Water Quality Monitoring Report - 2018

Sacramento Municipal Utility District

Hydro License Implementation • June 2019

Upper American River Project

FERC Project No. 2101

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Acronyms and Abbreviations

Acronym	Definition
BLM	U.S. Bureau of Land Management
CDFW	California Department of Fish and Wildlife
COLD	cold freshwater habitat
ºC	degrees Celsius
DO	dissolved oxygen
EPA	United States Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
hr	hour
m	Meter
MQO	Measurement Quality Objective
MDL	Method Detection Limit
uS/cm	microsiemens per centimeter
mg/L	milligram per liter
mL	milliliter
MPN	Most Probable Number
MRL	Method Reporting Limit
NTU	Nephelometric Turbidity Unit
% Sat	percent saturation
QA/QC	quality assurance and quality control
RWQCB	Regional Water Quality Control Board
SFAR	South Fork American River
SMUD	Sacramento Municipal Utility District
SPWN	Spawning, reproduction and/or early development
SWRCB	State Water Resources Control Board
SM	standard methods
s.u.	standard unit of pH
USFS	United States Forest Service
UARP	Upper American River Project
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 (Plan) (SMUD 2016). 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) and again in 2016 (Revision 2) to update the referenced analytical methods for various sub-programs within the Plan. At the completion of the first five years of monitoring, SMUD will consult with the SWRCB, Regional Water Quality Control Board (RWQCB), California Department of Fish and Wildlife (CDFW), USFS, and U.S. Bureau of Land Management (BLM) to determine if the results warrant further modifications to the Water Quality Monitoring Plan (SMUD 2016).

This report describes the results of the fourth year (2018) of water quality monitoring of basic *in situ* parameters and bacteria for the UARP.

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 2018 monitoring program was to perform *in situ* water quality and bacteria monitoring in reservoirs and stream reaches of the UARP, in order 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 UARP boundary.] The diverted stream reaches included in the monitoring program represented all streams and rivers downstream of UARP reservoirs (Figure 3-1).

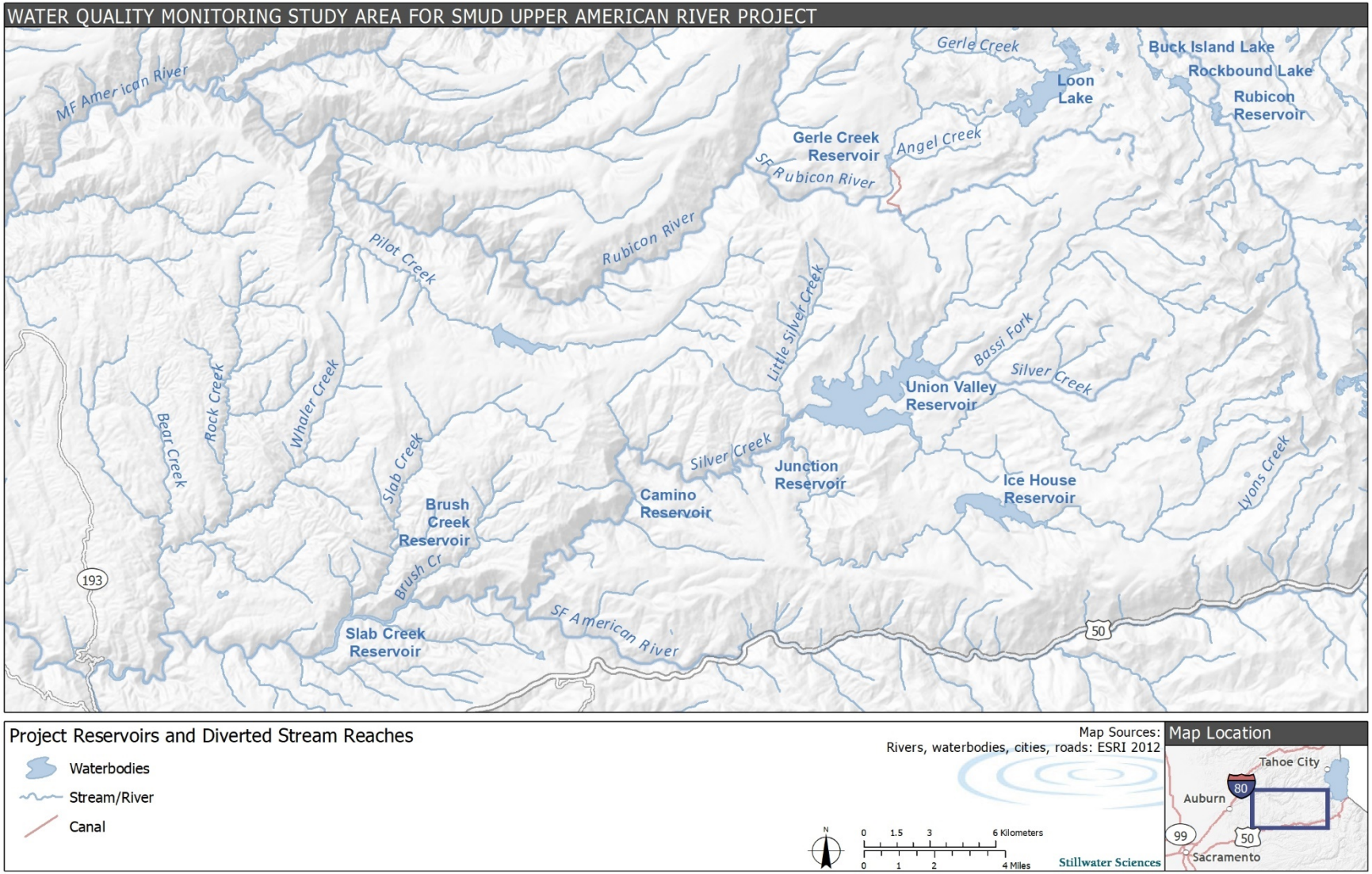

Figure 3-1. Study area for SMUD Upper American River Project *in situ* and bacteria monitoring.

4.0 SAMPLING FREQUENCY AND LOCATIONS

Year 4 (2018) sampling frequency for *in situ* water quality was consistent with winter, spring, summer, and fall monitoring periods designated in the Water Quality Monitoring Plan (SMUD 2016) (Table 4-1). Required bacteria monitoring was conducted by sampling the middle elevation UARP reservoir sites (Gerle Creek, Union Valley, Junction, Ice House, Brush Creek, Slab Creek) during the 30-day period surrounding 4th of July and sampling the upper elevation UARP reservoir sites (Loon Lake, Buck Island) during the 30-day period surrounding Labor Day.

Table 4-1. Sampling Frequency for *in situ* Parameters and Bacteria.

Type	2018 (Year 4) 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
Bacteria	Five samples within 30 days – around 4th of July Five samples within 30 days – around Labor Day

Specific sampling locations within reservoirs and diverted stream reaches varied depending on the general constituent under study. As specified in the Water Quality Monitoring Plan, *in situ* monitoring occurred at 15 representative reservoir locations (Figure 4-1 and Figure 4-2, Table 4-2) and 19 representative stream reaches (Figure 4-1 and Figure 4-2, Table 4-3). Several riverine sites could not be sampled during January 2018 due to snow accumulation (Table 4-4). Bacteria sampling occurred at 15 locations (Figure 4-1 and Figure 4-2, Table 4-5).

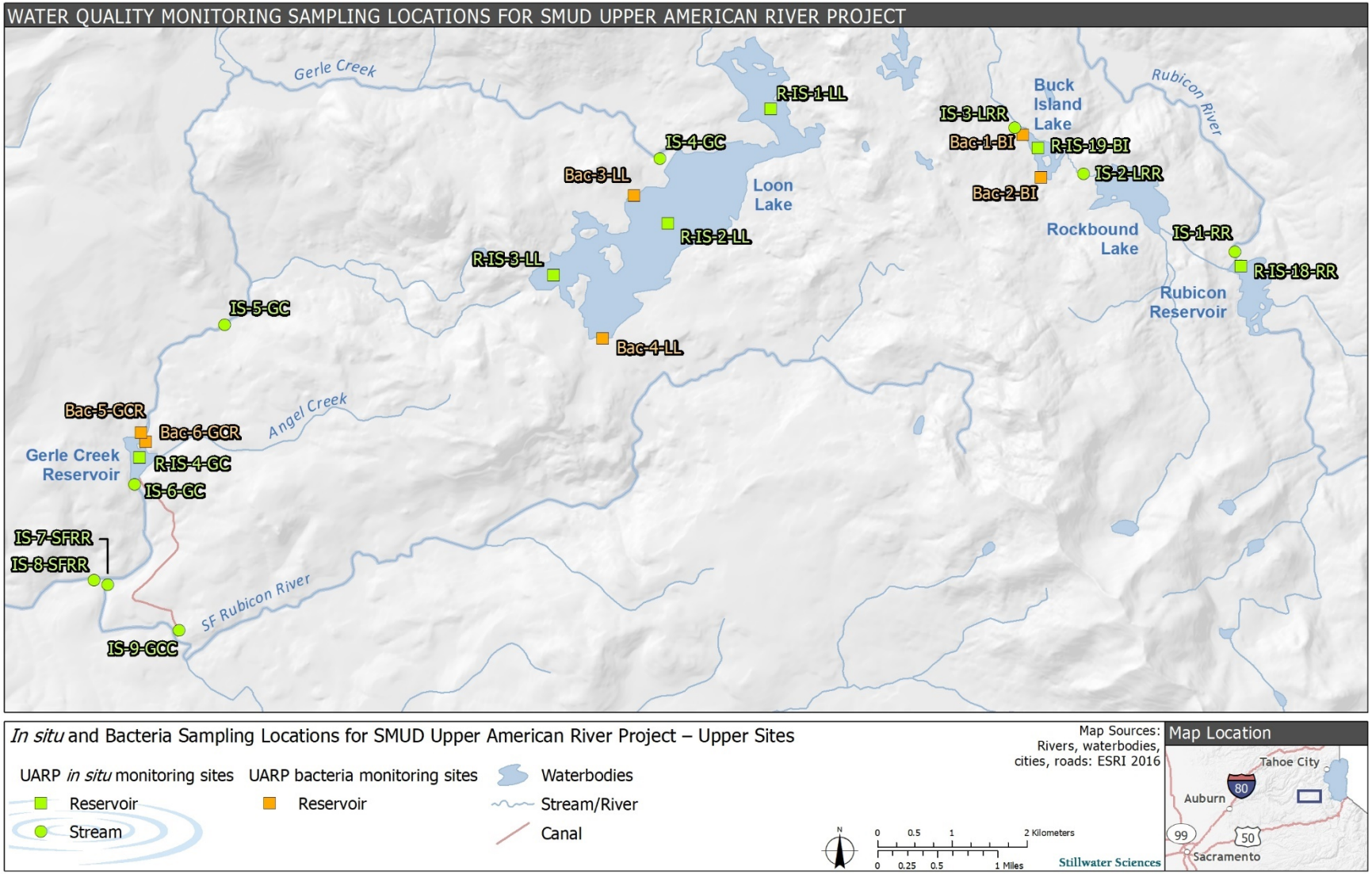

Figure 4-1. *In situ* water quality and bacteria sampling locations for SMUD Upper American River Project – upper sites.

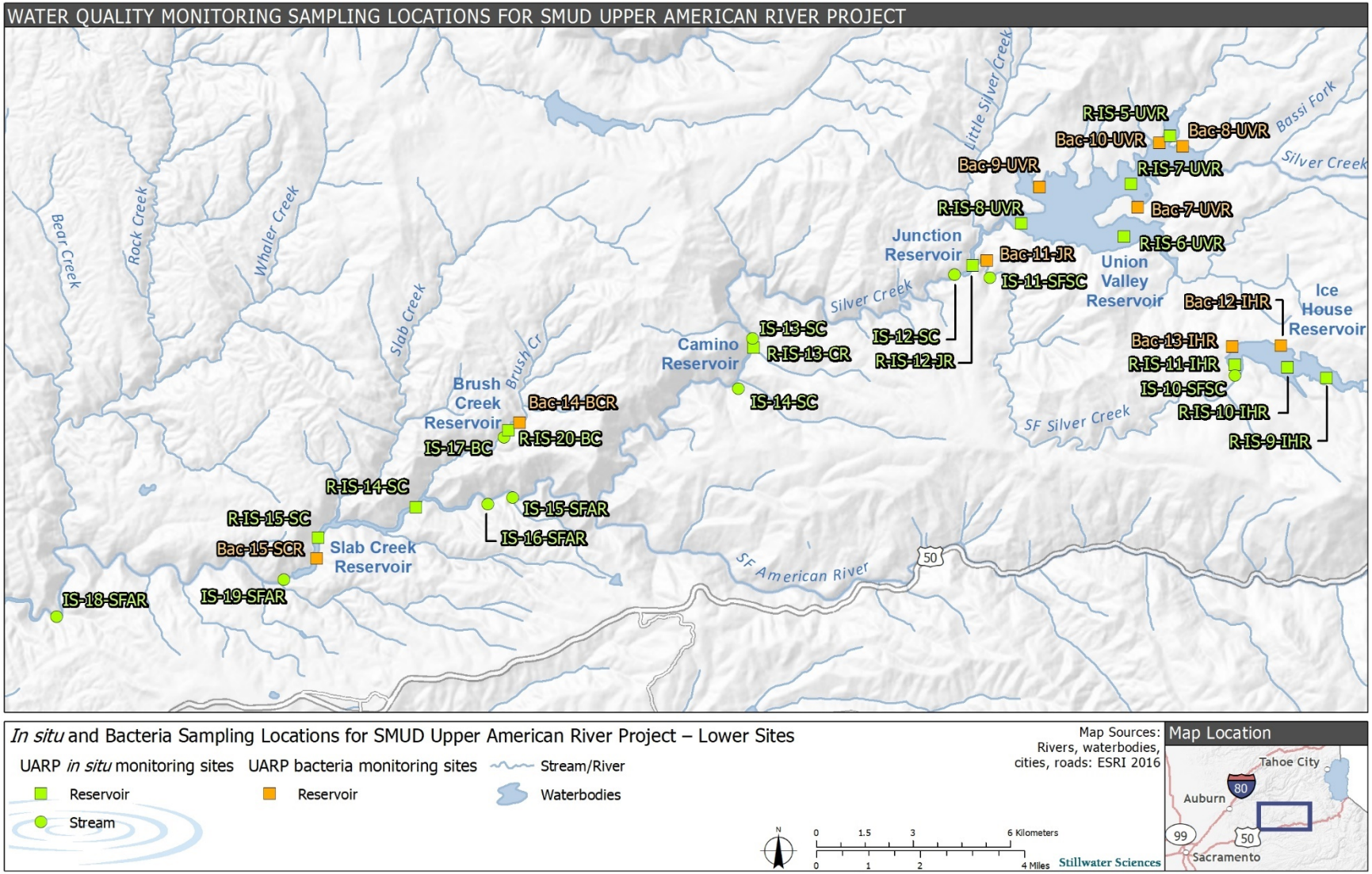

Figure 4-2. *In situ* water quality and bacteria sampling locations for SMUD Upper American River Project – lower sites.

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

SMUD Site Name	Site ID	Location	2018 *In situ* Survey Sample Date
R-4C	R-IS-1-LL	Loon Lake, upper reservoir (northeast body)	5/3, 10/23
R-4B	R-IS-2-LL	Loon Lake, mid-reservoir (west body)	5/1, 10/23
R-4A	R-IS-3-LL	Loon Lake, near dam	5/1, 10/23
R-5	R-IS-4-GC	Gerle Creek Reservoir, mid-reservoir	5/3, 10/26
R-6C	R-IS-5-UVR	Union Valley Reservoir, Robbs PH tailrace zone	4/30, 10/24
R-6D	R-IS-6-UVR	Union Valley Reservoir, Jones Fork Silver Creek arm	5/1, 10/24
R-6B	R-IS-7-UVR	Union Valley Reservoir, mid-reservoir	5/1, 10/24
R-6A	R-IS-8-UVR	Union Valley Reservoir, near dam	5/1, 10/24
R-7C	R-IS-9-IHR	Ice House Reservoir, upper lake body	4/30, 10/22
R-7B	R-IS-10-IHR	Ice House Reservoir, mid-reservoir	4/30, 10/22
R-7A	R-IS-11-IHR	Ice House Reservoir, near dam	4/30, 10/22
R-8	R-IS-12-JR	Junction Reservoir, mid-reservoir between arms	5/10, 10/26
R-9	R-IS-13-CR	Camino Reservoir, mid-reservoir	5/10, 10/26
R-11B	R-IS-14-SC	Slab Creek Reservoir, upper-reservoir	5/2, 10/25
R-11A	R-IS-15-SC	Slab Creek Reservoir, mid-reservoir	5/2, 10/25

Table 4-3. *In situ* Water Quality Sampling Locations and Dates for SMUD Upper American River Project Riverine Sites.

SMUD Site Name	Site ID	Location	2018 *In situ* Survey Sample Date
2	IS-1-RR	Rubicon River outflow from Rubicon Reservoir	5/18, 8/17, 11/12
5	IS-2-LRR	Little Rubicon River outflow from Rockbound Lake	5/18, 8/17, 11/12
6	IS-3-LRR	Little Rubicon outflow from Buck Island Lake	5/18, 8/17, 11/12
7	IS-4-GC	Gerle Creek outflow from Loon Lake	5/8, 8/13, 11/13
14	IS-5-GC	Gerle Creek inflow to Gerle Creek Reservoir	5/8, 8/13, 11/13
15	IS-6-GC	Gerle Creek outflow from Gerle Creek Reservoir	5/8, 8/13, 11/13
18	IS-7-SFRR	S.F. Rubicon upstream of Gerle Creek confluence	5/8, 8/13, 11/13
19	IS-8-SFRR	S.F. Rubicon downstream of Gerle Creek confluence	5/8, 8/13, 11/13
16	IS-9-GCC	Gerle Creek Canal inflow to Robbs Forebay	1/29, 5/8, 8/13, 11/13
25	IS-10-SFSC	S.F. Silver Creek outflow from Ice House	1/29, 5/8, 8/13, 11/13
27	IS-11-SFSC	S.F. Silver Creek inflow to Junction Reservoir	1/29, 5/10, 8/14, 11/14
29	IS-12-SC	Silver Creek outflow from Junction Reservoir	1/29, 5/10, 8/14, 11/14
32	IS-13-SC	Silver Creek inflow to Camino Reservoir	1/29, 5/10, 8/14, 11/14
34	IS-14-SC	Silver Creek outflow from Camino Reservoir	1/29, 5/10, 8/14, 11/14
38	IS-15-SFAR	South Fork American River (SFAR) upstream of Camino Powerhouse	1/30, 5/9, 8/14, 11/14
41	IS-16-SFAR	SFAR downstream of Camino Powerhouse	1/30, 5/9, 8/14, 11/14
40	IS-17-BC	Brush Creek outflow from Brush Creek Reservoir	1/30, 5/9, 8/14, 11/16
60	IS-18-SFAR	SFAR upstream of White Rock Powerhouse	1/30, 5/9, 8/15, 11/14
43	IS-19-SFAR	SFAR downstream of Slab Creek Reservoir	1/30, 5/9, 8/15, 11/14

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

SMUD Site Name	Site ID	Location	Reason not sampled during January 2018 (Winter) *In situ* Survey
2	IS-1-RR	Rubicon River outflow from Rubicon Reservoir	Snow accumulation
5	IS-2-LRR	Little Rubicon River outflow from Rockbound Lake	Snow accumulation
6	IS-3-LRR	Little Rubicon outflow from Buck Island Lake	Snow accumulation
7	IS-4-GC	Gerle Creek outflow from Loon Lake	Snow accumulation
14	IS-5-GC	Gerle Creek inflow to Gerle Creek Reservoir	Snow accumulation
15	IS-6-GC	Gerle Creek outflow from Gerle Creek Reservoir	Snow accumulation
18	IS-7-SFRR	S.F. Rubicon upstream of Gerle Creek confluence	Snow accumulation
19	IS-8-SFRR	S.F. Rubicon downstream of Gerle Creek confluence	Snow accumulation

Table 4-5. Bacteria Sampling Locations and Dates for SMUD Upper American River Project Sites.

Reservoir	SMUD Site Name	Site ID	Location	2018 Sample Dates
Buck Island Reservoir (beach locations)	R-3B	Bac-1-BI	On Northshore, near dam and Off-Highway Vehicle camping	8/23, 8/30, 9/6, 9/13, 9/20
	77	Bac-2-BI	On south shore, near Rubicon hiking trail	8/23, 8/30, 9/6, 9/13, 9/20
Loon Lake Reservoir (beach locations)	64	Bac-3-LL	West of main dam, near Red Fir Campground	8/23, 8/30, 9/6, 9/13, 9/20
	65	Bac-4-LL	West of Loon Lake Campground, near boat launch	8/23, 8/30, 9/6, 9/13, 9/20
Gerle Creek Reservoir (beach locations)	66	Bac-5-GCR	Near Gerle Creek Campground	6/20, 6/27, 7/3, 7/12, 7/18
	67	Bac-6-GCR	Near Angel Creek picnic area	6/27, 7/3, 7/12, 7/18, 7/25
Union Valley Reservoir (swim areas)	R-6H	Bac-7-UVR	At Fashoda Beach	6/20, 6/27, 7/3, 7/12, 7/18
	R-6E	Bac-8-UVR	Near Wench Creek Campground	6/20, 6/27, 7/3, 7/12, 7/18
	FC-2	Bac-9-UVR	Near Camino Cove Campground	6/20, 6/27, 7/3, 7/12, 7/18
	R-6F	Bac-10-UVR	Near Yellowjacket Campground	6/20, 6/27, 7/3, 7/12, 7/18
Other UARP Locations	R-8B	Bac-11-JR	Junction Reservoir, near boat launch	6/19, 6/26, 7/2, 7/11, 7/17
Ice House Reservoir (beach locations)	68	Bac-12-IHR	Northshore near private campground access	6/19, 6/26, 7/2, 7/11, 7/17
	69	Bac-13-IHR	East of boat launch and picnic area	6/19, 6/26, 7/2, 7/11, 7/17
Other UARP locations	R-10B	Bac-14-BCR	Brush Creek Reservoir, near boat launch	6/19, 6/26, 7/2, 7/11, 7/17
	R-11C	Bac-15-SCR	Slab Creek Reservoir, near boat launch	6/19, 6/26, 7/2, 7/11, 7/17

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] 6920 or EXO) 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-11-IHR) at Ice House Reservoir.

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-19-SFAR) at the outflow from Slab Creek Reservoir.

For both reservoir and riverine *in situ* monitoring, Sonde calibration was conducted on-site prior to the start of each sampling day using standard solutions, and recorded on calibration logs (Appendix E). 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 was 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 approved Water Quality Monitoring Plan (SMUD 2016).

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

Parameter[1]	Method	Units	MDL
Water temperature (YSI 6560 Sensor)	EPA 170.1	degrees Celsius (ºC)	0.1
Conductivity (YSI 6560 Sensor)	SM 2510-B	microsiemens per centimeter (uS/cm)	1.0
DO (YSI 6562 Rapid Pulse Sensor)	SM 4500-O(G)	milligrams per liter (mg/L)	0.1
pH (YSI 6565 Sensor)	SM 4500-H	standard unit of pH (s.u.)	0.1
Turbidity (YSI 6136 Sensor)	SM 2130B	Nephelometric Turbidity Unit (NTU)	0.1
Secchi depth (Secchi disk)	USGS	meter (m)	0.1

DO = dissolved oxygen
EPA = Environmental Protection Agency
MDL = method detection limit
SM = Standard Methods
[1] A YSI 6920 instrument was used during part of the spring and fall sampling events. All sensor numbers listed apply to the YSI 6920. A YSI EXO instrument was used during the winter, spring, summer, and fall sampling events. YSI does not assign specific numbers or codes to the EXO sensors.

Conductivity data were qualified for 59 of 98 (60%) of *in situ* samples in 2018, which is greater than observed during 2015−2017 monitoring (33% of samples in 2017, 45% of samples in 2016, 0% of samples in 2015). Potential reasons for the relatively high degree of qualified data in 2018 include 1) calibration procedure (i.e., insufficient time for sensor stabilization during the post-sampling calibration check given sample conductivity values that are generally at or near the low end of the sensor range and cold water temperatures); and, 2) the conductivity sensor was malfunctioning. Both of these potential reasons will be explored prior to 2019 monitoring to reduce the occurrence of qualified data.

5.2 BACTERIA

Bacteria grab samples were collected near reservoir and river shorelines in shallow water, and in particular at swim areas/beach locations (Table 4-5, Figure 5-3). Samples were collected in sterilized bottles supplied by the analytical laboratory. Field sampling personnel 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 5-2).

Figure 5-3. Example of a bacteria sampling site at Ice House Reservoir (Bac-12-IHR).

Table 5-2. Bacteria Analytical Methods and Field Hold Times.

Analyte	Method	Units	MDL	Hold time
Escherichia coli	SM9223B (Quantitray)	MPN/100 mL	1.8	8 hr
Fecal coliform	SM9221E (MPN 15 or 25)	MPN/100 mL	1.8	8 hr

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

Field-based Quality Assurance/Quality Control (QA/QC) for bacterial samples 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, preservative, client name, collector's name, reservoir/river name, sampling location, and analysis/sample type. All sample labels were cross-checked by a second field technician before delivering samples to the analytical laboratory.

6.0 RESULTS

6.1. *IN SITU* PARAMETERS

6.1.1. Riverine Sites

In situ water quality data for UARP riverine sites are summarized in Table 6-1, and field data sheets are provided in Appendix D. Several riverine sites were not sampled during the 2018 January (Winter) sampling event due to snow accumulation (Table 4-4).

January (Winter) In situ Water Quality Sampling Event

During the January sampling event, water temperatures ranged from 2.5 to 7.2 degrees Celsius (°C) and were variable by site. Riverine dissolved oxygen ranged from 11.0 to 12.8 milligrams per liter (mg/L) (86 to 102% 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 (Table 6-1). pH at riverine sites ranged from 6.7 to 7.8 standard units (s.u.), with no exceedances of the Basin Plan instantaneous minimum or maximum pH objectives (6.5 s.u. and 8.5 s.u., respectively).

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

Turbidity measurements during the January sampling event were low, ranging from 0.3 to 7.5 Nephelometric Turbidity Unit (NTU) (Table 6-1). Turbidity at Site lS-17-BC was 7.5 NTU during this survey (Table 6-1), which was higher than other sites sampled during 2018 and may be due to the increased runoff from the King Fire area that burned over 97,000 acres of land in El Dorado County, California, in mid-September to mid-October

2014. Turbidity at Site IS-17-BC during the 2018 winter sampling event was notably lower than the highest values recorded in 2017 (78.7 NTU at Site IS-14-SC), 2016 (46.0 NTU at Site IS-17-BC), and 2015 (295.4 NTU at Site IS-17-BC).

May (Spring) In situ Water Quality Sampling Event

During the May sampling event, water temperatures exhibited a greater range and were generally higher than winter temperatures (5.3 to 15.3°C). Dissolved oxygen ranged from 9.3 to 11.4 mg/L (81 to 101% saturation) across all riverine sites, which is well above the minimum Basin Plan concentration of 7.0 mg/L for COLD and SPWN. pH ranged from 6.4 to 7.5 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-4-GC (6.4 s.u.) (Table 6-1).

Conductivity at the riverine sites was low, ranging from 6 to 34 uS/cm during the May sampling event.

Turbidity measurements were low, ranging from 0.1 to 3.9 NTU (Table 6-1).

August (Summer) In situ Water Quality Sampling Event

During the August sampling event, water temperatures ranged from 6.7 to 22.5°C and were variable by site. Riverine dissolved oxygen during the August sampling event ranged from 6.6 to 10.6 mg/L (74 to 100% saturation), with three measurements falling below the Basin Plan instantaneous minimum concentration of 7.0 mg/L for COLD and SPWN. Measured dissolved oxygen below the Basin Plan instantaneous minimum occurred at sites IS-1-RR (6.9 mg/L), IS-2-LRR (6.6 mg/L), and IS-3-LRR (6.9 mg/L) (Table 6-1), which may be due to low river flows or higher water temperatures at these sites in August. Riverine pH ranged from 6.2 to 7.7 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-4-GC (6.2 s.u.) (Table 6-1).

Conductivity at the riverine sites was low, ranging from 6 to 49 uS/cm.

During the August sampling event, turbidity measurements were low, ranging from 0.1 to 1.2 NTU (Table 6-1).

November (Fall) In situ Water Quality Sampling Event

Water temperatures during the November sampling event ranged from -2.5[1] to 9.6°C. Riverine dissolved oxygen ranged from 9.9 to 12.8 mg/L (74 to 99% saturation), with no measurements falling below the Basin Plan instantaneous minimum concentration of 7.0

[1] This value represents an isolated, unusually low water temperature result and is qualified as such.

mg/L for COLD and SPWN. Riverine pH ranged from 6.1 to 7.7 s.u. during the November event with four measurements 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 lS-5-GC (6.2 s.u.), lS-6-GC (6.1 s.u.), lS-8-SFRR (6.4 s.u.), and lS-10-SFSC (6.1 s.u.) (Table 6-1).

Conductivity at the riverine sites was low, ranging from 8 to 54 uS/cm during the November sampling event.

Turbidity at riverine sites was low, ranging from 0.1 to 1.3 NTU (Table 6-1).

Table 6-1. *In situ* Water Quality for UARP Riverine Sites.

Site ID	2018 Sample Date	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)
January (Winter)							
IS-1-RR	–	–	–	–	–	–	–
IS-2-LRR	–	–	–	–	–	–	–
IS-3-LRR	–	–	–	–	–	–	–
IS-4-GC	–	–	–	–	–	–	–
IS-5-GC	–	–	–	–	–	–	–
IS-6-GC	–	–	–	–	–	–	–
IS-9-GCC	1/29	2.5	6.7	11.8	86	7[Q]	0.7
IS-7-SFRR	–	–	–	–	–	–	–
IS-8-SFRR	–	–	–	–	–	–	–
IS-10-SFSC	1/29	4.8	7.1	11.0	86	6[Q]	0.4
IS-11-SFSC	1/29	2.6	7.3	12.1	89	9[Q]	0.6
IS-12-SC	1/29	5.9	7.1	11.1	89	8[Q]	0.6
IS-13-SC	1/29	6.6	7.3	11.6	94	8[Q]	0.3
IS-14-SC	1/29	6.0	7.3	11.6	93	13[Q]	0.8
IS-15-SFAR	1/30	4.5	7.6	12.8	99	35	0.9
IS-16-SFAR	1/30	4.6	7.5	12.7	98	26	0.7
IS-17-BC	1/30	6.6	7.3	11.4	93	17	7.5
IS-18-SFAR	1/30	7.2	7.8	12.4	102	34	0.8
IS-19-SFAR	1/30	5.5	7.5	12.4	98	22	2.2
May (Spring)							
IS-1-RR	5/18	5.3	7.1	10.3	81	8	1.4
IS-2-LRR	5/18	7.5	7.1	9.7	81	7	1.1
IS-3-LRR	5/18	7.3	8.3	9.9	84	7	1.3
IS-4-GC	5/8	6.2	6.4	10.2	82	6[Q]	0.4
IS-5-GC	5/8	9.4	7.0	9.7	85	9[Q]	0.2
IS-6-GC	5/8	8.2	6.7	10.0	85	7[Q]	0.2
IS-9-GCC	5/8	10.7	6.9	9.9	89	9[Q]	0.2
IS-7-SFRR	5/8	11.4	7.1	9.3	85	12[Q]	0.3
IS-8-SFRR	5/8	11.4	6.9	9.5	87	10[Q]	0.2
IS-10-SFSC	5/8	5.5	7.0	10.7	85	7[Q]	0.5
IS-11-SFSC	5/10	10.1	7.1	9.9	88	11[Q]	0.2
IS-12-SC	5/10	6.9	7.0	10.7	88	9[Q]	0.2

Site ID	2018 Sample Date	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)
IS-13-SC	5/10	10.7	7.0	10.3	93	12[Q]	0.2
IS-14-SC	5/10	8.0	7.3	11.0	94	10[Q]	0.2
IS-15-SFAR	5/9	12.2	7.2	10.5	98	25[Q]	1.1
IS-16-SFAR	5/9	10.2	6.9	11.4	101	18[Q]	0.3
IS-17-BC	5/9	10.7	6.9	10.2	92	21[Q]	3.9
IS-18-SFAR	5/9	15.3	7.5	10.2	101	34[Q]	0.1
IS-19-SFAR	5/9	11.1	7.2	10.9	99	21[Q]	0.3
August (Summer)							
IS-1-RR	8/17	22.5	6.9	6.9	79	15	0.6
IS-2-LRR	8/17	20.5	6.9	6.6	74	13	0.2
IS-3-LRR	8/17	21.5	6.8	6.9	78	10	0.1
IS-4-GC	8/13	10.1	6.2	9.2	82	6[Q]	0.4
IS-5-GC	8/13	14.4	7.1	8.3	86	9[Q]	0.1
IS-6-GC	8/13	14.7	6.7	8.6	84	9[Q]	0.2
IS-9-GCC	8/13	16.4	6.7	8.6	88	9[Q]	0.1
IS-7-SFRR	8/13	15.8	7.0	8.5	86	9[Q]	0.1
IS-8-SFRR	8/13	15.5	7.0	8.7	88	9[Q]	0.1
IS-10-SFSC	8/13	6.7	6.8	10.5	85	7[Q]	0.4
IS-11-SFSC	8/14	13.6	7.2	9.1	87	11[Q]	0.2
IS-12-SC	8/14	7.9	6.8	10.2	86	8[Q]	0.2
IS-13-SC	8/14	16.1	7.0	9.0	92	14[Q]	0.1
IS-14-SC	8/14	10.4	7.1	10.5	94	11[Q]	0.2
IS-15-SFAR	8/14	20.6	7.7	8.8	98	49[Q]	0.3
IS-16-SFAR	8/14	11.3	6.7	10.6	97	16[Q]	0.2
IS-17-BC	8/14	19.3	7.3	8.4	91	24[Q]	1.2
IS-18-SFAR	8/15	17.7	7.4	9.5	100	26[Q]	0.2
IS-19-SFAR	8/15	13.3	7.2	10.1	97	17[Q]	0.8
November (Fall)							
IS-1-RR	11/12	1.3	6.5	10.4	74	12[Q]	0.4
IS-2-LRR	11/12	3.7	6.9	9.9	75	11[Q]	0.1
IS-3-LRR	11/12	3.0	6.6	10.6	79	8[Q]	0.3
IS-4-GC	11/13	5.2	6.6	10.2	80[Q]	8[Q]	0.2
IS-5-GC	11/13	1.2	6.2	11.3	81[Q]	10[Q]	0.1
IS-6-GC	11/13	3.0	6.1	10.5	78[Q]	11[Q]	0.2

Site ID	2018 Sample Date	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)
IS-9-GCC	11/13	3.1	6.8	10.8	81[Q]	13[Q]	0.3
IS-7-SFRR	11/13	1.1	6.5	11.5	81[Q]	13[Q]	0.1
IS-8-SFRR	11/13	1.6	6.4	11.5	82[Q]	12[Q]	0.3
IS-10-SFSC	11/13	5.6	6.1	9.9	79[Q]	13[Q]	0.5
IS-11-SFSC	11/14	-2.5[q]	6.9[q]	12.5[q]	80[q]	15[Q,q]	0.1[q]
IS-12-SC	11/14	1.2	6.8	11.9	85	14[Q]	0.2
IS-13-SC	11/14	1.5	6.9	12.5	89	15[Q]	0.2
IS-14-SC	11/14	4.0	6.9	11.9	90	16[Q]	0.1
IS-15-SFAR	11/14	1.9	7.0	12.8	93	54[Q]	0.1
IS-16-SFAR	11/14	4.9	6.7	12.3	96	27[Q]	0.4
IS-17-BC	11/16	9.6	7.5	10.4	91	30[Q]	1.3
IS-18-SFAR	11/16	7.1	7.7	12.0	99	32[Q]	0.2
IS-19-SFAR	11/16	8.4	7.7	11.3	96	26[Q]	0.4

°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 4-4.
"Q" Indicates data that are designated as "qualified" because the post-sampling calibration check measurement quality objective (MQO) for acceptability was not met (see Appendix E).
"q" All *in situ* parameters are qualified at this site due to an isolated, unusually low water temperature result.

6.1.2. Reservoir Sites

In situ water quality data for selected UARP reservoir sites are presented in Figures 6-1 and 6-2 as representative of vertical profiles at other sites. Data for all sites are presented in Appendices A and B. As noted in Section 5, *in situ* water quality parameters were collected as part of Spring and Fall *in situ* sampling events in 2018, consistent with the Monitoring Plan (SMUD 2016).

April/May (Spring) In situ Water Quality Sampling Event

During the April/May (Spring) sampling event, thermal stratification was apparent in Union Valley, Ice House, and Junction reservoirs, with the thermocline located between roughly 5 and 15 m depth (Figure 6-1). Less thermal stratification was apparent in Slab Creek Reservoir and at the deeper site in Loon Lake (Site R-IS-1-LL). Across all reservoir sites, surface water temperatures ranged from 6.0° to 12.5°C and bottom water temperatures were lower, ranging from 4.6° to 7.9°C. In Union Valley and Ice House reservoirs, pH and turbidity were generally consistent with depth, suggesting well-mixed water columns that had only recently begun to stratify due to increasing surface water temperatures. Dissolved oxygen concentrations at most reservoir sites increased slightly with depth, likely due to increasing solubility at lower water temperatures. Dissolved oxygen concentrations were above 8 mg/L at all reservoir sites during the April/May (Spring) sampling event, greater than the Basin Plan instantaneous minimum concentration of 7.0 mg/L for COLD and SPAWN designated beneficial uses. pH values showed little variation among reservoirs and with depth, ranging from 6.5 to 7.0 s.u., with several values below the Basin Plan instantaneous minimum pH objective (6.5 s.u.). There were no exceedances of the instantaneous maximum pH objective (8.5 s.u.). Turbidity levels were very low (less than or equal to 2 NTU) (Figure 6-1).

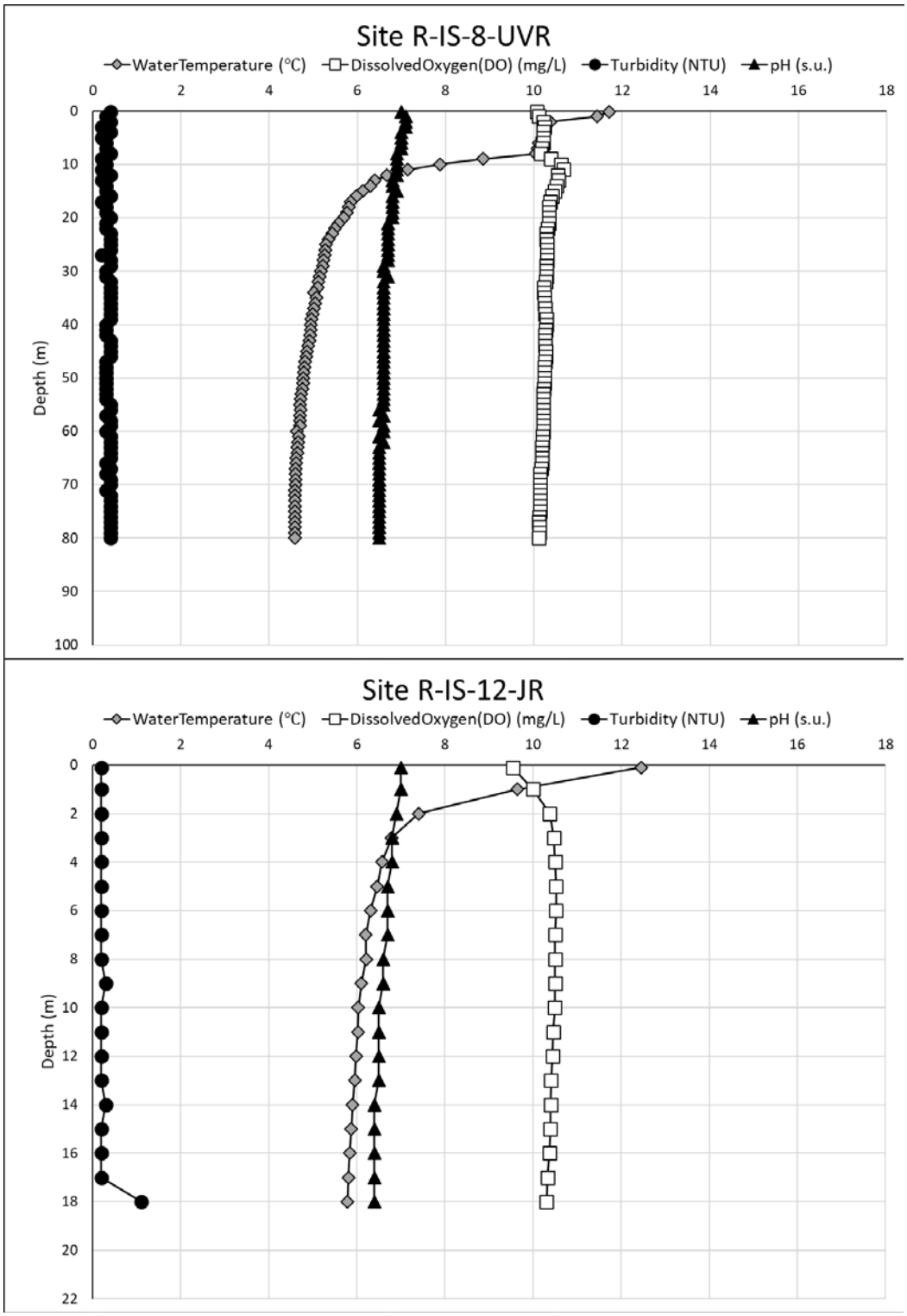

Figure 6-1. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Union Valley Reservoir and Junction Reservoir sites R-IS-8-UVR (top) and R-IS-12-JR (bottom) during May (Spring) 2018.

October (Fall) In situ Sampling Event

During the October sampling event, surface water temperatures across all reservoir sites ranged from 7.6° to 13.1°C and bottom water temperatures ranged from 3.6° to 12.8°C. Most sites exhibited little to no variation in water temperature with depth, indicating that the reservoirs were generally well mixed (Figure 6-2). Exceptions included Union Valley Reservoir (Site R-IS-8-UVR), which exhibited a broad, deep thermocline between 30 and 65 m (Appendix B, Figure B-12), and Slab Creek Reservoir (Site R-IS-14-SC), which exhibited a compact, shallow thermocline between 3 and 4 m (Appendix B, Figure B-15). Dissolved oxygen, pH, and turbidity at reservoir sites were generally consistent throughout depth. Dissolved oxygen concentrations were above the Basin Plan instantaneous minimum concentration of 7.0 mg/L for COLD and SPAWN designated beneficial uses, with the exception of Union Valley Reservoir (Site R-IS-8-UVR) where dissolved oxygen reached 6.7 mg/L at the approximate location of the thermocline (58 m) and continued to decrease towards the bottom of the reservoir (Appendix B, Figure B-12). pH values exhibited little variation with depth, ranging from 5.8 to 7.6 s.u., with Loon Lake (sites R-IS-1-LL, R-IS-2-LL, and R-IS-3-LL), Gerle Creek Reservoir (Site R-IS-4-GC), Union Valley Reservoir (sites R-IS-5-UVR, R-IS-6-UVR, R-IS-7-UVR, and R-IS-8-UVR), Junction Reservoir (Site R-IS-12-JR), and Camino Reservoir (Site R-IS-13-CR) all exhibiting values below the Basin Plan instantaneous minimum pH objective (6.5 s.u.) throughout the water column (Appendix B, Figures B-9, B-10, B-11, B-12, B-14 and B-15 respectively). There were no exceedances of the instantaneous maximum pH objective (8.5 s.u.). Turbidity levels were low (less than or equal to 4 NTU).

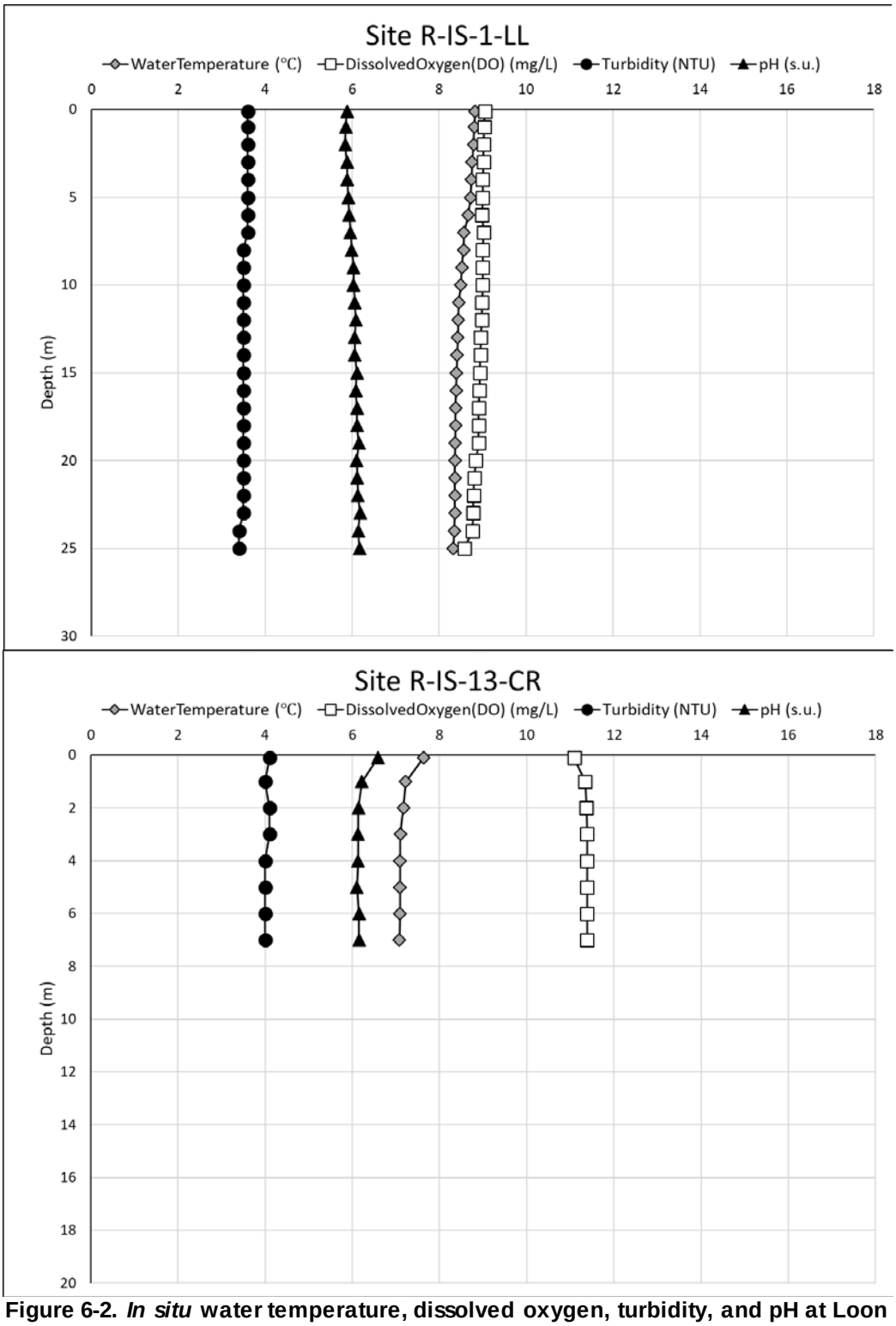

Figure 6-2. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Loon Lake and Camino Reservoir sites R-IS-1-LL (top) and R-IS-13-CR (bottom) during October (Fall) 2018.

6.2. BACTERIA

Instantaneous fecal coliform counts ranged from less than the MDL (1.8 most probable number per 100 milliliters [MPN/100 mL]) to 350 MPN/100 mL during both the 2018 Independence Day and Labor Day sampling events (Appendix C, Tables C-1 and C-2). The lowest geometric mean fecal coliform counts (0.9 MPN/100 mL) were calculated in samples from Brush Creek Reservoir (Site Bac-14-BCR) during the Independence Day sampling event and in Loon Lake (Site Bac-4-LL) during the Labor Day sampling event. The highest geometric mean fecal coliform count (9.2 MPN/100 mL) was calculated in samples from Slab Creek Reservoir (Site Bac-15-SCR) during the Independence Day sampling event (Table 6-2). Results less than the MDL were treated as 0.5 x MDL for the calculation. 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. Fecal coliform geometric mean counts in 2018 were either similar to or less than counts measured during prior years of the monitoring program (SMUD 2016, 2017, 2018). Further, none of the 2018 samples exceeded the instantaneous maximum Basin Plan objective of 400 MPN/100 mL.

Instantaneous *Escherichia coli* (*E. coli*) counts ranged from less than the MDL (1.0 MPN/100 mL) to 344.8 MPN/100 mL during the 2018 Independence Day and Labor Day sampling events (Appendix C, Tables C-1 and C-2). The lowest geometric mean *E. coli* count (0.5 MPN/100 mL) was calculated in samples from Brush Creek Reservoir (Site Bac-14-BCR) during the Independence Day sampling event, while the highest geometric mean *E. coli* count (21.8 MPN/100 mL) was calculated in samples from Junction Reservoir (Site Bac-11-JR) during the Independence Day sampling event (Table 6-2). Results less than the MDL were treated as 0.5 x MDL for the calculation. With the exception of Site Bac-11-JR, *E. coli* geometric mean counts in 2018 were either similar to or less than counts measured during prior years of the monitoring program (SMUD 2016, 2017, 2018). There is no Basin Plan numeric objective for *E. coli*.

Table 6-2. Bacteria Counts for UARP Reservoir Sites.

Site ID	Fecal coliform geometric mean [1,2] (MPN/100 mL)	*E. coli* geometric mean (MPN/100 mL)
Independence Day		
Bac-5-GCR	2.9	3.2
Bac-6-GCR	1.5	1.3
Bac-7-UVR	1.7	1.0
Bac-8-UVR	1.7	1.3
Bac-9-UVR	4.3	2.3
Bac-10-UVR	1.2	0.6
Bac-11-JR	7.6	21.8
Bac-12-IHR	1.1	0.7
Bac-13-IHR	2.0	2.4
Bac-14-BCR	0.9	0.5
Bac-15-SCR	9.2	8.4
Labor Day		
Bac-1-BI	1.2	0.7
Bac-2-BI	1.1	0.9
Bac-3-LL	1.1	0.7
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 is 200 MPN/100 mL expressed as the geometric mean of five samples collected over 30 days.

7.0 CONCLUSIONS

Based on 2018 *in situ* monitoring results, riverine water quality in the UARP study area consistently met Basin Plan water quality objectives for turbidity. There were three instances of dissolved oxygen measured below the Basin Plan instantaneous minimum objective (7.0 mg/L) for COLD and SPWN, which occurred during the August (Summer) sampling event at Rubicon River and Little Rubicon River sites and may have been due to relatively high water temperatures (greater than 20°C) and low flows. There were six instances of pH measured below the Basin Plan instantaneous minimum objective (6.5 s.u.), which is more than measured during 2015–2017 at riverine sites, but is generally consistent with low pH measured at reservoir sites during the 2015−2018 monitoring period. 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 (5 mg/L) in October (Fall) in the bottom waters of the deepest site at Union Valley Reservoir, which was stratified at the time of sampling. The latter result 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.

There were no instances of pH measured above the Basin Plan instantaneous maximum objective (8.5 s.u.). There were no instances of elevated turbidity.

Sampling results for 2018 also indicated no exceedances of the fecal coliform Basin Plan objective of 200 MPN/100 mL (geometric mean of five samples collected over 30 days) or the instantaneous maximum Basin Plan objective of 400 MPN/100 mL.

Despite occasional low dissolved oxygen and pH measurements, 2018 monitoring results indicate that overall, surface waters of the UARP study area support designated beneficial uses, including COLD, SPWN, and REC-1.

8.0 LITERATURE CITED

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APPENDIX A
In situ Vertical Profile Data for UARP Reservoir Sites

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Table A-1. Vertical Profile Data for UARP Reservoir Sites – April/May (Spring) In situ Surveys.

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
Loon Lake Reservoir									
R-IS-1-LL	5/3	0.1	8.2	9.9	84	6	7.3	0.2	12.2
		1	8.2	9.9	84	6	7.3	0.2	
		2	7.7	10.0	84	6	7.3	0.2	
		3	7.6	10.0	83	6	7.3	0.2	
		4	7.5	10.0	83	6	7.3	0.2	
		5	7.0	10.0	83	6	7.2	0.2	
		6	6.6	10.1	83	6	7.2	0.2	
		7	6.5	10.2	83	6	7.2	0.2	
		8	6.3	10.2	82	6	7.1	0.2	
		9	6.1	10.2	82	6	7.1	0.2	
		10	6.1	10.2	82	6	7.0	0.3	
		11	5.9	10.2	82	6	6.9	0.2	
		12	5.9	10.2	82	6	6.9	0.2	
		13	5.9	10.2	82	6	6.9	0.2	
		14	5.8	10.2	82	6	6.9	0.3	
		15	5.8	10.2	82	6	6.8	0.2	
		16	5.7	10.2	81	6	6.8	0.3	
		17	5.7	10.2	81	6	6.8	0.2	
		18	5.7	10.1	81	6	6.8	0.2	
		19	5.6	10.1	80	6	6.7	0.2	
		20	5.6	10.1	80	6	6.7	0.3	
		21	5.4	10.1	79	6	6.7	0.2	
		22	5.4	10.1	80	6	6.6	0.3	
		23	5.4	10.1	80	6	6.6	0.3	
		24	5.3	10.1	79	6	6.5	0.3	
		25	5.3	10.0	79	6	6.5	0.3[1]	

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
R-IS-2-LL	5/1	0.1	6.0	10.5	84	5	7.8	0.5	13.7
		1	6.0	10.5	84	5	7.6	0.4	
		2	6.0	10.5	84	5	7.5	0.5	
		3	6.0	10.5	84	5	7.4	0.5	
		4	6.0	10.5	84	5	7.3	0.5	
		5	6.0	10.4	84	5	7.3	0.4	
		6	6.0	10.5	84	5	7.2	0.5	
		7	6.0	10.4	84	5	7.1	0.4	
		8	6.0	10.4	84	5	6.9	0.4	
		9	6.0	10.4	84	5	6.6	0.4	
		10	5.9	10.4	83	5	6.6	0.4	
		11	6.0	10.4	83	5	6.5	0.5	
		12	5.9	10.4	83	5	6.5	0.5	
		13	6.0	10.4	83	5	6.5	0.5	
		14	6.0	10.4	83	5	6.4	0.5	
		15	6.0	10.3	83	5	6.5	0.4	
		16	5.9	10.3	83	5	6.4	0.4	
		17	5.9	10.3	83	5	6.4	0.4	
		18	5.9	10.3	83	5	6.4	0.5	
		19	5.9	10.3	83	5	6.3	0.4	
		20	5.9	10.3	83	5	6.4	0.4	
		21	5.9	10.3	83	5	6.4	0.4	
		22	5.9	10.3	82	5	6.4	0.4	
		23	5.7	10.3	82	5	6.3	0.4	
		24	5.7	10.3	82	5	6.3	0.4	
		25	5.7	10.3	82	5	6.3	0.4	
		26	5.6	10.3	82	5	6.3	0.4	
		27	5.5	10.3	82	5	6.3	0.5	
		28	5.5	10.4	82	5	6.3	0.5	

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
R-IS-3-LL	5/1	0.1	6.1	10.4	84	5	6.7	0.5	13.7
		1	6.1	10.4	84	5	6.6	0.4	
		2	6.0	10.4	84	5	6.6	0.4	
		3	6.0	10.4	84	5	6.6	0.5	
		4	6.0	10.4	84	5	6.6	0.4	
		5	6.0	10.4	84	5	6.6	0.4	
		6	6.0	10.4	84	5	6.6	0.4	
		7	5.9	10.4	84	5	6.6	0.5	
		8	5.9	10.4	83	5	6.5	0.4	
		9	5.9	10.4	83	5	6.5	0.4	
		10	5.9	10.4	83	5	6.5	0.4	
		11	5.9	10.4	83	5	6.5	0.4	
		12	5.9	10.4	83	5	6.5	0.4	
		13	5.9	10.4	83	5	6.5	0.4	
		14	5.9	10.4	83	5	6.5	0.4	
		15	5.8	10.3	83	5	6.4	0.4	
		16	5.8	10.3	83	5	6.5	0.4	
Gerle Reservoir									
R-IS-4-GC	5/3	0.1	7.8	10.3	87	7	6.9	0.2	8.5
		1	7.1	10.4	86	7	6.8	0.2	
		2	6.9	10.4	85	7	6.8	0.2	
		3	6.9	10.4	85	7	6.7	0.2	
		4	6.9	10.3	85	7	6.7	0.2	
		5	6.9	10.3	85	7	6.7	0.2	
		6	6.8	10.3	85	7	6.6	0.2	
		7	6.8	10.3	84	7	6.6	0.2	
		8	6.8	10.3	84	8	6.6	0.2	

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
Union Valley Reservoir									
R-IS-5-UVR	4/30	0.1	11.9	9.8	90	10	7.5	0.3	11.6
		1	11.9	9.7	90	10	7.4	0.2	
		2	11.4	9.8	89	10	7.3	0.2	
		3	11.1	9.8	88	10	7.3	0.2	
		4	11.0	9.8	88	10	7.3	0.2	
		5	10.2	9.9	88	10	7.3	0.2	
		6	9.5	10.0	88	10	7.2	0.2	
		7	8.7	10.1	87	10	7.2	0.2	
		8	8.1	10.2	87	9	7.1	0.2	
		9	7.9	10.2	86	9	7.1	0.2	
		10	7.7	10.3	86	9	7.0	0.1	
		11	7.5	10.3	86	9	7.0	0.1	
		12	7.1	10.3	84	9	7.0	0.2	
		13	6.1	10.4	83	9	6.9	0.2	
		14	5.7	10.3	82	8	6.9	0.2	
		15	5.6	10.3	82	9	6.9	0.2	
		16	5.4	10.3	81	8	6.9	0.2	
		17	5.3	10.2	81	8	6.8	0.2	
		18	5.2	10.2	80	8	6.8	0.2	
		19	5.2	10.1	79	8	6.8	0.2	
R-IS-6-UVR	5/1	0.1	12.2	9.3	92	10	6.9	0.4	12.2
		1	11.2	10.0	91	10	6.9	0.4	
		2	10.8	10.0	91	10	6.9	0.3	
		3	10.6	10.1	91	9	6.9	0.3	
		4	10.5	10.1	91	9	6.9	0.3	
		5	10.5	10.1	90	9	6.9	0.3	
		6	10.2	10.1	90	9	6.9	0.2	
		7	9.9	10.3	91	9	6.9	0.3	

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
R-IS-6-UVR	5/1	8	9.1	10.4	90	9	6.9	0.3	12.2
		9	8.4	10.5	90	9	6.9	0.3	
		10	7.9	10.6	89	9	6.8	0.3	
		11	7.8	10.6	89	9	6.9	0.2	
		12	7.4	10.6	88	9	6.9	0.3	
		13	7.1	10.5	87	9	6.8	0.2	
		14	6.9	10.4	86	8	6.8	0.4	
		15	6.8	10.4	85	8	6.8	0.3	
		16	6.5	10.4	85	8	6.8	0.3	
		17	6.4	10.4	84	8	6.7	0.3	
		18	6.3	10.4	83	8	6.8	0.3	
		19	6.1	10.4	83	8	6.8	0.3	
		20	5.8	10.3	83	8	6.7	0.3	
		21	5.8	10.3	82	8	6.7	0.3	
		22	5.8	10.3	82	8	6.7	0.3	
		23	5.7	10.3	82	8	6.7	0.3	
		24	5.7	10.3	82	8	6.7	0.3	
		25	5.5	10.3	82	8	6.7	0.3	
		26	5.4	10.3	81	8	6.7	0.3	
		27	5.3	10.3	81	8	6.6	0.4	
		28	5.1	10.2	80	8	6.6	0.4	
		29	5.1	10.2	80	8	6.6	0.4	
		30	5.0	10.2	80	8	6.6	0.4	
		31	5.0	10.2	80	8	6.6	0.3	
		32	5.0	10.2	80	8	6.6	0.4	
		33	5.0	10.2	80	8	6.6	0.4	
		34	5.0	10.2	79	8	6.6	0.4	
		35	5.0	10.2	79	8	6.6	0.4	
		36	4.9	10.1	79	8	6.7	0.4	

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
R-IS-7-UVR	5/1	0.1	12.1	9.9	92	10	7.0	0.5	10.4
		1	11.8	9.9	92	10	6.9	0.3	
		2	11.2	10.0	91	10	6.9	0.4	
		3	11.0	10.0	91	10	6.9	0.4	
		4	10.8	10.0	91	9	6.9	0.4	
		5	10.3	10.2	91	9	6.9	0.4	
		6	9.6	10.3	90	9	6.8	0.4	
		7	9.0	10.4	90	9	6.8	0.3	
		8	8.8	10.4	90	9	6.8	0.4	
		9	8.4	10.4	89	8	6.8	0.4	
		10	7.8	10.5	88	8	6.8	0.3	
		11	7.1	10.6	88	8	6.8	0.4	
		12	6.7	10.6	87	8	6.8	0.3	
		13	6.7	10.6	87	8	6.7	0.4	
		14	6.5	10.6	86	8	6.7	0.3	
		15	6.4	10.5	85	8	6.7	0.3	
		16	6.2	10.5	85	8	6.7	0.3	
		17	6.1	10.5	84	8	6.7	0.3	
		18	6.0	10.5	84	8	6.7	0.4	
		19	5.8	10.4	83	8	6.7	0.4	
		20	5.8	10.4	83	8	6.6	0.3	
		21	5.6	10.4	83	8	6.6	0.4	
		22	5.6	10.4	82	8	6.6	0.4	
		23	5.5	10.4	82	8	6.6	0.4	
		24	5.3	10.3	82	8	6.6	0.3	
		25	5.2	10.3	81	8	6.6	0.3	
		26	5.2	10.3	81	8	6.6	0.3	
		27	5.2	10.3	81	8	6.6	0.3	
		28	5.2	10.2	81	8	6.6	0.3	

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
R-IS-7-UVR	5/1	29	5.1	10.2	80	8	6.6	0.3	10.4
		30	5.1	10.2	80	8	6.6	0.3	
		31	5.1	10.2	80	8	6.6	0.4	
		32	5.0	10.2	80	8	6.6	0.4	
		33	5.0	10.2	80	8	6.6	0.3	
		34	5.0	10.2	80	8	6.6	0.3	
		35	5.0	10.2	80	8	6.6	0.4	
		36	4.9	10.2	80	8	6.6	0.4	
		37	4.9	10.2	79	8	6.6	0.3	
		38	4.9	10.2	79	8	6.6	0.3	
		39	4.9	10.2	79	8	6.6	0.3	
		40	4.9	10.2	79	8	6.5	0.4	
		41	4.9	10.2	79	8	6.6	0.4	
		42	4.9	10.2	79	8	6.5	0.3	
		43	4.9	10.2	79	8	6.5	0.4	
		44	4.9	10.1	79	8	6.5	0.4	
R-IS-8-UVR	5/1	0.1	11.7	10.1	93	10	7.0	0.4	11.3
		1	11.4	10.1	93	10	7.1	0.3	
		2	10.4	10.2	91	9	7.1	0.4	
		3	10.3	10.2	91	9	7.1	0.2	
		4	10.2	10.2	91	9	7.0	0.4	
		5	10.2	10.2	91	9	7.0	0.2	
		6	10.1	10.2	91	9	7.0	0.3	
		7	10.1	10.2	91	9	7.0	0.3	
		8	10.0	10.2	90	9	6.9	0.4	
		9	8.9	10.4	90	9	6.9	0.2	
		10	7.9	10.6	89	9	6.9	0.3	
		11	7.1	10.7	88	9	6.9	0.2	
		12	6.7	10.5	86	8	6.9	0.4	

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
R-IS-8-UVR	5/1	13	6.4	10.6	86	8	6.8	0.2	11.3
		14	6.3	10.5	85	8	6.8	0.3	
		15	6.1	10.5	84	8	6.8	0.3	
		16	6.0	10.4	84	8	6.8	0.4	
		17	5.9	10.4	83	8	6.8	0.2	
		18	5.8	10.3	83	8	6.8	0.3	
		19	5.8	10.4	83	8	6.8	0.3	
		20	5.7	10.3	82	8	6.8	0.4	
		21	5.6	10.3	82	8	6.7	0.3	
		22	5.5	10.3	82	8	6.7	0.3	
		23	5.4	10.3	82	8	6.7	0.4	
		24	5.3	10.3	81	8	6.7	0.4	
		25	5.3	10.3	81	8	6.7	0.4	
		26	5.3	10.3	81	8	6.7	0.4	
		27	5.3	10.3	81	8	6.7	0.2	
		28	5.2	10.3	81	8	6.7	0.4	
		29	5.2	10.3	81	8	6.6	0.4	
		30	5.2	10.3	81	8	6.6	0.3	
		31	5.2	10.3	81	8	6.7	0.3	
		32	5.1	10.3	81	8	6.6	0.4	
		33	5.1	10.2	80	8	6.6	0.4	
		34	5.0	10.2	80	8	6.6	0.4	
		35	5.1	10.2	80	8	6.6	0.4	
		36	5.1	10.3	80	8	6.6	0.4	
		37	5.0	10.3	80	8	6.6	0.4	
		38	5.0	10.3	80	8	6.6	0.4	
		39	5.0	10.3	80	8	6.6	0.4	
		40	5.0	10.3	80	8	6.6	0.3	
		41	4.9	10.3	80	8	6.6	0.3	

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
R-IS-8-UVR	5/1	42	4.9	10.3	80	8	6.6	0.3	11.3
		43	4.9	10.3	80	8	6.6	0.4	
		44	4.9	10.3	80	8	6.6	0.4	
		45	4.9	10.3	80	8	6.6	0.4	
		46	4.9	10.3	80	8	6.6	0.4	
		47	4.8	10.3	80	8	6.6	0.3	
		48	4.8	10.3	80	8	6.6	0.3	
		49	4.8	10.2	80	8	6.6	0.3	
		50	4.8	10.2	80	8	6.6	0.3	
		51	4.8	10.2	80	8	6.6	0.3	
		52	4.8	10.2	80	8	6.6	0.3	
		53	4.7	10.2	80	8	6.6	0.3	
		54	4.7	10.2	79	8	6.6	0.3	
		55	4.7	10.2	79	8	6.6	0.4	
		56	4.7	10.2	79	8	6.5	0.4	
		57	4.7	10.2	79	8	6.6	0.3	
		58	4.7	10.2	79	8	6.5	0.4	
		59	4.7	10.2	79	8	6.6	0.4	
		60	4.6	10.2	79	8	6.6	0.3	
		61	4.7	10.2	79	8	6.5	0.4	
		62	4.7	10.2	79	8	6.6	0.4	
		63	4.6	10.2	79	8	6.5	0.4	
		64	4.6	10.2	79	8	6.5	0.4	
		65	4.6	10.2	79	8	6.5	0.4	
		66	4.6	10.2	79	8	6.5	0.3	
		67	4.6	10.2	79	8	6.5	0.4	
		68	4.6	10.2	79	8	6.5	0.3	
		69	4.6	10.2	79	8	6.5	0.4	
		70	4.6	10.2	79	8	6.5	0.4	

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
R-IS-8-UVR	5/1	71	4.6	10.1	79	8	6.5	0.3	11.3
		72	4.6	10.1	79	8	6.5	0.4	
		73	4.6	10.1	79	8	6.5	0.4	
		74	4.6	10.1	79	8	6.5	0.4	
		75	4.6	10.1	79	8	6.5	0.4	
		76	4.6	10.1	78	8	6.5	0.4	
		77	4.6	10.1	78	8	6.5	0.4	
		78	4.6	10.1	78	8	6.5	0.4	
		79	4.6	10.1	78	8	6.5	0.4	
		80	4.6	10.1	78	8	6.5	0.4[1]	
Ice House Reservoir									
R-IS-9-IHR	4/30	0.1	10.3	9.8	88	9	7.7	0.3	10.1
		1	10.2	9.9	88	9	7.4	0.4	
		2	10.2	9.9	88	9	7.3	0.3	
		3	10.1	9.8	87	8	7.2	0.3	
		4	10.0	9.8	87	8	7.1	0.3	
		5	9.5	10.0	87	8	7.1	0.3	
		6	8.0	10.2	86	7	7.1	0.3	
		7	7.3	10.3	86	7	7.0	0.3	
		8	6.4	10.5	85	7	6.9	0.4	
		9	5.9	10.5	84	7	6.9	0.3	
		10	5.7	10.6	84	7	6.8	0.3	
		11	5.5	10.5	84	7	6.8	0.3	
		12	5.5	10.6	84	7	6.8	0.4	
		13	5.3	10.6	83	7	6.7	0.3	
		14	5.1	10.5	83	7	6.7	0.3	
		15	5.0	10.5	82	7	6.7	0.4	
		16	5.0	10.5	82	7	6.6	0.4	
		17	5.0	10.4	82	7	6.6	0.4	

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
R-IS-9-IHR	4/30	18	5.0	10.4	82	7	6.6	0.3	10.1
		19	4.9	10.4	81	7	6.5	0.4	
		20	4.9	10.4	81	7	6.7	0.4	
		21	4.9	10.3	80	7	6.7	0.4	
		22	4.9	10.3	80	7	6.7	0.4	
		23	4.9	10.3	80	7	6.6	0.3	
		24	4.9	10.3	80	7	6.7	0.4	
		25	4.8	10.3	80	7	6.6	0.3	
		26	4.8	10.3	80	7	6.6	0.4	
R-IS-10-IHR	4/30	0.1	10.3	9.9	88	9	6.9	0.4	10.1
		1	10.1	9.9	88	9	7.0	0.4	
		2	10.1	9.9	88	9	7.0	0.3	
		3	10.0	9.9	88	9	6.9	0.3	
		4	9.9	9.9	88	8	6.9	0.3	
		5	9.6	10.0	88	8	6.9	0.3	
		6	9.1	10.2	89	8	6.9	0.4	
		7	8.6	10.3	88	8	6.9	0.3	
		8	7.7	10.4	87	7	6.9	0.3	
		9	7.3	10.4	86	7	6.9	0.3	
		10	7.0	10.4	86	7	6.8	0.4	
		11	6.8	10.4	86	7	6.8	0.3	
		12	6.3	10.5	85	7	6.8	0.3	
		13	6.1	10.5	85	7	6.8	0.3	
		14	6.0	10.5	84	7	6.8	0.3	
		15	5.7	10.5	84	7	6.7	0.4	
		16	5.6	10.4	83	7	6.7	0.4[1]	
R-IS-11-IHR	4/30	0.1	10.3	10.0	89	9	6.9	0.4	10.4
		1	9.9	10.0	88	9	6.9	0.3	
		2	9.7	10.0	88	8	6.9	0.3	

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
R-IS-11-IHR	4/30	3	9.7	10.0	88	8	6.9	0.3	10.4
		4	9.7	10.0	88	8	6.9	0.3	
		5	9.7	10.0	88	8	6.9	0.3	
		6	9.5	10.0	88	8	6.9	0.4	
		7	8.7	10.2	88	8	6.9	0.4	
		8	7.6	10.5	88	8	6.8	0.4	
		9	7.1	10.5	87	8	6.8	0.3	
		10	6.4	10.6	86	8	6.8	0.4	
		11	6.4	10.6	85	7	6.8	0.4	
		12	5.9	10.6	85	7	6.7	0.4	
		13	5.5	10.5	84	7	6.8	0.4	
		14	5.4	10.5	83	7	6.7	0.4	
		15	5.4	10.5	83	7	6.7	0.4	
		16	5.1	10.4	82	7	6.7	0.5	
		17	5.1	10.4	82	7	6.6	0.3	
		18	5.0	10.4	82	7	6.6	0.5	
		19	4.9	10.4	81	7	6.6	0.4	
		20	4.9	10.3	80	7	6.6	0.4	
		21	4.9	10.3	80	7	6.6	0.5	
		22	4.8	10.3	80	7	6.5	0.5	
		23	4.8	10.3	80	7	6.5	0.5	
		24	4.8	10.3	80	7	6.5	0.4	
		25	4.8	10.3	80	7	6.5	0.5	
		26	4.8	10.3	80	7	6.5	0.5	
		27	4.8	10.3	79	7	6.5	0.3	
		28	4.8	10.3	80	7	6.5	0.4	
		29	4.8	10.3	80	7	6.5	0.5	
		30	4.8	10.3	80	7	6.4	0.5	
		31	4.8	10.3	80	7	6.4	0.4	

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
R-IS-11-IHR	4/30	32	4.8	10.3	80	7	6.4	0.4	10.4
		33	4.7	10.3	80	7	6.4	0.5	
		34	4.7	10.2	80	7	6.4	0.4	
		35	4.7	10.2	79	7	6.5	0.4[1]	
Junction Reservoir									
R-IS-12-JR	5/10	0.1	12.5	9.5	89	12[Q]	7.0	0.2	6.4
		1	9.6	10.0	89	11[Q]	7.0	0.2	
		2	7.4	10.4	86	10[Q]	6.9	0.2	
		3	6.8	10.5	86	10[Q]	6.8	0.2	
		4	6.6	10.5	86	9[Q]	6.8	0.2	
		5	6.5	10.5	86	9[Q]	6.7	0.2	
		6	6.3	10.5	85	9[Q]	6.7	0.2	
		7	6.2	10.5	85	9[Q]	6.7	0.2	
		8	6.2	10.5	85	9[Q]	6.6	0.2	
		9	6.1	10.5	85	9[Q]	6.6	0.3	
		10	6.0	10.5	84	9[Q]	6.5	0.2	
		11	6.0	10.5	84	9[Q]	6.5	0.2	
		12	6.0	10.4	84	9[Q]	6.5	0.2	
		13	6.0	10.4	84	9[Q]	6.5	0.2	
		14	5.9	10.4	83	9[Q]	6.4	0.3	
		15	5.9	10.4	83	9[Q]	6.4	0.2	
		16	5.8	10.4	83	9[Q]	6.4	0.2	
		17	5.8	10.3	83	9[Q]	6.4	0.2	
		18	5.8	10.3	82	9[Q]	6.4	0.2[1]	
Camino Reservoir									
R-IS-13-CR	5/10	0.1	6.8	11.5	95	9[Q]	7.2	0.2	7.6
		1	6.7	11.5	94	9[Q]	7.2	0.2	
		2	6.7	11.5	94	9[Q]	6.9	0.2	
		3	6.7	11.5	94	9[Q]	6.9	0.3	

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
R-IS-13-CR	5/10	4	6.7	11.5	94	9Q	6.8	0.2	7.6
		5	6.7	11.5	94	9Q	6.7	0.2	
		6	6.7	11.5	94	9Q	6.7	0.2	
		7	6.7	11.5	94	9Q	6.7	0.2	
Slab Creek Reservoir									
R-IS-14-SC	5/2	0.1	8.0	11.8	100	19	6.9	1.8	7.0
		1	7.8	11.8	99	19	6.9	1.7	
		2	7.6	11.8	99	19	6.9	1.8	
		3	7.7	11.8	99	19	6.9	1.7	
		4	7.6	11.8	99	19	6.9	1.5	
		5	7.6	11.8	99	19	6.9	1.8	
		6	7.5	11.8	98	19	6.9	1.3	
		7	7.4	11.8	98	18	6.9	1.3	
		8	7.4	11.8	98	18	6.9	1.3	
R-IS-15-SC	5/2	0.1	9.9	11.2	99	18	6.8	0.7	8.5
		1	9.8	11.2	98	18	6.9	0.7	
		2	9.8	11.2	99	18	6.9	0.7	
		3	9.8	11.2	99	18	6.9	0.9	
		4	9.7	11.2	98	18	7.0	0.8	
		5	9.1	11.2	97	18	7.0	0.7	
		6	8.9	11.3	98	18	7.0	0.8	
		7	8.8	11.3	97	18	7.0	0.7	
		8	8.8	11.3	97	18	7.0	0.8	
		9	8.7	11.3	97	18	7.0	0.7	
		10	8.4	11.4	97	17	7.0	0.7	
		11	8.3	11.4	98	17	7.0	0.7	
		12	8.3	11.5	98	17	7.0	0.5	
		13	8.2	11.5	98	17	7.0	0.6	
		14	8.2	11.5	98	17	7.0	0.6	

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
R-IS-15-SC	5/2	15	8.2	11.5	98	17	7.0	0.6	8.5
		16	8.2	11.5	98	17	7.0	0.6	
		17	8.1	11.5	97	17	7.0	0.6	
		18	8.0	11.5	97	17	7.0	0.6	
		19	8.0	11.5	97	17	7.0	0.5	
		20	7.9	11.5	97	17	7.0	0.6	
		21	7.9	11.5	97	17	7.0	0.6	
		22	7.9	11.5	97	17	7.0	0.6	
		23	7.9	11.5	97	17	7.0	0.6	
		24	7.9	11.5	97	17	7.0	0.7	
		25	7.9	11.5	97	17	7.0	0.7	
		26	7.9	11.5	97	17	7.0	0.7	
		27	7.9	11.5	97	17	7.0	0.6	
		28	7.9	11.5	97	17	7.0	0.7	
		29	7.9	11.5	97	17	7.0	0.7	
		30	7.9	11.5	97	17	7.0	0.8	
		31	7.9	11.5	97	17	7.0	0.6	
		32	7.9	11.5	97	17	7.0	0.8	
		33	7.9	11.5	97	18	7.0	0.7	
		34	7.9	11.5	97	17	7.0	0.7[1]	

°C = degrees Celsius
m = meter(s)
mg/L = milligrams per liter
% sat = percent saturation
s.u = standard unit of pH
uS/cm = microsiemens per centimeter
NTU = Nephelometric Turbidity Unit
"Q" indicates data qualified based on post-sampling calibration check (see Appendix E).
[1] Turbidity values are recorded as the values from the previous depth. Higher turbidity values on the data sheet reflect turbidity caused by the probe coming into contact with reservoir bottom sediments.

Table A-2. Vertical Profile Data for UARP Reservoir Sites – October (Fall*) In situ* Surveys.

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
Loon Lake									
R-IS-1-LL	10/23	0.1	8.8	9.1	78	8	5.9	3.6	7.3
		1.0	8.8	9.0	78	8	5.9	3.6	
		2.0	8.8	9.0	78	8	5.8	3.6	
		3.0	8.8	9.0	78	8	5.9	3.6	
		4.0	8.7	9.0	77	8	5.9	3.6	
		5.0	8.7	9.0	77	8	5.9	3.6	
		6.0	8.7	9.0	77	8	5.9	3.6	
		7.0	8.6	9.0	77	8	6.0	3.6	
		8.0	8.6	9.0	77	8	6.0	3.5	
		9.0	8.5	9.0	77	8	6.0	3.5	
		10.0	8.5	9.0	77	8	6.0	3.5	
		11.0	8.5	9.0	77	8	6.1	3.5	
		12.0	8.4	9.0	77	8	6.1	3.5	
		13.0	8.4	9.0	76	8	6.1	3.5	
		14.0	8.4	9.0	76	8	6.1	3.5	
		15.0	8.4	8.9	76	8	6.1	3.5	
		16.0	8.4	8.9	76	8	6.1	3.5	
		17.0	8.4	8.9	76	8	6.1	3.5	
		18.0	8.4	8.9	76	8	6.1	3.5	
		19.0	8.4	8.9	76	8	6.2	3.5	
		20.0	8.4	8.8	75	8	6.1	3.5	
		21.0	8.4	8.8	75	8	6.1	3.5	
		22.0	8.4	8.8	75	8	6.1	3.5	
		23.0	8.4	8.8	75	8	6.2	3.5	
		24.0	8.4	8.8	74	8	6.1	3.4	
		25.0	8.3	8.6	71	8	6.2	3.4[1]	

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
R-IS-2-LL	10/23	0.1	8.7	9.5	82	8	7.6	3.4	7.6
		1.0	8.7	9.3	80	8	7.5	3.4	
		2.0	8.7	9.2	79	8	6.5	3.5	
		3.0	8.7	9.1	78	8	6.5	3.4	
		4.0	8.7	9.1	78	8	6.4	3.5	
		5.0	8.7	9.0	78	8	6.4	3.5	
		6.0	8.6	9.0	77	8	6.4	3.5	
		7.0	8.6	9.0	77	8	6.3	3.5	
		8.0	8.6	9.0	77	8	6.3	3.5	
		9.0	8.6	9.0	77	8	6.3	3.5	
		10.0	8.6	9.0	77	8	6.3	3.3	
		11.0	8.6	9.0	77	8	6.3	3.5	
		12.0	8.6	9.0	76	8	6.3	3.5	
		13.0	8.6	8.9	77	8	6.2	3.5	
		14.0	8.6	8.9	76	8	6.3	3.6	
		15.0	8.6	8.9	76	8	6.3	3.5	
		16.0	8.6	8.9	76	8	6.2	3.5	
		17.0	8.6	8.9	76	8	6.2	3.5	
		18.0	8.6	8.9	76	8	6.2	3.5	
		19.0	8.6	8.9	76	8	6.2	3.5	
		20.0	8.6	8.9	76	8	6.2	3.5	
R-IS-3-LL	10/23	0.1	8.6	9.7	83	8	6.6	3.2	7.3
		1.0	8.6	9.5	81	8	6.6	3.3	
		2.0	8.6	9.4	80	8	6.6	3.3	
		3.0	8.5	9.3	80	8	6.5	3.3	
		4.0	8.5	9.3	79	8	6.5	3.4	
		5.0	8.5	9.2	79	8	6.4	3.5	
		6.0	8.5	9.2	78	8	6.5	3.4	
		7.0	8.5	9.1	78	8	6.4	3.4	

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
R-IS-3-LL	10/23	8.0	8.5	9.1	78	8	6.4	3.4	7.3
		9.0	8.5	9.1	78	8	6.5	3.5	
		10.0	8.4	9.1	78	8	6.4	3.5	
		11.0	8.4	9.0	77	8	6.4	3.5[1]	
Gerle Creek Reservoir									
R-IS-4-GC	10/26	0.1	7.7	9.5	80	13	5.8	3.8	5.8
		1.0	7.6	9.5	80	13	5.9	3.8	
		2.0	7.5	9.5	80	12	5.9	3.9	
		3.0	7.5	9.5	79	12	5.9	3.9	
		4.0	7.4	9.5	79	12	6.0	3.8	
		5.0	7.3	9.6	79	11	6.0	3.8	
		6.0	7.2	9.6	80	11	6.0	3.8	
		7.0	7.1	9.6	79	11	6.0	3.8	
		8.0	8.6	9.7	79	10	6.0	3.8	
Union Valley Reservoir									
R-IS-5-UVR	10/24	0.1	12.8	8.6	81	13	6.0	2.9	8.8
		1	12.7	8.6	81	13	6.2	3.3	
		2	12.6	8.6	81	13	6.3	3.4	
		3	12.6	8.6	80	13	6.2	3.3	
		4	12.5	8.6	80	13	6.2	3.3	
		5	12.5	8.5	80	13	6.2	3.2	
		6	12.5	8.5	80	13	6.2	3.2	
		7	12.4	8.5	80	13	6.2	3.2	
		8	12.3	8.5	79	13	6.2	3.2[1]	
R-IS-6-UVR	10/24	0.1	13.1	9.9	94	13	6.7	3.2	8.2
		1	13.0	8.9	84	13	6.8	3.2	
		2	12.9	8.7	82	13	6.7	3.2	
		3	12.9	8.6	81	13	6.7	3.2	
		4	12.9	8.5	81	13	6.6	3.3	

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
R-IS-6-UVR	10/24	5	12.9	8.5	80	13	6.6	3.3	8.2
		6	12.9	8.5	80	13	6.6	3.3	
		7	12.9	8.4	80	13	6.6	3.3	
		8	12.9	8.4	79	13	6.5	3.3	
		9	12.9	8.4	79	13	6.6	3.3	
		10	12.9	8.4	79	13	6.6	3.3	
		11	12.8	8.4	79	13	6.6	3.3	
		12	12.8	8.3	79	13	6.6	3.3	
		13	12.8	8.3	79	13	6.5	3.3	
		14	12.8	8.3	79	13	6.5	3.3	
		15	12.8	8.3	78	13	6.5	3.3	
		16	12.8	8.3	78	13	6.5	3.3	
		17	12.8	8.3	78	13	6.5	3.3	
		18	12.8	8.3	78	13	6.5	3.3	
		19	12.8	8.2	78	13	6.4	3.4	
		20	12.8	8.2	78	13	6.4	3.4	
		21	12.8	8.2	78	13	6.5	3.3	
		22	12.8	8.2	78	13	6.5	3.3	
		23	12.8	8.2	78	12	6.4	3.3	
		24	12.8	8.2	78	12	6.5	3.1	
		25	12.8	8.2	77	12	6.4	3.4	
R-IS-7-UVR	10/24	0.1	13.0	10.0	95	13	6.7	3.4	7.6
		1	13.0	8.9	84	13	6.7	3.3	
		2	13.0	8.7	82	13	6.6	3.3	
		3	13.0	8.6	82	13	6.6	3.3	
		4	13.0	8.5	81	13	6.6	3.3	
		5	12.9	8.5	80	13	6.6	3.3	
		6	12.9	8.5	80	13	6.7	3.4	
		7	12.9	8.4	80	13	6.6	3.4	

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
R-IS-7-UVR	10/24	8	12.9	8.4	80	13	6.6	3.4	7.6
		9	12.9	8.4	79	13	6.5	3.3	
		10	12.9	8.4	79	13	6.5	3.3	
		11	12.9	8.4	79	13	6.5	3.3	
		12	12.9	8.3	79	13	6.5	3.3	
		13	12.9	8.3	79	13	6.5	3.3	
		14	12.9	8.3	79	13	6.4	3.4	
		15	12.9	8.3	78	13	6.4	3.3	
		16	12.9	8.3	78	13	6.5	3.2	
		17	12.9	8.3	78	13	6.5	3.4	
		18	12.9	8.3	78	13	6.4	3.4	
		19	12.9	8.2	78	13	6.4	3.2	
		20	12.9	8.2	78	13	6.4	3.3	
		21	12.9	8.2	78	13	6.4	3.3	
		22	12.9	8.2	78	13	6.4	3.3	
		23	12.9	8.2	78	13	6.4	3.4	
		24	12.8	8.2	77	13	6.4	3.3	
		25	12.8	8.1	77	13	6.4	3.3	
		26	12.8	8.1	77	13	6.3	3.3	
		27	12.8	8.1	76	13	6.4	3.2	
		28	12.7	8.1	76	13	6.4	3.3	
		29	12.4	7.8	72	12	6.3	3.2	
R-IS-8-UVR	10/24	0.1	13.1	9.8	93	12	6.7	3.3	9.4
		1	13.1	9.0	85	12	6.7	3.0	
		2	12.9	8.7	83	12	6.7	3.0	
		3	12.9	8.6	82	12	6.7	3.0	
		4	12.9	8.5	81	12	6.6	3.1	
		5	12.9	8.5	80	12	6.6	2.9	
		6	12.9	8.4	80	12	6.6	3.1	

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
R-IS-8-UVR	10/24	7	12.8	8.4	79	12	6.5	3.1	9.4
		8	12.8	8.4	79	12	6.5	3.3	
		9	12.8	8.3	79	12	6.5	3.3	
		10	12.8	8.3	79	12	6.5	3.3	
		11	12.8	8.3	78	12	6.5	3.3	
		12	12.8	8.2	78	12	6.5	3.4	
		13	12.8	8.2	78	12	6.5	3.4	
		14	12.8	8.2	78	12	6.5	3.4	
		15	12.8	8.2	78	12	6.4	3.3	
		16	12.8	8.2	78	12	6.4	3.3	
		17	12.8	8.2	78	12	6.4	3.3	
		18	12.8	8.2	77	12	6.4	3.3	
		19	12.8	8.2	77	12	6.4	3.3	
		20	12.8	8.2	77	12	6.4	3.3	
		21	12.8	8.2	77	12	6.4	3.3	
		22	12.8	8.1	77	12	6.4	3.4	
		23	12.8	8.1	77	12	6.5	3.3	
		24	12.8	8.1	77	12	6.4	3.3	
		25	12.8	8.1	77	12	6.4	3.4	
		26	12.8	8.1	77	12	6.4	3.4	
		27	12.8	8.1	76	12	6.4	3.3	
		28	12.8	8.1	76	12	6.4	3.3	
		29	12.7	8.0	75	12	6.4	3.3	
		30	12.4	7.9	73	12	6.3	3.4	
		31	12.0	7.7	69	11	6.4	3.4	
		32	10.3	7.4	66	11	6.2	3.5	
		33	10.2	7.4	66	11	6.2	3.5	
		34	9.9	7.3	64	11	6.1	3.5	
		35	9.7	7.1	63	11	6.1	3.5	

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
R-IS-8-UVR	10/24	36	9.4	7.2	63	11	6.1	3.5	9.4
		37	9.3	7.2	63	11	6.1	3.5	
		38	9.2	7.2	62	11	6.1	3.5	
		39	8.9	7.2	62	11	6.1	3.5	
		40	8.6	7.2	62	11	6.1	3.5	
		41	8.6	7.2	61	11	6.1	3.5	
		42	8.5	7.2	61	11	6.1	3.5	
		43	8.4	7.2	61	11	6.1	3.4	
		44	8.3	7.2	61	10	6.0	3.4	
		45	8.1	7.2	61	10	6.1	3.5	
		46	8.1	7.3	61	10	6.1	3.4	
		47	8.0	7.3	61	10	6.1	3.5	
		48	7.9	7.2	61	10	6.0	3.4	
		49	7.8	7.1	60	10	6.0	3.4	
		50	7.7	7.1	60	10	6.0	3.5	
		51	7.7	7.1	60	10	6.0	3.5	
		52	7.6	7.1	59	10	6.0	3.4	
		53	7.4	7.1	59	10	6.0	3.4	
		54	7.3	7.0	58	10	6.0	3.4	
		55	7.2	6.9	57	10	6.0	3.4	
		56	7.1	6.9	57	10	6.0	3.4	
		57	7.0	6.8	56	10	6.0	3.4	
		58	6.8	6.7	55	10	6.0	3.4	
		59	6.7	6.6	54	10	6.0	3.4	
		60	6.5	6.5	53	10	6.0	3.3	
		61	5.8	6.5	52	10	6.0	3.2	
		62	5.4	6.4	51	10	6.0	3.3	
		63	4.9	6.6	51	10	6.0	3.3	
		64	4.7	6.6	51	10	6.0	3.2	

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
R-IS-8-UVR	10/24	65	4.3	6.7	51	10	6.0	3.2	9.4
		66	4.1	6.9	53	10	6.0	3.2	
		67	3.9	7.0	53	10	6.1	3.2	
		68	3.9	7.0	53	10	6.0	3.1	
		69	3.8	7.0	53	10	6.0	3.1	
		70	3.8	7.0	53	10	6.0	3.2	
		71	3.8	7.1	53	10	6.0	3.1	
		72	3.8	7.1	54	10	6.0	3.1	
		73	3.8	7.1	54	10	6.0	3.2	
		74	3.7	7.1	54	10	6.0	3.1	
		75	3.7	7.1	54	10	6.0	3.2	
		76	3.7	7.1	54	10	6.1	3.2	
		77	3.7	7.1	53	10	6.0	3.1	
		78	3.7	7.0	53	10	6.0	3.1	
		79	3.7	7.0	53	10	6.0	3.1	
		80	3.7	7.0	53	10	6.0	3.1	
		81	3.7	6.9	52	10	6.0	3.0	
		82	3.7	6.9	52	10	6.0	3.1	
		83	3.7	6.8	52	10	6.0	3.0	
		84	3.7	6.8	51	10	6.0	3.0	
		85	3.7	6.6	50	10	6.0	3.0	
		86	3.7	6.6	50	10	6.0	3.0	
		87	3.7	6.4	48	10	6.1	2.9	
		88	3.7	6.4	48	11	6.0	2.9	
		89	3.7	6.4	48	11	6.0	2.7	
		90	3.7	6.2	47	11	6.0	2.7	
		91	3.7	6.1	46	11	6.1	2.6	
		92	3.7	6.1	46	11	6.1	2.7	

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
Ice House Reservoir									
R-IS-9-IHR	10/22	0.1	11.1	8.6	78	11	7.1	1.1	4.9
		1	11.0	8.6	78	11	7.1	1.1	
		2	10.8	8.6	77	11	7.1	0.9	
		3	10.8	8.5	77	11	7.0	0.9	
		4	10.8	8.5	77	11	7.0	0.9	
		5	10.7	8.5	77	11	6.9	0.9	
		6	10.7	8.5	76	11	6.9	0.7	
		7	10.7	8.4	76	11	6.8	0.9	
		8	10.7	8.4	75	11	6.8	0.8	
R-IS-10-IHR	10/22	0.1	11.3	8.6	78	11	6.8	1.4	5.5
		1	10.9	8.6	78	11	6.8	1.2	
		2	10.9	8.6	78	11	6.8	1.2	
		3	10.8	8.6	78	11	6.8	1.2	
		4	10.8	8.6	78	11	6.7	1.2	
		5	10.7	8.6	78	11	6.7	1.2	
		6	10.7	8.6	78	11	6.7	1.1	
		7	10.7	8.6	77	11	6.7	1.1[1]	
R-IS-11-IHR	10/22	0.1	11.7	8.5	79	11	6.8	1.5	5.5
		1	11.3	8.5	78	11	6.7	1.3	
		2	11.0	8.6	78	11	6.7	1.4	
		3	10.8	8.6	77	11	6.7	1.3	
		4	10.7	8.6	77	11	6.7	1.3	
		5	10.7	8.6	77	11	6.6	1.3	
		6	10.7	8.6	77	10	6.6	1.2	
		7	10.7	8.5	77	10	6.7	1.0	
		8	10.7	8.5	77	10	6.6	1.1	
		9	10.7	8.5	77	10	6.6	1.3	
		10	10.7	8.5	77	10	6.6	1.2	

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
R-IS-11-IHR	10/22	11	10.6	8.5	76	10	6.6	1.3	5.5
		12	10.6	8.5	76	10	6.6	0.7	
Junction Reservoir									
R-IS-12-JR	10/26	0.1	8.2	10.6	90	11	6.0	4.2	9.8
		1	7.6	10.6	89	10	5.9	4.1	
		2	7.2	10.7	89	10	5.9	4.1	
		3	7.2	10.7	88	10	5.9	4.1	
		4	7.1	10.7	89	10	5.9	4.1	
		5	7.0	10.8	89	10	5.9	4.1	
		6	7.0	10.8	89	10	6.0	4.1	
		7	7.0	10.9	89	10	5.9	4.1	
		8	7.0	10.9	90	10	5.9	4.1	
		9	7.0	10.9	90	10	5.9	4.1	
		10	7.0	10.8	89	10	5.9	4.1	
		11	6.9	10.9	89	10	6.0	4.1	
		12	6.9	10.9	89	10	5.9	4.1	
		13	6.9	10.9	89	10	5.9	4.1	
		14	6.9	10.9	89	10	5.9	4.1	
		15	6.9	10.9	89	10	5.9	4.1	
		16	6.9	10.9	89	10	5.9	4.1	
		17	6.8	10.9	89	10	5.9	4.1	
		18	6.7	10.8	88	11	6.0	4.1	
		19	6.1	10.8	87	11	6.0	0.9	
Camino Reservoir									
R-IS-13-CR	10/26	0.1	7.6	11.1	93	11	6.6	4.1	6.7
		1	7.2	11.3	94	10	6.2	4.0	
		2	7.2	11.4	94	10	6.1	4.1	
		3	7.1	11.4	94	10	6.1	4.1	
		4	7.1	11.4	94	10	6.1	4.0	

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
R-IS-13-CR	10/26	5	7.1	11.4	94	10	6.1	4.0	6.7
		6	7.1	11.4	94	10	6.2	4.0	
Slab Creek Reservoir									
R-IS-14-SC	10/25	0.1	9.2	10.5	91	21	6.8	3.6	6.7
		1	9.2	10.5	91	21	6.7	3.6	
		2	9.2	10.5	91	21	6.7	3.6	
		3	9.1	10.5	91	21	6.7	3.6	
		4	7.8	10.7	90	21	6.8	3.4	
		5	7.5	11.1	94	20	6.8	3.5	
		6	7.4	11.4	95	20	6.7	3.6	
		7	7.4	11.6	97	20	6.7	3.6	
		8	7.3	11.7	97	20	6.7	3.6[1]	
R-IS-15-SC	10/25	0.1	9.8	10.5	92	22	6.7	3.6	5.5
		1	9.3	10.5	91	21	6.7	3.5	
		2	9.1	10.5	91	21	6.7	3.5	
		3	9.1	10.5	91	21	6.7	3.5	
		4	9.1	10.4	91	21	6.7	3.5	
		5	9.0	10.5	90	21	6.7	3.5	
		6	9.0	10.4	90	21	6.7	3.5	
		7	9.0	10.4	90	21	6.7	3.5	
		8	9.0	10.4	90	21	6.6	3.5	
		9	9.0	10.4	90	21	6.6	3.4	
		10	8.9	10.4	90	21	6.6	3.4	
		11	8.6	10.4	89	20	6.6	3.3	
		12	8.5	10.5	90	20	6.6	3.4	
		13	8.4	10.6	90	20	6.6	3.4	
		14	8.4	10.6	90	20	6.5	3.5	
		15	8.4	10.6	91	20	6.5	3.4	
		16	8.3	10.7	91	19	6.5	3.3	

Site ID	2018 Sample Date	Sample Depth (m)	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	pH (s.u.)	Turbidity (NTU)	Secchi disk (m)
S-15-SC	10/25	17	8.3	10.7	91	19	6.5	3.4	5.5
		18	8.3	10.7	91	19	6.5	3.4	
		19	8.3	10.7	91	19	6.5	3.3	
		20	8.3	10.7	91	19	6.5	3.3	
		21	8.2	10.7	91	19	6.5	3.3	
		22	8.2	10.8	91	19	6.5	3.3	
		23	8.2	10.8	91	19	6.5	3.3	
		24	8.2	10.8	91	19	6.5	3.3	
		25	8.2	10.8	92	19	6.5	3.2	
		26	8.2	10.8	92	19	6.5	3.2	
		27	8.2	10.8	92	19	6.5	3.2	
		28	8.2	10.8	92	19	6.5	3.2	
		29	8.2	10.8	92	19	6.5	3.2	
		30	8.1	10.8	92	19	6.5	3.1	
		31	8.1	10.8	92	19	6.5	3.1	
		32	8.0	10.9	92	19	6.4	3.0	
		33	8.0	10.9	92	19	6.5	2.9	
		34	8.0	10.9	92	18	6.4	2.7	
		35	8.0	10.9	92	18	6.5	1.8	
		36	8.0	10.8	92	19	6.5	1.8[1]	

°C = degrees Celsius
m = meter(s)
mg/L = milligrams per liter
% sat = percent saturation
s.u. = standard unit of pH
uS/cm = microsiemens per centimeter
NTU = Nephelometric Turbidity Unit

[1] Turbidity values are recorded as the values from the previous depth. Higher turbidity values on the data sheet reflect turbidity caused by the probe coming into contact with reservoir bottom sediments.

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APPENDIX B
In situ Vertical Profiles for UARP Reservoir Sites

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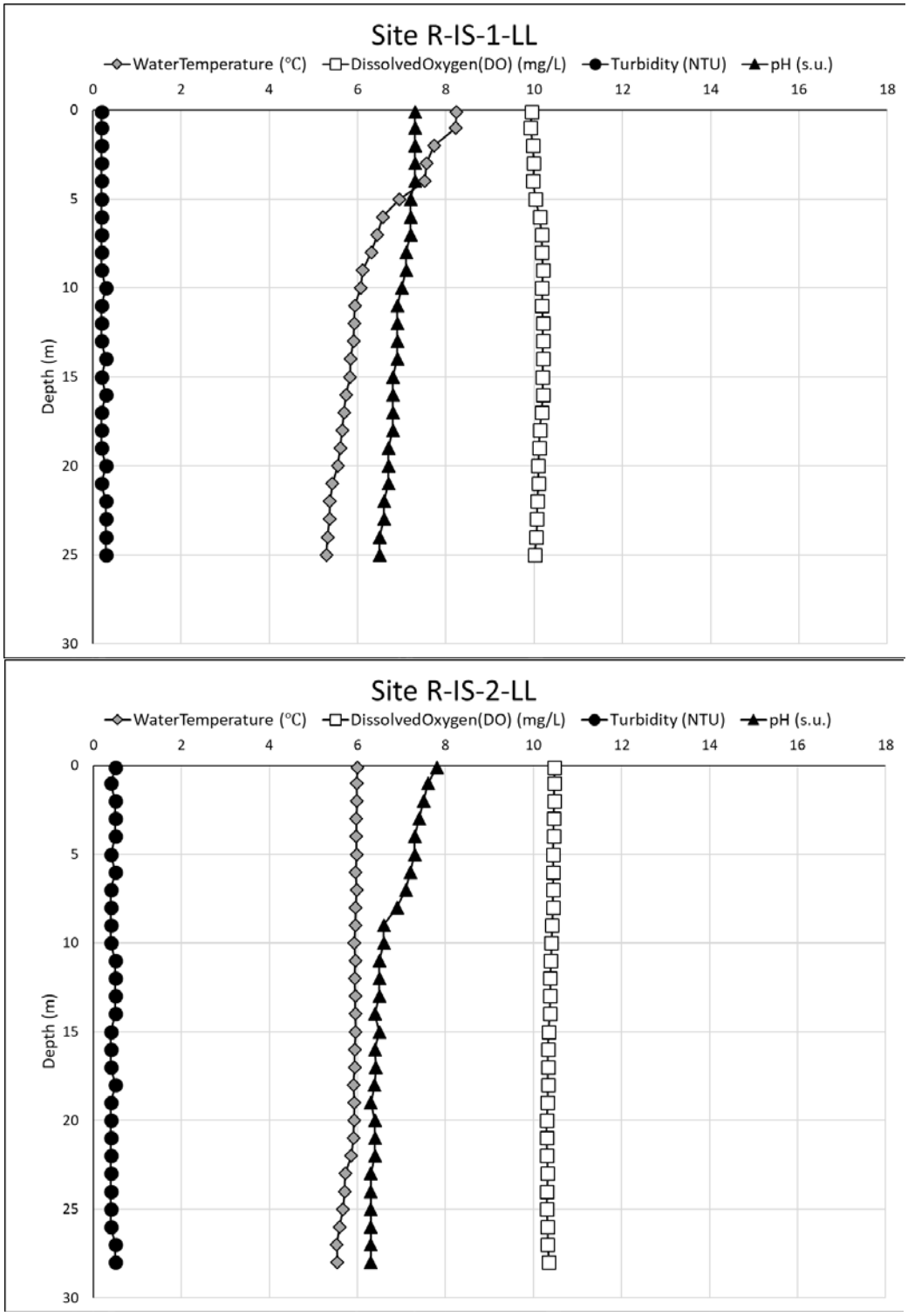

Figure B-1. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Loon Lake sites R-IS-1-LL and R-IS-2-LL during May (Spring) 2018.

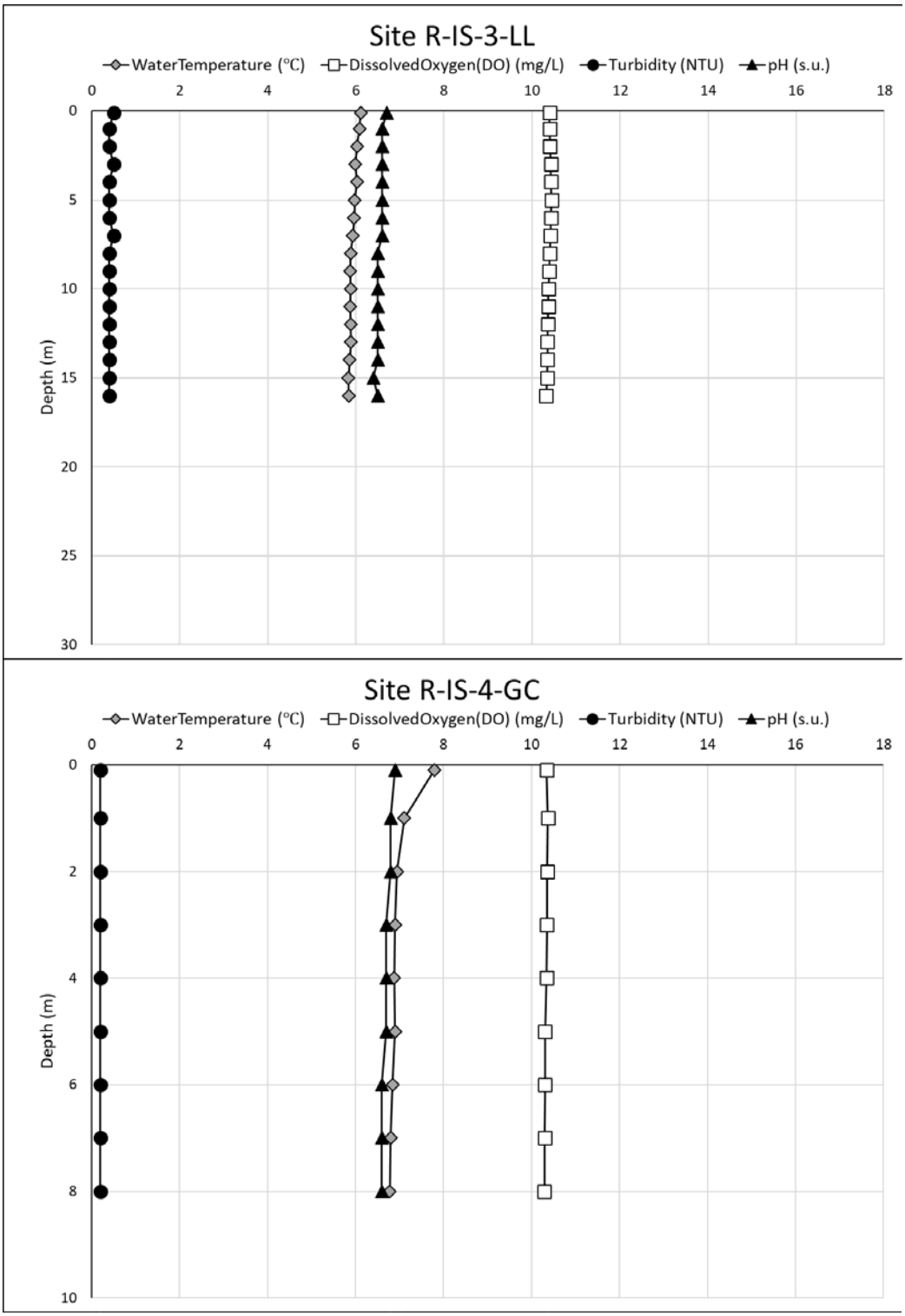

Figure B-2. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Loon Lake and Gerle Creek Reservoir sites R-IS-3-LL and R-IS-4-GC during May (Spring) 2018.

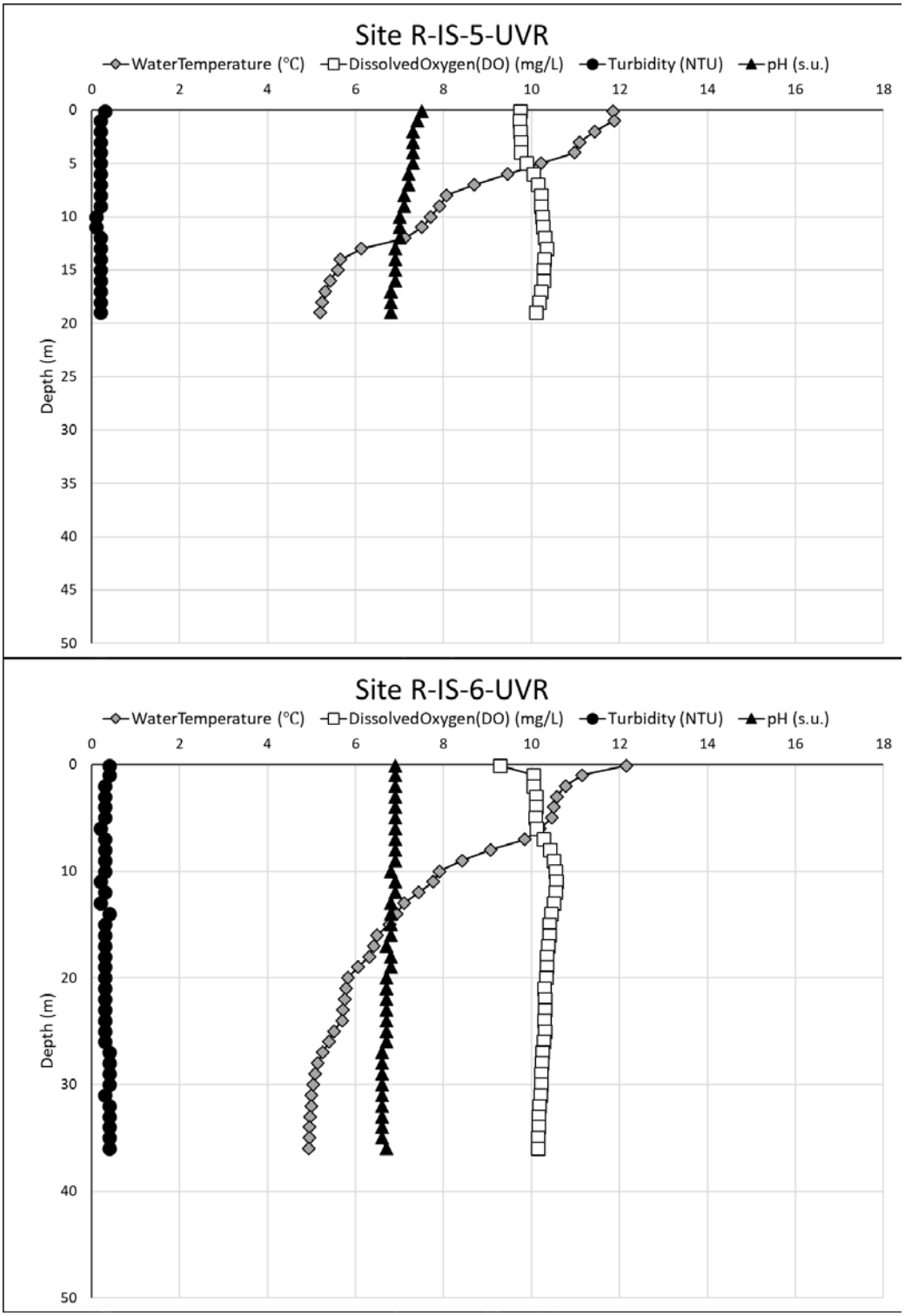

Figure B-3. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Union Valley Reservoir sites R-IS-5-UVR and R-IS-6-UVR during May (Spring) 2018.

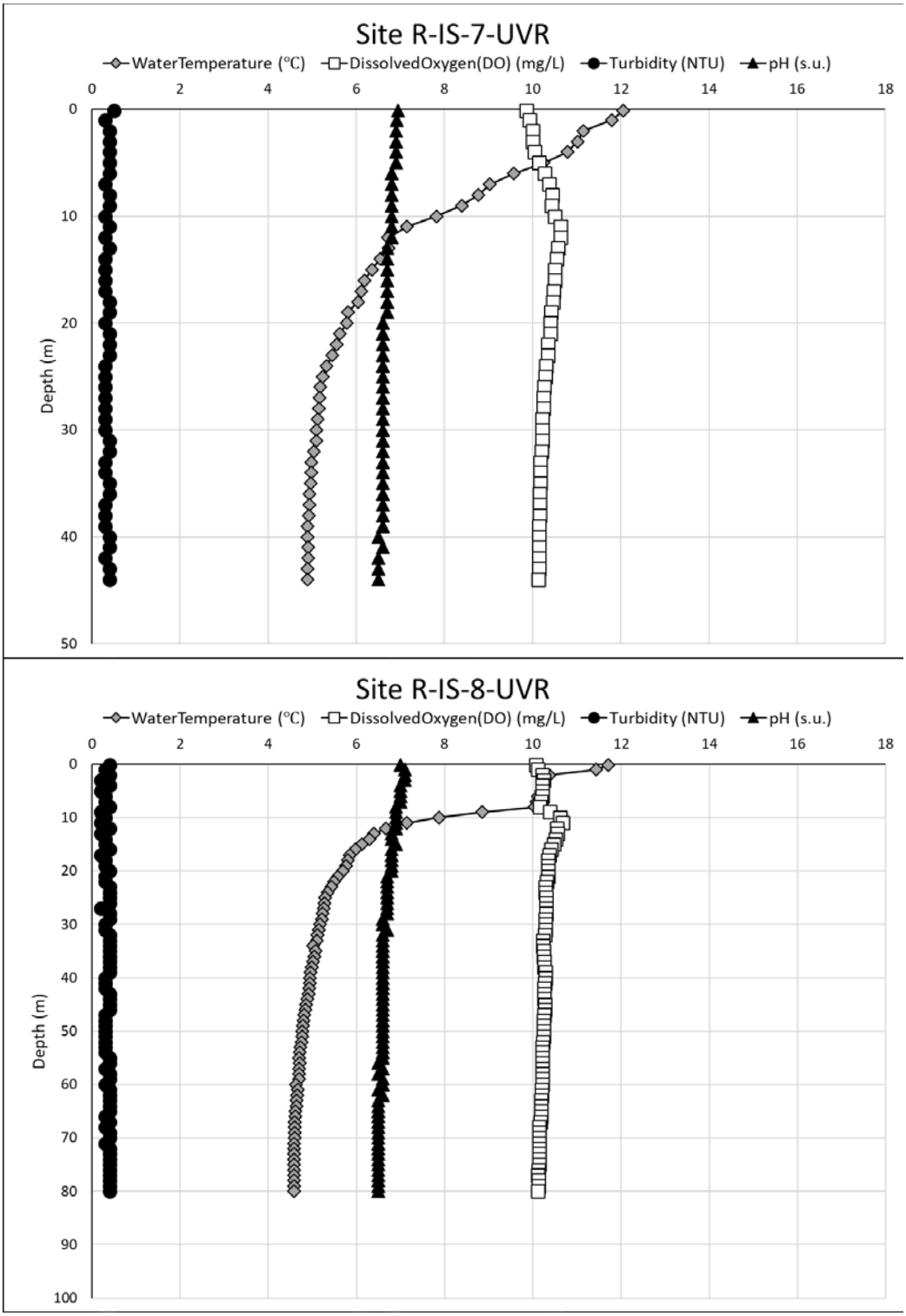

Figure B-4. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Union Valley Reservoir sites R-IS-7-UVR and R-IS-8-UVR during May (Spring) 2018.

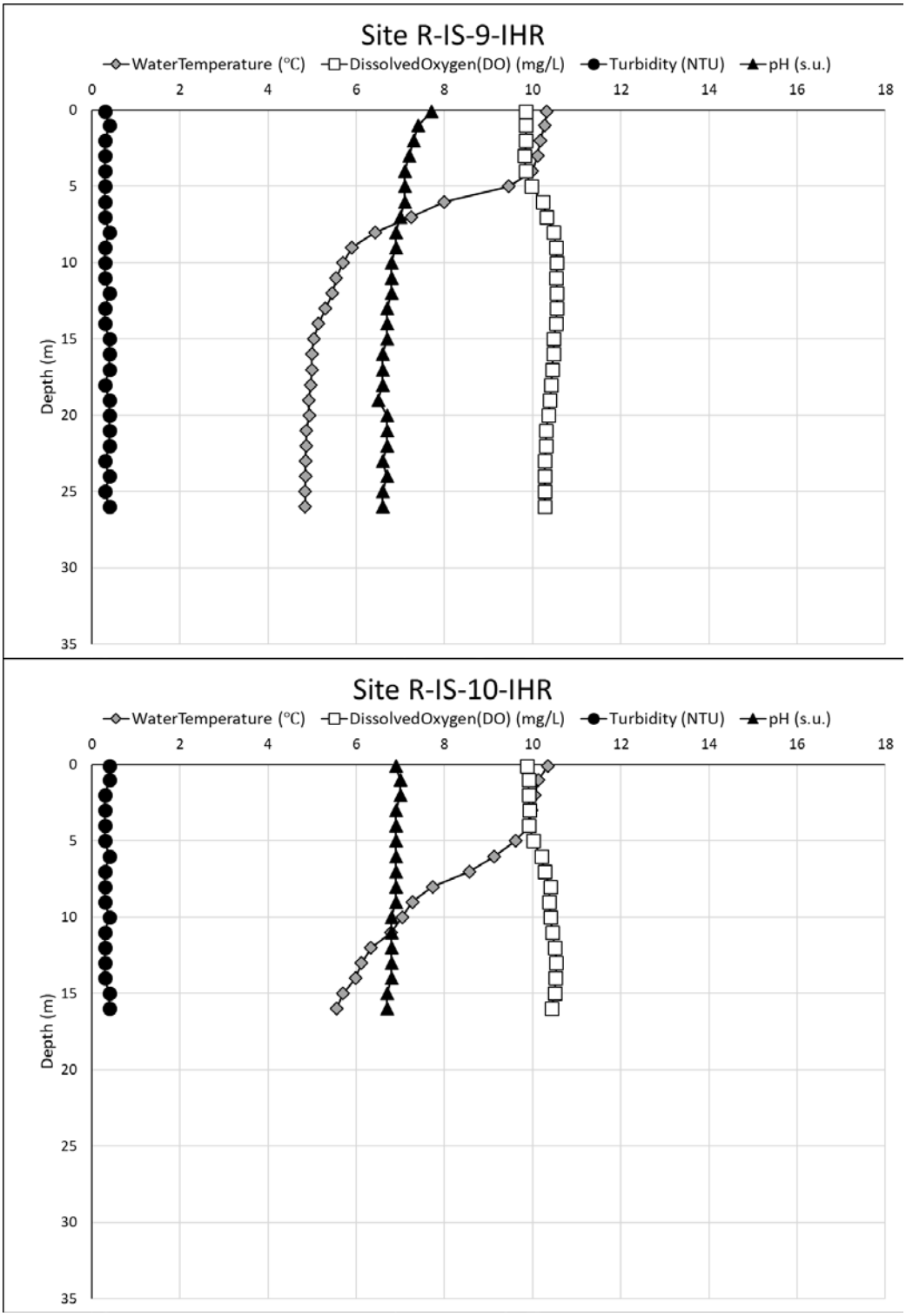

Figure B-5. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Ice House Reservoir sites R-IS-9-IHR and R-IS-10-IHR during April (Spring) 2018.

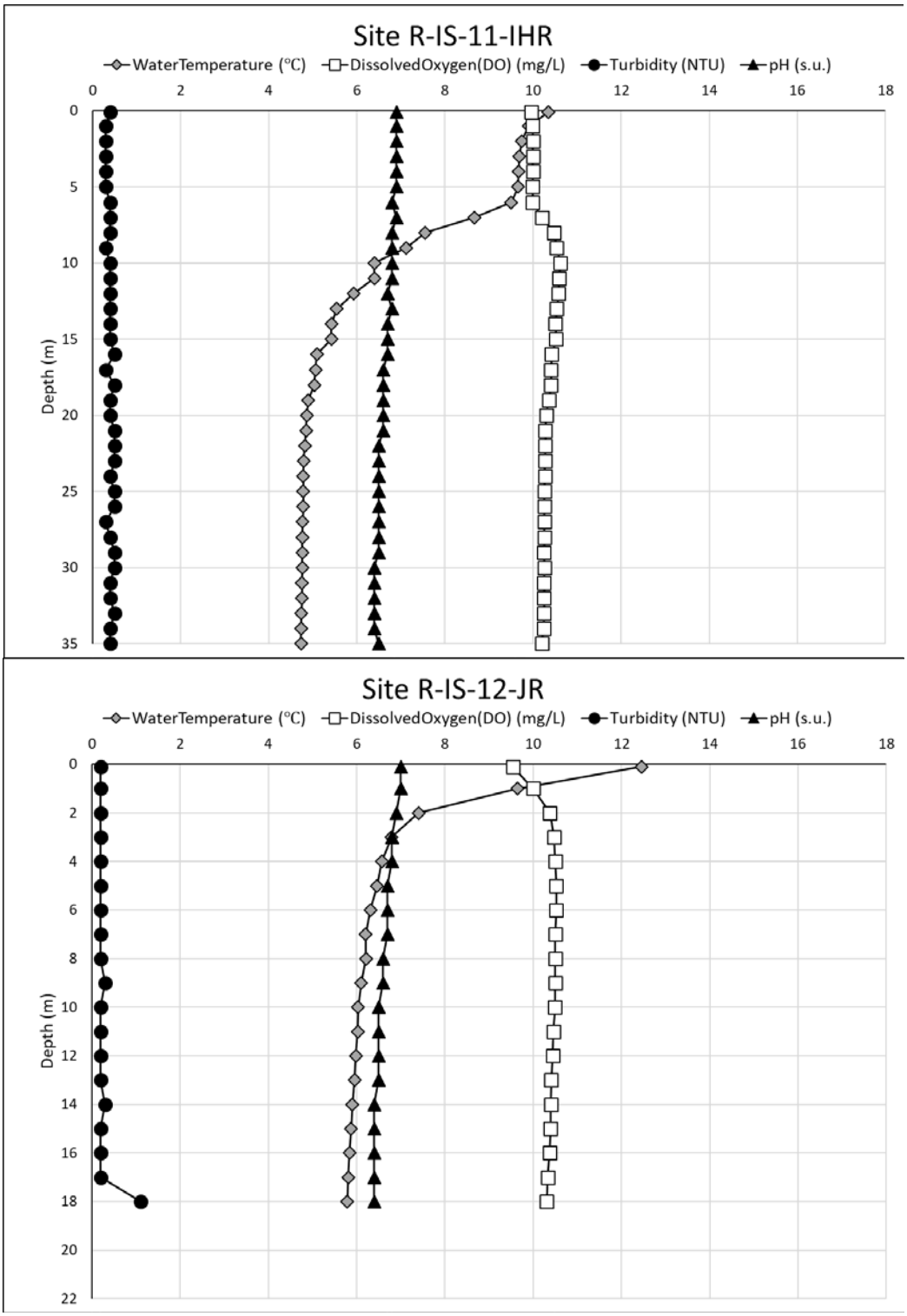

Figure B-6. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Ice House Reservoir Sites R-IS-11-IHR during April (Spring) and Junction Reservoir Site R-IS-12-JR during May (Spring), 2018

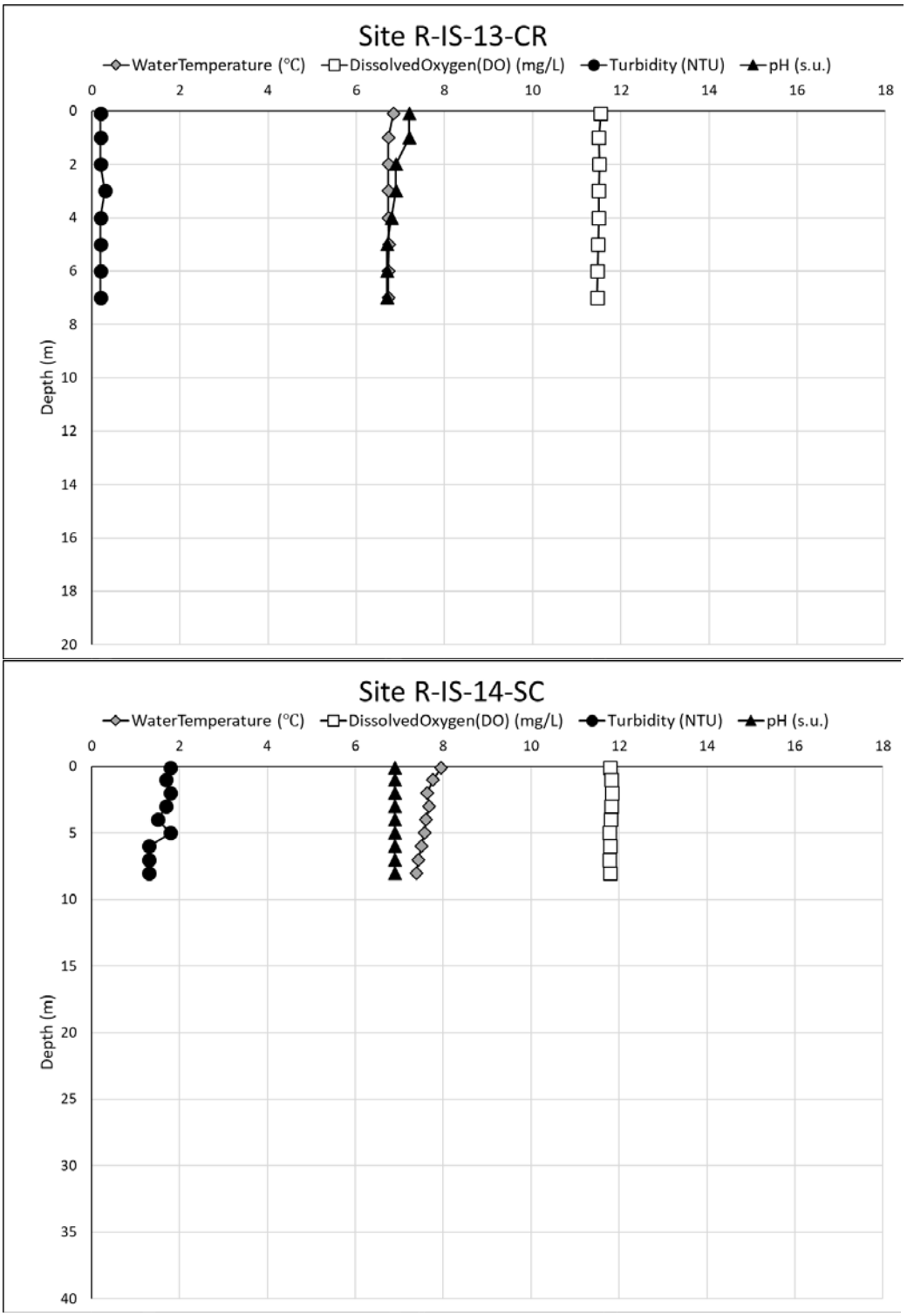

Figure B-7. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Camino Reservoir and Slab Creek Reservoir sites R-IS-13-CR and R-IS-14-SC during May (Spring) 2018.

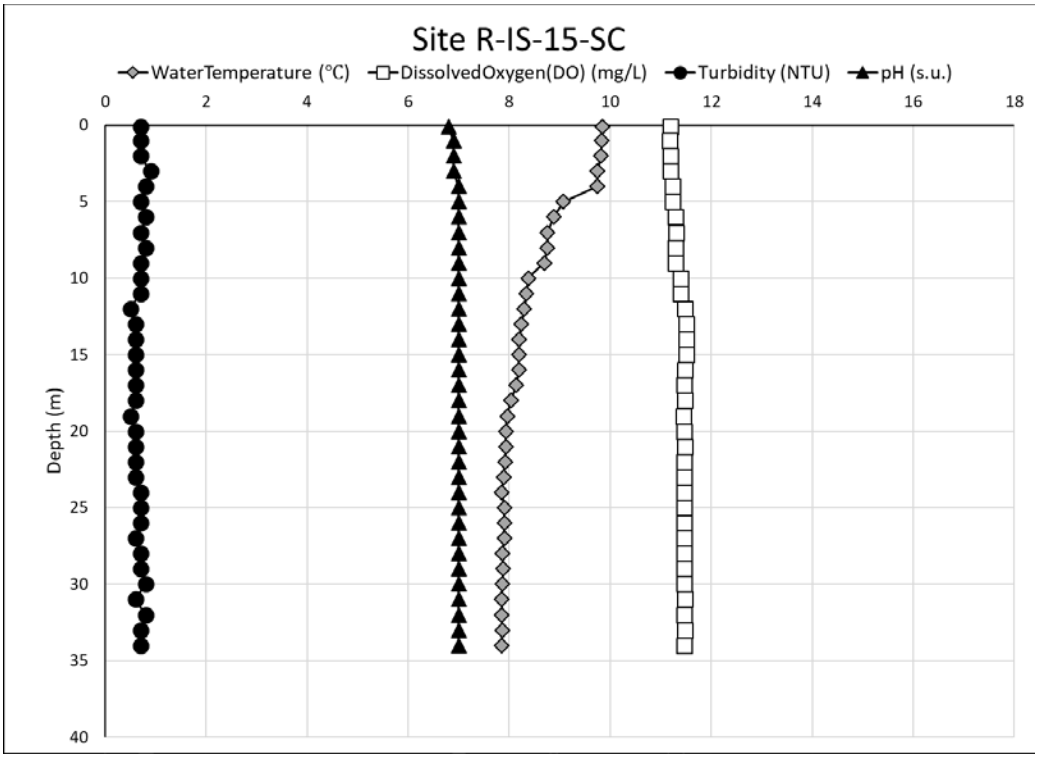

Figure B-8. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Slab Creek Reservoir site R-IS-15-SC during May (Spring) 2018

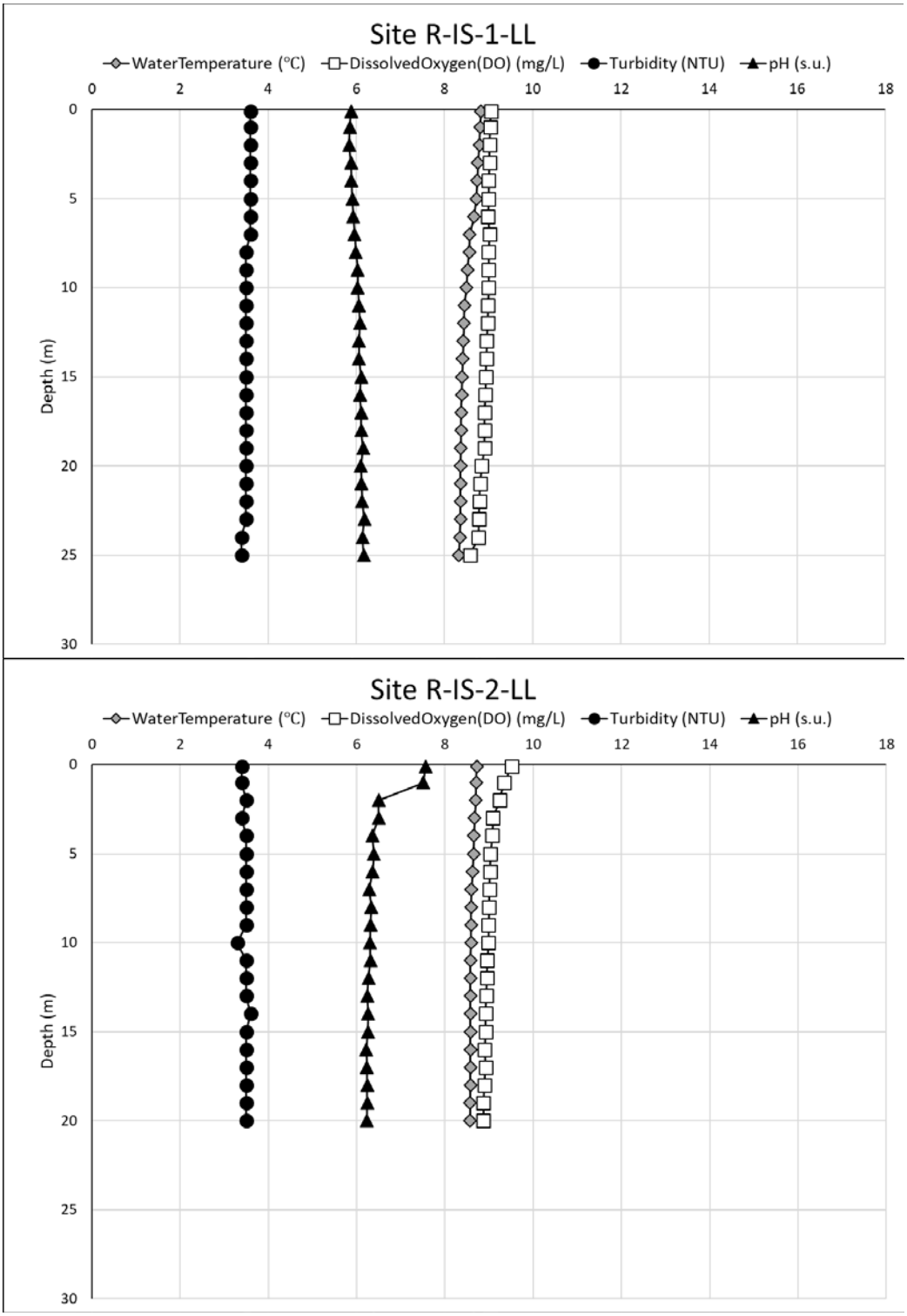

Figure B-9. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Loon Lake sites R-IS-1-LL and R-IS-2-LL during October (Fall) 2018.

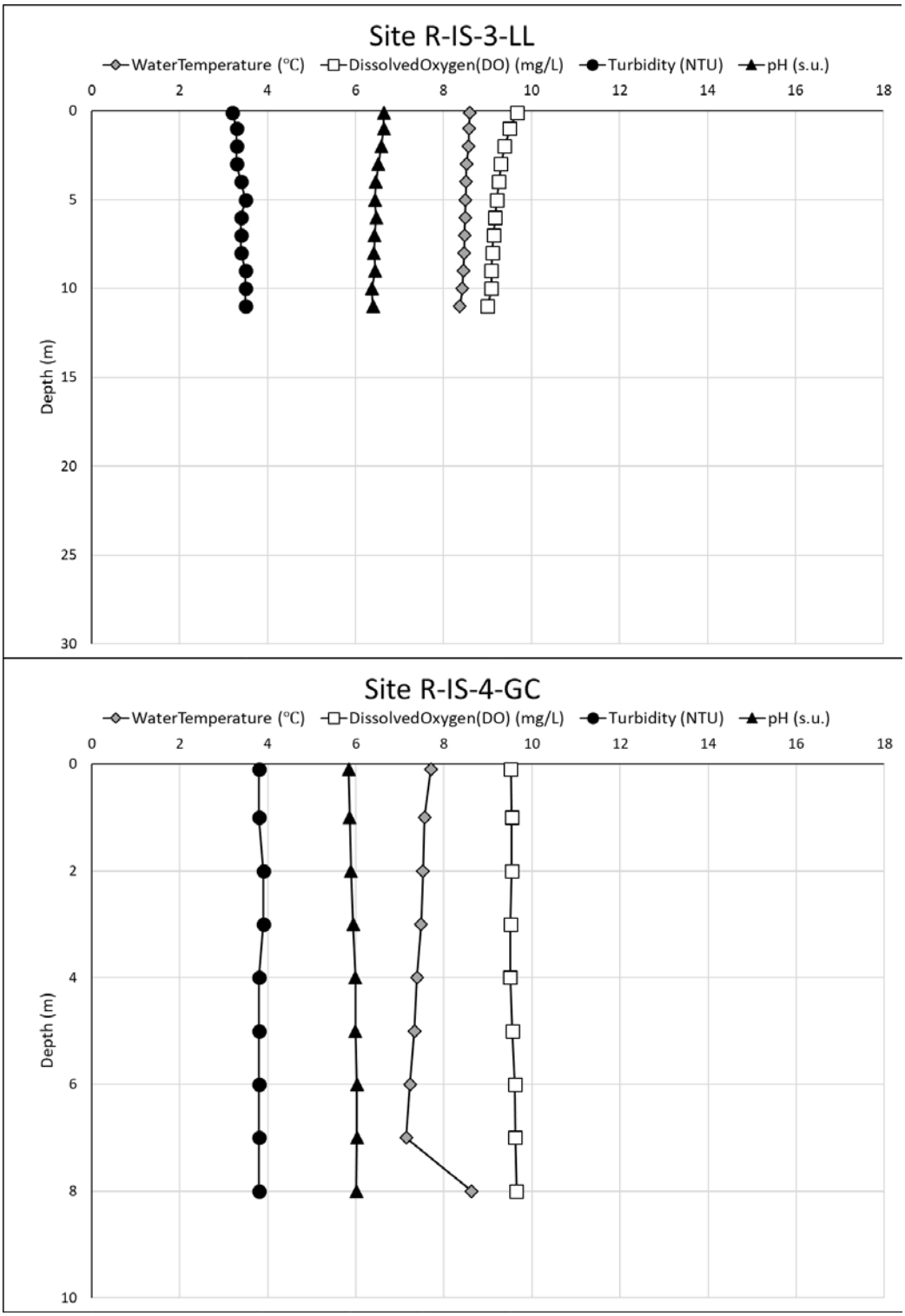

Figure B-10. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Loon Lake and Gerle Creek Reservoir sites R-IS-3-LL and R-IS-4-GC during October (Fall) 2018.

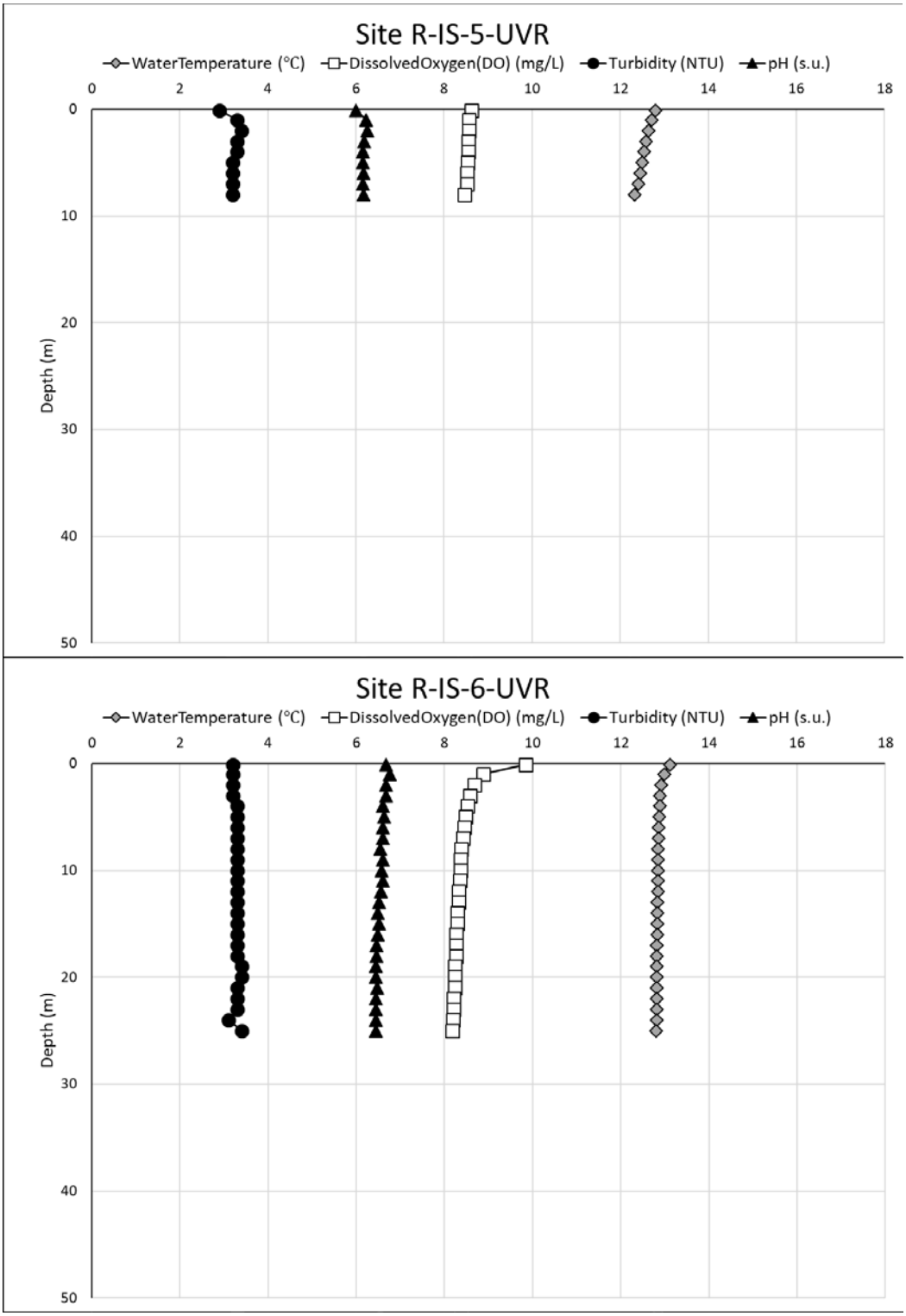

Figure B-11. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Union Valley Reservoir sites R-IS-5-UVR and R-IS-6-UVR during October (Fall) 2018.

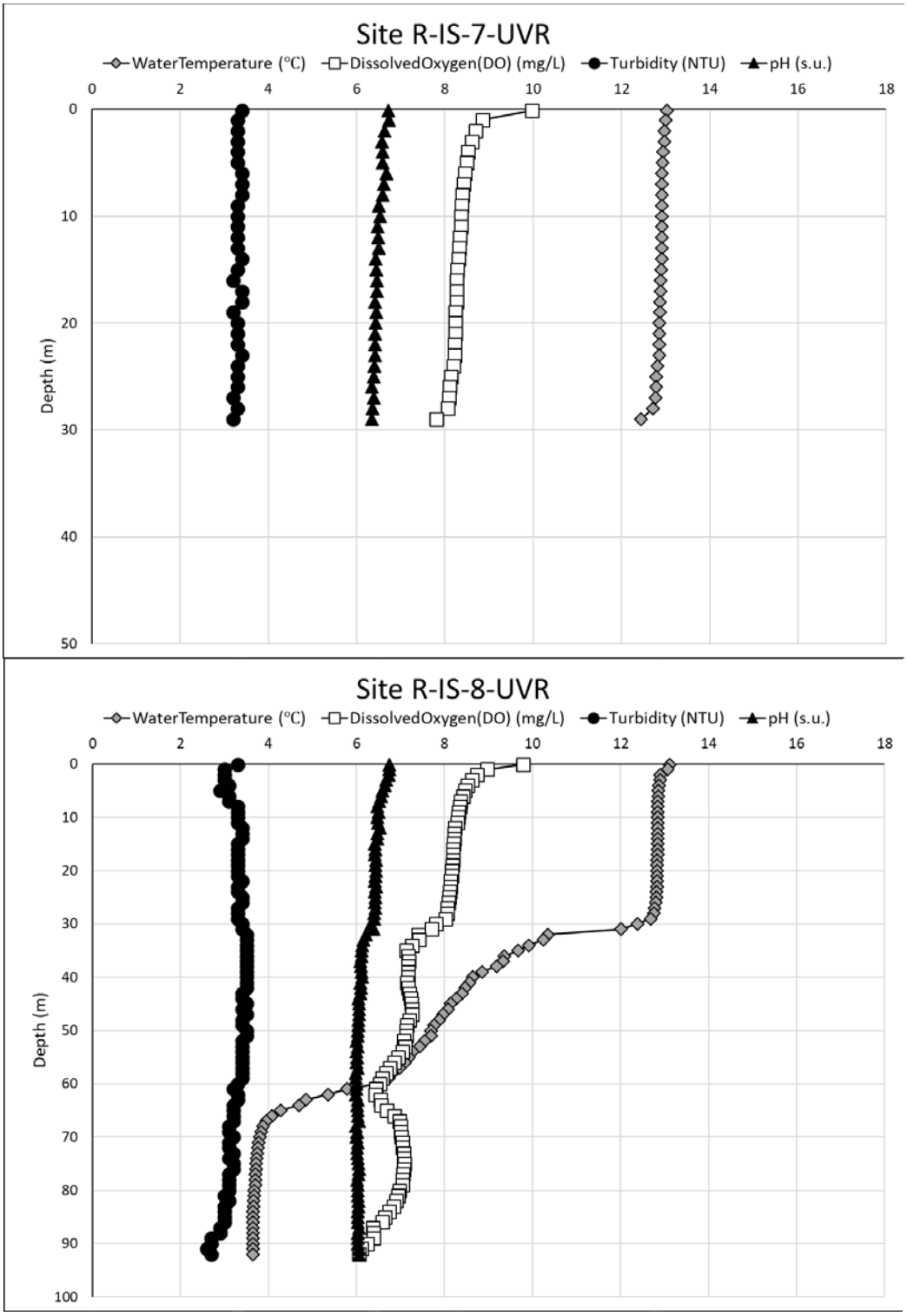

Figure B-12. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Union Valley Reservoir sites R-IS-7-UVR and R-IS-8-UVR during October (Fall) 2018.

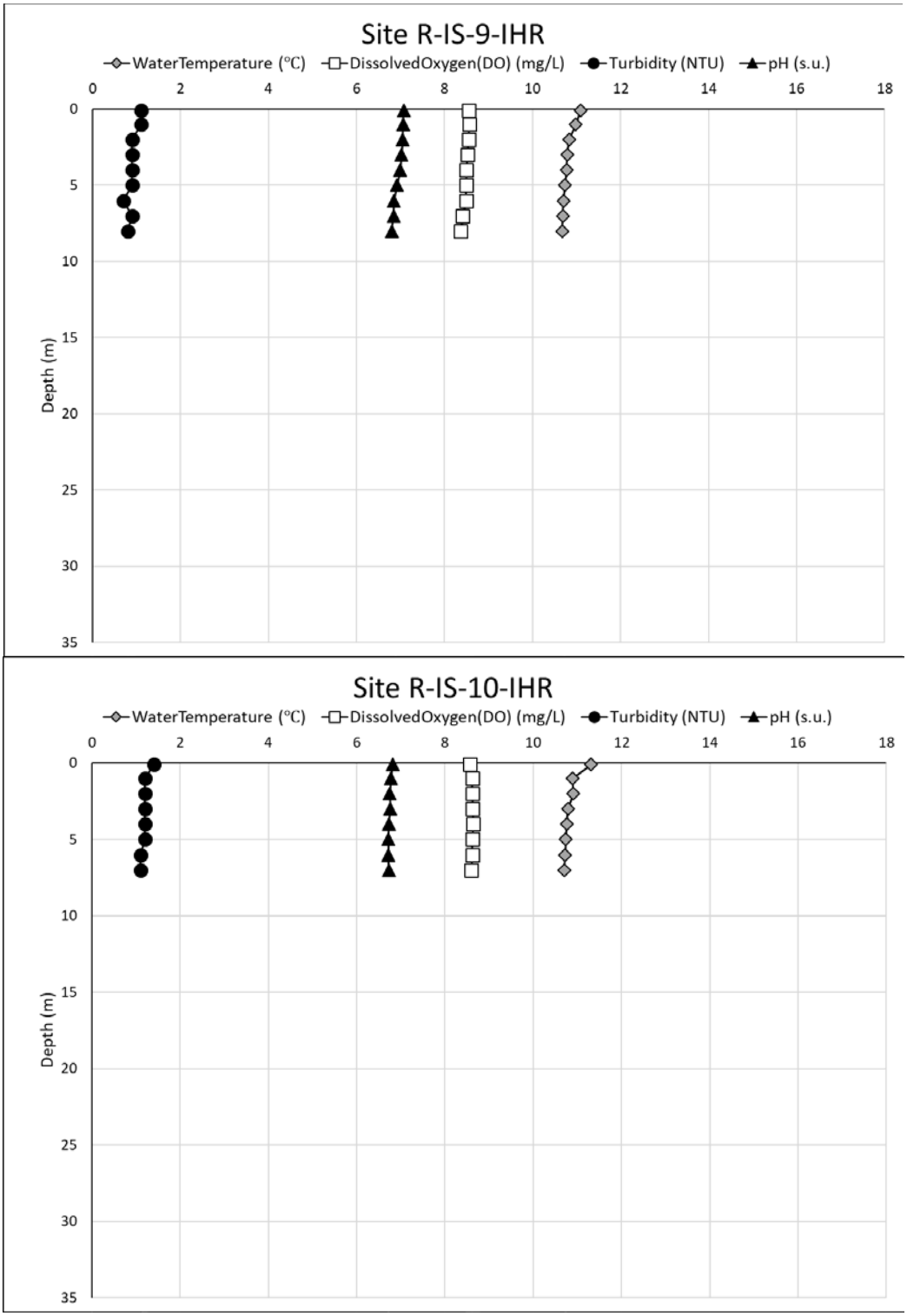

Figure B-13. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Ice House Reservoir sites R-IS-9-IHR and R-IS-10-IHR during October (Fall) 2018.

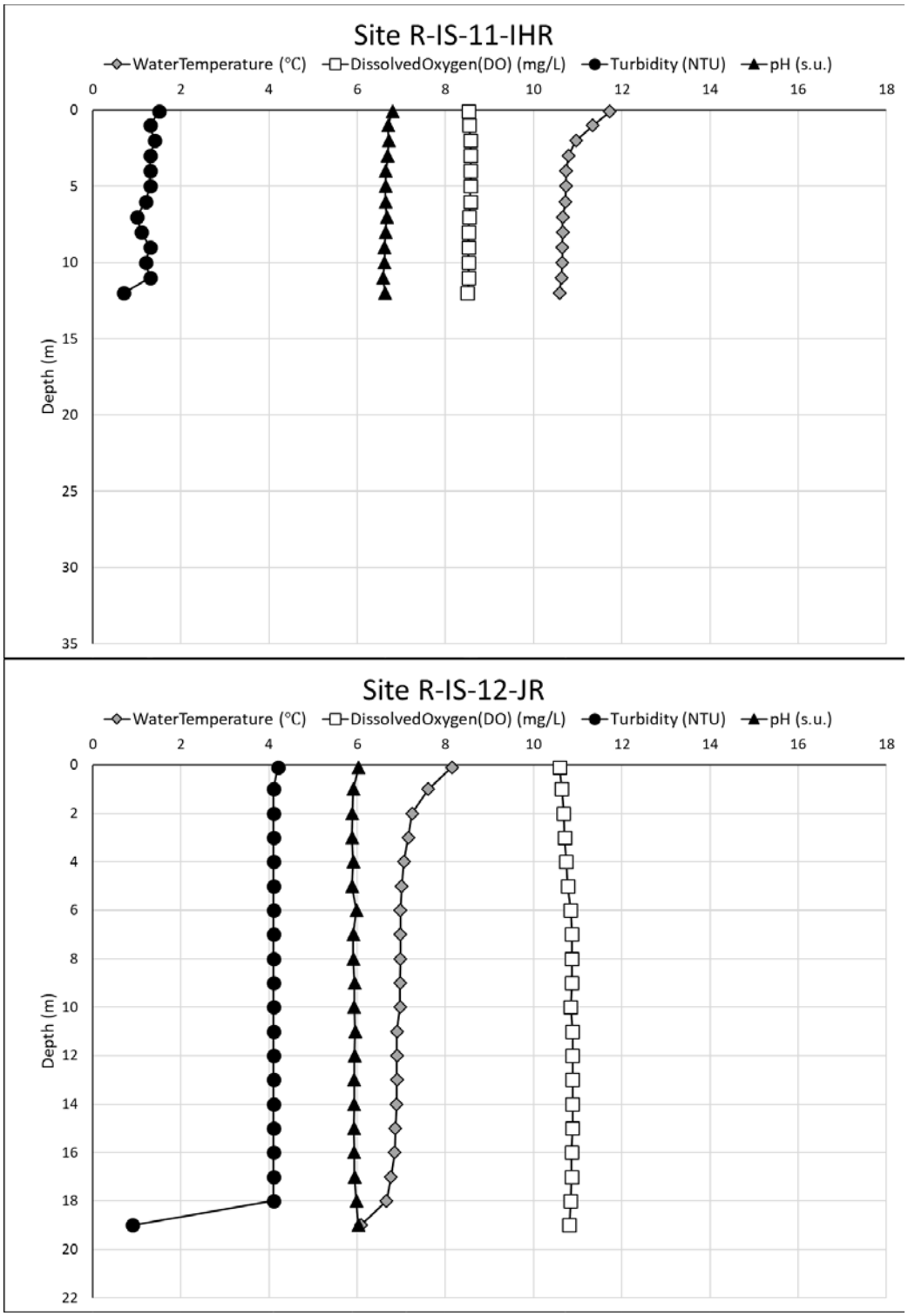

Figure B-14. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Ice House Reservoir and Junction Reservoir sites R-IS-11-IHR and R-IS-12-JR during October (Fall) 2018.

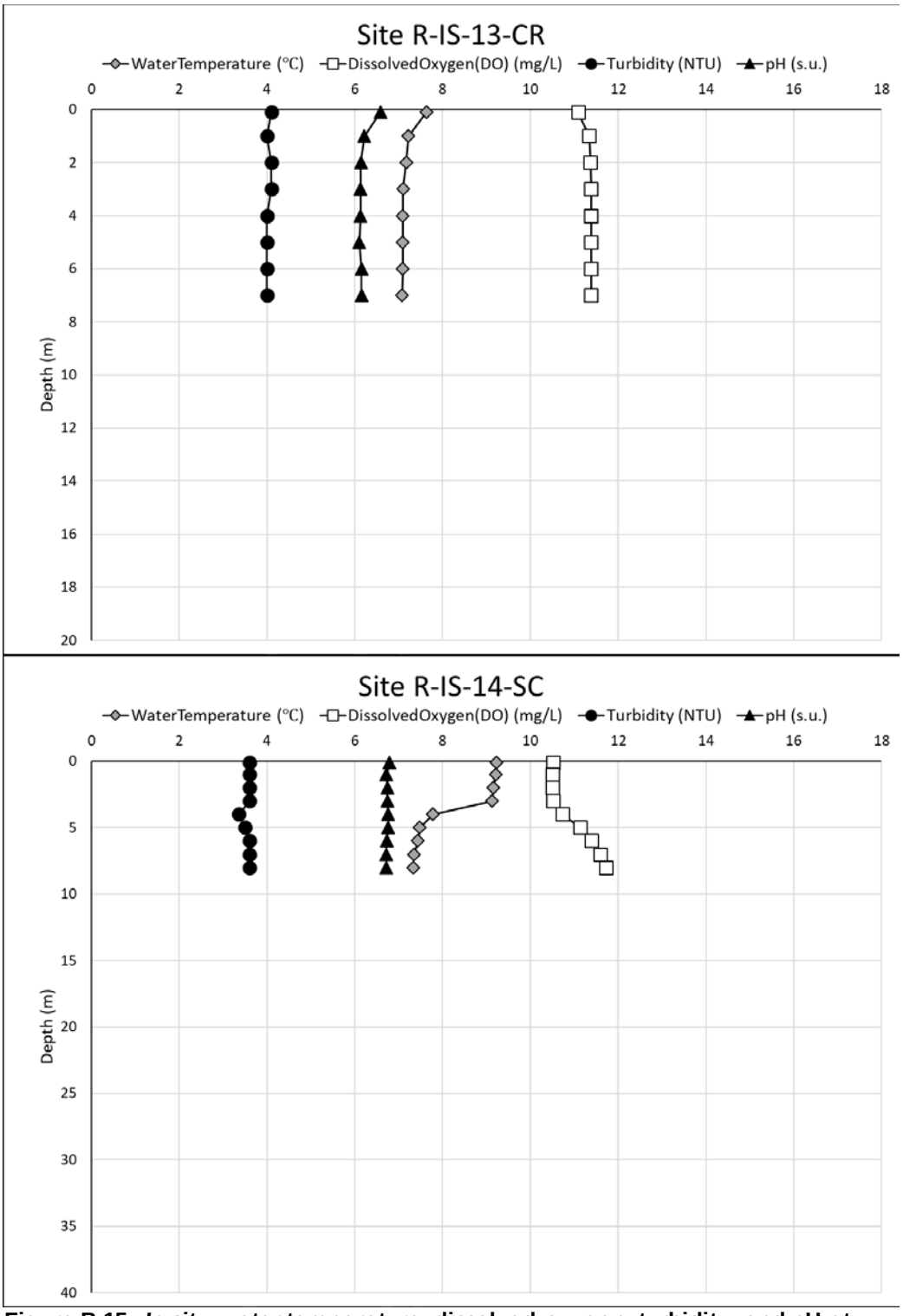

Figure B-15. ***In situ*** **water temperature, dissolved oxygen, turbidity, and pH at Camino Reservoir and Slab Creek Reservoir sites R-IS-13-JR and R-IS-14-SC during October (Fall) 2018.**

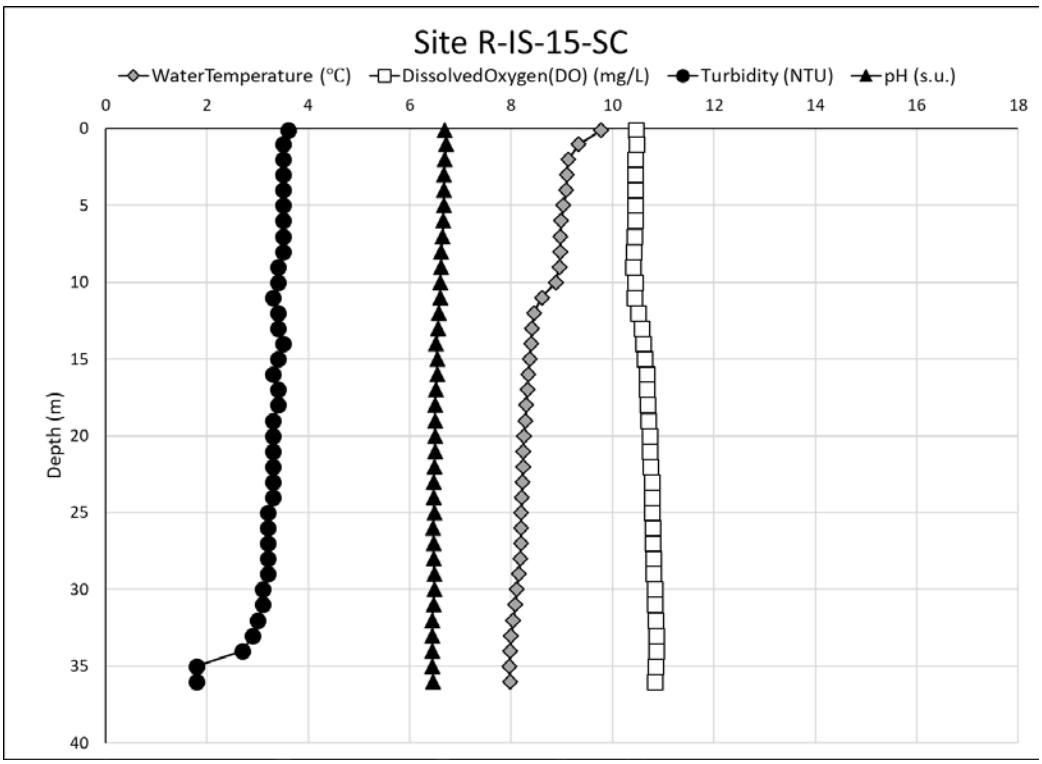

Figure B-16. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Slab Creek Reservoir site R-IS-15-SC during October (Fall) 2018.

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APPENDIX C
Bacteria Results for UARP Reservoir and Riverine Sites

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Table C-1. Bacteria (MPN/100mL) for UARP 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]	*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	4.5	8.6	6.8	7.5	<1.8	5.2	<1.8	1.0	7.8	1.0	2.9	3.2
Bac-6-GCR*	13.0	1.0	<1.8	7.5	<1.8	<1.0	<1.8	2.0	<1.8	<1.0	1.5	1.3
Bac-7-UVR	2.0	1.0	2.0	1.0	2.0	1.0	2.0	2.0	<1.8	<1.0	1.7	1.0
Bac-8-UVR	4.5	1.0	4.0	3.1	<1.8	2.0	<1.8	<1.0	<1.8	1.0	1.7	1.3
Bac-9-UVR	1.8	2.0	23.0	3.1	2.0	6.3	2.0	<1.0	9.3	3.1	4.3	2.3
Bac-10-UVR	2.0	<1.0	<1.8	<1.0	<1.8	1.0	2.0	<1.0	<1.8	<1.0	1.2	0.6
Bac-11-JR	4.5	19.9	2.0	29.2	2.0	5.2	350	261.3	4.0	6.3	7.6	21.8
Bac-12-IHR	<1.8	<1	<1.8	1.0	<1.8	<1.0	2.0	1.0	<1.8	<1	1.1	0.7
Bac-13-IHR	2.0	2.0	<1.8	<1.0	<1.8	<1.0	<1.8	2.0	23.0	73.8	2.0	2.4
Bac-14-BCR	<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-15-SCR	<1.8	<1.0	<1.8	<1.0	130.0	344.8	350.0	248.1	1.8	2.0	9.2	8.4
MDL	1.8	1.0	1.8	1.0	1.8	1.0	1.8	1.0	1.8	1.0	-	-
MRL	1.8	1.0	1.8	1.0	1.8	1.0	1.8	1.0	1.8	1.0	-	-

[1] Individual results <MDL were treated as 0.5 x MDL for the geometric mean calculations.
*Due to construction-related access constraints, sampling was shifted back by one week at Site Bac-6-GCR.
MDL = method detection limit
MRL = method reporting limit

Table C-2. Bacteria (MPN/100mL) for UARP 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	3.7	<1.0	<1.8	<1.0	<1.8	2.0	<1.8	<1.0	<1.8	<1.0	1.2	0.7
Bac-2-BI	<1.8	<1.0	2.0	10.9	<1.8	<1.0	<1.8	<1.0	<1.8	<1.0	1.1	0.9
Bac-3-LL	<1.8	<1.0	<1.8	<1.0	<1.8	2.0	2.0	<1.0	<1.8	<1.0	1.1	0.7
Bac-4-LL	<1.8	1	<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	-	-
MRL	1.8	1.0	1.8	1.0	1.8	1.0	1.8	1.0	1.8	1.0	-	-

[1] Individual results <MDL were treated as 0.5 x MDL for the geometric mean calculations.
MDL = method detection limit
MRL = method reporting limit

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APPENDIX D
In situ Field Data Sheets

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Stillwater Sciences

SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

Page 1 of 4

Instrument(s) used: YSI EXO **Crew:** KKC + MND

Site Location: IS-9-GCC GPS:
Date: 1/29/18 Time: 1040
Photos: Weather: Cloudy, cold
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
2.52	11.77	86.4	7.3	0.013	6.67	0.69	

Site Location: IS-10-SFSC GPS:
Date: 1/29/18 Time: 1130
Photos: Weather: cloudy, cold
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
4.80	11.02	85.9	5.9	0.010	7.11	0.41	

Site Location: IS-11-SFSC GPS:
Date: 1/29/18 Time: 1215
Photos: Weather: Cloudy, Cold
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
2.62	12.11	89.1	9.1	0.016	7.25	0.63	

Stillwater Sciences

SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

Page 2 of 4

Instrument(s) used: YSI EXO **Crew:** KKC + MND

Site Location: IS-12-SC GPS:
Date: 1/29/18 Time: 1252
Photos: Weather: Cloudy, cold
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
5.91	11.11	89.0	7.8	0.012	7.08	0.64	

Site Location: IS-14-SC GPS:
Date: 1/29/18 Time: 1400
Photos: Weather: Partly cloudy, cool
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
6.04	11.62	93.4	13.3	0.021	7.34	0.84	

Site Location: IS-13-SC GPS:
Date: 1/29/18 Time: 1431
Photos: Weather: cloudy, cool
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
6.61	11.55	94.3	8.4	0.013	7.27	0.32	

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SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

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Instrument(s) used: YSI EXO **Crew:** KKC + MND

Site Location: IS-17-BC GPS:
Date: 1/30/18 Time: 1005
Photos: Weather: Clear, Cool
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
6.63	11.42	93.2	16.7	0.026	7.34	7.54	

Site Location: IS-15-SFAR GPS:
Date: 1/30/18 Time: 1105
Photos: Weather: clear, cool
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
4.45	12.77	98.6	35.4	0.058	7.63	0.85	

Site Location: IS-16-SFAR GPS:
Date: 1/30/18 Time: 1130
Photos: Weather: Clear, Cool
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
4.57	12.66	98.1	36.4	0.043	7.52	0.72	

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Instrument(s) used: 451 EXO Crew: KKC + MND

Site Location: IS-19-SFAR GPS:
Date: 1/30/18 Time: 1235
Photos: Weather: Sunny, Cool
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
5.50	12.36	98.1	22.0	0.035	7.47	2.21	

Site Location: IS-18-SFAR GPS:
Date: 1/30/18 Time: 1335
Photos: Weather: Clear, cool
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
7.17	12.35	102.2	33.8	0.051	7.77	0.83	

Site Location: GPS:
Date: Time:
Photos: Weather:
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	

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Instrument(s) used: YSI EXO **Crew:** ESS KKC

Site Location: IS-9-GCC GPS:
Date: 5/8/2018 Time: 1346
Photos: Weather: sunny, clear, warm
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
10.69	9.85	88.8	8.6	0.012	6.9	0.2	

Site Location: IS-7-SFRR GPS:
Date: 5/8/2018 Time: 1420
Photos: Weather: Sunny, clear, calm
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
11.36	9.33	85.3	11.6	0.016	7.1	0.3	

Site Location: IS-8-SFRR GPS:
Date: 5/8/18 Time: 1435
Photos: Weather: Sunny, clear
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
11.37	9.49	86.9	10.2	0.014	6.9	0.2	

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Instrument(s) used: YSI Exo **Crew:** SES KKC

Site Location: IS-4-GC GPS:
Date: 5/8/2018 Time: 1045
Photos: Yes Weather: Sunny, clear, windy
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
6.19	10.16	82.0	5.5	0.009	6.4	0.4	

Site Location: IS-5-GC GPS:
Date: 5/8/2018 Time: 1130
Photos: Weather: Sunny, clear, calm
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
9.38	9.67	84.5	8.6	0.012	7.0	0.2	

Site Location: IS-6-GC GPS:
Date: 5/8/2018 Time: 1210
Photos: Weather: Sunny, clear, warm
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
8.22	10.02	85.1	7.1	0.010	6.7	0.2	

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Instrument(s) used: _____ **Crew:** EES KKC

Site Location: IS-10-SESC GPS: _____
Date: 5/8/18 Time: 1520
Photos: _____ Weather: Sunny, warm, calm
Notes: _____

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
5.52	10.73	85.2	6.9	0.011	7.0	0.5	

Site Location: IS-17-BL GPS: _____
Date: 5/9/2018 Time: 1017
Photos: _____ Weather: Sunny, clear, warm
Notes: _____

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
10.72	10.20	91.9	20.6	0.028	6.9	3.9	

Site Location: IS-15-SFAR GPS: _____
Date: 5/9/2018 Time: 1130
Photos: _____ Weather: Sunny, clear, hot
Notes: _____

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
12.16	10.49	97.7	25.0	0.033	7.2	1.1	

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Instrument(s) used: YSI EXO **Crew:** KKC EES

Site Location: IS-16-SFAR GPS:
Date: 5-9-2018 Time: 1150
Photos: Weather: clear, sunny, hot
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
10.21	11.37	101.2	17.5	0.024	6.9	0.3	

Site Location: IS-19-SFAR GPS:
Date: 5-9-2018 Time: 1400
Photos: Weather: clear, sunny, hot
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
11.13	10.88	99.0	20.9	0.029	7.2	0.3	

Site Location: IS-18-SFAR GPS:
Date: 5-9-2018 Time:
Photos: Weather:
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	

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Instrument(s) used: YSI EXO **Crew:** KKC + EES

Site Location: IS-18-SFAR GPS:
Date: 5-9-2018 Time: 1500
Photos: Weather: Sunny, clear, warm
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
15.28	10.17	104.4	34.2	0.042	7.5	0.1	

Site Location: IS-14-SC GPS:
Date: 5/10/18 Time: 1100
Photos: Weather: Sunny, clear, warm
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
8.04	11.04	93.5	10.2	0.015	7.3	0.2	

Site Location: IS-13-SC GPS:
Date: 5/10/18 Time: 1130
Photos: Weather: Sunny, clear, calm
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
10.66	10.30	92.6	11.9	0.016	7.0	0.2	

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Instrument(s) used: YSI EXO **Crew:** BTH, KKC

Site Location: IS-11-SFSC GPS:
Date: 5/10/18 Time: 1230
Photos: Weather: Sunny, clear, warm
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
10.12	9.86	87.6	10.9	0.015	7.1	0.2	

Site Location: IS-12-SC GPS:
Date: 5/10/18 Time: 1250
Photos: Weather: Sunny, cool, calm
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
6.86	10.66	87.5	8.8	0.013	7.0	0.2	

Site Location: IS-1-BR GPS:
Date: 5/18/18 Time: 1300
Photos: Weather: Partly cloudy, warm
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
5.32	10.30	81.3	8.0	0.012	7.1	1.4	

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Instrument(s) used: YSI 6920 **Crew:** KKC + BTH

Site Location: US-2-LRR GPS:
Date: 5/18/18 Time: 1430
Photos: Weather: Thunderstorms, cool
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
7.45	9.71	81.0	7.0	0.011	7.1	1.1	

Site Location: US-3-LRR GPS:
Date: 5/18/18 Time: 1515
Photos: Weather: Thunderstorms, cool
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
8.30	9.88	84.1	7.0	0.010	7.3	1.3	

Site Location: GPS:
Date: Time:
Photos: Weather:
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	

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Instrument(s) used: YSI EXO **Crew:** KKC + DKR

Site Location: IS-4-GC GPS:
Date: 8/13/18 Time: 1045
Photos: Weather: Sunny, breezy
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
10.13	9.20	81.7	6.3	0.009	6.21	0.41	

Site Location: IS-5-GC GPS:
Date: 8/13/18 Time: 1120
Photos: Weather: Sunny, warm
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
14.37	8.80	86.1	9.2	0.011	7.06	0.05	

Site Location: IS-6-GC GPS:
Date: 8/13/18 Time: 1145
Photos: Weather: Sunny, warm
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
14.67	8.57	84.4	8.7	0.011	6.73	0.15	

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Instrument(s) used: YSI Exo **Crew:** KKC, DKB

Site Location: IS-9-GCC GPS:
Date: 8/13/18 Time: 1215
Photos: Weather: Sunny, Warm
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
16.39	8.60	87.9	8.7	0.010	6.66	0.07	

Site Location: IS-7-SFRR GPS:
Date: 8/13/18 Time: 1250
Photos: Weather: Sunny, hot
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
15.81	8.52	85.9	9.4	0.011	7.03	0.08	

Site Location: IS-8-SFRR GPS:
Date: 8/13/18 Time: 1310
Photos: Weather: Sunny, warm
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
15.52	8.71	87.5	9.3	0.011	7.00	0.05	

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Instrument(s) used: _____ **Crew:** _____

Site Location: FS-10-SFSC GPS: _____
Date: 6/18/18 Time: 1355
Photos: _____ Weather: sunny hot
Notes: _____

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
6.67	10.46	85.4	6.7	0.010	6.79	0.44	

Site Location: _____ GPS: _____
Date: _____ Time: _____
Photos: _____ Weather: _____
Notes: _____

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	

Site Location: _____ GPS: _____
Date: _____ Time: _____
Photos: _____ Weather: _____
Notes: _____

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	

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Instrument(s) used: YSI EXO Crew: KKC + DKR

Site Location: IS-11-SFSC GPS:
Date: 8/14/18 Time: 0910
Photos: Weather: sunny cool
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
13.57	9.07	87.2	11.0	0.014	7.19	0.20	

Site Location: IS-12-SC GPS:
Date: 8/14/18 Time: 0937
Photos: Weather: sunny cool
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
7.85	10.19	85.8	9.1	0.012	6.75	0.16	

Site Location: IS-13-SC GPS:
Date: 8/14/18 Time: 1035
Photos: Weather: sunny warm
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
16.05	9.03	91.5	14.0	0.017	7.01	0.11	

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Instrument(s) used: YSI EXO **Crew:** KKC - DKR

Site Location: IS-14-SC GPS:
Date: 8/14/18 Time: 1180
Photos: Weather: sunny warm
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
10.42	10.52	94.2	10.5	0.015	7.12	0.21	

Site Location: IS-15-SFAR GPS:
Date: 8/14/18 Time: 1220
Photos: Weather: sunny hot
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
20.59	8.77	97.6	49.0	0.053	7.69	0.26	

Site Location: IS-16-SFAR GPS:
Date: 8/14/18 Time: 1346
Photos: Weather: sunny hot
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
11.34	10.56	96.7	15.60	0.021	6.72	0.18	

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Instrument(s) used: YSI EXO **Crew:** KKC DKR

Site Location: IS-17-BC GPS:
Date: 8/14/18 Time: 1434
Photos: Weather: sunny hot
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
19.33	8.39	91.1	24.1	0.027	7.25	1.22	

Site Location: IS-18-SFAR GPS:
Date: 8/15/18 Time: 1250
Photos: Weather: sunny, hot
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
17.73	9.54	100.3	25.5	0.030	7.37	0.18	

Site Location: IS-19-SFAR GPS:
Date: 8/15/18 Time: 1330
Photos: Weather: sunny hot
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
13.25	10.12	96.5	16.7	0.022	7.24	0.78	

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Instrument(s) used: YSI EXO **Crew:** EES, BRC

Site Location: IS-3-LRR GPS:
Date: 8-17-18 Time: 1047
Photos: Weather: hot, clear
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
21.49	6.88	77.8	10.0	0.011	6.84	0.12	

Site Location: IS-2-LRR GPS:
Date: 8-17-18 Time: 1138
Photos: Weather: hot, clear
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
20.47	6.64	73.7	13.4	0.015	6.87	0.23	

Site Location: IS-1-RR GPS:
Date: 8-17-18 Time: 1249
Photos: Weather: breezy, hot
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
22.45	6.88	79.1	15.3	0.016	6.88	0.58	60'

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Instrument(s) used: YSI 6920 **Crew:** ES + BL

Site Location: IS-1-RR GPS:
Date: 11/12/2018 Time: 1139
Photos: Weather: sunny, breezy
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
1.29	10.41	73.7	12	0.021	6.53	0.4	

Site Location: IS-2-LRR GPS:
Date: 11/12/2018 Time: 13:07
Photos: Weather: sunny, breezy
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
3.70	9.91	75.0	11	0.018	6.85	0.1	

Site Location: IS-3-LRR GPS:
Date: 11/12/2018 Time: 13:56
Photos: Weather: sunny, slight breeze
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
2.96	10.63	78.8	8	0.014	6.57	0.3	

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Instrument(s) used: YSI 6920 **Crew:** ES BL

Site Location: IS-4-GC GPS:
Date: 11/13/18 Time: 0911
Photos: Weather: clear, sunny
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
5.15	10.18	80.0	8	0.013	6.57	0.2	

Site Location: IS-5-GC GPS:
Date: 11/13/18 Time: 0955
Photos: Weather: clear, sunny
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
1.55	11.29	80.8	10	0.018	6.16	0.1	

Site Location: IS-6-GC GPS:
Date: 11/13/18 Time: 1027
Photos: Weather:
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
3.04	10.47	77.8	11	0.019	6.13	0.2	

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SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

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Instrument(s) used: YSI 6920 **Crew:** ES BL

Site Location: IS-9-GCC GPS:
Date: 11/13/18 Time: 1047
Photos: Weather: clear, sunny
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
3.12	10.82	80.7	13	0.022	6.80	0.3	

Site Location: IS-8-SFRR GPS:
Date: 11/13/18 Time: 1137
Photos: Weather: clear, sunny
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
1.64	11.46	82.1	12	0.021	6.43	0.3	

Site Location: IS-7-SFRR GPS:
Date: 11/13/18 Time: 1124
Photos: Weather: clear, sunny
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
1.10	11.48	80.8	13	0.024	6.48	0.1	

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SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

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Instrument(s) used: YSI 6920 **Crew:** ES + BL

Site Location: IS-10-SFSC GPS:
Date: 11/13/18 Time: 1217
Photos: Weather: clear, sunny
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
5.63	9.93	79.0	13	0.021	6.13	0.5	

Site Location: GPS:
Date: Time:
Photos: Weather:
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	

Site Location: GPS:
Date: Time:
Photos: Weather:
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	

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Instrument(s) used: YSI 6920 **Crew:** ES + BL

Site Location: IS-11-SFSC GPS:
Date: 11/14/18 Time: 08:48
Photos: Weather: clear, sunny, cold
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
-2.49	12.54	80.2	15	0.031	6.86	0.1	

Site Location: IS-12-SC GPS:
Date: 11/14/18 Time: 09:09
Photos: Weather: clear, sunny, cold
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
1.17	11.87	85.1	14	0.024	6.82	0.2	

Site Location: IS-13-SC GPS:
Date: 11/14/18 Time: 10:05
Photos: Weather: clear, sunny
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
1.48	12.53	89.4	15	0.028	6.90	0.2	

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Instrument(s) used: YSI 6920 **Crew:** ES + BL

Site Location: IS-14-SC GPS:
Date: 11/14/18 Time: 1035
Photos: Weather: cool, clear, sunny
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
3.97	11.86	90.4	16	0.026	6.87	0.1	

Site Location: IS-16-SFAR GPS:
Date: 11/14/18 Time: 1312
Photos: Weather: clear, sunny
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
4.85	12.30	96.4	27	0.044	6.70	0.4	

Site Location: IS-15-SFAR GPS:
Date: 11/14/18 Time: 1328
Photos: Weather: clear, sunny
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
1.85	12.81	92.5	54	0.097	7.01	0.1	

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Instrument(s) used: YSI EXO **Crew:** ES + SK

Site Location: ES-17-BC GPS:
Date: 11/16/18 Time: 0900
Photos: Weather: clear, cool
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
9.60	10.39	91.2	29.6	0.042	7.46	1.29	

Site Location: LS-19-SFAR GPS:
Date: 11-16-18 Time: 1045
Photos: Weather: clear, cool
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
8.42	11.28	96.2	26.3	0.038	7.73	0.43	

Site Location: LS-18-SFAR GPS:
Date: 11-16-18 Time: 1200
Photos: Weather: clear, cool
Notes:

In situ

Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
7.13	11.99	99.2	32.3	0.049	7.65	0.16	

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Date: 5/3/18
Time: 1142

Reservoir - Water Quality Vertical Profiles

Site Location: R-IS-1-LL
Lat/Long (NAD83):

Instrument used: YSI EXO
Water depth: 92 ft

Secchi (ft): 40

Personnel: EES BTH

Site Notes: clear, breezy, cool

Depth (ft)	Depth (m)	Temp (°C)	DO (mg/L)	DO (%)	Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
surface		8.24	9.94	84.4	6.2	0.009	7.3	0.2		
3.3	1	8.22	9.92	84.2	6.2	0.009	7.3	0.2		
6.6	2	7.73	9.97	83.6	6.1	0.009	7.3	0.2		
9.8	3	7.56	9.99	83.4	6.1	0.009	7.3	0.2		
13.1	4	7.52	9.98	83.3	6.1	0.009	7.3	0.2		
16.4	5	6.95	10.03	82.7	6.0	0.009	7.2	0.2		
19.7	6	6.57	10.13	82.6	5.9	0.009	7.2	0.2		
23.0	7	6.415	10.17	82.7	5.8	0.009	7.2	0.2		
26.2	8	6.31	10.18	82.4	5.8	0.009	7.1	0.2		
29.5	9	6.12	10.20	82.2	5.8	0.009	7.1	0.2		
32.8	10	6.07	10.18	81.9	5.8	0.009	7.0	0.3		
36.1	11	5.94	10.18	81.6	5.8	0.009	6.9	0.2		
39.4	12	5.92	10.20	81.7	5.8	0.009	6.9	0.2		
42.7	13	5.91	10.20	81.8	5.8	0.009	6.9	0.2		
45.9	14	5.84	10.20	81.7	5.8	0.009	6.9	0.3		
49.2	15	5.83	10.19	81.5	5.7	0.009	6.8	0.2		
52.5	16	5.74	10.20	81.3	5.7	0.009	6.8	0.3		
55.8	17	5.69	10.17	81.1	5.7	0.009	6.8	0.2		
59.1	18	5.65	10.13	80.7	5.8	0.009	6.8	0.2		
62.3	19	5.61	10.11	80.4	5.8	0.009	6.7	0.2		
65.6	20	5.55	10.09	80.2	5.7	0.009	6.7	0.3		
68.9	21	5.413	10.10	79.0	5.8	0.009	6.7	0.2		
72.2	22	5.37	10.07	79.6	5.7	0.009	6.6	0.3		
75.5	23	5.36	10.06	79.5	5.8	0.009	6.6	0.3		
78.7	24	5.32	10.05	79.4	5.7	0.009	6.5	0.3		
82.0	25	5.29	10.01	78.6	5.8	0.009	6.5	171.23		(BOTTOM)
85.3	26									
88.6	27									
91.9	28									
95.1	29									
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									

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SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

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Date: 5/1/18
Time: 1030

Reservoir - Water Quality Vertical Profiles

Site Location: UARP-R-IS-2-LL
Lat/Long (NAD83):

Instrument used: EXO
Water depth: 114 ft

Personnel: BTH & KKC

Secchi (ft): 45 ft

Site Notes: Sunny, Cold, windy

Depth (ft)	Depth (m)	Temp (°C)	DO (mg/L)	DO (%)	Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
surface		6.00	10.48	84.2	5.3	0.008	7.8	0.5		
3.3	1	5.98	10.47	84.1	5.3	0.008	7.6	0.4		
6.6	2	5.99	10.47	84.1	5.3	0.008	7.5	0.5		
9.8	3	5.97	10.46	84.0	5.3	0.008	7.4	0.5		
13.1	4	5.97	10.46	84.0	5.3	0.008	7.3	0.5		
16.4	5	5.98	10.44	83.8	5.3	0.008	7.3	0.4		
19.7	6	5.96	10.45	83.9	5.3	0.008	7.2	0.5		
23.0	7	5.98	10.44	83.9	5.3	0.008	7.1	0.4		
26.2	8	5.96	10.44	83.8	5.3	0.008	6.9	0.4		
29.5	9	5.95	10.42	83.6	5.3	0.008	6.6	0.4		
32.8	10	5.93	10.41	83.4	5.3	0.008	6.6	0.4		
36.1	11	5.95	10.39	83.3	5.3	0.008	6.5	0.5		
39.4	12	5.94	10.38	83.3	5.3	0.008	6.5	0.5		
42.7	13	5.95	10.38	83.2	5.3	0.008	6.5	0.5		
45.9	14	5.95	10.37	83.3	5.3	0.008	6.4	0.5		
49.2	15	5.96	10.34	83.0	5.3	0.008	6.5	0.4		
52.5	16	5.94	10.33	82.9	5.3	0.008	6.4	0.4		
55.8	17	5.94	10.33	82.8	5.3	0.008	6.42	0.4		
59.1	18	5.91	10.33	82.8	5.3	0.008	6.39	0.5		
62.3	19	5.93	10.32	82.8	5.3	0.008	6.3	0.4		
65.6	20	5.92	10.30	82.7	5.3	0.008	6.4	0.4		
68.9	21	5.91	10.30	82.5	5.3	0.008	6.4	0.4		
72.2	22	5.86	10.31	82.4	5.3	0.008	6.4	0.4		
75.5	23	5.72	10.32	82.4	5.3	0.008	6.3	0.4		
78.7	24	5.71	10.31	82.2	5.3	0.008	6.3	0.4		
82.0	25	5.67	10.30	82.1	5.3	0.008	6.3	0.4		
85.3	26	5.59	10.32	82.0	5.3	0.008	6.3	0.4		
88.6	27	5.53	10.32	81.9	5.3	0.008	6.3	0.5		
91.9	28	5.44	10.35	82.0	5.2	0.008	6.3	0.5		BOTTOM
95.1	29									
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									

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SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

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Date: 5/1/18
Time: 1110

Reservoir - Water Quality Vertical Profiles

Instrument used: EXO
Site Location: UARP-R-IS-3-LL
Water depth: 57ft
Lat/Long (NAD83):
Secchi (ft): 45ft

Personnel: BTH + KKC

Site Notes: Sunny, Cold, Windy

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		6.11	10.40	83.8	5.3	0.008	6.7	0.5		
3.3	1	6.08	10.40	83.7	5.3	0.008	6.6	0.4		
6.6	2	6.02	10.41	83.7	5.3	0.008	6.6	0.4		
9.8	3	5.99	10.43	83.7	5.3	0.008	6.6	0.5		
13.1	4	6.02	10.43	83.8	5.3	0.008	6.6	0.4		
16.4	5	5.97	10.44	83.8	5.3	0.008	6.6	0.4		
19.7	6	5.96	10.43	83.7	5.3	0.008	6.6	0.4		
23.0	7	5.93	10.42	83.5	5.3	0.008	6.6	0.5		
26.2	8	5.88	10.40	83.3	5.3	0.008	6.5	0.4		
29.5	9	5.87	10.39	83.2	5.3	0.008	6.5	0.4		
32.8	10	5.88	10.37	83.0	5.3	0.008	6.5	0.4		
36.1	11	5.87	10.37	83.0	5.3	0.008	6.5	0.4		
39.4	12	5.88	10.36	82.9	5.3	0.008	6.5	0.4		
42.7	13	5.89	10.35	82.9	5.3	0.008	6.5	0.4		
45.9	14	5.86	10.35	82.9	5.3	0.008	6.5	0.4		
49.2	15	5.83	10.34	82.7	5.3	0.008	6.4	0.4		
52.5	16	5.84	10.32	82.6	5.3	0.008	6.5	0.4		BOTTOM
55.8	17									
59.1	18									
62.3	19									
65.6	20									
68.9	21									
72.2	22									
75.5	23									
78.7	24									
82.0	25									
85.3	26									
88.6	27									
91.9	28									
95.1	29									
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									

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SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

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Date: 5/3/18
Time: 1006

Reservoir - Water Quality Vertical Profiles

Site Location: R-15-4-GC
Lat/Long (NAD83):

Instrument used: YSI EXO
Water depth: 29.6

Secchi (ft): 28

Personnel: BT 14, EES

Site Notes: clear, calm, cool

Depth (ft)	Depth (m)	Temp (°C)	DO (mg/L)	DO (%)	Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
surface		7.79	10.34	86.8	7.3	0.011	6.9	0.2		
3.3	1	7.11	10.37	85.6	7.1	0.011	6.8	0.2		
6.6	2	6.94	10.36	85.3	7.1	0.011	6.8	0.2		
9.8	3	6.90	10.35	85.1	7.1	0.011	6.7	0.2		
13.1	4	6.88	10.34	84.9	7.1	0.011	6.7	0.2		
16.4	5	6.90	10.31	84.8	7.2	0.011	6.7	0.2		
19.7	6	6.84	10.31	84.5	7.3	0.011	6.6	0.2		
23.0	7	6.80	10.30	84.4	7.4	0.011	6.6	0.2		
26.2	8	6.78	10.29	84.3	7.5	0.012	6.6	0.2		
29.5	9									BOTTOM
32.8	10									
36.1	11									
39.4	12									
42.7	13									
45.9	14									
49.2	15									
52.5	16									
55.8	17									
59.1	18									
62.3	19									
65.6	20									
68.9	21									
72.2	22									
75.5	23									
78.7	24									
82.0	25									
85.3	26									
88.6	27									
91.9	28									
95.1	29									
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									

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SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

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Date: 4/30/18
Time: 1300

Reservoir - Water Quality Vertical Profiles

Site Location: UARP-R-IS-5-UUR
Lat/Long (NAD83):

Instrument used: EXO
Water depth: 68 ft

Personnel: KKC + BTH

Secchi (ft): 38 ft

Site Notes: Cloudy, Cold, Breezy.

Depth (ft)	Depth (m)	Temp (°C)	DO (mg/L)	DO (%)	Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
surface		11.86	9.75	90.2	10.3	0.014	7.5	0.3		
3.3	1	11.88	9.73	90.1	10.3	0.014	7.4	0.2		
6.6	2	11.44	9.75	89.2	10.1	0.014	7.3	0.2		
9.8	3	11.09	9.76	88.7	10.1	0.014	7.3	0.2		
13.1	4	10.98	9.76	88.4	10.1	0.014	7.3	0.2		
16.4	5	10.21	9.88	88.1	10.0	0.014	7.3	0.2		
19.7	6	9.45	10.04	87.8	9.8	0.014	7.2	0.2		
23.0	7	8.69	10.14	87.0	9.5	0.014	7.2	0.2		
26.2	8	8.07	10.22	86.5	9.1	0.013	7.1	0.2		
29.5	9	7.91	10.22	86.1	9.0	0.013	7.1	0.2		
32.8	10	7.71	10.25	85.9	9.0	0.013	7.0	0.1		
36.1	11	7.51	10.26	85.7	8.9	0.013	7.0	0.1		
39.4	12	7.12	10.31	84.2	8.8	0.013	7.0	0.2		
42.7	13	6.13	10.35	83.2	8.6	0.013	6.9	0.2		
45.9	14	5.66	10.29	82.0	8.4	0.013	6.9	0.2		
49.2	15	5.59	10.28	81.7	8.5	0.013	6.9	0.2		
52.5	16	5.42	10.27	81.2	8.4	0.013	6.9	0.2		
55.8	17	5.31	10.21	80.6	8.4	0.013	6.8	0.2		
59.1	18	5.24	10.17	80.1	8.4	0.013	6.8	0.2		
62.3	19	5.19	10.10	79.4	8.4	0.014	6.8	0.2		BOTTOM
65.6	20									
68.9	21									
72.2	22									
75.5	23									
78.7	24									
82.0	25									
85.3	26									
88.6	27									
91.9	28									
95.1	29									
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									

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Date: 5/1/18
Time: 1500

Reservoir - Water Quality Vertical Profiles

Site Location: UARP-R-IS-6-UVR
Lat/Long (NAD83):

Instrument used: EXO
Water depth: 127 ft

Secchi (ft): 40ft

Personnel: BTH + KVE

Site Notes: Sunny, Cool, Calm

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		12.15	9.29	92.4	9.9	0.013	6.9	0.4		
3.3	1	11.15	10.04	91.4	9.6	0.013	6.9	0.4		
6.6	2	10.77	10.08	90.8	9.5	0.013	6.9	0.3		
9.8	3	10.57	10.10	90.7	9.4	0.013	6.9	0.3		
13.1	4	10.50	10.10	90.6	9.4	0.013	6.9	0.3		
16.4	5	10.46	10.09	90.3	9.4	0.013	6.9	0.3		
19.7	6	10.19	10.11	90.0	9.3	0.013	6.9	0.2		
23.0	7	9.85	10.27	90.8	9.2	0.013	6.9	0.3		
26.2	8	9.07	10.42	90.4	9.0	0.013	6.9	0.3		
29.5	9	8.43	10.50	89.8	8.8	0.013	6.9	0.3		
32.8	10	7.90	10.55	88.8	8.7	0.013	6.8	0.3		
36.1	11	7.77	10.56	88.7	8.6	0.013	6.9	0.2		
39.4	12	7.43	10.55	87.9	8.5	0.013	6.9	0.3		
42.7	13	7.10	10.51	86.8	8.5	0.013	6.8	0.2		
45.9	14	6.93	10.44	85.8	8.4	0.013	6.8	0.4		
49.2	15	6.77	10.41	85.2	8.4	0.013	6.8	0.3		
52.5	16	6.49	10.40	84.5	8.3	0.013	6.8	0.3		
55.8	17	6.42	10.38	84.3	8.4	0.013	6.7	0.3		
59.1	18	6.31	10.35	83.8	8.3	0.013	6.8	0.3		
62.3	19	6.05	10.35	83.2	8.3	0.013	6.8	0.3		
65.6	20	5.82	10.33	82.6	8.3	0.013	6.7	0.3		
68.9	21	5.78	10.29	82.2	8.3	0.013	6.7	0.3		
72.2	22	5.75	10.30	82.2	8.3	0.013	6.7	0.3		
75.5	23	5.71	10.30	82.2	8.3	0.013	6.7	0.3		
78.7	24	5.69	10.29	82.0	8.3	0.013	6.7	0.3		
82.0	25	5.51	10.31	81.7	8.2	0.013	6.7	0.3		
85.3	26	5.39	10.28	81.3	8.2	0.013	6.7	0.3		
88.6	27	5.25	10.25	80.7	8.1	0.013	6.6	0.4		
91.9	28	5.14	10.23	80.4	8.1	0.013	6.6	0.4		
95.1	29	5.08	10.21	80.2	8.1	0.013	6.6	0.4		
98.4	30	5.03	10.21	80.0	8.1	0.013	6.6	0.4		
101.7	31	5.00	10.20	79.8	8.1	0.013	6.6	0.3		
105.0	32	4.99	10.17	79.6	8.1	0.013	6.6	0.4		
108.3	33	4.96	10.16	79.5	8.1	0.013	6.6	0.4		
111.5	34	4.95	10.16	79.4	8.1	0.013	6.6	0.4		

Stillwater Sciences

Reservoir - Water Quality Vertical Profiles

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
(CONTINUED)										
114.8	35	4.95	10.15	79.4	8.1	0.013	6.6	0.4		
118.1	36	4.94	10.14	79.3	8.1	0.013	6.7	0.4		BOTTOM
121.4	37									
124.7	38									
128.0	39									
131.2	40									
134.5	41									
137.8	42									
141.1	43									
144.4	44									
147.6	45									
150.9	46									
154.2	47									
157.5	48									
160.8	49									
164.0	50									
167.3	51									
170.6	52									
173.9	53									
177.2	54									
180.4	55									
183.7	56									
187.0	57									
190.3	58									
193.6	59									
196.8	60									
200.1	61									
203.4	62									
206.7	63									
210.0	64									
213.3	65									
216.5	66									
219.8	67									
223.1	68									
226.4	69									
229.7	70									
232.9	71									
236.2	72									

Stillwater Sciences

SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

Page 1 of 2

Date: 5/1/18
Time: 1530

Reservoir - Water Quality Vertical Profiles

Site Location: UARP-R-IS-7-UVR
Lat/Long (NAD83):

Instrument used: EXO
Water depth: 161 ft

Secchi (ft): 34 ft

Personnel: KFC + BTH

Site Notes: Cloudy, cool, windy

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		12.06	9.86	91.7	9.8	0.013	6.95	0.5		
3.3	1	11.80	9.93	91.7	9.7	0.013	6.91	0.3		
6.6	2	11.15	10.0	90.9	9.6	0.013	6.9	0.4		
9.8	3	11.02	10.0	90.7	9.5	0.013	6.9	0.4		
13.1	4	10.79	10.04	90.6	9.4	0.013	6.9	0.4		
16.4	5	10.25	10.15	90.5	9.2	0.013	6.9	0.4		
19.7	6	9.57	10.28	90.3	9.0	0.013	6.8	0.4		
23.0	7	9.03	10.38	89.9	8.7	0.013	6.8	0.3		
26.2	8	8.77	10.44	89.9	8.6	0.013	6.8	0.4		
29.5	9	8.39	10.43	88.7	8.4	0.013	6.8	0.4		
32.8	10	7.82	10.5	88.9	8.2	0.013	6.8	0.3		
36.1	11	7.14	10.44	88.0	8.4	0.013	6.8	0.4		
39.4	12	6.72	10.63	86.8	8.2	0.013	6.8	0.3		
42.7	13	6.73	10.57	86.5	8.2	0.013	6.7	0.4		
45.9	14	6.54	10.55	85.9	8.2	0.013	6.7	0.3		
49.2	15	6.35	10.51	85.2	8.2	0.013	6.7	0.3		
52.5	16	6.19	10.50	84.8	8.2	0.013	6.7	0.3		
55.8	17	6.12	10.48	84.4	8.2	0.013	6.7	0.3		
59.1	18	6.04	10.46	84.2	8.2	0.013	6.7	0.4		
62.3	19	5.81	10.42	83.7	8.1	0.013	6.7	0.4		
65.6	20	5.78	10.41	83.1	8.1	0.013	6.6	0.3		
68.9	21	5.63	10.40	82.8	8.1	0.013	6.6	0.4		
72.2	22	5.55	10.35	82.2	8.0	0.013	6.6	0.4		
75.5	23	5.46	10.35	81.9	8.0	0.013	6.6	0.4		
78.7	24	5.33	10.31	81.5	8.0	0.013	6.6	0.3		
82.0	25	5.24	10.29	81.1	8.0	0.013	6.6	0.3		
85.3	26	5.18	10.26	80.7	8.0	0.013	6.6	0.3		
88.6	27	5.16	10.25	80.5	8.0	0.013	6.6	0.3		
91.9	28	5.15	10.24	80.5	8.0	0.013	6.6	0.3		
95.1	29	5.13	10.22	80.3	8.0	0.013	6.6	0.3		
98.4	30	5.10	10.21	80.2	8.0	0.013	6.6	0.3		
101.7	31	5.09	10.21	80.2	8.0	0.013	6.6	0.4		
105.0	32	5.03	10.20	79.9	8.0	0.013	6.6	0.4		
108.3	33	4.98	10.18	79.7	8.0	0.013	6.6	0.3		
111.5	34	4.98	10.18	79.7	8.0	0.013	6.6	0.3		

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Stillwater Sciences

Reservoir - Water Quality Vertical Profiles

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
(CONTINUED)										
114.8	35	4.96	10.17	79.6	8.0	0.013	6.6	0.4		
118.1	36	4.93	10.16	79.5	8.0	0.013	6.6	0.4		
121.4	37	4.93	10.16	79.4	8.0	0.013	6.6	0.3		
124.7	38	4.92	10.16	79.4	8.0	0.013	6.6	0.3		
128.0	39	4.90	10.15	79.4	8.0	0.013	6.6	0.3		
131.2	40	4.90	10.15	79.3	8.0	0.013	6.5	0.4		
134.5	41	4.91	10.15	79.3	8.0	0.013	6.6	0.4		
137.8	42	4.91	10.15	79.3	8.0	0.013	6.5	0.3		
141.1	43	4.90	10.15	79.3	8.0	0.013	6.5	0.4		
144.4	44	4.90	10.13	79.1	8.1	0.013	6.5	0.4		(6.4m)
147.6	45	4.90				0.013				
150.9	46					0.013				
154.2	47									
157.5	48									
160.8	49									
164.0	50									
167.3	51									
170.6	52									
173.9	53									
177.2	54									
180.4	55									
183.7	56									
187.0	57									
190.3	58									
193.6	59									
196.8	60									
200.1	61									
203.4	62									
206.7	63									
210.0	64									
213.3	65									
216.5	66									
219.8	67									
223.1	68									
226.4	69									
229.7	70									
232.9	71									
236.2	72									

Stillwater Sciences

SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

Page 1 of 3

Date: 5/1/18
Time: 1330

Reservoir - Water Quality Vertical Profiles

Site Location: UARP-R-IS-8-UNR
Lat/Long (NAD83):

Instrument used: EXO
Water depth: —

Secchi (ft): 37 ft

Personnel: BTH + KKC

Site Notes: Sunny, cool, calm

Depth (ft)	Depth (m)	Temp (°C)	DO (mg/L)	DO (%)	Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
surface		11.71	10.07	92.9	9.7	0.013	7.0	0.4		
3.3	1	11.43	10.12	92.5	9.6	0.013	7.1	0.3		
6.6	2	10.38	10.22	91.4	9.3	0.013	7.1	0.4		
9.8	3	10.25	10.24	91.2	9.3	0.013	7.1	0.2		
13.1	4	10.21	10.22	91.0	9.3	0.013	7.0	0.4		
16.4	5	10.18	10.22	91.0	9.3	0.013	7.0	0.2		
19.7	6	10.11	10.22	90.7	9.3	0.013	7.0	0.3		
23.0	7	10.09	10.19	90.5	9.3	0.013	7.0	0.3		
26.2	8	10.04	10.16	90.0	9.3	0.013	6.9	0.4		
29.5	9	8.85	10.39	89.7	8.9	0.013	6.9	0.2		
32.8	10	7.88	10.62	89.4	8.7	0.013	6.9	0.3		
36.1	11	7.14	10.68	88.3	8.5	0.013	6.9	0.2		
39.4	12	6.67	10.54	86.1	8.3	0.013	6.9	0.4		
42.7	13	6.40	10.56	85.7	8.2	0.013	6.8	0.2		
45.9	14	6.30	10.52	85.2	8.2	0.013	6.8	0.3		
49.2	15	6.12	10.48	84.4	8.2	0.013	6.9	0.3		
52.5	16	5.98	10.42	83.6	8.2	0.013	6.8	0.4		
55.8	17	5.85	10.38	83.0	8.2	0.013	6.8	0.2		
59.1	18	5.81	10.34	82.7	8.1	0.013	6.8	0.3		
62.3	19	5.76	10.35	82.6	8.1	0.013	6.8	0.3		
65.6	20	5.69	10.34	82.4	8.1	0.013	6.8	0.4		
68.9	21	5.57	10.34	82.1	8.1	0.013	6.7	0.3		
72.2	22	5.49	10.31	81.8	8.1	0.013	6.7	0.3		
75.5	23	5.43	10.29	81.5	8.1	0.013	6.7	0.4		
78.7	24	5.34	10.29	81.3	8.0	0.013	6.7	0.4		
82.0	25	5.29	10.30	81.3	8.0	0.013	6.7	0.4		
85.3	26	5.28	10.30	81.2	8.0	0.013	6.7	0.4		
88.6	27	5.26	10.30	81.2	8.0	0.013	6.7	0.2		
91.9	28	5.23	10.30	81.1	8.0	0.013	6.7	0.4		
95.1	29	5.21	10.29	81.0	8.0	0.013	6.6	0.4		
98.4	30	5.18	10.29	81.0	8.0	0.013	6.6	0.3		
101.7	31	5.15	10.29	80.9	8.0	0.013	6.7	0.3		
105.0	32	5.12	10.27	80.7	8.0	0.013	6.6	0.4		
108.3	33	5.10	10.23	80.3	8.0	0.013	6.6	0.4		
111.5	34	5.01	10.23	80.2	8.0	0.013	6.6	0.4		

Stillwater Sciences

Reservoir - Water Quality Vertical Profiles

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
(CONTINUED)										
114.8	35	5.07	10.24	80.3	8.0	0.013	6.6	0.4		
118.1	36	5.05	10.25	80.3	8.0	0.013	6.6	0.4		
121.4	37	5.01	10.26	80.4	8.0	0.013	6.6	0.4		
124.7	38	4.98	10.26	80.3	8.0	0.013	6.6	0.4		
128.0	39	4.96	10.28	80.4	8.0	0.013	6.6	0.4		
131.2	40	4.95	10.28	80.4	8.0	0.013	6.6	0.3		
134.5	41	4.94	10.27	80.3	8.0	0.013	6.6	0.3		
137.8	42	4.93	10.26	80.3	8.0	0.013	6.6	0.3		
141.1	43	4.91	10.26	80.2	8.0	0.013	6.6	0.4		
144.4	44	4.89	10.26	80.1	8.0	0.013	6.6	0.4		
147.6	45	4.86	10.27	80.1	8.0	0.013	6.6	0.4		
150.9	46	4.85	10.27	80.1	8.0	0.013	6.6	0.4		
154.2	47	4.82	10.26	79.9	8.0	0.013	6.6	0.3		
157.5	48	4.80	10.25	79.8	8.0	0.013	6.6	0.3		
160.8	49	4.78	10.24	79.8	8.0	0.013	6.6	0.3		
164.0	50	4.77	10.24	79.7	8.0	0.013	6.6	0.3		
167.3	51	4.77	10.24	79.7	8.0	0.013	6.6	0.3		
170.6	52	4.75	10.23	79.6	8.0	0.013	6.6	0.3		
173.9	53	4.73	10.22	79.5	8.0	0.013	6.6	0.3		
177.2	54	4.71	10.22	79.4	8.0	0.013	6.6	0.3		
180.4	55	4.70	10.22	79.4	8.0	0.013	6.6	0.4		
183.7	56	4.71	10.22	79.4	8.0	0.013	6.5	0.4		
187.0	57	4.70	10.21	79.4	8.0	0.013	6.6	0.3		
190.3	58	4.70	10.21	79.3	8.0	0.013	6.5	0.4		
193.6	59	4.70	10.21	79.3	8.0	0.013	6.6	0.4		
196.8	60	4.63	10.21	79.3	8.0	0.013	6.6	0.3		
200.1	61	4.67	10.20	79.2	8.0	0.013	6.5	0.4		
203.4	62	4.65	10.20	79.1	8.0	0.013	6.6	0.4		
206.7	63	4.64	10.19	79.0	8.1	0.013	6.5	0.4		
210.0	64	4.64	10.18	79.0	8.0	0.013	6.5	0.4		
213.3	65	4.62	10.18	78.9	8.0	0.013	6.5	0.4		
216.5	66	4.62	10.18	78.9	8.1	0.013	6.5	0.3		
219.8	67	4.60	10.17	78.8	8.0	0.013	6.5	0.4		
223.1	68	4.60	10.15	78.7	8.0	0.013	6.5	0.3		
226.4	69	4.60	10.15	78.6	8.0	0.013	6.5	0.4		
229.7	70	4.60	10.15	78.6	8.0	0.013	6.5	0.4		
232.9	71	4.59	10.14	78.6	8.0	0.013	6.5	0.3		
236.2	72	4.59	10.14	78.6	8.0	0.013	6.5	0.4		

Stillwater Sciences

Reservoir - Water Quality Vertical Profiles

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
(CONTINUED)										
239.5	73	4.59	10.14	78.5	8.0	0.013	6.5	0.4		
242.8	74	4.58	10.14	78.5	8.1	0.013	6.5	0.4		
246.1	75	4.58	10.14	78.5	8.0	0.013	6.5	0.4		
249.3	76	4.58	10.13	78.4	8.0	0.013	6.5	0.4		
252.6	77	4.58	10.12	78.4	8.1	0.013	6.5	0.4		
255.9	78	4.58	10.13	78.4	8.0	0.013	6.5	0.4		
259.2	79	4.58	10.13	78.4	8.0	0.013	6.5	0.4		
262.5	80	4.58	10.12	78.3	8.0	0.013	6.5	8.2		BOTTOM
265.7	81									
269.0	82									
272.3	83									
275.6	84									
278.9	85									
282.1	86									
285.4	87									
288.7	88									
292.0	89									
295.3	90									
298.6	91									
301.8	92									
305.1	93									
308.4	94									

Stillwater Sciences

SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

Page 1 of 1

Date: 4/30/18
Time: 1000

Reservoir - Water Quality Vertical Profiles

Site Location: UARP - R - IS - 9 - IHR
Lat/Long (NAD83):

Instrument used: EXO
Water depth: 96ft

Secchi (ft): 33ft

Personnel: BTH + KKC

Site Notes: Partly cloudy, cold, calm

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		10.32	9.84	87.9	8.5	0.012	7.7	0.3		
3.3	1	10.27	9.85	87.8	8.5	0.012	7.4	0.4		
6.6	2	10.17	9.85	87.5	8.5	0.012	7.3	0.3		
9.8	3	10.11	9.82	87.2	8.4	0.012	7.2	0.3		
13.1	4	9.99	9.84	87.1	8.4	0.012	7.1	0.3		
16.4	5	9.46	9.97	87.4	8.2	0.012	7.1	0.3		
19.7	6	8.00	10.23	86.3	7.4	0.011	7.1	0.3		
23.0	7	7.25	10.32	85.5	7.2	0.011	7.0	0.3		
26.2	8	6.43	10.48	85.2	7.1	0.011	6.9	0.4		
29.5	9	5.90	10.53	84.3	7.0	0.011	6.9	0.3		
32.8	10	5.70	10.55	84.1	7.0	0.011	6.8	0.3		
36.1	11	5.54	10.54	83.7	7.2	0.011	6.8	0.3		
39.4	12	5.46	10.55	83.5	7.2	0.011	6.8	0.4		
42.7	13	5.30	10.55	83.2	7.2	0.012	6.7	0.3		
45.9	14	5.14	10.53	82.7	7.3	0.012	6.7	0.3		
49.2	15	5.03	10.48	82.1	7.2	0.012	6.7	0.4		
52.5	16	4.99	10.47	82.0	7.2	0.012	6.6	0.4		
55.8	17	4.99	10.44	81.7	7.2	0.012	6.6	0.4		
59.1	18	4.97	10.42	81.5	7.3	0.012	6.6	0.3		
62.3	19	4.92	10.39	81.2	7.2	0.012	6.5	0.4		
65.6	20	4.93	10.36	81.0	7.2	0.012	6.7	0.4		
68.9	21	4.87	10.31	80.4	7.2	0.012	6.7	0.4		
72.2	22	4.86	10.30	80.3	7.2	0.012	6.7	0.4		
75.5	23	4.85	10.28	80.2	7.2	0.012	6.6	0.3		
78.7	24	4.85	10.27	80.0	7.3	0.012	6.7	0.4		
82.0	25	4.84	10.28	80.1	7.2	0.012	6.6	0.3		
85.3	26	4.84	10.27	80.0	7.2	0.012	6.6	0.4		BOTTOM
88.6	27									
91.9	28									
95.1	29									
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									

Stillwater Sciences

SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

Page 1 of 1

Date: 4/30/18
Time: 1030

Reservoir - Water Quality Vertical Profiles

Instrument used: EXO
Water depth: 58 ft

Site Location: UARP - R - IS - 10 - IHR
Lat/Long (NAD83):

Secchi (ft): 33 ft

Personnel: BTH + KKC

Site Notes: Partly cloudy, cold, calm

Depth (ft)	Depth (m)	Temp (°C)	DO (mg/L)	DO (%)	Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
surface		10.34	9.87	89.2	8.5	0.012	6.9	0.4		
3.3	1	10.13	9.91	88.1	8.5	0.012	7.0	0.4		
6.6	2	10.05	9.91	88.0	8.5	0.012	7.0	0.3		
9.8	3	9.97	9.93	87.9	8.5	0.012	6.9	0.3		
13.1	4	9.92	9.92	87.6	8.4	0.012	6.9	0.3		
16.4	5	9.61	10.01	87.7	8.2	0.012	6.9	0.3		
19.7	6	9.13	10.20	88.5	8.0	0.012	6.9	0.4		
23.0	7	8.57	10.27	87.9	7.7	0.011	6.9	0.3		
26.2	8	7.73	10.40	87.0	7.3	0.011	6.9	0.3		
29.5	9	7.27	10.37	86.0	7.2	0.011	6.9	0.3		
32.8	10	7.04	10.41	85.8	7.3	0.011	6.8	0.4		
36.1	11	6.79	10.44	85.5	7.3	0.011	6.8	0.3		
39.4	12	6.33	10.51	85.0	7.4	0.011	6.8	0.3		
42.7	13	6.12	10.54	85.0	7.4	0.012	6.8	0.3		
45.9	14	5.98	10.52	84.4	7.4	0.012	6.8	0.3		
49.2	15	5.70	10.50	83.7	7.4	0.012	6.7	0.4		
52.5	16	5.55	10.43	82.8	7.3	0.012	6.7	10.23		BOTTOM
55.8	17									
59.1	18									
62.3	19									
65.6	20									
68.9	21									
72.2	22									
75.5	23									
78.7	24									
82.0	25									
85.3	26									
88.6	27									
91.9	28									
95.1	29									
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									

Stillwater Sciences

SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

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Date: 4/30/18
Time: 1100

Reservoir - Water Quality Vertical Profiles

Site Location: UARP-R-IS-11-IHR
Lat/Long (NAD83):

Instrument used: EXO
Water depth: 110 ft

Secchi (ft): 34 ft.

Personnel: BTH + KKC

Site Notes: partly cloudy, cold, slight breeze

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		10.34	9.96	88.9	8.6	0.012	6.9	0.4		
3.3	1	9.90	9.99	88.3	8.5	0.012	6.9	0.3		
6.6	2	9.74	10.06	88.0	8.4	0.012	6.9	0.3		
9.8	3	9.69	10.00	87.9	8.4	0.012	6.9	0.3		
13.1	4	9.67	10.00	87.9	8.4	0.012	6.9	0.3		
16.4	5	9.66	9.99	87.8	8.4	0.012	6.9	0.3		
19.7	6	9.45	9.99	87.5	8.3	0.012	6.8	0.4		
23.0	7	8.67	10.20	88.0	8.2	0.012	6.9	0.4		
26.2	8	7.55	10.48	87.5	7.9	0.012	6.8	0.4		
29.5	9	7.12	10.53	87.1	7.7	0.012	6.8	0.3		
32.8	10	6.40	10.62	86.1	7.5	0.012	6.8	0.4		
36.1	11	6.40	10.59	85.1	7.4	0.012	6.8	0.4		
39.4	12	5.92	10.58	84.8	7.4	0.012	6.7	0.4		
42.7	13	5.54	10.54	83.6	7.3	0.012	6.8	0.4		
45.9	14	5.42	10.51	83.3	7.3	0.012	6.7	0.4		
49.2	15	5.42	10.52	83.2	7.3	0.012	6.7	0.4		
52.5	16	5.09	10.42	81.7	7.2	0.012	6.7	0.5		
55.8	17	5.06	10.41	81.6	7.2	0.012	6.6	0.3		
59.1	18	5.03	10.41	81.5	7.2	0.012	6.6	0.5		
62.3	19	4.90	10.36	80.9	7.1	0.012	6.6	0.4		
65.6	20	4.86	10.30	80.3	7.1	0.010	6.6	0.4		
68.9	21	4.85	10.28	80.2	7.1	0.012	6.6	0.5		
72.2	22	4.82	10.28	80.1	7.1	0.012	6.5	0.5		
75.5	23	4.79	10.27	80.0	7.1	0.012	6.5	0.5		
78.7	24	4.78	10.27	79.9	7.1	0.012	6.5	0.4		
82.0	25	4.78	10.26	79.9	7.1	0.012	6.5	0.5		
85.3	26	4.78	10.26	79.9	7.1	0.012	6.5	0.5		
88.6	27	4.77	10.26	79.9	7.1	0.012	6.5	0.3		
91.9	28	4.76	10.26	79.8	7.1	0.012	6.5	0.4		
95.1	29	4.76	10.25	79.8	7.1	0.012	6.5	0.5		
98.4	30	4.76	10.26	79.8	7.1	0.012	6.4	0.5		
101.7	31	4.75	10.25	79.7	7.1	0.012	6.4	0.4		
105.0	32	4.75	10.25	79.7	7.1	0.012	6.4	0.4		
108.3	33	4.74	10.25	79.6	7.1	0.012	6.4	0.5		
111.5	34	4.73	10.24	79.7	7.1	0.012	6.4	0.4		

Stillwater Sciences

Reservoir - Water Quality Vertical Profiles

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
(CONTINUED)										
114.8	35	4.73	10.20	79.3	7.1	0.012	6.5	207.4		BOTTOM
118.1	36									
121.4	37									
124.7	38									
128.0	39									
131.2	40									
134.5	41									
137.8	42									
141.1	43									
144.4	44									
147.6	45									
150.9	46									
154.2	47									
157.5	48									
160.8	49									
164.0	50									
167.3	51									
170.6	52									
173.9	53									
177.2	54									
180.4	55									
183.7	56									
187.0	57									
190.3	58									
193.6	59									
196.8	60									
200.1	61									
203.4	62									
206.7	63									
210.0	64									
213.3	65									
216.5	66									
219.8	67									
223.1	68									
226.4	69									
229.7	70									
232.9	71									
236.2	72									

Stillwater Sciences

SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

Page 1 of 1

Date: 5/10/18
Time: 1400

Reservoir - Water Quality Vertical Profiles

Site Location: UARP-R-IS-12-JR
Lat/Long (NAD83):

Instrument used: EXO
Water depth: 55 ft

Secchi (ft): 21 ft

Personnel: KKC, BTH

Site Notes: Sunny, clear, windy

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		12.45	9.54	89.4	11.9	0.016	7.0	0.2		
3.3	1	9.64	10.00	88.8	11.0	0.016	7.0	0.2		
6.6	2	7.40	10.38	86.4	10.0	0.015	6.9	0.2		
9.8	3	6.79	10.47	86.0	9.5	0.015	6.8	0.2		
13.1	4	6.57	10.50	85.7	9.4	0.015	6.8	0.2		
16.4	5	6.46	10.52	85.5	9.3	0.014	6.7	0.2		
19.7	6	6.31	10.52	85.2	8.8	0.014	6.7	0.2		
23.0	7	6.20	10.50	84.8	8.8	0.014	6.7	0.2		
26.2	8	6.21	10.50	84.8	8.8	0.014	6.6	0.2		
29.5	9	6.10	10.50	84.5	8.7	0.014	6.6	0.3		
32.8	10	6.03	10.49	84.3	8.7	0.014	6.5	0.2		
36.1	11	6.02	10.46	84.0	8.7	0.014	6.5	0.2		
39.4	12	5.98	10.44	83.8	8.7	0.012	6.5	0.2		
42.7	13	5.95	10.41	83.5	8.7	0.014	6.5	0.2		
45.9	14	5.90	10.40	83.4	8.7	0.014	6.4	0.3		
49.2	15	5.87	10.39	83.1	8.6	0.014	6.4	0.2		
52.5	16	5.84	10.37	83.0	8.6	0.014	6.4	0.2		
55.8	17	5.81	10.33	82.5	8.6	0.014	6.4	0.2		
59.1	18	5.79	10.31	82.4	8.6	0.014	6.4	1.1		BOTTOM
62.3	19									
65.6	20									
68.9	21									
72.2	22									
75.5	23									
78.7	24									
82.0	25									
85.3	26									
88.6	27									
91.9	28									
95.1	29									
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									

Stillwater Sciences

SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

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Date: 5/10/18
Time: 0945

Reservoir - Water Quality Vertical Profiles

Site Location: UARP-R-IS-13-CR
Lat/Long (NAD83):

Instrument used: EXO
Water depth: 27ft

Secchi (ft): 25 ft

Personnel: BTH + KKC

Site Notes: Sunny, calm, cool

Depth (ft)	Depth (m)	Temp (°C)	DO (mg/L)	DO (%)	Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
surface		6.84	11.54	94.7	9.2	0.014	7.2	0.2		
3.3	1	6.73	11.55	94.4	9.1	0.014	7.2	0.2		
6.6	2	6.73	11.51	94.2	9.1	0.014	6.9	0.2		
9.8	3	6.73	11.50	94.2	9.1	0.014	6.9	0.3		
13.1	4	6.73	11.50	94.1	9.2	0.014	6.8	0.2		
16.4	5	6.74	11.48	94.0	9.1	0.014	6.7	0.2		
19.7	6	6.73	11.47	93.8	9.2	0.014	6.7	0.2		
23.0	7	6.73	11.46	93.8	9.2	0.014	6.7	0.2		BOTTOM
26.2	8									
29.5	9									
32.8	10									
36.1	11									
39.4	12									
42.7	13									
45.9	14									
49.2	15									
52.5	16									
55.8	17									
59.1	18									
62.3	19									
65.6	20									
68.9	21									
72.2	22									
75.5	23									
78.7	24									
82.0	25									
85.3	26									
88.6	27									
91.9	28									
95.1	29									
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									

Stillwater Sciences

SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

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Date: 5/2/2018
Time: 1243

Reservoir - Water Quality Vertical Profiles

Instrument used: YSI EXO
Water depth: 31 ft

Site Location: R-15-14-SC
Lat/Long (NAD83):

Secchi (ft): 23

Personnel: EES BTH

Site Notes: None; partly cloudy, windy, cool

Depth (ft)	Depth (m)	Temp (°C)	DO (mg/L)	DO (%)	Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
surface		7.95	11.79	99.6	19.4	0.029	6.9	1.8		
3.3	1	7.76	11.82	99.3	19.1	0.028	6.9	1.7		
6.6	2	7.64	11.84	99.0	18.9	0.028	6.9	1.8		
9.8	3	7.68	11.82	99.0	19.0	0.028	6.9	1.7		
13.1	4	7.60	11.81	98.7	18.9	0.028	6.9	1.5		
16.4	5	7.57	11.78	98.5	18.7	0.028	6.9	1.8		
19.7	6	7.50	11.79	98.3	18.6	0.028	6.9	1.3		
23.0	7	7.44	11.78	98.2	18.4	0.028	6.9	1.3		
26.2	8	7.39	11.80	98.1	18.3	0.028	6.9	1.3		
29.5	9									BOTTOM
32.8	10									
36.1	11									
39.4	12									
42.7	13									
45.9	14									
49.2	15									
52.5	16									
55.8	17									
59.1	18									
62.3	19									
65.6	20									
68.9	21									
72.2	22									
75.5	23									
78.7	24									
82.0	25									
85.3	26									
88.6	27									
91.9	28									
95.1	29									
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									

Stillwater Sciences

SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

Page 1 of 1

Date: 2 May 2018
Time: 1330

Reservoir - Water Quality Vertical Profiles

Instrument used: YSI EXO
Water depth: 130 ft

Site Location: R-15-15-SC
Lat/Long (NAD83):

Secchi (ft): 28 ft

Personnel: BTH - EES

Site Notes: per my eLogbook, windy

Depth (ft)	Depth (m)	Temp (°C)	DO (mg/L)	DO (%)	Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
surface		9.85	11.2	97.0	18.4	0.026	6.8	0.7		
3.3	1	9.83	11.18	96.7	18.4	0.026	6.9	0.7		
6.6	2	9.81	11.19	98.7	18.3	0.026	6.9	0.7		
9.8	3	9.75	11.20	98.6	18.3	0.026	6.9	0.9		
13.1	4	9.74	11.23	98.4	18.2	0.026	7.0	0.8		
16.4	5	9.07	11.24	97.4	17.9	0.026	7.0	0.7		
19.7	6	8.88	11.30	97.5	17.7	0.026	7.0	0.8		
23.0	7	8.76	11.31	97.2	17.6	0.026	7.0	0.7		
26.2	8	8.76	11.30	97.2	17.6	0.026	7.0	0.8		
29.5	9	8.69	11.3	97.2	17.6	0.026	7.0	0.7		
32.8	10	8.39	11.40	97.2	17.2	0.026	7.0	0.7		
36.1	11	8.34	11.44	97.5	17.2	0.026	7.0	0.7		
39.4	12	8.30	11.48	97.5	17.2	0.026	7.0	0.5		
42.7	13	8.24	11.51	97.8	17.2	0.026	7.0	0.6		
45.9	14	8.20	11.51	97.7	17.2	0.025	7.0	0.6		
49.2	15	8.19	11.51	97.6	17.2	0.025	7.0	0.6		
52.5	16	8.19	11.48	97.5	17.2	0.025	7.0	0.6		
55.8	17	8.14	11.47	97.2	17.2	0.025	7.0	0.6		
59.1	18	8.03	11.48	97.0	17.2	0.025	7.0	0.6		
62.3	19	7.96	11.49	97.0	17.2	0.025	7.0	0.5		
65.6	20	7.93	11.47	96.8	17.1	0.025	7.0	0.6		
68.9	21	7.93	11.48	96.7	17.2	0.025	7.0	0.6		
72.2	22	7.92	11.47	96.7	17.1	0.025	7.0	0.6		
75.5	23	7.89	11.47	96.6	17.1	0.025	7.0	0.6		
78.7	24	7.89	11.46	96.5	17.1	0.025	7.0	0.7		
82.0	25	7.90	11.46	96.5	17.1	0.025	7.0	0.7		
85.3	26	7.90	11.46	96.5	17.1	0.025	7.0	0.7		
88.6	27	7.90	11.47	96.7	17.1	0.025	7.0	0.6		
91.9	28	7.86	11.47	96.5	17.1	0.025	7.0	0.7		
95.1	29	7.88	11.46	96.5	17.1	0.025	7.0	0.7		
98.4	30	7.86	11.47	96.5	17.1	0.025	7.0	0.8		
101.7	31	7.85	11.48	96.5	17.1	0.025	7.0	0.6		
105.0	32	7.85	11.47	96.5	17.1	0.025	7.0	0.8		
108.3	33	7.86	11.48	96.6	17.1	0.025	7.0	0.7		
111.5	34	7.85	11.47	96.5	17.1	0.025	7.0	70.0		bottom

Stillwater Sciences

SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

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Date: 10/23/18
Time: 10:30 AM

Reservoir - Water Quality Vertical Profiles

Instrument used: YSI 6920
Water depth: 73 ft.

Site Location: R-1S-1-LL
Lat/Long (NAD83):

Secchi (ft): 24

Personnel: BTH + BRL

Site Notes:

Depth (ft)	Depth (m)	Temp (°C)	DO (mg/L)	DO (%)	Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
surface		8.83	9.05	77.9	8	0.011	5.88	3.6		
3.3	1	8.81	9.04	77.8	8	0.011	5.85	3.6		
6.6	2	8.79	9.02	77.6	8	0.011	5.84	3.6		
9.8	3	8.76	9.02	77.5	8	0.011	5.88	3.6		
13.1	4	8.74	9.00	77.4	8	0.011	5.89	3.6		
16.4	5	8.72	9.00	77.3	8	0.011	5.91	3.6		
19.7	6	8.67	8.99	77.1	8	0.011	5.93	3.6		
23.0	7	8.57	9.02	77.2	8	0.011	5.96	3.6		
26.2	8	8.56	9.00	77.0	8	0.011	5.99	3.5		
29.5	9	8.52	9.00	76.9	8	0.011	6.03	3.5		
32.8	10	8.50	9.00	76.9	8	0.011	6.03	3.5		
36.1	11	8.45	8.99	76.8	8	0.011	6.06	3.5		
39.4	12	8.44	8.98	76.5	8	0.011	6.08	3.5		
42.7	13	8.43	8.96	76.4	8	0.011	6.06	3.5		
45.9	14	8.41	8.95	76.3	8	0.011	6.06	3.5		
49.2	15	8.40	8.94	76.1	8	0.011	6.11	3.5		
52.5	16	8.39	8.93	76.1	8	0.011	6.08	3.5		
55.8	17	8.38	8.91	75.9	8	0.011	6.11	3.5		
59.1	18	8.38	8.91	75.9	8	0.011	6.11	3.5		
62.3	19	8.37	8.91	75.9	8	0.011	6.15	3.5		
65.6	20	8.36	8.84	75.3	8	0.011	6.1	3.5		
68.9	21	8.36	8.81	75.1	8	0.011	6.12	3.5		
72.2	22	8.36	8.79	74.9	8	0.011	6.13	3.5		
75.5	23	8.36	8.78	74.8	8	0.011	6.18	3.5		
78.7	24	8.35	8.77	74.1	8	0.011	6.14	3.4		
82.0	25	8.33	8.58	71.3	8	0.011	6.17	830.0		Bottom
85.3	26									
88.6	27									
91.9	28									
95.1	29									
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									

Stillwater Sciences

SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

Page 1 of 1

Date: 10/23/18
Time: 11:00 Am

Reservoir - Water Quality Vertical Profiles

Site Location: R-1S-2-LL
Lat/Long (NAD83):

Instrument used: YSI 6920
Water depth: 80 ft.

Secchi (ft): 25

Personnel: BTH + BRL

Site Notes:

Depth (ft)	Depth (m)	Temp (°C)	DO (mg/L)	DO (%)	Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
surface		8.72	9.52	81.6	8	0.011	7.56	3.4		
3.3	1	8.71	9.34	80.1	8	0.011	7.51	3.4		
6.6	2	8.70	9.24	79.2	8	0.011	6.50	3.5		
9.8	3	8.67	9.09	78.0	8	0.011	6.50	3.4		
13.1	4	8.66	9.07	77.8	8	0.011	6.35	3.5		
16.4	5	8.65	9.03	77.5	8	0.011	6.39	3.5		
19.7	6	8.63	9.02	77.3	8	0.011	6.36	3.5		
23.0	7	8.60	9.01	77.2	8	0.011	6.28	3.5		
26.2	8	8.59	9.00	77.1	8	0.011	6.33	3.5		
29.5	9	8.59	8.99	77.0	8	0.011	6.31	3.5		
32.8	10	8.59	8.99	77.0	8	0.011	6.30	3.3		
36.1	11	8.58	8.96	76.7	8	0.011	6.31	3.5		
39.4	12	8.58	8.95	76.1	8	0.011	6.27	3.5		
42.7	13	8.58	8.94	76.5	8	0.011	6.24	3.5		
45.9	14	8.58	8.92	76.4	8	0.011	6.26	3.6		
49.2	15	8.58	8.92	76.4	8	0.011	6.25	3.5		
52.5	16	8.58	8.90	76.3	8	0.011	6.22	3.5		
55.8	17	8.58	8.92	76.3	8	0.011	6.23	3.5		
59.1	18	8.58	8.89	76.1	8	0.011	6.24	3.5		
62.3	19	8.57	8.87	75.9	8	0.011	6.24	3.5		
65.6	20	8.57	8.87	75.9	8	0.011	6.23	3.5		
68.9	21									
72.2	22									
75.5	23									
78.7	24									
82.0	25									
85.3	26									
88.6	27									
91.9	28									
95.1	29									
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									

Stillwater Sciences

SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

Page 1 of 1

Date: 10/23/18
Time: 11:21 AM

Reservoir - Water Quality Vertical Profiles

Instrument used: YSI 6920
Water depth: ~~11.2 m~~ 36 ft.

Site Location: R-15-3-LL
Lat/Long (NAD83):

Secchi (ft): 24

Personnel: BTH + BRL

Site Notes:

Depth (ft)	Depth (m)	Temp (°C)	DO (mg/L)	DO (%)	Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
surface		8.60	9.67	82.6	8	0.011	6.64	3.2		
3.3	1	8.58	9.50	81.3	8	0.011	6.64	3.3		
6.6	2	8.57	9.39	80.3	8	0.011	6.58	3.3		
9.8	3	8.52	9.30	79.6	8	0.011	6.52	3.3		
13.1	4	8.51	9.26	79.1	8	0.011	6.46	3.4		
16.4	5	8.50	9.21	78.7	8	0.011	6.44	3.5		
19.7	6	8.49	9.17	78.3	8	0.011	6.47	3.4		
23.0	7	8.48	9.14	78.0	8	0.011	6.43	3.4		
26.2	8	8.47	9.11	77.8	8	0.011	6.42	3.4		
29.5	9	8.45	9.09	77.6	8	0.011	6.45	3.5		
32.8	10	8.43	9.09	77.5	8	0.011	6.37	3.5		
36.1	11	8.37	9.00	76.7	8	0.011	6.4	257.3		Bottom
39.4	12									
42.7	13									
45.9	14									
49.2	15									
52.5	16									
55.8	17									
59.1	18									
62.3	19									
65.6	20									
68.9	21									
72.2	22									
75.5	23									
78.7	24									
82.0	25									
85.3	26									
88.6	27									
91.9	28									
95.1	29									
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									

Stillwater Sciences

SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

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Reservoir - Water Quality Vertical Profiles

Date: 10/26/18
Time: 10:15

Site Location: R-15-4-GC
Lat/Long (NAD83):

Instrument used: YSI 6920
Water depth: 126 ft

Secchi (ft): 19 ft

Personnel: BTH, ESB

Site Notes: Partly cloudy, no wind

Depth (ft)	Depth (m)	Temp (°C)	DO (mg/L)	DO (%)	Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
surface		7.70	9.52	79.9	13	0.019	5.84	3.8		
3.3	1	7.56	9.54	79.7	13	0.019	5.86	3.8		
6.6	2	7.52	9.54	79.6	12	0.018	5.89	3.9		
9.8	3	7.48	9.51	79.2	12	0.018	5.94	3.9		
13.1	4	7.39	9.50	79.1	12	0.017	5.99	3.8		
16.4	5	7.33	9.55	79.4	11	0.017	5.99	3.8		
19.7	6	7.23	9.61	79.6	11	0.017	6.02	3.8		
23.0	7	7.14	9.62	79.2	11	0.017	6.02	3.8		
26.2	8	6.63	9.65	78.7	10	0.016	6.01	3.8		
29.5	9									
32.8	10									
36.1	11									
39.4	12									
42.7	13									
45.9	14									
49.2	15									
52.5	16									
55.8	17									
59.1	18									
62.3	19									
65.6	20									
68.9	21									
72.2	22									
75.5	23									
78.7	24									
82.0	25									
85.3	26									
88.6	27									
91.9	28									
95.1	29									
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									

Stillwater Sciences

SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

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Date: 10-24-18
Time: 1005

Reservoir - Water Quality Vertical Profiles

Instrument used: YSI 6920
Water depth: 23.9 ft

Site Location: R-15-5-UVR
Lat/Long (NAD83):

Secchi (ft): 29 ft

Personnel: BTH & SPK

Site Notes: clear skies, no wind

Depth (ft)	Depth (m)	Temp (°C)	DO (mg/L)	DO (%)	Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
surface		12.80	8.60	81.1	13	0.017	6.00	2.9		
3.3	1	12.72	8.57	80.8	13	0.017	6.23	3.3		
6.6	2	12.64	8.56	80.5	13	0.017	6.25	3.4		
9.8	3	12.59	8.55	80.4	13	0.017	6.18	3.3		
13.1	4	12.54	8.53	80.3	13	0.017	6.15	3.3		
16.4	5	12.50	8.54	80.1	13	0.017	6.15	3.2		
19.7	6	12.46	8.53	79.9	13	0.017	6.17	3.2		
23.0	7	12.41	8.52	79.8	13	0.017	6.16	3.2		
26.2	8	12.32	8.47	79.0	13	0.017	6.17	37.8		BOTTOM
29.5	9									
32.8	10									
36.1	11									
39.4	12									
42.7	13									
45.9	14									
49.2	15									
52.5	16									
55.8	17									
59.1	18									
62.3	19									
65.6	20									
68.9	21									
72.2	22									
75.5	23									
78.7	24									
82.0	25									
85.3	26									
88.6	27									
91.9	28									
95.1	29									
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									

Stillwater Sciences

SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

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Date: 10-24-18
Time: 1100

Reservoir - Water Quality Vertical Profiles

Instrument used: YSI 6920
Water depth: 85 Ft

Site Location: R-15-6-UVR
Lat/Long (NAD83):

Secchi (ft): 27

Personnel: BTH + SPK

Site Notes: clear, flies, no wind

Depth (ft)	Depth (m)	Temp (°C)	DO (mg/L)	DO (%)	Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
surface		13.11	9.85	93.7	13	0.016	6.67	3.2		
3.3	1	12.98	8.88	84.0	13	0.016	6.76	3.2		
6.6	2	12.92	8.68	82.1	13	0.016	6.67	3.2		
9.8	3	12.88	8.58	81.2	13	0.016	6.68	3.2		
13.1	4	12.88	8.52	80.6	13	0.016	6.60	3.3		
16.4	5	12.87	8.48	80.2	13	0.016	6.63	3.3		
19.7	6	12.86	8.45	79.9	13	0.016	6.60	3.3		
23.0	7	12.86	8.42	79.6	13	0.016	6.60	3.3		
26.2	8	12.85	8.38	79.2	13	0.016	6.54	3.3		
29.5	9	12.85	8.36	79.0	13	0.016	6.60	3.3		
32.8	10	12.85	8.36	79.0	13	0.016	6.57	3.3		
36.1	11	12.84	8.35	78.9	13	0.016	6.60	3.3		
39.4	12	12.84	8.33	78.7	13	0.016	6.56	3.3		
42.7	13	12.83	8.32	78.6	13	0.016	6.52	3.3		
45.9	14	12.83	8.30	78.5	13	0.016	6.49	3.3		
49.2	15	12.83	8.29	78.4	13	0.016	6.51	3.3		
52.5	16	12.83	8.27	78.2	13	0.016	6.48	3.3		
55.8	17	12.82	8.26	78.1	13	0.016	6.46	3.3		
59.1	18	12.82	8.26	78.0	13	0.016	6.46	3.3		
62.3	19	12.82	8.24	77.9	13	0.016	6.44	3.4		
65.6	20	12.82	8.24	77.9	13	0.016	6.44	3.4		
68.9	21	12.82	8.23	77.7	13	0.016	6.47	3.3		
72.2	22	12.81	8.21	77.5	13	0.016	6.45	3.3		
75.5	23	12.81	8.21	77.6	12	0.016	6.44	3.3		
78.7	24	12.81	8.20	77.5	12	0.016	6.45	3.3		
82.0	25	12.80	8.18	77.3	12	0.016	6.44	3.4		
85.3	26									
88.6	27									
91.9	28									
95.1	29									
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									

Stillwater Sciences

SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

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Date: 10-24-18
Time: 1030

Reservoir - Water Quality Vertical Profiles

Instrument used: YSI 6920
Water depth: 98ft

Site Location: R-1S-7-UVR
Lat/Long (NAD83):

Secchi (ft): 25 ft

Personnel: BTH + SPK

Site Notes: clear skies, no wind

Depth (ft)	Depth (m)	Temp (°C)	DO (mg/L)	DO (%)	Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
surface		13.03	9.98	94.8	13	0.017	6.72	3.4		
3.3	1	13.00	8.85	83.7	13	0.017	6.73	3.3		
6.6	2	12.97	8.70	82.4	13	0.017	6.63	3.3		
9.8	3	12.97	8.61	81.6	13	0.017	6.57	3.3		
13.1	4	12.95	8.53	80.8	13	0.017	6.58	3.3		
16.4	5	12.93	8.49	80.4	13	0.017	6.58	3.3		
19.7	6	12.92	8.45	80.0	13	0.017	6.67	3.4		
23.0	7	12.92	8.42	79.7	13	0.017	6.61	3.4		
26.2	8	12.92	8.40	79.5	13	0.017	6.58	3.4		
29.5	9	12.92	8.38	79.3	13	0.017	6.50	3.3		
32.8	10	12.91	8.37	79.3	13	0.017	6.53	3.3		
36.1	11	12.91	8.37	79.3	13	0.017	6.47	3.3		
39.4	12	12.91	8.34	79.0	13	0.017	6.48	3.3		
42.7	13	12.91	8.32	78.8	13	0.017	6.50	3.3		
45.9	14	12.91	8.31	78.7	13	0.017	6.43	3.4		
49.2	15	12.90	8.28	78.4	13	0.016	6.44	3.3		
52.5	16	12.89	8.27	78.3	13	0.016	6.46	3.2		
55.8	17	12.89	8.26	78.2	13	0.016	6.46	3.4		
59.1	18	12.87	8.26	78.1	13	0.016	6.41	3.4		
62.3	19	12.87	8.24	78.0	13	0.016	6.44	3.2		
65.6	20	12.86	8.24	77.9	13	0.016	6.43	3.3		
68.9	21	12.86	8.23	77.8	13	0.016	6.42	3.3		
72.2	22	12.86	8.22	77.8	13	0.016	6.41	3.3		
75.5	23	12.86	8.22	77.8	13	0.016	6.41	3.4		
78.7	24	12.81	8.19	77.3	13	0.016	6.40	3.3		
82.0	25	12.79	8.13	76.8	13	0.016	6.39	3.3		
85.3	26	12.78	8.11	76.6	13	0.016	6.34	3.3		
88.6	27	12.77	8.09	76.3	13	0.016	6.38	3.2		
91.9	28	12.71	8.07	75.9	13	0.016	6.35	3.3		
95.1	29	12.44	7.80	72.4	12	0.016	6.34	3.2		
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									

Stillwater Sciences

SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

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Date: 10-24-18
Time: 1130

Reservoir - Water Quality Vertical Profiles

Instrument used: 4516920
Water depth: —

Site Location: R-15-8-UVR
Lat/Long (NAD83):

Secchi (ft): 31

Personnel: BTH + SPL

Site Notes: clear skies, no wind

Depth (ft)	Depth (m)	Temp (°C)	DO (mg/L)	DO (%)	Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
surface		13.12	9.78	93.0	12	0.016	6.74	3.3		
3.3	1	13.07	8.97	85.0	12	0.016	6.74	3.0		
6.6	2	12.90	8.74	82.7	12	0.016	6.73	3.0		
9.8	3	12.90	8.62	81.5	12	0.016	6.67	3.0		
13.1	4	12.87	8.53	80.6	12	0.016	6.64	3.1		
16.4	5	12.86	8.46	80.0	12	0.016	6.59	2.9		
19.7	6	12.86	8.42	79.6	12	0.016	6.56	3.1		
23.0	7	12.84	8.37	79.2	12	0.016	6.51	3.1		
26.2	8	12.84	8.35	79.0	12	0.016	6.47	3.3		
29.5	9	12.84	8.33	78.7	12	0.016	6.50	3.3		
32.8	10	12.84	8.31	78.6	12	0.016	6.47	3.3		
36.1	11	12.84	8.29	78.4	12	0.016	6.49	3.3		
39.4	12	12.84	8.23	77.9	12	0.016	6.53	3.4		
42.7	13	12.84	8.22	77.7	12	0.016	6.47	3.4		
45.9	14	12.84	8.22	77.8	12	0.016	6.47	3.4		
49.2	15	12.84	8.21	77.6	12	0.016	6.41	3.3		
52.5	16	12.84	8.20	77.6	12	0.016	6.43	3.3		
55.8	17	12.84	8.20	77.5	12	0.016	6.42	3.3		
59.1	18	12.83	8.19	77.4	12	0.016	6.44	3.3		
62.3	19	12.83	8.18	77.3	12	0.016	6.43	3.3		
65.6	20	12.83	8.16	77.2	12	0.016	6.44	3.3		
68.9	21	12.83	8.17	77.2	12	0.016	6.43	3.3		
72.2	22	12.83	8.14	77.0	12	0.016	6.41	3.4		
75.5	23	12.83	8.13	76.9	12	0.016	6.45	3.3		
78.7	24	12.82	8.12	76.8	12	0.016	6.42	3.3		
82.0	25	12.82	8.11	76.6	12	0.016	6.43	3.4		
85.3	26	12.80	8.10	76.5	12	0.016	6.42	3.4		
88.6	27	12.77	8.07	76.2	12	0.016	6.43	3.3		
91.9	28	12.75	8.06	76.0	12	0.016	6.40	3.3		
95.1	29	12.69	8.02	75.2	12	0.016	6.40	3.3		
98.4	30	12.38	7.89	73.4	12	0.016	6.33	3.4		
101.7	31	12.01	7.70	69.2	11	0.016	6.39	3.4		
105.0	32	10.34	7.40	65.8	11	0.015	6.22	3.5		
108.3	33	10.24	7.42	66.0	11	0.016	6.15	3.5		
111.5	34	9.92	7.26	64.1	11	0.016	6.13	3.5		

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Reservoir - Water Quality Vertical Profiles

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
(CONTINUED)										
114.8	35	9.67	7.13	62.5	11	0.016	6.11	3.5		
118.1	36	9.36	7.17	62.5	11	0.015	6.11	3.5		
121.4	37	9.33	7.19	62.6	11	0.016	6.08	3.5		
124.7	38	9.18	7.18	62.2	11	0.016	6.10	3.5		
128.0	39	8.85	7.18	61.8	11	0.016	6.12	3.5		
131.2	40	8.64	7.18	61.5	11	0.016	6.13	3.5		
134.5	41	8.57	7.15	61.2	11	0.016	6.09	3.5		
137.8	42	8.47	7.18	61.3	11	0.015	6.10	3.5		
141.1	43	8.39	7.21	61.3	11	0.015	6.09	3.4		
144.4	44	8.27	7.23	61.4	10	0.015	6.04	3.4		
147.6	45	8.14	7.24	61.3	10	0.015	6.06	3.5		
150.9	46	8.08	7.26	61.4	10	0.015	6.06	3.4		
154.2	47	7.96	7.26	61.1	10	0.015	6.06	3.5		
157.5	48	7.88	7.20	60.6	10	0.015	6.04	3.4		
160.8	49	7.77	7.14	59.9	10	0.015	6.04	3.4		
164.0	50	7.69	7.13	59.8	10	0.015	6.03	3.5		
167.3	51	7.69	7.13	59.8	10	0.015	6.02	3.5		
170.6	52	7.55	7.07	59.0	10	0.015	6.00	3.4		
173.9	53	7.44	7.10	59.1	10	0.016	6.02	3.4		
177.2	54	7.27	7.04	58.2	10	0.016	6.00	3.4		
180.4	55	7.19	6.94	57.4	10	0.016	6.01	3.4		
183.7	56	7.10	6.86	56.6	10	0.016	6.00	3.4		
187.0	57	6.98	6.76	55.7	10	0.016	6.02	3.4		
190.3	58	6.82	6.67	54.6	10	0.016	5.98	3.4		
193.6	59	6.73	6.59	53.8	10	0.016	5.99	3.4		
196.8	60	6.51	6.53	53.0	10	0.016	6.00	3.3		
200.1	61	5.78	6.45	51.5	10	0.016	6.00	3.2		
203.4	62	5.35	6.43	50.8	10	0.016	5.98	3.3		
206.7	63	4.85	6.55	51.3	10	0.016	6.02	3.3		
210.0	64	4.69	6.56	50.9	10	0.016	6.01	3.2		
213.3	65	4.27	6.69	51.4	10	0.016	6.02	3.2		
216.5	66	4.08	6.86	52.5	10	0.016	6.03	3.2		
219.8	67	3.94	6.97	53.1	10	0.016	6.06	3.2		
223.1	68	3.88	7.00	53.2	10	0.016	5.99	3.1		
226.4	69	3.83	7.01	53.2	10	0.016	6.01	3.1		
229.7	70	3.81	7.02	53.3	10	0.016	6.00	3.2		
232.9	71	3.78	7.05	53.4	10	0.016	6.02	3.1		
236.2	72	3.76	7.05	53.5	10	0.016	6.01	3.1		

Stillwater Sciences

Reservoir - Water Quality Vertical Profiles

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
(CONTINUED)										
239.5	73	3.75	7.08	53.7	10	0.016	6.01	3.2		
242.8	74	3.73	7.08	53.7	10	0.016	6.03	3.1		
246.1	75	3.72	7.09	53.7	10	0.016	6.04	3.2		
249.3	76	3.71	7.07	53.5	10	0.016	6.05	3.2		
252.6	77	3.70	7.06	53.4	10	0.017	6.04	3.1		
255.9	78	3.70	7.04	53.3	10	0.017	6.01	3.1		
259.2	79	3.70	7.04	53.3	10	0.017	6.02	3.1		
262.5	80	3.68	6.98	52.7	10	0.017	6.03	3.1		
265.7	81	3.67	6.94	52.4	10	0.017	6.03	3.0		
269.0	82	3.66	6.90	52.1	10	0.017	6.04	3.1		
272.3	83	3.66	6.84	51.7	10	0.017	6.04	3.0		
275.6	84	3.65	6.75	51.0	10	0.017	6.03	3.0		
278.9	85	3.65	6.64	50.1	10	0.017	6.03	3.0		
282.1	86	3.65	6.59	49.8	10	0.017	6.03	3.0		
285.4	87	3.65	6.37	48.1	10	0.018	6.05	2.9		
288.7	88	3.65	6.38	48.2	11	0.018	6.02	2.9		
292.0	89	3.65	6.38	48.1	11	0.018	6.02	2.7		
295.3	90	3.65	6.24	47.1	11	0.018	6.03	2.7		
298.6	91	3.65	6.11	46.1	11	0.019	6.06	2.6		
301.8	92	3.65	6.06	45.7	11	0.019	6.05	2.7		
305.1	93									
308.4	94									

Stillwater Sciences

SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

Page 1 of 1

Date: 10/22/18
Time: 11:21

Reservoir - Water Quality Vertical Profiles

Instrument used: YSI 6920
Water depth: 28 ft.

Site Location: R-1S-9-1HR
Lat/Long (NAD83):

Secchi (ft): 16

Personnel: BTH + BRL

Site Notes: Sunny, no breeze

Depth (ft)	Depth (m)	Temp (°C)	DO (mg/L)	DO (%)	Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
surface		11.09	8.55	77.7	11	0.015	7.07	1.1		
3.3	1	10.98	8.56	77.6	11	0.015	7.06	1.1		
6.6	2	10.83	8.55	77.2	11	0.015	7.05	0.9		
9.8	3	10.79	8.52	76.8	11	0.015	7.02	0.9		
13.1	4	10.77	8.50	76.6	11	0.015	6.99	0.9		
16.4	5	10.74	8.49	76.5	11	0.015	6.92	0.9		
19.7	6	10.70	8.49	76.4	11	0.015	6.85	0.7		
23.0	7	10.69	8.41	75.7	11	0.015	6.84	0.9		
26.2	8	10.67	8.37	75.3	11	0.015	6.80	0.8		
29.5	9									
32.8	10									
36.1	11									
39.4	12									
42.7	13									
45.9	14									
49.2	15									
52.5	16									
55.8	17									
59.1	18									
62.3	19									
65.6	20									
68.9	21									
72.2	22									
75.5	23									
78.7	24									
82.0	25									
85.3	26									
88.6	27									
91.9	28									
95.1	29									
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									

Stillwater Sciences

SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

Page 1 of 1

Date: 10/22/18
Time: 11:51

Reservoir - Water Quality Vertical Profiles

Site Location: R-1S-10-1HR
Lat/Long (NAD83):

Instrument used: YSI 6920
Water depth: 22.4

Secchi (ft): 18

Personnel: BTH + BRL

Site Notes: Sunny, no breeze

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		11.31	8.56	78.2	11	0.015	6.81	1.4		
3.3	1	10.89	8.62	78.1	11	0.015	6.78	1.2		
6.6	2	10.91	8.62	77.9	11	0.015	6.75	1.2		
9.8	3	10.79	8.63	77.9	11	0.015	6.76	1.2		
13.1	4	10.76	8.64	77.9	11	0.015	6.73	1.2		
16.4	5	10.74	8.62	77.7	11	0.015	6.72	1.2		
19.7	6	10.72	8.62	77.6	11	0.015	6.72	1.1		
23.0	7	10.70	8.60	77.4	11	0.015	6.73	178.2		Bottom
26.2	8									
29.5	9									
32.8	10									
36.1	11									
39.4	12									
42.7	13									
45.9	14									
49.2	15									
52.5	16									
55.8	17									
59.1	18									
62.3	19									
65.6	20									
68.9	21									
72.2	22									
75.5	23									
78.7	24									
82.0	25									
85.3	26									
88.6	27									
91.9	28									
95.1	29									
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									

Stillwater Sciences

SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

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Date: 10/22/18
Time: 12:36

Reservoir - Water Quality Vertical Profiles

Instrument used: YSI 6920
Water depth: 42.8

Site Location: R-1S-11-1HR
Lat/Long (NAD83):

Secchi (ft): 18

Personnel: BTH + BRL

Site Notes: Sunny, no breeze

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		11.73	8.53	78.6	11	0.015	6.80	1.5		
3.3	1	11.34	8.54	77.8	11	0.015	6.7	1.3		
6.6	2	10.96	8.56	77.6	11	0.015	6.71	1.4		
9.8	3	10.79	8.57	77.3	11	0.015	6.69	1.3		
13.1	4	10.74	8.57	77.3	11	0.014	6.65	1.3		
16.4	5	10.73	8.56	77.1	11	0.014	6.64	1.3		
19.7	6	10.72	8.56	77.1	10	0.014	6.64	1.2		
23.0	7	10.66	8.54	76.8	10	0.014	6.67	1.0		
26.2	8	10.66	8.52	76.7	10	0.014	6.64	1.1		
29.5	9	10.65	8.52	76.6	10	0.014	6.62	1.3		
32.8	10	10.65	8.52	76.6	10	0.014	6.62	1.2		
36.1	11	10.63	8.53	76.2	10	0.014	6.58	1.3		
39.4	12	10.59	8.50	75.6	10	0.014	6.63	0.7		
42.7	13									
45.9	14									
49.2	15									
52.5	16									
55.8	17									
59.1	18									
62.3	19									
65.6	20									
68.9	21									
72.2	22									
75.5	23									
78.7	24									
82.0	25									
85.3	26									
88.6	27									
91.9	28									
95.1	29									
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									

Stillwater Sciences

SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

Page 1 of 1

Date: 10/26/18
Time: 1230

Reservoir - Water Quality Vertical Profiles

Instrument used: YSI 6920
Water depth: 67'

Site Location: R-IS-12-JR
Lat/Long (NAD83):

Secchi (ft): 32'

Personnel: BTH, ESB

Site Notes: Partly cloudy, no wind

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		8.15	10.59	89.8	11	0.016	6.03	4.2		
3.3	1	7.61	10.64	88.6	10	0.016	5.91	4.1		
6.6	2	7.24	10.68	88.5	10	0.016	5.89	4.1		
9.8	3	7.16	10.76	88.4	10	0.016	5.88	4.1		
13.1	4	7.06	10.74	88.5	10	0.016	5.91	4.1		
16.4	5	7.01	10.77	88.8	10	0.016	5.88	4.1		
19.7	6	6.98	10.84	89.2	10	0.016	5.98	4.1		
23.0	7	6.98	10.87	89.4	10	0.016	5.91	4.1		
26.2	8	6.98	10.87	89.5	10	0.016	5.91	4.1		
29.5	9	6.97	10.87	89.5	10	0.016	5.94	4.1		
32.8	10	6.97	10.84	89.3	10	0.016	5.93	4.1		
36.1	11	6.90	10.88	89.4	10	0.016	5.95	4.1		
39.4	12	6.90	10.88	89.4	10	0.016	5.94	4.1		
42.7	13	6.90	10.88	89.4	10	0.016	5.93	4.1		
45.9	14	6.89	10.88	89.4	10	0.016	5.93	4.1		
49.2	15	6.86	10.88	89.3	10	0.016	5.92	4.1		
52.5	16	6.85	10.86	89.2	10	0.016	5.93	4.1		
55.8	17	6.76	10.86	88.9	10	0.016	5.94	4.1		
59.1	18	6.66	10.84	87.9	11	0.016	5.98	4.1		
62.3	19	6.08	10.81	87.0	11	0.017	6.02	0.9		
65.6	20									
68.9	21									
72.2	22									
75.5	23									
78.7	24									
82.0	25									
85.3	26									
88.6	27									
91.9	28									
95.1	29									
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									

Stillwater Sciences

SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

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Date: 10/26/18
Time: 1420

Reservoir - Water Quality Vertical Profiles

Site Location: R-IS-13-CR
Lat/Long (NAD83):

Instrument used: YSI-6920
Water depth: 22'

Personnel: BTH, ESB

Secchi (ft): 22'

Site Notes:

Depth (ft)	Depth (m)	Temp (°C)	DO (mg/L)	DO (%)	Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
surface		7.63	11.09	92.9	11	0.016	6.58	4.1		
3.3	1	7.22	11.34	94.0	10	0.016	6.22	4.0		
6.6	2	7.17	11.37	94.0	10	0.016	6.14	4.1		
9.8	3	7.10	11.38	94.0	10	0.016	6.13	4.1		
13.1	4	7.09	11.38	94.0	10	0.016	6.13	4.0		
16.4	5	7.09	11.38	94.0	10	0.016	6.10	4.0		
19.7	6	7.09	11.38	93.9	10	0.016	6.15	4.0		
23.0	7	7.08	11.38	94.0	10	0.016	6.15	29.8		Bottom
26.2	8									
29.5	9									
32.8	10									
36.1	11									
39.4	12									
42.7	13									
45.9	14									
49.2	15									
52.5	16									
55.8	17									
59.1	18									
62.3	19									
65.6	20									
68.9	21									
72.2	22									
75.5	23									
78.7	24									
82.0	25									
85.3	26									
88.6	27									
91.9	28									
95.1	29									
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									

Stillwater Sciences

SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

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Date: 10-25-18
Time: 1140

Reservoir - Water Quality Vertical Profiles

Instrument used: YSI 6920
Water depth: 47 ft
Secchi (ft): 22 ft

Site Location: R-1S-14-SC
Lat/Long (NAD83):

Personnel: BTH + SPL

Site Notes: clear skies, no wind

Depth (ft)	Depth (m)	Temp (°C)	DO (mg/L)	DO (%)	Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
surface		9.22	10.52	91.4	21	0.031	6.79	3.6		
3.3	1	9.21	10.5	91.3	21	0.031	6.72	3.6		
6.6	2	9.16	10.51	91.3	21	0.031	6.74	3.6		
9.8	3	9.13	10.52	91.2	21	0.030	6.74	3.6		
13.1	4	7.78	10.73	90.1	21	0.032	6.76	3.36		
16.4	5	7.48	11.14	93.5	20	0.031	6.76	3.5		
19.7	6	7.44	11.40	950	20	0.030	6.73	3.6		
23.0	7	7.35	11.60	965	20	0.030	6.72	3.6		
26.2	8	7.33	11.72	97.4	20	0.030	6.72	22.2		BOTTOM
29.5	9									
32.8	10									
36.1	11									
39.4	12									
42.7	13									
45.9	14									
49.2	15									
52.5	16									
55.8	17									
59.1	18									
62.3	19									
65.6	20									
68.9	21									
72.2	22									
75.5	23									
78.7	24									
82.0	25									
85.3	26									
88.6	27									
91.9	28									
95.1	29									
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									

Stillwater Sciences

SMUD *In situ* Monitoring in the Upper American River Project and Chili Bar Project

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Date: 10-25-18
Time: 1220

Reservoir - Water Quality Vertical Profiles

Instrument used: YSI 6920
Water depth: 121 ft

Site Location: R-15-15-SC
Lat/Long (NAD83):

Secchi (ft): 18 ft

Personnel: BTH & SPK

Site Notes: clear skies, light wind

Depth (ft)	Depth (m)	Temp (°C)	DO (mg/L)	DO (%)	Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
surface		9.77	10.46	92.2	22	0.031	6.69	3.6		
3.3	1	9.33	10.47	91.2	21	0.030	6.72	3.5		
6.6	2	9.12	10.45	90.6	21	0.030	6.69	3.5		
9.8	3	9.10	10.45	90.6	21	0.030	6.68	3.5		
13.1	4	9.09	10.44	90.5	21	0.030	6.68	3.5		
16.4	5	9.03	10.46	90.4	21	0.030	6.67	3.5		
19.7	6	8.99	10.44	90.3	21	0.030	6.66	3.5		
23.0	7	8.97	10.43	90.2	21	0.030	6.65	3.5		
26.2	8	8.97	10.42	90.0	21	0.030	6.62	3.5		
29.5	9	8.95	10.41	89.9	21	0.030	6.62	3.4		
32.8	10	8.88	10.44	90.0	21	0.030	6.60	3.4		
36.1	11	8.61	10.43	89.4	20	0.030	6.60	3.3		
39.4	12	8.45	10.51	89.7	20	0.029	6.57	3.4		
42.7	13	8.41	10.57	90.2	20	0.029	6.56	3.4		
45.9	14	8.39	10.61	90.4	20	0.029	6.52	3.5		
49.2	15	8.37	10.64	90.6	20	0.029	6.54	3.4		
52.5	16	8.34	10.68	90.8	19	0.029	6.54	3.3		
55.8	17	8.32	10.68	90.9	19	0.028	6.52	3.4		
59.1	18	8.30	10.69	90.9	19	0.028	6.50	3.4		
62.3	19	8.28	10.71	91.0	19	0.028	6.50	3.3		
65.6	20	8.25	10.73	91.2	19	0.028	6.50	3.3		
68.9	21	8.24	10.74	91.3	19	0.028	6.50	3.3		
72.2	22	8.23	10.75	91.4	19	0.028	6.49	3.3		
75.5	23	8.22	10.77	91.4	19	0.028	6.47	3.3		
78.7	24	8.21	10.77	91.4	19	0.028	6.47	3.3		
82.0	25	8.20	10.77	91.5	19	0.028	6.48	3.2		
85.3	26	8.20	10.79	91.5	19	0.028	6.46	3.2		
88.6	27	8.19	10.79	91.5	19	0.028	6.47	3.2		
91.9	28	8.18	10.80	91.6	19	0.029	6.47	3.2		
95.1	29	8.15	10.81	91.7	19	0.029	6.48	3.2		
98.4	30	8.11	10.83	91.7	19	0.028	6.48	3.1		
101.7	31	8.08	10.84	91.7	19	0.028	6.47	3.1		
105.0	32	8.04	10.85	91.7	19	0.028	6.44	3.0		
108.3	33	8.00	10.87	91.56	19	0.029	6.45	2.9		
111.5	34	7.98	10.86	91.7	18	0.027	6.44	2.7		

Stillwater Sciences

Reservoir - Water Quality Vertical Profiles

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
(CONTINUED)										
114.8	35	7.97	10.85	91.5	18	0.027	6.45	1.8		
118.1	36	7.98	10.84	91.5	19	0.028	6.46	130.3		BOTTOM
121.4	37									
124.7	38									
128.0	39									
131.2	40									
134.5	41									
137.8	42									
141.1	43									
144.4	44									
147.6	45									
150.9	46									
154.2	47									
157.5	48									
160.8	49									
164.0	50									
167.3	51									
170.6	52									
173.9	53									
177.2	54									
180.4	55									
183.7	56									
187.0	57									
190.3	58									
193.6	59									
196.8	60									
200.1	61									
203.4	62									
206.7	63									
210.0	64									
213.3	65									
216.5	66									
219.8	67									
223.1	68									
226.4	69									
229.7	70									
232.9	71									
236.2	72									

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APPENDIX E
In situ Field Calibration Sheets

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Water Quality YSI 6920 Sonde Calibration – Daily Use

Project: SMUD UARP WQ WINTER SURVEY 2018

Unit ID: YSI EXO

Sampling Event Date(s): 1/29 – 1/31

PRE-SAMPLING CALIBRATION

Date and time 1/28/18 1600 Name KELLEIGH CROWE

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	19.41	1020	1000	
Cond (uS/cm @ 25°C)	1,413	19.34	1391	1413	
DO (%)		20.3	94.8	96.4	732.4 mmHg
DO (mg/L)*		20.3	8.68	8.68	*Check solubility table*
pH4	pH4	19.9	4.05	4.00	
pH 7	pH 7	19.8	7.01	7.00	
pH 10	pH 10	19.7	10.03	10.00	
Turbidity	0	20.5	0.68	0.00	
Turbidity	12.4	20.3	12.78	12.4	

POST-SAMPLING CALIBRATION CHECK

Date and time 1/29/18 1830 Name KELLEIGH CROWE

Parameter	Std. Value	Std. Temp (°C)	Post-Sampling Value	Re-Cal Yes or No?	Post-Cal Value	MQO Code[1]	Notes
Cond (uS/cm @ 25°C)	1,000	18.65	1066	NO		Q	
Cond (uS/cm @ 25°C)	1,413	19.04	1415	NO		A	
DO (%)		18.42	93.8	NO		A	713.0 mmHg
*DO (mg/L)		18.42	8.81	NO		A	*Check solubility table*
pH4	pH 4	17.78	3.94	NO		A	
pH 7	pH 7	17.89	7.00	NO		A	
pH 10	pH 10	18.51	10.08	NO		A	
Turbidity	0	19.84	0.94	NO		A	
Turbidity	12.4	17.40	12.32	NO		A	

[1] See Table 1

Table 1: Measurement Quality Objectives – comparisons are between Post-sampling Value and Post-calibration Value

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%	> 5% and ≤ 10%	> 10%

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Water Quality YSI 6920 Sonde Calibration – Daily Use

Project: SMUD UARP WQ WINTER SURVEY 2018

Unit ID: YSI EXO

Sampling Event Date(s): 1/29 - 1/31

PRE-SAMPLING CALIBRATION

Date and time 1/30/18 0800 Name KELLEIGH CROWE

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	23.71	1031	1000	
Cond (uS/cm @ 25°C)	1,413	23.94	1374	1413	
DO (%)		22.5	93.4	93.8	712.8 mmHg
DO (mg/L)*		22.5	8.12	8.11	*Check solubility table*
pH4	pH4	23.6	4.03	4.00	
pH 7	pH 7	23.4	7.05	7.00	
pH 10	pH 10	23.4	9.97	10.00	
Turbidity	0	23.8	0.00	0.00	
Turbidity	12.4	23.6	12.61	12.40	

POST-SAMPLING CALIBRATION CHECK

Date and time 1/30/18 1830 Name KELLEIGH CROWE

Parameter	Std. Value	Std. Temp (°C)	Post-Sampling Value	Re-Cal Yes or No?	Post-Cal Value	MQO Code[1]	Notes
Cond (uS/cm @ 25°C)	1,000	20.95	1037	NO		A	
Cond (uS/cm @ 25°C)	1,413	20.83	1412	NO		A	
DO (%)		20.42	96.4	NO		A	727.1 mmHg
*DO (mg/L)		20.42	8.69	NO		A	*Check solubility table*
pH4	pH 4	20.91	3.97	No		A	
pH 7	pH 7	21.10	7.02	NO		A	
pH 10	pH 10	21.20	10.04	NO		A	
Turbidity	0	21.19	0.03	NO		A	
Turbidity	12.4	20.98	12.37	NO		A	

[1] See Table 1

Table 1: Measurement Quality Objectives – comparisons are between Post-sampling Value and Post-calibration Value

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%	> 5% and ≤ 10%	> 10%

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Water Quality YSI 6920 Sonde Calibration – Daily Use

Project: SMUD UARPWQ WINTER SURVEY 2018

Unit ID: YSI EXO

Sampling Event Date(s): 1/29 – 1/31

PRE-SAMPLING CALIBRATION

Date and time 1/31/18 1000 Name KELLEIGH CROWE

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	19.51	1,046	1,000	
Cond (uS/cm @ 25°C)	1,413	19.50	1,352	1,413	
DO (%)		19.3	96.4	95.8	728.0 mmHg
DO (mg/L)*		19.4	8.83	8.82	*Check solubility table*
pH4	pH4	19.6	3.99	4.00	
pH 7	pH 7	19.4	7.05	7.00	
pH 10	pH 10	19.5	10.04	10.00	
Turbidity	0	20.2	0.02	0.00	
Turbidity	12.4	20.3	11.68	12.40	

POST-SAMPLING CALIBRATION CHECK

Date and time 1/31/18 1800 Name KELLEIGH CROWE

Parameter	Std. Value	Std. Temp (°C)	Post-Sampling Value	Re-Cal Yes or No?	Post-Cal Value	MQO Code[1]	Notes
Cond (uS/cm @ 25°C)	1,000	22.08	1,021	NO		A	
Cond (uS/cm @ 25°C)	1,413	22.28	1414	NO		A	
DO (%)		22.29	97.5	NO		A	726.2 mmHg
*DO (mg/L)		2229	8.49	NO		A	*Check solubility table*
pH4	pH 4	23.30	4.00	NO		A	
pH 7	pH 7	17.80	7.03	NO		A	
pH 10	pH 10	17.60	10.07	NO		A	
Turbidity	0	22.25	0.03	NO		A	
Turbidity	12.4	22.64	12.27	NO		A	

[1] See Table 1

Table 1: Measurement Quality Objectives – comparisons are between Post-sampling Value and Post-calibration Value

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%	> 5% and ≤ 10%	> 10%

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Water Quality YSI 6920 Sonde Calibration – Daily Use

Project: SMUD UARP WQ SPRING SURVEY

Unit ID: YSI EXO

Sampling Event Date(s): 4/30/18 - 5/3/18, 5/7/18 - 5/10/18, 5/18/18

PRE-SAMPLING CALIBRATION

Date and time 29 April 2018 22:30 Name Bruce Hitch

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	17.43	859	1000	
Cond (uS/cm @ 25°C)	1,413	17.25	1400	1413	
DO (%)		18.1	97.3	96.5	726.0 mm/Hg
DO (mg/L)*		18.1	9.2	9.2	Check solubility table*
pH4	pH4	17.0	4.02	4.00	
pH 7	pH 7	17.6	7.06	7.00	
pH 10	pH 10	16.9	10.20	10.00	
Turbidity	0	18.7	0.04	0.00	
Turbidity	12.4	18.6	12.58	12.4	

POST-SAMPLING CALIBRATION CHECK

Date and time 29 April 2018 1820 Name Kelleigh Crowe

Parameter	Std. Value	Std. Temp (°C)	Post-Sampling Value	Re-Cal Yes or No?	Post-Cal Value	MQO Code[1]	Notes
Cond (uS/cm @ 25°C)	1,000	17.00	1049	NO		A	
Cond (uS/cm @ 25°C)	1,413	17.31	1418	NO		A	
DO (%)		18.76	92.9	NO		A	
*DO (mg/L)		18.76	8.66	NO		A	Check solubility table*
pH4	pH 4	16.07	4.04	NO		A	705.7 mm/Hg
pH 7	pH 7	16.56	7.00	NO		A	
pH 10	pH 10	16.65	10.12	NO		A	
Turbidity	0	19.24	0.10	NO		A	
Turbidity	12.4	17.90	12.49	NO		A	

[1] See Table 1

Table 1: Measurement Quality Objectives – comparisons are between Post-sampling Value and Post-calibration Value

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%	> 5% and ≤ 10%	> 10%

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Water Quality YSI 6920 Sonde Calibration – Daily Use

Project: SMUD UARP WQ SPRING SURVEY

Unit ID: YSI EXO

Sampling Event Date(s): 4/30-5/3, 5/7-5/10, 5/18/2018

PRE-SAMPLING CALIBRATION

Date and time 1 MAY 2018 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	19.92	1102	1000	
Cond (uS/cm @ 25°C)	1,413	20.11	1359	1413	
DO (%)		19.60	91.50	92.60	703.9 mmHg
DO (mg/L)*		19.60	8.47	8.47	Check solubility table*
pH4	pH4	20.90	4.16	4.00	
pH 7	pH 7	21.10	7.02	7.00	
pH 10	pH 10	21.00	10.15	10.00	
Turbidity	0	20.20	0.62	0.00	
Turbidity	12.4	19.90	12.31	12.4	

POST-SAMPLING CALIBRATION CHECK

Date and time 1 MAY 2018 1815 Name KELLEIGH CROWE

Parameter	Std. Value	Std. Temp (°C)	Post-Sampling Value	Re-Cal Yes or No?	Post-Cal Value	MQO Code[1]	Notes
Cond (uS/cm @ 25°C)	1,000	21.68	1086	NO		A	
Cond (uS/cm @ 25°C)	1,413	21.34	1457	NO		A	
DO (%)		21.10	92.8	NO		A	702.8 mmHg
*DO (mg/L)		21.10	8.25	NO		A	Check solubility table*
pH4	pH 4	21.02	4.05	NO		A	
pH 7	pH 7	21.24	6.92	NO		A	
pH 10	pH 10	21.42	9.86	NO		A	
Turbidity	0	21.41	0.23	NO		A	
Turbidity	12.4	21.32	12.43	NO		A	

[1] See Table 1

Table 1: Measurement Quality Objectives – comparisons are between Post-sampling Value and Post-calibration Value

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%	> 5% and ≤ 10%	> 10%

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Water Quality YSI 6920 Sonde Calibration – Daily Use

Project: SMUD UARP WQ SPRING SURVEY

Unit ID: YSI EXO

Sampling Event Date(s): 4/30 - 5/3, 5/7 - 5/10, 5/18/2018

PRE-SAMPLING CALIBRATION

Date and time 5/1/18 1900 Name Kelleigh Crouse.

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	21.78	1089	1000	
Cond (uS/cm @ 25°C)	1,413	21.58	1334	1413	
DO (%)		21.30	93.1	92.5	
DO (mg/L)*		21.30	8.20	8.20	*Check solubility table**
pH4	pH4	21.90	4.04	4.00	703.1 mm/Hg
pH 7	pH 7	21.70	6.93	7.00	
pH 10	pH 10	21.90	9.86	10.00	
Turbidity	0	22.40	0.55	0.00	
Turbidity	12.4	22.20	12.35	12.40	

POST-SAMPLING CALIBRATION CHECK

Date and time 5/2/18 1800 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Post-Sampling Value	Re-Cal Yes or No?	Post-Cal Value	MQO Code[1]	Notes
Cond (uS/cm @ 25°C)	1,000	19.78	1014	No		A	
Cond (uS/cm @ 25°C)	1,413	20.36	1371	No		A	
DO (%)		18.92	94.0	No		A	711.6 mm/Hg
*DO (mg/L)		18.92	8.73	No		A	*Check solubility table*
pH4	pH 4	21.35	4.05	No		A	
pH 7	pH 7	21.81	6.98	No		A	
pH 10	pH 10	21.84	10.09	No		A	
Turbidity	0	17.41	0.08	No		A	
Turbidity	12.4	17.70	12.6	No		A	

[1] See Table 1

Table 1: Measurement Quality Objectives – comparisons are between Post-sampling Value and Post-calibration Value

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%	> 5% and ≤ 10%	> 10%

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Water Quality YSI 6920 Sonde Calibration – Daily Use

Project: SMUD UARP WQ SPRING SURVEY

Unit ID: YSI EXO

Sampling Event Date(s): 4/30-5/3, 5/7-5/10, 5/18/2018

PRE-SAMPLING CALIBRATION

Date and time 5/3/18 0630 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	20.00	874	1000	
Cond (uS/cm @ 25°C)	1,413	19.49	1460	1413	
DO (%)		18.60	94.7	93.7	
DO (mg/L)*		18.50	8.78	8.78	*Check solubility table*
pH4	pH4	17.20	3.93	4.00	712.4 mm Hg
pH 7	pH 7	17.50	8.45	7.00	
pH 10	pH 10	15.20	13.06	10.00	
Turbidity	0	16.80	0.23	0.00	
Turbidity	12.4	18.20	12.15	12.40	

POST-SAMPLING CALIBRATION CHECK

Date and time 5/3/18 2000 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Post-Sampling Value	Re-Cal Yes or No?	Post-Cal Value	MQO Code[1]	Notes
Cond (uS/cm @ 25°C)	1,000	24.08	987	No		A	
Cond (uS/cm @ 25°C)	1,413	25.73	1444	No		A	
DO (%)		22.22	95.70	No		A	729.2 mmHg
*DO (mg/L)		22.22	8.33	No		A	*Check solubility table*
pH4	pH 4	23.99	4.07	No		A	
pH 7	pH 7	23.72	7.04	No		A	
pH 10	pH 10	23.44	9.99	No		A	
Turbidity	0	22.99	0.09	No		A	
Turbidity	12.4	23.92	12.52	No		A	

[1] See Table 1

Table 1: Measurement Quality Objectives – comparisons are between Post-sampling Value and Post-calibration Value

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%	> 5% and ≤ 10%	> 10%

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Water Quality YSI 6920 Sonde Calibration – Daily Use

Project: SMUD LARP WQ SPRING SURVEY

Unit ID: 751 Exo

Sampling Event Date(s): 4/30-5/3, 5/7-5/10, 5/18/2018

PRE-SAMPLING CALIBRATION

Date and time 5/7/18 2200 Name BRUCE HAACK

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	23.14	1501	1000	
Cond (uS/cm @ 25°C)	1,413	23.56	1182	1413	
DO (%)		21.5	95.8	95.5	726.2 mm / Hg
DO (mg/L)*		21.5	8.42	8.42	*Check solubility table**
pH4	pH4	23.4	4.07	4.00	
pH 7	pH 7	23.4	6.94	7.00	
pH 10	pH 10	23.6	10.08	10.00	
Turbidity	0	24.0	0.24	0.0	
Turbidity	12.4	24.0	17.0	12.4	

POST-SAMPLING CALIBRATION CHECK

Date and time 5/8/18 2100 Name KELLEIGH CROWE

Parameter	Std. Value	Std. Temp (°C)	Post-Sampling Value	Re-Cal Yes or No?	Post-Cal Value	MQO Code[1]	Notes
Cond (uS/cm @ 25°C)	1,000	24.51	1109	NO		Q	
Cond (uS/cm @ 25°C)	1,413	22.14	1385	NO		A	
DO (%)		23.15	93.0	NO		A	
*DO (mg/L)		23.15	7.95	NO		A	*Check solubility table**
pH4	pH 4	22.31	3.98	NO		A	713.2 mm/Hg
pH 7	pH 7	22.13	6.91	NO		A	
pH 10	pH 10	21.91	9.98	NO		A	
Turbidity	0	22.62	0.02	NO		A	
Turbidity	12.4	20.27	12.0	NO		A	

[1] See Table 1

Table 1: Measurement Quality Objectives – comparisons are between Post-sampling Value and Post-calibration Value

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%	> 5% and ≤ 10%	> 10%

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Water Quality YSI 6920 Sonde Calibration – Daily Use

Project: SMUD UARP WQ SPRING SURVEY

Unit ID: YSI EXO

Sampling Event Date(s): 4/30 - 5/3, 5/7 - 5/10, 5/18/2018

PRE-SAMPLING CALIBRATION

Date and time 5/9/2018 0700 Name KELLEIGH CROWE

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	21.05	1076	1000	
Cond (uS/cm @ 25°C)	1,413	20.43	1242	1413	
DO (%)		20.40	93.2	93.9	713.4 mm Hg
DO (mg/L)*		20.40	8.47	8.47	*Check solubility table**
pH4	pH4	20.70	4.05	4.00	
pH 7	pH 7	20.80	6.96	7.00	
pH 10	pH 10	20.80	10.01	10.00	
Turbidity	0	21.50	0.37	0.00	
Turbidity	12.4	21.30	10.47	12.4	

POST-SAMPLING CALIBRATION CHECK

Date and time 5/9/2018 2000 Name KELLEIGH CROWE

Parameter	Std. Value	Std. Temp (°C)	Post-Sampling Value	Re-Cal Yes or No?	Post-Cal Value	MQO Code[1]	Notes
Cond (uS/cm @ 25°C)	1,000	22.93	11 29	NO		Q	
Cond (uS/cm @ 25°C)	1,413	23.71	1513	NO		Q	
DO (%)		23.26	93.8	NO		A	
*DO (mg/L)		23.26	8.01	NO		A	*Check solubility table**
pH4	pH 4	23.08	4.02	NO		A	711.6 mm Hg
pH 7	pH 7	23.23	6.92	NO		A	
pH 10	pH 10	23.75	10.02	NO		A	
Turbidity	0	22.60	0.88	NO		A	
Turbidity	12.4	24.19	12.52	NO		A	

[1] See Table 1

Table 1: Measurement Quality Objectives – comparisons are between Post-sampling Value and Post-calibration Value

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%	> 5% and ≤ 10%	> 10%

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Water Quality YSI 6920 Sonde Calibration – Daily Use

Project: SMUD UARP WQ SPRING SURVEY

Unit ID: 451 EXO

Sampling Event Date(s): 4/30 - 5/3, 5/7 - 5/10, 5/18/2018

PRE-SAMPLING CALIBRATION

Date and time 5/10/18 0600 Name KELLEIGH CROWE

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	22.64	1133	1000	
Cond (uS/cm @ 25°C)	1,413	22.90	1315	1413	
DO (%)		22.50	93.3	93.4	
DO (mg/L)*		22.50	8.11	8.11	*Check solubility table**
pH4	pH4	22.7	4.02	4.00	709.8 mm/Hg
pH 7	pH 7	22.5	6.91	7.00	
pH 10	pH 10	22.7	10.00	10.00	
Turbidity	0	23.1	0.39	0.00	
Turbidity	12.4	23.4	25.36	12.40	

POST-SAMPLING CALIBRATION CHECK

Date and time 5/10/18 1900 Name KELLEIGH CROWE

Parameter	Std. Value	Std. Temp (°C)	Post-Sampling Value	Re-Cal Yes or No?	Post-Cal Value	MQO Code[1]	Notes
Cond (uS/cm @ 25°C)	1,000	21.13	1128	NO		Q	
Cond (uS/cm @ 25°C)	1,413	21.66	1456	NO		A	
DO (%)		25.54	95.1	NO		A	
*DO (mg/L)		25.54	7.78	NO		A	*Check solubility table**
pH4	pH 4	28.01	4.05	NO		A	721.2 mmHg
pH 7	pH 7	27.93	6.97	NO		A	
pH 10	pH 10	27.83	9.98	NO		A	
Turbidity	0	26.60	0.00	NO		A	
Turbidity	12.4	21.96	12.31	NO		A	

[1] See Table 1

Table 1: Measurement Quality Objectives – comparisons are between Post-sampling Value and Post-calibration Value

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%	> 5% and ≤ 10%	> 10%

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Water Quality YSI 6920 Sonde Calibration – Daily Use

Project: SMUD UARP WQ SPRING SURVEY

Unit ID: YSI 6920

Sampling Event Date(s): 4/30-5/3, 5/7-5/10, 5/18/2018

PRE-SAMPLING CALIBRATION

Date and time 5/18/18 0600 Name Kelleigh Crowe

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	20.77	1049	1000	
Cond (uS/cm @ 25°C)	1,413	20.80	1202	1413	
DO (%)		18.12	80.6	80.6	603.7 mmHg
DO (mg/L)*		18.12	7.61	7.61	Check solubility table*
pH4	pH4	20.92	4.07	4.00	
pH 7	pH 7	20.31	6.97	7.00	
pH 10	pH 10	20.18	10.11	10.00	
Turbidity	12.7	20.54	12.6	12.7	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

Date and time 5/18/18 2000 Name Kelleigh Crowe

Parameter	Std. Value	Std. Temp (°C)	Post-Sampling Value	Re-Cal Yes or No?	Post-Cal Value	MQO Code[1]	Notes
Cond (uS/cm @ 25°C)	1,000	18.37	1039	NO		A	
Cond (uS/cm @ 25°C)	1,413	18.91	1381	NO		A	
DO (%)		18.63	95.7	NO		A	721.1 mmHg
*DO (mg/L)		18.63	8.93	NO		A	Check solubility table*
pH4	pH 4	18.48	4.08	NO		A	
pH 7	pH 7	18.51	7.00	NO		A	
pH 10	pH 10	18.61	10.08	NO		A	
Turbidity	12.7	18.56	12.9	NO		A	
Turbidity							
[1] See Table 1							

Table 1: Measurement Quality Objectives – comparisons are between Post-sampling Value and Post-calibration Value

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%	> 5% and ≤ 10%	> 10%

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Water Quality YSI 6920 Sonde Calibration – Daily Use

Project: SMUD UARP WQ SUMMER SURVEY

Unit ID: YSI EXO

Sampling Event Date(s): 8/13/18 – 8/15/18, 8/17/18

PRE-SAMPLING CALIBRATION

Date and time 8/12/18 1800 Name Kelleigh Crowe

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	29.95	1,011	1,000	
Cond (uS/cm @ 25°C)	1,413	29.78	1,382	1413	
DO (%)		27.80	94.3	95.0	722.8 mm Hg
DO (mg/L)*		27.80	7.52	7.50	*Check solubility table*
pH4	pH4	29.4	4.14	4.00	
pH 7	pH 7	29.7	7.05	7.00	
pH 10	pH 10	30.4	10.04	10.00	
Turbidity	0.0	29.2	0.16	0.00	
Turbidity	12.4	29.7	13.42	12.40	

POST-SAMPLING CALIBRATION CHECK

Date and time 8/13/18 1500 Name Kelleigh Crowe

Parameter	Std. Value	Std. Temp (°C)	Post-Sampling Value	Re-Cal Yes or No?	Post-Cal Value	MQO Code[1]	Notes
Cond (uS/cm @ 25°C)	1,000	26.83	1058	NO		Q	
Cond (uS/cm @ 25°C)	1,413	26.56	1421	NO		A	
DO (%)		26.41	93.3	NO		A	709.4 mm Hg
*DO (mg/L)		26.41	7.50	NO		A	*Check solubility table*
pH4	pH 4	26.63	4.00	NO		A	
pH 7	pH 7	27.01	7.02	NO		A	
pH 10	pH 10	27.33	10.11	NO		A	
Turbidity	0.0	26.62	0.05	NO		A	
Turbidity	12.4	27.21	12.55	NO		A	
[1] See Table 1							

Table 1: Measurement Quality Objectives – comparisons are between Post-sampling Value and Post-calibration Value

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%	> 5% and ≤ 10%	> 10%

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Water Quality YSI 6920 Sonde Calibration – Daily Use

Project: SMUD UARP WQ SUMMER SURVEY

Unit ID: YSI EXO

Sampling Event Date(s): 8/13/18 - 8/15/18, 8/17/18

PRE-SAMPLING CALIBRATION

Date and time 8/13/18 1600 Name Kelleigh Crouse

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	25.40	1052	1000	
Cond (uS/cm @ 25°C)	1,413	25.68	1353	1413	
DO (%)		26.1	93.5	93.3	709.4 mmHg
DO (mg/L)*		26.1	7.57	7.57	Check solubility table*
pH4	pH4	25.9	4.06	4.00	
pH 7	pH 7	25.8	7.02	7.00	
pH 10	pH 10	26.3	10.12	10.00	
Turbidity	0.0	26.6	0.24	0.00	
Turbidity	12.4	27.2	13.22	12.40	

POST-SAMPLING CALIBRATION CHECK

Date and time 8/14/18 1745 Name Kelleigh Crouse

Parameter	Std. Value	Std. Temp (°C)	Post-Sampling Value	Re-Cal Yes or No?	Post-Cal Value	MQO Code[1]	Notes
Cond (uS/cm @ 25°C)	1,000	23.71	1061	NO		Q	
Cond (uS/cm @ 25°C)	1,413	23.67	1410	NO		A	
DO (%)		25.43	92.8	NO		A	708.4 mmHg
*DO (mg/L)		25.43	7.62	NO		A	Check solubility table*
pH4	pH 4	26.49	4.00	NO		A	
pH 7	pH 7	25.49	7.00	NO		A	
pH 10	pH 10	26.05	9.81	NO		A	
Turbidity	0.0	26.02	0.04	NO		A	
Turbidity	12.4	25.61	12.78	NO		A	

[1] See Table 1

Table 1: Measurement Quality Objectives – comparisons are between Post-sampling Value and Post-calibration Value

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%	> 5% and ≤ 10%	> 10%

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Water Quality YSI 6920 Sonde Calibration – Daily Use

Project: SMUD UARP WQ SUMMER SURVEY

Unit ID: YSI EXO

Sampling Event Date(s): 8/13/18 - 8/15/18, 8/17/18

PRE-SAMPLING CALIBRATION

Date and time 8/15/18 0645 Name Kelleigh Crowe

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	21.89	1020	1,000	
Cond (uS/cm @ 25°C)	1,413	21.86	1384	1413	
DO (%)		21.60	93.4	93.4	709.7 mmHg
DO (mg/L)*		21.60	8.23	8.23	*Check solubility table*
pH4	pH4	21.90	4.08	4.00	
pH 7	pH 7	21.80	7.01	7.00	
pH 10	pH 10	21.90	9.85	10.00	
Turbidity	0.0	22.40	0.35	0.00	
Turbidity	12.4	23.20	16.27	12.40	

POST-SAMPLING CALIBRATION CHECK

Date and time 8/15/18 2000 Name Kelleigh Crowe

Parameter	Std. Value	Std. Temp (°C)	Post-Sampling Value	Re-Cal Yes or No?	Post-Cal Value	MQO Code[1]	Notes
Cond (uS/cm @ 25°C)	1,000	21.96	931	NO		Q	
Cond (uS/cm @ 25°C)	1,413	21.81	1319	NO		Q	
DO (%)		22.92	95.2	NO		A	725.8 mmHg
*DO (mg/L)		22.92	8.16	NO		A	*Check solubility table*
pH4	pH 4	22.49	3.93	NO		A	
pH 7	pH 7	22.87	7.01	NO		A	
pH 10	pH 10	23.02	10.20	NO		A	
Turbidity	0.0	23.01	0.04	NO		A	
Turbidity	12.4	23.10	11.30	NO		Q	
[1] See Table 1							

Table 1: Measurement Quality Objectives – comparisons are between Post-sampling Value and Post-calibration Value

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%	> 5% and ≤ 10%	> 10%

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Water Quality YSI 6920 Sonde Calibration – Daily Use

Project: SMUD UARP WQ SUMMER SURVEY

Unit ID: YSI EXO

Sampling Event Date(s): 8/13/18 – 8/15/18, 8/17/18

PRE-SAMPLING CALIBRATION

Date and time 8/16/18 1000 Name Kelleigh Crouse

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	22.92	967	1,000	
Cond (uS/cm @ 25°C)	1,413	22.10	1372	1413	
DO (%)		22.90	95.2	95.5	726.1 mm Hg
DO (mg/L)*		22.90	8.22	8.21	*Check solubility table*
pH4	pH4	22.40	3.95	4.00	
pH 7	pH 7	22.60	7.03	7.00	
pH 10	pH 10	22.70	10.28	10.00	
Turbidity	0.00	23.90	0.10	0.00	
Turbidity	12.40	23.90	9.26	12.40	

POST-SAMPLING CALIBRATION CHECK

Date and time 8/17/18 1931 Name Eric Sommerauer

Parameter	Std. Value	Std. Temp (°C)	Post-Sampling Value	Re-Cal Yes or No?	Post-Cal Value	MQO Code[1]	Notes
Cond (uS/cm @ 25°C)	1,000	29.62	1148	ND		Q	
Cond (uS/cm @ 25°C)	1,413	29.41	1405	NO		A	
DO (%)		28.80	99.6	NO		A	758.5 mm Hg
*DO (mg/L)		28.01	7.81	NO		A	*Check solubility table*
pH4	pH 4	30.46	4.07	NO		A	
pH 7	pH 7	29.58	7.04	NO		A	
pH 10	pH 10	30.45	9.83	NO		A	
Turbidity	0.00	30.44	0.05	NO		A	
Turbidity	12.40	30.56	11.96	NO		A	

[1] See Table 1

Table 1: Measurement Quality Objectives – comparisons are between Post-sampling Value and Post-calibration Value

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%	> 5% and ≤ 10%	> 10%

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Water Quality YSI 6920 Sonde Calibration – Daily Use

Project: HAR? RESERVOIR WQ FALL 2018

Unit ID: YSI 6920

Sampling Event Date(s): 10/22/18 – 10/24/18

PRE-SAMPLING CALIBRATION

Date and time 10/21/18 1920 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	20.38	825	1000	
Cond (uS/cm @ 25°C)	1,413	19.63	1926	1413	
DO (%)		21.63	97.8	95.4	
DO (mg/L)*		21.63	8.61	8.38	*Check solubility table**
pH4	pH4	21.93	4.12	4.00	724.4 mm/Hg
pH 7	pH 7	18.90	6.84	7.00	
pH 10	pH 10	22.30	10.27	10.04	
Turbidity	12.7	22.65	12.7	12.7	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

Date and time 10/22/18 15:30 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Post-Sampling Value	Re-Cal Yes or No?	Post-Cal Value	MQO Code[1]	Notes
Cond (uS/cm @ 25°C)	1,000	19.43	1012	NO		A	
Cond (uS/cm @ 25°C)	1,413	19.45	1378	NO		A	
DO (%)		18.40	92.6	NO		A	707.8 mm/Hg
*DO (mg/L)		18.46	8.7	NO		A	*Check solubility table**
pH4	pH 4	18.90	4.09	NO		A	
pH 7	pH 7	18.75	7.04	NO		A	
pH 10	pH 10	19.16	9.88	NO		A	
Turbidity	12.7	18.40	12.9	NO		A	
Turbidity							

[1] See Table 1

Table 1: Measurement Quality Objectives – comparisons are between Post-sampling Value and Post-calibration Value

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%	> 5% and ≤ 10%	> 10%

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Water Quality YSI Exo Sonde Calibration – Daily Use

Project: LARP RESERVOIR WQ FALL 2018

Unit ID: 751 6920

Sampling Event Date(s): 10/22/18 - 10/26/18

PRE-SAMPLING CALIBRATION

Date and time 10/23/18 0630 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	16.79	931	1000	
Cond (uS/cm @ 25°C)	1,413	16.72	1403	1413	
DO (%)		15.09	92.5	93.1	707.6 mm / Hg
DO (mg/L)*		15.09	9.29	9.33	*Check solubility table**
pH4	pH4	15.48	4.14	4.00	
pH 7	pH 7	15.47	6.95	7.02	
pH 10	pH 10	16.49	10.00	10.00	
Turbidity	12.7	14.58	14.9	12.7	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

Date and time 10/23/18 1600 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Post-Sampling Value	Re-Cal Yes or No?	Post-Cal Value	MQO Code[1]	Notes
Cond (uS/cm @ 25°C)	1,000	15.35	976	No		A	
Cond (uS/cm @ 25°C)	1,413	15.07	1388	No		A	
DO (%)		14.31	92.9	No		A	708.2 mm / Hg
*DO (mg/L)		14.31	9.47	No		A	*Check solubility table**
pH4	pH 4	14.43	3.96	No		A	
pH 7	pH 7	14.38	6.96	No		A	
pH 10	pH 10	15.35	10.02	No		A	
Turbidity	12.7	14.38	12.5	no		A	
Turbidity							

[1] See Table 1

Table 1: Measurement Quality Objectives – comparisons are between Post-sampling Value and Post-calibration Value

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%	> 5% and ≤ 10%	> 10%

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Water Quality YSI 6920 Sonde Calibration – Daily Use

Project: UARP RESERVOIR WQ FALL 2018

Unit ID: YSI 6920

Sampling Event Date(s): 10/22/18 - 10/24/18

PRE-SAMPLING CALIBRATION

Date and time 10/24/18 0680 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	16.17	992	1000	
Cond (uS/cm @ 25°C)	1,413	15.96	1410	1413	
DO (%)		15.19	92.9	93.2	710.8 mm Hg
DO (mg/L)*		15.19	9.32	9.36	*Check solubility table**
pH4	pH4	15.47	8.94	4.00	
pH 7	pH 7	14.80	6.97	7.00	
pH 10	pH 10	15.63	9.95	10.00	
Turbidity	12.7	14.01	12.3	12.7	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

Date and time 10/24/18 1700 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Post-Sampling Value	Re-Cal Yes or No?	Post-Cal Value	MQO Code[1]	Notes
Cond (uS/cm @ 25°C)	1,000	15.33	989	No		A	
Cond (uS/cm @ 25°C)	1,413	15.42	1406	No		A	
DO (%)		16.15	94.8	No		A	710.4 mm/Hg
*DO (mg/L)		16.15	9.32	No		A	*Check solubility table**
pH4	pH 4	14.49	3.99	No		A	
pH 7	pH 7	14.55	7.01	No		A	
pH 10	pH 10	15.15	10.00	No		A	
Turbidity	12.7	14.55	12.6	No		A	
Turbidity							

[1] See Table 1

Table 1: Measurement Quality Objectives – comparisons are between Post-sampling Value and Post-calibration Value

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%	> 5% and ≤ 10%	> 10%

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Water Quality YSI Exo Sonde Calibration – Daily Use

Project: UARP RESERVOIR WQ FALL 2018

Unit ID: MSI 6920

Sampling Event Date(s): 10/22/18 - 10/26/18

PRE-SAMPLING CALIBRATION

Date and time 10/25/18 0700 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	16.22	1007	1000	
Cond (uS/cm @ 25°C)	1,413	16.17	1412	1413	
DO (%)		14.75	94.0	93.5	710.6 mm Hg
DO (mg/L)*		14.75	9.5	9.42	Check solubility table* 0
pH4	pH4	14.74	3.98	4.00	
pH 7	pH 7	15.00	7.05	7.00	
pH 10	pH 10	15.84	10.03	10.00	
Turbidity	12.7	14.43	13.1	12.6	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

Date and time 10/25/18 1730 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Post-Sampling Value	Re-Cal Yes or No?	Post-Cal Value	MQO Code[1]	Notes
Cond (uS/cm @ 25°C)	1,000	15.52	977	NO		A	
Cond (uS/cm @ 25°C)	1,413	15.60	1402	No		A	
DO (%)		14.25	93.2	No		A	710.2 mm Hg
*DO (mg/L)		16.25	9.16	No		A	Check solubility table* 0
pH4	pH 4	14.16	4.07	No		A	
pH 7	pH 7	14.74	6.97	No		A	
pH 10	pH 10	15.82	10.00	No		A	
Turbidity	12.7	15.12	13.1	No		A	
Turbidity							
[1] See Table 1							

Table 1: Measurement Quality Objectives – comparisons are between Post-sampling Value and Post-calibration Value

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%	> 5% and ≤ 10%	> 10%

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Water Quality YSI 6920 Sonde Calibration – Daily Use

Project: UARP RESERVOIR WQ FALL 2018

Unit ID: YSI 6920

Sampling Event Date(s): 10/22/18 – 10/26/18

PRE-SAMPLING CALIBRATION

Date and time 10/26/18 0630 Name BRUCE H.TCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	16.71	1004	1000	
Cond (uS/cm @ 25°C)	1,413	16.58	1419	1413	
DO (%)		15.76	92.6	93.7	711.6 mm/Hg
DO (mg/L)*		15.76	9.19	9.28	*Check solubility table**
pH4	pH4	14.95	3.99	4.00	
pH 7	pH 7	15.62	6.98	7.00	
pH 10	pH 10	15.79	10.00	10.00	
Turbidity	12.7	14.65	13.0	12.7	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

Date and time 10/26/18 1700 Name BRUCE H.TCH

Parameter	Std. Value	Std. Temp (°C)	Post-Sampling Value	Re-Cal Yes or No?	Post-Cal Value	MQO Code[1]	Notes
Cond (uS/cm @ 25°C)	1,000	19.58	1083	No		A	
Cond (uS/cm @ 25°C)	1,413	19.57	1412	No		A	
DO (%)		19.60	98.2	No		A	727.3 mm/Hg
*DO (mg/L)		19.60	9.98	No		A	*Check solubility table**
pH4	pH 4	19.65	3.99	No		A	
pH 7	pH 7	19.43	7.01	No		A	
pH 10	pH 10	19.11	9.98	No		A	
Turbidity	12.7	19.93	12.5	No			
Turbidity							
[1] See Table 1							

Table 1: Measurement Quality Objectives – comparisons are between Post-sampling Value and Post-calibration Value

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%	> 5% and ≤ 10%	> 10%

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Water Quality YSI 6920 Sonde Calibration – Daily Use

Project: SMUD UARP WQ FALL SURVEY

Unit ID: YSI 6920

Sampling Event Date(s): 11/12/18 - 11/14/18, 11/16/18

PRE-SAMPLING CALIBRATION

Date and time 11/11/18 1745 Name ERIC SOMMERAUER

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	16.89	1046	1000	
Cond (uS/cm @ 25°C)	1,413	16.72	1371	1413	
DO (%)		8.28	90.1	87.4	Cal. 11/12 @ 0650
DO (mg/L)*		8.28	10.63	10.34	Check solubility table* 664.3 mmHg → 10.3 mg/L
pH4	pH4	17.00	4.01	4.00	
pH 7	pH 7	17.06	7.03	7.00	
pH 10	pH 10	17.04	9.92	10.00	
Turbidity	12.7	17.00	13.0	12.7	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

Date and time 11/12/18 1730 Name ERIC SOMMERAUER

Parameter	Std. Value	Std. Temp (°C)	Post-Sampling Value	Re-Cal Yes or No?	Post-Cal Value	MQO Code[1]	Notes
Cond (uS/cm @ 25°C)	1,000	16.12	1012	N		A	
Cond (uS/cm @ 25°C)	1,413	13.26	1234	N		A	
DO (%)		10.24	88.1	N		A	
*DO (mg/L)		10.24	9.83	N		A	Check solubility table*
pH4	pH 4	15.56	3.95	N		A	
pH 7	pH 7	15.81	7.03	N		A	
pH 10	pH 10	17.29	10.06	N		A	
Turbidity	12.7	14.19	12.9	N		A	
Turbidity							

[1] See Table 1

Table 1: Measurement Quality Objectives – comparisons are between Post-sampling Value and Post-calibration Value

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%	> 5% and ≤ 10%	> 10%

Ver. 01/2016

Stillwater Sciences

Water Quality YSI 6920 Sonde Calibration – Daily Use

Project: SMUD UARP WQ FALL SURVEY

Unit ID: YSI 6920

Sampling Event Date(s): 11/13/2018 – 11/14/18, 11/16/18

PRE-SAMPLING CALIBRATION

Date and time 11/13/18 0730 Name ERIC SOMMERAUER

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	9.63	8.51	1000	
Cond (uS/cm @ 25°C)	1,413	9.61	1404	1413	
DO (%)		8.57	88.5	87.9	
DO (mg/L)*		8.57	10.30	10.22	*Check solubility table* 667.6 mm Hg → 10.3 mg/L
pH4	pH4	9.59	3.99	4.00	
pH 7	pH 7	9.56	7.01	7.00	
pH 10	pH 10	9.58	9.87	10.00	
Turbidity	12.7	10.41	12.5	12.7	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

Date and time 11/13/18 1400 Name Eric Sommerauer

Parameter	Std. Value	Std. Temp (°C)	Post-Sampling Value	Re-Cal Yes or No?	Post-Cal Value	MQO Code[1]	Notes
Cond (uS/cm @ 25°C)	1,000	14.30	1133	N		Q	
Cond (uS/cm @ 25°C)	1,413	14.73	1595	N		Q	
DO (%)		10.53	95.5	N		Q	
*DO (mg/L)		10.53	10.41	N		A	*Check solubility table*
pH4	pH 4	14.81	3.93	N		A	
pH 7	pH 7	15.26	7.04	N		A	
pH 10	pH 10	15.42	10.14	N		A	
Turbidity	12.7	14.44	12.6	N		A	
Turbidity							

[1] See Table 1

Table 1: Measurement Quality Objectives – comparisons are between Post-sampling Value and Post-calibration Value

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%	> 5% and ≤ 10%	> 10%

Ver. 01/2016

Stillwater Sciences

pg 3 of 4

Water Quality YSI 6920 Sonde Calibration – Daily Use

Project: SMUD UARP WQ FALL SURVEY

Unit ID: YSI 6920

Sampling Event Date(s): 11/12/18 - 11/14/18, 11/16/18

PRE-SAMPLING CALIBRATION

Date and time 11/14/18 0730 Name ERIC SOMMERAUER

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	6.33	935	1000	
Cond (uS/cm @ 25°C)	1,413	6.81	1333	1412	
DO (%)		9.52	88.6	87.6	
DO (mg/L)*		9.52	10.05	9.95	Check solubility table* 667.0 mm Hg → 10.0 mg/L
pH4	pH4	7.39	3.94	4.00	
pH 7	pH 7	6.70	7.07	7.00	
pH 10	pH 10	6.65	9.96	10.00	
Turbidity	12.7	4.51	13.1	12.7	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

Date and time 11/14/18 1645 Name Eric Sommerauer

Parameter	Std. Value	Std. Temp (°C)	Post-Sampling Value	Re-Cal Yes or No?	Post-Cal Value	MQO Code[1]	Notes
Cond (uS/cm @ 25°C)	1,000	11.67	1142	N		Q	
Cond (uS/cm @ 25°C)	1,413	12.01	1436	N		A	
DO (%)		11.17	87.0	N		A	
*DO (mg/L)		11.17	9.51	N		A	Check solubility table*
pH4	pH 4	13.93	4.00	N		A	
pH 7	pH 7	13.87	7.06	N		A	
pH 10	pH 10	13.32	10.14	N		A	
Turbidity	12.7	12.87	12.8	N		A	
Turbidity							

[1] See Table 1

Table 1: Measurement Quality Objectives – comparisons are between Post-sampling Value and Post-calibration Value

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%	> 5% and ≤ 10%	> 10%

Ver. 01/2016

Stillwater Sciences

pg 4 of 4

Water Quality YSI 6920 Sonde Calibration – Daily Use

Project: SMUD UARP WQ FALL SURVEY

Unit ID: YSI EXO

Sampling Event Date(s): 11/12/18 – 11/14/18, 11/16/18

PRE-SAMPLING CALIBRATION

Date and time 11/16/18 0700 Name Eric Sommeraner

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	9.25	866	1000	
Cond (uS/cm @ 25°C)	1,413	8.83	1340	1413	
DO (%)		16.5	86.0	86.9	
DO (mg/L)*		16.5	8.41	8.40	Check solubility table* 660.6 mm Hg → 8.4 mg/L
pH4	pH4	12.2	4.05	4.00	
pH 7	pH 7	9.1	6.63	7.00	
pH 10	pH 10	7.1	9.95	10.00	
Turbidity	0.0	11.4	0.14	0.00	
Turbidity	12.4	11.1	12.12	12.4	

POST-SAMPLING CALIBRATION CHECK

Date and time 11/16/18 1400 Name Eric Sommeraner

Parameter	Std. Value	Std. Temp (°C)	Post-Sampling Value	Re-Cal Yes or No?	Post-Cal Value	MQO Code[1]	Notes
Cond (uS/cm @ 25°C)	1,000	15.97	1145	N		Q	
Cond (uS/cm @ 25°C)	1,413	16.45	1601	N		Q	
DO (%)		12.50	87.4	N		A	
*DO (mg/L)		12.50	9.30	N		A	Check solubility table*
pH4	pH 4	13.60	4.08	N		A	
pH 7	pH 7	15.10	6.95	N		A	
pH 10	pH 10	14.66	9.84	N		A	
Turbidity	0.0	17.52	0.04	N		A	
Turbidity	12.4	17.35	12.52	N		A	
[1] See Table 1							

Table 1: Measurement Quality Objectives – comparisons are between Post-sampling Value and Post-calibration Value

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%	> 5% and ≤ 10%	> 10%

Ver. 01/2016

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APPENDIX F
Analytical Laboratory Bacteria Reports

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CALIFORNIA LABORATORY SERVICES
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June 26, 2018

CLS Work Order #: 18F0955
COC #:

Maia Singer
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 06/19/18 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.

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

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA SWRCB ELAP Accreditation/Registration number 1233

Page 1 of 4

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. 16E0855 (1 of 1)

Report To:	Client Job Number 750.10 Task 0200.01
Stillwater Sciences 2855 Telegraph Ave. Suite 400 Berkeley, CA 94705	Destination Laboratory Rancho Cordova [x] CLS (916) 638-7301 3249 Fitzgerald Road Rancho Cordova, CA 95742 www.californialab.com [ ] OTHER
Project Manager: Maia Singer maia@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	

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	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
6/19/18	1200	BAC-11-JR		Surface water			6	X	X				X	
6/19/18	1180	BAC-12-IHR		Surface water			6	X	X				X	
6/19/18	1100	BAC-13-IHR		Surface water			6	X	X				X	
6/19/18	0945	BAC-14-BCR		Surface water			6	X	X				X	
6/19/18	1315	BAC-15-SCR		Surface water			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. 750.10 Task 0200.01
				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
	Kelleigh Crowe Stillwater Sciences	6/19/18 1430		

RECEIVED AT LAB BY: DATE/TIME: 6/19/18 1820 CONDITIONS/COMMENTS:

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

Page 2 of 4

CALIFORNIA LABORATORY SERVICES
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 06/26/18 14:30

Stillwater Sciences	Project:	SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0200.01	**CLS Work Order #: 18F0955**
Berkeley, CA 94705	Project Manager:	Maia Singer	COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-11-JR (18F0955-01) Surface Water	**Sampled: 06/19/18 12:00**		**Received: 06/19/18 14:30**						
E. Coli	**19.9**	1.0	MPN/100 mL	1	1805061	06/19/18	06/20/18	SM9223	
Fecal Coliforms	**4.5**	1.8	"	"	1805063	06/19/18	06/22/18	SM 9221	
BAC-12-IHR (18F0955-02) Surface Water	**Sampled: 06/19/18 11:20**		**Received: 06/19/18 14:30**						
E. Coli	<1	1.0	MPN/100 mL	1	1805061	06/19/18	06/20/18	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1805063	06/19/18	06/22/18	SM 9221	
BAC-13-IHR (18F0955-03) Surface Water	**Sampled: 06/19/18 11:00**		**Received: 06/19/18 14:30**						
E. Coli	**2.0**	1.0	MPN/100 mL	1	1805061	06/19/18	06/20/18	SM9223	
Fecal Coliforms	**2.0**	1.8	"	"	1805063	06/19/18	06/22/18	SM 9221	
BAC-14-BCR (18F0955-04) Surface Water	**Sampled: 06/19/18 09:45**		**Received: 06/19/18 14:30**						
E. Coli	<1	1.0	MPN/100 mL	1	1805061	06/19/18	06/20/18	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1805063	06/19/18	06/22/18	SM 9221	
BAC-15-SCR (18F0955-05) Surface Water	**Sampled: 06/19/18 13:15**		**Received: 06/19/18 14:30**						
E. Coli	<1	1.0	MPN/100 mL	1	1805061	06/19/18	06/20/18	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1805063	06/19/18	06/22/18	SM 9221	

CALIFORNIA LABORATORY SERVICES
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06/26/18 14:30

Stillwater Sciences	Project:	SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0200.01	**CLS Work Order #: 18F0955**
Berkeley, CA 94705	Project Manager:	Maia Singer	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
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June 27, 2018

CLS Work Order #: 18F1075
COC #:

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

Project Name: SMUD In situ, Bac-T, & Chemistry Monitoring

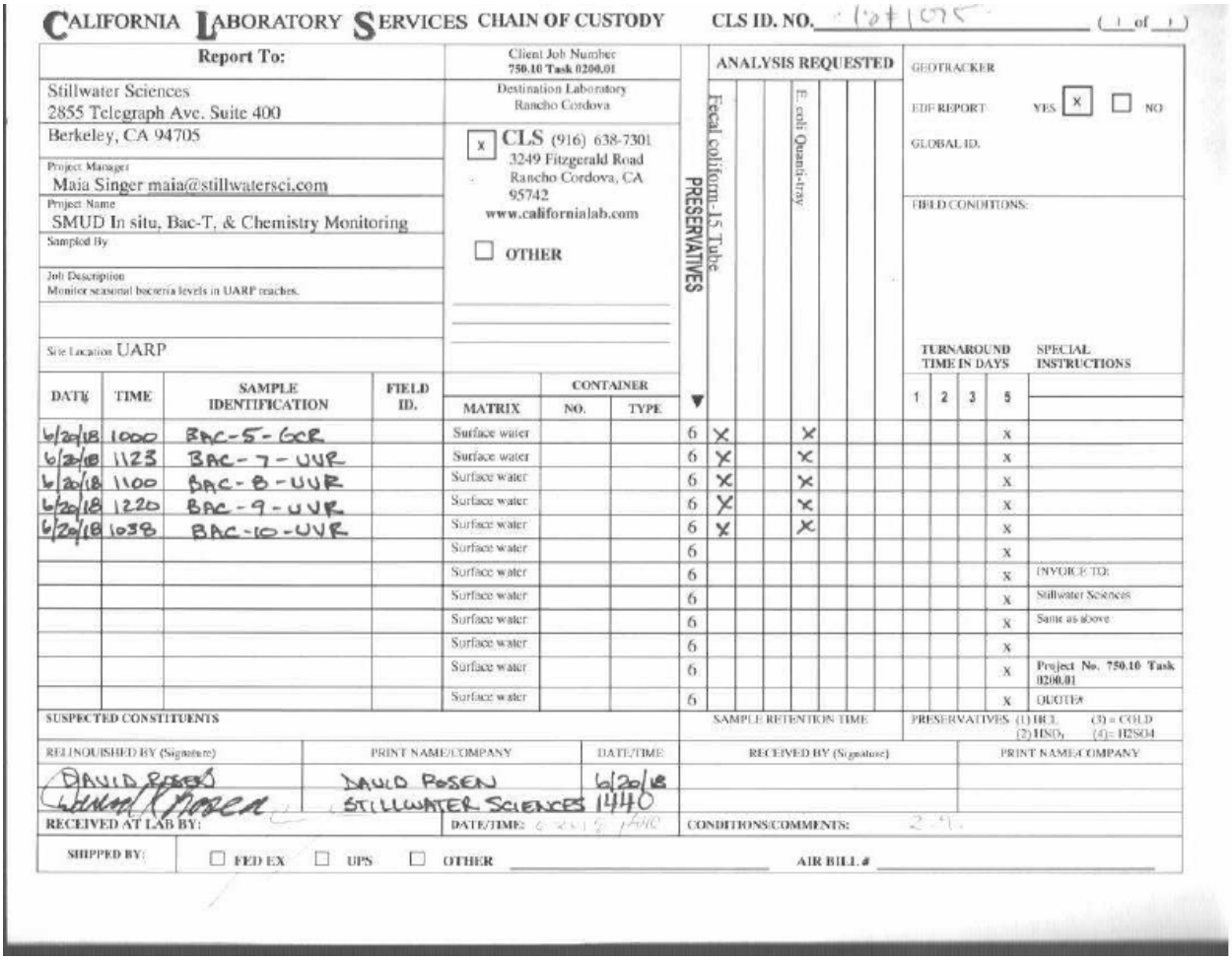
Enclosed are the results of analyses for samples received by the laboratory on 06/20/18 14:40. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness. Any comments and exceptions are addressed under the Notes and Definitions section.

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

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA SWRCB ELAP Accreditation/Registration number 1233



CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 10+1075 (1 of 1)

Report To:
Stillwater Sciences
2855 Telegraph Ave. Suite 400
Berkeley, CA 94705
Project Manager: Maia Singer maia@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 0200.01
Destination Laboratory: Rancho Cordova
[X] CLS (916) 638-7301, 3249 Fitzgerald Road, Rancho Cordova, CA 95742, www.californialab.com
[ ] OTHER

ANALYSIS REQUESTED
PRESERVATIVES: 6
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	Fecal coliform-15 Tube	E. coli Quanti-tray	TURNAROUND TIME IN DAYS: 1	2	3	5	SPECIAL INSTRUCTIONS
6/20/18	1000	BAC-5-GCR		Surface water			X	X				X	
6/20/18	1123	BAC-7-UVR		Surface water			X	X				X	
6/20/18	1100	BAC-8-UVR		Surface water			X	X				X	
6/20/18	1220	BAC-9-UVR		Surface water			X	X				X	
6/20/18	1038	BAC-10-UVR		Surface water			X	X				X	
				Surface water								X	
				Surface water								X	INVOICE TO:
				Surface water								X	Stillwater Sciences
				Surface water								X	Same as above
				Surface water								X	
				Surface water								X	Project No. 750.10 Task 0200.01
				Surface water								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
DAVID ROSEN	DAVID ROSEN STILLWATER SCIENCES	6/20/18 1440		

RECEIVED AT LAB BY: DATE/TIME: 6/21/18 1410
CONDITIONS/COMMENTS: 2.9°

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

CALIFORNIA LABORATORY SERVICES
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 06/27/18 14:06

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

Project: SMUD In situ, Bac-T, & Chemistry Monitoring
Project Number: 750.10 Task 0200.01
Project Manager: Maia Singer

CLS Work Order #: 18F1075
COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-5-GCR (18F1075-01) Surface Water	**Sampled: 06/20/18 10:00**		**Received: 06/20/18 14:40**						
Fecal Coliforms	**4.5**	1.8	MPN/100 mL	1	1805140	06/20/18 16:00	06/23/18	SM 9221	
E. Coli	**8.6**	1.0	"	"	1805108	06/20/18 17:00	06/21/18	SM9223	
BAC-7-UVR (18F1075-02) Surface Water	**Sampled: 06/20/18 11:23**		**Received: 06/20/18 14:40**						
Fecal Coliforms	**2.0**	1.8	MPN/100 mL	1	1805140	06/20/18 16:00	06/23/18	SM 9221	
E. Coli	**1.0**	1.0	"	"	1805108	06/20/18 17:00	06/21/18	SM9223	
BAC-8-UVR (18F1075-03) Surface Water	**Sampled: 06/20/18 11:00**		**Received: 06/20/18 14:40**						
Fecal Coliforms	**4.5**	1.8	MPN/100 mL	1	1805140	06/20/18 16:00	06/23/18	SM 9221	
E. Coli	**1.0**	1.0	"	"	1805108	06/20/18 17:00	06/21/18	SM9223	
BAC-9-UVR (18F1075-04) Surface Water	**Sampled: 06/20/18 12:20**		**Received: 06/20/18 14:40**						
Fecal Coliforms	**1.8**	1.8	MPN/100 mL	1	1805140	06/20/18 16:00	06/23/18	SM 9221	
E. Coli	**2.0**	1.0	"	"	1805108	06/20/18 17:00	06/21/18	SM9223	
BAC-10-UVR (18F1075-05) Surface Water	**Sampled: 06/20/18 10:38**		**Received: 06/20/18 14:40**						
Fecal Coliforms	**2.0**	1.8	MPN/100 mL	1	1805140	06/20/18 16:00	06/23/18	SM 9221	
E. Coli	<1	1.0	"	"	1805108	06/20/18 17:00	06/21/18	SM9223	

3249 Fitzgerald Road, Rancho Cordova, CA 95742 | 800.638.7301 | Tel: 916.638.7301 x102 | Fax: 916.638.4510 | www.californialab.com
Small Business #2916 | ELAP #1233 | NAICS #541380 | CA SWRCB ELAP Accreditation/Registration Number 1233

CALIFORNIA LABORATORY SERVICES
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 06/27/18 14:06

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0200.01	**CLS Work Order #: 18F1075**
Berkeley, CA 94705	Project Manager: Maia Singer	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
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July 03, 2018

CLS Work Order #: 18F1392
COC #:

Maia Singer
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 06/26/18 15:28. 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,

James Liang, Ph.D.
Laboratory Director

CA SWRCB ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. 12F1312 (1 of 1)

Report To:
Stillwater Sciences
2855 Telegraph Ave. Suite 400
Berkeley, CA 94705
Project Manager: Maia Singer maia@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 0200.01
Destination Laboratory: Rancho Cordova
[x] CLS (916) 638-7301
3249 Fitzgerald Road
Rancho Cordova, CA
95742
www.californialab.com
[ ] OTHER

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	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
6-26-18	0915	BAC-15-SCR		Surface water			6	X	X				X	
6-26-18	1058	BAC-14-BCR		Surface water			6	X	X				X	
6-26-18	1218	BAC-11-JR		Surface water			6	X	X				X	
6-26-18	1332	BAC-12-IHR		Surface water			6	X	X				X	
6-26-18	1255	BAC-13-IHR		Surface water			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. 750.10 Task 0200.01
				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
	Eric Sommerauer	6/26/18		
	Stillwater Sciences	1528		

RECEIVED AT LAB BY: DATE/TIME: 6/26/18 1525 CONDITIONS/COMMENTS: 2.2

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

CALIFORNIA LABORATORY SERVICES
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07/03/18 14:49

Stillwater Sciences	Project:	SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0200.01	**CLS Work Order #: 18F1392**
Berkeley, CA 94705	Project Manager:	Maia Singer	COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-15-SCR (18F1392-01) Surface Water	**Sampled: 06/26/18 09:15**		**Received: 06/26/18 15:28**						
E. Coli	<1	1.0	MPN/100 mL	1	1805304	06/26/18	06/27/18	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1805322	06/26/18	06/29/18	SM 9221	
BAC-14-BCR (18F1392-02) Surface Water	**Sampled: 06/26/18 10:58**		**Received: 06/26/18 15:28**						
E. Coli	<1	1.0	MPN/100 mL	1	1805304	06/26/18	06/27/18	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1805322	06/26/18	06/29/18	SM 9221	
BAC-11-JR (18F1392-03) Surface Water	**Sampled: 06/26/18 12:18**		**Received: 06/26/18 15:28**						
E. Coli	**29.2**	1.0	MPN/100 mL	1	1805304	06/26/18	06/27/18	SM9223	
Fecal Coliforms	**2.0**	1.8	"	"	1805322	06/26/18	06/29/18	SM 9221	
BAC-12-IHR (18F1392-04) Surface Water	**Sampled: 06/26/18 13:32**		**Received: 06/26/18 15:28**						
E. Coli	**1.0**	1.0	MPN/100 mL	1	1805304	06/26/18	06/27/18	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1805322	06/26/18	06/29/18	SM 9221	
BAC-13-IHR (18F1392-05) Surface Water	**Sampled: 06/26/18 12:55**		**Received: 06/26/18 15:28**						
E. Coli	<1	1.0	MPN/100 mL	1	1805304	06/26/18	06/27/18	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1805322	06/26/18	06/29/18	SM 9221	

CALIFORNIA LABORATORY SERVICES
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07/03/18 14:49

Stillwater Sciences	Project:	SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0200.01	**CLS Work Order #: 18F1392**
Berkeley, CA 94705	Project Manager:	Maia Singer	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

3249 Fitzgerald Road, Rancho Cordova, CA 95742 | 800.638.7301 | Tel: 916.638.7301 x102 | Fax: 916.638.4510 | www.californialab.com
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CALIFORNIA LABORATORY SERVICES
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July 05, 2018

CLS Work Order #: 18F1436
COC #:

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

Project Name: SMUD In situ, Bac-T, & Chemistry Monitoring

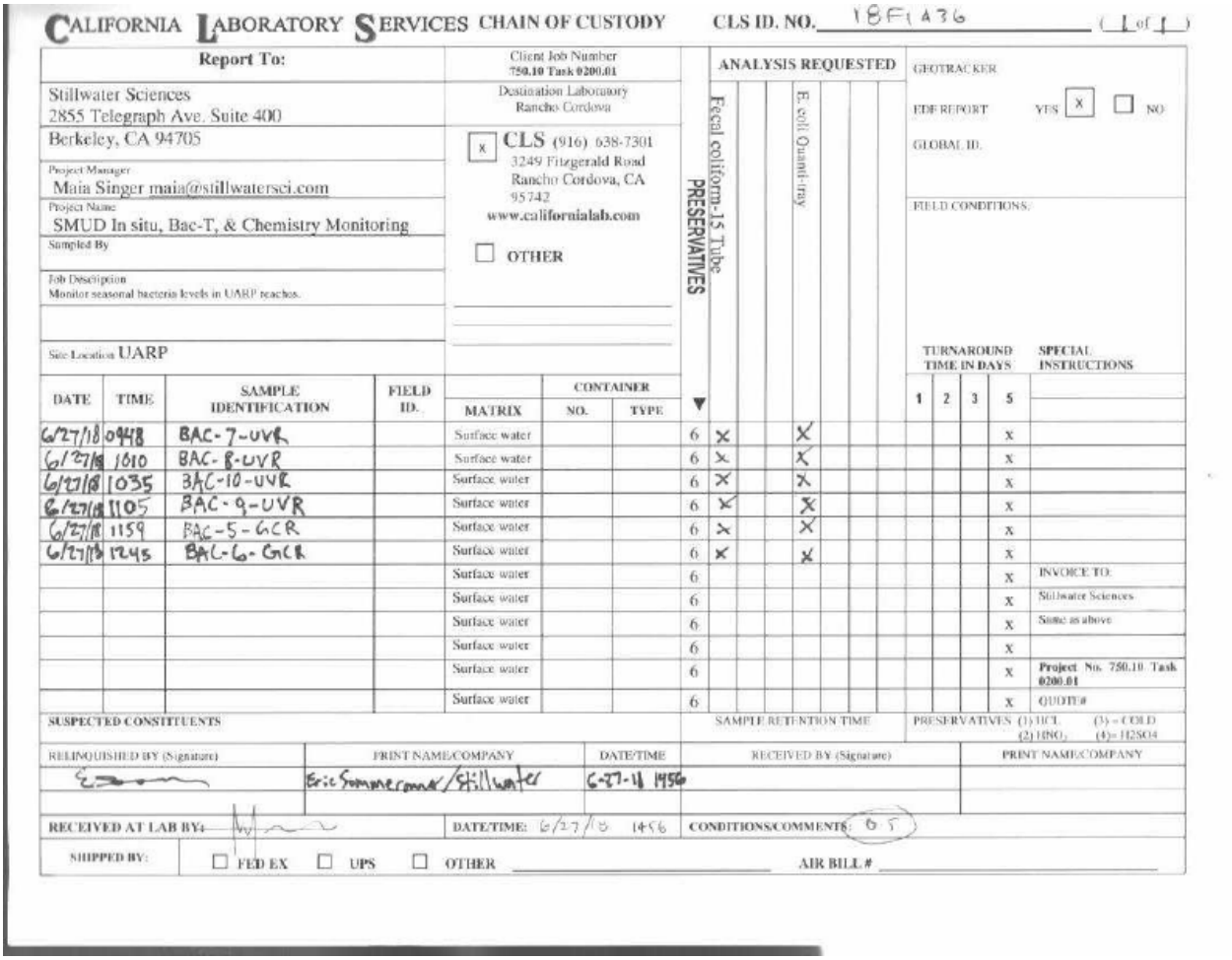
Enclosed are the results of analyses for samples received by the laboratory on 06/27/18 14:56. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

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

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA SWRCB ELAP Accreditation/Registration number 1233



CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. 18F1436 (1 of 1)

Report To:
Stillwater Sciences
2855 Telegraph Ave. Suite 400
Berkeley, CA 94705
Project Manager: Maia Singer maia@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 0200.01
Destination Laboratory: Rancho Cordova
[X] CLS (916) 638-7301, 3249 Fitzgerald Road, Rancho Cordova, CA 95742, www.californialab.com
[ ] OTHER

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	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
6/27/18	0948	BAC-7-UVR		Surface water			6	X	X				X	
6/27/18	1010	BAC-8-UVR		Surface water			6	X	X				X	
6/27/18	1035	BAC-10-UVR		Surface water			6	X	X				X	
6/27/18	1105	BAC-9-UVR		Surface water			6	X	X				X	
6/27/18	1159	BAC-5-GCR		Surface water			6	X	X				X	
6/27/18	1245	BAC-6-GCR		Surface water			6	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 0200.01
				Surface water			6						X	QUOTE#

SUSPECTED CONSTITUENTS
SAMPLE RETENTION TIME
PRESERVATIVES (1) HCL (2) HNO3 (3) = COLD (4) = H2SO4

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
[signature]	Eric Sommercamp/Stillwater	6-27-18 1956		

RECEIVED AT LAB BY: [signature] DATE/TIME: 6/27/18 1456 CONDITIONS/COMMENTS: 0.5

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

CALIFORNIA LABORATORY SERVICES
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 07/05/18 12:28

Stillwater Sciences	Project:	SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0200.01	**CLS Work Order #: 18F1436**
Berkeley, CA 94705	Project Manager:	Maia Singer	COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-7-UVR (18F1436-01) Surface Water	**Sampled: 06/27/18 09:48**		**Received: 06/27/18 14:56**						
E. Coli	**1.0**	1.0	MPN/100 mL	1	1805355	06/27/18	06/28/18	SM9223	
Fecal Coliforms	**2.0**	1.8	"	"	1805357	06/27/18	06/30/18	SM 9221	
BAC-8-UVR (18F1436-02) Surface Water	**Sampled: 06/27/18 10:10**		**Received: 06/27/18 14:56**						
E. Coli	**3.1**	1.0	MPN/100 mL	1	1805355	06/27/18	06/28/18	SM9223	
Fecal Coliforms	**4.0**	1.8	"	"	1805357	06/27/18	06/30/18	SM 9221	
BAC-10-UVR (18F1436-03) Surface Water	**Sampled: 06/27/18 10:35**		**Received: 06/27/18 14:56**						
E. Coli	<1	1.0	MPN/100 mL	1	1805355	06/27/18	06/28/18	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1805357	06/27/18	06/30/18	SM 9221	
BAC-9-UVR (18F1436-04) Surface Water	**Sampled: 06/27/18 11:05**		**Received: 06/27/18 14:56**						
E. Coli	**3.1**	1.0	MPN/100 mL	1	1805355	06/27/18	06/28/18	SM9223	
Fecal Coliforms	**23**	1.8	"	"	1805357	06/27/18	06/30/18	SM 9221	
BAC-5-GCR (18F1436-05) Surface Water	**Sampled: 06/27/18 11:59**		**Received: 06/27/18 14:56**						
E. Coli	**7.5**	1.0	MPN/100 mL	1	1805355	06/27/18	06/28/18	SM9223	
Fecal Coliforms	**6.8**	1.8	"	"	1805357	06/27/18	06/30/18	SM 9221	
BAC-6-GCR (18F1436-06) Surface Water	**Sampled: 06/27/18 12:45**		**Received: 06/27/18 14:56**						
E. Coli	**1.0**	1.0	MPN/100 mL	1	1805355	06/27/18	06/28/18	SM9223	
Fecal Coliforms	**13**	1.8	"	"	1805357	06/27/18	06/30/18	SM 9221	

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CALIFORNIA LABORATORY SERVICES
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07/05/18 12:28

Stillwater Sciences	Project:	SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0200.01	**CLS Work Order #: 18F1436**
Berkeley, CA 94705	Project Manager:	Maia Singer	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

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CALIFORNIA LABORATORY SERVICES
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July 10, 2018

CLS Work Order #: 18G0085
COC #:

Maia Singer
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 07/02/18 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.

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

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA SWRCB ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

07/10/18 13:24

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0200.01	**CLS Work Order #: 18G0085**
Berkeley, CA 94705	Project Manager: Maia Singer	COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-11-JR (18G0085-01) Surface Water	**Sampled: 07/02/18 12:15**		**Received: 07/02/18 15:15**							
E. Coli	**5.2**	1.0	1.0	MPN/100 mL	1	1805478	07/02/18	07/03/18	SM9223	
Fecal Coliforms	**2.0**	1.8	1.8	"	"	1805496	"	07/05/18	SM 9221	
BAC-12-IHR (18G0085-02) Surface Water	**Sampled: 07/02/18 11:30**		**Received: 07/02/18 15:15**							
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1805478	07/02/18	07/03/18	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1805496	"	07/05/18	SM 9221	
BAC-13-IHR (18G0085-03) Surface Water	**Sampled: 07/02/18 11:20**		**Received: 07/02/18 15:15**							
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1805478	07/02/18	07/03/18	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1805496	"	07/05/18	SM 9221	
BAC-14-BCR (18G0085-04) Surface Water	**Sampled: 07/02/18 10:00**		**Received: 07/02/18 15:15**							
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1805478	07/02/18	07/03/18	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1805496	"	07/05/18	SM 9221	
BAC-15-SCR (18G0085-05) Surface Water	**Sampled: 07/02/18 13:20**		**Received: 07/02/18 15:15**							
E. Coli	**344.8**	1.0	1.0	MPN/100 mL	1	1805478	07/02/18	07/03/18	SM9223	
Fecal Coliforms	**130**	1.8	1.8	"	"	1805496	"	07/05/18	SM 9221	

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Small Business #2916 | ELAP #1233 | NAICS #541380 | CA SWRCB ELAP Accreditation/Registration Number 1233

CALIFORNIA LABORATORY SERVICES
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07/10/18 13:24

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0200.01	**CLS Work Order #: 18G0085**
Berkeley, CA 94705	Project Manager: Maia Singer	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.

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CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. 182008 (__ of __)

Report To:	Client Job Number: 750.10 Task 0200.01
Stillwater Sciences 2855 Telegraph Ave. Suite 400 Berkeley, CA 94705	Destination Laboratory: Rancho Cordova
Project Manager: Maia Singer maia@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 UARP reaches.	
Site Location: UARP	

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
7/2/18	1215	BAC-11-SR		Surface water			6	X			X							X	
7/2/18	1130	BAC-12-IHR		Surface water			6	X			X							X	
7/2/18	1120	BAC-13-IHR		Surface water			6	X			X							X	
7/2/18	1000	BAC-14-BCR		Surface water			6	X			X							X	
7/2/18	1320	BAC-15-SCR		Surface water			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. 750.10 Task 0200.01
				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
	Kelleigh Crowe Stillwater Sciences	7/2/18 1515		

RECEIVED AT LAB BY: DATE/TIME: 7-2-18 1515 CONDITIONS/COMMENTS: 1.5°

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

CALIFORNIA LABORATORY SERVICES
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July 11, 2018

CLS Work Order #: 18G0187
COC #:

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

Project Name: SMUD In situ, Bac-T, & Chemistry Monitoring

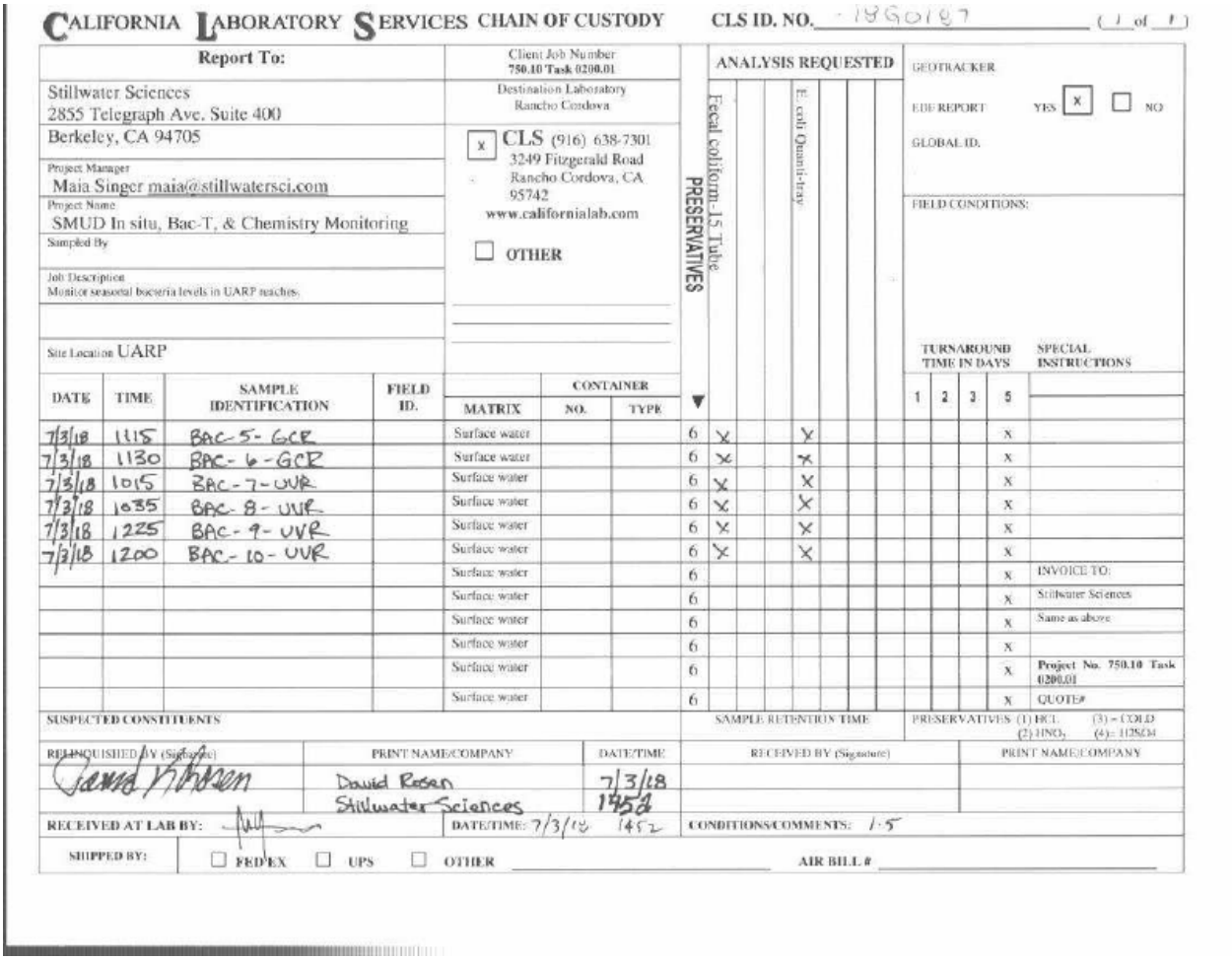
Enclosed are the results of analyses for samples received by the laboratory on 07/03/18 14:52. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

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

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA SWRCB ELAP Accreditation/Registration number 1233



CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. 180187 (1 of 1)

Report To:
Stillwater Sciences
2855 Telegraph Ave. Suite 400
Berkeley, CA 94705
Project Manager: Maia Singer maia@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 0200.01
Destination Laboratory: Rancho Cordova
[x] CLS (916) 638-7301, 3249 Fitzgerald Road, Rancho Cordova, CA 95742, www.californialab.com
[ ] OTHER

ANALYSIS REQUESTED: Fecal coliform-15 Tube; E. coli Quanti-Tray
PRESERVATIVES

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
7/3/18	1115	BAC-5-GCR		Surface water			6	X	X				X	
7/3/18	1130	BAC-6-GCR		Surface water			6	X	X				X	
7/3/18	1015	BAC-7-UVR		Surface water			6	X	X				X	
7/3/18	1035	BAC-8-UVR		Surface water			6	X	X				X	
7/3/18	1225	BAC-9-UVR		Surface water			6	X	X				X	
7/3/18	1200	BAC-10-UVR		Surface water			6	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 0200.01
				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
David Rosen	David Rosen Stillwater Sciences	7/3/18 1458		

RECEIVED AT LAB BY: DATE/TIME: 7/3/18 1452
CONDITIONS/COMMENTS: 1.5
SHIPPED BY: [ ] FEDEX [ ] UPS [ ] OTHER AIR BILL #

CALIFORNIA LABORATORY SERVICES
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 07/11/18 15:10

Stillwater Sciences	Project:	SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0200.01	**CLS Work Order #: 18G0187**
Berkeley, CA 94705	Project Manager:	Maia Singer	COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-5-GCR (18G0187-01) Surface Water	**Sampled: 07/03/18 11:15**		**Received: 07/03/18 14:52**						
E. Coli	**5.2**	1.0	MPN/100 mL	1	1805535	07/03/18	07/04/18	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1805540	"	07/06/18	SM 9221	
BAC-6-GCR (18G0187-02) Surface Water	**Sampled: 07/03/18 11:30**		**Received: 07/03/18 14:52**						
E. Coli	**7.5**	1.0	MPN/100 mL	1	1805535	07/03/18	07/04/18	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1805540	"	07/06/18	SM 9221	
BAC-7-UVR (18G0187-03) Surface Water	**Sampled: 07/03/18 10:15**		**Received: 07/03/18 14:52**						
E. Coli	**2.0**	1.0	MPN/100 mL	1	1805535	07/03/18	07/04/18	SM9223	
Fecal Coliforms	**2.0**	1.8	"	"	1805540	"	07/06/18	SM 9221	
BAC-8-UVR (18G0187-04) Surface Water	**Sampled: 07/03/18 10:35**		**Received: 07/03/18 14:52**						
E. Coli	**2.0**	1.0	MPN/100 mL	1	1805535	07/03/18	07/04/18	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1805540	"	07/06/18	SM 9221	
BAC-9-UVR (18G0187-05) Surface Water	**Sampled: 07/03/18 12:25**		**Received: 07/03/18 14:52**						
E. Coli	**6.3**	1.0	MPN/100 mL	1	1805535	07/03/18	07/04/18	SM9223	
Fecal Coliforms	**2.0**	1.8	"	"	1805540	"	07/06/18	SM 9221	
BAC-10-UVR (18G0187-06) Surface Water	**Sampled: 07/03/18 12:00**		**Received: 07/03/18 14:52**						
E. Coli	**1.0**	1.0	MPN/100 mL	1	1805535	07/03/18	07/04/18	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1805540	"	07/06/18	SM 9221	

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Small Business #2916 | ELAP #1233 | NAICS #541380 | CA SWRCB ELAP Accreditation/Registration Number 1233

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

07/11/18 15:10

Stillwater Sciences	Project:	SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0200.01	**CLS Work Order #: 18G0187**
Berkeley, CA 94705	Project Manager:	Maia Singer	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

3249 Fitzgerald Road, Rancho Cordova, CA 95742 | 800.638.7301 | Tel: 916.638.7301 x102 | Fax: 916.638.4510 | www.californialab.com
Small Business #2916 | ELAP #1233 | NAICS #541380 | CA SWRCB ELAP Accreditation/Registration Number 1233

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

July 18, 2018

CLS Work Order #: 18G0642
COC #:

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

Project Name: SMUD In situ, Bac-T, & Chemistry Monitoring

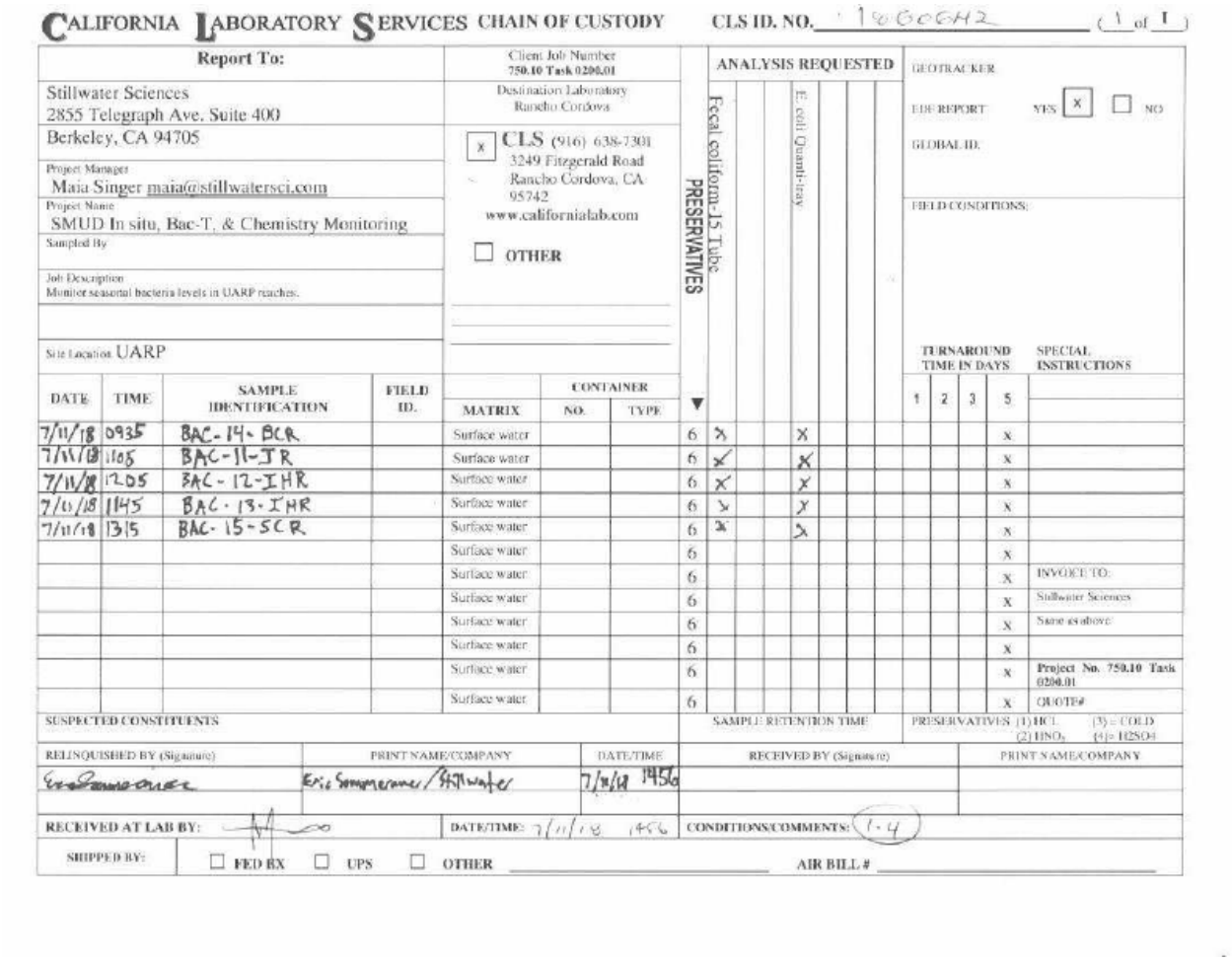
Enclosed are the results of analyses for samples received by the laboratory on 07/11/18 14:56. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness. Any comments and exceptions are addressed under the Notes and Definitions section.

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

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA SWRCB ELAP Accreditation/Registration number 1233



CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. 190604-2 (1 of 1)

Report To:
Stillwater Sciences
2855 Telegraph Ave. Suite 400
Berkeley, CA 94705
Project Manager: Maia Singer maia@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 0200.01
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.	CONTAINER MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	Fecal coliform-15 Tube	E. coli Quanti-tray	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
7/11/18	0935	BAC-14-BCR		Surface water			6	X	X				X	
7/11/18	1105	BAC-11-JR		Surface water			6	X	X				X	
7/11/18	1205	BAC-12-IHR		Surface water			6	X	X				X	
7/11/18	1145	BAC-13-IHR		Surface water			6	X	X				X	
7/11/18	1315	BAC-15-SCR		Surface water			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. 750.10 Task 0200.01
				Surface water			6						X	QUOTE#

SUSPECTED CONSTITUENTS
SAMPLE RETENTION TIME
PRESERVATIVES (1) HCL (2) HNO_3 (3) = COLD (4) = $H2SO_4$

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
[signature]	Eric Sommerman/Stillwater	7/11/18 1456		

RECEIVED AT LAB BY: [signature] DATE/TIME: 7/11/18 1456 CONDITIONS/COMMENTS: 1-4

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

CALIFORNIA LABORATORY SERVICES
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 07/18/18 15:04

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

Project: SMUD In situ, Bac-T, & Chemistry Monitoring
Project Number: 750.10 Task 0200.01
Project Manager: Maia Singer

CLS Work Order #: 18G0642
COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-14-BCR (18G0642-01) Surface Water	**Sampled: 07/11/18 09:35**		**Received: 07/11/18 14:56**						
Fecal Coliforms	<1.8	1.8	MPN/100 mL	1	1805792	07/11/18 16:00	07/14/18	SM 9221	
E. Coli	<1	1.0	"	"	1805788	07/11/18 17:00	07/12/18	SM9223	
BAC-11-JR (18G0642-02) Surface Water	**Sampled: 07/11/18 11:05**		**Received: 07/11/18 14:56**						
Fecal Coliforms	**350**	1.8	MPN/100 mL	1	1805792	07/11/18 16:00	07/14/18	SM 9221	
E. Coli	**261.3**	1.0	"	"	1805788	07/11/18 17:00	07/12/18	SM9223	
BAC-12-IHR (18G0642-03) Surface Water	**Sampled: 07/11/18 12:05**		**Received: 07/11/18 14:56**						
Fecal Coliforms	**2.0**	1.8	MPN/100 mL	1	1805792	07/11/18 16:00	07/14/18	SM 9221	
E. Coli	**1.0**	1.0	"	"	1805788	07/11/18 17:00	07/12/18	SM9223	
BAC-13-IHR (18G0642-04) Surface Water	**Sampled: 07/11/18 11:45**		**Received: 07/11/18 14:56**						
Fecal Coliforms	<1.8	1.8	MPN/100 mL	1	1805792	07/11/18 16:00	07/14/18	SM 9221	
E. Coli	**2.0**	1.0	"	"	1805788	07/11/18 17:00	07/12/18	SM9223	
BAC-15-SCR (18G0642-05) Surface Water	**Sampled: 07/11/18 13:15**		**Received: 07/11/18 14:56**						
Fecal Coliforms	**350**	1.8	MPN/100 mL	1	1805792	07/11/18 16:00	07/14/18	SM 9221	
E. Coli	**248.1**	1.0	"	"	1805788	07/11/18 17:00	07/12/18	SM9223	

CALIFORNIA LABORATORY SERVICES
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 07/18/18 15:04

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0200.01	**CLS Work Order #: 18G0642**
Berkeley, CA 94705	Project Manager: Maia Singer	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

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Small Business #2916 | ELAP #1233 | NAICS #541380 | CA SWRCB ELAP Accreditation/Registration Number 1233

CALIFORNIA LABORATORY SERVICES
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July 19, 2018

CLS Work Order #: 18G0709
COC #:

Maia Singer
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 07/12/18 13:15. 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.

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

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA SWRCB ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES
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07/19/18 12:32

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0200.01	**CLS Work Order #: 18G0709**
Berkeley, CA 94705	Project Manager: Maia Singer	COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-7-UVR (18G0709-01) Surface Water	**Sampled: 07/12/18 08:25**		**Received: 07/12/18 13:15**							
E. Coli	**1.0**	1.0	1.0	MPN/100 mL	1	1805807	07/12/18	07/13/18	SM9223	
Fecal Coliforms	**2.0**	1.8	1.8	"	"	1805827	07/12/18	07/15/18	SM 9221	
BAC-8-UVR (18G0709-02) Surface Water	**Sampled: 07/12/18 08:50**		**Received: 07/12/18 13:15**							
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1805807	07/12/18	07/13/18	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1805827	07/12/18	07/15/18	SM 9221	
BAC-9-UVR (18G0709-03) Surface Water	**Sampled: 07/12/18 09:50**		**Received: 07/12/18 13:15**							
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1805807	07/12/18	07/13/18	SM9223	
Fecal Coliforms	**2.0**	1.8	1.8	"	"	1805827	07/12/18	07/15/18	SM 9221	
BAC-10-UVR (18G0709-04) Surface Water	**Sampled: 07/12/18 09:15**		**Received: 07/12/18 13:15**							
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1805807	07/12/18	07/13/18	SM9223	
Fecal Coliforms	**2.0**	1.8	1.8	"	"	1805827	07/12/18	07/15/18	SM 9221	
BAC-5-GCR (18G0709-05) Surface Water	**Sampled: 07/12/18 11:05**		**Received: 07/12/18 13:15**							
E. Coli	**1.0**	1.0	1.0	MPN/100 mL	1	1805807	07/12/18	07/13/18	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1805827	07/12/18	07/15/18	SM 9221	
BAC-6-GCR (18G0709-06) Surface Water	**Sampled: 07/12/18 10:40**		**Received: 07/12/18 13:15**							
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1805807	07/12/18	07/13/18	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1805827	07/12/18	07/15/18	SM 9221	

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CALIFORNIA LABORATORY SERVICES
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07/19/18 12:32

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0200.01	**CLS Work Order #: 18G0709**
Berkeley, CA 94705	Project Manager: Maia Singer	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.

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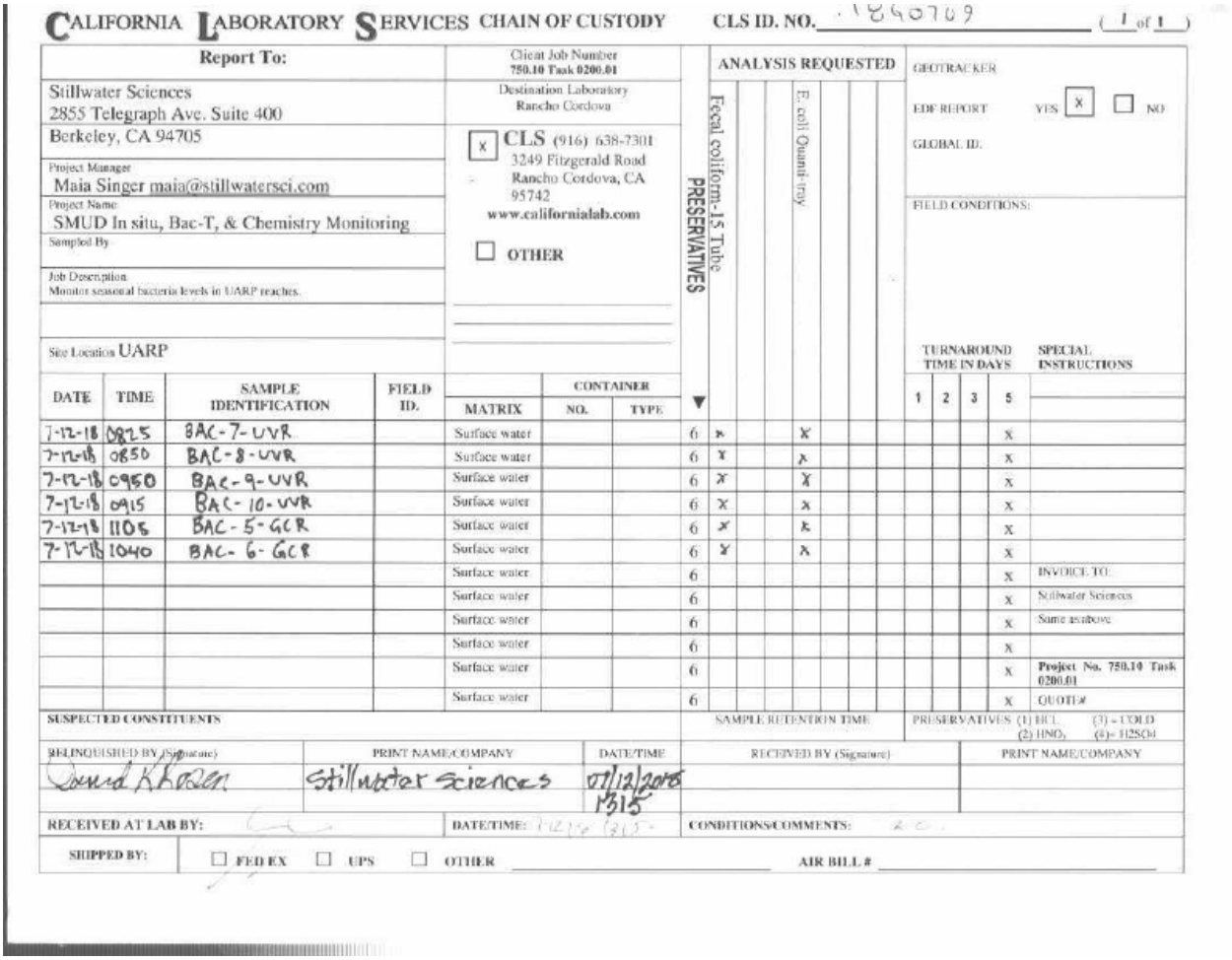

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 1890709 (1 of 1)

Report To:
Stillwater Sciences
2855 Telegraph Ave. Suite 400
Berkeley, CA 94705
Project Manager: Maia Singer maia@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 0200.01
Destination Laboratory: Rancho Cordova
[X] CLS (916) 638-7301, 3249 Fitzgerald Road, Rancho Cordova, CA 95742, www.californialab.com
[ ] OTHER

ANALYSIS REQUESTED
PRESERVATIVES: 6
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	Fecal coliform-15 Tube	E. coli Quanti-tray	TURNAROUND TIME IN DAYS: 1	2	3	5	SPECIAL INSTRUCTIONS
7-12-18	0825	BAC-7-UVR		Surface water			X	X				X	
7-12-18	0850	BAC-8-UVR		Surface water			X	X				X	
7-12-18	0950	BAC-9-UVR		Surface water			X	X				X	
7-12-18	0915	BAC-10-UVR		Surface water			X	X				X	
7-12-18	1105	BAC-5-GCR		Surface water			X	X				X	
7-12-18	1040	BAC-6-GCR		Surface water			X	X				X	
				Surface water								X	INVOICE TO:
				Surface water								X	Stillwater Sciences
				Surface water								X	Same as above
				Surface water								X	
				Surface water								X	Project No. 750.10 Task 0200.01
				Surface water								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
David Kratzer	Stillwater Sciences	07/12/2018 1315		

RECEIVED AT LAB BY: DATE/TIME: 7/12/18 1315 CONDITIONS/COMMENTS: 2 C

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

CALIFORNIA LABORATORY SERVICES
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July 24, 2018

CLS Work Order #: 18G0947
COC #:

Maia Singer
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 07/17/18 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,

James Liang, Ph.D.
Laboratory Director

CA SWRCB ELAP Accreditation/Registration number 1233

Page 1 of 4

CALIFORNIA LABORATORY SERVICES
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07/24/18 13:46

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0200.01	**CLS Work Order #: 18G0947**
Berkeley, CA 94705	Project Manager: Maia Singer	COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-11-JR (18G0947-01) Surface Water	**Sampled: 07/17/18 12:50**		**Received: 07/17/18 15:45**							
E. Coli	**6.3**	1.0	1.0	MPN/100 mL	1	1805939	07/17/18	07/19/18	SM9223	
Fecal Coliforms	**4.0**	1.8	1.8	"	"	1805940	"	07/20/18	SM 9221	
BAC-12-IHR (18G0947-02) Surface Water	**Sampled: 07/17/18 13:40**		**Received: 07/17/18 15:45**							
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1805939	07/17/18	07/19/18	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1805940	"	07/20/18	SM 9221	
BAC-13-IHR (18G0947-03) Surface Water	**Sampled: 07/17/18 13:30**		**Received: 07/17/18 15:45**							
E. Coli	**73.8**	1.0	1.0	MPN/100 mL	1	1805939	07/17/18	07/19/18	SM9223	
Fecal Coliforms	**23**	1.8	1.8	"	"	1805940	"	07/20/18	SM 9221	
BAC-14-BCR (18G0947-04) Surface Water	**Sampled: 07/17/18 11:20**		**Received: 07/17/18 15:45**							
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1805939	07/17/18	07/19/18	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1805940	"	07/20/18	SM 9221	
BAC-15-SCR (18G0947-05) Surface Water	**Sampled: 07/17/18 09:30**		**Received: 07/17/18 15:45**							
E. Coli	**2.0**	1.0	1.0	MPN/100 mL	1	1805939	07/17/18	07/19/18	SM9223	
Fecal Coliforms	**1.8**	1.8	1.8	"	"	1805940	"	07/20/18	SM 9221	

CALIFORNIA LABORATORY SERVICES
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07/24/18 13:46

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0200.01	**CLS Work Order #: 18G0947**
Berkeley, CA 94705	Project Manager: Maia Singer	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.

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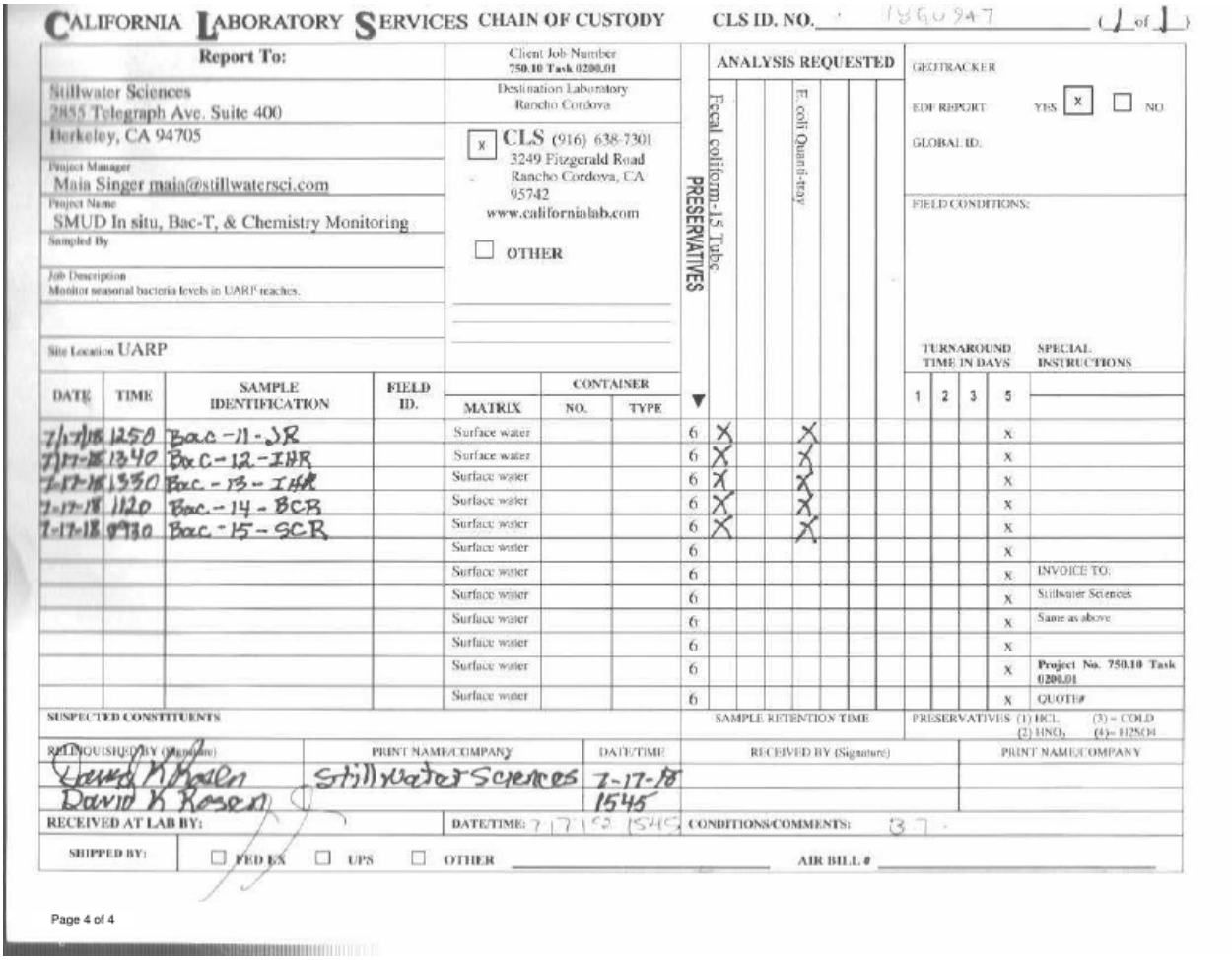

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 1960947 (1 of 1)

Report To:
Stillwater Sciences
2855 Telegraph Ave. Suite 400
Berkeley, CA 94705
Project Manager: Maia Singer maia@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 0200.01
Destination Laboratory: Rancho Cordova
[X] CLS (916) 638-7301, 3249 Fitzgerald Road, Rancho Cordova, CA 95742, www.californialab.com
[ ] OTHER

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	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
7/17/18	1250	Bac-11-SR		Surface water			6	X	X				X	
7/17/18	1340	Bac-12-IHR		Surface water			6	X	X				X	
7-17-18	1350	Bac-13-IHR		Surface water			6	X	X				X	
7-17-18	1120	Bac-14-BCR		Surface water			6	X	X				X	
7-17-18	0930	Bac-15-SCR		Surface water			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. 750.10 Task 0200.01
				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
David K Rosen	Stillwater Sciences	7-17-18 1545		

RECEIVED AT LAB BY: DATE/TIME: 7/17/18 1545 CONDITIONS/COMMENTS: 3.7

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

Page 4 of 4

CALIFORNIA LABORATORY SERVICES
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July 25, 2018

CLS Work Order #: 18G0977
COC #:

Maia Singer
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 07/18/18 13:45. 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,

James Liang, Ph.D.
Laboratory Director

CA SWRCB ELAP Accreditation/Registration number 1233

Page 1 of 4

CALIFORNIA LABORATORY SERVICES
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07/25/18 07:21

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0200.01	**CLS Work Order #: 18G0977**
Berkeley, CA 94705	Project Manager: Maia Singer	COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-5-GCR (18G0977-01) Surface Water	**Sampled: 07/18/18 10:00**		**Received: 07/18/18 13:45**							
E. Coli	**1.0**		1.0	MPN/100 mL	1	1805972	07/18/18	07/19/18	SM9223	
Fecal Coliforms	**7.8**		1.8	"	"	1805974	07/18/18	07/21/18	SM 9221	
BAC-6-GCR (18G0977-02) Surface Water	**Sampled: 07/18/18 10:45**		**Received: 07/18/18 13:45**							
E. Coli	**2.0**		1.0	MPN/100 mL	1	1805972	07/18/18	07/19/18	SM9223	
Fecal Coliforms	<1.8		1.8	"	"	1805974	07/18/18	07/21/18	SM 9221	
BAC-7-UVR (18G0977-03) Surface Water	**Sampled: 07/18/18 09:15**		**Received: 07/18/18 13:45**							
E. Coli	<1		1.0	MPN/100 mL	1	1805972	07/18/18	07/19/18	SM9223	
Fecal Coliforms	<1.8		1.8	"	"	1805974	07/18/18	07/21/18	SM 9221	
BAC-8-UVR (18G0977-04) Surface Water	**Sampled: 07/18/18 09:30**		**Received: 07/18/18 13:45**							
E. Coli	**1.0**		1.0	MPN/100 mL	1	1805972	07/18/18	07/19/18	SM9223	
Fecal Coliforms	<1.8		1.8	"	"	1805974	07/18/18	07/21/18	SM 9221	
BAC-9-UVR (18G0977-05) Surface Water	**Sampled: 07/18/18 11:40**		**Received: 07/18/18 13:45**							
E. Coli	**3.1**		1.0	MPN/100 mL	1	1805972	07/18/18	07/19/18	SM9223	
Fecal Coliforms	**9.3**		1.8	"	"	1805974	07/18/18	07/21/18	SM 9221	
BAC-10-UVR (18G0977-06) Surface Water	**Sampled: 07/18/18 11:10**		**Received: 07/18/18 13:45**							
E. Coli	<1		1.0	MPN/100 mL	1	1805972	07/18/18	07/19/18	SM9223	
Fecal Coliforms	<1.8		1.8	"	"	1805974	07/18/18	07/21/18	SM 9221	

CALIFORNIA LABORATORY SERVICES
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07/25/18 07:21

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0200.01	**CLS Work Order #: 18G0977**
Berkeley, CA 94705	Project Manager: Maia Singer	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.

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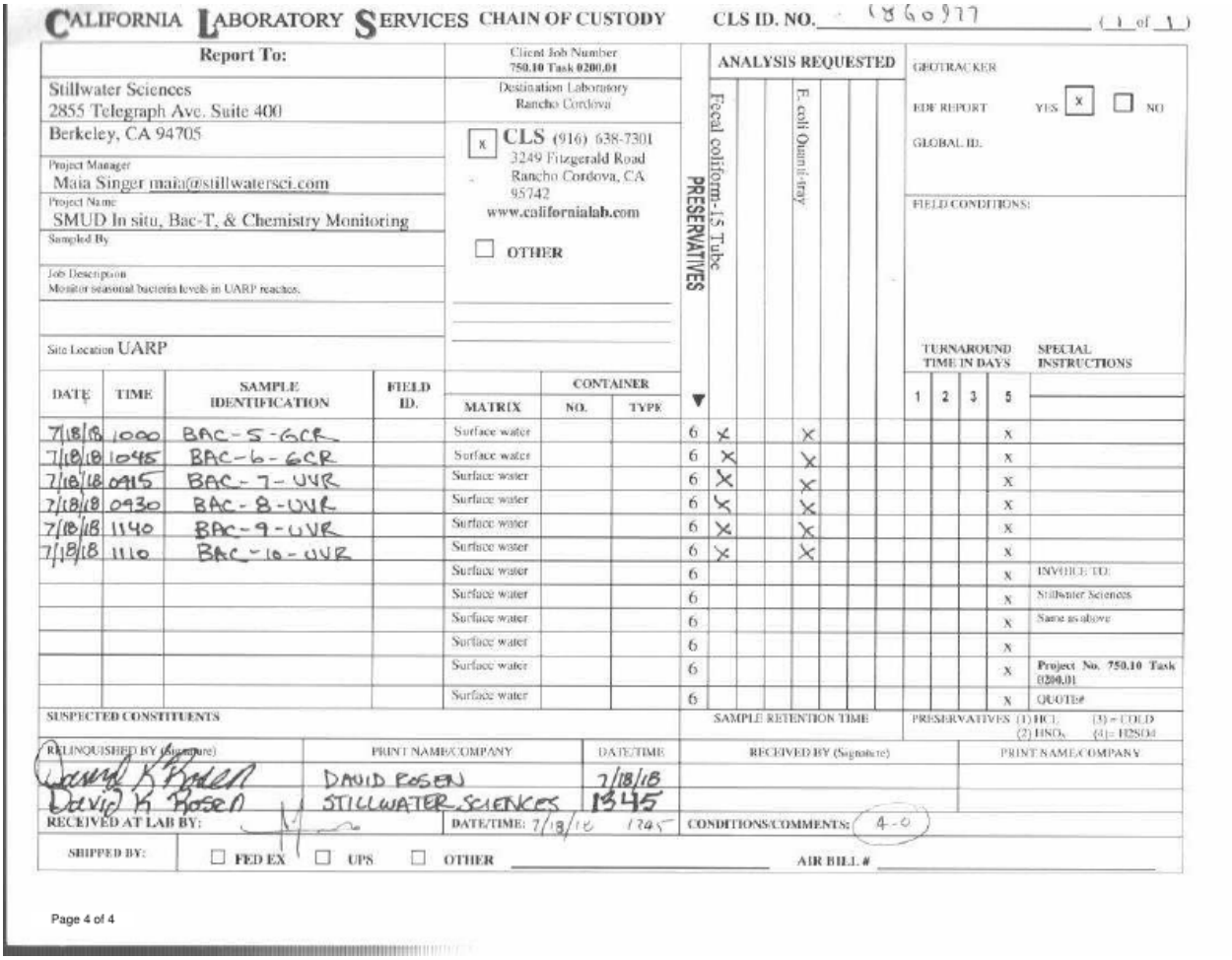
Small Business #2916 | ELAP #1233 | NAICS #541380 | CA SWRCB ELAP Accreditation/Registration Number 1233



CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY

CLS ID. NO. 186077 (1 of 1)

Report To:
Stillwater Sciences
2855 Telegraph Ave. Suite 400
Berkeley, CA 94705
Project Manager: Maia Singer maia@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 0200.01
Destination Laboratory: Rancho Cordova
[X] CLS (916) 638-7301, 3249 Fitzgerald Road, Rancho Cordova, CA 95742, www.californialab.com
[ ] OTHER

ANALYSIS REQUESTED: Fecal coliform-I.S. Tube; E. coli Quanti-tray

PRESERVATIVES

GEOTRACKER
EDF REPORT: YES [X] NO [ ]
GLOBAL ID:
FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	Fecal coliform-I.S. Tube	E. coli Quanti-tray	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
7/18/18	1000	BAC-5-GCR		Surface water			6	X	X				X	
7/18/18	1045	BAC-6-GCR		Surface water			6	X	X				X	
7/18/18	0915	BAC-7-UVR		Surface water			6	X	X				X	
7/18/18	0930	BAC-8-UVR		Surface water			6	X	X				X	
7/18/18	1140	BAC-9-UVR		Surface water			6	X	X				X	
7/18/18	1110	BAC-10-UVR		Surface water			6	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 0200.01
				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
David K Rosen	DAVID ROSEN	7/18/18		
David K Rosen	STILLWATER SCIENCES	1345		

RECEIVED AT LAB BY: DATE/TIME: 7/18/18 1745 CONDITIONS/COMMENTS: 4-0

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

Page 4 of 4

CALIFORNIA LABORATORY SERVICES
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August 01, 2018

CLS Work Order #: 18G1398
COC #:

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

Project Name: SMUD In situ, Bac-T, & Chemistry Monitoring

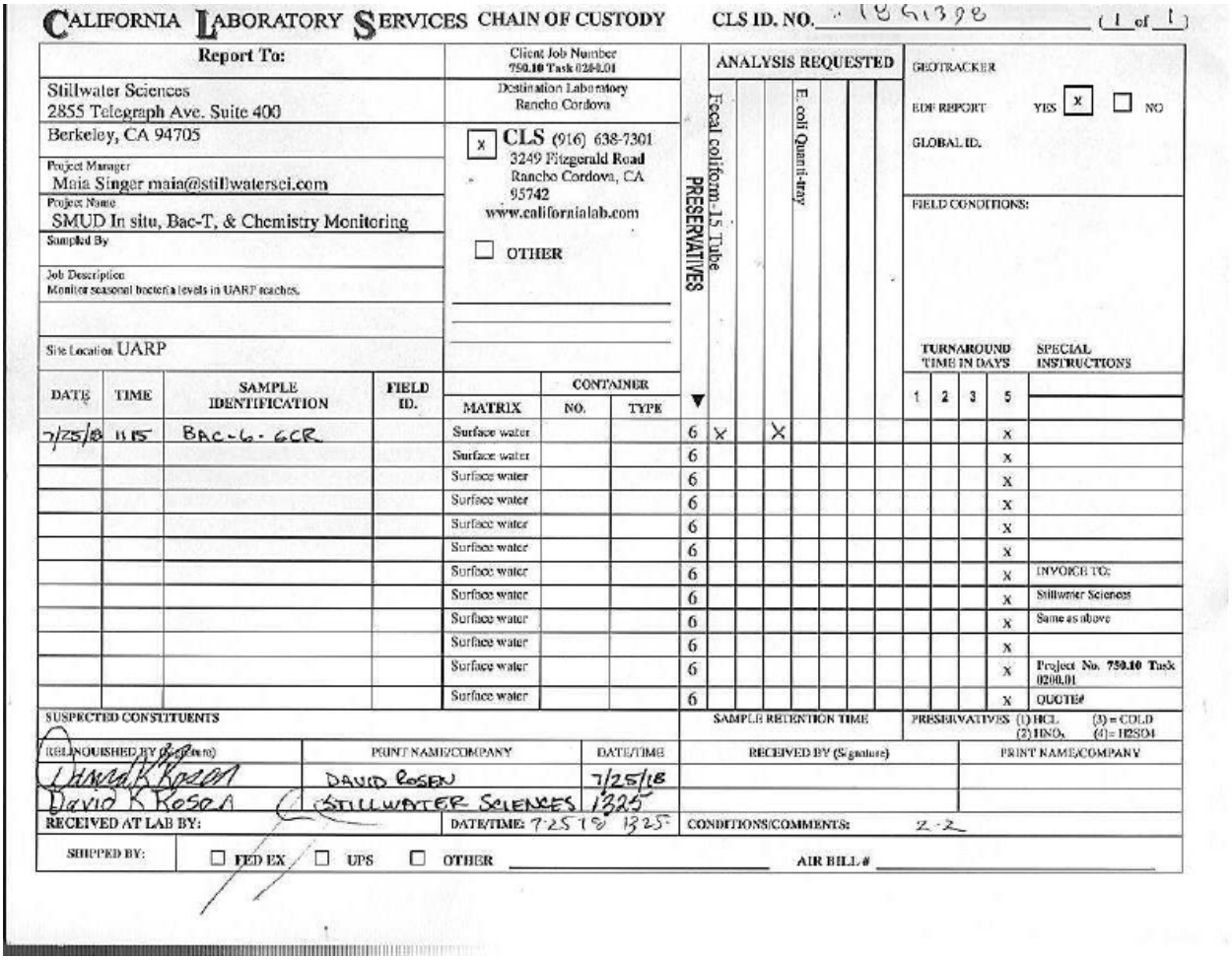
Enclosed are the results of analyses for samples received by the laboratory on 07/25/18 13:25. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness. Any comments and exceptions are addressed under the Notes and Definitions section.

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

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA SWRCB ELAP Accreditation/Registration number 1233



CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. 186398 (1 of 1)

Report To:
Stillwater Sciences
2855 Telegraph Ave. Suite 400
Berkeley, CA 94705
Project Manager: Maia Singer maia@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 0200.01
Destination Laboratory: Rancho Cordova
[x] CLS (916) 638-7301, 3249 Fitzgerald Road, Rancho Cordova, CA 95742, www.californialab.com
[ ] OTHER

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	TURNAROUND TIME IN DAYS: 1	2	3	5	SPECIAL INSTRUCTIONS
7/25/18	1315	BAC-6-6CR		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	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 0200.01
				Surface water			6						X	QUOTE#

SUSPECTED CONSTITUENTS
SAMPLE RETENTION TIME
PRESERVATIVES (1) HCL (2) HNO3 (3) = COLD (4) = H2SO4

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
David K Rosen	DAVID ROSEN	7/25/18		
David K Rosen	STILLWATER SCIENCES	1325		

RECEIVED AT LAB BY: DATE/TIME: 7-25-18 1325 CONDITIONS/COMMENTS: 2-2

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

CALIFORNIA LABORATORY SERVICES
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 08/01/18 15:24

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0200.01	**CLS Work Order #: 18G1398**
Berkeley, CA 94705	Project Manager: Maia Singer	COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-6-GCR (18G1398-01) Surface Water	**Sampled: 07/25/18 11:15**	**Received: 07/25/18 13:25**							
Fecal Coliforms	<1.8	1.8	MPN/100 mL	1	1806149	07/25/18 14:00	07/28/18	SM 9221	
E. Coli	<1	1.0	"	"	1806147	"	07/26/18	SM9223	

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CALIFORNIA LABORATORY SERVICES
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 08/01/18 15:24

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0200.01	**CLS Work Order #: 18G1398**
Berkeley, CA 94705	Project Manager: Maia Singer	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

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CALIFORNIA LABORATORY SERVICES
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August 30, 2018

CLS Work Order #: 18H1399
COC #:

Maia Singer
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 08/23/18 14:33. 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,

James Liang, Ph.D.
Laboratory Director

CA SWRCB ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES
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08/30/18 14:08

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0200.01	**CLS Work Order #: 18H1399**
Berkeley, CA 94705	Project Manager: Maia Singer	COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-1-BI (18H1399-01) Surface Water	**Sampled: 08/23/18 09:39**		**Received: 08/23/18 14:33**							
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1807108	08/23/18	08/24/18	SM9223	
Fecal Coliforms	**3.7**	1.8	1.8	"	"	1807110	08/23/18	08/26/18	SM 9221	
Total Coliforms	**71.7**	1.0	1.0	"	"	1807108	08/23/18	08/24/18	SM9223	
BAC-2-BI (18H1399-02) Surface Water	**Sampled: 08/23/18 10:10**		**Received: 08/23/18 14:33**							
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1807108	08/23/18	08/24/18	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1807110	08/23/18	08/26/18	SM 9221	
Total Coliforms	**980.4**	1.0	1.0	"	"	1807108	08/23/18	08/24/18	SM9223	
BAC-3-LL (18H1399-03) Surface Water	**Sampled: 08/23/18 12:15**		**Received: 08/23/18 14:33**							
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1807108	08/23/18	08/24/18	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1807110	08/23/18	08/26/18	SM 9221	
Total Coliforms	**365.4**	1.0	1.0	"	"	1807108	08/23/18	08/24/18	SM9223	
BAC-4-LL (18H1399-04) Surface Water	**Sampled: 08/23/18 12:35**		**Received: 08/23/18 14:33**							
E. Coli	**1.0**	1.0	1.0	MPN/100 mL	1	1807108	08/23/18	08/24/18	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1807110	08/23/18	08/26/18	SM 9221	
Total Coliforms	**325.5**	1.0	1.0	"	"	1807108	08/23/18	08/24/18	SM9223	

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CALIFORNIA LABORATORY SERVICES
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08/30/18 14:08

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0200.01	**CLS Work Order #: 18H1399**
Berkeley, CA 94705	Project Manager: Maia Singer	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.

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CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. 15H1399 (__of__)

Report To:	Client Job Number 750.10 Task 0200.01
Stillwater Sciences 2855 Telegraph Ave. Suite 400 Berkeley, CA 94705	Destination Laboratory Rancho Cordova [x] CLS (916) 638-7301 3249 Fitzgerald Road Rancho Cordova, CA 95742 www.californialab.com [ ] OTHER
Project Manager: Maia Singer maia@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	

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
8/23/18	0939	BAC-1-BI		Surface water			6	X	X				X	
8/23/18	1010	BAC-2-BI		Surface water			6	X	X				X	
8/23/18	1215	BAC-3-LL		Surface water			6	X	X				X	
8/23/18	1235	BAC-4-LL		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 0200.01
				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
	Eric Sommerauer/Stillwater	8/23/18 1459		

RECEIVED AT LAB BY: DATE/TIME: 8/23/18 1472 CONDITIONS/COMMENTS: 1.7

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

CALIFORNIA LABORATORY SERVICES
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August 30, 2018

CLS Work Order #: 18H1399
COC #:

Maia Singer
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 08/23/18 14:33. 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,

James Liang, Ph.D.
Laboratory Director

CA SWRCB ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES
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08/30/18 14:08

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0200.01	**CLS Work Order #: 18H1399**
Berkeley, CA 94705	Project Manager: Maia Singer	COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-1-BI (18H1399-01) Surface Water	**Sampled: 08/23/18 09:39**		**Received: 08/23/18 14:33**							
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1807108	08/23/18	08/24/18	SM9223	
Fecal Coliforms	**3.7**	1.8	1.8	"	"	1807110	08/23/18	08/26/18	SM 9221	
Total Coliforms	**71.7**	1.0	1.0	"	"	1807108	08/23/18	08/24/18	SM9223	
BAC-2-BI (18H1399-02) Surface Water	**Sampled: 08/23/18 10:10**		**Received: 08/23/18 14:33**							
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1807108	08/23/18	08/24/18	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1807110	08/23/18	08/26/18	SM 9221	
Total Coliforms	**980.4**	1.0	1.0	"	"	1807108	08/23/18	08/24/18	SM9223	
BAC-3-LL (18H1399-03) Surface Water	**Sampled: 08/23/18 12:15**		**Received: 08/23/18 14:33**							
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1807108	08/23/18	08/24/18	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1807110	08/23/18	08/26/18	SM 9221	
Total Coliforms	**365.4**	1.0	1.0	"	"	1807108	08/23/18	08/24/18	SM9223	
BAC-4-LL (18H1399-04) Surface Water	**Sampled: 08/23/18 12:35**		**Received: 08/23/18 14:33**							
E. Coli	**1.0**	1.0	1.0	MPN/100 mL	1	1807108	08/23/18	08/24/18	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1807110	08/23/18	08/26/18	SM 9221	
Total Coliforms	**325.5**	1.0	1.0	"	"	1807108	08/23/18	08/24/18	SM9223	

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Small Business #2916 | ELAP #1233 | NAICS #541380 | CA SWRCB ELAP Accreditation/Registration Number 1233

CALIFORNIA LABORATORY SERVICES
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08/30/18 14:08

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0200.01	**CLS Work Order #: 18H1399**
Berkeley, CA 94705	Project Manager: Maia Singer	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.

3249 Fitzgerald Road, Rancho Cordova, CA 95742 | 800.638.7301 | Tel: 916.638.7301 x102 | Fax: 916.638.4510 | www.californialab.com
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CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. 15H1399 (__ of __)

Report To:	Client Job Number 750.10 Task 0200.01
Stillwater Sciences 2855 Telegraph Ave. Suite 400 Berkeley, CA 94705	Destination Laboratory Rancho Cordova [x] CLS (916) 638-7301 3249 Fitzgerald Road Rancho Cordova, CA 95742 www.californialab.com [ ] OTHER
Project Manager: Maia Singer maia@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	

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	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
8/23/18	0939	BAC-1-BI		Surface water			6	X	X				X	
8/23/18	1010	BAC-2-BI		Surface water			6	X	X				X	
8/23/18	1215	BAC-3-LL		Surface water			6	X	X				X	
8/23/18	1235	BAC-4-LL		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 0200.01
				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
[signature]	Eric Sommerauer/Stillwater	8/23/18 1459		

RECEIVED AT LAB BY: [signature] DATE/TIME: 8/23/18 1472 CONDITIONS/COMMENTS: 1.7

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

CALIFORNIA LABORATORY SERVICES
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September 07, 2018

CLS Work Order #: 18H1747
COC #:

Maia Singer
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 08/30/18 16:12. 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,

James Liang, Ph.D.
Laboratory Director

CA SWRCB ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

09/07/18 14:08

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0200.01	**CLS Work Order #: 18H1747**
Berkeley, CA 94705	Project Manager: Maia Singer	COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-1-BI (18H1747-01) Surface Water	**Sampled: 08/30/18 10:45**		**Received: 08/30/18 16:12**							
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1807339	08/30/18	08/31/18	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1807341	"	09/02/18	SM 9221	
BAC-2-BI (18H1747-02) Surface Water	**Sampled: 08/30/18 11:10**		**Received: 08/30/18 16:12**							
E. Coli	**10.9**	1.0	1.0	MPN/100 mL	1	1807339	08/30/18	08/31/18	SM9223	
Fecal Coliforms	**2.0**	1.8	1.8	"	"	1807341	"	09/02/18	SM 9221	
BAC-3-LL (18H1747-03) Surface Water	**Sampled: 08/30/18 13:40**		**Received: 08/30/18 16:12**							
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1807339	08/30/18	08/31/18	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1807341	"	09/02/18	SM 9221	
BAC-4-LL (18H1747-04) Surface Water	**Sampled: 08/30/18 13:55**		**Received: 08/30/18 16:12**							
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1807339	08/30/18	08/31/18	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1807341	"	09/02/18	SM 9221	

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Small Business #2916 | ELAP #1233 | NAICS #541380 | CA SWRCB ELAP Accreditation/Registration Number 1233

CALIFORNIA LABORATORY SERVICES
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09/07/18 14:08

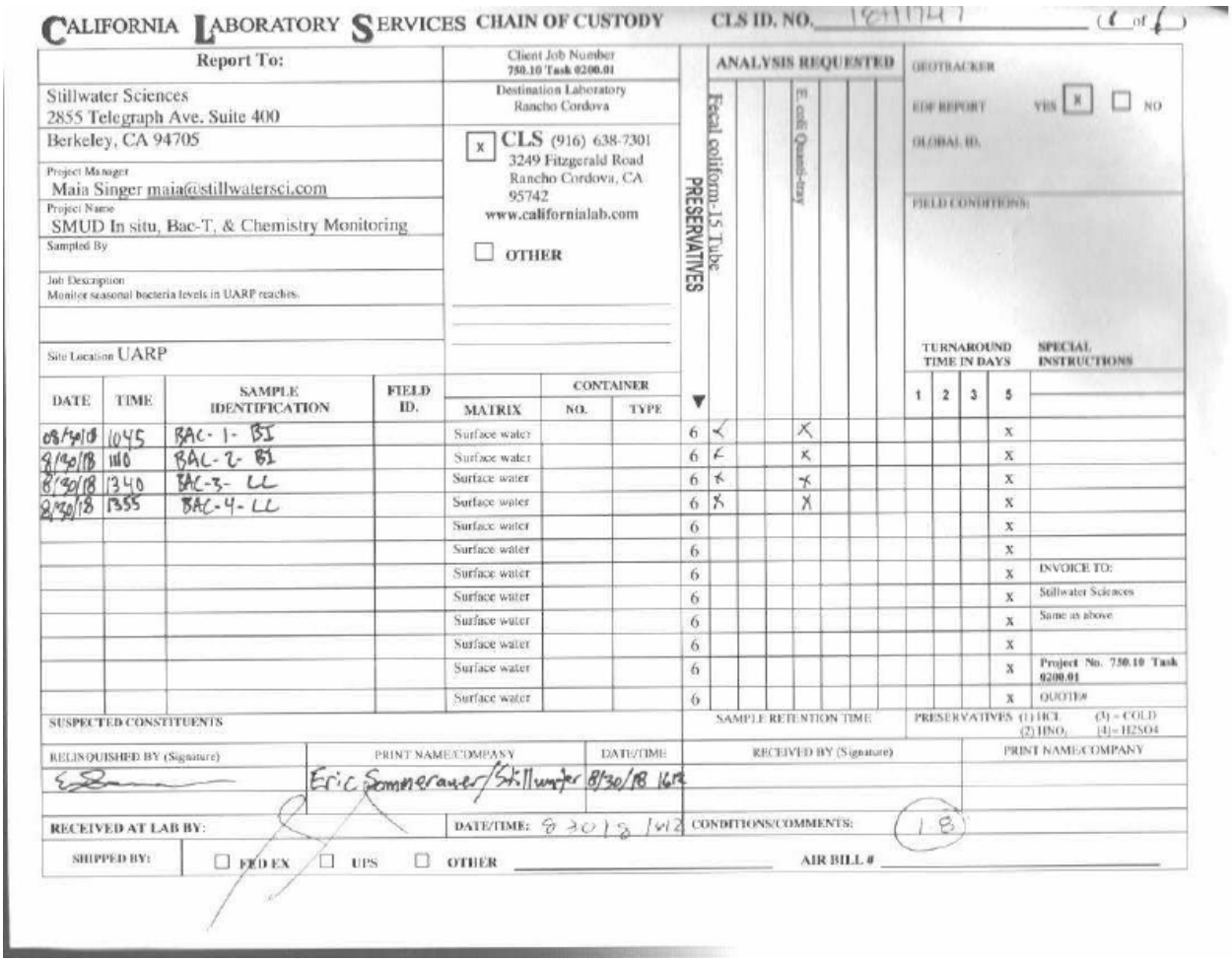
Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0200.01	**CLS Work Order #: 18H1747**
Berkeley, CA 94705	Project Manager: Maia Singer	COC #:

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.

3249 Fitzgerald Road, Rancho Cordova, CA 95742 | 800.638.7301 | Tel: 916.638.7301 x102 | Fax: 916.638.4510 | www.californialab.com
Small Business #2916 | ELAP #1233 | NAICS #541380 | CA SWRCB ELAP Accreditation/Registration Number 1233



CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. 1811174 (1 of 1)

Report To:
Stillwater Sciences
2855 Telegraph Ave. Suite 400
Berkeley, CA 94705
Project Manager: Maia Singer maia@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 0200.01
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
08/30/18	1045	BAC-1-B1		Surface water			6	X	X				X	
8/30/18	1110	BAC-2-B1		Surface water			6	X	X				X	
8/30/18	1340	BAC-3-LL		Surface water			6	X	X				X	
8/30/18	1355	BAC-4-LL		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 9200.01
				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
[signature]	Eric Somerauer/Stillwater	8/30/18 1612		

RECEIVED AT LAB BY:
DATE/TIME: 8/30/18 1612
CONDITIONS/COMMENTS: 18

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

CALIFORNIA LABORATORY SERVICES
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September 13, 2018

CLS Work Order #: 18I0333
COC #:

Maia Singer
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 09/06/18 16:06. 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.

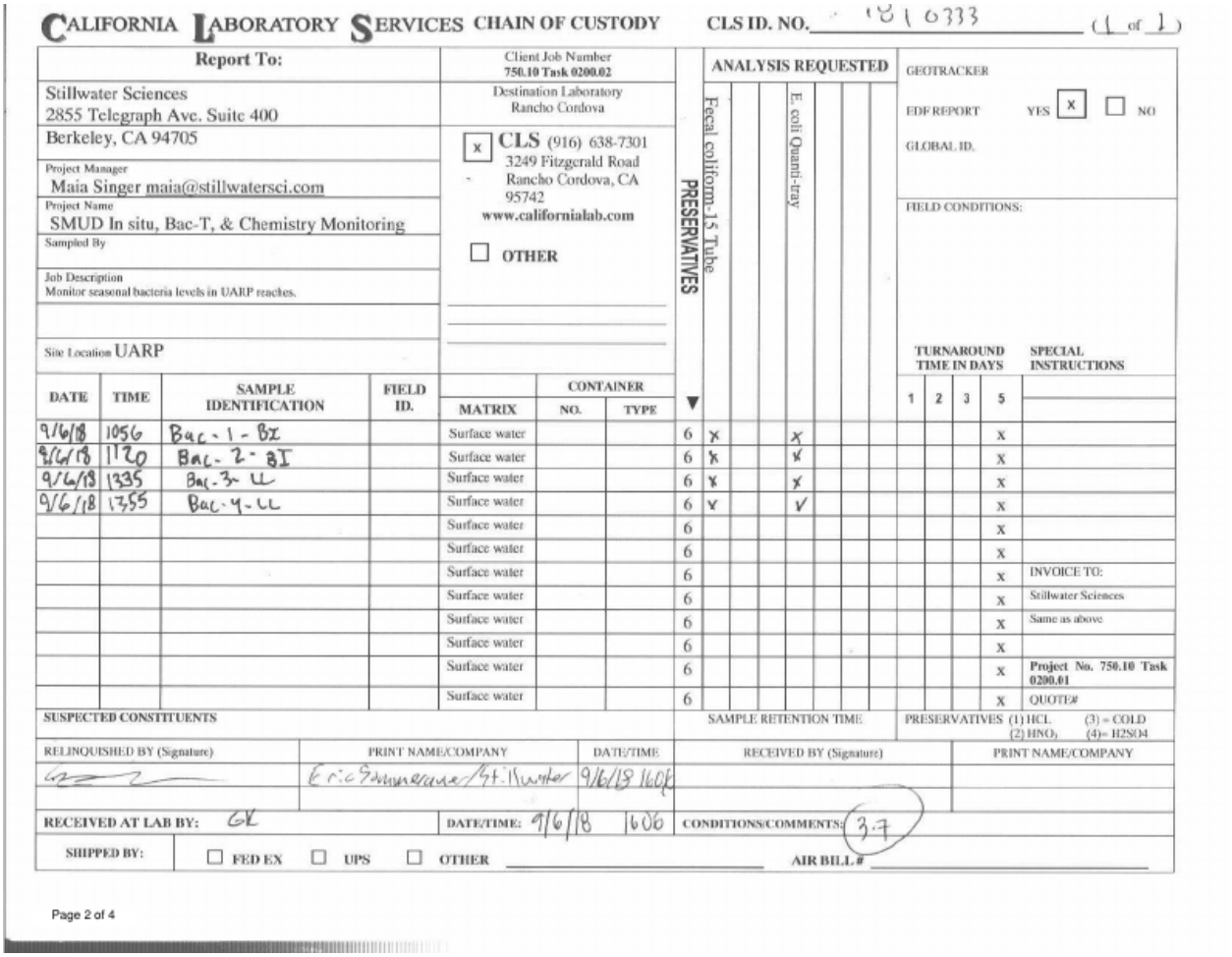
Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA SWRCB ELAP Accreditation/Registration number 1233

Page 1 of 4



CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. 816333 (1 of 1)

Report To:	Client Job Number 750.10 Task 0200.02	ANALYSIS REQUESTED	GEOTRACKER
Stillwater Sciences 2855 Telegraph Ave. Suite 400 Berkeley, CA 94705	Destination Laboratory Rancho Cordova [x] CLS (916) 638-7301 3249 Fitzgerald Road Rancho Cordova, CA 95742 www.californialab.com [ ] OTHER	PRESERVATIVES: Fecal coliform-15 Tube; E. coli Quanti-tray	EDF REPORT YES [x] NO [ ] GLOBAL ID.
Project Manager: Maia Singer maia@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			FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	CONTAINER MATRIX	CONTAINER NO.	CONTAINER TYPE	▼	Fecal coliform-15 Tube			E. coli Quanti-tray				TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
9/6/18	1056	Bac-1-BI		Surface water			6	X			X							X	
9/6/18	1120	Bac-2-BI		Surface water			6	X			X							X	
9/6/18	1335	Bac-3-LL		Surface water			6	X			X							X	
9/6/18	1355	Bac-4-LL		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. 750.10 Task 0200.01
				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
	Eric Simmerman/Stillwater	9/6/18 1606		

RECEIVED AT LAB BY: GL DATE/TIME: 9/6/18 1606 CONDITIONS/COMMENTS: 3.7

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

Page 2 of 4

CALIFORNIA LABORATORY SERVICES
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Page 1 of 2 09/13/18 12:50

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0200.02	**CLS Work Order #: 18I0333**
Berkeley, CA 94705	Project Manager: Maia Singer	COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-1-BI (18I0333-01) Surface Water	**Sampled: 09/06/18 10:56**		**Received: 09/06/18 16:06**						
Fecal Coliforms	<1.8	1.8	MPN/100 mL	1	1807542	09/06/18 16:30	09/09/18	SM 9221	
E. Coli	**2.0**	1.0	"	"	1807521	"	09/07/18	SM9223	
BAC-2-BI (18I0333-02) Surface Water	**Sampled: 09/06/18 11:20**		**Received: 09/06/18 16:06**						
Fecal Coliforms	<1.8	1.8	MPN/100 mL	1	1807542	09/06/18 16:30	09/09/18	SM 9221	
E. Coli	<1	1.0	"	"	1807521	"	09/07/18	SM9223	
BAC-3-LL (18I0333-03) Surface Water	**Sampled: 09/06/18 13:35**		**Received: 09/06/18 16:06**						
Fecal Coliforms	<1.8	1.8	MPN/100 mL	1	1807542	09/06/18 16:30	09/09/18	SM 9221	
E. Coli	**2.0**	1.0	"	"	1807521	"	09/07/18	SM9223	
BAC-4-LL (18I0333-04) Surface Water	**Sampled: 09/06/18 13:55**		**Received: 09/06/18 16:06**						
Fecal Coliforms	<1.8	1.8	MPN/100 mL	1	1807542	09/06/18 16:30	09/09/18	SM 9221	
E. Coli	<1	1.0	"	"	1807521	"	09/07/18	SM9223	

CALIFORNIA LABORATORY SERVICES
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 09/13/18 12:50

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0200.02	**CLS Work Order #: 1810333**
Berkeley, CA 94705	Project Manager: Maia Singer	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
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September 20, 2018

CLS Work Order #: 18I0688
COC #:

Maia Singer
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 09/13/18 16:07. 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,

James Liang, Ph.D.
Laboratory Director

CA SWRCB ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. 181 0689 (__ of __)

Report To:
Stillwater Sciences
2855 Telegraph Ave. Suite 400
Berkeley, CA 94705
Project Manager: Maia Singer maia@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 0200.02
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
9/13/18	1100	Bac-T- BI		Surface water			6	X	X				X	
9/13/18	1125	Bac-T BI		Surface water			6	X	X				X	
9/13/18	1340	Bac-T- LL		Surface water			6	X	X				X	
9/13/18	1355	Bac-T LL		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 0200.02
				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
	Eric [illegible]/Stillwater	9/13/18 1607		

RECEIVED AT LAB BY: GK DATE/TIME: 9/13/18 1607 CONDITIONS/COMMENTS: 0.2

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

CALIFORNIA LABORATORY SERVICES
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 09/20/18 16:57

Stillwater Sciences	Project:	SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0200.02	**CLS Work Order #: 18I0688**
Berkeley, CA 94705	Project Manager:	Maia Singer	COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bac-1-BI (18I0688-01) Surface Water	**Sampled: 09/13/18 11:00**	**Received: 09/13/18 16:07**							
E. Coli	<1	1.0	MPN/100 mL	1	1807748	09/13/18	09/14/18	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1807750	09/13/18	09/16/18	SM 9221	
Bac-2-BI (18I0688-02) Surface Water	**Sampled: 09/13/18 11:25**	**Received: 09/13/18 16:07**							
E. Coli	<1	1.0	MPN/100 mL	1	1807748	09/13/18	09/14/18	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1807750	09/13/18	09/16/18	SM 9221	
Bac-3-LL (18I0688-03) Surface Water	**Sampled: 09/13/18 13:40**	**Received: 09/13/18 16:07**							
E. Coli	<1	1.0	MPN/100 mL	1	1807748	09/13/18	09/14/18	SM9223	
Fecal Coliforms	**2.0**	1.8	"	"	1807750	09/13/18	09/16/18	SM 9221	
Bac-4 LL (18I0688-04) Surface Water	**Sampled: 09/13/18 13:55**	**Received: 09/13/18 16:07**							
E. Coli	<1	1.0	MPN/100 mL	1	1807748	09/13/18	09/14/18	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1807750	09/13/18	09/16/18	SM 9221	

CALIFORNIA LABORATORY SERVICES
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09/20/18 16:57

Stillwater Sciences	Project:	SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number:	750.10 Task 0200.02	**CLS Work Order #: 1810688**
Berkeley, CA 94705	Project Manager:	Maia Singer	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

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Small Business #2916 | ELAP #1233 | NAICS #541380 | CA SWRCB ELAP Accreditation/Registration Number 1233

CALIFORNIA LABORATORY SERVICES
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September 27, 2018

CLS Work Order #: 1811081
COC #:

Maia Singer
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 09/20/18 16:30. 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,

James Liang, Ph.D.
Laboratory Director

CA SWRCB ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES
Committed. Responsive. Flexible.

09/27/18 15:02

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0200.02	**CLS Work Order #: 18I1081**
Berkeley, CA 94705	Project Manager: Maia Singer	COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-1-BI (18I1081-01) Surface Water	**Sampled: 09/20/18 11:45**		**Received: 09/20/18 16:30**							
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1807989	09/20/18	09/21/18	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1807991	"	09/23/18	SM 9221	
BAC-2-BI (18I1081-02) Surface Water	**Sampled: 09/20/18 12:10**		**Received: 09/20/18 16:30**							
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1807989	09/20/18	09/21/18	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1807991	"	09/23/18	SM 9221	
BAC-3-LL (18I1081-03) Surface Water	**Sampled: 09/20/18 14:10**		**Received: 09/20/18 16:30**							
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1807989	09/20/18	09/21/18	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1807991	"	09/23/18	SM 9221	
BAC-4-LL (18I1081-04) Surface Water	**Sampled: 09/20/18 14:25**		**Received: 09/20/18 16:30**							
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1807989	09/20/18	09/21/18	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1807991	"	09/23/18	SM 9221	

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Small Business #2916 | ELAP #1233 | NAICS #541380 | CA SWRCB ELAP Accreditation/Registration Number 1233

CALIFORNIA LABORATORY SERVICES
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09/27/18 15:02

Stillwater Sciences	Project: SMUD In situ, Bac-T, & Chemistry Monitoring	
2855 Telegraph Ave., Suite 400	Project Number: 750.10 Task 0200.02	**CLS Work Order #: 1811081**
Berkeley, CA 94705	Project Manager: Maia Singer	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.

3249 Fitzgerald Road, Rancho Cordova, CA 95742 | 800.638.7301 | Tel: 916.638.7301 x102 | Fax: 916.638.4510 | www.californialab.com
Small Business #2916 | ELAP #1233 | NAICS #541380 | CA SWRCB ELAP Accreditation/Registration Number 1233

CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. 181081 (1 of 1)

Report To:
Stillwater Sciences
2855 Telegraph Ave. Suite 400
Berkeley, CA 94705
Project Manager: Maia Singer maia@stillwatersci.com
Project Name: SMUD In situ, Bac-T, & Chemistry Monitoring
Sampled By: EES BRL
Job Description: Monitor seasonal bacteria levels in UARP reaches.
Site Location: UARP

Client Job Number: 780.40 Task 0200.02
Destination Laboratory: Rancho Cordova
[x] CLS (916) 638-7301, 3249 Fitzgerald Road, Rancho Cordova, CA 95742, www.californialab.com
[ ] OTHER

ANALYSIS REQUESTED: Fecal coliform-15 Tube; E. coli Quanti-tray
PRESERVATIVES

GEOTRACKER
EDF REPORT: YES [x] NO [ ]
GLOBAL ID.
FIELD CONDITIONS:

DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	CONTAINER MATRIX	CONTAINER NO.	CONTAINER TYPE	PRESERVATIVES	Fecal coliform-15 Tube	E. coli Quanti-tray	TURNAROUND TIME IN DAYS 1	2	3	5	SPECIAL INSTRUCTIONS
9-20-18	1145	Bac-1-BI		Surface water			6	X	X				X	
9-20-18	1210	Bac-2-BS		Surface water			6	X	X				X	
9-20-18	1410	Bac-3-LL		Surface water			6	X	X				X	
9-20-18	1425	Bac-4-LL		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. 780.10 Task 0200.01
				Surface water			6						X	QUOTE#

SUSPECTED CONSTITUENTS
SAMPLE RETENTION TIME
PRESERVATIVES (1) HCL (2) HNO3 (3) = COLD (4) = H2SO4

RELINQUISHED BY (Signature)	PRINT NAME/COMPANY	DATE/TIME	RECEIVED BY (Signature)	PRINT NAME/COMPANY
	Eric Sommarstrom/Stillwater	9/20/18 1630		

RECEIVED AT LAB BY: GK DATE/TIME: 9/20/18 1630 CONDITIONS/COMMENTS: 1.8

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