0.0012	0.0050	mg/L	0.100	0.00380	73	75-125			QM-7
Matrix Spike Dup (2209971-MSD1)			**Source: 22K0761-01**		Prepared: 11/18/22 Analyzed: 11/21/22						
Cyanide (total)	0.0748	0.0012	0.0050	mg/L	0.100	0.00380	71	75-125	3	25	QM-7

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22K0904
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209973 - General Preparation											
Blank (2209973-BLK1)					Prepared & Analyzed: 11/18/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							
LCS (2209973-BS1)					Prepared & Analyzed: 11/18/22						
Total Organic Carbon	10.0	0.54	1.0	mg/L	10.0		100	75-125			
LCS Dup (2209973-BSD1)					Prepared & Analyzed: 11/18/22						
Total Organic Carbon	10.3	0.54	1.0	mg/L	10.0		103	75-125	2	25	
Matrix Spike (2209973-MS1)			**Source: 22K0904-04**		Prepared & Analyzed: 11/18/22						
Total Organic Carbon	17.0	0.54	1.0	mg/L	10.0	2.16	149	75-125			QM-7
Matrix Spike Dup (2209973-MSD1)			**Source: 22K0904-04**		Prepared & Analyzed: 11/18/22						
Total Organic Carbon	17.1	0.54	1.0	mg/L	10.0	2.16	150	75-125	0.6	25	QM-7
Batch 2209982 - General Preparation											
Blank (2209982-BLK1)					Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
Blank (2209982-BLK2)					Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2209982-BS1)					Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	0.302	0.023	0.050	mg/L	0.300		101	80-120			
LCS (2209982-BS2)					Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	0.302	0.023	0.050	mg/L	0.300		101	80-120			

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0904
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209982 - General Preparation											
LCS Dup (2209982-BSD1)					Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	0.285	0.023	0.050	mg/L	0.300		95	80-120	6	25	
LCS Dup (2209982-BSD2)					Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	0.285	0.023	0.050	mg/L	0.300		95	80-120	6	25	
Matrix Spike (2209982-MS1)			**Source: 22K0847-01**		Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	0.293	0.023	0.050	mg/L	0.300	ND	98	75-125			
Matrix Spike (2209982-MS2)			**Source: 22K1091-02**		Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	0.312	0.023	0.050	mg/L	0.300	ND	104	75-125			
Matrix Spike Dup (2209982-MSD1)			**Source: 22K0847-01**		Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	0.328	0.023	0.050	mg/L	0.300	ND	109	75-125	11	30	
Matrix Spike Dup (2209982-MSD2)			**Source: 22K1091-02**		Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	0.311	0.023	0.050	mg/L	0.300	ND	104	75-125	0.5	30	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209814 - EPA 3510B GCNV											
Blank (2209814-BLK1)					Prepared & Analyzed: 11/14/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
JP-5/JP-8	ND	0.020	0.050	"							
Surrogate: o-Terphenyl	*0.0267*			"	*0.0250*		*107*	*65-135*			
LCS (2209814-BS1)					Prepared & Analyzed: 11/14/22						
Diesel	1.68	0.0021	0.050	mg/L	2.50		67	65-135			
Surrogate: o-Terphenyl	*0.0184*			"	*0.0250*		*74*	*65-135*			
LCS Dup (2209814-BSD1)					Prepared & Analyzed: 11/14/22						
Diesel	1.64	0.0021	0.050	mg/L	2.50		65	65-135	3	30	
Surrogate: o-Terphenyl	*0.0199*			"	*0.0250*		*80*	*65-135*			
Matrix Spike (2209814-MS1)			**Source: 22K0665-01**		Prepared & Analyzed: 11/14/22						
Diesel	1.45	0.0021	0.050	mg/L	2.50	ND	58	46-137			
Surrogate: o-Terphenyl	*0.0142*			"	*0.0250*		*57*	*65-135*			*QS-4*
Matrix Spike Dup (2209814-MSD1)			**Source: 22K0665-01**		Prepared & Analyzed: 11/14/22						
Diesel	1.47	0.0021	0.050	mg/L	2.50	ND	59	46-137	2	30	
Surrogate: o-Terphenyl	*0.0174*			"	*0.0250*		*70*	*65-135*			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K0904**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209837 - EPA 200 Series											
Blank (2209837-BLK1)					Prepared: 11/15/22 Analyzed: 11/16/22						
Aluminum	1.69	1.6	20	µg/L							J
Antimony	ND	0.34	6.0	"							
Arsenic	0.536	0.45	2.0	"							J
Barium	ND	0.14	5.0	"							
Lead	ND	0.020	5.0	"							
Manganese	0.0650	0.050	2.0	"							J
Selenium	ND	0.75	5.0	"							
Silver	ND	0.070	0.50	"							
Thallium	ND	0.030	1.0	"							
LCS (2209837-BS1)					Prepared: 11/15/22 Analyzed: 11/16/22						
Aluminum	485	1.6	20	µg/L	500		97	85-115			
Antimony	100	0.34	6.0	"	100		100	85-115			
Arsenic	102	0.45	2.0	"	100		102	85-115			
Barium	104	0.14	5.0	"	100		104	85-115			
Lead	96.9	0.020	5.0	"	100		97	85-115			
Manganese	101	0.050	2.0	"	100		101	85-115			
Selenium	105	0.75	5.0	"	100		105	85-115			
Silver	99.5	0.070	0.50	"	100		100	85-115			
Thallium	102	0.030	1.0	"	100		102	85-115			
Matrix Spike (2209837-MS1)				**Source: 22K0761-01**	Prepared: 11/15/22 Analyzed: 11/16/22						
Aluminum	518	1.6	20	µg/L	500	30.4	98	70-130			
Antimony	99.5	0.34	6.0	"	100	ND	99	70-130			
Arsenic	97.6	0.45	2.0	"	100	ND	98	70-130			
Barium	117	0.14	5.0	"	100	13.4	104	70-130			
Lead	96.1	0.020	5.0	"	100	0.0320	96	70-130			
Manganese	131	0.050	2.0	"	100	31.7	99	70-130			
Selenium	95.8	0.75	5.0	"	100	ND	96	70-130			
Silver	98.3	0.070	0.50	"	100	ND	98	70-130			
Thallium	101	0.030	1.0	"	100	ND	101	70-130			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K0904**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209837 - EPA 200 Series											
Matrix Spike (2209837-MS2)			**Source: 22K0902-03**		Prepared: 11/15/22 Analyzed: 11/16/22						
Aluminum	498	1.6	20	µg/L	500	3.91	99	70-130			
Antimony	101	0.34	6.0	"	100	ND	101	70-130			
Arsenic	102	0.45	2.0	"	100	2.88	99	70-130			
Barium	221	0.14	5.0	"	100	114	106	70-130			
Lead	98.2	0.020	5.0	"	100	0.163	98	70-130			
Manganese	349	0.050	2.0	"	100	261	88	70-130			
Selenium	97.2	0.75	5.0	"	100	0.930	96	70-130			
Silver	98.7	0.070	0.50	"	100	ND	99	70-130			
Thallium	103	0.030	1.0	"	100	ND	103	70-130			
Batch 2209897 - EPA 200 Series											
Blank (2209897-BLK1)					Prepared & Analyzed: 11/16/22						
Barium	ND	1.1	20	µg/L							
Beryllium	ND	0.29	5.0	"							
Boron	ND	5.3	50	"							
Cadmium	ND	2.2	10	"							
Calcium	29.2	27	1000	"							J
Copper	ND	3.4	10	"							
Iron	18.7	9.1	100	"							J
Magnesium	ND	21	1000	"							
Manganese	ND	0.92	10	"							
Nickel	ND	3.1	20	"							
Potassium	ND	61	1000	"							
Silver	ND	3.3	10	"							
Sodium	ND	34	1000	"							
Zinc	ND	1.7	20	"							

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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209897 - EPA 200 Series											
LCS (2209897-BS1)					Prepared & Analyzed: 11/16/22						
Barium	504	1.1	20	µg/L	500		101	85-115			
Beryllium	531	0.29	5.0	"	500		106	85-115			
Boron	497	5.3	50	"	500		99	85-115			
Cadmium	503	2.2	10	"	500		101	85-115			
Calcium	5140	27	1000	"	5000		103	85-115			
Copper	500	3.4	10	"	500		100	85-115			
Iron	502	9.1	100	"	500		100	85-115			
Magnesium	4990	21	1000	"	5000		100	85-115			
Manganese	516	0.92	10	"	500		103	85-115			
Nickel	513	3.1	20	"	500		103	85-115			
Potassium	5180	61	1000	"	5000		104	85-115			
Silver	534	3.3	10	"	500		107	85-115			
Sodium	5140	34	1000	"	5000		103	85-115			
Zinc	503	1.7	20	"	500		101	85-115			
Matrix Spike (2209897-MS1)				**Source: 22K0757-03**	Prepared & Analyzed: 11/16/22						
Barium	511	1.1	20	µg/L	500	4.38	101	70-130			
Beryllium	535	0.29	5.0	"	500	ND	107	70-130			
Boron	493	5.3	50	"	500	7.73	97	70-130			
Cadmium	496	2.2	10	"	500	ND	99	70-130			
Calcium	5390	27	1000	"	5000	210	104	70-130			
Copper	496	3.4	10	"	500	ND	99	70-130			
Iron	586	9.1	100	"	500	65.6	104	70-130			
Magnesium	4950	21	1000	"	5000	42.6	98	70-130			
Manganese	517	0.92	10	"	500	2.79	103	70-130			
Nickel	508	3.1	20	"	500	ND	102	70-130			
Potassium	5170	61	1000	"	5000	ND	103	70-130			
Silver	549	3.3	10	"	500	ND	110	70-130			
Sodium	5330	34	1000	"	5000	178	103	70-130			
Zinc	509	1.7	20	"	500	18.4	98	70-130			

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22K0904
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209897 - EPA 200 Series											
Matrix Spike (2209897-MS2)			**Source: 22K0985-03**	Prepared: 11/16/22	Analyzed: 11/17/22						
Barium	798	1.1	20	µg/L	500	294	101	70-130			
Beryllium	542	0.29	5.0	"	500	ND	108	70-130			
Boron	593	5.3	50	"	500	81.2	102	70-130			
Cadmium	504	2.2	10	"	500	ND	101	70-130			
Calcium	127000	27	1000	"	5000	122000	103	70-130			
Copper	493	3.4	10	"	500	ND	99	70-130			
Iron	511	9.1	100	"	500	ND	102	70-130			
Magnesium	53900	21	1000	"	5000	49000	99	70-130			
Manganese	515	0.92	10	"	500	ND	103	70-130			
Nickel	499	3.1	20	"	500	ND	100	70-130			
Potassium	8010	61	1000	"	5000	2760	105	70-130			
Silver	545	3.3	10	"	500	ND	109	70-130			
Sodium	75500	34	1000	"	5000	70900	93	70-130			
Zinc	516	1.7	20	"	500	ND	103	70-130			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209934 - EPA 200 No Digestion											
Blank (2209934-BLK1)					Prepared & Analyzed: 11/17/22						
Iron	ND	6.8	100	µg/L							
LCS (2209934-BS1)					Prepared & Analyzed: 11/17/22						
Iron	472	6.8	100	µg/L	500		94	85-115			
Matrix Spike (2209934-MS1)			**Source: 22K0649-01**		Prepared & Analyzed: 11/17/22						
Iron	457	6.8	100	µg/L	500	8.23	90	70-130			
Matrix Spike (2209934-MS2)			**Source: 22K0904-01**		Prepared & Analyzed: 11/17/22						
Iron	547	6.8	100	µg/L	500	9.88	107	70-130			
Batch 2209937 - EPA 200 No Digestion											
Blank (2209937-BLK1)					Prepared & Analyzed: 11/17/22						
Aluminum	ND	0.52	20	µg/L							
Silver	ND	0.15	0.50	"							
LCS (2209937-BS1)					Prepared & Analyzed: 11/17/22						
Aluminum	494	0.52	20	µg/L	500		99	85-115			
Silver	98.3	0.15	0.50	"	100		98	85-115			
Matrix Spike (2209937-MS1)			**Source: 22K0822-01**		Prepared & Analyzed: 11/17/22						
Aluminum	498	0.52	20	µg/L	500	6.27	98	70-130			
Silver	96.8	0.15	0.50	"	100	ND	97	70-130			
Matrix Spike (2209937-MS2)			**Source: 22K0904-01**		Prepared & Analyzed: 11/17/22						
Aluminum	510	0.52	20	µg/L	500	4.86	101	70-130			
Silver	97.1	0.15	0.50	"	100	ND	97	70-130			

11/30/22 13:26

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K0904**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209835 - EPA 5030 Water GC											
Blank (2209835-BLK1)					Prepared & Analyzed: 11/15/22						
JP-4	0.00			µg/L							
Gasoline	ND	10	50	"							
Surrogate: o-Chlorotoluene (Gas)	*16.6*			"	*20.0*		*83*	*65-135*			
LCS (2209835-BS1)					Prepared & Analyzed: 11/15/22						
Gasoline	538	10	50	µg/L	500		108	70-130			
Surrogate: o-Chlorotoluene (Gas)	*16.4*			"	*20.0*		*82*	*65-135*			
LCS Dup (2209835-BSD1)					Prepared & Analyzed: 11/15/22						
Gasoline	538	10	50	µg/L	500		108	70-130	0.1	30	
Surrogate: o-Chlorotoluene (Gas)	*14.8*			"	*20.0*		*74*	*65-135*			
Matrix Spike (2209835-MS1)				**Source: 22K0761-02**	Prepared & Analyzed: 11/15/22						
Gasoline	483	10	50	µg/L	500	ND	97	68-132			
Surrogate: o-Chlorotoluene (Gas)	*16.4*			"	*20.0*		*82*	*65-135*			
Matrix Spike Dup (2209835-MSD1)				**Source: 22K0761-02**	Prepared & Analyzed: 11/15/22						
Gasoline	514	10	50	µg/L	500	ND	103	68-132	6	32	
Surrogate: o-Chlorotoluene (Gas)	*14.9*			"	*20.0*		*74*	*65-135*			

11/30/22 13:26

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0904
COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209860 - EPA 3510B GCMS											
Blank (2209860-BLK1)					Prepared & Analyzed: 11/15/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Surrogate: Toluene-d8	*9.76*			"	*10.0*		*98*	*72-125*			
LCS (2209860-BS1)					Prepared & Analyzed: 11/15/22						
Methyl tert-butyl ether	22.5	0.095	0.50	µg/L	20.0		112	52-130			
Surrogate: Toluene-d8	*10.3*			"	*10.0*		*103*	*72-125*			
LCS Dup (2209860-BSD1)					Prepared & Analyzed: 11/15/22						
Methyl tert-butyl ether	22.9	0.095	0.50	µg/L	20.0		115	52-130	2	30	
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			
Matrix Spike (2209860-MS1)			**Source: 22K0904-01**		Prepared & Analyzed: 11/15/22						
Methyl tert-butyl ether	17.1	0.095	0.50	µg/L	20.0	ND	85	52-140			
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			
Matrix Spike Dup (2209860-MSD1)			**Source: 22K0904-01**		Prepared & Analyzed: 11/15/22						
Methyl tert-butyl ether	19.9	0.095	0.50	µg/L	20.0	ND	100	52-140	15	30	
Surrogate: Toluene-d8	*9.99*			"	*10.0*		*100*	*72-125*			

11/30/22 13:26

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K0904**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QS-4	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22C6904 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[X] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [X] NO [ ]

GLOBAL ID

FIELD CONDITIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	TSS, TDS, Hardness, Alkalinity, NO2-N+NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total
11/14/22	08:45	R.IS.5.UVR		Surface water			6	X	X	X	X	X	X	X
11/14/22	10:15	R.IS.6.UVR		Surface water			6	X	X	X	X	X	X	X
11/14/22	9:30	R.IS.7.UVR		Surface water			6	X	X	X	X	X	X	X
11/14/22	11:45	R.IS.8.UVR		Surface water			6	X	X	X	X	X	X	X
				Surface water			6							
				Surface water			6							
				Surface water			6							
				Surface water			6							
				Surface water			6							
				Surface water			6							
				Surface water			6							
				Surface water			6							

ANALYSIS REQUESTED

TURNAROUND TIME IN DAYS				SPECIAL INSTRUCTIONS
1	2	3	5	
			X	
			X	
			X	
			X	
			X	
			X	
			X	
			X	INVOICE TO
			X	Stillwater Sciences
			X	Same as above
			X	
			X	**Project No. 750.10 Task 0620.01**
			X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
Jakob Woodall	STILLWATER SCIENCES	11/14 14:09		

RECEIVED AT LAB BY: DOS DATE/TIME: 11/14/22 1409 CONDITIONS/COMMENTS: 7.1°C

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER _____ AIR BILL # _____

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

December 01, 2022

CLS Work Order #: 22K0964
COC #:

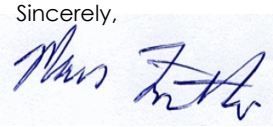
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 11/15/22 15:04. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

12/01/22 12:41

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0964
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-9-IHR (22K0964-01) Water Sampled: 11/15/22 09:45 Received: 11/15/22 15:04										
Ammonia as N	ND		0.10	mg/L	1	2209903	11/16/22	11/16/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**7.4**		5.0	"	"	2209890	11/16/22	11/16/22	SM2320B	
Carbonate as CaCO3	ND		5.0	"	"	"	"	"	"	
Chloride	**0.68**		0.50	"	"	2209867	11/16/22	11/16/22	EPA 300.0	
Cyanide (total)	ND		0.0050	"	"	2210032	11/21/22	11/23/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND		5.0	"	"	2209944	11/17/22	11/22/22	EPA 1664B	
Hydroxide as CaCO3	ND		5.0	"	"	2209890	11/16/22	11/16/22	SM2320B	
Nitrate/Nitrite as N	ND		0.40	"	"	2209867	11/16/22	11/16/22	EPA 300.0	
Orthophosphate as PO4	ND		0.15	"	"	2209892	11/16/22	11/16/22	SM4500-P E	
Sulfate as SO4	**0.62**		0.50	"	"	2209867	11/16/22	11/16/22	EPA 300.0	
Total Alkalinity	**7.4**		5.0	"	"	2209890	11/16/22	11/16/22	SM2320B	
Total Dissolved Solids	**26**		10	"	"	2209905	11/16/22	11/16/22	SM2540C	
Total Hardness as CaCO3	**4.8**		1.0	"	"	2209918	11/17/22	11/18/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.23**		0.20	"	"	2209946	11/17/22	11/17/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.5**		1.0	"	"	2210016	11/21/22	11/21/22	SM5310B	
Total Phosphorus as P	ND		0.050	"	"	2209982	11/18/22	11/18/22	SM4500-P E	
Total Suspended Solids	ND		5.0	"	"	2209969	11/18/22	11/18/22	SM2540D	
R-IS-10-IHR (22K0964-02) Water Sampled: 11/15/22 10:45 Received: 11/15/22 15:04										
Ammonia as N	ND		0.10	mg/L	1	2209903	11/16/22	11/16/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**6.8**		5.0	"	"	2209890	11/16/22	11/16/22	SM2320B	
Carbonate as CaCO3	ND		5.0	"	"	"	"	"	"	
Chloride	**0.62**		0.50	"	"	2209867	11/16/22	11/16/22	EPA 300.0	
Cyanide (total)	ND		0.0050	"	"	2210032	11/21/22	11/23/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND		5.0	"	"	2209944	11/17/22	11/22/22	EPA 1664B	
Hydroxide as CaCO3	ND		5.0	"	"	2209890	11/16/22	11/16/22	SM2320B	
Nitrate/Nitrite as N	ND		0.40	"	"	2209867	11/16/22	11/16/22	EPA 300.0	
Orthophosphate as PO4	ND		0.15	"	"	2209892	11/16/22	11/16/22	SM4500-P E	

12/01/22 12:41

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0964
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-10-IHR (22K0964-02) Water	**Sampled: 11/15/22 10:45**		**Received: 11/15/22 15:04**							
Sulfate as SO4	**0.61**		0.50	mg/L	1	2209867	11/16/22	11/16/22	EPA 300.0	
Total Alkalinity	**6.8**		5.0	"	"	2209890	11/16/22	11/16/22	SM2320B	
Total Dissolved Solids	**30**		10	"	"	2209905	11/16/22	11/16/22	SM2540C	
Total Hardness as CaCO3	**4.9**		1.0	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.31**		0.20	"	"	2209946	11/17/22	11/17/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.4**		1.0	"	"	2210016	11/21/22	11/21/22	SM5310B	
Total Phosphorus as P	ND		0.050	"	"	2209982	11/18/22	11/18/22	SM4500-P E	
Total Suspended Solids	ND		5.0	"	"	2209969	11/18/22	11/18/22	SM2540D	
R-IS-11-IHR (22K0964-03) Water	**Sampled: 11/15/22 11:30**		**Received: 11/15/22 15:04**							
Ammonia as N	ND		0.10	mg/L	1	2209903	11/16/22	11/16/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**7.0**		5.0	"	"	2209890	11/16/22	11/16/22	SM2320B	
Carbonate as CaCO3	ND		5.0	"	"	"	"	"	"	
Chloride	**0.67**		0.50	"	"	2209867	11/16/22	11/16/22	EPA 300.0	
Cyanide (total)	ND		0.0050	"	"	2210032	11/21/22	11/23/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND		5.0	"	"	2209944	11/17/22	11/22/22	EPA 1664B	
Hydroxide as CaCO3	ND		5.0	"	"	2209890	11/16/22	11/16/22	SM2320B	
Nitrate/Nitrite as N	ND		0.40	"	"	2209867	11/16/22	11/16/22	EPA 300.0	
Orthophosphate as PO4	ND		0.15	"	"	2209892	11/16/22	11/16/22	SM4500-P E	
Sulfate as SO4	**0.58**		0.50	"	"	2209867	11/16/22	11/16/22	EPA 300.0	
Total Alkalinity	**7.0**		5.0	"	"	2209890	11/16/22	11/16/22	SM2320B	
Total Dissolved Solids	**20**		10	"	"	2209905	11/16/22	11/16/22	SM2540C	
Total Hardness as CaCO3	**4.7**		1.0	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.46**		0.20	"	"	2209946	11/17/22	11/17/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.4**		1.0	"	"	2210016	11/21/22	11/21/22	SM5310B	
Total Phosphorus as P	ND		0.050	"	"	2209982	11/18/22	11/18/22	SM4500-P E	
Total Suspended Solids	ND		5.0	"	"	2209969	11/18/22	11/18/22	SM2540D	

12/01/22 12:41

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0964
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-10-SFSC (22K0964-04) Water	**Sampled: 11/15/22 12:30**		**Received: 11/15/22 15:04**							
Ammonia as N	ND		0.10	mg/L	1	2209903	11/16/22	11/16/22	SM4500-NH3F-2011	
Bicarbonate as CaCO3	**8.0**		5.0	"	"	2209890	11/16/22	11/16/22	SM2320B	
Carbonate as CaCO3	ND		5.0	"	"	"	"	"	"	
Chloride	**0.67**		0.50	"	"	2209867	11/16/22	11/16/22	EPA 300.0	
Cyanide (total)	ND		0.0050	"	"	2210032	11/21/22	11/23/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND		5.0	"	"	2209944	11/17/22	11/22/22	EPA 1664B	
Hydroxide as CaCO3	ND		5.0	"	"	2209890	11/16/22	11/16/22	SM2320B	
Nitrate/Nitrite as N	ND		0.40	"	"	2209867	11/16/22	11/16/22	EPA 300.0	
Orthophosphate as PO4	ND		0.15	"	"	2209892	11/16/22	11/16/22	SM4500-P E	
Sulfate as SO4	**0.77**		0.50	"	"	2209867	11/16/22	11/16/22	EPA 300.0	
Total Alkalinity	**8.0**		5.0	"	"	2209890	11/16/22	11/16/22	SM2320B	
Total Dissolved Solids	**25**		10	"	"	2209905	11/16/22	11/16/22	SM2540C	
Total Hardness as CaCO3	**5.3**		1.0	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.47**		0.20	"	"	2209946	11/17/22	11/17/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.1**		1.0	"	"	2210016	11/21/22	11/21/22	SM5310B	
Total Phosphorus as P	ND		0.050	"	"	2209982	11/18/22	11/18/22	SM4500-P E	
Total Suspended Solids	ND		5.0	"	"	2209969	11/18/22	11/18/22	SM2540D	

12/01/22 12:41

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0964
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-9-IHR (22K0964-01) Water Sampled: 11/15/22 09:45 Received: 11/15/22 15:04										
Diesel	ND		0.050	mg/L	1	2209917	11/17/22	11/18/22	EPA 8015M	
Hydraulic Oil	ND		0.050	"	"	"	"	"	"	
Kerosene	ND		0.050	"	"	"	"	"	"	
Mineral Oil	ND		0.050	"	"	"	"	"	"	
Motor Oil	ND		0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*52 %*	*65-135*		"	"	"	"	*QS-4*
R-IS-10-IHR (22K0964-02) Water Sampled: 11/15/22 10:45 Received: 11/15/22 15:04										
Diesel	ND		0.050	mg/L	1	2209917	11/17/22	11/18/22	EPA 8015M	
Hydraulic Oil	ND		0.050	"	"	"	"	"	"	
Kerosene	ND		0.050	"	"	"	"	"	"	
Mineral Oil	ND		0.050	"	"	"	"	"	"	
Motor Oil	ND		0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*71 %*	*65-135*		"	"	"	"	
R-IS-11-IHR (22K0964-03) Water Sampled: 11/15/22 11:30 Received: 11/15/22 15:04										
Diesel	ND		0.050	mg/L	1	2209917	11/17/22	11/18/22	EPA 8015M	
Hydraulic Oil	ND		0.050	"	"	"	"	"	"	
Kerosene	ND		0.050	"	"	"	"	"	"	
Mineral Oil	ND		0.050	"	"	"	"	"	"	
Motor Oil	ND		0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*70 %*	*65-135*		"	"	"	"	
R-IS-10-SFSC (22K0964-04) Water Sampled: 11/15/22 12:30 Received: 11/15/22 15:04										
Diesel	ND		0.050	mg/L	1	2209917	11/17/22	11/18/22	EPA 8015M	
Hydraulic Oil	ND		0.050	"	"	"	"	"	"	
Kerosene	ND		0.050	"	"	"	"	"	"	
Mineral Oil	ND		0.050	"	"	"	"	"	"	
Motor Oil	ND		0.050	"	"	"	"	"	"	

12/01/22 12:41

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K0964**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-10-SFSC (22K0964-04) Water	**Sampled: 11/15/22 12:30**		**Received: 11/15/22 15:04**							
Surrogate: o-Terphenyl			*65 %*		*65-135*	*2209917*	"	*11/18/22*	*EPA 8015M*	

12/01/22 12:41

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0964
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-9-IHR (22K0964-01) Water Sampled: 11/15/22 09:45 Received: 11/15/22 15:04										
Aluminum	ND		20	µg/L	1	2209920	11/17/22	11/18/22	EPA 200.8	
Barium	**6.9**		5.0	"	"	"	"	11/17/22	"	
Calcium	**1500**		1000	"	"	2209918	11/17/22	11/18/22	EPA 200.7	
Iron	ND		100	"	"	"	"	"	"	
Magnesium	ND		1000	"	"	"	"	"	"	
Manganese	**18**		2.0	"	"	2209920	11/17/22	11/17/22	EPA 200.8	
Potassium	ND		1000	"	"	2209918	11/17/22	11/18/22	EPA 200.7	
Silver	ND		0.50	"	"	2209920	11/17/22	11/18/22	EPA 200.8	
Sodium	**1200**		1000	"	"	2209918	11/17/22	11/18/22	EPA 200.7	
R-IS-10-IHR (22K0964-02) Water Sampled: 11/15/22 10:45 Received: 11/15/22 15:04										
Aluminum	ND		20	µg/L	1	2209920	11/17/22	11/17/22	EPA 200.8	QC-2H
Barium	**6.7**		5.0	"	"	"	"	"	"	
Calcium	**1600**		1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
Iron	ND		100	"	"	"	"	"	"	
Magnesium	ND		1000	"	"	"	"	"	"	
Manganese	**23**		2.0	"	"	2209920	11/17/22	11/17/22	EPA 200.8	
Potassium	ND		1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
Silver	**0.73**		0.50	"	"	2209920	11/17/22	11/17/22	EPA 200.8	
Sodium	**1100**		1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
R-IS-11-IHR (22K0964-03) Water Sampled: 11/15/22 11:30 Received: 11/15/22 15:04										
Aluminum	ND		20	µg/L	1	2209920	11/17/22	11/17/22	EPA 200.8	QC-2H
Barium	**6.8**		5.0	"	"	"	"	"	"	
Calcium	**1500**		1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
Iron	ND		100	"	"	"	"	"	"	
Magnesium	ND		1000	"	"	"	"	"	"	
Manganese	**21**		2.0	"	"	2209920	11/17/22	11/17/22	EPA 200.8	
Potassium	ND		1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
Silver	**0.51**		0.50	"	"	2209920	11/17/22	11/17/22	EPA 200.8	
Sodium	**1000**		1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0964
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-10-SFSC (22K0964-04) Water	**Sampled: 11/15/22 12:30**		**Received: 11/15/22 15:04**							
Aluminum	**34**		20	µg/L	1	2209920	11/17/22	11/23/22	EPA 200.8	
Barium	**11**		5.0	"	"	"	"	11/17/22	"	
Calcium	**1700**		1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
Iron	**600**		100	"	"	"	"	"	"	
Magnesium	ND		1000	"	"	"	"	"	"	
Manganese	**360**		2.0	"	"	2209920	11/17/22	11/17/22	EPA 200.8	
Potassium	ND		1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	
Silver	ND		0.50	"	"	2209920	11/17/22	11/17/22	EPA 200.8	
Sodium	ND		1000	"	"	2209897	11/16/22	11/16/22	EPA 200.7	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K0964**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-9-IHR (22K0964-01) Water Sampled: 11/15/22 09:45 Received: 11/15/22 15:04										
Aluminum	ND		20	µg/L	1	2209963	11/18/22	11/18/22	EPA 200.8	
Iron	ND		100	"	"	2209967	11/18/22	11/18/22	EPA 200.7	
Silver	ND		0.50	"	"	2209963	11/18/22	11/18/22	EPA 200.8	
R-IS-10-IHR (22K0964-02) Water Sampled: 11/15/22 10:45 Received: 11/15/22 15:04										
Aluminum	ND		20	µg/L	1	2209963	11/18/22	11/18/22	EPA 200.8	
Iron	ND		100	"	"	2209967	11/18/22	11/18/22	EPA 200.7	
Silver	ND		0.50	"	"	2209963	11/18/22	11/18/22	EPA 200.8	
R-IS-11-IHR (22K0964-03) Water Sampled: 11/15/22 11:30 Received: 11/15/22 15:04										
Aluminum	ND		20	µg/L	1	2209963	11/18/22	11/18/22	EPA 200.8	
Iron	ND		100	"	"	2209967	11/18/22	11/18/22	EPA 200.7	
Silver	ND		0.50	"	"	2209963	11/18/22	11/18/22	EPA 200.8	
R-IS-10-SFSC (22K0964-04) Water Sampled: 11/15/22 12:30 Received: 11/15/22 15:04										
Aluminum	ND		20	µg/L	1	2209963	11/18/22	11/18/22	EPA 200.8	
Iron	ND		100	"	"	2209967	11/18/22	11/18/22	EPA 200.7	
Silver	ND		0.50	"	"	2209963	11/18/22	11/18/22	EPA 200.8	

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COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-9-IHR (22K0964-01) Water Sampled: 11/15/22 09:45 Received: 11/15/22 15:04										
Gasoline	ND		50	µg/L	1	2209930	11/17/22	11/17/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*75 %*		*65-135*		"	"	"	"
R-IS-10-IHR (22K0964-02) Water Sampled: 11/15/22 10:45 Received: 11/15/22 15:04										
Gasoline	ND		50	µg/L	1	2209930	11/17/22	11/17/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*71 %*		*65-135*		"	"	"	"
R-IS-11-IHR (22K0964-03) Water Sampled: 11/15/22 11:30 Received: 11/15/22 15:04										
Gasoline	ND		50	µg/L	1	2209930	11/17/22	11/17/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*77 %*		*65-135*		"	"	"	"
R-IS-10-SFSC (22K0964-04) Water Sampled: 11/15/22 12:30 Received: 11/15/22 15:04										
Gasoline	ND		50	µg/L	1	2209930	11/17/22	11/17/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*76 %*		*65-135*		"	"	"	"

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COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-9-IHR (22K0964-01) Water Sampled: 11/15/22 09:45 Received: 11/15/22 15:04										
Methyl tert-butyl ether	ND		0.50	µg/L	1	2210109	11/16/22	11/16/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"
R-IS-10-IHR (22K0964-02) Water Sampled: 11/15/22 10:45 Received: 11/15/22 15:04										
Methyl tert-butyl ether	ND		0.50	µg/L	1	2210109	11/16/22	11/16/22	EPA 8260B	
Surrogate: Toluene-d8			*100 %*		*72-125*		"	"	"	"
R-IS-11-IHR (22K0964-03) Water Sampled: 11/15/22 11:30 Received: 11/15/22 15:04										
Methyl tert-butyl ether	ND		0.50	µg/L	1	2210109	11/16/22	11/16/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"
R-IS-10-SFSC (22K0964-04) Water Sampled: 11/15/22 12:30 Received: 11/15/22 15:04										
Methyl tert-butyl ether	ND		0.50	µg/L	1	2210109	11/16/22	11/16/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"

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COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209867 - General Prep											
Blank (2209867-BLK1)					Prepared & Analyzed: 11/16/22						
Chloride	ND		0.50	mg/L							
Sulfate as SO4	ND		0.50	"							
Nitrate/Nitrite as N	ND		0.40	"							
LCS (2209867-BS1)					Prepared & Analyzed: 11/16/22						
Chloride	4.85		0.50	mg/L	5.00		97	80-120			
Sulfate as SO4	4.74		0.50	"	5.00		95	80-120			
Nitrate/Nitrite as N	4.23		0.40	"	4.00		106	80-120			
LCS Dup (2209867-BSD1)					Prepared & Analyzed: 11/16/22						
Sulfate as SO4	4.85		0.50	mg/L	5.00		97	80-120	2	20	
Chloride	4.98		0.50	"	5.00		100	80-120	3	20	
Nitrate/Nitrite as N	4.31		0.40	"	4.00		108	80-120	2	20	
Matrix Spike (2209867-MS1)			**Source: 22K0964-01**		Prepared & Analyzed: 11/16/22						
Sulfate as SO4	5.32		0.50	mg/L	5.00	0.618	94	80-120			
Chloride	5.45		0.50	"	5.00	0.677	95	80-120			
Nitrate/Nitrite as N	4.20		0.40	"	4.00	ND	105	80-120			
Matrix Spike Dup (2209867-MSD1)			**Source: 22K0964-01**		Prepared & Analyzed: 11/16/22						
Chloride	5.55		0.50	mg/L	5.00	0.677	97	80-120	2	20	
Sulfate as SO4	5.45		0.50	"	5.00	0.618	97	80-120	2	20	
Nitrate/Nitrite as N	4.31		0.40	"	4.00	ND	108	80-120	2	20	
Batch 2209890 - General Preparation											
Blank (2209890-BLK1)					Prepared & Analyzed: 11/16/22						
Total Alkalinity	ND		5.0	mg/L							
Bicarbonate as CaCO3	ND		5.0	"							
Carbonate as CaCO3	ND		5.0	"							
Hydroxide as CaCO3	ND		5.0	"							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209890 - General Preparation											
Blank (2209890-BLK2)					Prepared & Analyzed: 11/16/22						
Total Alkalinity	ND		5.0	mg/L							
Bicarbonate as CaCO3	ND		5.0	"							
Carbonate as CaCO3	ND		5.0	"							
Hydroxide as CaCO3	ND		5.0	"							
Duplicate (2209890-DUP1)				**Source: 22K1011-09**	Prepared & Analyzed: 11/16/22						
Total Alkalinity	353		5.0	mg/L		363			3	20	
Bicarbonate as CaCO3	353		5.0	"		363			3	20	
Carbonate as CaCO3	ND		5.0	"		ND				20	
Hydroxide as CaCO3	ND		5.0	"		ND				20	
Duplicate (2209890-DUP2)				**Source: 22K1011-18**	Prepared & Analyzed: 11/16/22						
Total Alkalinity	590		5.0	mg/L		588			0.3	20	
Bicarbonate as CaCO3	590		5.0	"		588			0.3	20	
Carbonate as CaCO3	ND		5.0	"		ND				20	
Hydroxide as CaCO3	ND		5.0	"		ND				20	
Batch 2209892 - General Preparation											
Blank (2209892-BLK1)					Prepared & Analyzed: 11/16/22						
Orthophosphate as PO4	ND		0.15	mg/L							
LCS (2209892-BS1)					Prepared & Analyzed: 11/16/22						
Orthophosphate as PO4	0.838		0.15	mg/L	0.918		91	80-120			
LCS Dup (2209892-BSD1)					Prepared & Analyzed: 11/16/22						
Orthophosphate as PO4	0.809		0.15	mg/L	0.918		88	80-120	4	20	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209892 - General Preparation											
Matrix Spike (2209892-MS1)			**Source: 22K0964-01**		Prepared & Analyzed: 11/16/22						
Orthophosphate as PO4	0.867		0.15	mg/L	0.918	ND	94	75-125			
Matrix Spike Dup (2209892-MSD1)			**Source: 22K0964-01**		Prepared & Analyzed: 11/16/22						
Orthophosphate as PO4	0.842		0.15	mg/L	0.918	ND	92	75-125	3	25	
Batch 2209897 - EPA 200 Series											
Blank (2209897-BLK1)					Prepared & Analyzed: 11/16/22						
Total Hardness as CaCO3	ND		1.0	mg/L							
LCS (2209897-BS1)					Prepared & Analyzed: 11/16/22						
Total Hardness as CaCO3	33.4		1.0	mg/L	33.1		101	85-115			
Matrix Spike (2209897-MS1)			**Source: 22K0757-03**		Prepared & Analyzed: 11/16/22						
Total Hardness as CaCO3	33.9		1.0	mg/L	33.1	0.700	100	70-130			
Matrix Spike (2209897-MS2)			**Source: 22K0985-03**		Prepared: 11/16/22 Analyzed: 11/17/22						
Total Hardness as CaCO3	540		1.0	mg/L	33.1	507	101	70-130			
Batch 2209903 - General Preparation											
Blank (2209903-BLK1)					Prepared & Analyzed: 11/16/22						
Ammonia as N	ND		0.10	mg/L							
LCS (2209903-BS1)					Prepared & Analyzed: 11/16/22						
Ammonia as N	0.564		0.10	mg/L	0.500		113	80-120			

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209903 - General Preparation											
LCS Dup (2209903-BSD1)					Prepared & Analyzed: 11/16/22						
Ammonia as N	0.566		0.10	mg/L	0.500		113	80-120	0.4	25	
Matrix Spike (2209903-MS1)			**Source: 22K0904-01**		Prepared & Analyzed: 11/16/22						
Ammonia as N	0.591		0.10	mg/L	0.500	0.0310	112	75-125			
Matrix Spike Dup (2209903-MSD1)			**Source: 22K0904-01**		Prepared & Analyzed: 11/16/22						
Ammonia as N	0.583		0.10	mg/L	0.500	0.0310	110	75-125	1	25	
Batch 2209905 - General Preparation											
Blank (2209905-BLK1)					Prepared & Analyzed: 11/16/22						
Total Dissolved Solids	ND		10	mg/L							
Duplicate (2209905-DUP1)			**Source: 22K0753-01**		Prepared & Analyzed: 11/16/22						
Total Dissolved Solids	378		10	mg/L		374			1	20	
Batch 2209918 - EPA 200 Series											
Blank (2209918-BLK1)					Prepared: 11/17/22 Analyzed: 11/18/22						
Total Hardness as CaCO3	ND		1.0	mg/L							
LCS (2209918-BS1)					Prepared: 11/17/22 Analyzed: 11/18/22						
Total Hardness as CaCO3	35.1		1.0	mg/L	33.1		106	85-115			
Matrix Spike (2209918-MS1)			**Source: 22K0964-01**		Prepared: 11/17/22 Analyzed: 11/18/22						
Total Hardness as CaCO3	40.1		1.0	mg/L	33.1	4.76	107	70-130			

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209918 - EPA 200 Series											
Matrix Spike (2209918-MS2)			**Source: 22K1104-02**		Prepared: 11/17/22 Analyzed: 11/18/22						
Total Hardness as CaCO3	75.2		1.0	mg/L	33.1	41.3	102	70-130			
Batch 2209944 - Solvent Extract											
Blank (2209944-BLK1)					Prepared: 11/17/22 Analyzed: 11/22/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND		5.0	mg/L							
LCS (2209944-BS1)					Prepared: 11/17/22 Analyzed: 11/22/22						
Hexane Extractable Material (HEM, Oil & Grease)	38.2		5.0	mg/L	40.0		96	78-114			
LCS Dup (2209944-BSD1)					Prepared: 11/17/22 Analyzed: 11/22/22						
Hexane Extractable Material (HEM, Oil & Grease)	38.8		5.0	mg/L	40.0		97	78-114	2	18	
Batch 2209946 - General Preparation											
Blank (2209946-BLK1)					Prepared & Analyzed: 11/17/22						
Total Kjeldahl Nitrogen	ND		0.20	mg/L							
LCS (2209946-BS1)					Prepared & Analyzed: 11/17/22						
Total Kjeldahl Nitrogen	0.574		0.20	mg/L	0.500		115	80-120			
LCS Dup (2209946-BSD1)					Prepared & Analyzed: 11/17/22						
Total Kjeldahl Nitrogen	0.516		0.20	mg/L	0.500		103	80-120	11	20	
Matrix Spike (2209946-MS1)			**Source: 22K0904-01**		Prepared & Analyzed: 11/17/22						
Total Kjeldahl Nitrogen	0.754		0.20	mg/L	0.500	0.209	109	75-125			

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209946 - General Preparation											
Matrix Spike Dup (2209946-MSD1)			**Source: 22K0904-01**		Prepared & Analyzed: 11/17/22						
Total Kjeldahl Nitrogen	0.826		0.20	mg/L	0.500	0.209	123	75-125	9	25	
Batch 2209969 - General Preparation											
Blank (2209969-BLK1)					Prepared & Analyzed: 11/18/22						
Total Suspended Solids	ND		5.0	mg/L							
Duplicate (2209969-DUP1)			**Source: 22K0900-02**		Prepared & Analyzed: 11/18/22						
Total Suspended Solids	ND		5.0	mg/L		ND				20	
Batch 2209982 - General Preparation											
Blank (2209982-BLK1)					Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	ND		0.050	mg/L							
Blank (2209982-BLK2)					Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	ND		0.050	mg/L							
LCS (2209982-BS1)					Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	0.302		0.050	mg/L	0.300		101	80-120			
LCS (2209982-BS2)					Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	0.302		0.050	mg/L	0.300		101	80-120			
LCS Dup (2209982-BSD1)					Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	0.285		0.050	mg/L	0.300		95	80-120	6	25	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209982 - General Preparation											
LCS Dup (2209982-BSD2)					Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	0.285		0.050	mg/L	0.300		95	80-120	6	25	
Matrix Spike (2209982-MS1)				**Source: 22K0847-01**	Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	0.293		0.050	mg/L	0.300	ND	98	75-125			
Matrix Spike (2209982-MS2)				**Source: 22K1091-02**	Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	0.312		0.050	mg/L	0.300	ND	104	75-125			
Matrix Spike Dup (2209982-MSD1)				**Source: 22K0847-01**	Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	0.328		0.050	mg/L	0.300	ND	109	75-125	11	30	
Matrix Spike Dup (2209982-MSD2)				**Source: 22K1091-02**	Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	0.311		0.050	mg/L	0.300	ND	104	75-125	0.5	30	
Batch 2210016 - General Preparation											
Blank (2210016-BLK1)					Prepared & Analyzed: 11/21/22						
Total Organic Carbon	ND		1.0	mg/L							
LCS (2210016-BS1)					Prepared & Analyzed: 11/21/22						
Total Organic Carbon	10.2		1.0	mg/L	10.0		102	75-125			
LCS Dup (2210016-BSD1)					Prepared & Analyzed: 11/21/22						
Total Organic Carbon	10.5		1.0	mg/L	10.0		105	75-125	4	25	
Matrix Spike (2210016-MS1)				**Source: 22K0964-03**	Prepared & Analyzed: 11/21/22						
Total Organic Carbon	15.6		1.0	mg/L	10.0	2.38	132	75-125			QM-7

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K0964
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210016 - General Preparation											
Matrix Spike Dup (2210016-MSD1)			**Source: 22K0964-03**		Prepared & Analyzed: 11/21/22						
Total Organic Carbon	16.0		1.0	mg/L	10.0	2.38	136	75-125	3	25	QM-7
Batch 2210032 - General Preparation											
Blank (2210032-BLK1)					Prepared: 11/21/22 Analyzed: 11/23/22						
Cyanide (total)	ND		0.0050	mg/L							
LCS (2210032-BS1)					Prepared: 11/21/22 Analyzed: 11/23/22						
Cyanide (total)	0.0774		0.0050	mg/L	0.100		77	75-125			
LCS Dup (2210032-BSD1)					Prepared: 11/21/22 Analyzed: 11/23/22						
Cyanide (total)	0.0781		0.0050	mg/L	0.100		78	75-125	0.9	25	
Matrix Spike (2210032-MS1)			**Source: 22K0964-01**		Prepared: 11/21/22 Analyzed: 11/23/22						
Cyanide (total)	0.0615		0.0050	mg/L	0.100	0.00420	57	75-125			QM-7
Matrix Spike Dup (2210032-MSD1)			**Source: 22K0964-01**		Prepared: 11/21/22 Analyzed: 11/23/22						
Cyanide (total)	0.0585		0.0050	mg/L	0.100	0.00420	54	75-125	5	25	QM-7

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Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209917 - EPA 3510B GCNV											
Blank (2209917-BLK1)					Prepared: 11/17/22 Analyzed: 11/18/22						
Diesel	ND		0.050	mg/L							
Motor Oil	ND		0.050	"							
Surrogate: o-Terphenyl	*0.0188*			*"*	*0.0250*		*75*	*65-135*			
LCS (2209917-BS1)					Prepared: 11/17/22 Analyzed: 11/18/22						
Diesel	1.68		0.050	mg/L	2.50		67	65-135			
Surrogate: o-Terphenyl	*0.0200*			*"*	*0.0250*		*80*	*65-135*			
LCS Dup (2209917-BSD1)					Prepared: 11/17/22 Analyzed: 11/18/22						
Diesel	1.68		0.050	mg/L	2.50		67	65-135	0.03	30	
Surrogate: o-Terphenyl	*0.0193*			*"*	*0.0250*		*77*	*65-135*			
Matrix Spike (2209917-MS1)			**Source: 22K0964-01**		Prepared: 11/17/22 Analyzed: 11/18/22						
Diesel	1.46		0.050	mg/L	2.50	ND	59	46-137			
Surrogate: o-Terphenyl	*0.0189*			*"*	*0.0250*		*75*	*65-135*			
Matrix Spike Dup (2209917-MSD1)			**Source: 22K0964-01**		Prepared: 11/17/22 Analyzed: 11/18/22						
Diesel	1.54		0.050	mg/L	2.50	ND	61	46-137	5	30	
Surrogate: o-Terphenyl	*0.0199*			*"*	*0.0250*		*80*	*65-135*			

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COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209897 - EPA 200 Series											
Blank (2209897-BLK1)					Prepared & Analyzed: 11/16/22						
Barium	ND		20	µg/L							
Beryllium	ND		5.0	"							
Boron	ND		50	"							
Cadmium	ND		10	"							
Calcium	ND		1000	"							
Copper	ND		10	"							
Iron	ND		100	"							
Magnesium	ND		1000	"							
Manganese	ND		10	"							
Nickel	ND		20	"							
Potassium	ND		1000	"							
Silver	ND		10	"							
Sodium	ND		1000	"							
Zinc	ND		20	"							
LCS (2209897-BS1)					Prepared & Analyzed: 11/16/22						
Barium	504		20	µg/L	500		101	85-115			
Beryllium	531		5.0	"	500		106	85-115			
Boron	497		50	"	500		99	85-115			
Cadmium	503		10	"	500		101	85-115			
Calcium	5140		1000	"	5000		103	85-115			
Copper	500		10	"	500		100	85-115			
Iron	502		100	"	500		100	85-115			
Magnesium	4990		1000	"	5000		100	85-115			
Manganese	516		10	"	500		103	85-115			
Nickel	513		20	"	500		103	85-115			
Potassium	5180		1000	"	5000		104	85-115			
Silver	534		10	"	500		107	85-115			
Sodium	5140		1000	"	5000		103	85-115			
Zinc	503		20	"	500		101	85-115			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209897 - EPA 200 Series											
Matrix Spike (2209897-MS1)			**Source: 22K0757-03**		Prepared & Analyzed: 11/16/22						
Barium	511		20	µg/L	500	4.38	101	70-130			
Beryllium	535		5.0	"	500	ND	107	70-130			
Boron	493		50	"	500	7.73	97	70-130			
Cadmium	496		10	"	500	ND	99	70-130			
Calcium	5390		1000	"	5000	210	104	70-130			
Copper	496		10	"	500	ND	99	70-130			
Iron	586		100	"	500	65.6	104	70-130			
Magnesium	4950		1000	"	5000	42.6	98	70-130			
Manganese	517		10	"	500	2.79	103	70-130			
Nickel	508		20	"	500	ND	102	70-130			
Potassium	5170		1000	"	5000	ND	103	70-130			
Silver	549		10	"	500	ND	110	70-130			
Sodium	5330		1000	"	5000	178	103	70-130			
Zinc	509		20	"	500	18.4	98	70-130			
Matrix Spike (2209897-MS2)			**Source: 22K0985-03**		Prepared: 11/16/22 Analyzed: 11/17/22						
Barium	798		20	µg/L	500	294	101	70-130			
Beryllium	542		5.0	"	500	ND	108	70-130			
Boron	593		50	"	500	81.2	102	70-130			
Cadmium	504		10	"	500	ND	101	70-130			
Calcium	127000		1000	"	5000	122000	103	70-130			
Copper	493		10	"	500	ND	99	70-130			
Iron	511		100	"	500	ND	102	70-130			
Magnesium	53900		1000	"	5000	49000	99	70-130			
Manganese	515		10	"	500	ND	103	70-130			
Nickel	499		20	"	500	ND	100	70-130			
Potassium	8010		1000	"	5000	2760	105	70-130			
Silver	545		10	"	500	ND	109	70-130			
Sodium	75500		1000	"	5000	70900	93	70-130			
Zinc	516		20	"	500	ND	103	70-130			

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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209918 - EPA 200 Series											
Blank (2209918-BLK1)					Prepared: 11/17/22 Analyzed: 11/18/22						
Beryllium	ND		5.0	µg/L							
Boron	ND		50	"							
Cadmium	ND		10	"							
Calcium	ND		1000	"							
Copper	ND		10	"							
Iron	ND		100	"							
Magnesium	ND		1000	"							
Manganese	ND		10	"							
Nickel	ND		20	"							
Potassium	ND		1000	"							
Silver	ND		10	"							
Sodium	ND		1000	"							
Zinc	ND		20	"							
LCS (2209918-BS1)					Prepared: 11/17/22 Analyzed: 11/18/22						
Beryllium	508		5.0	µg/L	500		102	85-115			
Boron	503		50	"	500		101	85-115			
Cadmium	523		10	"	500		105	85-115			
Calcium	5230		1000	"	5000		105	85-115			
Copper	516		10	"	500		103	85-115			
Iron	515		100	"	500		103	85-115			
Magnesium	5340		1000	"	5000		107	85-115			
Manganese	528		10	"	500		106	85-115			
Nickel	531		20	"	500		106	85-115			
Potassium	5090		1000	"	5000		102	85-115			
Silver	548		10	"	500		110	85-115			
Sodium	5410		1000	"	5000		108	85-115			
Zinc	510		20	"	500		102	85-115			

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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209918 - EPA 200 Series											
Matrix Spike (2209918-MS1)			**Source: 22K0964-01**		Prepared: 11/17/22	Analyzed: 11/18/22					
Beryllium	502		5.0	µg/L	500	ND	100	70-130			
Boron	516		50	"	500	ND	103	70-130			
Cadmium	527		10	"	500	ND	105	70-130			
Calcium	6710		1000	"	5000	1460	105	70-130			
Copper	519		10	"	500	ND	104	70-130			
Iron	577		100	"	500	53.7	105	70-130			
Magnesium	5660		1000	"	5000	267	108	70-130			
Manganese	548		10	"	500	17.3	106	70-130			
Nickel	532		20	"	500	ND	106	70-130			
Potassium	5670		1000	"	5000	268	108	70-130			
Silver	553		10	"	500	5.74	109	70-130			
Sodium	6480		1000	"	5000	1210	105	70-130			
Zinc	516		20	"	500	ND	103	70-130			
Matrix Spike (2209918-MS2)			**Source: 22K1104-02**		Prepared: 11/17/22	Analyzed: 11/18/22					
Beryllium	504		5.0	µg/L	500	ND	101	70-130			
Boron	498		50	"	500	8.88	98	70-130			
Cadmium	508		10	"	500	ND	102	70-130			
Calcium	16600		1000	"	5000	11300	105	70-130			
Copper	500		10	"	500	ND	100	70-130			
Iron	578		100	"	500	72.2	101	70-130			
Magnesium	8180		1000	"	5000	3110	102	70-130			
Manganese	529		10	"	500	14.1	103	70-130			
Nickel	513		20	"	500	ND	103	70-130			
Potassium	6740		1000	"	5000	1620	103	70-130			
Silver	530		10	"	500	ND	106	70-130			
Sodium	11100		1000	"	5000	5980	102	70-130			
Zinc	497		20	"	500	ND	99	70-130			

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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209920 - EPA 200 Series											
Blank (2209920-BLK1)					Prepared: 11/17/22 Analyzed: 11/18/22						
Aluminum	ND		20	µg/L							
Antimony	ND		6.0	"							
Arsenic	ND		2.0	"							
Barium	ND		5.0	"							
Lead	ND		5.0	"							
Manganese	ND		2.0	"							
Selenium	ND		5.0	"							
Silver	ND		0.50	"							
Thallium	ND		1.0	"							
LCS (2209920-BS1)					Prepared: 11/17/22 Analyzed: 11/18/22						
Aluminum	469		20	µg/L	500		94	85-115			
Antimony	99.2		6.0	"	100		99	85-115			
Arsenic	100		2.0	"	100		100	85-115			
Barium	100		5.0	"	100		100	85-115			
Lead	90.2		5.0	"	100		90	85-115			
Manganese	103		2.0	"	100		103	85-115			
Selenium	100		5.0	"	100		100	85-115			
Silver	91.9		0.50	"	100		92	85-115			
Thallium	93.8		1.0	"	100		94	85-115			
Matrix Spike (2209920-MS1)				**Source: 22K0991-05**	Prepared & Analyzed: 11/17/22						
Aluminum	576		20	µg/L	500	75.3	100	70-130			
Antimony	98.9		6.0	"	100	ND	99	70-130			
Arsenic	96.0		2.0	"	100	0.451	96	70-130			
Barium	158		5.0	"	100	64.0	94	70-130			
Lead	94.5		5.0	"	100	1.47	93	70-130			
Manganese	101		2.0	"	100	5.23	95	70-130			
Selenium	95.2		5.0	"	100	ND	95	70-130			
Silver	99.3		0.50	"	100	0.440	99	70-130			
Thallium	98.2		1.0	"	100	ND	98	70-130			

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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209920 - EPA 200 Series											
Matrix Spike (2209920-MS2)			**Source: 22K1042-01**	Prepared & Analyzed: 11/17/22							
Aluminum	597		20	µg/L	500	88.8	102	70-130			
Antimony	100		6.0	"	100	ND	100	70-130			
Arsenic	97.1		2.0	"	100	ND	97	70-130			
Barium	165		5.0	"	100	64.3	101	70-130			
Lead	97.0		5.0	"	100	0.489	97	70-130			
Manganese	113		2.0	"	100	16.7	96	70-130			
Selenium	97.7		5.0	"	100	ND	98	70-130			
Silver	98.6		0.50	"	100	ND	99	70-130			
Thallium	102		1.0	"	100	ND	102	70-130			

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Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209963 - EPA 200 No Digestion											
Blank (2209963-BLK1)					Prepared & Analyzed: 11/18/22						
Aluminum	ND		20	µg/L							
Silver	ND		0.50	"							
LCS (2209963-BS1)					Prepared & Analyzed: 11/18/22						
Aluminum	484		20	µg/L	500		97	85-115			
Silver	96.9		0.50	"	100		97	85-115			
Matrix Spike (2209963-MS1)			**Source: 22K0964-01**		Prepared & Analyzed: 11/18/22						
Aluminum	497		20	µg/L	500	19.8	95	70-130			
Silver	96.5		0.50	"	100	ND	97	70-130			
Batch 2209967 - EPA 200 No Digestion											
Blank (2209967-BLK1)					Prepared & Analyzed: 11/18/22						
Iron	ND		100	µg/L							
LCS (2209967-BS1)					Prepared & Analyzed: 11/18/22						
Iron	516		100	µg/L	500		103	85-115			
Matrix Spike (2209967-MS1)			**Source: 22K0964-01**		Prepared & Analyzed: 11/18/22						
Iron	531		100	µg/L	500	7.91	105	70-130			
Matrix Spike (2209967-MS2)			**Source: 22K1104-02**		Prepared & Analyzed: 11/18/22						
Iron	554		100	µg/L	500	11.8	108	70-130			

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TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209930 - EPA 5030 Water GC											
Blank (2209930-BLK1)					Prepared & Analyzed: 11/17/22						
Gasoline	ND		50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*13.9*			*"*	*20.0*		*70*	*65-135*			
LCS (2209930-BS1)					Prepared & Analyzed: 11/17/22						
Gasoline	451		50	µg/L	500		90	70-130			
Surrogate: o-Chlorotoluene (Gas)	*15.8*			*"*	*20.0*		*79*	*65-135*			
LCS Dup (2209930-BSD1)					Prepared & Analyzed: 11/17/22						
Gasoline	427		50	µg/L	500		85	70-130	5	30	
Surrogate: o-Chlorotoluene (Gas)	*15.5*			*"*	*20.0*		*77*	*65-135*			
Matrix Spike (2209930-MS1)			**Source: 22K0964-04**		Prepared & Analyzed: 11/17/22						
Gasoline	500		50	µg/L	500	ND	100	68-132			
Surrogate: o-Chlorotoluene (Gas)	*14.9*			*"*	*20.0*		*75*	*65-135*			
Matrix Spike Dup (2209930-MSD1)			**Source: 22K0964-04**		Prepared & Analyzed: 11/17/22						
Gasoline	474		50	µg/L	500	ND	95	68-132	5	32	
Surrogate: o-Chlorotoluene (Gas)	*16.4*			*"*	*20.0*		*82*	*65-135*			

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Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210109 - EPA 3510B GCMS											
Blank (2210109-BLK1)					Prepared & Analyzed: 11/16/22						
Di-isopropyl ether	ND		0.50	µg/L							
Ethyl tert-butyl ether	ND		0.50	"							
Methyl tert-butyl ether	ND		0.50	"							
tert-Amyl methyl ether	ND		0.50	"							
tert-Butyl alcohol	ND		5.0	"							
Surrogate: Toluene-d8	*9.84*			*"*	*10.0*		*98*	*72-125*			
LCS (2210109-BS1)					Prepared & Analyzed: 11/16/22						
Methyl tert-butyl ether	18.0		0.50	µg/L	20.0		90	52-130			
Surrogate: Toluene-d8	*9.99*			*"*	*10.0*		*100*	*72-125*			
LCS Dup (2210109-BSD1)					Prepared & Analyzed: 11/16/22						
Methyl tert-butyl ether	22.0		0.50	µg/L	20.0		110	52-130	20	30	
Surrogate: Toluene-d8	*10.1*			*"*	*10.0*		*101*	*72-125*			
Matrix Spike (2210109-MS1)			**Source: 22K1011-09**		Prepared & Analyzed: 11/16/22						
Methyl tert-butyl ether	12.6		0.50	µg/L	20.0	ND	63	52-140			
Surrogate: Toluene-d8	*10.4*			*"*	*10.0*		*104*	*72-125*			
Matrix Spike Dup (2210109-MSD1)			**Source: 22K1011-09**		Prepared & Analyzed: 11/16/22						
Methyl tert-butyl ether	12.2		0.50	µg/L	20.0	ND	61	52-140	3	30	
Surrogate: Toluene-d8	*10.1*			*"*	*10.0*		*101*	*72-125*			

12/01/22 12:41

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K0964**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QS-4	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
QC-2H	The recovery of one CCV was greater than the acceptance limit. However, all analytes in the associated samples were ND; therefore a reanalysis was not performed.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22K0964 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[X] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [X] [ ] NO

GLOBAL ID

FIELD CONDITIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	Cl, SO4	TSS, TDS, Hardness, Alkalinity, NO2-N+NO3-N, Diss Metals	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
11/15/22	9:45	R-IS-9-IHR		Surface water			6	X	X	X	X	X	X	X				X	
11/15/22	10:45	R-IS-10-IHR		Surface water			6	X	X	X	X	X	X	X				X	
11/15/22	11:30	R-IS-11-IHR		Surface water			6	X	X	X	X	X	X	X				X	
11/15/22	12:30	R-IS-10-SFSL		Surface water			6	X	X	X	X	X	X	X				X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	INVOICE TO
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	Project No. 750.10 Task 0620.01
				Surface water			6											X	QUOTE#

ANALYSIS REQUESTED

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO3 (4) = H2SO4 (5) NH_2/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	STILLWATER SCIENCES	11/15/22 15:4		

RECEIVED AT LAB BY: DATE/TIME: 11/15/22 1504 CONDITIONS/COMMENTS: 2-7/2.0

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER AIR BILL #

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02

Lab No: 22K0987
Reported: 01/12/23
Phone: 530-756-7550

Included in this report are laboratory results for work order 22K0987, received on 11/22/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: IS-12-SC
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0987-01
Sampled: 11/21/22 11:30
Received: 11/22/22 08:15

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Copper	ug/l	0.25		0.04	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Lead	ug/l	0.058		0.007	0.050	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Mercury	ng/l	0.81		0.22	0.50	EPA 1631E	12/11/22	12/11/22	B2L1032 / DJC
Nickel	ug/l	0.15		0.02	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/01/22	B2K1455 / edm
Zinc	ug/l	0.54		0.12	0.50	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Copper	ug/l	0.17		0.04	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Nickel	ug/l	0.08	J	0.02	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/08/22	B2L0963 / edm
Zinc	ug/l	0.15	J	0.12	0.50	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM

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Analytical Report

Description: IS-11-SFSC
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0987-02
Sampled: 11/21/22 10:30
Received: 11/22/22 08:15

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Copper	ug/l	0.28		0.04	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Lead	ug/l	0.012	J	0.007	0.050	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Mercury	ng/l	0.39	J	0.22	0.50	EPA 1631E	12/11/22	12/11/22	B2L1032 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	01/11/23	01/10/23	B3A1023 / EDM
Nickel	ug/l	0.07	J	0.02	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/01/22	B2K1455 / edm
Zinc	ug/l	0.14	J	0.12	0.50	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Copper	ug/l	0.10		0.04	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Lead	ug/l	0.008	J	0.007	0.050	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Nickel	ug/l	0.05	J	0.02	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/08/22	B2L0963 / edm
Zinc	ug/l	0.15	J	0.12	0.50	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM

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Analytical Report

Description: R-IS-16-CB
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0987-03
Sampled: 11/21/22 14:00
Received: 11/22/22 08:15

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Copper	ug/l	0.31		0.04	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Lead	ug/l	0.042	J	0.007	0.050	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Mercury	ng/l	0.57		0.22	0.50	EPA 1631E	12/11/22	12/11/22	B2L1032 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	01/11/23	01/10/23	B3A1023 / EDM
Nickel	ug/l	0.10		0.02	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/01/22	B2K1455 / edm
Zinc	ug/l	0.23	J	0.12	0.50	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Copper	ug/l	0.22		0.04	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Nickel	ug/l	0.08	J	0.02	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/08/22	B2L0963 / edm
Zinc	ug/l	0.19	J	0.12	0.50	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM

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Analytical Report

Description: R-IS-17-CB
Matrix / Type: Surface Water (Grab)
Lab ID: 22K0987-04
Sampled: 11/21/22 14:30
Received: 11/22/22 08:15

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Copper	ug/l	0.26		0.04	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Lead	ug/l	0.025	J	0.007	0.050	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Mercury	ng/l	1.12		0.22	0.50	EPA 1631E	12/11/22	12/11/22	B2L1032 / DJC
Methyl Mercury as Mercury	ng/l	ND		0.017	0.050	EPA 1630**	01/11/23	01/10/23	B3A1023 / EDM
Nickel	ug/l	0.09	J	0.02	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/01/22	B2K1455 / edm
Zinc	ug/l	0.17	J	0.12	0.50	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Copper	ug/l	0.22		0.04	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Nickel	ug/l	0.08	J	0.02	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/08/22	B2L0963 / edm
Zinc	ug/l	0.26	J	0.12	0.50	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1455 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	211	2.0	ug/l	200		105	85-115			
Duplicate	Source: 22K0707-02									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22K0987-03									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22K0707-02									
Selenium	202	2.0	ug/l	200	ND	101	75-125			
Matrix Spike	Source: 22K0987-03									
Selenium	207	2.0	ug/l	200	ND	103	75-125			
Metals - Total - Redding Location	**Batch B2L1032 - BrCl Digestion**									

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2L1032 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	10.4	0.50	ng/l	10.0		104	77-123			
Matrix Spike	Source: 22K0820-01									
Mercury	11.1	0.50	ng/l	10.0	0.70	103	71-125			
Matrix Spike	Source: 22K1100-01									
Mercury	12.4	0.50	ng/l	10.0	1.76	106	71-125			
Matrix Spike Dup	Source: 22K0820-01									
Mercury	11.3	0.50	ng/l	10.0	0.70	106	71-125	2.47	24	
Matrix Spike Dup	Source: 22K1100-01									
Mercury	12.0	0.50	ng/l	10.0	1.76	103	71-125	2.84	24	
Metals - Total - Redding Location	**Batch B3A0934 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B3A0934 - EPA 1638 - Closed Bottle Oven Digestion**									
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.2	50-150			
Cadmium	0.24	0.10	ug/l	0.250		97.8	84-113			
Copper	0.26	0.10	ug/l	0.250		103	51-145			
Lead	0.122	0.050	ug/l	0.125		97.2	72-143			
Nickel	0.25	0.10	ug/l	0.250		99.9	68-134			
Zinc	1.23	0.50	ug/l	1.25		98.7	46-146			
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.3	50-150			
Cadmium	0.25	0.10	ug/l	0.250		99.7	84-113			
Copper	0.25	0.10	ug/l	0.250		98.6	51-145			
Lead	0.122	0.050	ug/l	0.125		97.9	72-143			
Nickel	0.25	0.10	ug/l	0.250		101	68-134			
Zinc	1.25	0.50	ug/l	1.25		99.9	46-146			
Matrix Spike	Source: 22K0820-03									
Arsenic	2.50	0.50	ug/l	2.50	ND	99.9	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	103	84-113			
Copper	0.52	0.10	ug/l	0.500	ND	103	51-145			
Lead	0.252	0.050	ug/l	0.250	ND	101	72-143			
Nickel	0.51	0.10	ug/l	0.500	ND	101	68-134			
Zinc	2.59	0.50	ug/l	2.50	ND	104	46-146			
Matrix Spike	Source: 22L0732-01									
Arsenic	3.86	0.50	ug/l	2.50	1.33	101	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	99.0	84-113			
Copper	1.44	0.10	ug/l	0.500	0.97	94.2	51-145			
Lead	0.306	0.050	ug/l	0.250	0.049	103	72-143			
Nickel	1.30	0.10	ug/l	0.500	0.83	93.8	68-134			
Zinc	4.87	0.50	ug/l	2.50	2.54	93.3	46-146			
Matrix Spike Dup	Source: 22K0820-03									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150	1.18	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.9	84-113	2.89	20	
Copper	0.53	0.10	ug/l	0.500	ND	105	51-145	2.16	20	
Lead	0.258	0.050	ug/l	0.250	ND	103	72-143	2.41	20	
Nickel	0.50	0.10	ug/l	0.500	ND	101	68-134	0.453	20	
Zinc	2.53	0.50	ug/l	2.50	ND	101	46-146	2.59	20	
Matrix Spike Dup	Source: 22L0732-01									
Arsenic	3.87	0.50	ug/l	2.50	1.33	102	50-150	0.276	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	97.8	84-113	1.24	20	
Copper	1.44	0.10	ug/l	0.500	0.97	94.8	51-145	0.217	20	
Lead	0.318	0.050	ug/l	0.250	0.049	107	72-143	3.92	20	
Nickel	1.32	0.10	ug/l	0.500	0.83	99.7	68-134	2.23	20	
Zinc	4.98	0.50	ug/l	2.50	2.54	97.5	46-146	2.14	20	
Metals - Total - Redding Location	**Batch B3A1023 - EPA 1630 Distillation (Modified)**									
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B3A1023 - EPA 1630 Distillation (Modified)**									
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.12	0.050	ng/l	2.00		106	67-133			
Matrix Spike	Source: 22K0844-02									
Methyl Mercury as Mercury	1.28	0.050	ng/l	1.00	0.023	125	65-135			
Matrix Spike	Source: 22L0150-01									
Methyl Mercury as Mercury	1.26	0.050	ng/l	1.00	0.019	124	65-135			
Matrix Spike Dup	Source: 22K0844-02									
Methyl Mercury as Mercury	1.24	0.050	ng/l	1.00	0.023	122	65-135	2.81	35	
Matrix Spike Dup	Source: 22L0150-01									
Methyl Mercury as Mercury	1.26	0.050	ng/l	1.00	0.019	125	65-135	0.277	35	
Metals - Dissolved - Redding Location	**Batch B2L0963 - EPA 200.8 Diss**									
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	215	2.0	ug/l	200		107	85-115			
Duplicate	Source: 22K0824-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22K0903-04									
Selenium	0.5	2.0	ug/l		0.5			0.502	20	J
Matrix Spike	Source: 22K0824-01									
Selenium	212	2.0	ug/l	200	ND	106	75-125			
Matrix Spike	Source: 22K0903-04									
Selenium	209	2.0	ug/l	200	0.5	104	75-125			
Metals - Dissolved - Redding Location	**Batch B3A0952 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B3A0952 - EPA 1638 - Dissolved**									
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.24	0.10	ug/l	0.250		95.0	84-113			
Copper	0.27	0.10	ug/l	0.250		107	51-145			
Lead	0.129	0.050	ug/l	0.125		104	72-143			
Nickel	0.25	0.10	ug/l	0.250		101	68-134			
Zinc	1.27	0.50	ug/l	1.25		102	46-146			
LCS										
Arsenic	1.28	0.50	ug/l	1.25		102	50-150			
Cadmium	0.25	0.10	ug/l	0.250		100	84-113			
Copper	0.26	0.10	ug/l	0.250		106	51-145			
Lead	0.131	0.050	ug/l	0.125		105	72-143			
Nickel	0.28	0.10	ug/l	0.250		113	68-134			
Matrix Spike	Source: 22K0820-03									
Arsenic	2.51	0.50	ug/l	2.50	ND	100	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113			
Copper	0.52	0.10	ug/l	0.500	ND	103	51-145			
Lead	0.250	0.050	ug/l	0.250	ND	100	72-143			
Nickel	0.52	0.10	ug/l	0.500	ND	104	68-134			
Zinc	2.54	0.50	ug/l	2.50	ND	102	46-146			
Matrix Spike	Source: 22K1046-02									
Arsenic	2.69	0.50	ug/l	2.50	ND	108	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.71	0.10	ug/l	0.500	0.19	103	51-145			
Lead	0.261	0.050	ug/l	0.250	ND	104	72-143			
Nickel	0.56	0.10	ug/l	0.500	0.06	99.7	68-134			
Matrix Spike Dup	Source: 22K0820-03									
Arsenic	2.55	0.50	ug/l	2.50	ND	102	50-150	1.71	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	96.2	84-113	5.94	20	
Copper	0.51	0.10	ug/l	0.500	ND	102	51-145	1.72	20	
Lead	0.252	0.050	ug/l	0.250	ND	101	72-143	0.991	20	
Nickel	0.51	0.10	ug/l	0.500	ND	103	68-134	1.20	20	
Zinc	2.61	0.50	ug/l	2.50	ND	104	46-146	2.66	20	
Matrix Spike Dup	Source: 22K1046-02									
Arsenic	2.74	0.50	ug/l	2.50	ND	109	50-150	1.64	20	
Cadmium	0.51	0.10	ug/l	0.500	ND	101	84-113	0.103	20	
Copper	0.71	0.10	ug/l	0.500	0.19	103	51-145	0.0936	20	
Lead	0.261	0.050	ug/l	0.250	ND	104	72-143	0.0734	20	
Nickel	0.61	0.10	ug/l	0.500	0.06	110	68-134	9.11	20	

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Analytical Report

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	The laboratory does not hold CA-ELAP accreditiation for this analyte or method. Accreditation may not be available from CA-ELAP for this analyte or method.
**	The laboratory holds accreditation for this analyte or method with WA-ECY Lab ID: Lab ID C783. Accreditation is not offered for this method by CA-ELAP
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Accreditations Held:
Redding Location: CA-ELAP - Cert # 1677
Chico Location: CA-ELAP - Cert # 2718

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen
Ricky Jensen, Operations Manager
Pace Analytical Services LLC - Redding CA

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

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LABORATORY WORK ORDER # 22K0987
PAGE 1 OF 1

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS
279 Cousteau Place, Suite 400
Davis, CA 95618

REPORT TO ☒ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED
☒ Standard ☐ Rush _____

INVOICE TO: same

EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory

QC Reported? (check one) ☐ None ☑ STD ☐ Other

Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED		SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	11/21/22	11:30	AM PM	SW			IS-12-SC		6	X	X	X	X	X	X
2	11/21/22	10:30	AM PM	↓			IS-11-SFSC		6	X	X	X	X	X	X
3	11/21/22	2:00	AM PM				R-IS-16-CB		6	X	X	X	X	X	X
4	11/21/22	2:30	AM PM				R-IS-17-CB		6	X	X	X	X	X	X
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												
			AM PM												

SAMPLED BY: (please print) AFH, JEW

RELINQUISHED DATE / TIME:

SAMPLING / ANALYSIS COMMENTS
(1) Total and Dissolved LL 1638 Metals

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME: Annabelle Howe
SIGNATURE:
DATE: 11/21/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB	DATE/TIME	LOGGED BY LAB	DATE/TIME
	11/22/22 0815		11/22/22 1546

For Official Lab Comments Only

*SAMPLE TYPE CODES

DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water

SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

SAMPLE RECEIPT CHECKLIST

WO NUMBER 22k0987

Samples Received Via:
Fed-Ex ☑ Client Walk-In ☐ Courier ☐
UPS ☐ Pace Field Service ☐ Other ☐

Samples Received By: RH Date: 11/22/22 Time: 0815
Are samples for regulatory compliance? Yes ☑ No ☐

THERMAL PRESERVATION

Were samples received in a cooler? Yes ☑ No ☐ If no, take temperature of representative sample container and record below.
If no, do they require thermal preservation? Yes ☐ No ☐ If no, why not? Non-regulatory ☐ Not Required by Method ☐
Samples received on ice? Yes ☑ No ☐ Ice type? Wet ☑ Ice Packs ☐ Other _____
Samples received the same day collected? Yes ~~☑~~ No ☑ RH 11/22/22

Therm. ID (Circle one): Therm-36(IR) Therm-37(IR) (Therm-59(IR)) Therm-41(Stick) Therm-C01(IR) Therm-C02(IR) Other: _____

Cooler #1 Init. Temp °C 3.3 Correction °C +0.1 Corrected Temp °C 3.4
Cooler #2 Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
Cooler #3 Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
No Cooler - Representative Sample Temperature: Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
Do samples received meet thermal preservation requirements? Yes ☑ No ☐ N/A ☐

Thermal Preservation Notes/Discrepancies/Nonconformances:

SAMPLE CONDITION AND PROCESSING

Do all sample IDs on labels match the COC? Yes ☑ No ☐
Custody seals present? Yes ☐ No ☐ N/A ☑
Samples in proper containers? Yes ☑ No ☐
Sample containers damaged? Yes ☑ No ☑
Sufficient sample volume for indicated tests? Yes ☑ No ☐
Samples received with sufficient holding time? Yes ☑ No ☐
Are VOA vials free of headspace? Yes ☐ No ☐ N/A ☑

1-01 Methyl Hg container was shattered before it ~~arrived~~ was received. Client was notified. RH 11/22/22 RH 11/22/22

CHEMICAL PRESERVATION

Were the sample containers received with labels that indicate that appropriate preservatives were present for the indicated tests? Yes ☑ No ☑ N/A ☐
Were samples received properly dechlorinated? Yes ☐ No ☐ N/A ☐ For Dechlorination checks done by analysts, were dechlor. agent labels present? Yes ☐ No ☐
Preservation checked by Sample Receiving? Initials SM Date & Time 11/22/22 12:22 Test Strip (ID 2J12028)
Dechlorination checked by Sample Receiving? Initials_____ Date & Time _____ Test Strip (ID_____)

	Yes	No	NA	
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑	
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐	Added upon sample receipt? Yes ☑ No ☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑	
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑	
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑	In Lab By:_____ Meter ID:_____

Were any additional preservatives added after receipt? Yes ☑ No ☐ Initial pH: _____ Final pH _____
If yes, is addition of preservatives allowed by the method? Yes ☐ No ☐

List preservatives added at receipt:
Type: HNO3 Volume Added: 1.5mL ID: 2I28023 Type: _____ Volume Added:_____ ID:_____
Type: _____ Volume Added:_____ ID:_____ Type: _____ Volume Added:_____ ID:_____

COMMENTS, DISCREPANCEIS, ANOMALIES, NONCONFORMANCES

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Analytical Report

Report To: STILLWATER SCIENCES
279 COUSTEA PLACE, SUITE 400
DAVIS, CA 95618
Attention: EMILY APPLEQUIST
Project: SMUD PROJECT 2022 750.10/620.02

Lab No: 22K1046
Reported: 01/12/23
Phone: 530-756-7550

Included in this report are laboratory results for work order 22K1046, received on 11/23/22. All analyses were performed in strict adherence to our established Quality Manual. Any qualifications or abnormalities are listed in the Notes and Definitions and/or the Case Narrative section of this report. The project Chain of Custody and laboratory sample receipt record are included as attachments to this report.

Sample Results

Description: R-IS-14-SC
Matrix / Type: Surface Water (Grab)
Lab ID: 22K1046-01
Sampled: 11/22/22 10:45
Received: 11/23/22 09:00

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Copper	ug/l	0.22		0.04	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Lead	ug/l	0.010	J	0.007	0.050	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Mercury	ng/l	0.52		0.22	0.50	EPA 1631E	12/11/22	12/11/22	B2L1032 / DJC
Methyl Mercury as Mercury	ng/l	0.018	J	0.017	0.050	EPA 1630**	01/11/23	01/10/23	B3A1023 / EDM
Nickel	ug/l	0.13		0.02	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/01/22	B2K1455 / edm
Zinc	ug/l	0.20	J	0.12	0.50	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Copper	ug/l	0.19		0.04	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Nickel	ug/l	0.08	J	0.02	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/08/22	B2L0963 / edm
Zinc	ug/l	0.16	J	0.12	0.50	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM

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Analytical Report

Description: R-IS-15-SC
Matrix / Type: Surface Water (Grab)
Lab ID: 22K1046-02
Sampled: 11/22/22 11:45
Received: 11/23/22 09:00

Metals - Total - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	0.13	J	0.12	0.50	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Copper	ug/l	0.24		0.04	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Lead	ug/l	0.015	J	0.007	0.050	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Mercury	ng/l	0.49	J	0.22	0.50	EPA 1631E	12/11/22	12/11/22	B2L1032 / DJC
Methyl Mercury as Mercury	ng/l	0.021	J	0.017	0.050	EPA 1630**	01/11/23	01/10/23	B3A1023 / EDM
Nickel	ug/l	0.08	J	0.02	0.10	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/01/22	B2K1455 / edm
Zinc	ug/l	0.13	J	0.12	0.50	EPA 1638**	01/05/23	01/04/23	B3A0934 / EDM

Metals - Dissolved - Redding Location

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch / Analyst
Arsenic	ug/l	ND		0.12	0.50	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Cadmium	ug/l	ND		0.02	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Copper	ug/l	0.19		0.04	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Lead	ug/l	ND		0.007	0.050	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Nickel	ug/l	0.06	J	0.02	0.10	EPA 1638**	01/05/23	01/05/23	B3A0952 / EDM
Selenium	ug/l	ND		0.3	2.0	EPA 200.8	12/08/22	12/08/22	B2L0963 / edm
Zinc	ug/l	ND		0.12	0.50	EPA 1638**	01/06/23	01/06/23	B3A0980 / EDM

Quality Control Data

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2K1455 - EPA 200.8 Total**									
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	211	2.0	ug/l	200		105	85-115			
Duplicate	Source: 22K0707-02									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22K0987-03									
Selenium	ND	2.0	ug/l		ND				20	
Matrix Spike	Source: 22K0707-02									
Selenium	202	2.0	ug/l	200	ND	101	75-125			
Matrix Spike	Source: 22K0987-03									
Selenium	207	2.0	ug/l	200	ND	103	75-125			
Metals - Total - Redding Location	**Batch B2L1032 - BrCl Digestion**									

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B2L1032 - BrCl Digestion**									
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
Blank										
Mercury	ND	0.50	ng/l							
LCS										
Mercury	10.4	0.50	ng/l	10.0		104	77-123			
Matrix Spike	Source: 22K0820-01									
Mercury	11.1	0.50	ng/l	10.0	0.70	103	71-125			
Matrix Spike	Source: 22K1100-01									
Mercury	12.4	0.50	ng/l	10.0	1.76	106	71-125			
Matrix Spike Dup	Source: 22K0820-01									
Mercury	11.3	0.50	ng/l	10.0	0.70	106	71-125	2.47	24	
Matrix Spike Dup	Source: 22K1100-01									
Mercury	12.0	0.50	ng/l	10.0	1.76	103	71-125	2.84	24	
Metals - Total - Redding Location	**Batch B3A0934 - EPA 1638 - Closed Bottle Oven Digestion**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B3A0934 - EPA 1638 - Closed Bottle Oven Digestion**									
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.2	50-150			
Cadmium	0.24	0.10	ug/l	0.250		97.8	84-113			
Copper	0.26	0.10	ug/l	0.250		103	51-145			
Lead	0.122	0.050	ug/l	0.125		97.2	72-143			
Nickel	0.25	0.10	ug/l	0.250		99.9	68-134			
Zinc	1.23	0.50	ug/l	1.25		98.7	46-146			
LCS										
Arsenic	1.23	0.50	ug/l	1.25		98.3	50-150			
Cadmium	0.25	0.10	ug/l	0.250		99.7	84-113			
Copper	0.25	0.10	ug/l	0.250		98.6	51-145			
Lead	0.122	0.050	ug/l	0.125		97.9	72-143			
Nickel	0.25	0.10	ug/l	0.250		101	68-134			
Zinc	1.25	0.50	ug/l	1.25		99.9	46-146			
Matrix Spike	Source: 22K0820-03									
Arsenic	2.50	0.50	ug/l	2.50	ND	99.9	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	103	84-113			
Copper	0.52	0.10	ug/l	0.500	ND	103	51-145			
Lead	0.252	0.050	ug/l	0.250	ND	101	72-143			
Nickel	0.51	0.10	ug/l	0.500	ND	101	68-134			
Zinc	2.59	0.50	ug/l	2.50	ND	104	46-146			
Matrix Spike	Source: 22L0732-01									
Arsenic	3.86	0.50	ug/l	2.50	1.33	101	50-150			
Cadmium	0.50	0.10	ug/l	0.500	ND	99.0	84-113			
Copper	1.44	0.10	ug/l	0.500	0.97	94.2	51-145			
Lead	0.306	0.050	ug/l	0.250	0.049	103	72-143			
Nickel	1.30	0.10	ug/l	0.500	0.83	93.8	68-134			
Zinc	4.87	0.50	ug/l	2.50	2.54	93.3	46-146			
Matrix Spike Dup	Source: 22K0820-03									
Arsenic	2.53	0.50	ug/l	2.50	ND	101	50-150	1.18	20	
Cadmium	0.50	0.10	ug/l	0.500	ND	99.9	84-113	2.89	20	
Copper	0.53	0.10	ug/l	0.500	ND	105	51-145	2.16	20	
Lead	0.258	0.050	ug/l	0.250	ND	103	72-143	2.41	20	
Nickel	0.50	0.10	ug/l	0.500	ND	101	68-134	0.453	20	
Zinc	2.53	0.50	ug/l	2.50	ND	101	46-146	2.59	20	
Matrix Spike Dup	Source: 22L0732-01									
Arsenic	3.87	0.50	ug/l	2.50	1.33	102	50-150	0.276	20	
Cadmium	0.49	0.10	ug/l	0.500	ND	97.8	84-113	1.24	20	
Copper	1.44	0.10	ug/l	0.500	0.97	94.8	51-145	0.217	20	
Lead	0.318	0.050	ug/l	0.250	0.049	107	72-143	3.92	20	
Nickel	1.32	0.10	ug/l	0.500	0.83	99.7	68-134	2.23	20	
Zinc	4.98	0.50	ug/l	2.50	2.54	97.5	46-146	2.14	20	
Metals - Total - Redding Location	**Batch B3A1023 - EPA 1630 Distillation (Modified)**									
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										
Methyl Mercury as Mercury	ND	0.050	ng/l							
Blank										

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Total - Redding Location	**Batch B3A1023 - EPA 1630 Distillation (Modified)**									
Methyl Mercury as Mercury	ND	0.050	ng/l							
LCS										
Methyl Mercury as Mercury	2.12	0.050	ng/l	2.00		106	67-133			
Matrix Spike	Source: 22K0844-02									
Methyl Mercury as Mercury	1.28	0.050	ng/l	1.00	0.023	125	65-135			
Matrix Spike	Source: 22L0150-01									
Methyl Mercury as Mercury	1.26	0.050	ng/l	1.00	0.019	124	65-135			
Matrix Spike Dup	Source: 22K0844-02									
Methyl Mercury as Mercury	1.24	0.050	ng/l	1.00	0.023	122	65-135	2.81	35	
Matrix Spike Dup	Source: 22L0150-01									
Methyl Mercury as Mercury	1.26	0.050	ng/l	1.00	0.019	125	65-135	0.277	35	
Metals - Dissolved - Redding Location	**Batch B2L0963 - EPA 200.8 Diss**									
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
Blank										
Selenium	ND	2.0	ug/l							
LCS										
Selenium	215	2.0	ug/l	200		107	85-115			
Duplicate	Source: 22K0824-01									
Selenium	ND	2.0	ug/l		ND				20	
Duplicate	Source: 22K0903-04									
Selenium	0.5	2.0	ug/l		0.5			0.502	20	J
Matrix Spike	Source: 22K0824-01									
Selenium	212	2.0	ug/l	200	ND	106	75-125			
Matrix Spike	Source: 22K0903-04									
Selenium	209	2.0	ug/l	200	0.5	104	75-125			
Metals - Dissolved - Redding Location	**Batch B3A0952 - EPA 1638 - Dissolved**									
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B3A0952 - EPA 1638 - Dissolved**									
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
Zinc	ND	0.50	ug/l							
Blank										
Arsenic	ND	0.50	ug/l							
Cadmium	ND	0.10	ug/l							
Copper	ND	0.10	ug/l							
Lead	ND	0.050	ug/l							
Nickel	ND	0.10	ug/l							
LCS										
Arsenic	1.25	0.50	ug/l	1.25		100	50-150			
Cadmium	0.24	0.10	ug/l	0.250		95.0	84-113			
Copper	0.27	0.10	ug/l	0.250		107	51-145			
Lead	0.129	0.050	ug/l	0.125		104	72-143			
Nickel	0.25	0.10	ug/l	0.250		101	68-134			
Zinc	1.27	0.50	ug/l	1.25		102	46-146			
LCS										
Arsenic	1.28	0.50	ug/l	1.25		102	50-150			
Cadmium	0.25	0.10	ug/l	0.250		100	84-113			
Copper	0.26	0.10	ug/l	0.250		106	51-145			
Lead	0.131	0.050	ug/l	0.125		105	72-143			
Nickel	0.28	0.10	ug/l	0.250		113	68-134			
Matrix Spike	Source: 22K0820-03									
Arsenic	2.51	0.50	ug/l	2.50	ND	100	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	102	84-113			
Copper	0.52	0.10	ug/l	0.500	ND	103	51-145			
Lead	0.250	0.050	ug/l	0.250	ND	100	72-143			
Nickel	0.52	0.10	ug/l	0.500	ND	104	68-134			
Zinc	2.54	0.50	ug/l	2.50	ND	102	46-146			
Matrix Spike	Source: 22K1046-02									
Arsenic	2.69	0.50	ug/l	2.50	ND	108	50-150			
Cadmium	0.51	0.10	ug/l	0.500	ND	101	84-113			
Copper	0.71	0.10	ug/l	0.500	0.19	103	51-145			
Lead	0.261	0.050	ug/l	0.250	ND	104	72-143			
Nickel	0.56	0.10	ug/l	0.500	0.06	99.7	68-134			
Matrix Spike Dup	Source: 22K0820-03									
Arsenic	2.55	0.50	ug/l	2.50	ND	102	50-150	1.71	20	
Cadmium	0.48	0.10	ug/l	0.500	ND	96.2	84-113	5.94	20	
Copper	0.51	0.10	ug/l	0.500	ND	102	51-145	1.72	20	
Lead	0.252	0.050	ug/l	0.250	ND	101	72-143	0.991	20	
Nickel	0.51	0.10	ug/l	0.500	ND	103	68-134	1.20	20	
Zinc	2.61	0.50	ug/l	2.50	ND	104	46-146	2.66	20	
Matrix Spike Dup	Source: 22K1046-02									
Arsenic	2.74	0.50	ug/l	2.50	ND	109	50-150	1.64	20	
Cadmium	0.51	0.10	ug/l	0.500	ND	101	84-113	0.103	20	
Copper	0.71	0.10	ug/l	0.500	0.19	103	51-145	0.0936	20	
Lead	0.261	0.050	ug/l	0.250	ND	104	72-143	0.0734	20	
Nickel	0.61	0.10	ug/l	0.500	0.06	110	68-134	9.11	20	

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Analytical Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Metals - Dissolved - Redding Location	**Batch B3A0980 - EPA 1638 - Dissolved**									
Blank										
Zinc	ND	0.50	ug/l							
LCS										
Zinc	1.26	0.50	ug/l	1.25		101	46-146			
Matrix Spike	Source: 22K1046-02									
Zinc	2.61	0.50	ug/l	2.50	ND	104	46-146			
Matrix Spike Dup	Source: 22K1046-02									
Zinc	2.62	0.50	ug/l	2.50	ND	105	46-146	0.618	20	

Notes and Definitions

J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
ND	Analyte NOT DETECTED at or above the detection limit
RPD	Relative Percent Difference
MDL	Method Detection Limit
RL	Reporting Limit
* or #	The laboratory does not hold CA-ELAP accreditiation for this analyte or method. Accreditation may not be available from CA-ELAP for this analyte or method.
**	The laboratory holds accreditation for this analyte or method with WA-ECY Lab ID: Lab ID C783. Accreditation is not offered for this method by CA-ELAP
Note 2	According to 40 CFR Part 136 Table II, the following tests should be analyzed in the field within 15 minutes of sampling: pH, chlorine, dissolved oxygen, and sulfite.

Accreditations Held:
Redding Location: CA-ELAP - Cert # 1677
Chico Location: CA-ELAP - Cert # 2718

Approved By

I certify that these results meet the requirements of the applicable accreditation standard, and were performed in compliance with the stated analytical methods unless otherwise noted in the qualifications or Case Narrative section of this report.

Approved By: Ricky Jensen
Ricky Jensen, Operations Manager
Pace Analytical Services LLC - Redding CA

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Analytical Report

BASIC LABORATORY, INC. - CHAIN OF CUSTODY (STANDARD)

☑ 2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494
☐ 3860 Morrow Lane, Suite F Chico, CA 95928 (530) 894-8966 FAX: (530) 894-5143

LABORATORY WORK ORDER # 22K1046
PAGE 1 OF 1

basic laboratory

CLIENT NAME	PROJECT NAME	PROJECT / PO #	PWS # (If Applicable)
Stillwater Sciences	SMUD UARP 2022	750.10/620.02	

MAILING ADDRESS
279 Cousteau Place, Suite 400
Davis, CA 95618

REPORT TO ☒ Email ☐ Mail Hardcopy
NAME / ATTENTION: Emily Applequist
PHONE: 530-756-7550 X382

TURN AROUND TIME REQUESTED
☒ Standard ☐ Rush _____

INVOICE TO: same
EMAIL: eapplequist@stillwatersci.com

SPECIAL INSTRUCTIONS / PO#

☑ Regulatory ☐ Non-Regulatory
QC Reported? (check one) ☐ None ☑ STD ☐ Other
Do you require Electronic Data Deliverables (EDD)? ☑ Yes ☐ No What Type? Excel

ID # (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE TYPE*	Comp	Grab	SAMPLE LOCATION / IDENTIFICATION / DESCRIPTION	REGULATORY ID / SOURCE CODE (if Applicable)	NUMBER OF CONTAINERS	ANALYSES REQUESTED: T-As,Cd,Cu,Ni,Pb,Zn (1)	D-As,Cd,Cu,Ni,Pb,Zn (1)	Tot Se by 200.8	Diss Se by 200.8	LL Hg by 1631	Methyl Hg by 1630
1	11/22/22	10:45 (AM) PM	SW			R-IS-14-SC		6	X	X	X	X	X	X
2	11/22/22	11:45 (AM) PM	SW			R-IS-15-SC		6	X	X	X	X	X	X
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												
		AM PM												

SAMPLED BY: (please print) AFH, JEW

RELINQUISHED DATE / TIME:

SAMPLING / ANALYSIS COMMENTS
(1) Total and Dissolved LL 1638 Metals

☑ I authorize Basic Laboratory to perform the indicated tests. By signing I agree to Basic Laboratory's TERMS and CONDITIONS. (www.basiclab.com/terms)

NAME: Annabelle Howe
SIGNATURE: [signature]
DATE: 11/22/22

RECEIVED BY	DATE/TIME	RELINQUISHED BY	DATE/TIME
RECEIVED BY LAB: [signature]	DATE/TIME: 11/23/22 0900	LOGGED BY LAB: [signature]	DATE/TIME: 11/23/22 1514

*SAMPLE TYPE CODES
DW = Drinking Water
DWS=Drinking Water Source
WW = Wastewater
GW = Groundwater
STW = Stormwater
SW = Surface Water
RW = Rain Water
SLG = Sludge
SO = Soil
SDW = Solid Waste
OL = Oil
OT = Other (Specify)

For Official Lab Comments Only

FRM-002.1 - Chain of Custody (rev 1.1)

SAMPLE RECEIPT CHECKLIST

WO NUMBER 22K1046

Samples Received Via:
Fed-Ex ☑ Client Walk-In ☐ Courier ☐
UPS ☐ Pace Field Service ☐ Other ☐

Samples Received By: RH Date: 11/23/22 Time: 0900
Are samples for regulatory compliance? Yes ☑ No ☐

THERMAL PRESERVATION

Were samples received in a cooler? Yes ☑ No ☐ If no, take temperature of representative sample container and record below.
If no, do they require thermal preservation? Yes ☐ No ☐ If no, why not? Non-regulatory ☐ Not Required by Method ☐
Samples received on ice? Yes ☑ No ☐ Ice type? Wet ☑ Ice Packs ☐ Other _____
Samples received the same day collected? Yes ☑ No ☐

Therm. ID (Circle one): Therm-36(IR) Therm-37(IR) (Therm-59(IR)) Therm-41(Stick) Therm-C01(IR) Therm-C02(IR) Other: _____

Cooler #1 Init. Temp °C 3.6 Correction °C +0.1 Corrected Temp °C 3.7
Cooler #2 Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
Cooler #3 Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
No Cooler - Representative Sample Temperature: Init. Temp °C _____ Correction °C _____ Corrected Temp °C _____
Do samples received meet thermal preservation requirements? Yes ☑ No ☐ N/A ☐

Thermal Preservation Notes/Discrepancies/Nonconformances:

SAMPLE CONDITION AND PROCESSING

Do all sample IDs on labels match the COC? Yes ☑ No ☐
Custody seals present? Yes ☐ No ☐ N/A ☑
Samples in proper containers? Yes ☑ No ☐
Sample containers damaged? Yes ☐ No ☑
Sufficient sample volume for indicated tests? Yes ☑ No ☐
Samples received with sufficient holding time? Yes ☑ No ☐
Are VOA vials free of headspace? Yes ☐ No ☐ N/A ☑

CHEMICAL PRESERVATION

Were the sample containers received with labels that indicate that appropriate preservatives were present for the indicated tests? Yes ☑ No ☑ N/A ☐
Were samples received properly dechlorinated? Yes ☐ No ☐ N/A ☐ For Dechlorination checks done by analysts, were dechlor. agent labels present? Yes ☐ No ☐
Preservation checked by Sample Receiving? Initials RH Date & Time 11/23/22 0945 Test Strip (ID 2J12028)
Dechlorination checked by Sample Receiving? Initials_____ Date & Time _____ Test Strip (ID_____)

	Yes	No	NA
H2SO4 preserved samples confirmed to pH <2 (i.e., E350.1, SM5220, SM5310)?	☐	☐	☑
HNO3 preserved samples confirmed to pH <2 (i.e., E200.7, E200.8, 6010)?	☑	☐	☐
NaOH preserved samples confirmed to pH >10 (cyanide) or >9 (sulfide)?	☐	☐	☑
Hexavalent Chromium (DW) preserved samples confirmed to pH >8 & Chlorine <0.1 mg/l?	☐	☐	☑
Hexavalent Chromium (W) preserved samples confirmed to pH 9.3 - 9.7?	☐	☐	☑

Added upon sample receipt? Yes ☑ No ☐
In Lab By:_____ Meter ID:_____

Were any additional preservatives added after receipt? Yes ☑ No ☐ Initial pH: _____ Final pH _____
If yes, is addition of preservatives allowed by the method? Yes ☐ No ☐

List preservatives added at receipt:
Type: HNO3 Volume Added: 1.4 mL ID: 2I28023 Type: _____ Volume Added:_____ ID:_____
Type: _____ Volume Added:_____ ID:_____ Type: _____ Volume Added:_____ ID:_____

COMMENTS, DISCREPANCEIS, ANOMALIES, NONCONFORMANCES

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

December 02, 2022

CLS Work Order #: 22K1091
COC #:

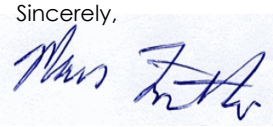
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 11/16/22 15:45. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

12/02/22 12:21

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1091
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-13-SC (22K1091-01) Water Sampled: 11/16/22 11:00 Received: 11/16/22 15:45										
Ammonia as N	**0.070**	0.025	0.10	mg/L	1	2209981	11/18/22	11/18/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**7.8**	0.50	5.0	"	"	2210025	11/21/22	11/21/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.59**	0.026	0.50	"	"	2209940	11/17/22	11/17/22	EPA 300.0	
Cyanide (total)	**0.0038**	0.0012	0.0050	"	"	2210071	11/22/22	12/02/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209945	11/17/22	11/22/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2210025	11/21/22	11/21/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209940	11/17/22	11/17/22	EPA 300.0	
Orthophosphate as PO4	**0.0066**	0.0051	0.15	"	"	2209931	11/17/22	11/17/22	SM4500-P E	J
Sulfate as SO4	**0.58**	0.038	0.50	"	"	2209940	11/17/22	11/17/22	EPA 300.0	
Total Alkalinity	**7.8**	1.0	5.0	"	"	2210025	11/21/22	11/21/22	SM2320B	
Total Dissolved Solids	**47**	5.0	10	"	"	2209992	11/18/22	11/22/22	SM2540C	
Total Hardness as CaCO3	**5.6**	0.19	1.0	"	"	2209978	11/18/22	11/18/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.11**	0.040	0.20	"	"	2210084	11/22/22	11/22/22	SM4500-NH3F-2011	J
Total Organic Carbon	**1.9**	0.54	1.0	"	"	2210016	11/21/22	11/21/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209982	11/18/22	11/18/22	SM4500-P E	
Total Suspended Solids	**2.5**	2.0	5.0	"	"	2210034	11/21/22	11/21/22	SM2540D	J
IS-14-SC (22K1091-02) Water Sampled: 11/16/22 12:00 Received: 11/16/22 15:45										
Ammonia as N	**0.090**	0.025	0.10	mg/L	1	2209981	11/18/22	11/18/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**8.4**	0.50	5.0	"	"	2210025	11/21/22	11/21/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.60**	0.026	0.50	"	"	2209940	11/17/22	11/17/22	EPA 300.0	
Cyanide (total)	**0.0034**	0.0012	0.0050	"	"	2210071	11/22/22	12/02/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209945	11/17/22	11/22/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2210025	11/21/22	11/21/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209940	11/17/22	11/17/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2209931	11/17/22	11/17/22	SM4500-P E	

12/02/22 12:21

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1091
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-14-SC (22K1091-02) Water Sampled: 11/16/22 12:00 Received: 11/16/22 15:45										
Sulfate as SO4	**0.53**	0.038	0.50	mg/L	1	2209940	11/17/22	11/17/22	EPA 300.0	
Total Alkalinity	**8.4**	1.0	5.0	"	"	2210025	11/21/22	11/21/22	SM2320B	
Total Dissolved Solids	**21**	5.0	10	"	"	2209992	11/18/22	11/22/22	SM2540C	
Total Hardness as CaCO3	**5.7**	0.19	1.0	"	"	2209978	11/18/22	11/18/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.17**	0.040	0.20	"	"	2210084	11/22/22	11/22/22	SM4500-NH3F-2011	J
Total Organic Carbon	**2.1**	0.54	1.0	"	"	2210016	11/21/22	11/21/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209982	11/18/22	11/18/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2210034	11/21/22	11/21/22	SM2540D	
IS-14-SC-FB (22K1091-03) Water Sampled: 11/16/22 12:00 Received: 11/16/22 15:45										
Ammonia as N	**0.061**	0.025	0.10	mg/L	1	2209981	11/18/22	11/18/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**2.2**	0.50	5.0	"	"	2210025	11/21/22	11/21/22	SM2320B	J
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.20**	0.026	0.50	"	"	2209940	11/17/22	11/17/22	EPA 300.0	J
Cyanide (total)	**0.0042**	0.0012	0.0050	"	"	2210071	11/22/22	12/02/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209945	11/17/22	11/22/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2210025	11/21/22	11/21/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209940	11/17/22	11/17/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2209931	11/17/22	11/17/22	SM4500-P E	
Sulfate as SO4	ND	0.038	0.50	"	"	2209940	11/17/22	11/17/22	EPA 300.0	
Total Alkalinity	**2.2**	1.0	5.0	"	"	2210025	11/21/22	11/21/22	SM2320B	J
Total Dissolved Solids	**9.0**	5.0	10	"	"	2209992	11/18/22	11/22/22	SM2540C	J
Total Hardness as CaCO3	ND	0.19	1.0	"	"	2209978	11/18/22	11/18/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.073**	0.040	0.20	"	"	2210084	11/22/22	11/22/22	SM4500-NH3F-2011	J
Total Organic Carbon	ND	0.54	1.0	"	"	2210016	11/21/22	11/21/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209982	11/18/22	11/18/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2210034	11/21/22	11/21/22	SM2540D	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1091
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-13-CR (22K1091-04) Water Sampled: 11/16/22 11:00 Received: 11/16/22 15:45										
Ammonia as N	**0.059**	0.025	0.10	mg/L	1	2209981	11/18/22	11/18/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**7.8**	0.50	5.0	"	"	2210025	11/21/22	11/21/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.51**	0.026	0.50	"	"	2209940	11/17/22	11/17/22	EPA 300.0	
Cyanide (total)	**0.0057**	0.0012	0.0050	"	"	2210071	11/22/22	12/02/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209945	11/17/22	11/22/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2210025	11/21/22	11/21/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209940	11/17/22	11/17/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2209931	11/17/22	11/17/22	SM4500-P E	
Sulfate as SO4	**0.46**	0.038	0.50	"	"	2209940	11/17/22	11/17/22	EPA 300.0	J
Total Alkalinity	**7.8**	1.0	5.0	"	"	2210025	11/21/22	11/21/22	SM2320B	
Total Dissolved Solids	**16**	5.0	10	"	"	2209992	11/18/22	11/22/22	SM2540C	
Total Hardness as CaCO3	**5.2**	0.19	1.0	"	"	2209978	11/18/22	11/18/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.063**	0.040	0.20	"	"	2210084	11/22/22	11/22/22	SM4500-NH3F-2011	J
Total Organic Carbon	**2.2**	0.54	1.0	"	"	2210016	11/21/22	11/21/22	SM5310B	
Total Phosphorus as P	**0.024**	0.023	0.050	"	"	2209982	11/18/22	11/18/22	SM4500-P E	J
Total Suspended Solids	ND	2.0	5.0	"	"	2210034	11/21/22	11/21/22	SM2540D	
R-IS-13-CR-Dup (22K1091-05) Water Sampled: 11/16/22 11:00 Received: 11/16/22 15:45										
Ammonia as N	**0.062**	0.025	0.10	mg/L	1	2209981	11/18/22	11/18/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**7.6**	0.50	5.0	"	"	2210025	11/21/22	11/21/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.61**	0.026	0.50	"	"	2209940	11/17/22	11/17/22	EPA 300.0	
Cyanide (total)	**0.0060**	0.0012	0.0050	"	"	2210071	11/22/22	12/02/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2209945	11/17/22	11/22/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2210025	11/21/22	11/21/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209940	11/17/22	11/17/22	EPA 300.0	
Orthophosphate as PO4	**0.011**	0.0051	0.15	"	"	2209931	11/17/22	11/17/22	SM4500-P E	J

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1091
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-13-CR-Dup (22K1091-05) Water	**Sampled: 11/16/22 11:00**		**Received: 11/16/22 15:45**							
Sulfate as SO4	**0.46**	0.038	0.50	mg/L	1	2209940	11/17/22	11/17/22	EPA 300.0	J
Total Alkalinity	**7.6**	1.0	5.0	"	"	2210025	11/21/22	11/21/22	SM2320B	
Total Dissolved Solids	**14**	5.0	10	"	"	2209992	11/18/22	11/22/22	SM2540C	
Total Hardness as CaCO3	**5.3**	0.19	1.0	"	"	2209978	11/18/22	11/18/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.21**	0.040	0.20	"	"	2210084	11/22/22	11/22/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.0**	0.54	1.0	"	"	2210016	11/21/22	11/21/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2209982	11/18/22	11/18/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2210034	11/21/22	11/21/22	SM2540D	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1091
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-13-SC (22K1091-01) Water Sampled: 11/16/22 11:00 Received: 11/16/22 15:45										
Diesel	ND	0.0021	0.050	mg/L	1	2209917	11/17/22	11/18/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*69 %*	*65-135*		"	"	"	"	
IS-14-SC (22K1091-02) Water Sampled: 11/16/22 12:00 Received: 11/16/22 15:45										
Diesel	ND	0.0021	0.050	mg/L	1	2209917	11/17/22	11/18/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*77 %*	*65-135*		"	"	"	"	
IS-14-SC-FB (22K1091-03) Water Sampled: 11/16/22 12:00 Received: 11/16/22 15:45										
Diesel	ND	0.0021	0.050	mg/L	1	2209917	11/17/22	11/18/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*81 %*	*65-135*		"	"	"	"	
R-IS-13-CR (22K1091-04) Water Sampled: 11/16/22 11:00 Received: 11/16/22 15:45										
Diesel	ND	0.0021	0.050	mg/L	1	2209917	11/17/22	11/18/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K1091**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-13-CR (22K1091-04) Water Sampled: 11/16/22 11:00 Received: 11/16/22 15:45										
Surrogate: o-Terphenyl			*80 %*	*65-135*		*2209917*	"	*11/18/22*	*EPA 8015M*	
R-IS-13-CR-Dup (22K1091-05) Water Sampled: 11/16/22 11:00 Received: 11/16/22 15:45										
Diesel	ND	0.0021	0.050	mg/L	1	2209917	11/17/22	11/18/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*89 %*	*65-135*		*"*	"	*"*	*"*	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1091
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-13-SC (22K1091-01) Water Sampled: 11/16/22 11:00 Received: 11/16/22 15:45										
Aluminum	**26**	1.6	20	µg/L	1	2209953	11/18/22	11/19/22	EPA 200.8	
Barium	**9.2**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1600**	27	1000	"	"	2209978	11/18/22	11/18/22	EPA 200.7	
Iron	**77**	9.1	100	"	"	"	"	"	"	J
Magnesium	**420**	21	1000	"	"	"	"	"	"	J
Manganese	**6.6**	0.050	2.0	"	"	2209953	11/18/22	11/19/22	EPA 200.8	
Potassium	**510**	61	1000	"	"	2209978	11/18/22	11/18/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209953	11/18/22	11/19/22	EPA 200.8	
Sodium	**1400**	34	1000	"	"	2209978	11/18/22	11/18/22	EPA 200.7	
IS-14-SC (22K1091-02) Water Sampled: 11/16/22 12:00 Received: 11/16/22 15:45										
Aluminum	**36**	1.6	20	µg/L	1	2209953	11/18/22	11/19/22	EPA 200.8	
Barium	**8.1**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1700**	27	1000	"	"	2209978	11/18/22	11/18/22	EPA 200.7	
Iron	**110**	9.1	100	"	"	"	"	"	"	
Magnesium	**380**	21	1000	"	"	"	"	"	"	J
Manganese	**17**	0.050	2.0	"	"	2209953	11/18/22	11/19/22	EPA 200.8	
Potassium	**200**	61	1000	"	"	2209978	11/18/22	11/18/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209953	11/18/22	11/19/22	EPA 200.8	
Sodium	**1200**	34	1000	"	"	2209978	11/18/22	11/18/22	EPA 200.7	
IS-14-SC-FB (22K1091-03) Water Sampled: 11/16/22 12:00 Received: 11/16/22 15:45										
Aluminum	**1.6**	1.6	20	µg/L	1	2209953	11/18/22	11/19/22	EPA 200.8	J
Barium	ND	0.14	5.0	"	"	"	"	"	"	
Calcium	ND	27	1000	"	"	2209978	11/18/22	11/18/22	EPA 200.7	
Iron	ND	9.1	100	"	"	"	"	"	"	
Magnesium	ND	21	1000	"	"	"	"	"	"	
Manganese	**0.19**	0.050	2.0	"	"	2209953	11/18/22	11/19/22	EPA 200.8	J
Potassium	ND	61	1000	"	"	2209978	11/18/22	11/18/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2209953	11/18/22	11/19/22	EPA 200.8	
Sodium	**140**	34	1000	"	"	2209978	11/18/22	11/18/22	EPA 200.7	J

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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1091
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-13-CR (22K1091-04) Water Sampled: 11/16/22 11:00 Received: 11/16/22 15:45										
Aluminum	**27**	1.6	20	µg/L	1	2209953	11/18/22	11/19/22	EPA 200.8	
Barium	**7.7**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1500**	27	1000	"	"	2209978	11/18/22	11/18/22	EPA 200.7	
Iron	**59**	9.1	100	"	"	"	"	"	"	J
Magnesium	**340**	21	1000	"	"	"	"	"	"	J
Manganese	**12**	0.050	2.0	"	"	2209953	11/18/22	11/19/22	EPA 200.8	
Potassium	**280**	61	1000	"	"	2209978	11/18/22	11/18/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209953	11/18/22	11/19/22	EPA 200.8	
Sodium	**1200**	34	1000	"	"	2209978	11/18/22	11/18/22	EPA 200.7	
R-IS-13-CR-Dup (22K1091-05) Water Sampled: 11/16/22 11:00 Received: 11/16/22 15:45										
Aluminum	**22**	1.6	20	µg/L	1	2209953	11/18/22	11/19/22	EPA 200.8	
Barium	**7.2**	0.14	5.0	"	"	"	"	"	"	
Calcium	**1600**	27	1000	"	"	2209978	11/18/22	11/18/22	EPA 200.7	
Iron	**63**	9.1	100	"	"	"	"	"	"	J
Magnesium	**350**	21	1000	"	"	"	"	"	"	J
Manganese	**12**	0.050	2.0	"	"	2209953	11/18/22	11/19/22	EPA 200.8	
Potassium	**240**	61	1000	"	"	2209978	11/18/22	11/18/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2209953	11/18/22	11/19/22	EPA 200.8	
Sodium	**1200**	34	1000	"	"	2209978	11/18/22	11/18/22	EPA 200.7	

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Stillwater Sciences
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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1091
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-13-SC (22K1091-01) Water Sampled: 11/16/22 11:00 Received: 11/16/22 15:45										
Aluminum	**8.2**	0.52	20	µg/L	1	2209963	11/18/22	11/18/22	EPA 200.8	J
Iron	**77**	6.8	100	"	"	2209967	11/18/22	11/18/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2209963	11/18/22	11/18/22	EPA 200.8	
IS-14-SC (22K1091-02) Water Sampled: 11/16/22 12:00 Received: 11/16/22 15:45										
Aluminum	**8.1**	0.52	20	µg/L	1	2209963	11/18/22	11/18/22	EPA 200.8	J
Iron	**110**	6.8	100	"	"	2209967	11/18/22	11/18/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2209963	11/18/22	11/18/22	EPA 200.8	
IS-14-SC-FB (22K1091-03) Water Sampled: 11/16/22 12:00 Received: 11/16/22 15:45										
Aluminum	**10**	0.52	20	µg/L	1	2209963	11/18/22	11/18/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2209967	11/18/22	11/18/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2209963	11/18/22	11/18/22	EPA 200.8	
R-IS-13-CR (22K1091-04) Water Sampled: 11/16/22 11:00 Received: 11/16/22 15:45										
Aluminum	**9.8**	0.52	20	µg/L	1	2209963	11/18/22	11/18/22	EPA 200.8	J
Iron	**59**	6.8	100	"	"	2209967	11/18/22	11/18/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2209963	11/18/22	11/18/22	EPA 200.8	
R-IS-13-CR-Dup (22K1091-05) Water Sampled: 11/16/22 11:00 Received: 11/16/22 15:45										
Aluminum	**7.2**	0.52	20	µg/L	1	2209963	11/18/22	11/18/22	EPA 200.8	J
Iron	**63**	6.8	100	"	"	2209967	11/18/22	11/18/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2209963	11/18/22	11/18/22	EPA 200.8	

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Stillwater Sciences
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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1091
COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-13-SC (22K1091-01) Water Sampled: 11/16/22 11:00 Received: 11/16/22 15:45										
Gasoline	ND	10	50	µg/L	1	2209930	11/17/22	11/17/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*75 %*	*65-135*		"	"	"	"	
IS-14-SC (22K1091-02) Water Sampled: 11/16/22 12:00 Received: 11/16/22 15:45										
Gasoline	ND	10	50	µg/L	1	2209930	11/17/22	11/17/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*72 %*	*65-135*		"	"	"	"	
IS-14-SC-FB (22K1091-03) Water Sampled: 11/16/22 12:00 Received: 11/16/22 15:45										
Gasoline	ND	10	50	µg/L	1	2209930	11/17/22	11/17/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*79 %*	*65-135*		"	"	"	"	
R-IS-13-CR (22K1091-04) Water Sampled: 11/16/22 11:00 Received: 11/16/22 15:45										
Gasoline	ND	10	50	µg/L	1	2209930	11/17/22	11/17/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*84 %*	*65-135*		"	"	"	"	
R-IS-13-CR-Dup (22K1091-05) Water Sampled: 11/16/22 11:00 Received: 11/16/22 15:45										
Gasoline	ND	10	50	µg/L	1	2209930	11/17/22	11/17/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*83 %*	*65-135*		"	"	"	"	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1091
COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-13-SC (22K1091-01) Water Sampled: 11/16/22 11:00 Received: 11/16/22 15:45										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2210012	11/17/22	11/17/22	EPA 8260B	
Surrogate: Toluene-d8			*98 %*		*72-125*		"	"	"	"
IS-14-SC (22K1091-02) Water Sampled: 11/16/22 12:00 Received: 11/16/22 15:45										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2210012	11/17/22	11/17/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"
IS-14-SC-FB (22K1091-03) Water Sampled: 11/16/22 12:00 Received: 11/16/22 15:45										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2210012	11/17/22	11/17/22	EPA 8260B	
Surrogate: Toluene-d8			*98 %*		*72-125*		"	"	"	"
R-IS-13-CR (22K1091-04) Water Sampled: 11/16/22 11:00 Received: 11/16/22 15:45										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2210012	11/17/22	11/17/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"
R-IS-13-CR-Dup (22K1091-05) Water Sampled: 11/16/22 11:00 Received: 11/16/22 15:45										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2210012	11/17/22	11/17/22	EPA 8260B	
Surrogate: Toluene-d8			*100 %*		*72-125*		"	"	"	"

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CLS Work Order #: 22K1091
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209931 - General Preparation											
Blank (2209931-BLK1)					Prepared & Analyzed: 11/17/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							
LCS (2209931-BS1)					Prepared & Analyzed: 11/17/22						
Orthophosphate as PO4	0.846	0.0051	0.15	mg/L	0.918		92	80-120			
LCS Dup (2209931-BSD1)					Prepared & Analyzed: 11/17/22						
Orthophosphate as PO4	0.825	0.0051	0.15	mg/L	0.918		90	80-120	2	20	
Matrix Spike (2209931-MS1)			**Source: 22K1091-01**		Prepared & Analyzed: 11/17/22						
Orthophosphate as PO4	0.834	0.0051	0.15	mg/L	0.918	0.00660	90	75-125			
Matrix Spike Dup (2209931-MSD1)			**Source: 22K1091-01**		Prepared & Analyzed: 11/17/22						
Orthophosphate as PO4	0.821	0.0051	0.15	mg/L	0.918	0.00660	89	75-125	1	25	
Batch 2209940 - General Prep											
Blank (2209940-BLK1)					Prepared & Analyzed: 11/17/22						
Chloride	ND	0.026	0.50	mg/L							
Sulfate as SO4	ND	0.038	0.50	"							
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2209940-BS1)					Prepared & Analyzed: 11/17/22						
Chloride	4.97	0.026	0.50	mg/L	5.00		99	80-120			
Sulfate as SO4	4.82	0.038	0.50	"	5.00		96	80-120			
Nitrate/Nitrite as N	4.34	0.055	0.40	"	4.00		108	80-120			
LCS Dup (2209940-BSD1)					Prepared & Analyzed: 11/17/22						
Sulfate as SO4	4.93	0.038	0.50	mg/L	5.00		99	80-120	2	20	
Chloride	5.08	0.026	0.50	"	5.00		102	80-120	2	20	
Nitrate/Nitrite as N	4.43	0.055	0.40	"	4.00		111	80-120	2	20	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209940 - General Prep											
Matrix Spike (2209940-MS1)			**Source: 22K1091-05**		Prepared & Analyzed: 11/17/22						
Sulfate as SO4	5.27	0.038	0.50	mg/L	5.00	0.464	96	80-120			
Chloride	5.45	0.026	0.50	"	5.00	0.611	97	80-120			
Nitrate/Nitrite as N	4.33	0.055	0.40	"	4.00	ND	108	80-120			
Matrix Spike Dup (2209940-MSD1)			**Source: 22K1091-05**		Prepared & Analyzed: 11/17/22						
Sulfate as SO4	5.45	0.038	0.50	mg/L	5.00	0.464	100	80-120	3	20	
Chloride	5.63	0.026	0.50	"	5.00	0.611	100	80-120	3	20	
Nitrate/Nitrite as N	4.47	0.055	0.40	"	4.00	ND	112	80-120	3	20	
Batch 2209945 - Solvent Extract											
Blank (2209945-BLK1)					Prepared: 11/17/22 Analyzed: 11/22/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2209945-BS1)					Prepared: 11/17/22 Analyzed: 11/22/22						
Hexane Extractable Material (HEM, Oil & Grease)	38.9	1.0	5.0	mg/L	40.0		97	78-114			
LCS Dup (2209945-BSD1)					Prepared: 11/17/22 Analyzed: 11/22/22						
Hexane Extractable Material (HEM, Oil & Grease)	38.3	1.0	5.0	mg/L	40.0		96	78-114	2	18	
Batch 2209978 - EPA 200 Series											
Blank (2209978-BLK1)					Prepared & Analyzed: 11/18/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2209978-BS1)					Prepared & Analyzed: 11/18/22						
Total Hardness as CaCO3	34.4	0.19	1.0	mg/L	33.1		104	85-115			

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209978 - EPA 200 Series											
Matrix Spike (2209978-MS1)			**Source: 22K1091-01**		Prepared & Analyzed: 11/18/22						
Total Hardness as CaCO3	39.6	0.19	1.0	mg/L	33.1	5.65	103	70-130			
Matrix Spike (2209978-MS2)			**Source: 22K1107-01**		Prepared & Analyzed: 11/18/22						
Total Hardness as CaCO3	55.1	0.19	1.0	mg/L	33.1	21.1	103	70-130			
Batch 2209981 - General Preparation											
Blank (2209981-BLK1)					Prepared & Analyzed: 11/18/22						
Ammonia as N	ND	0.025	0.10	mg/L							
LCS (2209981-BS1)					Prepared & Analyzed: 11/18/22						
Ammonia as N	0.469	0.025	0.10	mg/L	0.500		94	80-120			
LCS Dup (2209981-BSD1)					Prepared & Analyzed: 11/18/22						
Ammonia as N	0.468	0.025	0.10	mg/L	0.500		94	80-120	0.2	25	
Matrix Spike (2209981-MS1)			**Source: 22K1091-01**		Prepared & Analyzed: 11/18/22						
Ammonia as N	0.553	0.025	0.10	mg/L	0.500	0.0700	97	75-125			
Matrix Spike Dup (2209981-MSD1)			**Source: 22K1091-01**		Prepared & Analyzed: 11/18/22						
Ammonia as N	0.585	0.025	0.10	mg/L	0.500	0.0700	103	75-125	6	25	
Batch 2209982 - General Preparation											
Blank (2209982-BLK1)					Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K1091**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209982 - General Preparation											
Blank (2209982-BLK2)					Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2209982-BS1)					Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	0.302	0.023	0.050	mg/L	0.300		101	80-120			
LCS (2209982-BS2)					Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	0.302	0.023	0.050	mg/L	0.300		101	80-120			
LCS Dup (2209982-BSD1)					Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	0.285	0.023	0.050	mg/L	0.300		95	80-120	6	25	
LCS Dup (2209982-BSD2)					Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	0.285	0.023	0.050	mg/L	0.300		95	80-120	6	25	
Matrix Spike (2209982-MS1)			**Source: 22K0847-01**		Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	0.293	0.023	0.050	mg/L	0.300	ND	98	75-125			
Matrix Spike (2209982-MS2)			**Source: 22K1091-02**		Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	0.312	0.023	0.050	mg/L	0.300	ND	104	75-125			
Matrix Spike Dup (2209982-MSD1)			**Source: 22K0847-01**		Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	0.328	0.023	0.050	mg/L	0.300	ND	109	75-125	11	30	
Matrix Spike Dup (2209982-MSD2)			**Source: 22K1091-02**		Prepared & Analyzed: 11/18/22						
Total Phosphorus as P	0.311	0.023	0.050	mg/L	0.300	ND	104	75-125	0.5	30	
Batch 2209992 - General Preparation											
Blank (2209992-BLK1)					Prepared: 11/18/22 Analyzed: 11/22/22						
Total Dissolved Solids	ND	5.0	10	mg/L							

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CLS Work Order #: 22K1091
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209992 - General Preparation											
Duplicate (2209992-DUP1)			**Source: 22K1030-02**		Prepared: 11/18/22 Analyzed: 11/22/22						
Total Dissolved Solids	111	5.0	10	mg/L		114			3	20	
Batch 2210016 - General Preparation											
Blank (2210016-BLK1)					Prepared & Analyzed: 11/21/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							
LCS (2210016-BS1)					Prepared & Analyzed: 11/21/22						
Total Organic Carbon	10.2	0.54	1.0	mg/L	10.0		102	75-125			
LCS Dup (2210016-BSD1)					Prepared & Analyzed: 11/21/22						
Total Organic Carbon	10.5	0.54	1.0	mg/L	10.0		105	75-125	4	25	
Matrix Spike (2210016-MS1)			**Source: 22K0964-03**		Prepared & Analyzed: 11/21/22						
Total Organic Carbon	15.6	0.54	1.0	mg/L	10.0	2.38	132	75-125			QM-7
Matrix Spike Dup (2210016-MSD1)			**Source: 22K0964-03**		Prepared & Analyzed: 11/21/22						
Total Organic Carbon	16.0	0.54	1.0	mg/L	10.0	2.38	136	75-125	3	25	QM-7
Batch 2210025 - General Preparation											
Blank (2210025-BLK1)					Prepared & Analyzed: 11/21/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210025 - General Preparation											
Blank (2210025-BLK2)					Prepared & Analyzed: 11/21/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Duplicate (2210025-DUP1)				**Source: 22K1030-02**	Prepared & Analyzed: 11/21/22						
Total Alkalinity	66.0	1.0	5.0	mg/L		64.0			3	20	
Bicarbonate as CaCO3	66.0	0.50	5.0	"		64.0			3	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Duplicate (2210025-DUP2)				**Source: 22K1109-01**	Prepared & Analyzed: 11/21/22						
Total Alkalinity	19.6	1.0	5.0	mg/L		21.0			7	20	
Bicarbonate as CaCO3	16.8	0.50	5.0	"		18.2			8	20	
Carbonate as CaCO3	2.80	0.50	5.0	"		2.80			0	20	J
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Batch 2210034 - General Preparation											
Blank (2210034-BLK1)					Prepared & Analyzed: 11/21/22						
Total Suspended Solids	ND	2.0	5.0	mg/L							
Duplicate (2210034-DUP1)				**Source: 22K1073-01**	Prepared & Analyzed: 11/21/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	
Batch 2210071 - General Preparation											
Blank (2210071-BLK1)					Prepared: 11/22/22 Analyzed: 12/02/22						
Cyanide (total)	0.00380	0.0012	0.0050	mg/L							J

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COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210071 - General Preparation											
LCS (2210071-BS1)					Prepared: 11/22/22 Analyzed: 12/02/22						
Cyanide (total)	0.0759	0.0012	0.0050	mg/L	0.100		76	75-125			
LCS Dup (2210071-BSD1)					Prepared: 11/22/22 Analyzed: 12/02/22						
Cyanide (total)	0.0763	0.0012	0.0050	mg/L	0.100		76	75-125	0.5	25	
Matrix Spike (2210071-MS1)			**Source: 22K1091-01**		Prepared: 11/22/22 Analyzed: 12/02/22						
Cyanide (total)	0.0608	0.0012	0.0050	mg/L	0.100	0.00380	57	75-125			QM-7
Matrix Spike Dup (2210071-MSD1)			**Source: 22K1091-01**		Prepared: 11/22/22 Analyzed: 12/02/22						
Cyanide (total)	0.0600	0.0012	0.0050	mg/L	0.100	0.00380	56	75-125	1	25	QM-7
Batch 2210084 - General Preparation											
Blank (2210084-BLK1)					Prepared & Analyzed: 11/22/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2210084-BS1)					Prepared & Analyzed: 11/22/22						
Total Kjeldahl Nitrogen	0.492	0.040	0.20	mg/L	0.500		98	80-120			
LCS Dup (2210084-BSD1)					Prepared & Analyzed: 11/22/22						
Total Kjeldahl Nitrogen	0.473	0.040	0.20	mg/L	0.500		95	80-120	4	20	
Matrix Spike (2210084-MS1)			**Source: 22K1091-01**		Prepared & Analyzed: 11/22/22						
Total Kjeldahl Nitrogen	0.906	0.040	0.20	mg/L	0.500	0.107	160	75-125			QM-7
Matrix Spike Dup (2210084-MSD1)			**Source: 22K1091-01**		Prepared & Analyzed: 11/22/22						
Total Kjeldahl Nitrogen	0.844	0.040	0.20	mg/L	0.500	0.107	147	75-125	7	25	QM-7

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CLS Work Order #: 22K1091
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209917 - EPA 3510B GCNV											
Blank (2209917-BLK1)					Prepared: 11/17/22 Analyzed: 11/18/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Surrogate: o-Terphenyl	*0.0188*			*"*	*0.0250*		*75*	*65-135*			
LCS (2209917-BS1)					Prepared: 11/17/22 Analyzed: 11/18/22						
Diesel	1.68	0.0021	0.050	mg/L	2.50		67	65-135			
Surrogate: o-Terphenyl	*0.0200*			*"*	*0.0250*		*80*	*65-135*			
LCS Dup (2209917-BSD1)					Prepared: 11/17/22 Analyzed: 11/18/22						
Diesel	1.68	0.0021	0.050	mg/L	2.50		67	65-135	0.03	30	
Surrogate: o-Terphenyl	*0.0193*			*"*	*0.0250*		*77*	*65-135*			
Matrix Spike (2209917-MS1)			**Source: 22K0964-01**		Prepared: 11/17/22 Analyzed: 11/18/22						
Diesel	1.46	0.0021	0.050	mg/L	2.50	ND	59	46-137			
Surrogate: o-Terphenyl	*0.0189*			*"*	*0.0250*		*75*	*65-135*			
Matrix Spike Dup (2209917-MSD1)			**Source: 22K0964-01**		Prepared: 11/17/22 Analyzed: 11/18/22						
Diesel	1.54	0.0021	0.050	mg/L	2.50	ND	61	46-137	5	30	
Surrogate: o-Terphenyl	*0.0199*			*"*	*0.0250*		*80*	*65-135*			

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COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209953 - EPA 200 Series											
Blank (2209953-BLK1)					Prepared & Analyzed: 11/18/22						
Aluminum	1.68	1.6	20	µg/L							J
Barium	ND	0.14	5.0	"							
Manganese	0.261	0.050	2.0	"							J
Silver	ND	0.070	0.50	"							
LCS (2209953-BS1)					Prepared & Analyzed: 11/18/22						
Aluminum	498	1.6	20	µg/L	500		100	85-115			
Barium	97.6	0.14	5.0	"	100		98	85-115			
Manganese	95.7	0.050	2.0	"	100		96	85-115			
Silver	95.7	0.070	0.50	"	100		96	85-115			
Matrix Spike (2209953-MS1)			**Source: 22K1046-07**		Prepared & Analyzed: 11/18/22						
Aluminum	521	1.6	20	µg/L	500	12.2	102	70-130			
Barium	110	0.14	5.0	"	100	9.00	101	70-130			
Manganese	94.6	0.050	2.0	"	100	0.917	94	70-130			
Silver	98.7	0.070	0.50	"	100	ND	99	70-130			
Matrix Spike (2209953-MS2)			**Source: 22K1046-17**		Prepared: 11/18/22 Analyzed: 11/19/22						
Aluminum	499	1.6	20	µg/L	500	5.58	99	70-130			
Barium	111	0.14	5.0	"	100	12.5	98	70-130			
Manganese	94.4	0.050	2.0	"	100	1.15	93	70-130			
Silver	96.1	0.070	0.50	"	100	ND	96	70-130			
Batch 2209978 - EPA 200 Series											
Blank (2209978-BLK1)					Prepared & Analyzed: 11/18/22						
Calcium	ND	27	1000	µg/L							
Iron	10.0	9.1	100	"							J
Magnesium	ND	21	1000	"							
Potassium	ND	61	1000	"							
Sodium	86.8	34	1000	"							J

12/02/22 12:21

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1091
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209978 - EPA 200 Series											
LCS (2209978-BS1)					Prepared & Analyzed: 11/18/22						
Calcium	5190	27	1000	µg/L	5000		104	85-115			
Iron	505	9.1	100	"	500		101	85-115			
Magnesium	5210	21	1000	"	5000		104	85-115			
Potassium	5330	61	1000	"	5000		107	85-115			
Sodium	5200	34	1000	"	5000		104	85-115			
Matrix Spike (2209978-MS1)			**Source: 22K1091-01**		Prepared & Analyzed: 11/18/22						
Calcium	6620	27	1000	µg/L	5000	1570	101	70-130			
Iron	578	9.1	100	"	500	77.2	100	70-130			
Magnesium	5590	21	1000	"	5000	416	103	70-130			
Potassium	5770	61	1000	"	5000	511	105	70-130			
Sodium	6300	34	1000	"	5000	1380	98	70-130			
Matrix Spike (2209978-MS2)			**Source: 22K1107-01**		Prepared & Analyzed: 11/18/22						
Calcium	10800	27	1000	µg/L	5000	5520	105	70-130			
Iron	515	9.1	100	"	500	ND	103	70-130			
Magnesium	6840	21	1000	"	5000	1760	102	70-130			
Potassium	5860	61	1000	"	5000	454	108	70-130			
Sodium	18000	34	1000	"	5000	12600	107	70-130			

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1091
COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209963 - EPA 200 No Digestion											
Blank (2209963-BLK1)					Prepared & Analyzed: 11/18/22						
Aluminum	1.81	0.52	20	µg/L							J
Silver	ND	0.15	0.50	"							
LCS (2209963-BS1)					Prepared & Analyzed: 11/18/22						
Aluminum	484	0.52	20	µg/L	500		97	85-115			
Silver	96.9	0.15	0.50	"	100		97	85-115			
Matrix Spike (2209963-MS1)			**Source: 22K0964-01**		Prepared & Analyzed: 11/18/22						
Aluminum	497	0.52	20	µg/L	500	19.8	95	70-130			
Silver	96.5	0.15	0.50	"	100	ND	97	70-130			
Batch 2209967 - EPA 200 No Digestion											
Blank (2209967-BLK1)					Prepared & Analyzed: 11/18/22						
Iron	ND	6.8	100	µg/L							
LCS (2209967-BS1)					Prepared & Analyzed: 11/18/22						
Iron	516	6.8	100	µg/L	500		103	85-115			
Matrix Spike (2209967-MS1)			**Source: 22K0964-01**		Prepared & Analyzed: 11/18/22						
Iron	531	6.8	100	µg/L	500	7.91	105	70-130			
Matrix Spike (2209967-MS2)			**Source: 22K1104-02**		Prepared & Analyzed: 11/18/22						
Iron	554	6.8	100	µg/L	500	11.8	108	70-130			

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1091
COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209930 - EPA 5030 Water GC											
Blank (2209930-BLK1)					Prepared & Analyzed: 11/17/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*13.9*			"	*20.0*		*70*	*65-135*			
LCS (2209930-BS1)					Prepared & Analyzed: 11/17/22						
Gasoline	451	10	50	µg/L	500		90	70-130			
Surrogate: o-Chlorotoluene (Gas)	*15.8*			"	*20.0*		*79*	*65-135*			
LCS Dup (2209930-BSD1)					Prepared & Analyzed: 11/17/22						
Gasoline	427	10	50	µg/L	500		85	70-130	5	30	
Surrogate: o-Chlorotoluene (Gas)	*15.5*			"	*20.0*		*77*	*65-135*			
Matrix Spike (2209930-MS1)			**Source: 22K0964-04**		Prepared & Analyzed: 11/17/22						
Gasoline	500	10	50	µg/L	500	ND	100	68-132			
Surrogate: o-Chlorotoluene (Gas)	*14.9*			"	*20.0*		*75*	*65-135*			
Matrix Spike Dup (2209930-MSD1)			**Source: 22K0964-04**		Prepared & Analyzed: 11/17/22						
Gasoline	474	10	50	µg/L	500	ND	95	68-132	5	32	
Surrogate: o-Chlorotoluene (Gas)	*16.4*			"	*20.0*		*82*	*65-135*			

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1091
COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210012 - EPA 3510B GCMS											
Blank (2210012-BLK1)					Prepared & Analyzed: 11/17/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Surrogate: Toluene-d8	*9.94*			"	*10.0*		*99*	*72-125*			
LCS (2210012-BS1)					Prepared & Analyzed: 11/17/22						
Methyl tert-butyl ether	17.0	0.095	0.50	µg/L	20.0		85	52-130			
Surrogate: Toluene-d8	*9.75*			"	*10.0*		*98*	*72-125*			
LCS Dup (2210012-BSD1)					Prepared & Analyzed: 11/17/22						
Methyl tert-butyl ether	18.7	0.095	0.50	µg/L	20.0		94	52-130	10	30	
Surrogate: Toluene-d8	*9.51*			"	*10.0*		*95*	*72-125*			
Matrix Spike (2210012-MS1)			**Source: 22K1038-01**		Prepared & Analyzed: 11/17/22						
Methyl tert-butyl ether	14.2	0.095	0.50	µg/L	20.0	ND	71	52-140			
Surrogate: Toluene-d8	*9.85*			"	*10.0*		*99*	*72-125*			
Matrix Spike Dup (2210012-MSD1)			**Source: 22K1038-01**		Prepared & Analyzed: 11/17/22						
Methyl tert-butyl ether	13.2	0.095	0.50	µg/L	20.0	ND	66	52-140	7	30	
Surrogate: Toluene-d8	*10.2*			"	*10.0*		*102*	*72-125*			

12/02/22 12:21

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K1091**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22K091 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[x] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [x] NO [ ]

GLOBAL ID

FIELD CONDITIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	TSS, TDS, Hardness, Alkalinity, NO2-N+NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
11/16/22	11:00	IS-13-SC		Surface water			6	X	X	X	X	X	X	X				X	
11/16/22	12:00	IS-14-SC		Surface water			6	X	X	X	X	X	X	X				X	
11/16/22	12:00	IS-14-SC-FB		Surface water			6	X	X	X	X	X	X	X				X	
11/16/22	11:00	R-IS-13-CR		Surface water			6	X	X	X	X	X	X	X				X	
11/16/22	11:00	R-IS-13-CR-Dup		Surface water			6	X	X	X	X	X	X	X				X	
				Surface water			6											X	
				Surface water			6											X	INVOICE TO
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	**Project No. 750.10 Task 0620.01**
				Surface water			6											X	QUOTE#

ANALYSIS REQUESTED

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (2) HNO3 (3) = COLD (4) = H2SO4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Jakob Woodall / Stillwater Sciences	11/16/22 15:45		

RECEIVED AT LAB BY: DATE/TIME: 11.16.22 15:45 CONDITIONS/COMMENTS: 4.7/4.0

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER AIR BILL #

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

December 05, 2022

CLS Work Order #: 22K1173
COC #:

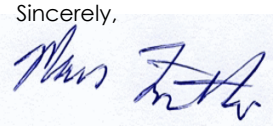
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 11/17/22 15:05. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

12/05/22 15:33

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1173
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-19-BI (22K1173-01) Water Sampled: 11/17/22 10:00 Received: 11/17/22 15:05										
Ammonia as N	**0.048**	0.025	0.10	mg/L	1	2210058	11/22/22	11/22/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**7.0**	0.50	5.0	"	"	2210025	11/21/22	11/21/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.32**	0.026	0.50	"	"	2209955	11/18/22	11/18/22	EPA 300.0	J
Cyanide (total)	**0.0016**	0.0012	0.0050	"	"	2210245	11/29/22	12/05/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2210060	11/22/22	11/23/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2210025	11/21/22	11/21/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209955	11/18/22	11/18/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2209956	11/18/22	11/18/22	SM4500-P E	
Sulfate as SO4	**0.52**	0.038	0.50	"	"	2209955	11/18/22	11/18/22	EPA 300.0	
Total Alkalinity	**7.0**	1.0	5.0	"	"	2210025	11/21/22	11/21/22	SM2320B	
Total Dissolved Solids	**18**	5.0	10	"	"	2210087	11/22/22	11/22/22	SM2540C	
Total Hardness as CaCO3	**4.6**	0.19	1.0	"	"	2210022	11/21/22	11/21/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.050**	0.040	0.20	"	"	2210084	11/22/22	11/22/22	SM4500-NH3F-2011	J
Total Organic Carbon	**2.7**	0.54	1.0	"	"	2210198	11/29/22	11/29/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2210194	11/29/22	11/29/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2210034	11/21/22	11/21/22	SM2540D	
IS-3-LRR (22K1173-02) Water Sampled: 11/17/22 11:00 Received: 11/17/22 15:05										
Ammonia as N	**0.045**	0.025	0.10	mg/L	1	2210058	11/22/22	11/22/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**6.2**	0.50	5.0	"	"	2210025	11/21/22	11/21/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.29**	0.026	0.50	"	"	2209955	11/18/22	11/18/22	EPA 300.0	J
Cyanide (total)	**0.0027**	0.0012	0.0050	"	"	2210245	11/29/22	12/05/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2210060	11/22/22	11/23/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2210025	11/21/22	11/21/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2209955	11/18/22	11/18/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2209956	11/18/22	11/18/22	SM4500-P E	

12/05/22 15:33

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K1173**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-3-LRR (22K1173-02) Water Sampled: 11/17/22 11:00 Received: 11/17/22 15:05										
Sulfate as SO4	**0.51**	0.038	0.50	mg/L	1	2209955	11/18/22	11/18/22	EPA 300.0	
Total Alkalinity	**6.2**	1.0	5.0	"	"	2210025	11/21/22	11/21/22	SM2320B	
Total Dissolved Solids	**21**	5.0	10	"	"	2210087	11/22/22	11/22/22	SM2540C	
Total Hardness as CaCO3	**4.6**	0.19	1.0	"	"	2210022	11/21/22	11/21/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.28**	0.040	0.20	"	"	2210084	11/22/22	11/22/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.4**	0.54	1.0	"	"	2210198	11/29/22	11/29/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2210194	11/29/22	11/29/22	SM4500-P E	
Total Suspended Solids	**2.3**	2.0	5.0	"	"	2210034	11/21/22	11/21/22	SM2540D	J

12/05/22 15:33

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1173
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-19-BI (22K1173-01) Water Sampled: 11/17/22 10:00 Received: 11/17/22 15:05										
Diesel	ND	0.0021	0.050	mg/L	1	2210042	11/21/22	11/22/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*86 %*	*65-135*		"	"	"	"	
IS-3-LRR (22K1173-02) Water Sampled: 11/17/22 11:00 Received: 11/17/22 15:05										
Diesel	ND	0.0021	0.050	mg/L	1	2210042	11/21/22	11/22/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*62 %*	*65-135*		"	"	"	"	*QS-4*

12/05/22 15:33

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1173
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-19-BI (22K1173-01) Water Sampled: 11/17/22 10:00 Received: 11/17/22 15:05										
Aluminum	**12**	1.6	20	µg/L	1	2210020	11/21/22	11/21/22	EPA 200.8	J
Barium	**4.0**	0.14	5.0	"	"	"	"	"	"	J
Calcium	**1600**	27	1000	"	"	2210022	11/21/22	11/21/22	EPA 200.7	
Iron	**89**	9.1	100	"	"	"	"	"	"	J
Magnesium	**140**	21	1000	"	"	"	"	"	"	J
Manganese	**8.8**	0.050	2.0	"	"	2210020	11/21/22	11/21/22	EPA 200.8	
Potassium	**1200**	61	1000	"	"	2210022	11/21/22	11/28/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2210020	11/21/22	11/21/22	EPA 200.8	
Sodium	**1300**	34	1000	"	"	2210022	11/21/22	11/28/22	EPA 200.7	
IS-3-LRR (22K1173-02) Water Sampled: 11/17/22 11:00 Received: 11/17/22 15:05										
Aluminum	**52**	1.6	20	µg/L	1	2210020	11/21/22	11/21/22	EPA 200.8	
Barium	**4.3**	0.14	5.0	"	"	"	"	"	"	J
Calcium	**1600**	27	1000	"	"	2210022	11/21/22	11/21/22	EPA 200.7	
Iron	**200**	9.1	100	"	"	"	"	"	"	
Magnesium	**150**	21	1000	"	"	"	"	"	"	J
Manganese	**23**	0.050	2.0	"	"	2210020	11/21/22	11/21/22	EPA 200.8	
Potassium	**910**	61	1000	"	"	2210022	11/21/22	11/28/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2210020	11/21/22	11/21/22	EPA 200.8	
Sodium	**960**	34	1000	"	"	2210022	11/21/22	11/28/22	EPA 200.7	J

12/05/22 15:33

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K1173**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-19-BI (22K1173-01) Water Sampled: 11/17/22 10:00 Received: 11/17/22 15:05										
Aluminum	**1.3**	0.52	20	µg/L	1	2210252	11/30/22	11/30/22	EPA 200.8	J
Iron	**16**	6.8	100	"	"	2210243	11/30/22	11/30/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2210252	11/30/22	11/30/22	EPA 200.8	
IS-3-LRR (22K1173-02) Water Sampled: 11/17/22 11:00 Received: 11/17/22 15:05										
Aluminum	**5.2**	0.52	20	µg/L	1	2210252	11/30/22	11/30/22	EPA 200.8	J
Iron	**8.7**	6.8	100	"	"	2210243	11/30/22	11/30/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2210252	11/30/22	11/30/22	EPA 200.8	

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1173
COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-19-BI (22K1173-01) Water Sampled: 11/17/22 10:00 Received: 11/17/22 15:05										
Gasoline	ND	10	50	µg/L	1	2210265	11/30/22	11/30/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*78 %*	*65-135*		"	"	"	"	
IS-3-LRR (22K1173-02) Water Sampled: 11/17/22 11:00 Received: 11/17/22 15:05										
Gasoline	ND	10	50	µg/L	1	2210265	11/30/22	11/30/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*75 %*	*65-135*		"	"	"	"	

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Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-19-BI (22K1173-01) Water Sampled: 11/17/22 10:00 Received: 11/17/22 15:05										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2210008	11/18/22	11/18/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*	*72-125*		"	"	"	"	
IS-3-LRR (22K1173-02) Water Sampled: 11/17/22 11:00 Received: 11/17/22 15:05										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2210008	11/18/22	11/18/22	EPA 8260B	
Surrogate: Toluene-d8			*109 %*	*72-125*		"	"	"	"	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209955 - General Prep											
Blank (2209955-BLK1)					Prepared & Analyzed: 11/18/22						
Sulfate as SO4	ND	0.038	0.50	mg/L							
Chloride	ND	0.026	0.50	"							
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2209955-BS1)					Prepared & Analyzed: 11/18/22						
Chloride	4.75	0.026	0.50	mg/L	5.00		95	80-120			
Sulfate as SO4	4.56	0.038	0.50	"	5.00		91	80-120			
Nitrate/Nitrite as N	4.15	0.055	0.40	"	4.00		104	80-120			
LCS Dup (2209955-BSD1)					Prepared & Analyzed: 11/18/22						
Chloride	4.84	0.026	0.50	mg/L	5.00		97	80-120	2	20	
Sulfate as SO4	4.68	0.038	0.50	"	5.00		94	80-120	3	20	
Nitrate/Nitrite as N	4.23	0.055	0.40	"	4.00		106	80-120	2	20	
Matrix Spike (2209955-MS1)			**Source: 22K1153-01**		Prepared & Analyzed: 11/18/22						
Sulfate as SO4	22.5	0.038	0.50	mg/L	5.00	18.2	85	80-120			
Chloride	53.3	0.026	0.50	"	5.00	51.5	37	80-120			QM-7
Nitrate/Nitrite as N	4.94	0.055	0.40	"	4.00	1.51	86	80-120			
Matrix Spike Dup (2209955-MSD1)			**Source: 22K1153-01**		Prepared & Analyzed: 11/18/22						
Chloride	53.4	0.026	0.50	mg/L	5.00	51.5	38	80-120	0.1	20	QM-7
Sulfate as SO4	22.6	0.038	0.50	"	5.00	18.2	87	80-120	0.4	20	
Nitrate/Nitrite as N	5.00	0.055	0.40	"	4.00	1.51	87	80-120	1	20	
Batch 2209956 - General Preparation											
Blank (2209956-BLK1)					Prepared & Analyzed: 11/18/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2209956 - General Preparation											
LCS (2209956-BS1)					Prepared & Analyzed: 11/18/22						
Orthophosphate as PO4	0.875	0.0051	0.15	mg/L	0.918		95	80-120			
LCS Dup (2209956-BSD1)					Prepared & Analyzed: 11/18/22						
Orthophosphate as PO4	0.875	0.0051	0.15	mg/L	0.918		95	80-120	0	20	
Matrix Spike (2209956-MS1)			**Source: 22K1173-01**		Prepared & Analyzed: 11/18/22						
Orthophosphate as PO4	0.887	0.0051	0.15	mg/L	0.918	ND	97	75-125			
Matrix Spike Dup (2209956-MSD1)			**Source: 22K1173-01**		Prepared & Analyzed: 11/18/22						
Orthophosphate as PO4	0.895	0.0051	0.15	mg/L	0.918	ND	98	75-125	0.9	25	
Batch 2210022 - EPA 200 Series											
Blank (2210022-BLK1)					Prepared & Analyzed: 11/21/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2210022-BS1)					Prepared & Analyzed: 11/21/22						
Total Hardness as CaCO3	33.1	0.19	1.0	mg/L	33.1		100	85-115			
Matrix Spike (2210022-MS1)			**Source: 22K0863-01**		Prepared & Analyzed: 11/21/22						
Total Hardness as CaCO3	41.2	0.19	1.0	mg/L	33.1	6.52	105	70-130			
Matrix Spike (2210022-MS2)			**Source: 22K1240-01**		Prepared & Analyzed: 11/21/22						
Total Hardness as CaCO3	119	0.19	1.0	mg/L	33.1	87.0	97	70-130			
Batch 2210025 - General Preparation											
Blank (2210025-BLK1)					Prepared & Analyzed: 11/21/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210025 - General Preparation											
Blank (2210025-BLK2)					Prepared & Analyzed: 11/21/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Duplicate (2210025-DUP1)				**Source: 22K1030-02**	Prepared & Analyzed: 11/21/22						
Total Alkalinity	66.0	1.0	5.0	mg/L		64.0			3	20	
Bicarbonate as CaCO3	66.0	0.50	5.0	"		64.0			3	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Duplicate (2210025-DUP2)				**Source: 22K1109-01**	Prepared & Analyzed: 11/21/22						
Total Alkalinity	19.6	1.0	5.0	mg/L		21.0			7	20	
Bicarbonate as CaCO3	16.8	0.50	5.0	"		18.2			8	20	
Carbonate as CaCO3	2.80	0.50	5.0	"		2.80			0	20	J
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Batch 2210034 - General Preparation											
Blank (2210034-BLK1)					Prepared & Analyzed: 11/21/22						
Total Suspended Solids	ND	2.0	5.0	mg/L							
Duplicate (2210034-DUP1)				**Source: 22K1073-01**	Prepared & Analyzed: 11/21/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	
Batch 2210058 - General Preparation											
Blank (2210058-BLK1)					Prepared & Analyzed: 11/22/22						
Ammonia as N	ND	0.025	0.10	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210058 - General Preparation											
LCS (2210058-BS1)					Prepared & Analyzed: 11/22/22						
Ammonia as N	0.506	0.025	0.10	mg/L	0.500		101	80-120			
LCS Dup (2210058-BSD1)					Prepared & Analyzed: 11/22/22						
Ammonia as N	0.517	0.025	0.10	mg/L	0.500		103	80-120	2	25	
Matrix Spike (2210058-MS1)			**Source: 22K1158-01**		Prepared & Analyzed: 11/22/22						
Ammonia as N	0.611	0.025	0.10	mg/L	0.500	0.0610	110	75-125			
Matrix Spike Dup (2210058-MSD1)			**Source: 22K1158-01**		Prepared & Analyzed: 11/22/22						
Ammonia as N	0.550	0.025	0.10	mg/L	0.500	0.0610	98	75-125	11	25	
Batch 2210060 - Solvent Extract											
Blank (2210060-BLK1)					Prepared: 11/22/22 Analyzed: 11/23/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2210060-BS1)					Prepared: 11/22/22 Analyzed: 11/23/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.1	1.0	5.0	mg/L	40.0		98	78-114			
LCS Dup (2210060-BSD1)					Prepared: 11/22/22 Analyzed: 11/23/22						
Hexane Extractable Material (HEM, Oil & Grease)	38.8	1.0	5.0	mg/L	40.0		97	78-114	0.8	18	
Batch 2210084 - General Preparation											
Blank (2210084-BLK1)					Prepared & Analyzed: 11/22/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210084 - General Preparation											
LCS (2210084-BS1)					Prepared & Analyzed: 11/22/22						
Total Kjeldahl Nitrogen	0.492	0.040	0.20	mg/L	0.500		98	80-120			
LCS Dup (2210084-BSD1)					Prepared & Analyzed: 11/22/22						
Total Kjeldahl Nitrogen	0.473	0.040	0.20	mg/L	0.500		95	80-120	4	20	
Matrix Spike (2210084-MS1)			**Source: 22K1091-01**		Prepared & Analyzed: 11/22/22						
Total Kjeldahl Nitrogen	0.906	0.040	0.20	mg/L	0.500	0.107	160	75-125			QM-7
Matrix Spike Dup (2210084-MSD1)			**Source: 22K1091-01**		Prepared & Analyzed: 11/22/22						
Total Kjeldahl Nitrogen	0.844	0.040	0.20	mg/L	0.500	0.107	147	75-125	7	25	QM-7
Batch 2210087 - General Preparation											
Blank (2210087-BLK1)					Prepared & Analyzed: 11/22/22						
Total Dissolved Solids	ND	5.0	10	mg/L							
Duplicate (2210087-DUP1)			**Source: 22K1149-01**		Prepared & Analyzed: 11/22/22						
Total Dissolved Solids	66.0	5.0	10	mg/L		67.0			2	20	
Batch 2210194 - General Preparation											
Blank (2210194-BLK1)					Prepared & Analyzed: 11/29/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2210194-BS1)					Prepared & Analyzed: 11/29/22						
Total Phosphorus as P	0.305	0.023	0.050	mg/L	0.300		102	80-120			

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210194 - General Preparation											
LCS Dup (2210194-BSD1)					Prepared & Analyzed: 11/29/22						
Total Phosphorus as P	0.308	0.023	0.050	mg/L	0.300		103	80-120	0.9	25	
Matrix Spike (2210194-MS1)			**Source: 22K1173-01**		Prepared & Analyzed: 11/29/22						
Total Phosphorus as P	0.296	0.023	0.050	mg/L	0.300	ND	99	75-125			
Matrix Spike Dup (2210194-MSD1)			**Source: 22K1173-01**		Prepared & Analyzed: 11/29/22						
Total Phosphorus as P	0.290	0.023	0.050	mg/L	0.300	ND	97	75-125	2	30	
Batch 2210198 - General Preparation											
Blank (2210198-BLK1)					Prepared & Analyzed: 11/29/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							
LCS (2210198-BS1)					Prepared & Analyzed: 11/29/22						
Total Organic Carbon	10.5	0.54	1.0	mg/L	10.0		105	75-125			
LCS Dup (2210198-BSD1)					Prepared & Analyzed: 11/29/22						
Total Organic Carbon	10.4	0.54	1.0	mg/L	10.0		104	75-125	0.5	25	
Matrix Spike (2210198-MS1)			**Source: 22K1173-01**		Prepared & Analyzed: 11/29/22						
Total Organic Carbon	15.9	0.54	1.0	mg/L	10.0	2.65	133	75-125			QM-7
Matrix Spike Dup (2210198-MSD1)			**Source: 22K1173-01**		Prepared & Analyzed: 11/29/22						
Total Organic Carbon	16.4	0.54	1.0	mg/L	10.0	2.65	137	75-125	3	25	QM-7
Batch 2210245 - General Preparation											
Blank (2210245-BLK1)					Prepared: 11/29/22 Analyzed: 12/05/22						
Cyanide (total)	0.00310	0.0012	0.0050	mg/L							J

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210245 - General Preparation											
LCS (2210245-BS1)					Prepared: 11/29/22 Analyzed: 12/05/22						
Cyanide (total)	0.0792	0.0012	0.0050	mg/L	0.100		79	75-125			
LCS Dup (2210245-BSD1)					Prepared: 11/29/22 Analyzed: 12/05/22						
Cyanide (total)	0.0807	0.0012	0.0050	mg/L	0.100		81	75-125	2	25	
Matrix Spike (2210245-MS1)			**Source: 22K1173-02**		Prepared: 11/29/22 Analyzed: 12/05/22						
Cyanide (total)	0.0393	0.0012	0.0050	mg/L	0.100	0.00270	37	75-125			QM-7
Matrix Spike Dup (2210245-MSD1)			**Source: 22K1173-02**		Prepared: 11/29/22 Analyzed: 12/05/22						
Cyanide (total)	0.0386	0.0012	0.0050	mg/L	0.100	0.00270	36	75-125	2	25	QM-7

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Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210042 - EPA 3510B GCNV											
Blank (2210042-BLK1)					Prepared: 11/21/22 Analyzed: 11/22/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Surrogate: o-Terphenyl	*0.0228*			*"*	*0.0250*		*91*	*65-135*			
LCS (2210042-BS1)					Prepared: 11/21/22 Analyzed: 11/22/22						
Diesel	2.24	0.0021	0.050	mg/L	2.50		90	65-135			
Surrogate: o-Terphenyl	*0.0269*			*"*	*0.0250*		*108*	*65-135*			
LCS Dup (2210042-BSD1)					Prepared: 11/21/22 Analyzed: 11/22/22						
Diesel	1.70	0.0021	0.050	mg/L	2.50		68	65-135	27	30	
Surrogate: o-Terphenyl	*0.0192*			*"*	*0.0250*		*77*	*65-135*			

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Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210020 - EPA 200 Series											
Blank (2210020-BLK1)					Prepared & Analyzed: 11/21/22						
Aluminum	2.97	1.6	20	µg/L							J
Barium	ND	0.14	5.0	"							
Cadmium	ND	0.17	0.50	"							
Chromium	ND	0.14	1.0	"							
Copper	0.194	0.090	2.0	"							J
Lead	0.0240	0.020	5.0	"							J
Manganese	0.435	0.050	2.0	"							J
Nickel	ND	0.13	2.0	"							
Silver	ND	0.070	0.50	"							
Zinc	3.12	0.27	10	"							J
LCS (2210020-BS1)					Prepared & Analyzed: 11/21/22						
Aluminum	494	1.6	20	µg/L	500		99	85-115			
Barium	103	0.14	5.0	"	100		103	85-115			
Cadmium	103	0.17	0.50	"	100		103	85-115			
Chromium	101	0.14	1.0	"	100		101	85-115			
Copper	102	0.090	2.0	"	100		102	85-115			
Lead	100	0.020	5.0	"	100		100	85-115			
Manganese	102	0.050	2.0	"	100		102	85-115			
Nickel	101	0.13	2.0	"	100		101	85-115			
Silver	101	0.070	0.50	"	100		101	85-115			
Zinc	104	0.27	10	"	100		104	85-115			
Matrix Spike (2210020-MS1)				**Source: 22K1133-01**	Prepared & Analyzed: 11/21/22						
Aluminum	503	1.6	20	µg/L	500	3.46	100	70-130			
Barium	134	0.14	5.0	"	100	31.7	103	70-130			
Cadmium	101	0.17	0.50	"	100	ND	101	70-130			
Chromium	99.9	0.14	1.0	"	100	0.415	99	70-130			
Copper	101	0.090	2.0	"	100	1.30	100	70-130			
Lead	99.1	0.020	5.0	"	100	ND	99	70-130			
Manganese	101	0.050	2.0	"	100	0.681	100	70-130			
Nickel	99.0	0.13	2.0	"	100	0.389	99	70-130			

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COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210020 - EPA 200 Series											
Matrix Spike (2210020-MS1)			**Source: 22K1133-01**		Prepared & Analyzed: 11/21/22						
Silver	98.0	0.070	0.50	µg/L	100	ND	98	70-130			
Zinc	102	0.27	10	"	100	ND	102	70-130			
Matrix Spike (2210020-MS2)			**Source: 22K1240-01**		Prepared & Analyzed: 11/21/22						
Aluminum	813	1.6	20	µg/L	500	337	95	70-130			
Barium	156	0.14	5.0	"	100	53.7	102	70-130			
Cadmium	103	0.17	0.50	"	100	ND	103	70-130			
Chromium	101	0.14	1.0	"	100	2.88	98	70-130			
Copper	142	0.090	2.0	"	100	43.9	98	70-130			
Lead	100	0.020	5.0	"	100	2.39	98	70-130			
Manganese	102	0.050	2.0	"	100	2.32	100	70-130			
Nickel	98.2	0.13	2.0	"	100	0.414	98	70-130			
Silver	99.4	0.070	0.50	"	100	ND	99	70-130			
Zinc	127	0.27	10	"	100	28.4	99	70-130			
Batch 2210022 - EPA 200 Series											
Blank (2210022-BLK1)					Prepared & Analyzed: 11/21/22						
Calcium	ND	27	1000	µg/L							
Iron	ND	9.1	100	"							
Magnesium	ND	21	1000	"							
Potassium	ND	61	1000	"							
Sodium	ND	34	1000	"							
LCS (2210022-BS1)					Prepared & Analyzed: 11/21/22						
Calcium	4880	27	1000	µg/L	5000		98	85-115			
Iron	492	9.1	100	"	500		98	85-115			
Magnesium	5080	21	1000	"	5000		102	85-115			
Potassium	4840	61	1000	"	5000		97	85-115			
Sodium	5130	34	1000	"	5000		103	85-115			

12/05/22 15:33

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1173
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210022 - EPA 200 Series											
Matrix Spike (2210022-MS1)			**Source: 22K0863-01**		Prepared & Analyzed: 11/21/22						
Calcium	7680	27	1000	µg/L	5000	2100	112	70-130			
Iron	641	9.1	100	"	500	83.9	111	70-130			
Magnesium	5340	21	1000	"	5000	311	101	70-130			
Potassium	6260	61	1000	"	5000	728	111	70-130			
Sodium	6240	34	1000	"	5000	575	113	70-130			
Matrix Spike (2210022-MS2)			**Source: 22K1240-01**		Prepared & Analyzed: 11/21/22						
Calcium	25300	27	1000	µg/L	5000	20500	97	70-130			
Iron	566	9.1	100	"	500	38.2	106	70-130			
Magnesium	13500	21	1000	"	5000	8700	96	70-130			
Potassium	8900	61	1000	"	5000	7780	23	70-130			QM-7
Sodium	18900	34	1000	"	5000	13900	100	70-130			

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1173
COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210243 - EPA 200 No Digestion											
Blank (2210243-BLK1)					Prepared & Analyzed: 11/30/22						
Iron	ND	6.8	100	µg/L							
LCS (2210243-BS1)					Prepared & Analyzed: 11/30/22						
Iron	500	6.8	100	µg/L	500		100	85-115			
Matrix Spike (2210243-MS1)			**Source: 22K1173-01**		Prepared & Analyzed: 11/30/22						
Iron	555	6.8	100	µg/L	500	16.3	108	70-130			
Matrix Spike (2210243-MS2)			**Source: 22K1317-01**		Prepared & Analyzed: 11/30/22						
Iron	527	6.8	100	µg/L	500	ND	105	70-130			
Batch 2210252 - EPA 200 No Digestion											
Blank (2210252-BLK1)					Prepared & Analyzed: 11/30/22						
Aluminum	ND	0.52	20	µg/L							
Silver	ND	0.15	0.50	"							
LCS (2210252-BS1)					Prepared & Analyzed: 11/30/22						
Aluminum	493	0.52	20	µg/L	500		99	85-115			
Silver	98.3	0.15	0.50	"	100		98	85-115			
Matrix Spike (2210252-MS1)			**Source: 22K1173-01**		Prepared & Analyzed: 11/30/22						
Aluminum	507	0.52	20	µg/L	500	1.30	101	70-130			
Silver	98.8	0.15	0.50	"	100	ND	99	70-130			

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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1173
COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210265 - EPA 5030 Water GC											
Blank (2210265-BLK1)					Prepared & Analyzed: 11/30/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*15.7*			"	*20.0*		*78*	*65-135*			
LCS (2210265-BS1)					Prepared & Analyzed: 11/30/22						
Gasoline	569	10	50	µg/L	500		114	70-130			
Surrogate: o-Chlorotoluene (Gas)	*15.9*			"	*20.0*		*80*	*65-135*			
LCS Dup (2210265-BSD1)					Prepared & Analyzed: 11/30/22						
Gasoline	542	10	50	µg/L	500		108	70-130	5	30	
Surrogate: o-Chlorotoluene (Gas)	*15.1*			"	*20.0*		*76*	*65-135*			
Matrix Spike (2210265-MS1)			**Source: 22K1386-02**		Prepared & Analyzed: 11/30/22						
Gasoline	474	10	50	µg/L	500	ND	95	68-132			
Surrogate: o-Chlorotoluene (Gas)	*13.9*			"	*20.0*		*70*	*65-135*			
Matrix Spike Dup (2210265-MSD1)			**Source: 22K1386-02**		Prepared & Analyzed: 11/30/22						
Gasoline	466	10	50	µg/L	500	ND	93	68-132	2	32	
Surrogate: o-Chlorotoluene (Gas)	*15.6*			"	*20.0*		*78*	*65-135*			

12/05/22 15:33

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Project Manager: Emily Applequist

CLS Work Order #: 22K1173
COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210008 - EPA 3510B GCMS											
Blank (2210008-BLK1)					Prepared & Analyzed: 11/18/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Surrogate: Toluene-d8	*9.73*			"	*10.0*		*97*	*72-125*			
LCS (2210008-BS1)					Prepared & Analyzed: 11/18/22						
Methyl tert-butyl ether	21.2	0.095	0.50	µg/L	20.0		106	52-130			
Surrogate: Toluene-d8	*9.34*			"	*10.0*		*93*	*72-125*			
LCS Dup (2210008-BSD1)					Prepared & Analyzed: 11/18/22						
Methyl tert-butyl ether	21.6	0.095	0.50	µg/L	20.0		108	52-130	2	30	
Surrogate: Toluene-d8	*9.36*			"	*10.0*		*94*	*72-125*			
Matrix Spike (2210008-MS1)			**Source: 22K1144-01**		Prepared & Analyzed: 11/18/22						
Methyl tert-butyl ether	30.5	0.095	0.50	µg/L	20.0	ND	153	52-140			QM-7
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			
Matrix Spike Dup (2210008-MSD1)			**Source: 22K1144-01**		Prepared & Analyzed: 11/18/22						
Methyl tert-butyl ether	29.2	0.095	0.50	µg/L	20.0	ND	146	52-140	4	30	QM-7
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			

12/05/22 15:33

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K1173**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QS-4	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22K1173 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[x] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [x] NO [ ]

GLOBAL ID

FIELD CONDITIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	ANALYSIS REQUESTED: TSS, TDS, Hardness, Alkalinity, NO2-N+NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS: 1	2	3	5	SPECIAL INSTRUCTIONS
11/17/22	10:00	R-IS-19-BI		Surface water			6	X	X	X	X	X	X	X				X	
11/17/22	11:00	IS-3-LRR		Surface water			6	X	X	X	X	X	X	X				X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	INVOICE TO
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	**Project No. 750.10 Task 0620.01**
				Surface water			6											X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Jakob Woodall / Stillwater Sciences	11/17/22 15:05		

RECEIVED AT LAB BY: DATE/TIME: 11-17-22 15:05 CONDITIONS/COMMENTS: 1.1/0.4

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER AIR BILL #

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

December 07, 2022

CLS Work Order #: 22K1317
COC #:

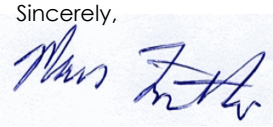
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 11/21/22 16:05. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

12/07/22 12:46

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1317
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-12-SC (22K1317-01) Water Sampled: 11/21/22 11:30 Received: 11/21/22 16:05										
Ammonia as N	**0.066**	0.025	0.10	mg/L	1	2210121	11/23/22	11/23/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**7.4**	0.50	5.0	"	"	2210124	11/23/22	11/23/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.51**	0.026	0.50	"	"	2210048	11/22/22	11/22/22	EPA 300.0	
Cyanide (total)	**0.0045**	0.0012	0.0050	"	"	2210245	11/29/22	12/05/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2210060	11/22/22	11/23/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2210124	11/23/22	11/23/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2210048	11/22/22	11/22/22	EPA 300.0	
Orthophosphate as PO4	**0.0066**	0.0051	0.15	"	"	2210083	11/22/22	11/22/22	SM4500-P E	J
Sulfate as SO4	**0.45**	0.038	0.50	"	"	2210048	11/22/22	11/22/22	EPA 300.0	J
Total Alkalinity	**7.4**	1.0	5.0	"	"	2210124	11/23/22	11/23/22	SM2320B	
Total Dissolved Solids	**16**	5.0	10	"	"	2210154	11/28/22	11/30/22	SM2540C	
Total Hardness as CaCO3	**5.2**	0.19	1.0	"	"	2210104	11/23/22	11/23/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.62**	0.040	0.20	"	"	2210177	11/28/22	11/28/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.5**	0.54	1.0	"	"	2210198	11/29/22	11/29/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2210194	11/29/22	11/29/22	SM4500-P E	
Total Suspended Solids	**3.5**	2.0	5.0	"	"	2210110	11/23/22	11/23/22	SM2540D	J
IS-11-SFSC (22K1317-02) Water Sampled: 11/21/22 10:30 Received: 11/21/22 16:05										
Ammonia as N	**0.060**	0.025	0.10	mg/L	1	2210121	11/23/22	11/23/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**8.8**	0.50	5.0	"	"	2210124	11/23/22	11/23/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**0.60**	0.026	0.50	"	"	2210048	11/22/22	11/22/22	EPA 300.0	
Cyanide (total)	**0.0053**	0.0012	0.0050	"	"	2210245	11/29/22	12/05/22	SM4500-CN E	
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2210060	11/22/22	11/23/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2210124	11/23/22	11/23/22	SM2320B	
Nitrate/Nitrite as N	**0.075**	0.055	0.40	"	"	2210048	11/22/22	11/22/22	EPA 300.0	J
Orthophosphate as PO4	**0.015**	0.0051	0.15	"	"	2210083	11/22/22	11/22/22	SM4500-P E	J

12/07/22 12:46

Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1317
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-11-SFSC (22K1317-02) Water Sampled: 11/21/22 10:30 Received: 11/21/22 16:05										
Sulfate as SO4	**0.70**	0.038	0.50	mg/L	1	2210048	11/22/22	11/22/22	EPA 300.0	
Total Alkalinity	**8.8**	1.0	5.0	"	"	2210124	11/23/22	11/23/22	SM2320B	
Total Dissolved Solids	**19**	5.0	10	"	"	2210154	11/28/22	11/30/22	SM2540C	
Total Hardness as CaCO3	**6.7**	0.19	1.0	"	"	2210104	11/23/22	11/23/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.18**	0.040	0.20	"	"	2210177	11/28/22	11/28/22	SM4500-NH3F-2011	J
Total Organic Carbon	**1.8**	0.54	1.0	"	"	2210198	11/29/22	11/29/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2210194	11/29/22	11/29/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2210110	11/23/22	11/23/22	SM2540D	
R-IS-16-CB (22K1317-03) Water Sampled: 11/21/22 14:00 Received: 11/21/22 16:05										
Ammonia as N	**0.033**	0.025	0.10	mg/L	1	2210121	11/23/22	11/23/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**11**	0.50	5.0	"	"	2210124	11/23/22	11/23/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**2.8**	0.026	0.50	"	"	2210048	11/22/22	11/22/22	EPA 300.0	
Cyanide (total)	**0.0042**	0.0012	0.0050	"	"	2210245	11/29/22	12/05/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2210060	11/22/22	11/23/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2210124	11/23/22	11/23/22	SM2320B	
Nitrate/Nitrite as N	**0.058**	0.055	0.40	"	"	2210048	11/22/22	11/22/22	EPA 300.0	J
Orthophosphate as PO4	**0.011**	0.0051	0.15	"	"	2210083	11/22/22	11/22/22	SM4500-P E	J
Sulfate as SO4	**0.68**	0.038	0.50	"	"	2210048	11/22/22	11/22/22	EPA 300.0	
Total Alkalinity	**11**	1.0	5.0	"	"	2210124	11/23/22	11/23/22	SM2320B	
Total Dissolved Solids	**21**	5.0	10	"	"	2210154	11/28/22	11/30/22	SM2540C	
Total Hardness as CaCO3	**10**	0.19	1.0	"	"	2210104	11/23/22	11/23/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.20**	0.040	0.20	"	"	2210177	11/28/22	11/28/22	SM4500-NH3F-2011	
Total Organic Carbon	**2.1**	0.54	1.0	"	"	2210198	11/29/22	11/29/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2210194	11/29/22	11/29/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2210110	11/23/22	11/23/22	SM2540D	

12/07/22 12:46

Stillwater Sciences
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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1317
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-17-CB (22K1317-04) Water	**Sampled: 11/21/22 14:30**		**Received: 11/21/22 16:05**							
Ammonia as N	**0.029**	0.025	0.10	mg/L	1	2210121	11/23/22	11/23/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**13**	0.50	5.0	"	"	2210124	11/23/22	11/23/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**2.1**	0.026	0.50	"	"	2210048	11/22/22	11/22/22	EPA 300.0	
Cyanide (total)	**0.0031**	0.0012	0.0050	"	"	2210245	11/29/22	12/05/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2210060	11/22/22	11/23/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2210124	11/23/22	11/23/22	SM2320B	
Nitrate/Nitrite as N	**0.072**	0.055	0.40	"	"	2210048	11/22/22	11/22/22	EPA 300.0	J
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2210083	11/22/22	11/22/22	SM4500-P E	
Sulfate as SO4	**0.74**	0.038	0.50	"	"	2210048	11/22/22	11/22/22	EPA 300.0	
Total Alkalinity	**13**	1.0	5.0	"	"	2210124	11/23/22	11/23/22	SM2320B	
Total Dissolved Solids	**25**	5.0	10	"	"	2210154	11/28/22	11/30/22	SM2540C	
Total Hardness as CaCO3	**11**	0.19	1.0	"	"	2210104	11/23/22	11/23/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.15**	0.040	0.20	"	"	2210177	11/28/22	11/28/22	SM4500-NH3F-2011	J
Total Organic Carbon	**2.1**	0.54	1.0	"	"	2210198	11/29/22	11/29/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2210194	11/29/22	11/29/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2210110	11/23/22	11/23/22	SM2540D	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1317
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-12-SC (22K1317-01) Water Sampled: 11/21/22 11:30 Received: 11/21/22 16:05										
Diesel	ND	0.0021	0.050	mg/L	1	2210042	11/22/22	11/22/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*64 %*	*65-135*		"	"	"	"	*QS-4*
IS-11-SFSC (22K1317-02) Water Sampled: 11/21/22 10:30 Received: 11/21/22 16:05										
Diesel	ND	0.0021	0.050	mg/L	1	2210042	11/22/22	11/22/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*77 %*	*65-135*		"	"	"	"	
R-IS-16-CB (22K1317-03) Water Sampled: 11/21/22 14:00 Received: 11/21/22 16:05										
Diesel	ND	0.0021	0.050	mg/L	1	2210042	11/22/22	11/22/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*68 %*	*65-135*		"	"	"	"	
R-IS-17-CB (22K1317-04) Water Sampled: 11/21/22 14:30 Received: 11/21/22 16:05										
Diesel	ND	0.0021	0.050	mg/L	1	2210042	11/22/22	11/22/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K1317**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-17-CB (22K1317-04) Water Sampled: 11/21/22 14:30 Received: 11/21/22 16:05										
Surrogate: o-Terphenyl			*91 %*		*65-135*	*2210042*	"	*11/22/22*	*EPA 8015M*	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1317
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-12-SC (22K1317-01) Water Sampled: 11/21/22 11:30 Received: 11/21/22 16:05										
Aluminum	**53**	1.6	20	µg/L	1	2210117	11/23/22	11/30/22	EPA 200.8	
Barium	**8.4**	0.14	5.0	"	"	"	"	11/24/22	"	
Calcium	**1500**	27	1000	"	"	2210104	11/23/22	11/23/22	EPA 200.7	
Iron	**880**	9.1	100	"	"	"	"	"	"	
Magnesium	**350**	21	1000	"	"	"	"	"	"	J
Manganese	**37**	0.050	2.0	"	"	2210117	11/23/22	11/24/22	EPA 200.8	
Potassium	**850**	61	1000	"	"	2210104	11/23/22	11/23/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2210117	11/23/22	11/24/22	EPA 200.8	
Sodium	**1300**	34	1000	"	"	2210104	11/23/22	11/23/22	EPA 200.7	
IS-11-SFSC (22K1317-02) Water Sampled: 11/21/22 10:30 Received: 11/21/22 16:05										
Aluminum	**12**	1.6	20	µg/L	1	2210117	11/23/22	11/30/22	EPA 200.8	J
Barium	**9.6**	0.14	5.0	"	"	"	"	11/24/22	"	
Calcium	**2000**	27	1000	"	"	2210104	11/23/22	11/23/22	EPA 200.7	
Iron	**160**	9.1	100	"	"	"	"	"	"	
Magnesium	**430**	21	1000	"	"	"	"	"	"	J
Manganese	**3.3**	0.050	2.0	"	"	2210117	11/23/22	11/24/22	EPA 200.8	
Potassium	**980**	61	1000	"	"	2210104	11/23/22	11/23/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2210117	11/23/22	11/24/22	EPA 200.8	
Sodium	**1400**	34	1000	"	"	2210104	11/23/22	11/23/22	EPA 200.7	
R-IS-16-CB (22K1317-03) Water Sampled: 11/21/22 14:00 Received: 11/21/22 16:05										
Aluminum	**40**	1.6	20	µg/L	1	2210117	11/23/22	11/30/22	EPA 200.8	
Barium	**11**	0.14	5.0	"	"	"	"	11/24/22	"	
Calcium	**3000**	27	1000	"	"	2210104	11/23/22	11/23/22	EPA 200.7	
Iron	**60**	9.1	100	"	"	"	"	"	"	J
Magnesium	**660**	21	1000	"	"	"	"	"	"	J
Manganese	**12**	0.050	2.0	"	"	2210117	11/23/22	11/24/22	EPA 200.8	
Potassium	**940**	61	1000	"	"	2210104	11/23/22	11/23/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2210117	11/23/22	11/24/22	EPA 200.8	
Sodium	**2200**	34	1000	"	"	2210104	11/23/22	11/23/22	EPA 200.7	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K1317**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-17-CB (22K1317-04) Water	**Sampled: 11/21/22 14:30**		**Received: 11/21/22 16:05**							
Aluminum	**27**	1.6	20	µg/L	1	2210117	11/23/22	11/30/22	EPA 200.8	
Barium	**11**	0.14	5.0	"	"	"	"	11/24/22	"	
Calcium	**3100**	27	1000	"	"	2210104	11/23/22	11/23/22	EPA 200.7	
Iron	**47**	9.1	100	"	"	"	"	"	"	J
Magnesium	**710**	21	1000	"	"	"	"	"	"	J
Manganese	**9.1**	0.050	2.0	"	"	2210117	11/23/22	11/24/22	EPA 200.8	
Potassium	**850**	61	1000	"	"	2210104	11/23/22	11/23/22	EPA 200.7	J
Silver	ND	0.070	0.50	"	"	2210117	11/23/22	11/24/22	EPA 200.8	
Sodium	**2200**	34	1000	"	"	2210104	11/23/22	11/23/22	EPA 200.7	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1317
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-12-SC (22K1317-01) Water Sampled: 11/21/22 11:30 Received: 11/21/22 16:05										
Aluminum	**7.2**	0.52	20	µg/L	1	2210252	11/30/22	11/30/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2210243	11/30/22	11/30/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2210252	11/30/22	11/30/22	EPA 200.8	
IS-11-SFSC (22K1317-02) Water Sampled: 11/21/22 10:30 Received: 11/21/22 16:05										
Aluminum	**5.3**	0.52	20	µg/L	1	2210252	11/30/22	11/30/22	EPA 200.8	J
Iron	**37**	6.8	100	"	"	2210243	11/30/22	11/30/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2210252	11/30/22	11/30/22	EPA 200.8	
R-IS-16-CB (22K1317-03) Water Sampled: 11/21/22 14:00 Received: 11/21/22 16:05										
Aluminum	**6.6**	0.52	20	µg/L	1	2210252	11/30/22	11/30/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2210243	11/30/22	11/30/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2210252	11/30/22	11/30/22	EPA 200.8	
R-IS-17-CB (22K1317-04) Water Sampled: 11/21/22 14:30 Received: 11/21/22 16:05										
Aluminum	**6.5**	0.52	20	µg/L	1	2210252	11/30/22	11/30/22	EPA 200.8	J
Iron	**9.5**	6.8	100	"	"	2210243	11/30/22	11/30/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2210252	11/30/22	11/30/22	EPA 200.8	

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Stillwater Sciences
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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1317
COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-12-SC (22K1317-01) Water Sampled: 11/21/22 11:30 Received: 11/21/22 16:05										
Gasoline	ND	10	50	µg/L	1	2210265	11/30/22	11/30/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*75 %*	*65-135*		"	"	"	"	
IS-11-SFSC (22K1317-02) Water Sampled: 11/21/22 10:30 Received: 11/21/22 16:05										
Gasoline	ND	10	50	µg/L	1	2210265	11/30/22	11/30/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*71 %*	*65-135*		"	"	"	"	
R-IS-16-CB (22K1317-03) Water Sampled: 11/21/22 14:00 Received: 11/21/22 16:05										
Gasoline	ND	10	50	µg/L	1	2210265	11/30/22	11/30/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*79 %*	*65-135*		"	"	"	"	
R-IS-17-CB (22K1317-04) Water Sampled: 11/21/22 14:30 Received: 11/21/22 16:05										
Gasoline	ND	10	50	µg/L	1	2210265	11/30/22	11/30/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*75 %*	*65-135*		"	"	"	"	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K1317**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IS-12-SC (22K1317-01) Water Sampled: 11/21/22 11:30 Received: 11/21/22 16:05										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2210203	11/23/22	11/23/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"
IS-11-SFSC (22K1317-02) Water Sampled: 11/21/22 10:30 Received: 11/21/22 16:05										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2210203	11/23/22	11/23/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"
R-IS-16-CB (22K1317-03) Water Sampled: 11/21/22 14:00 Received: 11/21/22 16:05										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2210203	11/23/22	11/23/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"
R-IS-17-CB (22K1317-04) Water Sampled: 11/21/22 14:30 Received: 11/21/22 16:05										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2210203	11/23/22	11/23/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"

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Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1317
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210048 - General Prep											
Blank (2210048-BLK1)					Prepared & Analyzed: 11/22/22						
Sulfate as SO4	ND	0.038	0.50	mg/L							
Chloride	ND	0.026	0.50	"							
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2210048-BS1)					Prepared & Analyzed: 11/22/22						
Sulfate as SO4	4.58	0.038	0.50	mg/L	5.00		92	80-120			
Chloride	4.72	0.026	0.50	"	5.00		94	80-120			
Nitrate/Nitrite as N	4.11	0.055	0.40	"	4.00		103	80-120			
LCS Dup (2210048-BSD1)					Prepared & Analyzed: 11/22/22						
Sulfate as SO4	4.72	0.038	0.50	mg/L	5.00		94	80-120	3	20	
Chloride	4.83	0.026	0.50	"	5.00		97	80-120	2	20	
Nitrate/Nitrite as N	4.21	0.055	0.40	"	4.00		105	80-120	2	20	
Matrix Spike (2210048-MS1)			**Source: 22K1306-01**		Prepared & Analyzed: 11/22/22						
Sulfate as SO4	184	0.038	0.50	mg/L	5.00	289	NR	80-120			QM-7
Chloride	50.7	0.026	0.50	"	5.00	50.0	14	80-120			QM-7
Nitrate/Nitrite as N	4.09	0.055	0.40	"	4.00	0.100	100	80-120			
Matrix Spike Dup (2210048-MSD1)			**Source: 22K1306-01**		Prepared & Analyzed: 11/22/22						
Chloride	50.8	0.026	0.50	mg/L	5.00	50.0	16	80-120	0.2	20	QM-7
Sulfate as SO4	184	0.038	0.50	"	5.00	289	NR	80-120	0.02	20	QM-7
Nitrate/Nitrite as N	4.48	0.055	0.40	"	4.00	0.100	110	80-120	9	20	
Batch 2210060 - Solvent Extract											
Blank (2210060-BLK1)					Prepared: 11/22/22 Analyzed: 11/23/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	0.66	1.0	mg/L							

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22K1317
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210060 - Solvent Extract											
LCS (2210060-BS1)					Prepared: 11/22/22 Analyzed: 11/23/22						
Hexane Extractable Material (HEM, Oil & Grease)	39.1	0.66	1.0	mg/L	40.0		98	78-114			
LCS Dup (2210060-BSD1)					Prepared: 11/22/22 Analyzed: 11/23/22						
Hexane Extractable Material (HEM, Oil & Grease)	38.8	0.66	1.0	mg/L	40.0		97	78-114	0.8	18	
Batch 2210083 - General Preparation											
Blank (2210083-BLK1)					Prepared & Analyzed: 11/22/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							
LCS (2210083-BS1)					Prepared & Analyzed: 11/22/22						
Orthophosphate as PO4	0.904	0.0051	0.15	mg/L	0.918		98	80-120			
LCS Dup (2210083-BSD1)					Prepared & Analyzed: 11/22/22						
Orthophosphate as PO4	0.862	0.0051	0.15	mg/L	0.918		94	80-120	5	20	
Matrix Spike (2210083-MS1)			**Source: 22K1317-04**		Prepared & Analyzed: 11/22/22						
Orthophosphate as PO4	0.867	0.0051	0.15	mg/L	0.918	ND	94	75-125			
Matrix Spike Dup (2210083-MSD1)			**Source: 22K1317-04**		Prepared & Analyzed: 11/22/22						
Orthophosphate as PO4	0.904	0.0051	0.15	mg/L	0.918	ND	98	75-125	4	25	
Batch 2210104 - EPA 200 Series											
Blank (2210104-BLK1)					Prepared & Analyzed: 11/23/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1317
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210104 - EPA 200 Series											
LCS (2210104-BS1)					Prepared & Analyzed: 11/23/22						
Total Hardness as CaCO3	33.5	0.19	1.0	mg/L	33.1		101	85-115			
Matrix Spike (2210104-MS1)			**Source: 22K1165-01**		Prepared & Analyzed: 11/23/22						
Total Hardness as CaCO3	187	0.19	1.0	mg/L	33.1	158	88	70-130			
Matrix Spike (2210104-MS2)			**Source: 22K1395-01**		Prepared & Analyzed: 11/23/22						
Total Hardness as CaCO3	107	0.19	1.0	mg/L	33.1	74.0	99	70-130			
Batch 2210110 - General Preparation											
Blank (2210110-BLK1)					Prepared & Analyzed: 11/23/22						
Total Suspended Solids	ND	2.0	5.0	mg/L							
Duplicate (2210110-DUP1)			**Source: 22K1273-01**		Prepared & Analyzed: 11/23/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	
Batch 2210121 - General Preparation											
Blank (2210121-BLK1)					Prepared & Analyzed: 11/23/22						
Ammonia as N	ND	0.025	0.10	mg/L							
LCS (2210121-BS1)					Prepared & Analyzed: 11/23/22						
Ammonia as N	0.543	0.025	0.10	mg/L	0.500		109	80-120			
LCS Dup (2210121-BSD1)					Prepared & Analyzed: 11/23/22						
Ammonia as N	0.525	0.025	0.10	mg/L	0.500		105	80-120	3	25	

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22K1317
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210121 - General Preparation											
Matrix Spike (2210121-MS1)			**Source: 22K1317-01**		Prepared & Analyzed: 11/23/22						
Ammonia as N	0.618	0.025	0.10	mg/L	0.500	0.0660	110	75-125			
Matrix Spike Dup (2210121-MSD1)			**Source: 22K1317-01**		Prepared & Analyzed: 11/23/22						
Ammonia as N	0.620	0.025	0.10	mg/L	0.500	0.0660	111	75-125	0.3	25	
Batch 2210124 - General Preparation											
Blank (2210124-BLK1)					Prepared & Analyzed: 11/23/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Duplicate (2210124-DUP1)			**Source: 22K1274-01**		Prepared & Analyzed: 11/23/22						
Total Alkalinity	210	1.0	5.0	mg/L		209			0.3	20	
Bicarbonate as CaCO3	210	0.50	5.0	"		209			0.3	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Batch 2210154 - General Preparation											
Blank (2210154-BLK1)					Prepared: 11/28/22 Analyzed: 11/30/22						
Total Dissolved Solids	ND	5.0	10	mg/L							
Duplicate (2210154-DUP1)			**Source: 22K1317-01**		Prepared: 11/28/22 Analyzed: 11/30/22						
Total Dissolved Solids	15.0	5.0	10	mg/L		16.0			6	20	

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1317
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210177 - General Preparation											
Blank (2210177-BLK1)					Prepared & Analyzed: 11/28/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2210177-BS1)					Prepared & Analyzed: 11/28/22						
Total Kjeldahl Nitrogen	0.532	0.040	0.20	mg/L	0.500		106	80-120			
LCS Dup (2210177-BSD1)					Prepared & Analyzed: 11/28/22						
Total Kjeldahl Nitrogen	0.563	0.040	0.20	mg/L	0.500		113	80-120	6	20	
Matrix Spike (2210177-MS1)			**Source: 22K1317-04**		Prepared & Analyzed: 11/28/22						
Total Kjeldahl Nitrogen	0.785	0.040	0.20	mg/L	0.500	0.151	127	75-125			QM-7
Matrix Spike Dup (2210177-MSD1)			**Source: 22K1317-04**		Prepared & Analyzed: 11/28/22						
Total Kjeldahl Nitrogen	0.775	0.040	0.20	mg/L	0.500	0.151	125	75-125	1	25	
Batch 2210194 - General Preparation											
Blank (2210194-BLK1)					Prepared & Analyzed: 11/29/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2210194-BS1)					Prepared & Analyzed: 11/29/22						
Total Phosphorus as P	0.305	0.023	0.050	mg/L	0.300		102	80-120			
LCS Dup (2210194-BSD1)					Prepared & Analyzed: 11/29/22						
Total Phosphorus as P	0.308	0.023	0.050	mg/L	0.300		103	80-120	0.9	25	
Matrix Spike (2210194-MS1)			**Source: 22K1173-01**		Prepared & Analyzed: 11/29/22						
Total Phosphorus as P	0.296	0.023	0.050	mg/L	0.300	ND	99	75-125			

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CLS Work Order #: 22K1317
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210194 - General Preparation											
Matrix Spike Dup (2210194-MSD1)			**Source: 22K1173-01**		Prepared & Analyzed: 11/29/22						
Total Phosphorus as P	0.290	0.023	0.050	mg/L	0.300	ND	97	75-125	2	30	
Batch 2210198 - General Preparation											
Blank (2210198-BLK1)					Prepared & Analyzed: 11/29/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							
LCS (2210198-BS1)					Prepared & Analyzed: 11/29/22						
Total Organic Carbon	10.5	0.54	1.0	mg/L	10.0		105	75-125			
LCS Dup (2210198-BSD1)					Prepared & Analyzed: 11/29/22						
Total Organic Carbon	10.4	0.54	1.0	mg/L	10.0		104	75-125	0.5	25	
Matrix Spike (2210198-MS1)			**Source: 22K1173-01**		Prepared & Analyzed: 11/29/22						
Total Organic Carbon	15.9	0.54	1.0	mg/L	10.0	2.65	133	75-125			QM-7
Matrix Spike Dup (2210198-MSD1)			**Source: 22K1173-01**		Prepared & Analyzed: 11/29/22						
Total Organic Carbon	16.4	0.54	1.0	mg/L	10.0	2.65	137	75-125	3	25	QM-7
Batch 2210245 - General Preparation											
Blank (2210245-BLK1)					Prepared: 11/29/22 Analyzed: 12/05/22						
Cyanide (total)	0.00310	0.0012	0.0050	mg/L							J
LCS (2210245-BS1)					Prepared: 11/29/22 Analyzed: 12/05/22						
Cyanide (total)	0.0792	0.0012	0.0050	mg/L	0.100		79	75-125			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K1317**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210245 - General Preparation											
LCS Dup (2210245-BSD1)					Prepared: 11/29/22 Analyzed: 12/05/22						
Cyanide (total)	0.0807	0.0012	0.0050	mg/L	0.100		81	75-125	2	25	
Matrix Spike (2210245-MS1)			**Source: 22K1173-02**		Prepared: 11/29/22 Analyzed: 12/05/22						
Cyanide (total)	0.0393	0.0012	0.0050	mg/L	0.100	0.00270	37	75-125			QM-7
Matrix Spike Dup (2210245-MSD1)			**Source: 22K1173-02**		Prepared: 11/29/22 Analyzed: 12/05/22						
Cyanide (total)	0.0386	0.0012	0.0050	mg/L	0.100	0.00270	36	75-125	2	25	QM-7

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Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1317
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210042 - EPA 3510B GCNV											
Blank (2210042-BLK1)					Prepared: 11/21/22 Analyzed: 11/22/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Surrogate: o-Terphenyl	*0.0228*			*"*	*0.0250*		*91*	*65-135*			
LCS (2210042-BS1)					Prepared: 11/21/22 Analyzed: 11/22/22						
Diesel	2.24	0.0021	0.050	mg/L	2.50		90	65-135			
Surrogate: o-Terphenyl	*0.0269*			*"*	*0.0250*		*108*	*65-135*			
LCS Dup (2210042-BSD1)					Prepared: 11/21/22 Analyzed: 11/22/22						
Diesel	1.70	0.0021	0.050	mg/L	2.50		68	65-135	27	30	
Surrogate: o-Terphenyl	*0.0192*			*"*	*0.0250*		*77*	*65-135*			

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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1317
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210104 - EPA 200 Series											
Blank (2210104-BLK1)					Prepared & Analyzed: 11/23/22						
Calcium	ND	27	1000	µg/L							
Copper	ND	3.4	10	"							
Iron	ND	9.1	100	"							
Magnesium	ND	21	1000	"							
Nickel	ND	3.1	20	"							
Potassium	641	61	1000	"							J
Silver	ND	3.3	10	"							
Sodium	353	34	1000	"							J
Zinc	ND	1.7	20	"							
LCS (2210104-BS1)					Prepared & Analyzed: 11/23/22						
Calcium	5000	27	1000	µg/L	5000		100	85-115			
Copper	488	3.4	10	"	500		98	85-115			
Iron	480	9.1	100	"	500		96	85-115			
Magnesium	5100	21	1000	"	5000		102	85-115			
Nickel	500	3.1	20	"	500		100	85-115			
Potassium	5610	61	1000	"	5000		112	85-115			
Silver	506	3.3	10	"	500		101	85-115			
Sodium	5020	34	1000	"	5000		100	85-115			
Zinc	485	1.7	20	"	500		97	85-115			
Matrix Spike (2210104-MS1)				**Source: 22K1165-01**	Prepared & Analyzed: 11/23/22						
Calcium	41300	27	1000	µg/L	5000	37200	82	70-130			
Copper	518	3.4	10	"	500	39.6	96	70-130			
Iron	867	9.1	100	"	500	416	90	70-130			
Magnesium	20400	21	1000	"	5000	15800	91	70-130			
Nickel	495	3.1	20	"	500	4.97	98	70-130			
Potassium	7220	61	1000	"	5000	2140	102	70-130			
Silver	492	3.3	10	"	500	ND	98	70-130			
Sodium	16100	34	1000	"	5000	11600	90	70-130			
Zinc	484	1.7	20	"	500	ND	97	70-130			

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Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1317
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210104 - EPA 200 Series											
Matrix Spike (2210104-MS2)			**Source: 22K1395-01**		Prepared & Analyzed: 11/23/22						
Calcium	20400	27	1000	µg/L	5000	15300	102	70-130			
Copper	504	3.4	10	"	500	5.01	100	70-130			
Iron	549	9.1	100	"	500	46.6	100	70-130			
Magnesium	13600	21	1000	"	5000	8710	97	70-130			
Nickel	508	3.1	20	"	500	ND	102	70-130			
Potassium	7500	61	1000	"	5000	2320	104	70-130			
Silver	524	3.3	10	"	500	ND	105	70-130			
Sodium	99500	34	1000	"	5000	96400	62	70-130			QM-4X
Zinc	523	1.7	20	"	500	18.6	101	70-130			
Batch 2210117 - EPA 200 Series											
Blank (2210117-BLK1)					Prepared: 11/23/22 Analyzed: 11/30/22						
Aluminum	ND	1.6	20	µg/L							
Barium	ND	0.14	5.0	"							
Manganese	0.0530	0.050	2.0	"							J
Silver	ND	0.070	0.50	"							
LCS (2210117-BS1)					Prepared: 11/23/22 Analyzed: 11/30/22						
Aluminum	507	1.6	20	µg/L	500		101	85-115			
Barium	102	0.14	5.0	"	100		102	85-115			
Manganese	104	0.050	2.0	"	100		104	85-115			
Silver	100	0.070	0.50	"	100		100	85-115			
Matrix Spike (2210117-MS1)			**Source: 22K1294-01**		Prepared: 11/23/22 Analyzed: 11/30/22						
Aluminum	515	1.6	20	µg/L	500	4.76	102	70-130			
Barium	121	0.14	5.0	"	100	16.6	104	70-130			
Manganese	103	0.050	2.0	"	100	6.81	96	70-130			
Silver	101	0.070	0.50	"	100	ND	101	70-130			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K1317**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210117 - EPA 200 Series											
Matrix Spike (2210117-MS2)			**Source: 22K1317-01**		Prepared: 11/23/22 Analyzed: 11/30/22						
Aluminum	565	1.6	20	µg/L	500	52.7	102	70-130			
Barium	111	0.14	5.0	"	100	8.42	103	70-130			
Manganese	140	0.050	2.0	"	100	36.5	103	70-130			
Silver	99.7	0.070	0.50	"	100	ND	100	70-130			

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Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1317
COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210243 - EPA 200 No Digestion											
Blank (2210243-BLK1)					Prepared & Analyzed: 11/30/22						
Iron	ND	6.8	100	µg/L							
LCS (2210243-BS1)					Prepared & Analyzed: 11/30/22						
Iron	500	6.8	100	µg/L	500		100	85-115			
Matrix Spike (2210243-MS1)			**Source: 22K1173-01**		Prepared & Analyzed: 11/30/22						
Iron	555	6.8	100	µg/L	500	16.3	108	70-130			
Matrix Spike (2210243-MS2)			**Source: 22K1317-01**		Prepared & Analyzed: 11/30/22						
Iron	527	6.8	100	µg/L	500	ND	105	70-130			
Batch 2210252 - EPA 200 No Digestion											
Blank (2210252-BLK1)					Prepared & Analyzed: 11/30/22						
Aluminum	ND	0.52	20	µg/L							
Silver	ND	0.15	0.50	"							
LCS (2210252-BS1)					Prepared & Analyzed: 11/30/22						
Aluminum	493	0.52	20	µg/L	500		99	85-115			
Silver	98.3	0.15	0.50	"	100		98	85-115			
Matrix Spike (2210252-MS1)			**Source: 22K1173-01**		Prepared & Analyzed: 11/30/22						
Aluminum	507	0.52	20	µg/L	500	1.30	101	70-130			
Silver	98.8	0.15	0.50	"	100	ND	99	70-130			

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1317
COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210265 - EPA 5030 Water GC											
Blank (2210265-BLK1)					Prepared & Analyzed: 11/30/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*15.7*			"	*20.0*		*78*	*65-135*			
LCS (2210265-BS1)					Prepared & Analyzed: 11/30/22						
Gasoline	569	10	50	µg/L	500		114	70-130			
Surrogate: o-Chlorotoluene (Gas)	*15.9*			"	*20.0*		*80*	*65-135*			
LCS Dup (2210265-BSD1)					Prepared & Analyzed: 11/30/22						
Gasoline	542	10	50	µg/L	500		108	70-130	5	30	
Surrogate: o-Chlorotoluene (Gas)	*15.1*			"	*20.0*		*76*	*65-135*			
Matrix Spike (2210265-MS1)			**Source: 22K1386-02**		Prepared & Analyzed: 11/30/22						
Gasoline	474	10	50	µg/L	500	ND	95	68-132			
Surrogate: o-Chlorotoluene (Gas)	*13.9*			"	*20.0*		*70*	*65-135*			
Matrix Spike Dup (2210265-MSD1)			**Source: 22K1386-02**		Prepared & Analyzed: 11/30/22						
Gasoline	466	10	50	µg/L	500	ND	93	68-132	2	32	
Surrogate: o-Chlorotoluene (Gas)	*15.6*			"	*20.0*		*78*	*65-135*			

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Project: SMUD In situ & Chemistry Monitoring
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Project Manager: Emily Applequist

CLS Work Order #: 22K1317
COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210203 - EPA 3510B GCMS											
Blank (2210203-BLK1)					Prepared & Analyzed: 11/23/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Benzene	ND	0.11	0.50	"							
Toluene	ND	0.11	0.50	"							
Ethylbenzene	ND	0.10	0.50	"							
Xylenes (total)	ND	0.33	1.0	"							
Surrogate: Toluene-d8	*9.83*			"	*10.0*		*98*	*72-125*			
LCS (2210203-BS1)					Prepared & Analyzed: 11/23/22						
Methyl tert-butyl ether	21.9	0.095	0.50	µg/L	20.0		110	52-130			
Benzene	19.4	0.11	0.50	"	20.0		97	52-130			
Surrogate: Toluene-d8	*9.83*			"	*10.0*		*98*	*72-125*			
LCS Dup (2210203-BSD1)					Prepared & Analyzed: 11/23/22						
Methyl tert-butyl ether	21.2	0.095	0.50	µg/L	20.0		106	52-130	3	30	
Benzene	19.0	0.11	0.50	"	20.0		95	52-130	2	30	
Surrogate: Toluene-d8	*9.84*			"	*10.0*		*98*	*72-125*			
Matrix Spike (2210203-MS1)			**Source: 22K1317-01**		Prepared & Analyzed: 11/23/22						
Methyl tert-butyl ether	20.2	0.095	0.50	µg/L	20.0	ND	101	52-140			
Benzene	21.0	0.11	0.50	"	20.0	ND	105	52-140			
Surrogate: Toluene-d8	*10.2*			"	*10.0*		*102*	*72-125*			
Matrix Spike Dup (2210203-MSD1)			**Source: 22K1317-01**		Prepared & Analyzed: 11/23/22						
Methyl tert-butyl ether	20.2	0.095	0.50	µg/L	20.0	ND	101	52-140	0	30	
Benzene	21.1	0.11	0.50	"	20.0	ND	106	52-140	0.5	30	
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K1317**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QS-4	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22-1317 (__1__ of __1__)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in CB reaches

Site Location Chili Bar Sites

Client Job Number
750.11 Task 0620.01

Destination Laboratory
Rancho Cordova

[x] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [x] NO [ ]

GLOBAL ID

FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	ANALYSIS REQUESTED: Cl, SO4	TSS, TDS, Hardness, Alkalinity, NO2-N+NO3-N, Diss Metals,	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS: 1	2	3	5	SPECIAL INSTRUCTIONS
11/21/22	11:30	IS-12-SC		Surface water			6	x	x	x	x	x	x	x				x	
11/21/22	10:30	IS-11-SFSC		Surface water			6	x	x	x	x	x	x	x				x	
11/21/22	14:00	R-IS-16-CB		Surface water			6	x	x	x	x	x	x	x				x	
11/21/22	14:30	R-IS-17-CB		Surface water			6	x	x	x	x	x	x	x				x	
				Surface water			6											x	
				Surface water			6											x	
				Surface water			6											x	INVOICE TO:
				Surface water			6											x	Stillwater Sciences
				Surface water			6											x	Same as above
				Surface water			6											x	
				Surface water			6											x	**Project No. 750.11 Task 0620.01**
				Surface water			6											x	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4) = H_2SO_4 (5) NH_3/NH_4 (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Jakob Woodall / Stillwater Science	11/21/22 16:05		

RECEIVED AT LAB BY: DATE/TIME: 11/21/22 1605 CONDITIONS/COMMENTS: 3.4/2.7

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER AIR BILL #

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

December 08, 2022

CLS Work Order #: 22K1386
COC #:

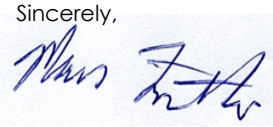
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 11/22/22 15:00. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1386
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-14-SC (22K1386-01) Water	**Sampled: 11/22/22 10:45**		**Received: 11/22/22 15:00**							
Ammonia as N	**0.034**	0.025	0.10	mg/L	1	2210121	11/23/22	11/23/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**13**	0.50	5.0	"	"	2210124	11/23/22	11/23/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**2.6**	0.026	0.50	"	"	2210095	11/23/22	11/23/22	EPA 300.0	
Cyanide (total)	**0.0034**	0.0012	0.0050	"	"	2210358	12/05/22	12/06/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2210165	11/28/22	11/30/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2210124	11/23/22	11/23/22	SM2320B	
Nitrate/Nitrite as N	**0.068**	0.055	0.40	"	"	2210095	11/23/22	11/23/22	EPA 300.0	J
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2210120	11/23/22	11/23/22	SM4500-P E	
Sulfate as SO4	**0.63**	0.038	0.50	"	"	2210095	11/23/22	11/23/22	EPA 300.0	
Total Alkalinity	**13**	1.0	5.0	"	"	2210124	11/23/22	11/23/22	SM2320B	
Total Dissolved Solids	**29**	5.0	10	"	"	2210154	11/28/22	11/30/22	SM2540C	
Total Hardness as CaCO3	**11**	0.19	1.0	"	"	2210104	11/23/22	11/23/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.31**	0.040	0.20	"	"	2210177	11/28/22	11/28/22	SM4500-NH3F-2011	
Total Organic Carbon	**1.9**	0.54	1.0	"	"	2210394	12/06/22	12/07/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2210194	11/29/22	11/29/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2210168	11/28/22	11/30/22	SM2540D	
R-IS-15-SC (22K1386-02) Water	**Sampled: 11/22/22 11:45**		**Received: 11/22/22 15:00**							
Ammonia as N	**0.045**	0.025	0.10	mg/L	1	2210121	11/23/22	11/23/22	SM4500-NH3F-2011	J
Bicarbonate as CaCO3	**13**	0.50	5.0	"	"	2210124	11/23/22	11/23/22	SM2320B	
Carbonate as CaCO3	ND	0.50	5.0	"	"	"	"	"	"	
Chloride	**2.0**	0.026	0.50	"	"	2210095	11/23/22	11/23/22	EPA 300.0	
Cyanide (total)	**0.0034**	0.0012	0.0050	"	"	2210358	12/05/22	12/06/22	SM4500-CN E	J
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	"	"	2210165	11/28/22	11/30/22	EPA 1664B	
Hydroxide as CaCO3	ND	0.50	5.0	"	"	2210124	11/23/22	11/23/22	SM2320B	
Nitrate/Nitrite as N	ND	0.055	0.40	"	"	2210095	11/23/22	11/23/22	EPA 300.0	
Orthophosphate as PO4	ND	0.0051	0.15	"	"	2210120	11/23/22	11/23/22	SM4500-P E	

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Stillwater Sciences
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Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1386
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-15-SC (22K1386-02) Water	**Sampled: 11/22/22 11:45**		**Received: 11/22/22 15:00**							
Sulfate as SO4	**0.59**	0.038	0.50	mg/L	1	2210095	11/23/22	11/23/22	EPA 300.0	
Total Alkalinity	**13**	1.0	5.0	"	"	2210124	11/23/22	11/23/22	SM2320B	
Total Dissolved Solids	**28**	5.0	10	"	"	2210154	11/28/22	11/30/22	SM2540C	
Total Hardness as CaCO3	**9.8**	0.19	1.0	"	"	2210104	11/23/22	11/23/22	EPA 200.7	
Total Kjeldahl Nitrogen	**0.30**	0.040	0.20	"	"	2210177	11/28/22	11/28/22	SM4500-NH3F-2011	
Total Organic Carbon	**1.9**	0.54	1.0	"	"	2210394	12/06/22	12/07/22	SM5310B	
Total Phosphorus as P	ND	0.023	0.050	"	"	2210194	11/29/22	11/29/22	SM4500-P E	
Total Suspended Solids	ND	2.0	5.0	"	"	2210168	11/28/22	11/30/22	SM2540D	

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Project: SMUD In situ & Chemistry Monitoring
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CLS Work Order #: 22K1386
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-14-SC (22K1386-01) Water Sampled: 11/22/22 10:45 Received: 11/22/22 15:00										
Diesel	ND	0.0021	0.050	mg/L	1	2210180	11/28/22	11/28/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*69 %*	*65-135*		"	"	"	"	
R-IS-15-SC (22K1386-02) Water Sampled: 11/22/22 11:45 Received: 11/22/22 15:00										
Diesel	ND	0.0021	0.050	mg/L	1	2210180	11/28/22	11/28/22	EPA 8015M	
Hydraulic Oil	ND	0.030	0.050	"	"	"	"	"	"	
Kerosene	ND	0.0036	0.050	"	"	"	"	"	"	
Mineral Oil	ND	0.020	0.050	"	"	"	"	"	"	
Motor Oil	ND	0.0091	0.050	"	"	"	"	"	"	
Surrogate: o-Terphenyl			*86 %*	*65-135*		"	"	"	"	

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CLS Work Order #: 22K1386
COC #:

Metals by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-14-SC (22K1386-01) Water	**Sampled: 11/22/22 10:45**		**Received: 11/22/22 15:00**							
Aluminum	**15**	1.6	20	µg/L	1	2210117	11/23/22	11/30/22	EPA 200.8	J
Barium	**10**	0.14	5.0	"	"	"	"	11/24/22	"	
Calcium	**3200**	27	1000	"	"	2210104	11/23/22	11/23/22	EPA 200.7	
Iron	**46**	9.1	100	"	"	"	"	"	"	J
Magnesium	**680**	21	1000	"	"	"	"	"	"	J
Manganese	**6.6**	0.050	2.0	"	"	2210117	11/23/22	11/24/22	EPA 200.8	
Potassium	**1700**	61	1000	"	"	2210104	11/23/22	11/23/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2210117	11/23/22	11/24/22	EPA 200.8	
Sodium	**3200**	34	1000	"	"	2210104	11/23/22	11/23/22	EPA 200.7	
R-IS-15-SC (22K1386-02) Water	**Sampled: 11/22/22 11:45**		**Received: 11/22/22 15:00**							
Aluminum	**17**	1.6	20	µg/L	1	2210117	11/23/22	11/30/22	EPA 200.8	J
Barium	**10**	0.14	5.0	"	"	"	"	11/24/22	"	
Calcium	**2900**	27	1000	"	"	2210104	11/23/22	11/23/22	EPA 200.7	
Iron	**31**	9.1	100	"	"	"	"	"	"	J
Magnesium	**610**	21	1000	"	"	"	"	"	"	J
Manganese	**7.8**	0.050	2.0	"	"	2210117	11/23/22	11/24/22	EPA 200.8	
Potassium	**1100**	61	1000	"	"	2210104	11/23/22	11/23/22	EPA 200.7	
Silver	ND	0.070	0.50	"	"	2210117	11/23/22	11/24/22	EPA 200.8	
Sodium	**2400**	34	1000	"	"	2210104	11/23/22	11/23/22	EPA 200.7	

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Project Manager: Emily Applequist

CLS Work Order #: 22K1386
COC #:

Metals (Dissolved) by EPA 200 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-14-SC (22K1386-01) Water	**Sampled: 11/22/22 10:45**		**Received: 11/22/22 15:00**							
Aluminum	**10**	0.52	20	µg/L	1	2210252	11/30/22	11/30/22	EPA 200.8	J
Iron	**7.5**	6.8	100	"	"	2210243	11/30/22	11/30/22	EPA 200.7	J
Silver	ND	0.15	0.50	"	"	2210252	11/30/22	11/30/22	EPA 200.8	
R-IS-15-SC (22K1386-02) Water	**Sampled: 11/22/22 11:45**		**Received: 11/22/22 15:00**							
Aluminum	**5.9**	0.52	20	µg/L	1	2210252	11/30/22	11/30/22	EPA 200.8	J
Iron	ND	6.8	100	"	"	2210243	11/30/22	11/30/22	EPA 200.7	
Silver	ND	0.15	0.50	"	"	2210252	11/30/22	11/30/22	EPA 200.8	

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Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K1386**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

TPH-Gasoline by GC FID

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-14-SC (22K1386-01) Water	**Sampled: 11/22/22 10:45**		**Received: 11/22/22 15:00**							
Gasoline	ND	10	50	µg/L	1	2210265	11/30/22	11/30/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*79 %*	*65-135*		"	"	"	"	
R-IS-15-SC (22K1386-02) Water	**Sampled: 11/22/22 11:45**		**Received: 11/22/22 15:00**							
Gasoline	ND	10	50	µg/L	1	2210265	11/30/22	11/30/22	EPA 8015M	
Surrogate: o-Chlorotoluene (Gas)			*79 %*	*65-135*		"	"	"	"	

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Project Manager: Emily Applequist

CLS Work Order #: 22K1386
COC #:

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
R-IS-14-SC (22K1386-01) Water Sampled: 11/22/22 10:45 Received: 11/22/22 15:00										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2210203	11/23/22	11/23/22	EPA 8260B	
Surrogate: Toluene-d8			*98 %*		*72-125*		"	"	"	"
R-IS-15-SC (22K1386-02) Water Sampled: 11/22/22 11:45 Received: 11/22/22 15:00										
Methyl tert-butyl ether	ND	0.095	0.50	µg/L	1	2210203	11/23/22	11/23/22	EPA 8260B	
Surrogate: Toluene-d8			*99 %*		*72-125*		"	"	"	"

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CLS Work Order #: 22K1386
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210095 - General Prep											
Blank (2210095-BLK1)					Prepared & Analyzed: 11/23/22						
Chloride	ND	0.026	0.50	mg/L							
Sulfate as SO4	ND	0.038	0.50	"							
Nitrate/Nitrite as N	ND	0.055	0.40	"							
LCS (2210095-BS1)					Prepared & Analyzed: 11/23/22						
Chloride	4.57	0.026	0.50	mg/L	5.00		91	80-120			
Sulfate as SO4	4.60	0.038	0.50	"	5.00		92	80-120			
Nitrate/Nitrite as N	4.00	0.055	0.40	"	4.00		100	80-120			
Matrix Spike (2210095-MS1)			**Source: 22K1380-05**		Prepared & Analyzed: 11/23/22						
Chloride	44.8	0.026	0.50	mg/L	5.00	42.7	40	80-120			QM-7
Sulfate as SO4	44.6	0.038	0.50	"	5.00	41.9	55	80-120			QM-7
Nitrate/Nitrite as N	11.3	0.055	0.40	"	4.00	7.68	91	80-120			
Matrix Spike Dup (2210095-MSD1)			**Source: 22K1380-05**		Prepared & Analyzed: 11/23/22						
Chloride	44.9	0.026	0.50	mg/L	5.00	42.7	43	80-120	0.3	20	QM-7
Sulfate as SO4	44.8	0.038	0.50	"	5.00	41.9	57	80-120	0.3	20	QM-7
Nitrate/Nitrite as N	11.4	0.055	0.40	"	4.00	7.68	94	80-120	0.8	20	
Batch 2210104 - EPA 200 Series											
Blank (2210104-BLK1)					Prepared & Analyzed: 11/23/22						
Total Hardness as CaCO3	ND	0.19	1.0	mg/L							
LCS (2210104-BS1)					Prepared & Analyzed: 11/23/22						
Total Hardness as CaCO3	33.5	0.19	1.0	mg/L	33.1		101	85-115			

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210104 - EPA 200 Series											
Matrix Spike (2210104-MS1)			**Source: 22K1165-01**		Prepared & Analyzed: 11/23/22						
Total Hardness as CaCO3	187	0.19	1.0	mg/L	33.1	158	88	70-130			
Matrix Spike (2210104-MS2)			**Source: 22K1395-01**		Prepared & Analyzed: 11/23/22						
Total Hardness as CaCO3	107	0.19	1.0	mg/L	33.1	74.0	99	70-130			
Batch 2210120 - General Preparation											
Blank (2210120-BLK1)					Prepared & Analyzed: 11/23/22						
Orthophosphate as PO4	ND	0.0051	0.15	mg/L							
LCS (2210120-BS1)					Prepared & Analyzed: 11/23/22						
Orthophosphate as PO4	0.883	0.0051	0.15	mg/L	0.918		96	80-120			
LCS Dup (2210120-BSD1)					Prepared & Analyzed: 11/23/22						
Orthophosphate as PO4	0.887	0.0051	0.15	mg/L	0.918		97	80-120	0.5	20	
Matrix Spike (2210120-MS1)			**Source: 22K1386-01**		Prepared & Analyzed: 11/23/22						
Orthophosphate as PO4	0.891	0.0051	0.15	mg/L	0.918	ND	97	75-125			
Matrix Spike Dup (2210120-MSD1)			**Source: 22K1386-01**		Prepared & Analyzed: 11/23/22						
Orthophosphate as PO4	0.867	0.0051	0.15	mg/L	0.918	ND	94	75-125	3	25	
Batch 2210121 - General Preparation											
Blank (2210121-BLK1)					Prepared & Analyzed: 11/23/22						
Ammonia as N	ND	0.025	0.10	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210121 - General Preparation											
LCS (2210121-BS1)					Prepared & Analyzed: 11/23/22						
Ammonia as N	0.543	0.025	0.10	mg/L	0.500		109	80-120			
LCS Dup (2210121-BSD1)					Prepared & Analyzed: 11/23/22						
Ammonia as N	0.525	0.025	0.10	mg/L	0.500		105	80-120	3	25	
Matrix Spike (2210121-MS1)			**Source: 22K1317-01**		Prepared & Analyzed: 11/23/22						
Ammonia as N	0.618	0.025	0.10	mg/L	0.500	0.0660	110	75-125			
Matrix Spike Dup (2210121-MSD1)			**Source: 22K1317-01**		Prepared & Analyzed: 11/23/22						
Ammonia as N	0.620	0.025	0.10	mg/L	0.500	0.0660	111	75-125	0.3	25	
Batch 2210124 - General Preparation											
Blank (2210124-BLK1)					Prepared & Analyzed: 11/23/22						
Total Alkalinity	ND	1.0	5.0	mg/L							
Bicarbonate as CaCO3	ND	0.50	5.0	"							
Carbonate as CaCO3	ND	0.50	5.0	"							
Hydroxide as CaCO3	ND	0.50	5.0	"							
Duplicate (2210124-DUP1)			**Source: 22K1274-01**		Prepared & Analyzed: 11/23/22						
Total Alkalinity	210	1.0	5.0	mg/L		209			0.3	20	
Bicarbonate as CaCO3	210	0.50	5.0	"		209			0.3	20	
Carbonate as CaCO3	ND	0.50	5.0	"		ND				20	
Hydroxide as CaCO3	ND	0.50	5.0	"		ND				20	
Batch 2210154 - General Preparation											
Blank (2210154-BLK1)					Prepared: 11/28/22 Analyzed: 11/30/22						
Total Dissolved Solids	ND	5.0	10	mg/L							

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210154 - General Preparation											
Duplicate (2210154-DUP1)				**Source: 22K1317-01**	Prepared: 11/28/22 Analyzed: 11/30/22						
Total Dissolved Solids	15.0	5.0	10	mg/L		16.0			6	20	
Batch 2210165 - Solvent Extract											
Blank (2210165-BLK1)					Prepared: 11/28/22 Analyzed: 11/30/22						
Hexane Extractable Material (HEM, Oil & Grease)	ND	1.0	5.0	mg/L							
LCS (2210165-BS1)					Prepared: 11/28/22 Analyzed: 11/30/22						
Hexane Extractable Material (HEM, Oil & Grease)	38.8	1.0	5.0	mg/L	40.0		97	78-114			
LCS Dup (2210165-BSD1)					Prepared: 11/28/22 Analyzed: 11/30/22						
Hexane Extractable Material (HEM, Oil & Grease)	37.8	1.0	5.0	mg/L	40.0		95	78-114	3	18	
Batch 2210168 - General Preparation											
Duplicate (2210168-DUP1)				**Source: 22K1355-02**	Prepared: 11/28/22 Analyzed: 11/30/22						
Total Suspended Solids	ND	2.0	5.0	mg/L		ND				20	
Batch 2210177 - General Preparation											
Blank (2210177-BLK1)					Prepared & Analyzed: 11/28/22						
Total Kjeldahl Nitrogen	ND	0.040	0.20	mg/L							
LCS (2210177-BS1)					Prepared & Analyzed: 11/28/22						
Total Kjeldahl Nitrogen	0.532	0.040	0.20	mg/L	0.500		106	80-120			

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210177 - General Preparation											
LCS Dup (2210177-BSD1)					Prepared & Analyzed: 11/28/22						
Total Kjeldahl Nitrogen	0.563	0.040	0.20	mg/L	0.500		113	80-120	6	20	
Matrix Spike (2210177-MS1)			**Source: 22K1317-04**		Prepared & Analyzed: 11/28/22						
Total Kjeldahl Nitrogen	0.785	0.040	0.20	mg/L	0.500	0.151	127	75-125			QM-7
Matrix Spike Dup (2210177-MSD1)			**Source: 22K1317-04**		Prepared & Analyzed: 11/28/22						
Total Kjeldahl Nitrogen	0.775	0.040	0.20	mg/L	0.500	0.151	125	75-125	1	25	
Batch 2210194 - General Preparation											
Blank (2210194-BLK1)					Prepared & Analyzed: 11/29/22						
Total Phosphorus as P	ND	0.023	0.050	mg/L							
LCS (2210194-BS1)					Prepared & Analyzed: 11/29/22						
Total Phosphorus as P	0.305	0.023	0.050	mg/L	0.300		102	80-120			
LCS Dup (2210194-BSD1)					Prepared & Analyzed: 11/29/22						
Total Phosphorus as P	0.308	0.023	0.050	mg/L	0.300		103	80-120	0.9	25	
Matrix Spike (2210194-MS1)			**Source: 22K1173-01**		Prepared & Analyzed: 11/29/22						
Total Phosphorus as P	0.296	0.023	0.050	mg/L	0.300	ND	99	75-125			
Matrix Spike Dup (2210194-MSD1)			**Source: 22K1173-01**		Prepared & Analyzed: 11/29/22						
Total Phosphorus as P	0.290	0.023	0.050	mg/L	0.300	ND	97	75-125	2	30	
Batch 2210358 - General Preparation											
Blank (2210358-BLK1)					Prepared: 12/05/22 Analyzed: 12/06/22						
Cyanide (total)	0.00310	0.0012	0.0050	mg/L							J

12/08/22 14:46

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1386
COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210358 - General Preparation											
LCS (2210358-BS1)					Prepared: 12/05/22 Analyzed: 12/06/22						
Cyanide (total)	0.0755	0.0012	0.0050	mg/L	0.100		76	75-125			
LCS Dup (2210358-BSD1)					Prepared: 12/05/22 Analyzed: 12/06/22						
Cyanide (total)	0.0763	0.0012	0.0050	mg/L	0.100		76	75-125	1	25	
Matrix Spike (2210358-MS1)			**Source: 22L0098-01**		Prepared: 12/05/22 Analyzed: 12/06/22						
Cyanide (total)	0.0423	0.0012	0.0050	mg/L	0.100	0.00420	38	75-125			QM-7
Matrix Spike Dup (2210358-MSD1)			**Source: 22L0098-01**		Prepared: 12/05/22 Analyzed: 12/06/22						
Cyanide (total)	0.0412	0.0012	0.0050	mg/L	0.100	0.00420	37	75-125	3	25	QM-7
Batch 2210394 - General Preparation											
Blank (2210394-BLK1)					Prepared & Analyzed: 12/06/22						
Total Organic Carbon	ND	0.54	1.0	mg/L							
LCS (2210394-BS1)					Prepared & Analyzed: 12/06/22						
Total Organic Carbon	10.1	0.54	1.0	mg/L	10.0		101	75-125			
LCS Dup (2210394-BSD1)					Prepared & Analyzed: 12/06/22						
Total Organic Carbon	10.2	0.54	1.0	mg/L	10.0		102	75-125	0.9	25	
Matrix Spike (2210394-MS1)			**Source: 22L0074-04**		Prepared: 12/06/22 Analyzed: 12/07/22						
Total Organic Carbon	135	2.7	5.0	mg/L	50.0	71.0	128	75-125			QM-7
Matrix Spike Dup (2210394-MSD1)			**Source: 22L0074-04**		Prepared: 12/06/22 Analyzed: 12/07/22						
Total Organic Carbon	131	2.7	5.0	mg/L	50.0	71.0	121	75-125	3	25	

12/08/22 14:46

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1386
COC #:

Extractable Petroleum Hydrocarbons by EPA Method 8015M - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210180 - EPA 3510B GCNV											
Blank (2210180-BLK1)					Prepared & Analyzed: 11/28/22						
Diesel	ND	0.0021	0.050	mg/L							
Motor Oil	ND	0.0091	0.050	"							
Surrogate: o-Terphenyl	*0.0256*			*"*	*0.0250*		*102*	*65-135*			
LCS (2210180-BS1)					Prepared & Analyzed: 11/28/22						
Diesel	1.68	0.0021	0.050	mg/L	2.50		67	65-135			
Surrogate: o-Terphenyl	*0.0254*			*"*	*0.0250*		*102*	*65-135*			
LCS Dup (2210180-BSD1)					Prepared & Analyzed: 11/28/22						
Diesel	1.73	0.0021	0.050	mg/L	2.50		69	65-135	3	30	
Surrogate: o-Terphenyl	*0.0227*			*"*	*0.0250*		*91*	*65-135*			
Matrix Spike (2210180-MS1)			**Source: 22K1453-01**		Prepared & Analyzed: 11/28/22						
Diesel	1.94	0.0021	0.050	mg/L	2.50	ND	78	46-137			
Surrogate: o-Terphenyl	*0.0247*			*"*	*0.0250*		*99*	*65-135*			
Matrix Spike Dup (2210180-MSD1)			**Source: 22K1453-01**		Prepared & Analyzed: 11/28/22						
Diesel	2.14	0.0021	0.050	mg/L	2.50	ND	86	46-137	10	30	
Surrogate: o-Terphenyl	*0.0265*			*"*	*0.0250*		*106*	*65-135*			

12/08/22 14:46

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1386
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210104 - EPA 200 Series											
Blank (2210104-BLK1)					Prepared & Analyzed: 11/23/22						
Calcium	ND	27	1000	µg/L							
Copper	ND	3.4	10	"							
Iron	ND	9.1	100	"							
Magnesium	ND	21	1000	"							
Nickel	ND	3.1	20	"							
Potassium	641	61	1000	"							J
Silver	ND	3.3	10	"							
Sodium	353	34	1000	"							J
Zinc	ND	1.7	20	"							
LCS (2210104-BS1)					Prepared & Analyzed: 11/23/22						
Calcium	5000	27	1000	µg/L	5000		100	85-115			
Copper	488	3.4	10	"	500		98	85-115			
Iron	480	9.1	100	"	500		96	85-115			
Magnesium	5100	21	1000	"	5000		102	85-115			
Nickel	500	3.1	20	"	500		100	85-115			
Potassium	5610	61	1000	"	5000		112	85-115			
Silver	506	3.3	10	"	500		101	85-115			
Sodium	5020	34	1000	"	5000		100	85-115			
Zinc	485	1.7	20	"	500		97	85-115			
Matrix Spike (2210104-MS1)				**Source: 22K1165-01**	Prepared & Analyzed: 11/23/22						
Calcium	41300	27	1000	µg/L	5000	37200	82	70-130			
Copper	518	3.4	10	"	500	39.6	96	70-130			
Iron	867	9.1	100	"	500	416	90	70-130			
Magnesium	20400	21	1000	"	5000	15800	91	70-130			
Nickel	495	3.1	20	"	500	4.97	98	70-130			
Potassium	7220	61	1000	"	5000	2140	102	70-130			
Silver	492	3.3	10	"	500	ND	98	70-130			
Sodium	16100	34	1000	"	5000	11600	90	70-130			
Zinc	484	1.7	20	"	500	ND	97	70-130			

12/08/22 14:46

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1386
COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210104 - EPA 200 Series											
Matrix Spike (2210104-MS2)			**Source: 22K1395-01**		Prepared & Analyzed: 11/23/22						
Calcium	20400	27	1000	µg/L	5000	15300	102	70-130			
Copper	504	3.4	10	"	500	5.01	100	70-130			
Iron	549	9.1	100	"	500	46.6	100	70-130			
Magnesium	13600	21	1000	"	5000	8710	97	70-130			
Nickel	508	3.1	20	"	500	ND	102	70-130			
Potassium	7500	61	1000	"	5000	2320	104	70-130			
Silver	524	3.3	10	"	500	ND	105	70-130			
Sodium	99500	34	1000	"	5000	96400	62	70-130			QM-4X
Zinc	523	1.7	20	"	500	18.6	101	70-130			
Batch 2210117 - EPA 200 Series											
Blank (2210117-BLK1)					Prepared: 11/23/22 Analyzed: 11/30/22						
Aluminum	ND	1.6	20	µg/L							
Barium	ND	0.14	5.0	"							
Manganese	0.0530	0.050	2.0	"							J
Silver	ND	0.070	0.50	"							
LCS (2210117-BS1)					Prepared: 11/23/22 Analyzed: 11/30/22						
Aluminum	507	1.6	20	µg/L	500		101	85-115			
Barium	102	0.14	5.0	"	100		102	85-115			
Manganese	104	0.050	2.0	"	100		104	85-115			
Silver	100	0.070	0.50	"	100		100	85-115			
Matrix Spike (2210117-MS1)			**Source: 22K1294-01**		Prepared: 11/23/22 Analyzed: 11/30/22						
Aluminum	515	1.6	20	µg/L	500	4.76	102	70-130			
Barium	121	0.14	5.0	"	100	16.6	104	70-130			
Manganese	103	0.050	2.0	"	100	6.81	96	70-130			
Silver	101	0.070	0.50	"	100	ND	101	70-130			

12/08/22 14:46

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K1386**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Metals by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210117 - EPA 200 Series											
Matrix Spike (2210117-MS2)			**Source: 22K1317-01**		Prepared: 11/23/22	Analyzed: 11/30/22					
Aluminum	565	1.6	20	µg/L	500	52.7	102	70-130			
Barium	111	0.14	5.0	"	100	8.42	103	70-130			
Manganese	140	0.050	2.0	"	100	36.5	103	70-130			
Silver	99.7	0.070	0.50	"	100	ND	100	70-130			

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Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1386
COC #:

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210243 - EPA 200 No Digestion											
Blank (2210243-BLK1)					Prepared & Analyzed: 11/30/22						
Iron	ND	6.8	100	µg/L							
LCS (2210243-BS1)					Prepared & Analyzed: 11/30/22						
Iron	500	6.8	100	µg/L	500		100	85-115			
Matrix Spike (2210243-MS1)			**Source: 22K1173-01**		Prepared & Analyzed: 11/30/22						
Iron	555	6.8	100	µg/L	500	16.3	108	70-130			
Matrix Spike (2210243-MS2)			**Source: 22K1317-01**		Prepared & Analyzed: 11/30/22						
Iron	527	6.8	100	µg/L	500	ND	105	70-130			
Batch 2210252 - EPA 200 No Digestion											
Blank (2210252-BLK1)					Prepared & Analyzed: 11/30/22						
Aluminum	ND	0.52	20	µg/L							
Silver	ND	0.15	0.50	"							
LCS (2210252-BS1)					Prepared & Analyzed: 11/30/22						
Aluminum	493	0.52	20	µg/L	500		99	85-115			
Silver	98.3	0.15	0.50	"	100		98	85-115			
Matrix Spike (2210252-MS1)			**Source: 22K1173-01**		Prepared & Analyzed: 11/30/22						
Aluminum	507	0.52	20	µg/L	500	1.30	101	70-130			
Silver	98.8	0.15	0.50	"	100	ND	99	70-130			

12/08/22 14:46

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1386
COC #:

TPH-Gasoline by GC FID - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210265 - EPA 5030 Water GC											
Blank (2210265-BLK1)					Prepared & Analyzed: 11/30/22						
Gasoline	ND	10	50	µg/L							
Surrogate: o-Chlorotoluene (Gas)	*15.7*			"	*20.0*		*78*	*65-135*			
LCS (2210265-BS1)					Prepared & Analyzed: 11/30/22						
Gasoline	569	10	50	µg/L	500		114	70-130			
Surrogate: o-Chlorotoluene (Gas)	*15.9*			"	*20.0*		*80*	*65-135*			
LCS Dup (2210265-BSD1)					Prepared & Analyzed: 11/30/22						
Gasoline	542	10	50	µg/L	500		108	70-130	5	30	
Surrogate: o-Chlorotoluene (Gas)	*15.1*			"	*20.0*		*76*	*65-135*			
Matrix Spike (2210265-MS1)			**Source: 22K1386-02**		Prepared & Analyzed: 11/30/22						
Gasoline	474	10	50	µg/L	500	ND	95	68-132			
Surrogate: o-Chlorotoluene (Gas)	*13.9*			"	*20.0*		*70*	*65-135*			
Matrix Spike Dup (2210265-MSD1)			**Source: 22K1386-02**		Prepared & Analyzed: 11/30/22						
Gasoline	466	10	50	µg/L	500	ND	93	68-132	2	32	
Surrogate: o-Chlorotoluene (Gas)	*15.6*			"	*20.0*		*78*	*65-135*			

12/08/22 14:46

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ & Chemistry Monitoring
Project Number: 750.10 Task 0620.01
Project Manager: Emily Applequist

CLS Work Order #: 22K1386
COC #:

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2210203 - EPA 3510B GCMS											
Blank (2210203-BLK1)					Prepared & Analyzed: 11/23/22						
Di-isopropyl ether	ND	0.15	0.50	µg/L							
Ethyl tert-butyl ether	ND	0.062	0.50	"							
Methyl tert-butyl ether	ND	0.095	0.50	"							
tert-Amyl methyl ether	ND	0.078	0.50	"							
tert-Butyl alcohol	ND	2.2	5.0	"							
Benzene	ND	0.11	0.50	"							
Toluene	ND	0.11	0.50	"							
Ethylbenzene	ND	0.10	0.50	"							
Xylenes (total)	ND	0.33	1.0	"							
Surrogate: Toluene-d8	*9.83*			"	*10.0*		*98*	*72-125*			
LCS (2210203-BS1)					Prepared & Analyzed: 11/23/22						
Methyl tert-butyl ether	21.9	0.095	0.50	µg/L	20.0		110	52-130			
Benzene	19.4	0.11	0.50	"	20.0		97	52-130			
Surrogate: Toluene-d8	*9.83*			"	*10.0*		*98*	*72-125*			
LCS Dup (2210203-BSD1)					Prepared & Analyzed: 11/23/22						
Methyl tert-butyl ether	21.2	0.095	0.50	µg/L	20.0		106	52-130	3	30	
Benzene	19.0	0.11	0.50	"	20.0		95	52-130	2	30	
Surrogate: Toluene-d8	*9.84*			"	*10.0*		*98*	*72-125*			
Matrix Spike (2210203-MS1)			**Source: 22K1317-01**		Prepared & Analyzed: 11/23/22						
Methyl tert-butyl ether	20.2	0.095	0.50	µg/L	20.0	ND	101	52-140			
Benzene	21.0	0.11	0.50	"	20.0	ND	105	52-140			
Surrogate: Toluene-d8	*10.2*			"	*10.0*		*102*	*72-125*			
Matrix Spike Dup (2210203-MSD1)			**Source: 22K1317-01**		Prepared & Analyzed: 11/23/22						
Methyl tert-butyl ether	20.2	0.095	0.50	µg/L	20.0	ND	101	52-140	0	30	
Benzene	21.1	0.11	0.50	"	20.0	ND	106	52-140	0.5	30	
Surrogate: Toluene-d8	*10.1*			"	*10.0*		*101*	*72-125*			

12/08/22 14:46

Stillwater Sciences	Project: SMUD In situ & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0620.01	**CLS Work Order #: 22K1386**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS and/or LCSD recovery.
QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22C1386 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ & Chemistry Monitoring

Sampled By

Job Description
Monitor water chemistry in UARP reaches

Site Location Upper American River Project Sites

Client Job Number
750.10 Task 0620.01

Destination Laboratory
Rancho Cordova

[x] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [x] NO [ ]

GLOBAL ID

FIELD CONDITIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	TSS, TDS, Hardness, Alkalinity, NO2-N+NO3-N, Diss Metals, Cl, SO4	Oil & Grease	Cyanide - SM4500-CN E	TPH - GRO, MTBE, TOC	TPH-DRO	TKN, Ammonia, Total Phosphorus, Orthophosphate	Metals, Total	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
11/22/22	10:45	R-IS-14-SC		Surface water	12		6	X	X	X	X	X	X	X				X	
11/22/22	11:45	R-IS-15-SC		Surface water	12		6	X	X	X	X	X	X	X				X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	INVOICE TO
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	**Project No. 750.10 Task 0620.01**
				Surface water			6											X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (2) HNO3 (3) = COLD (4)= H2SO4 (5) NH_4OH (6) NAOH

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	JoKo Woodall Stillwater Sciences	11/22/22 15:00		

RECEIVED AT LAB BY: DATE/TIME: 11.22.22 15:00 CONDITIONS/COMMENTS: 1.2/0.5

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER AIR BILL #

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APPENDIX H
Analytical Laboratory Bacteria Reports

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CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

June 28, 2022

CLS Work Order #: 22F1195
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ, Bac-T, & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 06/21/22 13:38. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness. Any comments and exceptions are addressed under the Notes and Definitions section.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22F1195 (of)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ, Bac-T, & Chemistry Monitoring

Sampled By Bethany Leach + Cameron McLaughlin

Job Description
Monitor seasonal bacteria levels in UARP reaches.

Site Location UARP

Client Job Number
750.10 Task 0600.02

Destination Laboratory
Rancho Cordova

[x] **CLS** (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] **OTHER**

GEOTRACKER

EDF REPORT YES [x] NO [ ]

GLOBAL ID.

FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	Fecal coliform-15 Tube			E. coli Quanti-tray				TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
6/21/22	08:45	Bac-12-IHR	UARP IHR	Surface water			6	X			X							X	
6/21/22	08:45	Bac-12-IHR	UARP IHR	Surface water			6				X							X	
6/21/22	09:13	Bac-13-IHR	UARP IHR	Surface water			6	X			X							X	
6/21/22	09:13	Bac-13-IHR	UARP IHR	Surface water			6				X							X	
6/21/22	10:35	Bac-14-BCR	UARP BCR	Surface water			6	X			X							X	
6/21/22	10:35	Bac-14-BCR	UARP BCR	Surface water			6				X							X	
6/21/22	12:07	Bac-15-SCR	UARP SCR	Surface water			6	X			X							X	INVOICE TO:
6/21/22	12:07	Bac-15-SCR	UARP SCR	Surface water			6				X							X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	**Project No. 750.10 Task 0600.02**
				Surface water			6											X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H2SO4

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Bethany Leach Stillwater Sciences	6/21/22 13:38		

RECEIVED AT LAB BY: Dan **DATE/TIME:** 6/21/22 1338 **CONDITIONS/COMMENTS:** 3.3/2.6

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER _____ **AIR BILL #** _____

06/28/22 12:08

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ, Bac-T, & Chemistry Monitoring
Project Number: 750.10 Task 0600.02
Project Manager: Emily Applequist

CLS Work Order #: 22F1195
COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bac - 12 - IHR (22F1195-01) Surface water	**Sampled: 06/21/22 08:45**		**Received: 06/21/22 13:38**						
Fecal Coliforms	**4.5**	1.8	MPN/100 mL	1	2205204	06/21/22 13:45	06/24/22	SM 9221	
Total Coliforms	**>2419.6**	1.0	"	"	2205189	06/21/22 14:00	06/22/22	SM9223	
E. Coli	**2.0**	1.0	"	"	"	"	"	"	
Bac - 13 - IHR (22F1195-02) Surface water	**Sampled: 06/21/22 09:13**		**Received: 06/21/22 13:38**						
Fecal Coliforms	<1.8	1.8	MPN/100 mL	1	2205204	06/21/22 13:45	06/24/22	SM 9221	
Total Coliforms	**2419.6**	1.0	"	"	2205189	06/21/22 14:00	06/22/22	SM9223	
E. Coli	<1.0	1.0	"	"	"	"	"	"	
Bac - 14 - BCR (22F1195-03) Surface water	**Sampled: 06/21/22 10:35**		**Received: 06/21/22 13:38**						
Fecal Coliforms	<1.8	1.8	MPN/100 mL	1	2205204	06/21/22 13:45	06/24/22	SM 9221	
Total Coliforms	**158.5**	1.0	"	"	2205189	06/21/22 14:00	06/22/22	SM9223	
E. Coli	<1.0	1.0	"	"	"	"	"	"	
Bac - 15 - SCR (22F1195-04) Surface water	**Sampled: 06/21/22 12:07**		**Received: 06/21/22 13:38**						
Fecal Coliforms	**2.0**	1.8	MPN/100 mL	1	2205204	06/21/22 13:45	06/24/22	SM 9221	
Total Coliforms	**>2419.6**	1.0	"	"	2205189	06/21/22 14:00	06/22/22	SM9223	
E. Coli	**2.0**	1.0	"	"	"	"	"	"	

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0600.02	**CLS Work Order #: 22F1195**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

BT-5	>2419.6
BT-4a	<1.8
BT-4	<1.0
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

June 29, 2022

CLS Work Order #: 22F1293
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ, Bac-T, & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 06/22/22 13:34. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

06/29/22 09:59

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ, Bac-T, & Chemistry Monitoring
Project Number: 750.10 Task 0600.02
Project Manager: Emily Applequist

CLS Work Order #: 22F1293
COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bac 7 UVR (22F1293-01) Surface water	**Sampled: 06/22/22 09:15**		**Received: 06/22/22 13:34**							
E. Coli	**7.4**	1.0	1.0	MPN/100 mL	1	2205248	06/22/22	06/23/22	SM9223	
Fecal Coliforms	**7.8**	1.8	1.8	"	"	2205240	06/22/22	06/25/22	SM 9221	
Total Coliforms	**727.0**	1.0	1.0	"	"	2205248	06/22/22	06/23/22	SM9223	
Bac 8 UVR (22F1293-02) Surface water	**Sampled: 06/22/22 09:40**		**Received: 06/22/22 13:34**							
E. Coli	**1.0**	1.0	1.0	MPN/100 mL	1	2205248	06/22/22	06/23/22	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	2205240	06/22/22	06/25/22	SM 9221	
Total Coliforms	**36.8**	1.0	1.0	"	"	2205248	06/22/22	06/23/22	SM9223	
Bac 5 GCR (22F1293-03) Surface water	**Sampled: 06/22/22 10:10**		**Received: 06/22/22 13:34**							
E. Coli	**1.0**	1.0	1.0	MPN/100 mL	1	2205248	06/22/22	06/23/22	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	2205240	06/22/22	06/25/22	SM 9221	
Total Coliforms	**488.4**	1.0	1.0	"	"	2205248	06/22/22	06/23/22	SM9223	
Bac 10 UVR (22F1293-04) Surface water	**Sampled: 06/22/22 10:52**		**Received: 06/22/22 13:34**							
E. Coli	**4.1**	1.0	1.0	MPN/100 mL	1	2205248	06/22/22	06/23/22	SM9223	
Fecal Coliforms	**4.5**	1.8	1.8	"	"	2205240	06/22/22	06/25/22	SM 9221	
Total Coliforms	**517.2**	1.0	1.0	"	"	2205248	06/22/22	06/23/22	SM9223	
Bac 9 UVR (22F1293-05) Surface water	**Sampled: 06/22/22 11:15**		**Received: 06/22/22 13:34**							
E. Coli	**11.0**	1.0	1.0	MPN/100 mL	1	2205248	06/22/22	06/23/22	SM9223	
Fecal Coliforms	**6.1**	1.8	1.8	"	"	2205240	06/22/22	06/25/22	SM 9221	
Total Coliforms	**686.7**	1.0	1.0	"	"	2205248	06/22/22	06/23/22	SM9223	
Bac 6 GCR (22F1293-06) Surface water	**Sampled: 06/22/22 10:25**		**Received: 06/22/22 13:34**							
E. Coli	**1.0**	1.0	1.0	MPN/100 mL	1	2205248	06/22/22	06/23/22	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	2205240	06/22/22	06/25/22	SM 9221	
Total Coliforms	**547.5**	1.0	1.0	"	"	2205248	06/22/22	06/23/22	SM9223	

06/29/22 09:59

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ, Bac-T, & Chemistry Monitoring
Project Number: 750.10 Task 0600.02
Project Manager: Emily Applequist

CLS Work Order #: 22F1293
COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bac 11 JR (22F1293-07) Surface water	**Sampled: 06/22/22 11:45**		**Received: 06/22/22 13:34**							
E. Coli	**13.2**	1.0	1.0	MPN/100 mL	1	2205248	06/22/22	06/23/22	SM9223	
Fecal Coliforms	**7.8**	1.8	1.8	"	"	2205240	06/22/22	06/25/22	SM 9221	
Total Coliforms	**196.8**	1.0	1.0	"	"	2205248	06/22/22	06/23/22	SM9223	

06/29/22 09:59

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0600.02	**CLS Work Order #: 22F1293**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

BT-4	<1.8
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22F1293 (of)

Report To:	Client Job Number **750.10 Task 0600.02**	ANALYSIS REQUESTED	GEOTRACKER
Stillwater Sciences 279 Cousteau Place Suite 400 Davis, CA 95618	Destination Laboratory Rancho Cordova		EDF REPORT YES [X] NO
Project Manager Emily Applequist eapplequist@stillwatersci.com	[X] **CLS** (916) 638-7301 3249 Fitzgerald Road Rancho Cordova, CA 95742 **www.californialab.com**		GLOBAL ID.
Project Name SMUD In situ, Bac-T, & Chemistry Monitoring	[ ] **OTHER**		FIELD CONDITIONS:
Sampled By Bethany Leach ; Cameron McLaughlin			
Job Description Monitor seasonal bacteria levels in UARP reaches.			
Site Location UARP			TURNAROUND TIME IN DAYS / SPECIAL INSTRUCTIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES ▼	Fecal coliform-15 Tube	E. coli Quanti-tray	1	2	3	5	SPECIAL INSTRUCTIONS
6/22/22	9:15 AM	Bac 7 UVR	UVR/UARP	Surface water			6	X	X				X	
6/22/22	9:40 AM	Bac 8 UVR	UVR/UARP	Surface water			6	X	X				X	
6/22/22	10:10 AM	Bac 5 GCR	GCR/UARP	Surface water			6	X	X				X	
6/22/22	10:52 AM	Bac 10 UVR	UVR/UARP	Surface water			6	X	X				X	
6/22/22	11:15 AM	Bac 9 UVR	UVR/UARP	Surface water			6	X	X				X	
6/22/22	10:25 AM	Bac 6 GCR	GCR/UARP	Surface water			6	X	X				X	
6/22/22	11:45 AM	Bac 11 JR	JR/UARP	Surface water			6	X	X				X	INVOICE TO:
				Surface water			6						X	Stillwater Sciences
				Surface water			6						X	Same as above
				Surface water			6						X	
				Surface water			6						X	**Project No. 750.10 Task 0600.02**
				Surface water			6						X	QUOTE#

SUSPECTED CONSTITUENTS | SAMPLE RETENTION TIME | PRESERVATIVES (1) HCL (2) HNO_3 (3) = COLD (4)= H_2SO_4

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Bethany Leach Stillwater Sciences	6/22/22 13:34		

RECEIVED AT LAB BY: **DATE/TIME:** 6/22/22 1354 **CONDITIONS/COMMENTS:** 4.6 / 3.9

SHIPPED BY: [ ] **FED EX** [ ] **UPS** [ ] **OTHER** _____ **AIR BILL #** _____

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

July 06, 2022

CLS Work Order #: 22F1578
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ, Bac-T, & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 06/28/22 15:15. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness. Any comments and exceptions are addressed under the Notes and Definitions section.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22F1578 (of)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ, Bac-T, & Chemistry Monitoring

Sampled By Bethany Leach + Cameron McLaughlin

Job Description
Monitor seasonal bacteria levels in UARP reaches.

Site Location UARP

Client Job Number
750.10 Task 0600.02

Destination Laboratory
Rancho Cordova

[x] **CLS** (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] **OTHER**

ANALYSIS REQUESTED

GEOTRACKER

EDF REPORT YES [x] NO

GLOBAL ID.

FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	Fecal coliform-15 Tube	E. coli Quanti-tray	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
6/28/22	9:53	Bac-15-SCR	UARP SCR	Surface water			6	X	X				X	
6/28/22	11:07	Bac-14-BCR	UARP BCR	Surface water			6	X	X				X	
6/28/22	12:40	Bac-12-IHR	UARP IHR NOON	Surface water			6	X	X				X	
6/28/22	13:26	Bac-13-IHR	UARP IHR NO ATTEMPT	Surface water			6	X	X				X	
				Surface water			6						X	
				Surface water			6						X	
				Surface water			6						X	
				Surface water			6						X	INVOICE TO:
				Surface water			6						X	Stillwater Sciences
				Surface water			6						X	Same as above
				Surface water			6						X	
				Surface water			6						X	**Project No. 750.10 Task 0600.02**
				Surface water			6						X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H2SO4

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Bethany Leach	06/28/22		
	Stillwater Sciences	15:15		

RECEIVED AT LAB BY: [signature] **DATE/TIME:** 6/29/22 1515 **CONDITIONS/COMMENTS:** 6.9/6.2

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER _____ **AIR BILL #** _____

07/06/22 12:08

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ, Bac-T, & Chemistry Monitoring
Project Number: 750.10 Task 0600.02
Project Manager: Emily Applequist

CLS Work Order #: 22F1578
COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bac-15-SCR (22F1578-01) Surface water	**Sampled: 06/28/22 09:53**		**Received: 06/28/22 15:15**						
Fecal Coliforms	<1.8	1.8	MPN/100 mL	1	2205426	06/28/22 15:45	07/01/22	SM 9221	
E. Coli	**2.0**	1.0	"	"	2205410	06/28/22 15:30	06/29/22	SM9223	
Bac-14-BCR (22F1578-02) Surface water	**Sampled: 06/28/22 11:07**		**Received: 06/28/22 15:15**						
Fecal Coliforms	<1.8	1.8	MPN/100 mL	1	2205426	06/28/22 15:45	07/01/22	SM 9221	
E. Coli	<1.0	1.0	"	"	2205410	06/28/22 15:30	06/29/22	SM9223	
Bac-12-IHR (22F1578-03) Surface water	**Sampled: 06/28/22 12:40**		**Received: 06/28/22 15:15**						
Fecal Coliforms	**23**	1.8	MPN/100 mL	1	2205426	06/28/22 15:45	07/01/22	SM 9221	
E. Coli	**21.6**	1.0	"	"	2205410	06/28/22 15:30	06/29/22	SM9223	
Bac-13-IHR (22F1578-04) Surface water	**Sampled: 06/28/22 13:26**		**Received: 06/28/22 15:15**						
Fecal Coliforms	<1.8	1.8	MPN/100 mL	1	2205426	06/28/22 15:45	07/01/22	SM 9221	
E. Coli	<1.0	1.0	"	"	2205410	06/28/22 15:30	06/29/22	SM9223	

07/06/22 12:08

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0600.02	**CLS Work Order #: 22F1578**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

BT-4a	<1.8
BT-4	<1.0
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

July 07, 2022

CLS Work Order #: 22F1634
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ, Bac-T, & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 06/29/22 14:30. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness. Any comments and exceptions are addressed under the Notes and Definitions section.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22F1634 (of)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ, Bac-T, & Chemistry Monitoring

Sampled By Bethany Leach, Cameron McLaughlin

Job Description
Monitor seasonal bacteria levels in UARP reaches.

Site Location UARP

Client Job Number
750.10 Task 0600.02

Destination Laboratory
Rancho Cordova

[x] **CLS** (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] **OTHER**

ANALYSIS REQUESTED

GEOTRACKER

EDF REPORT YES [x] NO [ ]

GLOBAL ID.

FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	Fecal coliform-15 Tube	E. coli Quanti-tray	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
6/29/22	8:59	Bac-10-UVR	UARP Yellowjacket	Surface water			6	X	X				X	
6/29/22	9:23	Bac-9-UVR	UARP Camino	Surface water			6	X	X				X	
6/29/22	9:49	Bac-11-JR	UARP Junction	Surface water			6	X	X				X	
6/29/22	10:32	Bac-6-GCR	UARP Angel C.	Surface water			6	X	X				X	
6/29/22	10:52	Bac-5-GCR	UARP Gorle C.	Surface water			6	X	X				X	
6/29/22	11:25	Bac-8-UVR	UARP Wench	Surface water			6	X	X				X	
6/29/22	11:46	Bac-7-UVR	UARP Fashola	Surface water			6	X	X				X	INVOICE TO:
				Surface water			6						X	Stillwater Sciences
				Surface water			6						X	Same as above
				Surface water			6						X	
				Surface water			6						X	**Project No. 750.10 Task 0600.02**
				Surface water			6						X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H_2SO_4

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Bethany Leach	6/29/22		
	Stillwater Sciences	14:30		

RECEIVED AT LAB BY: **DATE/TIME:** 6/29/22 1430 **CONDITIONS/COMMENTS:** 5.0/4.3

SHIPPED BY: [ ] **FED EX** [ ] **UPS** [ ] **OTHER** _____ **AIR BILL #** _____

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ, Bac-T, & Chemistry Monitoring
Project Number: 750.10 Task 0600.02
Project Manager: Emily Applequist

CLS Work Order #: 22F1634
COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bac-10-UVR (22F1634-01) Surface water Sampled: 06/29/22 08:59 Received: 06/29/22 14:30									
Fecal Coliforms	<1.8	1.8	MPN/100 mL	1	2205449	06/29/22 14:30	07/02/22	SM 9221	
Total Coliforms	**488.4**	1.0	"	"	2205442	"	06/30/22	SM9223	
E. Coli	<1.0	1.0	"	"	"	"	"	"	
Bac-9-UVR (22F1634-02) Surface water Sampled: 06/29/22 09:23 Received: 06/29/22 14:30									
Fecal Coliforms	**6.8**	1.8	MPN/100 mL	1	2205449	06/29/22 14:30	07/02/22	SM 9221	
Total Coliforms	**1413.6**	1.0	"	"	2205442	"	06/30/22	SM9223	
E. Coli	**1.0**	1.0	"	"	"	"	"	"	
Bac-11-JR (22F1634-03) Surface water Sampled: 06/29/22 09:49 Received: 06/29/22 14:30									
Fecal Coliforms	**1600**	1.8	MPN/100 mL	1	2205449	06/29/22 14:30	07/02/22	SM 9221	
Total Coliforms	**>2419.6**	1.0	"	"	2205442	"	06/30/22	SM9223	
E. Coli	**98.8**	1.0	"	"	"	"	"	"	
Bac-6-GCR (22F1634-04) Surface water Sampled: 06/29/22 10:32 Received: 06/29/22 14:30									
Fecal Coliforms	**49**	1.8	MPN/100 mL	1	2205449	06/29/22 14:30	07/02/22	SM 9221	
Total Coliforms	**461.1**	1.0	"	"	2205442	"	06/30/22	SM9223	
E. Coli	**17.3**	1.0	"	"	"	"	"	"	
Bac-5-GCR (22F1634-05) Surface water Sampled: 06/29/22 10:52 Received: 06/29/22 14:30									
Fecal Coliforms	**23**	1.8	MPN/100 mL	1	2205449	06/29/22 14:30	07/02/22	SM 9221	
Total Coliforms	**1413.6**	1.0	"	"	2205442	"	06/30/22	SM9223	
E. Coli	**17.1**	1.0	"	"	"	"	"	"	
Bac-8-UVR (22F1634-06) Surface water Sampled: 06/29/22 11:25 Received: 06/29/22 14:30									
Fecal Coliforms	**2.0**	1.8	MPN/100 mL	1	2205449	06/29/22 14:30	07/02/22	SM 9221	
Total Coliforms	**517.2**	1.0	"	"	2205442	"	06/30/22	SM9223	
E. Coli	**2.0**	1.0	"	"	"	"	"	"	

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ, Bac-T, & Chemistry Monitoring
Project Number: 750.10 Task 0600.02
Project Manager: Emily Applequist

CLS Work Order #: 22F1634
COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bac-7-UVR (22F1634-07) Surface water	**Sampled: 06/29/22 11:46**	**Received: 06/29/22 14:30**							
Fecal Coliforms	**33**	1.8	MPN/100 mL	1	2205449	06/29/22 14:30	07/02/22	SM 9221	
Total Coliforms	**980.4**	1.0	"	"	2205442	"	06/30/22	SM9223	
E. Coli	**6.2**	1.0	"	"	"	"	"	"	

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0600.02	**CLS Work Order #: 22F1634**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

BT-5	>2419.6
BT-4a	<1.8
BT-4	<1.0
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

July 12, 2022

CLS Work Order #: 22G0143
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ, Bac-T, & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 07/05/22 15:43. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness. Any comments and exceptions are addressed under the Notes and Definitions section.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 2260143 (of)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ, Bac-T, & Chemistry Monitoring

Sampled By Bethany Leach + Cameron McLaughlin

Job Description
Monitor seasonal bacteria levels in UARP reaches.

Site Location UARP

Client Job Number
750.10 Task 0600.02

Destination Laboratory
Rancho Cordova

[x] **CLS** (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

☐ **OTHER**

ANALYSIS REQUESTED

PRESERVATIVES ▼

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES ▼	Fecal coliform-15 Tube	E. coli Quanti-tray	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
7/5/22	09:40	Bac-15-SCR	UARP/Slab Cr.	Surface water			6	X	X				X	
7/5/22	11:02	Bac-14-BCR	UARP/Brush Cr.	Surface water			6	X	X				X	
7/5/22	12:19	Bac-12-IHR	UARP/Ice House	Surface water			6	X	X				X	
7/5/22	12:36	Bac-13-IHR	UARP/New Natural	Surface water			6	X	X				X	
				Surface water			6						X	
				Surface water			6						X	
				Surface water			6						X	INVOICE TO:
				Surface water			6						X	Stillwater Sciences
				Surface water			6						X	Same as above
				Surface water			6						X	
				Surface water			6						X	**Project No. 750.10 Task 0600.02**
				Surface water			6						X	QUOTE#

GEOTRACKER

EDF REPORT YES [x] ☐ NO

GLOBAL ID.

FIELD CONDITIONS

TURNAROUND TIME IN DAYS 1 2 3 5

SPECIAL INSTRUCTIONS

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (2) HNO_3 (3) = COLD (4)= H_2SO_4

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Bethany Leach Stillwater Sciences	7/5/22 543		

RECEIVED AT LAB BY: **DATE/TIME:** 7/6/22 1543 **CONDITIONS/COMMENTS:** 6.1 / 5.4

SHIPPED BY: ☐ **FED EX** ☐ **UPS** ☐ **OTHER** **AIR BILL #**

07/12/22 14:16

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ, Bac-T, & Chemistry Monitoring
Project Number: 750.10 Task 0600.02
Project Manager: Emily Applequist

CLS Work Order #: 22G0143
COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bac-15-SCR (22G0143-01) Surface water	**Sampled: 07/05/22 09:40**	**Received: 07/05/22 15:43**							
Fecal Coliforms	<1.8	1.8	MPN/100 mL	1	2205577	07/05/22 16:00	07/08/22	SM 9221	
Total Coliforms	**1011.2**	1.0	"	"	2205560	07/05/22 15:45	07/06/22	SM9223	
E. Coli	<1.0	1.0	"	"	"	"	"	"	
Bac-14-BCR (22G0143-02) Surface water	**Sampled: 07/05/22 11:02**	**Received: 07/05/22 15:43**							
Fecal Coliforms	<1.8	1.8	MPN/100 mL	1	2205577	07/05/22 16:00	07/08/22	SM 9221	
Total Coliforms	**307.6**	1.0	"	"	2205560	07/05/22 15:45	07/06/22	SM9223	
E. Coli	<1.0	1.0	"	"	"	"	"	"	
Bac-12-IHR (22G0143-03) Surface water	**Sampled: 07/05/22 12:19**	**Received: 07/05/22 15:43**							
Fecal Coliforms	**2.0**	1.8	MPN/100 mL	1	2205577	07/05/22 16:00	07/08/22	SM 9221	
Total Coliforms	**791.5**	1.0	"	"	2205560	07/05/22 15:45	07/06/22	SM9223	
E. Coli	**550.4**	1.0	"	"	"	"	"	"	
Bac-13-IHR (22G0143-04) Surface water	**Sampled: 07/05/22 12:36**	**Received: 07/05/22 15:43**							
Fecal Coliforms	**920**	1.8	MPN/100 mL	1	2205577	07/05/22 16:00	07/08/22	SM 9221	
Total Coliforms	**980.4**	1.0	"	"	2205560	07/05/22 15:45	07/06/22	SM9223	
E. Coli	<1.0	1.0	"	"	"	"	"	"	

07/12/22 14:16

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0600.02	**CLS Work Order #: 22G0143**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

BT-4a	<1.8
BT-4	<1.0
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CALIFORNIA LABORATORY SERVICES
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July 13, 2022

CLS Work Order #: 22G0279
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ, Bac-T, & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 07/06/22 15:34. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness. Any comments and exceptions are addressed under the Notes and Definitions section.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22G0279 (of)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ, Bac-T, & Chemistry Monitoring

Sampled By
Bethany Leach; Cameron McLaughlin

Job Description
Monitor seasonal bacteria levels in UARP reaches.

Site Location UARP

Client Job Number
750.10 Task 0600.02

Destination Laboratory
Rancho Cordova

[x] **CLS** (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] **OTHER**

ANALYSIS REQUESTED

GEOTRACKER

EDF REPORT YES [x] NO [ ]

GLOBAL ID.

FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	Fecal coliform-15 Tube	E. coli Quanti-tray	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
7/6/22	09:50	Bac-7-UVR	UARP Fashoda	Surface water			6	X	X				X	
7/6/22	10:15	Bac-8-UVR	UARP Wrench	Surface water			6	X	X				X	
7/6/22	10:45	Bac-5-GCR	UARP Gerle	Surface water			6	X	X				X	
7/6/22	11:01	Bac-6-GCR	UARP Angel	Surface water			6	X	X				X	
7/6/22	11:25	Bac-10-UVR	UARP Yellow jacket	Surface water			6	X	X				X	
7/6/22	11:47	Bac-9-UVR	UARP Camino	Surface water			6	X	X				X	
7/6/22	12:25	Bac-11-JR	UARP Junction	Surface water			6	X	X				X	INVOICE TO:
7/6/22	13:02	Bac-13-IHR	UARP New Northwind	Surface water			6	X	X				X	Stillwater Sciences
				Surface water			6						X	Same as above
				Surface water			6						X	
				Surface water			6						X	**Project No. 750.10 Task 0600.02**
				Surface water			6						X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H2SO4

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Bethany Leach Stillwater Sciences	7/6/22 15:34		

RECEIVED AT LAB BY: **DATE/TIME:** 7/6/22 1534 **CONDITIONS/COMMENTS:** 4.1/3.4

SHIPPED BY: [ ] **FED EX** [ ] **UPS** [ ] **OTHER** **AIR BILL #**

07/13/22 11:36

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ, Bac-T, & Chemistry Monitoring
Project Number: 750.10 Task 0600.02
Project Manager: Emily Applequist

CLS Work Order #: 22G0279
COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bac-7-UVR (22G0279-01) Surface water	**Sampled: 07/06/22 09:50**		**Received: 07/06/22 15:34**						
Fecal Coliforms	**49**	1.8	MPN/100 mL	1	2205629	07/06/22 16:30	07/09/22	SM 9221	
E. Coli	**32.7**	1.0	"	"	2205610	07/06/22 16:15	07/07/22	SM9223	
Bac-8-UVR (22G0279-02) Surface water	**Sampled: 07/06/22 10:15**		**Received: 07/06/22 15:34**						
Fecal Coliforms	<1.8	1.8	MPN/100 mL	1	2205629	07/06/22 16:30	07/09/22	SM 9221	
E. Coli	<1.0	1.0	"	"	2205610	07/06/22 16:15	07/07/22	SM9223	
Bac-5-GCR (22G0279-03) Surface water	**Sampled: 07/06/22 10:45**		**Received: 07/06/22 15:34**						
Fecal Coliforms	**4.0**	1.8	MPN/100 mL	1	2205629	07/06/22 16:30	07/09/22	SM 9221	
E. Coli	**6.3**	1.0	"	"	2205610	07/06/22 16:15	07/07/22	SM9223	
Bac-6-GCR (22G0279-04) Surface water	**Sampled: 07/06/22 11:01**		**Received: 07/06/22 15:34**						
Fecal Coliforms	**>1600**	1.8	MPN/100 mL	1	2205629	07/06/22 16:30	07/09/22	SM 9221	
E. Coli	**1553.1**	1.0	"	"	2205610	07/06/22 16:15	07/07/22	SM9223	
Bac-10-UVR (22G0279-05) Surface water	**Sampled: 07/06/22 11:25**		**Received: 07/06/22 15:34**						
Fecal Coliforms	**49**	1.8	MPN/100 mL	1	2205629	07/06/22 16:30	07/09/22	SM 9221	
E. Coli	**6.3**	1.0	"	"	2205610	07/06/22 16:15	07/07/22	SM9223	
Bac-9-UVR (22G0279-06) Surface water	**Sampled: 07/06/22 11:47**		**Received: 07/06/22 15:34**						
Fecal Coliforms	**1.8**	1.8	MPN/100 mL	1	2205629	07/06/22 16:30	07/09/22	SM 9221	
E. Coli	<1.0	1.0	"	"	2205610	07/06/22 16:15	07/07/22	SM9223	
Bac-11-JR (22G0279-07) Surface water	**Sampled: 07/06/22 12:25**		**Received: 07/06/22 15:34**						
Fecal Coliforms	**14**	1.8	MPN/100 mL	1	2205629	07/06/22 16:30	07/09/22	SM 9221	
E. Coli	**8.6**	1.0	"	"	2205610	07/06/22 16:15	07/07/22	SM9223	

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ, Bac-T, & Chemistry Monitoring
Project Number: 750.10 Task 0600.02
Project Manager: Emily Applequist

CLS Work Order #: 22G0279
COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bac-13-IHR (22G0279-08) Surface water	**Sampled: 07/06/22 13:02**		**Received: 07/06/22 15:34**						
Fecal Coliforms	**23**	1.8	MPN/100 mL	1	2205629	07/06/22 16:30	07/09/22	SM 9221	
E. Coli	**65.7**	1.0	"	"	2205610	07/06/22 16:15	07/07/22	SM9223	

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0600.02	**CLS Work Order #: 22G0279**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

BT-5	>1600
BT-4a	<1.8
BT-4	<1.0
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

July 19, 2022

CLS Work Order #: 22G0646
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ, Bac-T, & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 07/12/22 14:00. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness. Any comments and exceptions are addressed under the Notes and Definitions section.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22606646 (of)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ, Bac-T, & Chemistry Monitoring

Sampled By Bethany Leach + Carrera Mclaughlin

Job Description
Monitor seasonal bacteria levels in UARP reaches

Site Location UARP

Client Job Number
750.10 Task 0600.02

Destination Laboratory
Rancho Cordova

[X] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

ANALYSIS REQUESTED

PRESERVATIVES ▼

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES ▼	Fecal coliform-15 Tube	E. coli Quanti-tray	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
7/12/22	09:23	Bac-15-SCR	UARP Slab creek	Surface water			6	X	X				X	
7/12/22	10:37	Bac-14-BCR	UARP Butte creek	Surface water			6	X	X				X	
7/12/22	11:53	Bac-13-IHR	UARP New Natomas	Surface water			6	X	X				X	
7/12/22	12:00	Bac-12-IHR	UARP Northshore	Surface water			6	X	X				X	
				Surface water			6						X	
				Surface water			6						X	
				Surface water			6						X	
				Surface water			6						X	
				Surface water			6						X	
				Surface water			6						X	
				Surface water			6						X	
				Surface water			6						X	
				Surface water			6						X	

GEOTRACKER

EDF REPORT YES [X] NO [ ]

GLOBAL ID:

FIELD CONDITIONS:

INVOICE TO:
Stillwater Sciences

Same as above

Project No. 750.10 Task 0600.02

QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H_2SO_4

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Bethany Leach	7/12/22		
	Stillwater Sciences	13:46		

RECEIVED AT LAB BY: **DATE/TIME:** 7/12/22 1346 **CONDITIONS/COMMENTS:** 4.1

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER **AIR BILL #**

07/19/22 15:00

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ, Bac-T, & Chemistry Monitoring
Project Number: 750.10 Task 0600.02
Project Manager: Emily Applequist

CLS Work Order #: 22G0646
COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bac-15-SCR (22G0646-01) Surface water	**Sampled: 07/12/22 09:23**	**Received: 07/12/22 14:00**							
Fecal Coliforms	**2.0**	1.8	MPN/100 mL	1	2205830	07/12/22 14:30	07/15/22	SM 9221	
Total Coliforms	**>2419.6**	1.0	"	"	2205820	07/12/22 13:50	07/13/22	SM9223	
E. Coli	<1.0	1.0	"	"	"	"	"	"	
Bac-14-BCR (22G0646-02) Surface water	**Sampled: 07/12/22 10:37**	**Received: 07/12/22 14:00**							
Fecal Coliforms	**4.0**	1.8	MPN/100 mL	1	2205830	07/12/22 14:30	07/15/22	SM 9221	
Total Coliforms	**2419.6**	1.0	"	"	2205820	07/12/22 13:50	07/13/22	SM9223	
E. Coli	**3.1**	1.0	"	"	"	"	"	"	
Bac-13-IHR (22G0646-03) Surface water	**Sampled: 07/12/22 11:53**	**Received: 07/12/22 14:00**							
Fecal Coliforms	**4.5**	1.8	MPN/100 mL	1	2205830	07/12/22 14:30	07/15/22	SM 9221	
Total Coliforms	**461.1**	1.0	"	"	2205820	07/12/22 13:50	07/13/22	SM9223	
E. Coli	**14.5**	1.0	"	"	"	"	"	"	
Bac-12-IHR (22G0646-04) Surface water	**Sampled: 07/12/22 12:00**	**Received: 07/12/22 14:00**							
Fecal Coliforms	**2.0**	1.8	MPN/100 mL	1	2205830	07/12/22 14:30	07/15/22	SM 9221	
Total Coliforms	**1299.7**	1.0	"	"	2205820	07/12/22 13:50	07/13/22	SM9223	
E. Coli	**2.0**	1.0	"	"	"	"	"	"	

07/19/22 15:00

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0600.02	**CLS Work Order #: 22G0646**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

BT-5	>2419.6
BT-4	<1.0
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

July 20, 2022

CLS Work Order #: 22G0708
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ, Bac-T, & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 07/13/22 12:35. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness. Any comments and exceptions are addressed under the Notes and Definitions section.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 2260708 (of)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ, Bac-T, & Chemistry Monitoring

Sampled By Bethany Leach, Cameron McLaughlin

Job Description
Monitor seasonal bacteria levels in UARP reaches.

Site Location UARP

Client Job Number
750.10 Task 0600.02

Destination Laboratory
Rancho Cordova

[X] **CLS** (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] **OTHER**

ANALYSIS REQUESTED

GEOTRACKER

EDF REPORT YES [X] [ ] NO

GLOBAL ID.

FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	Fecal coliform-15 Tube			E. coli Quanti-tray				TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
7/13/22	08:34	Bac-7-UVR	UARP Foshole	Surface water			6	X			X							X	
7/13/22	08:55	Bac-8-UVR	UARP Wench	Surface water			6	X			X							X	
7/13/22	09:28	Bac-5 GCR	UARP Gerle	Surface water			6	X			X							X	
7/13/22	09:41	Bac-6-GCR	UARP Angel	Surface water			6	X			X							X	
7/13/22	10:03	Bac-10-UVR	UARP Yellowjacket	Surface water			6	X			X							X	
7/13/22	10:25	Bac-9-UVR	UARP Camino	Surface water			6	X			X							X	
7/13/22	10:50	Bac-11-JR	UARP Junction	Surface water			6	X			X							X	INVOICE TO:
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	**Project No. 750.10 Task 0600.02**
				Surface water			6											X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4) = H_2SO_4

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME
	Bethany Leach	7/13/22
	Stillwater Sciences	12:35

RECEIVED BY (Signature)	PRINT NAME/COMPANY

RECEIVED AT LAB BY: **DATE/TIME:** 7/13/22 1285

CONDITIONS/COMMENTS: 4.8 / 4.1

SHIPPED BY: [ ] **FED EX** [ ] **UPS** [ ] **OTHER** _____ **AIR BILL #** _____

07/20/22 09:26

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ, Bac-T, & Chemistry Monitoring
Project Number: 750.10 Task 0600.02
Project Manager: Emily Applequist

CLS Work Order #: 22G0708
COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bac-7-UVR (22G0708-01) Surface water	**Sampled: 07/13/22 08:34**	**Received: 07/13/22 12:35**							
Fecal Coliforms	**240**	1.8	MPN/100 mL	1	2205867	07/13/22 13:15	07/16/22	SM 9221	
Total Coliforms	**307.6**	1.0	"	"	2205861	"	07/14/22	SM9223	
E. Coli	**25.9**	1.0	"	"	"	"	"	"	
Bac-8- UVR (22G0708-02) Surface water	**Sampled: 07/13/22 08:55**	**Received: 07/13/22 12:35**							
Fecal Coliforms	**920**	1.8	MPN/100 mL	1	2205867	07/13/22 13:15	07/16/22	SM 9221	
Total Coliforms	**224.7**	1.0	"	"	2205861	"	07/14/22	SM9223	
E. Coli	<1.0	1.0	"	"	"	"	"	"	
Bac-5- UVR (22G0708-03) Surface water	**Sampled: 07/13/22 09:28**	**Received: 07/13/22 12:35**							
Fecal Coliforms	**>1600**	1.8	MPN/100 mL	1	2205867	07/13/22 13:15	07/16/22	SM 9221	
Total Coliforms	**1203.3**	1.0	"	"	2205861	"	07/14/22	SM9223	
E. Coli	**9.8**	1.0	"	"	"	"	"	"	
Bac-6-UVR (22G0708-04) Surface water	**Sampled: 07/13/22 09:41**	**Received: 07/13/22 12:35**							
Fecal Coliforms	**>1600**	1.8	MPN/100 mL	1	2205867	07/13/22 13:15	07/16/22	SM 9221	
Total Coliforms	**1553.1**	1.0	"	"	2205861	"	07/14/22	SM9223	
E. Coli	**8.6**	1.0	"	"	"	"	"	"	
Bac-10-UVR (22G0708-05) Surface water	**Sampled: 07/13/22 10:03**	**Received: 07/13/22 12:35**							
Fecal Coliforms	**920**	1.8	MPN/100 mL	1	2205867	07/13/22 13:15	07/16/22	SM 9221	
Total Coliforms	**579.4**	1.0	"	"	2205861	"	07/14/22	SM9223	
E. Coli	<1.0	1.0	"	"	"	"	"	"	
Bac-9-UVR (22G0708-06) Surface water	**Sampled: 07/13/22 10:25**	**Received: 07/13/22 12:35**							
Fecal Coliforms	**350**	1.8	MPN/100 mL	1	2205867	07/13/22 13:15	07/16/22	SM 9221	
Total Coliforms	**235.9**	1.0	"	"	2205861	"	07/14/22	SM9223	
E. Coli	**1.0**	1.0	"	"	"	"	"	"	

07/20/22 09:26

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0600.02	**CLS Work Order #: 22G0708**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bac-11-JR (22G0708-07) Surface water	**Sampled: 07/13/22 10:50**		**Received: 07/13/22 12:35**						
Fecal Coliforms	**>1600**	1.8	MPN/100 mL	1	2205867	07/13/22 13:15	07/16/22	SM 9221	
Total Coliforms	**770.1**	1.0	"	"	2205861	"	07/14/22	SM9223	
E. Coli	**27.9**	1.0	"	"	"	"	"	"	

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0600.02	**CLS Work Order #: 22G0708**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

BT-5	>1600
BT-4	<1.0
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

July 27, 2022

CLS Work Order #: 22G1121
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ, Bac-T, & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 07/19/22 14:22. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness. Any comments and exceptions are addressed under the Notes and Definitions section.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 226112 (of)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ, Bac-T, & Chemistry Monitoring

Sampled By Bethany Leach, Cameron Mclaughlin

Job Description
Monitor seasonal bacteria levels in UARP reaches.

Site Location UARP

Client Job Number
750.10 Task 0600.02

Destination Laboratory
Rancho Cordova

[x] **CLS** (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] **OTHER**

ANALYSIS REQUESTED

GEOTRACKER

EDF REPORT YES [x] NO [ ]

GLOBAL ID.

FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	Fecal coliform-15 Tube			E. coli Quanti-tray				TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
7/19/22	09:51	Bac-15-SCR	UARP Slab	Surface water			6	X			X							X	
7/19/22	11:02	Bac-14-BCR	UARP Brush	Surface water			6	X			X							X	
7/19/22	12:31	Bac-13-IHR	UARP New IH Northend	Surface water			6	X			X							X	
7/19/22	12:17	Bac-12-IHR	UARP IH Northshore	Surface water			6	X			X							X	
				Surface water			6											X	
				Surface water			6											X	
				Surface water			6											X	INVOICE TO:
				Surface water			6											X	Stillwater Sciences
				Surface water			6											X	Same as above
				Surface water			6											X	
				Surface water			6											X	**Project No. 750.10 Task 0600.02**
				Surface water			6											X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H2SO4

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Bethany Leach Stillwater Sciences	7/19/22 14:22		

RECEIVED AT LAB BY: DD **DATE/TIME:** 07/19/22 1422 **CONDITIONS/COMMENTS:** 5.0/4.3

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER _____ **AIR BILL #** _____

07/27/22 12:06

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ, Bac-T, & Chemistry Monitoring
Project Number: 750.10 Task 0600.02
Project Manager: Emily Applequist

CLS Work Order #: 22G1121
COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bac-15-SCR (22G1121-01) Surface water	**Sampled: 07/19/22 09:51**	**Received: 07/19/22 14:22**							
Fecal Coliforms	**4.5**	1.8	MPN/100 mL	1	2206045	07/19/22 14:45	07/21/22	SM 9221	
E. Coli	<1	1.0	"	"	2206054	"	07/22/22	SM9223	
Bac-14- BCR (22G1121-02) Surface water	**Sampled: 07/19/22 11:02**	**Received: 07/19/22 14:22**							
Fecal Coliforms	**13**	1.8	MPN/100 mL	1	2206045	07/19/22 14:45	07/21/22	SM 9221	
E. Coli	**1.0**	1.0	"	"	2206054	"	07/22/22	SM9223	
Bac13- IHR (22G1121-03) Surface water	**Sampled: 07/19/22 12:31**	**Received: 07/19/22 14:22**							
Fecal Coliforms	**13**	1.8	MPN/100 mL	1	2206045	07/19/22 14:45	07/21/22	SM 9221	
E. Coli	**7.5**	1.0	"	"	2206054	"	07/22/22	SM9223	
Bac-12-IHR (22G1121-04) Surface water	**Sampled: 07/19/22 12:17**	**Received: 07/19/22 14:22**							
Fecal Coliforms	**23**	1.8	MPN/100 mL	1	2206045	07/19/22 14:45	07/21/22	SM 9221	
E. Coli	**13.2**	1.0	"	"	2206054	"	07/22/22	SM9223	

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0600.02	**CLS Work Order #: 22G1121**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

BT-4	<1
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

July 27, 2022

CLS Work Order #: 22G1209
COC #:

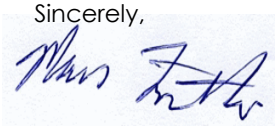
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ, Bac-T, & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 07/20/22 13:25. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 229209 (of)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ, Bac-T, & Chemistry Monitoring

Sampled By Bethany Leach, Cameron McLaughlin

Job Description
Monitor seasonal bacteria levels in UARP reaches.

Site Location UARP

Client Job Number
750.10 Task 0600.02

Destination Laboratory
Rancho Cordova

[X] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] OTHER

GEOTRACKER

EDF REPORT YES [X] [ ] NO

GLOBAL ID.

FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	ANALYSIS REQUESTED: Fecal coliform-15 Tube	ANALYSIS REQUESTED: E. coli Quanti-tray	TURNAROUND TIME IN DAYS: 1	2	3	5	SPECIAL INSTRUCTIONS
7/20/22	09:36	Bac-11-JR	UARP Junction	Surface water			6	X	X				X	
7/20/22	09:58	Bac-9-UVR	UARP Camino	Surface water			6	X	X				X	
7/20/22	10:21	Bac-10-UVR	UARP Yellow Jacket	Surface water			6	X	X				X	
7/20/22	10:45	Bac-5-GCR	UARP Gore	Surface water			6	X	X				X	
7/20/22	10:57	Bac-6-GCR	UARP Angel	Surface water			6	X	X				X	
7/20/22	11:22	Bac-8-UVR	UARP Bench	Surface water			6	X	X				X	
7/20/22	11:41	Bac-7-UVR	UARP Fashola	Surface water			6	X	X				X	INVOICE TO:
				Surface water			6						X	Stillwater Sciences
				Surface water			6						X	Same as above
				Surface water			6						X	
				Surface water			6						X	Project No. 750.10 Task 0600.02
				Surface water			6						X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4) = H_2SO_4

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Bethany Leach	7/20/22		
	Stillwater Sciences	13:25		

RECEIVED AT LAB BY: DB DATE/TIME: 07/20/22 1325

CONDITIONS/COMMENTS: 9.4/11.1

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER AIR BILL #

Stillwater Sciences	Project:	SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0600.02	**CLS Work Order #: 22G1209**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bac-11-JR (22G1209-01) Surface water Sampled: 07/20/22 09:36 Received: 07/20/22 13:25									
E. Coli	**8.6**	1.0	MPN/100 mL	1	2206106	07/20/22	07/21/22	SM9223	
Fecal Coliforms	**13**	1.8	"	"	2206108	07/20/22	07/24/22	SM 9221	
Bac-9-UVR (22G1209-02) Surface water Sampled: 07/20/22 09:58 Received: 07/20/22 13:25									
E. Coli	**1.0**	1.0	MPN/100 mL	1	2206106	07/20/22	07/21/22	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	2206108	07/20/22	07/24/22	SM 9221	
Bac-10-UVR (22G1209-03) Surface water Sampled: 07/20/22 10:21 Received: 07/20/22 13:25									
E. Coli	<1.0	1.0	MPN/100 mL	1	2206106	07/20/22	07/21/22	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	2206108	07/20/22	07/24/22	SM 9221	
Bac-5-GCR (22G1209-04) Surface water Sampled: 07/20/22 10:45 Received: 07/20/22 13:25									
E. Coli	**18.9**	1.0	MPN/100 mL	1	2206106	07/20/22	07/21/22	SM9223	
Fecal Coliforms	**11**	1.8	"	"	2206108	07/20/22	07/24/22	SM 9221	
Bac-6-GCR (22G1209-05) Surface water Sampled: 07/20/22 10:57 Received: 07/20/22 13:25									
E. Coli	**6.3**	1.0	MPN/100 mL	1	2206106	07/20/22	07/21/22	SM9223	
Fecal Coliforms	**11**	1.8	"	"	2206108	07/20/22	07/24/22	SM 9221	
Bac-8-UVR (22G1209-06) Surface water Sampled: 07/20/22 11:22 Received: 07/20/22 13:25									
E. Coli	<1.0	1.0	MPN/100 mL	1	2206106	07/20/22	07/21/22	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	2206108	07/20/22	07/24/22	SM 9221	
Bac-7-UVR (22G1209-07) Surface water Sampled: 07/20/22 11:41 Received: 07/20/22 13:25									
E. Coli	**12.1**	1.0	MPN/100 mL	1	2206106	07/20/22	07/21/22	SM9223	
Fecal Coliforms	**17**	1.8	"	"	2206108	07/20/22	07/24/22	SM 9221	

Stillwater Sciences	Project:	SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0600.02	**CLS Work Order #: 22G1209**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Notes and Definitions

BT-4a	<1.8
BT-4	<1.0
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

September 01, 2022

CLS Work Order #: 22H1582
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD Bac-T

Enclosed are the results of analyses for samples received by the laboratory on 08/24/22 16:25. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 124/582 (1 of 1)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD ~~In situ~~, Bac-T, & ~~Chemistry~~ Monitoring

Sampled By

Job Description
Monitor seasonal bacteria levels in UARP reaches.

Site Location UARP

Client Job Number
750.10 Task 0600.02

Destination Laboratory
Rancho Cordova

[x] **CLS** (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] **OTHER**

ANALYSIS REQUESTED

GEOTRACKER

EDF REPORT YES [x] NO [ ]

GLOBAL ID

FIELD CONDITIONS

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	Fecal coliform-15 Tube	E. coli Quanti-tray	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
8/24	1000	Bac-1-BI		Surface water			6	X	X				X	
8/24	0950	Bac-2-BI		Surface water			6	X	X				X	
8/24	1355	Bac-3-LL		Surface water			6	X	X				X	
8/24	1405	Bac-4-LL		Surface water			6	X	X				X	
				Surface water			6						X	
				Surface water			6						X	
				Surface water			6						X	
				Surface water			6						X	INVOICE TO:
				Surface water			6						X	Stillwater Sciences
				Surface water			6						X	Same as above
				Surface water			6						X	
				Surface water			6						X	**Project No. 750.10 Task 0600.02**
				Surface water			6						X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4) = H_2SO_4

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Esther Adelstein/Stillwater	8/24 1625		

RECEIVED AT LAB BY: **DATE/TIME:** 8/24 1625 **CONDITIONS/COMMENTS:** 1.3/0.6

SHIPPED BY: [ ] **FED EX** [ ] **UPS** [ ] **OTHER** _____ **AIR BILL #** _____

09/01/22 14:03

Stillwater Sciences	Project:	SMUD Bac-T	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0600.02	**CLS Work Order #: 22H1582**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bac-1-BI (22H1582-01) Surface Water Sampled: 08/24/22 10:00 Received: 08/24/22 16:25									
E. Coli	<1	1.0	MPN/100 mL	1	2207241	08/24/22	08/25/22	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	2207248	08/24/22	08/27/22	SM 9221	
Bac-2-BI (22H1582-02) Surface Water Sampled: 08/24/22 09:50 Received: 08/24/22 16:25									
E. Coli	<1	1.0	MPN/100 mL	1	2207241	08/24/22	08/25/22	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	2207248	08/24/22	08/27/22	SM 9221	
Bac-3-LL (22H1582-03) Surface Water Sampled: 08/24/22 13:55 Received: 08/24/22 16:25									
E. Coli	<1	1.0	MPN/100 mL	1	2207241	08/24/22	08/25/22	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	2207248	08/24/22	08/27/22	SM 9221	
Bac-4-LL (22H1582-04) Surface Water Sampled: 08/24/22 14:05 Received: 08/24/22 16:25									
E. Coli	**1.0**	1.0	MPN/100 mL	1	2207241	08/24/22	08/25/22	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	2207248	08/24/22	08/27/22	SM 9221	

Stillwater Sciences	Project:	SMUD Bac-T	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0600.02	**CLS Work Order #: 22H1582**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Notes and Definitions

BT-4a	<1.8
BT-4	<1
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

September 08, 2022

CLS Work Order #: 22H1932
COC #:

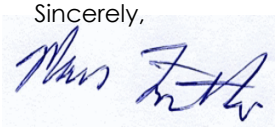
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD Bac-T

Enclosed are the results of analyses for samples received by the laboratory on 08/31/22 15:31. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 22H1932 (of)

Report To:	Client Job Number 750.11 Task 0600.02
Stillwater Sciences 279 Cousteau Place Suite 400 Davis, CA 95618	Destination Laboratory Rancho Cordova
Project Manager: Emily Applequist eapplequist@stillwatersci.com	[X] CLS (916) 638-7301 3249 Fitzgerald Road Rancho Cordova, CA 95742 www.californialab.com
Project Name: SMUD ~~In situ~~, Bac-T, ~~& Chemistry Monitoring~~	[ ] OTHER
Sampled By:	
Job Description: Monitor seasonal bacteria levels in reach downstream of Chili Bar	
Site Location: UARP	

ANALYSIS REQUESTED: Fecal coliform-15 Tube; E. coli Quanti-tray

GEOTRACKER
EDF REPORT: YES [X] NO [ ]
GLOBAL ID.
FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	Fecal coliform-15 Tube	E. coli Quanti-tray	TAT 1	TAT 2	TAT 3	TAT 5	SPECIAL INSTRUCTIONS
~~[illegible]~~	~~[illegible]~~	~~[illegible]~~		Surface water			6						X	
8/31	10:00	Bac-1-BI		Surface water	1		6	X	X				X	
	10:30	Bac-2-BI		Surface water	1		6	X	X				X	
	11:30	Bac-3-LL		Surface water	1		6	X	X				X	
	12:00	Bac-4-LL		Surface water	1		6	X	X				X	
				Surface water			6						X	
				Surface water			6						X	INVOICE TO:
				Surface water			6						X	Stillwater Sciences
				Surface water			6						X	Same as above
				Surface water			6						X	
				Surface water			6						X	**Project No. 750.11 Task 0600.02**
				Surface water			6						X	QUOTE#

SUSPECTED CONSTITUENTS | SAMPLE RETENTION TIME | PRESERVATIVES (1) HCL (2) HNO_3 (3) = COLD (4)= H2SO4

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
[signature]	Stillwater sciences	8/31/22 15:31		

RECEIVED AT LAB BY: [signature] DATE/TIME: 8/31/22 1531 CONDITIONS/COMMENTS: 5.2/4.5

SHIPPED BY: [ ] FED EX [ ] UPS [ ] OTHER ______ AIR BILL # ______

Stillwater Sciences	Project:	SMUD Bac-T	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0600.02	**CLS Work Order #: 22H1932**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bac-1-BI (22H1932-01) Surface Water	**Sampled: 08/31/22 10:00**	**Received: 08/31/22 15:31**							
E. Coli	**1.0**	1.0	MPN/100 mL	1	2207486	08/31/22	09/01/22	SM9223	
Total Coliforms	**1553.1**	1.0	"	"	"	"	"	"	
Bac-2-BI (22H1932-02) Surface Water	**Sampled: 08/31/22 10:30**	**Received: 08/31/22 15:31**							
E. Coli	<1	1.0	MPN/100 mL	1	2207486	08/31/22	09/01/22	SM9223	
Total Coliforms	**2419.6**	1.0	"	"	"	"	"	"	
Bac-3-LL (22H1932-03) Surface Water	**Sampled: 08/31/22 11:30**	**Received: 08/31/22 15:31**							
E. Coli	<1	1.0	MPN/100 mL	1	2207486	08/31/22	09/01/22	SM9223	
Total Coliforms	**5.2**	1.0	"	"	"	"	"	"	
Bac-4-LL (22H1932-04) Surface Water	**Sampled: 08/31/22 12:00**	**Received: 08/31/22 15:31**							
E. Coli	<1	1.0	MPN/100 mL	1	2207486	08/31/22	09/01/22	SM9223	
Total Coliforms	**95.9**	1.0	"	"	"	"	"	"	

Stillwater Sciences	Project:	SMUD Bac-T	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0600.02	**CLS Work Order #: 22H1932**
Berkeley, CA 94705	Project Manager:	Emily Applequist	COC #:

Notes and Definitions

BT-4	<1
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

September 14, 2022

CLS Work Order #: 22I0350
COC #: 222829

Maia Singer
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD WQ

Enclosed are the results of analyses for samples received by the laboratory on 09/07/22 15:15. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness. Any comments and exceptions are addressed under the Notes and Definitions section.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

CHAIN OF CUSTODY

CLS ID No.: 221050

LOG Nº 222829

HIGHLIGHTED AREAS MUST BE FILLED OUT PRIOR TO ACCEPTANCE

REPORT TO:

NAME AND ADDRESS: Emily Applequist
279 Constand Pl. #900
Davis, CA
PROJECT MANAGER: Main Singer PHONE#
PROJECT NAME: SMUD WQ
SAMPLED BY: APC & EAE
JOB DESCRIPTION: UARP WQ
SITE LOCATION: UARP

CLIENT JOB NUMBER:

DESTINATION LABORATORY

☐ CLS (916) 638-7301
3249 FITZGERALD RD.
RANCHO CORDOVA, CA.
95742

☐ OTHER

PRESERVATIVES: 6

ANALYSIS REQUESTED

Quantitray	Fecal Calif. IS tube	Total Calif. IS tube
x	x	x
↓	↓	↓
↓	↓	↓
↓	↓	↓

GEOTRACKER:
EDF REPORT ☐ YES ☐ NO
GLOBAL ID:

CDPH WRITE ON EDT TRANSMISSION? ☐ YES ☐ NO
STATE SYSTEM NUMBER
IF "YES" PLEASE ENTER THE SOURCE NUMBER(S).

COMPOSITE:

TURN AROUND TIME

1 DAY	2 DAY	3 DAY	5 DAY
			X
			X
			X
			X

SPECIAL INSTRUCTIONS

OR

ALT. ID:

DATE	TIME	SAMPLE IDENTIFICATION	MATRIX	CONTAINER NO.	CONTAINER TYPE
9/7	10:00	Bac-1-BI	Surface	1	
9/7	10:30	Bac-2-BI	Surface	1	
9/7	12:00	Bac-3-LL	Surface	1	
9/7	12:30	Bac-4-LL	Surface	1	

INVOICE TO:

PO. #

QUOTE #

Email/Address

PRESERVATIVES: (1) HCL (2) HNO_3 (3) = COLD (4) = NaOH (5) = H_2SO_4 (6) = $Na_2S_2O_3$ (7) =

RELINQUISHED BY (SIGN)	PRINT NAME / COMPANY	DATE / TIME	RECEIVED BY (SIGN)	PRINT NAME / COMPANY
	Adam Cohen/Stillwater	9/7 3:15 PM		

RECD AT LAB BY: [illegible] DATE / TIME: 9/7/22 1515 CONDITIONS / COMMENTS: 4.8/4.1

SHIPPED BY: ☐ FED X ☐ UPS ☐ OTHER _____ AIR BILL #

White-Lab/Terms and conditions Yellow - Lab file copy/Terms and Conditions Pink - Origin/Terms and Conditions Gold-Project Mgr./Field Sampler/Terms and conditions

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD WQ
Project Number: [none]
Project Manager: Maia Singer

CLS Work Order #: 22I0350
COC #: 222829

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bac-1-BI (22I0350-01) Surface Sampled: 09/07/22 10:00 Received: 09/07/22 15:15									**A-COM**
Total Coliforms	**2.0**	1.8	MPN/100 mL	1	2207665	09/07/22 20:00	09/10/22	SM 9221	
Fecal Coliforms	**2.0**	1.8	"	"	"	"	"	"	
Total Coliforms	**1986.3**	1.0	"	"	2207663	09/07/22 18:15	09/08/22	SM9223	
E. Coli	<1	1.0	"	"	"	"	"	"	
Bac-2-BI (22I0350-02) Surface Sampled: 09/07/22 10:30 Received: 09/07/22 15:15									**A-COM**
Total Coliforms	**33**	1.8	MPN/100 mL	1	2207665	09/07/22 20:00	09/10/22	SM 9221	
Fecal Coliforms	**4.0**	1.8	"	"	"	"	"	"	
Total Coliforms	**1413.6**	1.0	"	"	2207663	09/07/22 18:15	09/08/22	SM9223	
E. Coli	**1.0**	1.0	"	"	"	"	"	"	
Bac-3-LL (22I0350-03) Surface Sampled: 09/07/22 12:00 Received: 09/07/22 15:15									**A-COM**
Total Coliforms	**2.0**	1.8	MPN/100 mL	1	2207665	09/07/22 20:00	09/10/22	SM 9221	
Fecal Coliforms	<1.8	1.8	"	"	"	"	"	"	
Total Coliforms	**26.5**	1.0	"	"	2207663	09/07/22 18:15	09/08/22	SM9223	
E. Coli	<1	1.0	"	"	"	"	"	"	
Bac-4-LL (22I0350-04) Surface Sampled: 09/07/22 12:30 Received: 09/07/22 15:15									**A-COM**
Total Coliforms	**4.0**	1.8	MPN/100 mL	1	2207665	09/07/22 20:00	09/10/22	SM 9221	
Fecal Coliforms	<1.8	1.8	"	"	"	"	"	"	
Total Coliforms	**78.0**	1.0	"	"	2207663	09/07/22 18:15	09/08/22	SM9223	
E. Coli	<1	1.0	"	"	"	"	"	"	

09/14/22 15:37

Stillwater Sciences	Project: SMUD WQ	
2855 Telegraph Ave., Suite 400	Project Number: [none]	**CLS Work Order #: 22I0350**
Berkeley, CA 94705	Project Manager: Maia Singer	COC #: 222829

Notes and Definitions

BT-4a	<1.8
BT-4	<1
A-COM	Autoclave malfunction delayed media production. Prepared outside of hold time.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

September 30, 2022

CLS Work Order #: 22I1208
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ, Bac-T, & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 09/23/22 15:20. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness. Any comments and exceptions are addressed under the Notes and Definitions section.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 2271208 (of)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ, Bac-T, & Chemistry Monitoring

Sampled By

Job Description
Monitor seasonal bacteria levels in reach downstream of Chili Bar

Site Location UARP

Client Job Number
750.11 Task 0600.02

Destination Laboratory
Rancho Cordova

[x] **CLS** (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] **OTHER**

ANALYSIS REQUESTED

PRESERVATIVES ▼

Fecal coliform-15 Tube

E. coli Quanti-tray

GEOTRACKER

EDF REPORT YES [x] NO [ ]

GLOBAL ID.

FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES ▼	Fecal coliform-15 Tube	E. coli Quanti-tray	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
9/23	10:50	Bac-1-BI		Surface water			6						X	
	11:15	Bac-2-BI		Surface water			6						X	
	12:45	Bac-3-LL		Surface water			6						X	
	1:30	Bac-4-LL		Surface water			6						X	
				Surface water			6						X	
				Surface water			6						X	
				Surface water			6						X	
				Surface water			6						X	INVOICE TO:
				Surface water			6						X	Stillwater Sciences
				Surface water			6						X	Same as above
				Surface water			6						X	
				Surface water			6						X	**Project No. 750.11 Task 0600.02**
				Surface water			6						X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4) = H_2SO_4

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Adam Cohen/Stillwater	3:20 9/23		

RECEIVED AT LAB BY: DEOV **DATE/TIME:** 9/28/22 1800 **CONDITIONS/COMMENTS:** 4.0/12.7

SHIPPED BY: [ ] **FED EX** [ ] **UPS** [ ] **OTHER** _____ **AIR BILL #** _____

09/30/22 12:18

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ, Bac-T, & Chemistry Monitoring
Project Number: 750.11 Task 0600.02
Project Manager: Emily Applequist

CLS Work Order #: 22I1208
COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bac-1-BI (22I1208-01) Surface water Sampled: 09/23/22 10:50 Received: 09/23/22 15:20									
Fecal Coliforms	<1.8	1.8	MPN/100 mL	1	2208172	09/23/22 16:30	09/26/22	SM 9221	
Total Coliforms	**613.1**	1.0	"	"	2208177	09/23/22 17:30	09/24/22	SM9223	
E. Coli	<1	1.0	"	"	"	"	"	"	
Bac-2-BI (22I1208-02) Surface water Sampled: 09/23/22 11:15 Received: 09/23/22 15:20									
Fecal Coliforms	<1.8	1.8	MPN/100 mL	1	2208172	09/23/22 16:30	09/26/22	SM 9221	
Total Coliforms	**83.6**	1.0	"	"	2208177	09/23/22 17:30	09/24/22	SM9223	
E. Coli	<1	1.0	"	"	"	"	"	"	
Bac-3-LL (22I1208-03) Surface water Sampled: 09/23/22 12:45 Received: 09/23/22 15:20									
Fecal Coliforms	<1.8	1.8	MPN/100 mL	1	2208172	09/23/22 16:30	09/26/22	SM 9221	
Total Coliforms	**5.2**	1.0	"	"	2208177	09/23/22 17:30	09/24/22	SM9223	
E. Coli	<1	1.0	"	"	"	"	"	"	
Bac-4-LL (22I1208-04) Surface water Sampled: 09/23/22 13:30 Received: 09/23/22 15:20									
Fecal Coliforms	<1.8	1.8	MPN/100 mL	1	2208172	09/23/22 16:30	09/26/22	SM 9221	
Total Coliforms	**8.6**	1.0	"	"	2208177	09/23/22 17:30	09/24/22	SM9223	
E. Coli	<1	1.0	"	"	"	"	"	"	

09/30/22 12:18

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.11 Task 0600.02	**CLS Work Order #: 22I1208**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

BT-4a	<1.8
BT-4	<1
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

October 05, 2022

CLS Work Order #: 22I1360
COC #:

Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ, Bac-T, & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 09/27/22 16:20. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness. Any comments and exceptions are addressed under the Notes and Definitions section.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 221360 (of)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ, Bac-T, & Chemistry Monitoring

Sampled By Bethany Leach, Avik.

Job Description
Monitor seasonal bacteria levels in UARP reaches.

Site Location UARP

Client Job Number
750.10 Task 0600.02

Destination Laboratory
Rancho Cordova

[x] **CLS** (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] **OTHER**

ANALYSIS REQUESTED

GEOTRACKER

EDF REPORT YES [x] NO [ ]

GLOBAL ID

FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	Fecal coliform-15 Tube	E. coli Quanti-tray	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
9/27/22	11:30	Bac-1-BI		Surface water			6	X	X				X	
9/27/22	12:00	Bac-2-BI		Surface water			6	X	X				X	
9/27/22	13:50	Bac-3-LL		Surface water			6	X	X				X	
9/27/22	14:10	Bac-4-LL		Surface water			6	X	X				X	
				Surface water			6						X	
				Surface water			6						X	
				Surface water			6						X	
				Surface water			6						X	INVOICE TO:
				Surface water			6						X	Stillwater Sciences
				Surface water			6						X	Same as above
				Surface water			6						X	
				Surface water			6						X	**Project No. 750.10 Task 0600.02**
				Surface water			6						X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H_2SO_4

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Bethany Leach	9/27/22		
	Stillwater Sciences	16:20		

RECEIVED AT LAB BY: **DATE/TIME:** 9/27/22 1620 **CONDITIONS/COMMENTS:** 3.4/2.9

SHIPPED BY: [ ] **FED EX** [ ] **UPS** [ ] **OTHER** **AIR BILL #**

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ, Bac-T, & Chemistry Monitoring
Project Number: 750.10 Task 0600.02
Project Manager: Emily Applequist

CLS Work Order #: 22I1360
COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bac-1-BI (22I1360-01) Surface water Sampled: 09/27/22 11:30 Received: 09/27/22 16:20									
Fecal Coliforms	<1.8	1.8	MPN/100 mL	1	2208264	09/27/22 17:45	09/30/22	SM 9221	
Total Coliforms	**178.5**	1.0	"	"	2208258	"	09/28/22	SM9223	
E. Coli	<1	1.0	"	"	"	"	"	"	
Bac-2-BI (22I1360-02) Surface water Sampled: 09/27/22 12:00 Received: 09/27/22 16:20									
Fecal Coliforms	**13**	1.8	MPN/100 mL	1	2208264	09/27/22 17:45	09/30/22	SM 9221	
Total Coliforms	**204.6**	1.0	"	"	2208258	"	09/28/22	SM9223	
E. Coli	**2.0**	1.0	"	"	"	"	"	"	
Bac-3-LL (22I1360-03) Surface water Sampled: 09/27/22 13:50 Received: 09/27/22 16:20									
Fecal Coliforms	<1.8	1.8	MPN/100 mL	1	2208264	09/27/22 17:45	09/30/22	SM 9221	
Total Coliforms	**83.6**	1.0	"	"	2208258	"	09/28/22	SM9223	
E. Coli	<1	1.0	"	"	"	"	"	"	
Bac-4-LL (22I1360-04) Surface water Sampled: 09/27/22 14:10 Received: 09/27/22 16:20									
Fecal Coliforms	<1.8	1.8	MPN/100 mL	1	2208264	09/27/22 17:45	09/30/22	SM 9221	
Total Coliforms	**45.0**	1.0	"	"	2208258	"	09/28/22	SM9223	
E. Coli	<1	1.0	"	"	"	"	"	"	

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0600.02	**CLS Work Order #: 22I1360**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

BT-4a	<1.8
BT-4	<1
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

October 05, 2022

CLS Work Order #: 22I1449
COC #:

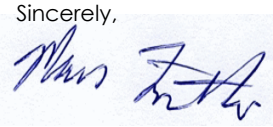
Emily Applequist
Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project Name: SMUD In situ, Bac-T, & Chemistry Monitoring

Enclosed are the results of analyses for samples received by the laboratory on 09/28/22 15:55. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



Marc Foster, Ph.D.
Technical Director

CA SWRCB ELAP Accreditation/Registration number 1233

10/05/22 16:26

Stillwater Sciences
2855 Telegraph Ave., Suite 400
Berkeley, CA 94705

Project: SMUD In situ, Bac-T, & Chemistry Monitoring
Project Number: 750.10 Task 0600.02
Project Manager: Emily Applequist

CLS Work Order #: 22I1449
COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bac-1-BI (22I1449-01) Surface water	**Sampled: 09/28/22 10:35**		**Received: 09/28/22 15:55**							
E. Coli	<1	1.0	1.0	MPN/100 mL	1	2208300	09/28/22	09/29/22	SM9223	
Fecal Coliforms	**23**	1.8	1.8	"	"	2208354	09/28/22	10/01/22	SM 9221	
Total Coliforms	**172.3**	1.0	1.0	"	"	2208300	09/28/22	09/29/22	SM9223	
Bac-2-BI (22I1449-02) Surface water	**Sampled: 09/28/22 10:40**		**Received: 09/28/22 15:55**							
E. Coli	<1	1.0	1.0	MPN/100 mL	1	2208300	09/28/22	09/29/22	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	2208354	09/28/22	10/01/22	SM 9221	
Total Coliforms	**816.4**	1.0	1.0	"	"	2208300	09/28/22	09/29/22	SM9223	
Bac-3-LL (22I1449-03) Surface water	**Sampled: 09/28/22 13:20**		**Received: 09/28/22 15:55**							
E. Coli	<1	1.0	1.0	MPN/100 mL	1	2208300	09/28/22	09/29/22	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	2208354	09/28/22	10/01/22	SM 9221	
Total Coliforms	**90.8**	1.0	1.0	"	"	2208300	09/28/22	09/29/22	SM9223	
Bac-4-LL (22I1449-04) Surface water	**Sampled: 09/28/22 13:50**		**Received: 09/28/22 15:55**							
E. Coli	<1	1.0	1.0	MPN/100 mL	1	2208300	09/28/22	09/29/22	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	2208354	09/28/22	10/01/22	SM 9221	
Total Coliforms	**22.8**	1.0	1.0	"	"	2208300	09/28/22	09/29/22	SM9223	

10/05/22 16:26

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0600.02	**CLS Work Order #: 22I1449**
Berkeley, CA 94705	Project Manager: Emily Applequist	COC #:

Notes and Definitions

BT-4a	<1.8
BT-4	<1
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

This is a "MDL Report", thus if the report denotes an "ND" for a particular analyte, it should be noted that the analyte was not detected at or above the MDL.

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 2211449 (of)

Report To:

Stillwater Sciences
279 Cousteau Place Suite 400
Davis, CA 95618

Project Manager
Emily Applequist eapplequist@stillwatersci.com

Project Name
SMUD In situ, Bac-T, & Chemistry Monitoring

Sampled By Bethany Leach, Jakob W

Job Description
Monitor seasonal bacteria levels in UARP reaches.

Site Location UARP

Client Job Number
750.10 Task 0600.02

Destination Laboratory
Rancho Cordova

[x] **CLS** (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com

[ ] **OTHER**

ANALYSIS REQUESTED

GEOTRACKER

EDF REPORT YES [x] NO [ ]

GLOBAL ID

FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES ▼	Fecal coliform-15 Tube	E. coli Quanti-tray	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
9/28/22	10:35	Bac-1-BI		Surface water			6	X	X				X	
9/28/22	10:40	Bac-2-BI		Surface water			6	X	X				X	
9/28/22	13:20	Bac-3-LL		Surface water			6	X	X				X	
9/28/22	13:50	Bac-4-LL		Surface water			6	X	X				X	
				Surface water			6						X	
				Surface water			6						X	
				Surface water			6						X	
				Surface water			6						X	INVOICE TO:
				Surface water			6						X	Stillwater Sciences
				Surface water			6						X	Same as above
				Surface water			6						X	
				Surface water			6						X	**Project No. 750.10 Task 0600.02**
				Surface water			6						X	QUOTE#

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES (1) HCL (3) = COLD (2) HNO_3 (4)= H_2SO_4

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Bethany Leach	9/28/22		
	Stillwater Sciences	15:55		

RECEIVED AT LAB BY: **DATE/TIME:** 1655 9/28

CONDITIONS/COMMENTS: 6.1 / 5.4

SHIPPED BY: [ ] **FED EX** [ ] **UPS** [ ] **OTHER** _____ **AIR BILL #** _____

From: Emily Applequist
To: CLS Labs - Mark Smith
Cc: Maia Singer
Subject: RE: SMUD WQ
Date: Friday, September 9, 2022 3:24:00 PM

Thanks for reaching out Mark. Please go ahead and process the samples. We'll make sure to note this in our reporting.

Emily Applequist
Environmental Scientist, Stillwater Sciences
office 530-756-7550 x382
eapplequist@stillwatersci.com

From: CLS Labs - Mark Smith <marks@californialab.com>
Sent: Friday, September 9, 2022 2:54 PM
To: Emily Applequist <eapplequist@stillwatersci.com>
Cc: Maia Singer <maia@stillwatersci.com>
Subject: SMUD WQ
Importance: High

Hi Emily,

I left you a voice mail – but wanted to follow-up with an email. For the attached COC – the lab did not set up the first two samples within the 8 hour hold time, BAC-1-BI – 2 Hours past hold time and BAC-2-BI – 1.5 Hours past hold time. I wanted to provide you this info so that you can let us know how you wish to handle this. My apologies for this issue and I look forward to hearing how you wish for us to proceed.

Mark G. Smith
Operations Manager
California Laboratory Services
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Rancho Cordova, CA 95742
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