

FINAL Water Quality Monitoring Report - 2017

Sacramento Municipal Utility District

Hydro License Implementation • March 2018

Upper American River Project

FERC Project No. 2101



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Acronyms and Abbreviations

Acronym	Definition
BPWQO	Basin Plan Water Quality Objective
BLM	U.S. Bureau of Land Management
CDFW	California Department of Fish and Wildlife
CTR	California Toxics Rule
cm	centimeter
CLS	California Laboratory Services
COLD	cold freshwater habitat
°C	degrees Celsius
DO	dissolved oxygen
EPA	United States Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
hr	hour
m	meter
MDL	Method Detection Limit
ug/L	micrograms per liter
uS/cm	microsiemens per centimeter
mg/L	milligram per liter
mL	milliliter
MPN	Most Probable Number
MRL	Method Reporting Limit
ng/L	nanograms per liter
NRWQC	National Recommended Water Quality Criteria
NTU	Nephelometric Turbidity Unit
% Sat	percent saturation
QA/QC	quality assurance and quality control
RWQCB	Regional Water Quality Control Board
RPD	relative percent difference
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 (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 third year (2017) of water quality monitoring of basic *in situ* parameters and bacteria for the UARP. In addition to these modules, a one-time sampling for general chemistry was conducted during Year 3 (2017), as described herein.

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 2017 monitoring program was to perform *in situ* water quality, chemistry sampling, 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).

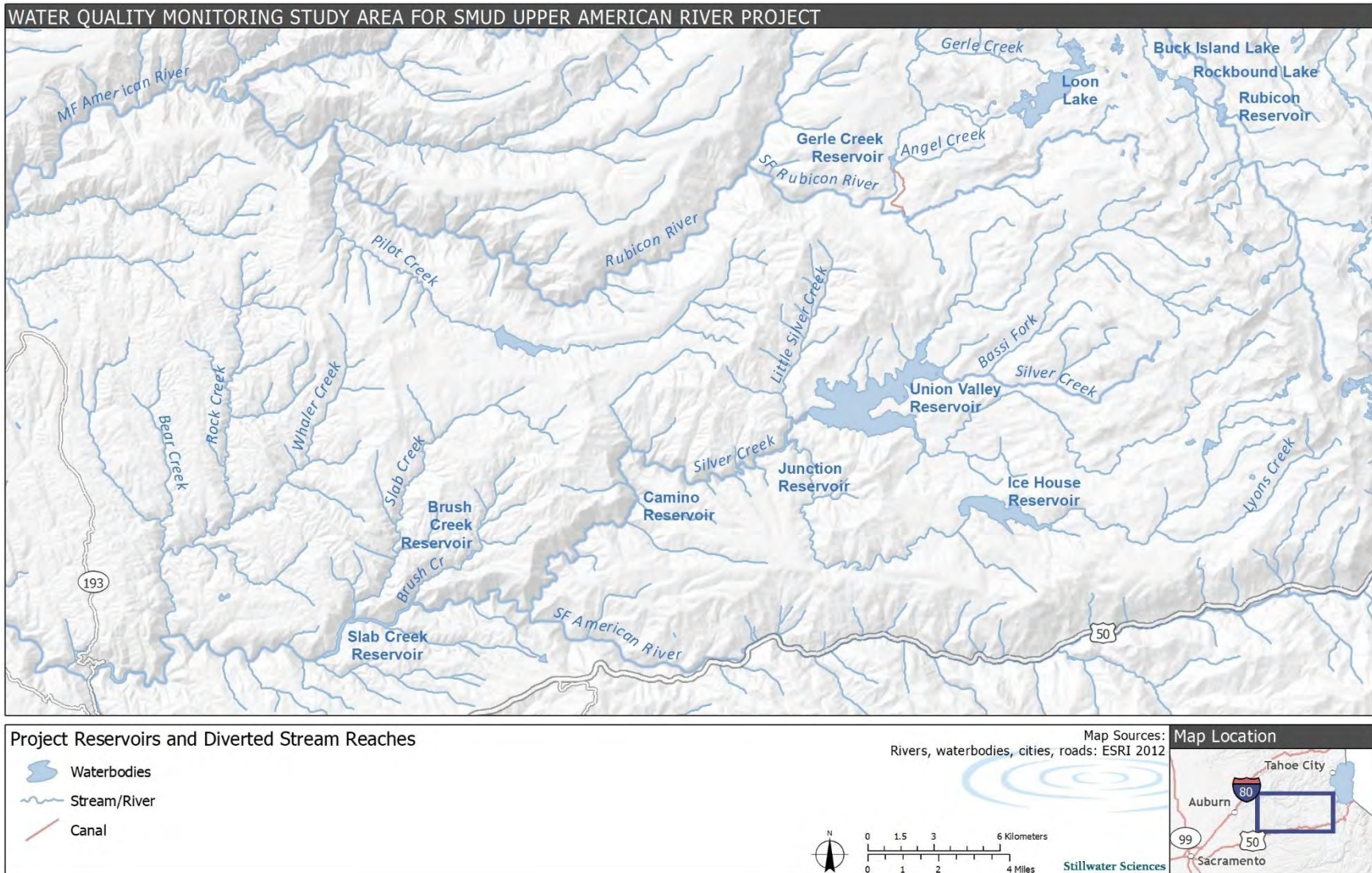


Figure 3-1. Study area for SMUD Upper American River Project *in situ*, chemistry, and bacteria monitoring.

4.0 SAMPLING FREQUENCY AND LOCATIONS

Year 3 (2017) 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). General chemistry sampling was conducted in spring, summer, fall, and the fall/winter period, immediately following the third measurable precipitation event of the season (Table 4-1). A “measurable precipitation event” is defined as an event resulting in 0.50” of precipitation over a 24-hour period, as designated in the Water Quality Monitoring Plan (SMUD 2016). Precipitation events on October 20, 2017 (0.8 inches), November 3-4, 2017 (1.2 inches), and November 9, 2017 (1.4 inches) were reported at the U.S. Bureau of Reclamation’s American River Basin, Pacific House (PFH), gage location (elevation 3,440 feet), establishing the first three measurable rain events for purposes of the Fall-Winter 2017 survey. Required bacteria monitoring was conducted by sampling the middle elevation UARP reservoir (Gerle Creek, Union Valley, Junction, Ice House, Brush Creek, Slab Creek) sites during the 30-day period surrounding 4th of July and sampling the upper elevation UARP reservoir (Loon Lake, Buck Island) sites during the 30-day period surrounding Labor Day.

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

Type	2017 (Year 3) Frequency
<i>In situ</i> reservoir	Once in spring – April/May Once in fall – October/November
<i>In situ</i> riverine	Once in winter – January/February Once in spring – April/May Once in summer – August Once in fall – November
General chemistry	Once in spring Once in summer Once in fall Once in fall/winter immediately following the second or third measurable rain event ¹
Bacteria	Five samples within 30 days – around 4 th of July Five samples within 30 days – around Labor Day

¹ A “measurable” rain event is defined as an event resulting in 0.50” of precipitation over a 24-hr period (SMUD 2016).

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 (Figures 4-1 and 4-2, Table 4-2) and 19 representative stream reaches (Figures 4-1 and 4-2, Table 4-4). General water chemistry monitoring occurred at 18 representative reservoir locations (Figures 4-3 and 4-4, Table 4-2) and 19 representative stream reaches (Figures 4-3 and 4-4, Table 4-4). Bacteria sampling occurred at 15 locations (Figures 4-1 and 4-2, Table 4-6). Several reservoir and riverine sites could not be sampled during 2017 due to snow accumulation, weather conditions, storm-damaged roads, or uncontrolled reservoir spill (Tables 4-3 and 4-5).

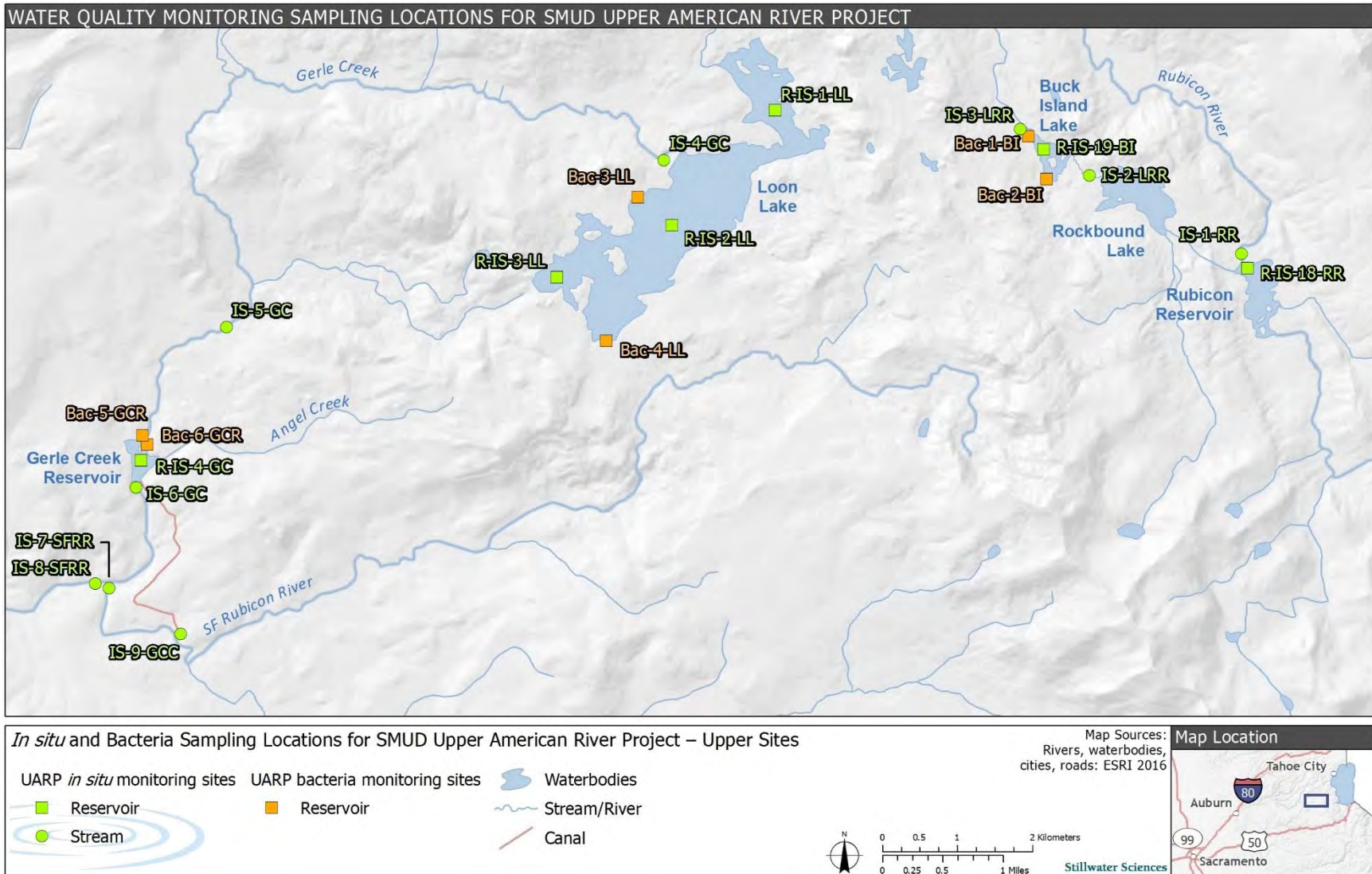


Figure 4-1. *In situ* water quality and bacteria sampling locations for SMUD Upper American River Project – upper sites.

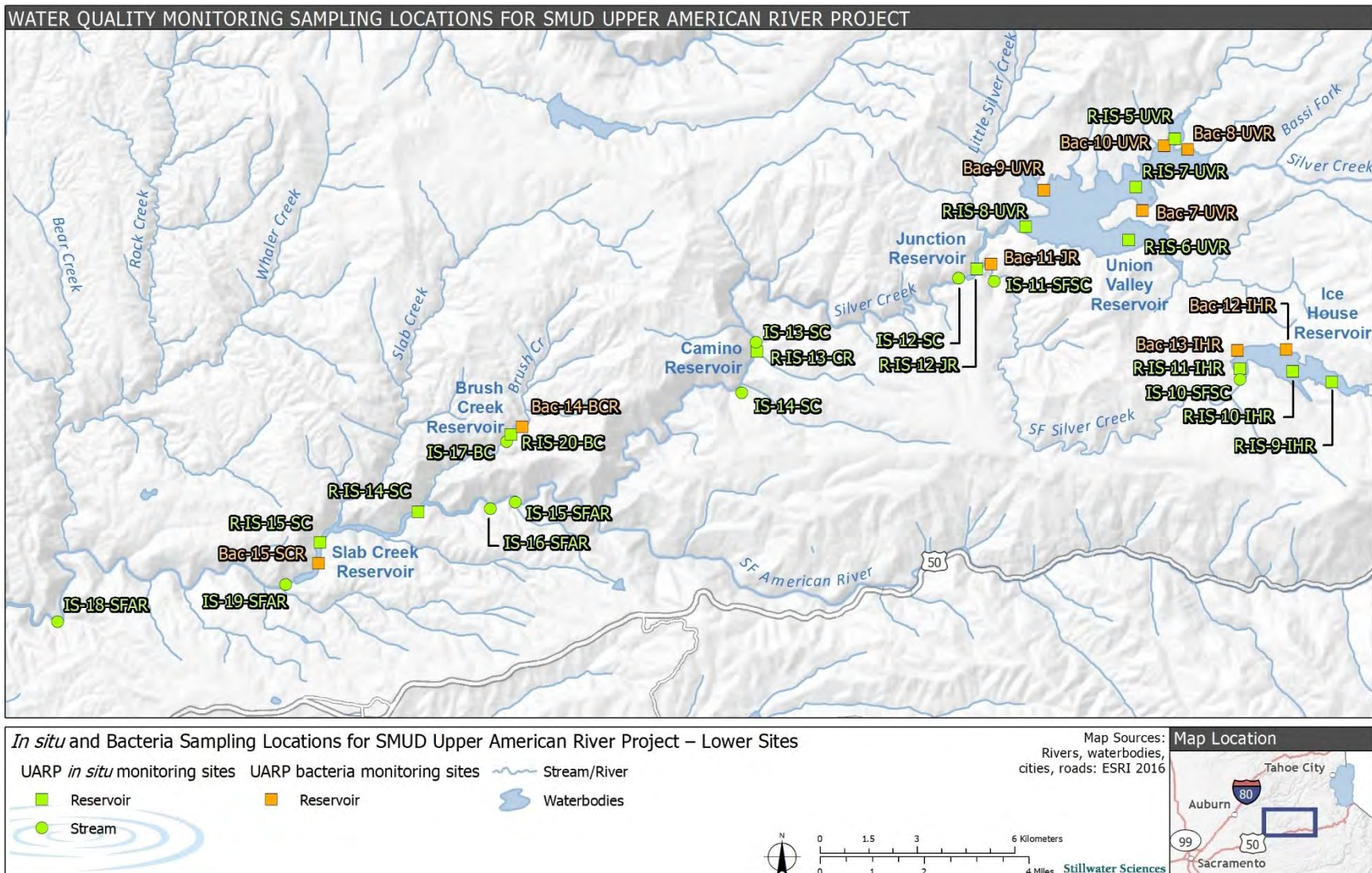


Figure 4-2. *In situ* water quality and bacteria sampling locations for SMUD Upper American River Project – lower sites.

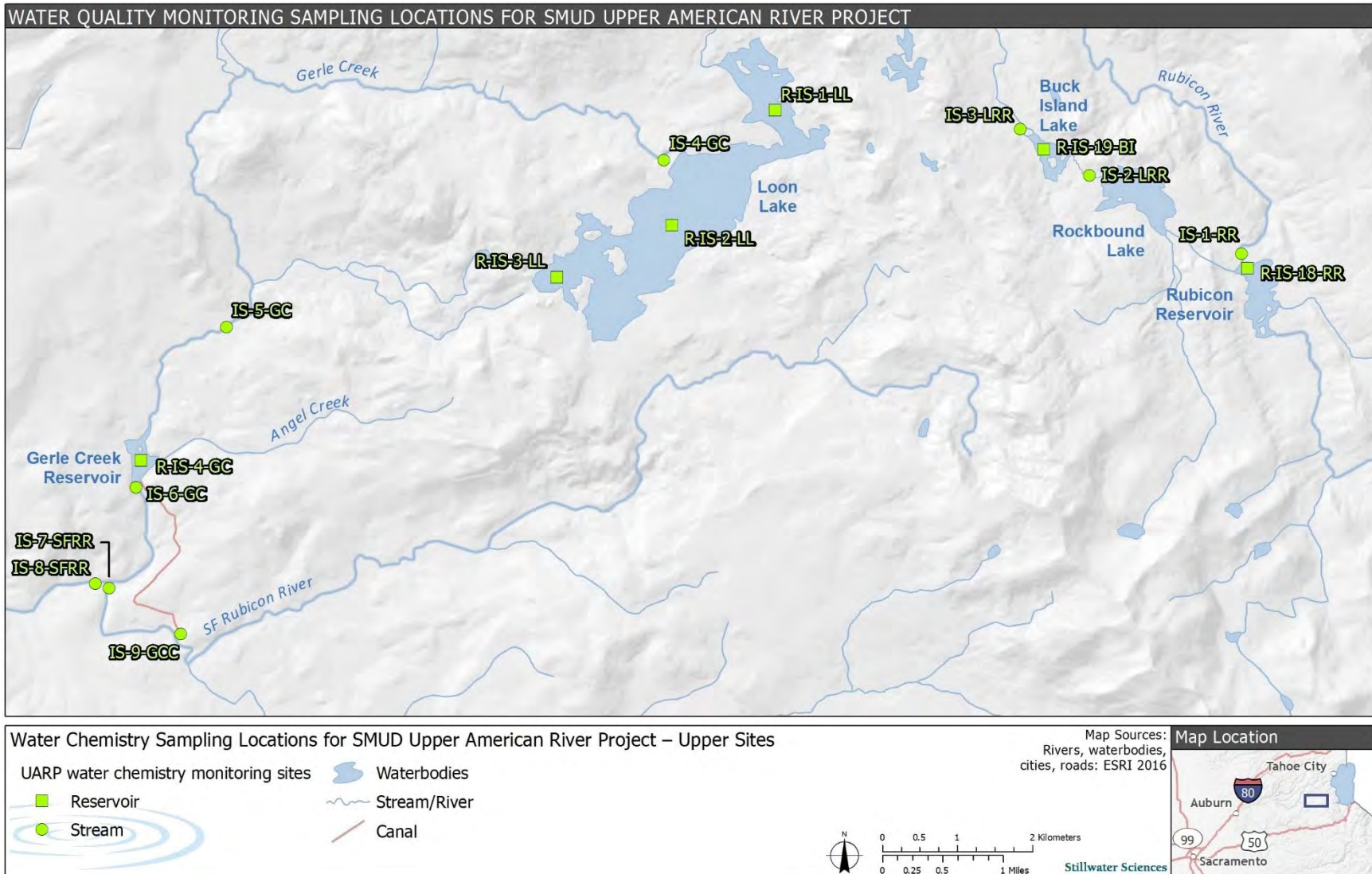


Figure 4-3. General water chemistry sampling locations for SMUD Upper American River Project – upper sites.

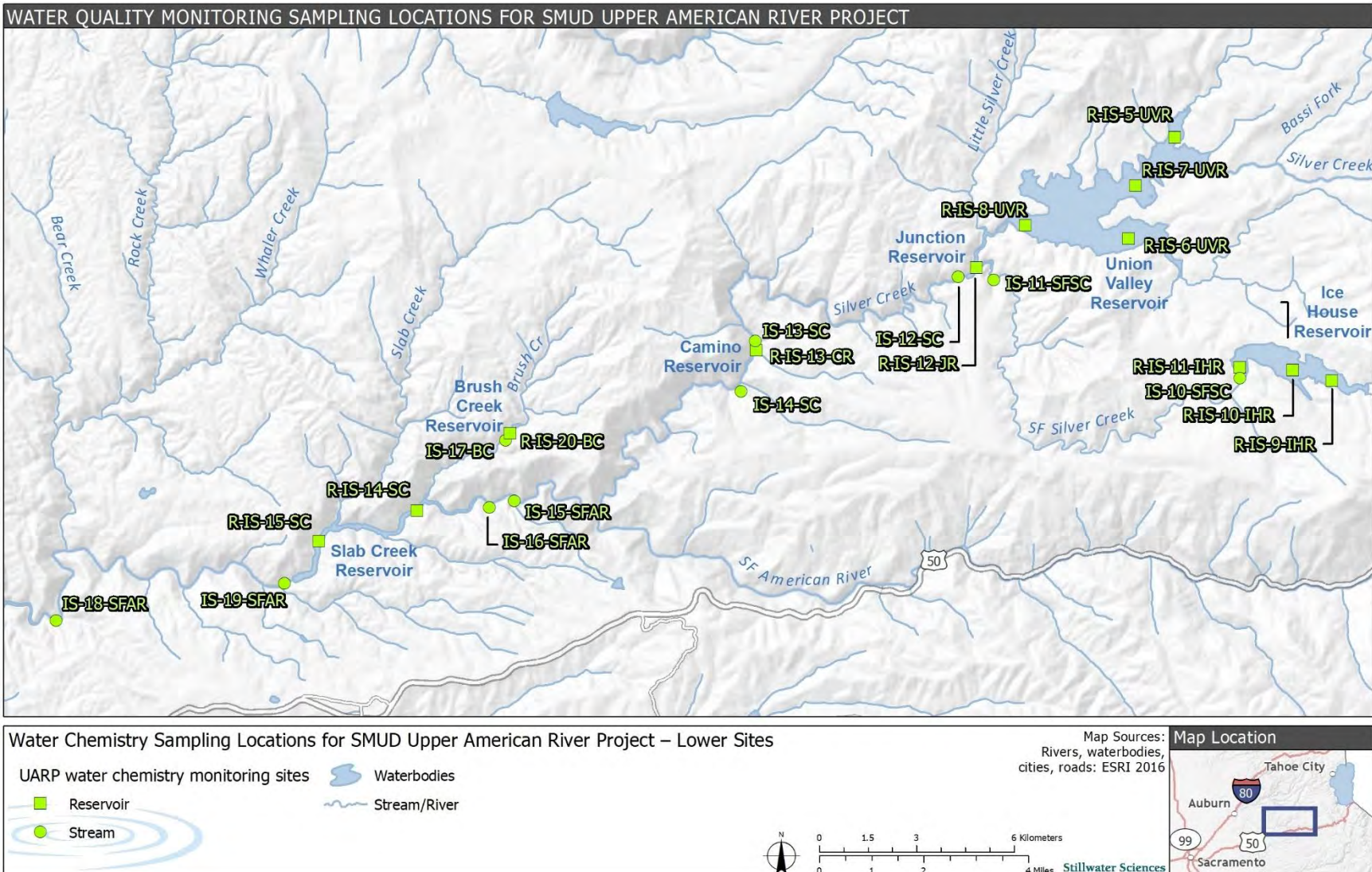


Figure 4-4. General water chemistry locations for SMUD Upper American River Project – lower sites.

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

SMUD Site Name	Site ID	Location	2017 <i>In situ</i> Survey Sample Date	2017 General Chemistry Survey Sample Date
	R-IS-18-RR	Rubicon Reservoir, mid-reservoir	N/A	8/9, 10/31
	R-IS-19-BI	Buck Island Reservoir, mid-reservoir	N/A	8/2, 10/18
R-4C	R-IS-1-LL	Loon Lake, upper reservoir (northeast body)	10/25	8/7, 10/25, 11/14
R-4B	R-IS-2-LL	Loon Lake, mid-reservoir (west body)	10/25	8/7, 10/25, 11/14
R-4A	R-IS-3-LL	Loon Lake, near dam	10/25	7/31, 10/25, 11/14
R-5	R-IS-4-GC	Gerle Creek Reservoir, mid-reservoir	11/2	8/16, 11/2, 11/21
R-6C	R-IS-5-UVR	Union Valley Reservoir, Robbs PH tailrace zone	5/10, 10/24	5/10, 8/8, 10/24, 11/15
R-6D	R-IS-6-UVR	Union Valley Reservoir, Jones Fork Silver Creek arm	5/10, 10/24	5/10, 8/8, 10/24, 11/15
R-6B	R-IS-7-UVR	Union Valley Reservoir, mid-reservoir	5/10, 10/24	5/10, 8/8, 10/24, 11/15
R-6A	R-IS-8-UVR	Union Valley Reservoir, near dam	5/11, 10/24,	5/11, 8/8, 10/24, 11/15
R-7C	R-IS-9-IHR	Ice House Reservoir, upper lake body	5/9, 10/23	5/9, 8/10, 10/23, 11/13
R-7B	R-IS-10-IHR	Ice House Reservoir, mid-reservoir	5/9, 10/23	5/9, 8/10, 10/23, 11/13
R-7A	R-IS-11-IHR	Ice House Reservoir, near dam	5/9, 10/23	5/9, 8/10, 10/23, 11/13
R-8	R-IS-12-JR	Junction Reservoir, mid-reservoir between arms	11/2	8/15, 11/2, 11/21
R-9	R-IS-13-CR	Camino Reservoir, mid-reservoir	-	8/15
	R-IS-20-BC	Brush Creek Reservoir, near dam	N/A	5/11, 8/14, 11/28
R-11B	R-IS-14-SC	Slab Creek Reservoir, upper-reservoir	10/30	8/3, 10/30, 11/27
R-11A	R-IS-15-SC	Slab Creek Reservoir, mid-reservoir	10/30	8/3, 10/30, 11/27

N/A = not applicable. This site not a designated as an *in situ* survey site (SMUD 2016).

"-" indicates that data were not collected due to site inaccessibility. See Table 4-3 for expanded list of sites not sampled on particular dates due to site inaccessibility.

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

SMUD Site Name	Site ID	Location	Reason not sampled during 2017 <i>In situ</i> Survey	Reason not sampled during 2017 General Chemistry Survey
May (Spring)				
	R-IS-18-RR	Rubicon Reservoir, mid-lake	N/A	Snow accumulation
	R-IS-19-BI	Buck Island Reservoir, mid-lake	N/A	Snow accumulation
R-4C	R-IS-1-LL	Loon Lake, upper reservoir (northeast body)	Snow accumulation	Snow accumulation
R-4B	R-IS-2-LL	Loon Lake, mid-reservoir (west body)	Snow accumulation	Snow accumulation
R-4A	R-IS-3-LL	Loon Lake, near dam	Snow accumulation	Snow accumulation
R-5	R-IS-4-GC	Gerle Creek Reservoir, mid-lake	Uncontrolled reservoir spill ¹	Uncontrolled reservoir spill ¹
R-8	R-IS-12-JR	Junction Reservoir, mid-reservoir between arms	Uncontrolled reservoir spill ¹	Uncontrolled reservoir spill ¹
R-9	R-IS-13-CR	Camino Reservoir, mid-reservoir	Uncontrolled reservoir spill ¹	Uncontrolled reservoir spill ¹
R-11B	R-IS-14-SC	Slab Creek Reservoir, upper-reservoir	Uncontrolled reservoir spill ¹	Uncontrolled reservoir spill ¹
R-11A	R-IS-15-SC	Slab Creek Reservoir, mid-reservoir	Uncontrolled reservoir spill ¹	Uncontrolled reservoir spill ¹
October/November (Fall)				
R-9	R-IS-13-CR	Camino Reservoir, mid-reservoir	Storm-damaged roads ²	Storm-damaged roads ²
	R-IS-20-BC	Brush Creek Reservoir, mid-reservoir	N/A	Storm-damaged roads ²
Late November (Fall-Winter)				
	R-IS-18-RR	Rubicon Reservoir, mid-lake	N/A	Weather – Helicopter flight conditions
	R-IS-19-BI	Buck Island Reservoir, mid-lake	N/A	Weather – Helicopter flight conditions
R-9	R-IS-13-CR	Camino Reservoir, mid-reservoir	Storm-damaged roads ²	Storm-damaged roads ²

N/A = not applicable. This site not a designated as an *in situ* survey site (SMUD 2016).

¹ Spill conditions precluded safe boat operation on the reservoir.

² Road washout or reconstruction prevented safe site access.



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

SMUD Site Name	Site ID	Location	2017 <i>In situ</i> Survey Sample Date	2017 General Chemistry Survey Sample Date
2	IS-1-RR	Rubicon River outflow from Rubicon Reservoir	8/9, 11/1	8/9, 11/1
5	IS-2-LRR	Little Rubicon River outflow from Rockbound Lake	8/9, 11/1	8/9, 11/1
6	IS-3-LRR	Little Rubicon outflow from Buck Island Lake	8/2, 11/1	8/2, 11/1
7	IS-4-GC	Gerle Creek outflow from Loon Lake	8/17, 11/2	8/17, 11/2, 11/16
14	IS-5-GC	Gerle Creek inflow to Gerle Creek Reservoir	5/3, 8/16, 11/2	5/3, 8/16, 11/2, 11/20
15	IS-6-GC	Gerle Creek outflow from Gerle Creek Reservoir	5/2, 8/17, 11/2	5/2, 8/17, 11/2, 11/20
18	IS-7-SFRR	S.F. Rubicon upstream of Gerle Creek confluence	5/2, 8/17, 11/7	5/2, 8/17, 11/7, 11/20
19	IS-8-SFRR	S.F. Rubicon downstream of Gerle Creek confluence	5/2, 8/17, 11/7	5/2, 8/17, 11/7, 11/20
16	IS-9-GCC	Gerle Creek Canal inflow to Robbs Forebay	5/2, 8/17, 11/7	5/2, 8/17, 11/7, 11/16
25	IS-10-SFSC	S.F. Silver Creek outflow from Ice House	2/7, 5/1, 8/10, 11/7	5/1, 8/10, 11/7, 11/16
27	IS-11-SFSC	S.F. Silver Creek inflow to Junction Reservoir	2/7, 5/1, 8/15, 11/8	5/1, 8/15, 11/8, 11/20
29	IS-12-SC	Silver Creek outflow from Junction Reservoir	2/7, 5/1, 8/16, 11/8	5/1, 8/16, 11/8, 11/20
32	IS-13-SC	Silver Creek inflow to Camino Reservoir	2/7, 5/8, 8/15	5/8, 8/15
34	IS-14-SC	Silver Creek outflow from Camino Reservoir	2/7, 5/8, 8/15	5/8, 8/15
38	IS-15-SFAR	South Fork American River (SFAR) upstream of Camino Powerhouse	5/8, 11/6	5/8, 11/6, 11/28
41	IS-16-SFAR	SFAR downstream of Camino Powerhouse	5/8, 11/6	5/8, 11/6, 11/28
40	IS-17-BC	Brush Creek outflow from Brush Creek Reservoir	5/8, 8/14	5/8, 8/14, 11/28
60	IS-18-SFAR	SFAR upstream of White Rock Powerhouse	2/8, 5/3, 8/16, 11/6	5/3, 8/16, 11/6, 11/29
43	IS-19-SFAR	SFAR downstream of Slab Creek Reservoir	2/8, 5/3, 8/21, 11/7	5/3, 8/21, 11/7, 11/27



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

SMUD Site Name	Site ID	Location	Reason for 2017 <i>In situ</i> Survey	Reason for 2017 General Chemistry Survey
February (Winter)				
2	IS-1-RR	Rubicon River outflow from Rubicon Reservoir	Snow accumulation	N/A
5	IS-2-LRR	Little Rubicon River outflow from Rockbound Lake	Snow accumulation	N/A
6	IS-3-LRR	Little Rubicon outflow from Buck Island Lake	Snow accumulation	N/A
7	IS-4-GC	Gerle Creek outflow from Loon Lake	Snow accumulation	N/A
14	IS-5-GC	Gerle Creek inflow to Gerle Creek Reservoir	Snow accumulation	N/A
15	IS-6-GC	Gerle Creek outflow from Gerle Creek Reservoir	Snow accumulation	N/A
18	IS-7-SFRR	S.F. Rubicon upstream of Gerle Creek confluence	Snow accumulation	N/A
19	IS-8-SFRR	S.F. Rubicon downstream of Gerle Creek confluence	Snow accumulation	N/A
16	IS-9-GCC	Gerle Creek Canal inflow to Robbs Forebay	Snow accumulation	N/A
38	IS-15-SFAR	SFAR upstream of Camino Powerhouse	Storm-damaged roads ²	N/A
41	IS-16-SFAR	SFAR downstream of Camino Powerhouse	Storm-damaged roads ²	N/A
40	IS-17-BC	Brush Creek outflow from Brush Creek Reservoir	Storm-damaged roads ²	N/A
May (Spring)				
2	IS-1-RR	Rubicon River outflow from Rubicon Reservoir	Snow accumulation	Snow accumulation
5	IS-2-LRR	Little Rubicon River outflow from Rockbound Lake	Snow accumulation	Snow accumulation
6	IS-3-LRR	Little Rubicon outflow from Buck Island Lake	Snow accumulation	Snow accumulation
7	IS-4-GC	Gerle Creek outflow from Loon Lake	Snow accumulation	Snow accumulation
August (Summer)				
38	IS-15-SFAR	SFAR upstream of Camino Powerhouse	Storm-damaged roads ²	Storm-damaged roads ²
41	IS-16-SFAR	SFAR downstream of Camino Powerhouse	Storm-damaged roads ²	Storm-damaged roads ²
November (Fall)				
32	IS-13-SC	Silver Creek inflow to Camino Reservoir	Storm-damaged roads ²	Storm-damaged roads ²
34	IS-14-SC	Silver Creek outflow from Camino Reservoir	Storm-damaged roads ²	Storm-damaged roads ²
40	IS-17-BC	Brush Creek outflow from Brush Creek Reservoir	Storm-damaged roads ²	Storm-damaged roads ²



SMUD Site Name	Site ID	Location	Reason for 2017 <i>In situ</i> Survey	Reason for 2017 General Chemistry Survey
Late November (Fall-Winter)				
2	IS-1-RR	Rubicon River outflow from Rubicon Reservoir	N/A	Weather – Helicopter flight conditions
5	IS-2-LRR	Little Rubicon River outflow from Rockbound Lake	N/A	Weather – Helicopter flight conditions
6	IS-3-LRR	Little Rubicon outflow from Buck Island Lake	N/A	Weather – Helicopter flight conditions
32	IS-13-SC	Silver Creek inflow to Camino Reservoir	N/A	Storm-damaged roads ²
34	IS-14-SC	Silver Creek outflow from Camino Reservoir	N/A	Storm-damaged roads ²

N/A = not applicable. The general chemistry survey did not include a February (Winter) sampling event and the *in situ* survey did not include a November (Fall-Winter) sampling event (SMUD 2016).

¹ Road washout or reconstruction prevented site access.

² Road washout or reconstruction prevented safe site access.

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

Reservoir	SMUD Site Name	Site ID	Location	2017 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	6/22, 6/29, 7/6, 7/13, 7/20
	67	Bac-6-GCR	Near Angel Creek picnic area	6/22, 6/29, 7/6, 7/13, 7/20
Union Valley Reservoir (swim areas)	R-6H	Bac-7-UVR	At Fashoda Beach	6/22, 6/29, 7/6, 7/13, 7/20
	R-6E	Bac-8-UVR	Near Wench Creek Campground	6/22, 6/29, 7/6, 7/13, 7/20
	FC-2	Bac-9-UVR	Near Camino Cove Campground	6/22, 6/29, 7/6, 7/13, 7/20
	R-6F	Bac-10-UVR	Near Yellowjacket Campground	6/22, 6/29, 7/6, 7/13, 7/20
Other UARP Locations	R-8B	Bac-11-JR	Junction Reservoir, near boat launch	6/22, 6/29, 7/6, 7/13, 7/20
Ice House Reservoir (beach locations)	68	Bac-12-IHR	Northshore near private campground access	6/21, 6/28, 7/5, 7/12, 7/19
	69	Bac-13-IHR	East of boat launch and picnic area	6/21, 6/28, 7/5, 7/12, 7/19
Other UARP locations	R-10B	Bac-14-BCR	Brush Creek Reservoir, near boat launch	6/21, 6/28, 7/5, 7/12, 7/19
	R-11C	Bac-15-SCR	Slab Creek Reservoir, near boat launch	6/21, 6/28, 7/5, 7/12, 7/19

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-2-LRR) at Little Rubicon River outflow from Rockbound Lake.

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 F). 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 (°C)	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 the winter, spring, and summer sampling events. All sensor numbers listed apply to the YSI 6920. A YSI EXO instrument was used during the fall and fall-winter events. YSI does not assign specific numbers or codes to the EXO probes.

5.2 GENERAL CHEMISTRY

In situ water quality parameters (water temperature, conductivity, dissolved oxygen, pH, and turbidity) were collected as part of general chemistry sampling, consistent with the Monitoring Plan (SMUD 2016). Methods for measurement of *in situ* parameters are described in Section 5.1.

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

Water column sampling procedures in reservoirs (Figure 5-3) varied depending on thermal stratification, which was determined using the *in situ* methods described above prior to collecting water samples. During periods of reservoir stratification, samples were collected within the upper epilimnion layer as well as in the hypolimnion layer less than or equal to 5 feet above the reservoir bottom. In instances when the reservoir was isothermal, samples were collected at a point below the water surface equivalent to approximately one-third of the water depth (SMUD 2016). General chemistry samples were collected using a Van Dorn sampling apparatus lowered by a marked line to the

appropriate depth. Between sampling events, the Van Dorn was rinsed with de-ionized water and then rinsed with water from the water body to be collected from. Water was transferred from the Van Dorn directly to certified, pre-cleaned bottles supplied by the analytical laboratory, which were placed on ice immediately for transport to the analytical laboratory within the required field hold time.

Consistent with the Water Quality Monitoring Plan (2016), clean sampling techniques were applied throughout the sampling event. Disposable gloves were used by all field crew members for collection of all analytes. For low level trace metals (total mercury, methylmercury, and total and dissolved arsenic, cadmium, copper, lead, nickel, selenium, and zinc), samples were collected and/or transferred to sample bottles using “clean hands/dirty hands” procedures, preventing potential cross contamination between samples. For each sampling event, one field sampling member was designated as “clean hands” and another as “dirty hands.” All contact with sample bottles and transfers of samples from the sample collection device to the sample bottles was handled by the individual designated as “clean hands.” Preparation of the sampling device and all other activities not involving direct contact with the sample was the responsibility of the individual designated as “dirty hands.”

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

General chemistry samples were analyzed for 52 separate chemical constituents, or analytes, consistent with Study Plan (SMUD 2016). Analytes were divided into four categories: miscellaneous, nutrients, trace elements, and standard minerals (Table 5-2). All metals were analyzed for total and dissolved fractions. Chemistry results were compared to the Sacramento and San Joaquin River Basin Plan Numerical Water Quality Objectives (BPWQOs) (CRWQCB 2016), the California Toxics Rule (CTR) standards (USEPA 2000), and US Environmental Protection Agency National Recommended Water Quality Criteria (NRWQC) (USEPA 1986), where applicable. NRWQC acute and chronic criteria for the dissolved metals cadmium, lead, nickel, silver, and zinc were based on hardness-dependent equations provided in Table 5-3 (USEPA 2017).

General chemistry results were further assessed for potential trends with season, sampling depth, and longitudinal movement of flow through the system. Inclusion of analytes in the trend analysis was predicated on the majority of results for the analyte of interest being above the analyte-specific MRL. Seasonal analysis was performed by comparison of results across the four sampling periods (spring, summer, fall, and fall-winter). Depth analysis at reservoir sites was performed on a sample site basis and

longitudinal flow analysis was assessed throughout two longitudinal flow transects. Transects originated at either Union Valley or Ice House reservoirs, with both terminating at IS-18-SFAR, the most downstream UARP riverine sampling site on the South Fork American River.

Table 5-2. General chemistry constituents, laboratory methods, detection/reporting limits, and water quality standards.

Analyte	Laboratory	Method	Units	Method Detection Limit** (MDL)	Method Reporting Limit** (MRL)	California Toxics Rule (CTR)	Basin Plan Water Quality Objectives (BPWQOs)	National Recommended Water Quality Criteria (NRWQC)	Hold Time
Miscellaneous									
Total Suspended Solids (TSS)	CLS	SM2540D	mg/L	2	5	NA	NA	NA	7 days
Total Dissolved Solids (TDS)	CLS	SM2540C	mg/L	10	10	NA	500 [v]	NA	7 days
Total Organic Carbon (TOC)	CLS	SM5310B	mg/L	0.54	1	NA	NA	NA	28 days
Cyanide	CLS	SM4500-CN E	ug/L	0.0012	0.0050	22/5.2 [ii, iii, vi]	NA	22/5.2 [ii, iii, vi]	14 days
Oil & Grease	CLS	EPA 1664A	mg/L	1	5	NA	NA	NA	28 days
Total Petroleum Hydrocarbons (TPH)	CLS	EPA 8015M	ug/L	10	50	NA	NA	NA	7 days
MTBE	CLS	EPA 8260B	mg/L	0.095	0.5	151/51 [i, vi]	5	NA	14 days
Hardness (as CaCO ₃)	CLS	SM2340B	mg/L	0.19	1	NA	NA	NA	180 days
Total Alkalinity (as CaCO ₃)	CLS	SM2320B	mg/L	1.0	5	NA	NA	>20 [i]	14 days
Nutrients									
Nitrate/Nitrite	CLS	EPA 300.0	mg/L	0.055 as N	0.40 as N	NA	1	10 [i, vii]	28 days
Total Kjeldahl Nitrogen (TKN)	CLS	SM4500-NH ₃ C	mg/L	0.040	0.2	NA	NA	NA	28 days
Ammonia as N	CLS	SM4500-NH ₃ C	mg/L	0.025	0.1	NA	1.5	[iv]	28 days
Total Phosphorous	CLS	SM4500-P E	mg/L	0.023	0.05	NA	NA	NA	28 days
Orthophosphate	CLS	SM4500-P E	mg/L	0.0051	0.15	NA	NA	NA	48 hours
Trace Elements*									
Aluminum (Total)	CLS	EPA 200.8	ug/L	1.55	20	NA	NA	750/87 [i, vi]	28 days
Aluminum (Dissolved)	CLS	EPA 200.8	ug/L	0.52	20	NA	NA	NA	28 days
Arsenic (Total)	Basic	EPA 1638	ug/L	0.0018	0.0054	340/150 [i, iii, vi]	10	340/150 [i, iii, vi]	28 days
Arsenic (Dissolved)	Basic	EPA 1638	ug/L	0.0018	0.0054	NA	NA	NA	28 days
Barium (Total)	CLS	EPA 200.8	ug/L	0.14	5	NA	NA	1000 [i, vii]	28 days
Cadmium (Total)	Basic	EPA 1638	ug/L	0.0330	0.100	0.29/0.22 [iii, vi, viii]	5	0.14/0.037 [i, viii, ix]	28 days
Cadmium (Dissolved)	Basic	EPA 1638	ug/L	0.0330	0.100	NA	NA	[xi]	28 days
Copper (Total)	Basic	EPA 1638	ug/L	0.0330	0.100	1.0/0.9 [iii, vi, viii]	1	[i, x]	28 days
Copper (Dissolved)	Basic	EPA 1638	ug/L	0.0330	0.100	NA	NA	[xi]	28 days
Iron (Total)	CLS	EPA 200.7	ug/L	6.8	100	NA	300	1000 [i]	28 days
Iron (Dissolved)	CLS	EPA 200.7	ug/L	6.8	100	NA	NA	NA	28 days



Analyte	Laboratory	Method	Units	Method Detection Limit** (MDL)	Method Reporting Limit** (MRL)	California Toxics Rule (CTR)	Basin Plan Water Quality Objectives (BPWQOs)	National Recommended Water Quality Criteria (NRWQC)	Hold Time
Lead (Total)	Basic	EPA 1638	ug/L	0.0200	0.0500	3/0.12 [iii, vi, viii]	15	3/0.12 [iii, vi, viii]	28 days
Lead (Dissolved)	Basic	EPA 1638	ug/L	0.0200	0.0500	NA	NA	[xi]	28 days
Manganese	CLS	EPA 200.8	ug/L	0.050	2.0	NA	50	50 [i, v]	28 days
Mercury (Total)	Basic	EPA 1631E	ug/L	0.20	0.50	0.05 [vii]	NA	1.4/0.77 [i, vi]	90 days
Methyl mercury (Total)	Basic	EPA 1630	ug/L	0.020	0.050	NA	NA	0.3 [vii]	6 months
Nickel (Total)	Basic	EPA 1638	ug/L	0.0330	0.100	610 [iii, vi]	100	50/5 [i, vi, viii]	28 days
Nickel (Dissolved)	Basic	EPA 1638	ug/L	0.0330	0.100	NA	NA	[xi]	28 days
Selenium (Total)	Basic	EPA 200.8	ug/L	0.4	2.0	20/5 [iii, vi]	NA	258/5 [i, vi]	28 days
Selenium (Dissolved)	Basic	EPA 200.8	ug/L	0.4	2.0	NA	NA	NA	28 days
Silver (Total)	CLS	EPA 200.8	ug/L	0.070	0.50	0.03 [iii, viii]	NA	0.03 [i, viii]	28 days
Silver (Dissolved)	CLS	EPA 200.8	ug/L	0.15	0.50	NA	NA	[xi]	28 days
Zinc (Total)	Basic	EPA 1638	ug/L	0.120	0.500	12/12 [iii, vi, viii]	NA	12/12 [i, vi, viii]	28 days
Zinc (Dissolved)	Basic	EPA 1638	ug/L	0.200	0.500	NA	NA	[xi]	28 days
Standard Minerals									
Calcium	CLS	EPA 200.7	mg/L	0.044	1.0	NA	NA	NA	6 months
Chloride	CLS	EPA 300.0	mg/L	0.026	0.50	NA	250	860/230 [i, vi]	28 days
Magnesium	CLS	EPA 200.7	mg/L	0.050	2.0	NA	NA	NA	6 months
Potassium	CLS	EPA 200.7	mg/L	0.13	1.0	NA	NA	NA	6 months
Sodium	CLS	EPA 200.7	mg/L	0.29	1.0	NA	NA	NA	6 months
Sulfate	CLS	EPA 300.0	mg/L	0.038	0.50	NA	250	250 [i, v]	6 months

* Metals were measured for both dissolved and total recoverable. The thresholds between the two differ slightly, and most are dependent on water hardness. Final thresholds were calculated as a function of method and water hardness (Table 5-3).

**MDLs and MRLs based on results from California Laboratory Services (CLS) and Basic Laboratories (Basic) analytical results.

NA = Not applicable

[i] National Recommended Water Quality Criteria for Freshwater Aquatic Life Protection

[ii] U.S. Environmental Protection Agency, Federal Register, Volume 57, No. 246

[iii] U.S. Environmental Protection Agency, Federal Register, Vol. 65 No. 97

[iv] Aquatic Life Ambient Water Quality for Ammonia – Freshwater 2013

[v] This threshold is based off a "secondary" Maximum Contaminant Level that is primarily concerned with taste and odor

[vi] Values correspond to 1-hour Average/4-day Average

[vii] National Recommended Water Quality Criteria for Human Health & Welfare Protection (Water & Fish Consumption)

[viii] Hardness dependent. Value(s) in this table are approximated based on an average hardness value of 6.5 mg/L, taken during FERC re-licensing. Actual thresholds were calculated based on the water hardness of the sample (Tables C-9 through C-16)

[ix] Values correspond to 24-hour Average/ 4-day Average

[x] U.S. Environmental Protection Agency, Aquatic Life Ambient Freshwater Quality Criteria – Copper (USEPA 2007)

[xi] Dissolved thresholds dependent on water hardness and equations found in USEPA 2017



Table 5-3. U.S. Environmental Protection Agency National Recommended Water Quality Criteria hardness-dependent equations for dissolved metals (USEPA 2017)

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

NA = Not applicable



Figure 5-3. Example of mid-reservoir general chemistry sampling site (R-IS-18-RR) at Rubicon Reservoir.

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

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

where:

RPD = relative percent difference

C₁ = sample concentration

C₂ = duplicate concentration

Field duplicate samples were collected at six sites, with each sampling event represented by at least one set of duplicates. Field duplicates were taken on 5/03/2017

(IS-19-SFAR) and 5/09/2017 (R-IS-10-IHR) for all analytes, and on 8/10/2017 (R-IS-9-IHR), 10/25/2017 (R-IS-2-LL), 11/07/2017 (IS-7-SFRR) and 11/20/2017 (IS-11-SFSC) for trace elements.

Quantitative RPD for most analytes was low (Appendix C, Table C-17), with a few instances of somewhat elevated RPD for results above the RL. During the May (Spring) sampling event, quantitative RPD for duplicate samples was elevated for sulfate as SO₄ (51%), total dissolved solids (67–100%), sodium (194%), total Kjeldahl nitrogen (165%), dissolved zinc (128%), and total zinc (117%). During the August (Summer) sampling event, dissolved nickel RPD was 68%. For the late-November (Fall-Winter) sampling period, the total lead RPD was 144%. The relatively higher quantitative RPD for the aforementioned sampling events and analytes is likely indicative of natural variability when concentrations are generally low, as measured during the 2017 surveys (Section 6.2).

To determine the potential for analyte contamination, field and equipment blanks were collected using laboratory-grade deionized water (from CLS) and EPA 1638 Trace Metals Clean deionized water (from Basic Laboratories) (for trace elements) during the May (Spring) sampling event. Use of the laboratory-grade deionized water (from CLS) was discontinued when it was confirmed to be of lower purity than the deionized water (from Basic Laboratories). Field and equipment blanks continued to be collected using EPA 1638 Trace Metals Clean deionized water (from Basic Laboratories) for trace elements during the remaining 2017 surveys. Blank results were overwhelmingly less than the MDL for all analytes in a given sample, with a few exceptions (Appendix C). Although the field blank for the Late-November (Fall-Winter) riverine and reservoir sampling events exhibited total copper (0.112 ug/L) and dissolved copper (0.105 ug/L) at levels slightly greater than the respective RL for these analytes (0.100 ug/L), the elevated blanks did not result in exceedances of water quality criteria (Appendix C, Tables C-4 and C-8). The same was true for the TOC field blank (1.9 mg/L) and equipment blank (1.1 mg/L) during the May (Spring) riverine and reservoir sampling events, respectively (Appendix C, Tables C-1 and C-5). The field blank for the May (Spring) riverine and reservoir sampling events also exhibited dissolved copper (0.0998 ug/L) between the MDL (0.0330 ug/L) and RL (0.100 ug/L), and the field blank for the November (Fall) riverine sampling event exhibited total mercury (0.33 ug/L) between the MDL (0.20 ug/L) and RL (0.50 ug/L). The slightly elevated blanks for these events also did not result in exceedances of water quality criteria (Appendix C, Tables C-1 and C-3). Overall, field and equipment blank results for the 2017 general chemistry survey were satisfactory.

5.3 BACTERIA

Bacteria grab samples were collected near reservoir and river shorelines in shallow water, and in particular at swim areas/beach locations (Table 4-6, Figure 5-4). Samples were collected in sterilized bottles supplied by the analytical laboratory. Field sampling personnel 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 5-4).



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

Table 5-4. 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 coliforms	SM9221E (MPN 15 or 25)	MPN/100 mL	1.8	8 hr

MDL = method detection limit

mL = milliliter

MPN = most probable number

SM = Standard Method

Field-based 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. As noted in Section 5, *in situ* water quality parameters were collected as part of both *in situ* sampling events and general chemistry sampling events in 2017, consistent with the Monitoring Plan (SMUD 2016). Several riverine sites were not sampled in 2017 due to lack of accessibility (Table 4-5).

February (Winter) In situ Water Quality Sampling Event

During the February sampling event, water temperatures ranged from 3.1 to 6.0 degrees Celsius (°C) and were variable by site. Riverine dissolved oxygen ranged from 9.8 to 12.9 milligrams per liter (mg/L) (73 to 104% saturation), with no measurements falling below the Basin Plan instantaneous minimum concentration of 7.0 mg/L for cold freshwater habitat (COLD) and spawning, reproduction, and/or early development (SPWN), designated beneficial uses. pH at riverine sites ranged from 6.1 to 7.5 standard units (s.u.), with two exceedances of the Basin Plan instantaneous minimum pH objective (6.5 s.u.) and no exceedances of the instantaneous maximum pH objective (8.5 s.u.). Measured pH below the Basin Plan instantaneous minimum occurred at sites IS-18-SFAR (6.3 s.u.) and IS-19-SFAR (6.1 s.u.) (Table 6-1).

Typical of granitic watersheds, conductivity at the riverine sites was low, ranging from 9 to 20 microsiemens per centimeter (uS/cm).

Turbidity measurements during the February sampling event ranged from 1.9 to 78.7 Nephelometric Turbidity Unit (NTU) with no particular spatial pattern. Turbidity measurements at two sites along Silver Creek (IS-13-SC, IS-14-BC) and two sites along

the South Fork American River (IS-18-SFAR, IS-19-SFAR) were relatively high (52–79 NTU) during this survey (Table 6-1), which may be due to increased runoff from the area immediately downstream of the King Fire area that burned over 97,000 acres of land in El Dorado County, California, in mid-September to mid-October 2014.

May (Spring) In situ Water Quality and General Chemistry Sampling Event

During the May sampling event, water temperatures exhibited a greater range and were generally higher than winter temperatures (3.5 to 11.2°C). Dissolved oxygen ranged from 10.0 to 11.3 mg/L (83 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 (Table 6-1). pH ranged from 6.5 to 7.2 s.u., with no exceedances of the Basin Plan instantaneous minimum pH objective (6.5 s.u.) and no exceedances of the instantaneous maximum (8.5 s.u.).

Conductivity at the riverine sites was low, ranging from 6 to 24 uS/cm during the May sampling event.

Turbidity measurements ranged from 0.2 to 13.7 NTU. All turbidity measurements were similarly low except for Site IS-17-BC, which was at 13.7 NTU (Table 6-1).

August (Summer) General Chemistry Sampling Event

During the August sampling event, water temperatures ranged from 8.4 to 20.0°C and were variable by site. Riverine dissolved oxygen during the August sampling event ranged from 7.6 to 10.1 mg/L (80 to 102% saturation), with no measurements falling below the Basin Plan instantaneous minimum concentration of 7.0 mg/L for COLD and SPWN. Riverine pH ranged from 6.2 to 8.0 with one exceedance of 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-3-LRR (6.2 s.u.) (Table 6-1).

Conductivity at the riverine sites was low, ranging from 6 to 28 uS/cm.

During the August sampling event, turbidity measurements were low, ranging from 0.7 to 5.8 NTU.

November (Fall) In situ Water Quality and General Chemistry Sampling Event

Water temperatures during the November sampling event ranged from 3.6 to 11.3 °C. Riverine dissolved oxygen ranged from 8.4 to 11.5 mg/L (78 to 99% saturation), with no measurements falling below Basin Plan instantaneous minimum concentration of 7.0 mg/L for COLD and SPWN. Riverine pH ranged from 6.8 to 7.3 during the November event with no exceedances of the Basin Plan instantaneous minimum pH objective (6.5 s.u.) and no exceedances of the instantaneous maximum (8.5 s.u.) (Table 6-1).

Conductivity at the riverine sites was low, ranging from 6 to 35 uS/cm during the November sampling event.

Turbidity at riverine sites was low, ranging from 0.1 to 1.0 NTU.

Late November (Fall-Winter) General Chemistry Sampling Event

Water temperatures during the late November sampling event ranged from 4.4 to 10.0 °C. Riverine dissolved oxygen ranged from 6.1 to 12.4 mg/L (81 to 101% saturation), with one measurement falling below 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 Site IS-9-GCC (6.2 mg/L) (Table 6-1). Riverine pH ranged from 6.6 to 7.4 during the late November sampling event with no exceedances of the Basin Plan instantaneous minimum pH objective (6.5 s.u.) and no exceedances of the instantaneous maximum (8.5 s.u.).

Conductivity at the riverine sites was low, ranging from 7 to 20 uS/cm.

During the late November sampling event, turbidity ranged from 0.1 to 44.6 NTU. All turbidity measurements were similar except for Site IS-17-BC, which exhibited 44.6 NTU (Table 6-1).

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

Site ID	2017 Sample Date	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)
February (Winter)							
IS-1-RR	-	-	-	-	-	-	-
IS-2-LRR	-	-	-	-	-	-	-
IS-3-LRR	-	-	-	-	-	-	-
IS-4-GC	-	-	-	-	-	-	-
IS-5-GC	-	-	-	-	-	-	-
IS-6-GC	-	-	-	-	-	-	-
IS-9-GCC	-	-	-	-	-	-	-
IS-7-SFRR	-	-	-	-	-	-	-
IS-8-SFRR	-	-	-	-	-	-	-
IS-10-SFSC	2/7	3.8	7.5	10.0	76	10 ^Q	1.9
IS-11-SFSC	2/7	3.1	7.3	9.8	73	9 ^Q	24.6
IS-12-SC	2/7	3.3	7.2	10.4	77	10 ^Q	20.4
IS-13-SC	2/7	5.1	6.7	10.4	82	11 ^Q	52.8
IS-14-SC	2/7	5.1	7.0	10.2	80	11 ^Q	78.7
IS-15-SFAR	-	-	-	-	-	-	-
IS-16-SFAR	-	-	-	-	-	-	-
IS-17-BC	-	-	-	-	-	-	-
IS-18-SFAR	2/8	7.2	6.3	12.2	101	20 ^Q	59.3
IS-19-SFAR	2/8	6.0	6.1	12.9	104	18 ^Q	63.9
May (Spring)							
IS-1-RR	-	-	-	-	-	-	-
IS-2-LRR	-	-	-	-	-	-	-
IS-3-LRR	-	-	-	-	-	-	-
IS-4-GC	-	-	-	-	-	-	-
IS-5-GC	5/3	3.6	6.5	11.0	83	6 ^Q	1.3
IS-6-GC	5/2	3.6	5.9	11.0	83	6 ^Q	0.5
IS-9-GCC	5/2	3.5	5.9	11.3	85	7 ^Q	1.1
IS-7-SFRR	5/2	5.5	6.8	10.7	84	7 ^Q	0.5
IS-8-SFRR	5/2	4.9	6.7	11.0	86	6 ^Q	0.2
IS-10-SFSC	5/1	4.8	6.8	10.7	83	9 ^Q	1.1
IS-11-SFSC	5/1	8.7	7.1	10.2	87	11 ^Q	0.9
IS-12-SC	5/1	6.9	7.0	10.7	88	10 ^Q	0.7
IS-13-SC	5/8	8.9	7.0	10.8	94	10	1.8



Site ID	2017 Sample Date	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)
IS-14-SC	5/8	8.6	6.5	11.0	93	10	1.3
IS-15-SFAR	5/8	8.7	7.2	11.3	97	18	4.1
IS-16-SFAR	5/8	9.2	7.3	10.8	94	16	5.4
IS-17-BC	5/8	10.4	6.8	10.0	90	24	13.7
IS-18-SFAR	5/3	11.2	7.2	11.1	101	23 ^Q	2.5
IS-19-SFAR	5/3	9.0	7.0	10.7	96	10 ^Q	1.2
August (Summer)							
IS-1-RR	8/9	17.0	7.2	7.8	80	9 ^Q	0.9
IS-2-LRR	8/9	19.7	6.8	7.6	83	9 ^Q	0.9
IS-3-LRR	8/2	20.0	6.2	7.5	82	9 ^Q	2.1
IS-4-GC	8/17	10.8	6.5	9.0	81	6	0.8
IS-5-GC	8/16	15.2	7.1	8.5	84	8	0.6
IS-6-GC	8/17	15.8	6.5	8.4	84	7	0.7
IS-9-GCC	8/17	15.4	6.7	8.5	85	6	0.9
IS-7-SFRR	8/17	14.9	7.1	8.7	86	7	0.7
IS-8-SFRR	8/17	15.2	7.2	8.6	86	7	0.6
IS-10-SFSC	8/10	7.8	7.8	10.1	85	8 ^Q	2.0
IS-11-SFSC	8/15	19.5	7.7	8.0	87	14 ^Q	1.0
IS-12-SC	8/16	8.4	6.9	10.0	86	7	2.6
IS-13-SC	8/15	15.4	6.7	9.1	91	13 ^Q	1.1
IS-14-SC	8/15	10.5	7.2	10.1	91	11 ^Q	1.2
IS-15-SFAR	-	-	-	-	-	-	-
IS-16-SFAR	-	-	-	-	-	-	-
IS-17-BC	8/14	18.6	8.0	8.5	91	22 ^Q	5.8
IS-18-SFAR	8/16	19.7	7.3	9.4	102	28	0.7
IS-19-SFAR	8/21	13.7	7.3	10.0	96	16 ^Q	1.6
November (Fall)							
IS-1-RR	11/1	8.9	6.8	8.4	72	9	0.4
IS-2-LRR	11/1	8.8	7.0	9.3	80	6	0.2
IS-3-LRR	11/1	10.0	6.8	8.6	76	6	0.2
IS-4-GC	11/2	10.0	6.8	9.2	82	6	0.5
IS-5-GC	11/2	6.8	6.9	10.3	84	6	0.5
IS-6-GC	11/2	3.6	6.8	9.6	82	8	0.4
IS-9-GCC	11/7	7.6	6.7	9.6	80	9	0.5
IS-7-SFRR	11/7	4.3	7.3	11.3	87	14	0.4



Site ID	2017 Sample Date	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)
IS-8-SFRR	11/7	4.9	7.1	11.2	88	11	0.3
IS-10-SFSC	11/7	8.4	6.7	9.3	84	8	1.0
IS-11-SFSC	11/8	5.1	7.3	11.3	89	11	0.1
IS-12-SC	11/8	9.1	7.0	9.8	85	9	0.1
IS-13-SC	-	-	-	-	-	-	-
IS-14-SC	-	-	-	-	-	-	-
IS-15-SFAR	11/6	3.9	7.6	11.2	97	35	0.6
IS-16-SFAR	11/6	9.8	7.3	11.5	101	28	0.6
IS-17-BC	-	-	-	-	-	-	-
IS-18-SFAR	11/6	11.3	7.3	10.9	99	17	0.9
IS-19-SFAR	11/7	10.7	7.2	10.8	98	16	0.8
Late November (Fall-Winter)							
IS-1-RR	-	-	-	-	-	-	-
IS-2-LRR	-	-	-	-	-	-	-
IS-3-LRR	-	-	-	-	-	-	-
IS-4-GC	11/16	6.6	6.9	9.9	81	7	0.7
IS-5-GC	11/20	4.5	6.8	10.9	84	9	0.1
IS-6-GC	11/20	4.4	6.6	10.9	84	9	0.3
IS-9-GCC	11/16	6.7	6.9	6.1	82	9	0.8
IS-7-SFRR	11/20	4.7	7.1	11.0	85	11	0.1
IS-8-SFRR	11/20	4.8	6.8	10.0	86	10	0.0
IS-10-SFSC	11/16	8.4	6.9	9.7	82	8	0.9
IS-11-SFSC	11/20	6.0	7.2	10.8	87	13	0.1
IS-12-SC	11/20	8.5	7.0	9.9	85	10	0.2
IS-13-SC	-	-	-	-	-	-	-
IS-14-SC	-	-	-	-	-	-	-



Site ID	2017 Sample Date	Water Temperature (°C)	pH (s.u.)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	Conductivity (uS/cm)	Turbidity (NTU)
IS-15-SFAR	11/28	5.3	7.3	12.4	98	23	1.1
IS-16-SFAR	11/28	8.1	7.1	10.8	91	15	5.7
IS-17-BC	11/28	9.5	7.1	10.5	92	20	44.6
IS-18-SFAR	11/29	9.5	7.4	11.3	99	18	4.7
IS-19-SFAR	11/27	10.0	7.2	11.4	101	16	1.3

°C = degrees Celsius

s.u. = standard unit of pH

mg/L = milligrams per liter

% sat = percent saturation

uS/cm = microsiemens per centimeter

NTU = Nephelometric Turbidity Unit

“–” indicates that data were not collected due to site inaccessibility. See also Table 4.5.

“Q” Data that are designated as “qualified” because the post-sampling calibration check measurement quality objective (MQO) for acceptability was not met (see Appendix F).

6.1.2. Reservoir Sites

In situ water quality data for selected UARP reservoir sites are presented in Figures 6-1 through 6-4 as representative of vertical profiles at other sites. 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 both *in situ* sampling events and general chemistry sampling events in 2017, consistent with the Monitoring Plan (SMUD 2016).

May (Spring) In situ Water Quality and General Chemistry Sampling Event

During the May sampling event, thermal stratification was apparent in Union Valley and Ice House reservoirs, with a relatively compact, shallow thermocline located between roughly 2 and 10 m depth, and a gradual, deeper thermocline in the smaller Brush Creek Reservoir (Figure 6-1). Surface water temperatures ranged from 11.1° to 15.6°C and bottom water temperatures were lower, ranging 4.6° to 10.0°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 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 in May, above 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 5.9 to 7.6 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), with the exception of waters near the bottom of Brush Creek Reservoir where turbidity increased to approximately 7 NTU (Figure 6-1).

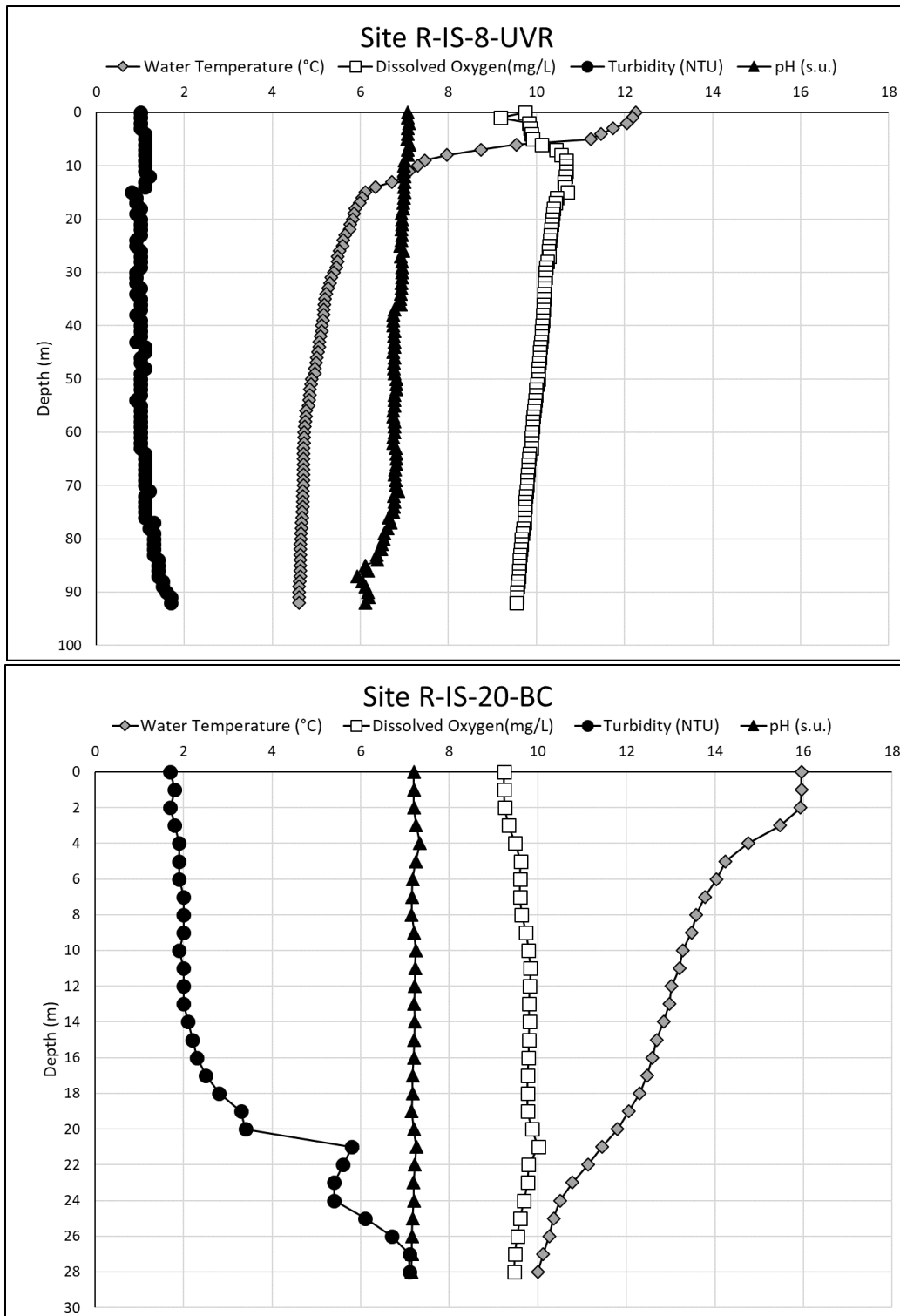


Figure 6-1. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Union Valley Reservoir and Brush Creek Reservoir sites R-IS-8-UVR (top) and R-IS-20-BC (bottom) during May (Spring) 2017. These plots are also repeated in Appendix B.

August (Summer) General Chemistry Sampling Event

During the August sampling event, seasonal thermal stratification was apparent in the deeper reservoirs (i.e., Union Valley, Ice House, Loon Lake), with broad thermoclines located between roughly 5 and 20 m depth (Figure 6-2). There was less variation in water temperatures in the smaller reservoirs; exceptions include shallow, daily thermoclines in surface waters at Junction Reservoir (Appendix B, Figure B-11) and Slab Creek Reservoir (Appendix B, Figures B-12 and B-13) and decreasing temperatures in the bottom waters of Brush Creek Reservoir (Figure 6-2) and Buck Island Reservoir (Appendix B, Figure B-5). Overall, surface water temperatures ranged from 22.7° to 11.3°C, with lower temperatures in bottom waters ranging from 15.6° to 6.1°C. pH and turbidity were generally consistent with depth, while dissolved oxygen varied somewhat depending on the reservoir. For example, in Ice House Reservoir, dissolved oxygen increased slightly (0.5–1 mg/L) mid-water column (Figure 6-2), suggesting the possibility of photosynthetic activity and associated dissolved oxygen production in the metalimnion. Dissolved oxygen concentrations were above 7 mg/L at UARP reservoir sites in August, which is above the Basin Plan instantaneous minimum concentration of 7.0 mg/L for COLD and SPAWN designated beneficial uses. Brush Creek Reservoir was the exception, where dissolved oxygen concentrations decreased through the thermocline to a minimum of approximately 2 mg/L in near the reservoir bottom (Figure 6-2). pH values exhibited some variation among reservoirs and with depth, ranging from 5.9 to 8.4 s.u., with several values below the Basin Plan instantaneous minimum pH objective (6.5 s.u.) and no values above the instantaneous maximum pH objective (8.5 s.u.). Turbidity levels were very low (less than or equal to 2 NTU), with the exception of waters near the bottom of Loon Lake (Appendix B, Figure B-7), Slab Creek Reservoir (Appendix B, Figure B-12), and Brush Creek Reservoir (Figure 6-2), where turbidity increased slightly to 6.5, 7.4 and 7.5 NTU, respectively.

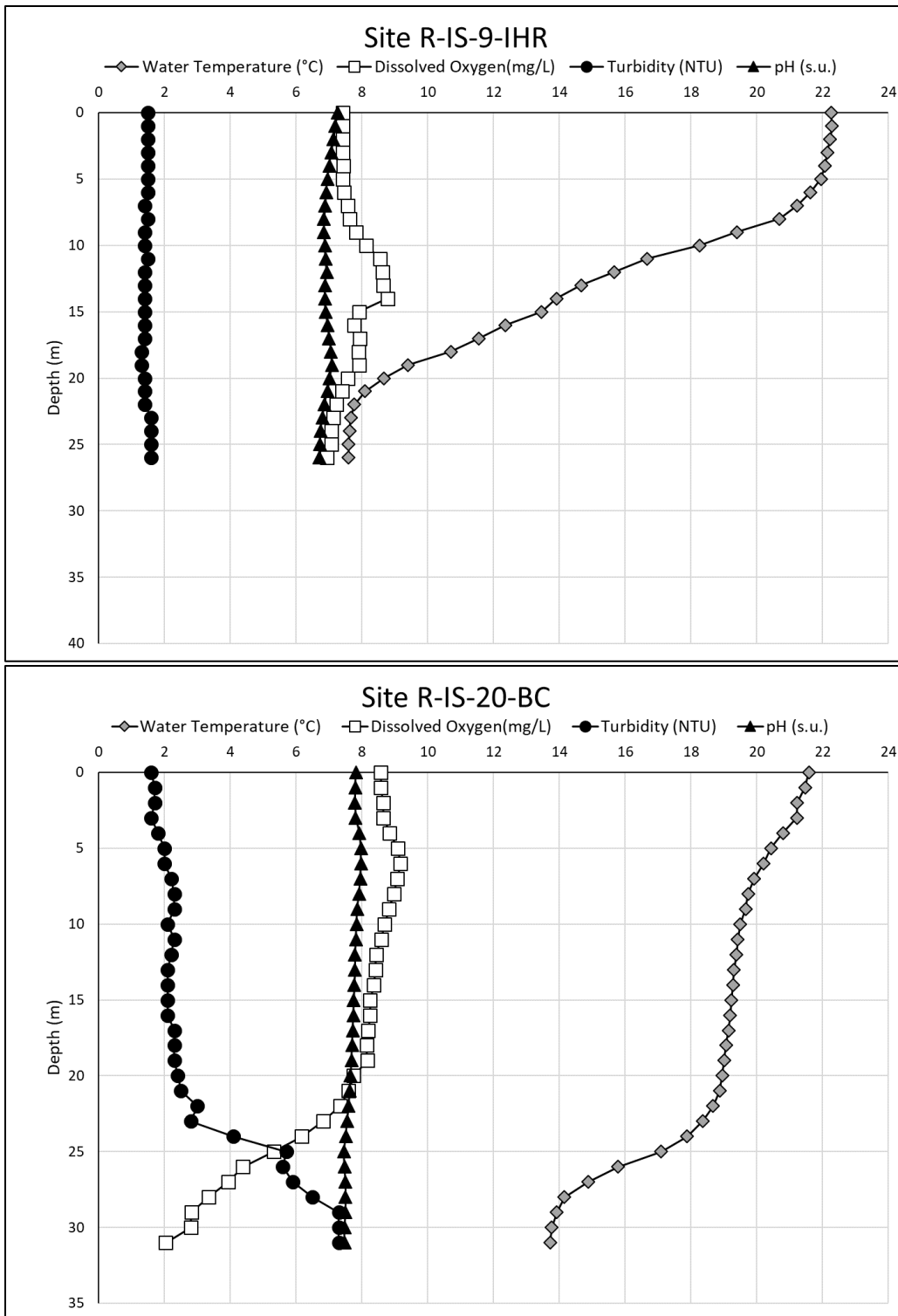


Figure 6-2. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Ice House Reservoir and Brush Creek Reservoir sites R-IS-9-IHR (top) and R-IS-20-BC (bottom) during August (Summer) 2017.

October/November (Fall) In situ and General Chemistry Sampling Event

During the October/November sampling event, surface water temperatures ranged from 9.8° to 17.0°C and bottom water temperatures ranged from 6.6° to 15.3°C. All sites exhibited little to no variation in water temperature with depth, indicating that the reservoirs were generally well mixed (Figure 6-3). Exceptions included Site R-IS-8-UVR, which exhibited a broad, deep thermocline between 40 and 70 m (Appendix B, Figure B-18), and Site R-IS-11-IHR, which exhibited a compact thermocline between 19 and 21 m (Appendix B, Figure B-20). Dissolved oxygen, pH, and turbidity at reservoir sites were generally consistent with 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 Site R-IS-11-IHR where dissolved oxygen reached 5.9 mg/L at the approximate location of the thermocline (20 m) and continued to decrease towards the bottom of the reservoir (Appendix B, Figure B-20). pH values exhibited little variation with depth, with only Junction Reservoir (R-IS-12-JR) having values below the Basin Plan instantaneous minimum pH objective (6.5 s.u.) throughout the water column (Appendix B, Figure B-20). There were no exceedances of the instantaneous maximum pH objective (8.5 s.u.). Turbidity levels were very low (less than or equal to 3 NTU).

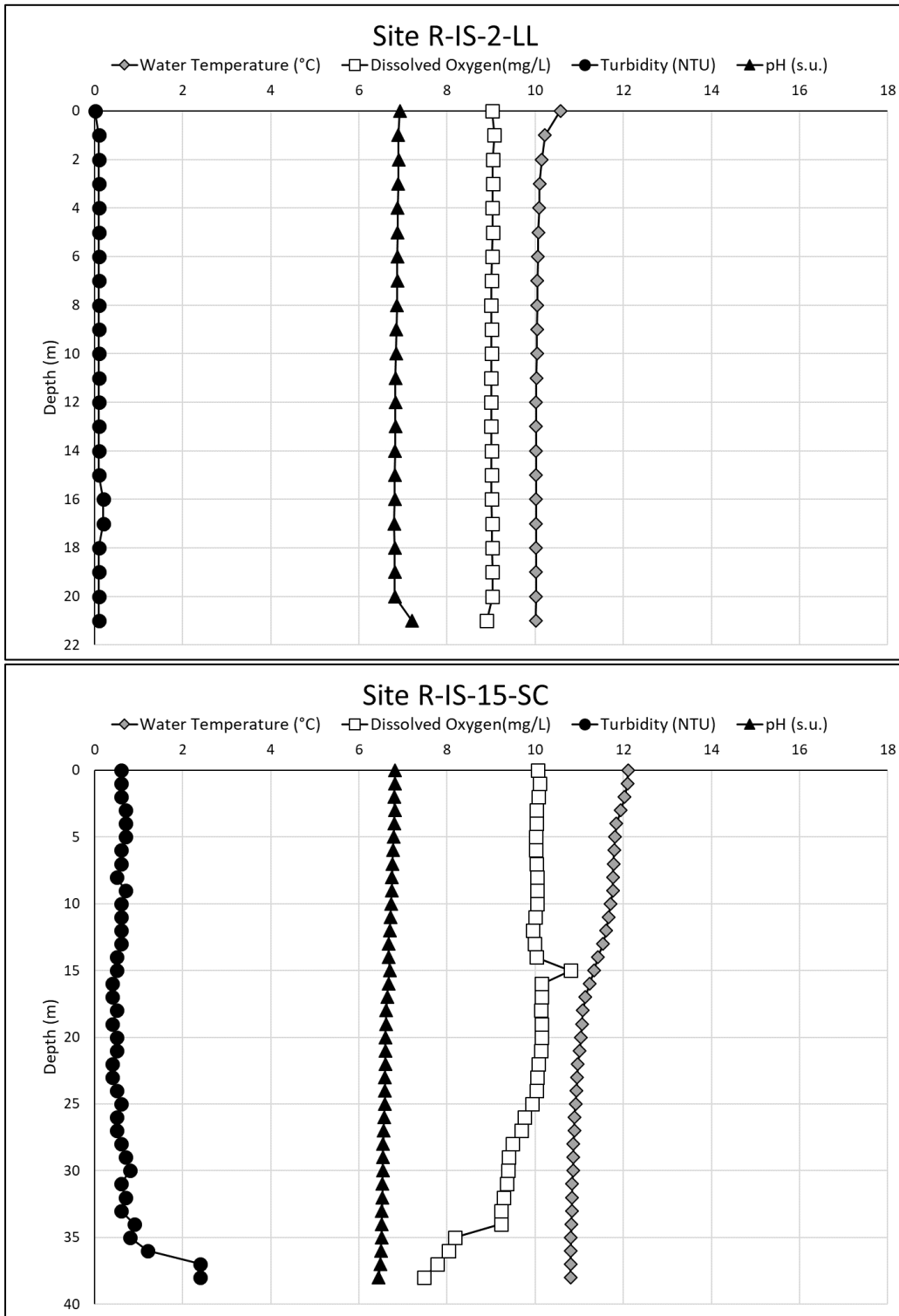


Figure 6-3. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Loon Lake and Slab Creek Reservoir sites R-IS-2-LL (top) and R-IS-15-SC (bottom) during October/November (Fall) 2017.

Late November (Fall-Winter) General Chemistry Sampling Event

During the late November sampling event, surface water temperatures ranged from 13.5° to 5.7°C and bottom water temperatures ranged from 12.7° to 4.4°C. All sites exhibited little to no variation in water temperature with depth indicating that these sites were fully mixed. Similar to the October/November (Fall) sampling results, exceptions included Site R-IS-8-UVR, which exhibited a broad, deep thermocline between 63 and 69 m, and Site R-IS-11-IHR, which possessed a shallow thermocline between 23 and 26 m (Figure 6-4). Dissolved oxygen, pH, and turbidity at all waterbodies were generally consistent with depth. Dissolved oxygen concentrations were above 8 mg/L at all reservoir sites during the late November sampling event, above the Basin Plan instantaneous minimum concentration of 7.0 mg/L for COLD and SPAWN designated beneficial uses. There were two exceptions: Site R-IS-8-UVR, with dissolved oxygen concentrations that decreased from 7.1 to 5.8 mg/L at the approximate location of the thermocline (63–69 m) and then increased again to 7.3 mg/L by the bottom of the reservoir; and Site R-IS-11-IHR, with dissolved oxygen concentrations that decreased from 6.3 to 2.8 mg/L at the approximate location of the thermocline (23–26 m) and further decreased toward the bottom of the reservoir. pH values exhibited little variation among reservoirs and with depth, ranging from 5.8 to 7.1 s.u., with sites R-IS-8-UVR and R-IS-11-IHR possessing several values below the Basin Plan instantaneous minimum pH objective (6.5 s.u.) at the approximate location of thermocline for each reservoir. There were no exceedances of the instantaneous maximum pH objective (8.5 s.u.).

Turbidity levels were very low (less than or equal to 3 NTU), with the exception of waters near the bottom of a shallow (~6 m depth) site in Loon Lake (Appendix B, Figure B-22), throughout the water column in Brush Creek Reservoir (Appendix B, Figure B-29), and mid-water column in Slab Creek Reservoir (Appendix B, Figure B-28). The relatively higher turbidity levels throughout the Brush Creek Reservoir water column ranged from 31.4 to 62.9 NTU and were likely indicative of a recent rain event in the area of the King Fire. The higher turbidity levels at the shallow (~10 m depth) Site R-IS-14-SC occurred throughout the water column, ranging from 13.8 to 20.7 NTU and may have been due to re-suspension of shallow bottom sediments. In contrast, the discrete increase in turbidity at 13 m at the deeper Site R-IS-15-SC suggests the presence of a turbidity plume, potentially from riverine input, which was not yet mixed within the larger water column.

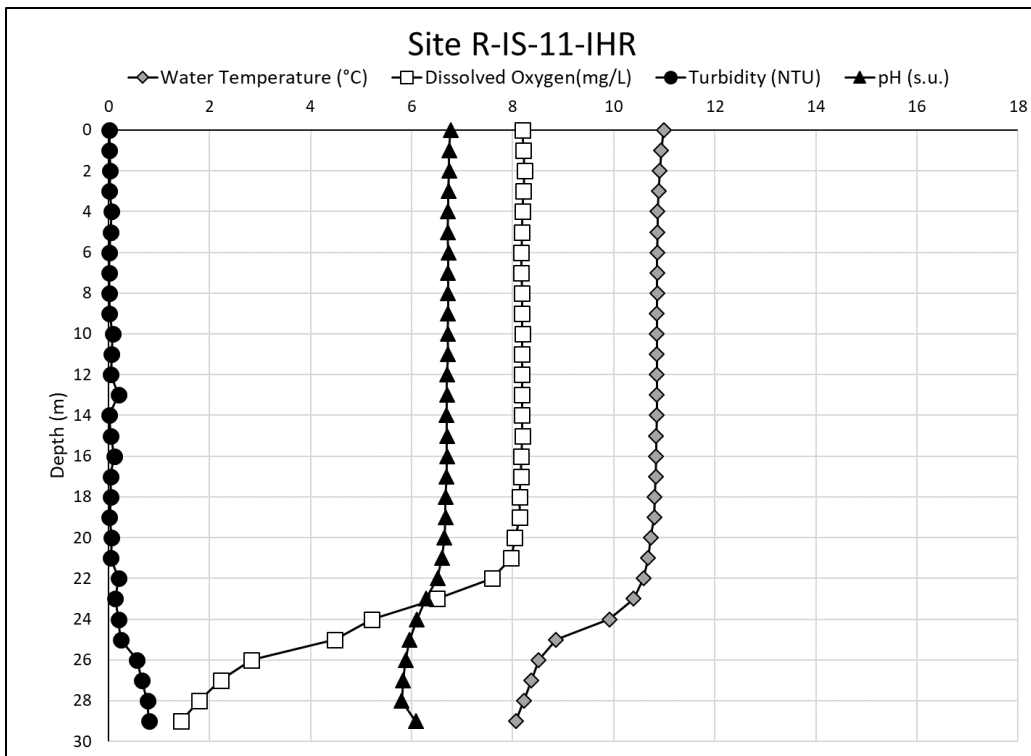
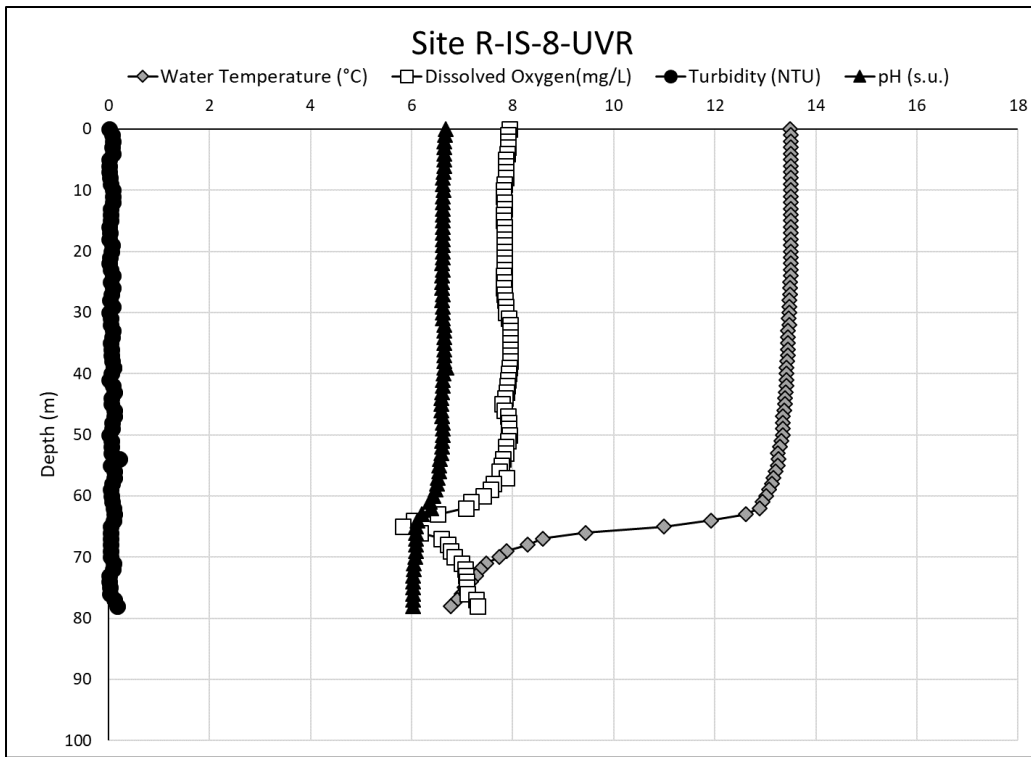


Figure 6-4. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Union Valley Reservoir and Ice House Reservoir sites R-IS-8-UVR and R-IS-11-IHR during late November 2017.

6.2. GENERAL CHEMISTRY

6.2.1. In situ Parameters

In situ water quality parameters measured during the 2017 May (Spring), August (Summer), October/November (Fall), and Late November (Fall-Winter) general chemistry sampling events are discussed in Section 6.1.

6.2.2. Chemical Constituents

General chemistry data for UARP riverine and reservoir sites are presented in Appendix C, Tables C-1 through C-8. Water quality standards are presented in Table 5-2, with equations for hardness-dependent water quality standards presented in Table 5-3. In general, suspended and dissolved solids, TOC, fuels and oils, nutrients, and total alkalinity were low and there were no exceedances of water quality standards. Hardness was also very low (< 17 mg/L) at all sites, such that acute and chronic hardness-dependent criteria for associated metals were also low and exceedances occasionally occurred. In the case of dissolved silver, the hardness-based criterion was below the MDL. Despite this, across a total of 2,693 analyte records for riverine samples, there were only 29 instances of exceedances (1%). Across a total of 3,368 analyte records for reservoir samples, there were only 31 instances of exceedances (0.9%). The sections below provide a summary of general chemistry samples that exceeded one or more water quality standards. Exceedances of water quality standards observed during 2017 UARP riverine and reservoir sampling events are summarized in Tables 6-2 and 6-3, respectively.

Not all sites were able to be sampled in 2017. Refer to Tables 4-3 and 4-5 for explanations regarding chemistry sites that could not be sampled.

6.2.3. Riverine Sites

May (Spring) Sampling Event

During the May (Spring) sampling event, 11 of 15 sites had no exceedances of water quality standards. Exceedances occurred at four sites (IS-10-SFSC, IS-11-SFSC, IS-12-SC, IS-17-BC) for total silver, total iron, and/or manganese (Table 6-2).

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

August (Summer) Sampling Event

During the August (Summer) sampling event, 14 of 17 sites had no exceedances of water quality standards. Exceedances occurred at three sites (IS-3-LRR, IS-6-GC, IS-18-SFAR) for dissolved silver (Table 6-2).

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

November (Fall) Sampling Event

During the November (Fall) sampling event, nine of 16 sites had no exceedances of water quality standards. Exceedances occurred at seven sites (IS-2-LRR, IS-9-GCC, IS-7-SFRR, IS-8-SFRR, IS-10-SFSC, IS-11-SFSC, IS-19-SFAR) for total silver, dissolved silver, total iron, and/or manganese (Table 6-2).

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

Late-November (Fall-Winter) Sampling Event

During the November (Fall-Winter) sampling event, 10 of 14 sites had no exceedances of water quality standards. Exceedances occurred at four sites (IS-4-GC, IS-10-SFSC, IS-16-SFAR, IS-17-BC) for total aluminum, total cadmium, dissolved cadmium, total copper, total iron, manganese, total zinc, and/or dissolved zinc (Table 6-2).

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



Table 6-2. Exceedances of water quality standards observed during 2017 UARP general chemistry riverine sampling events.

Site ID	Total Aluminum (ug/L)	Total Cadmium (ug/L)	Dissolved Cadmium (ug/L)	Total Copper (ug/L)	Total Iron (ug/L)	Manganese (ug/L)	Total Silver (ug/L) ¹	Dissolved Silver (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)
Water Quality Standards										
NRWQC	750	0.14	NA	NA	1,000	50	0.03	NA	12	NA
BPWQO	NA	5.0	NA	1.0	300	50	NA	NA	NA	NA
CTR	NA	0.29	NA	1.0	NA	NA	0.03	NA	12	NA
May (Spring)										
IS-10-SFSC	--	--	--	--	--	--	0.82	--	--	--
IS-11-SFSC	--	--	--	--	--	--	1.3	--	--	--
IS-12-SC	--	--	--	--	--	--	1.1	--	--	--
IS-17-BC	--	--	--	--	400	80	--	--	--	--
August (Summer)										
IS-3-LRR	--	--	--	--	--	--	--	0.28 ^{2,3,J}	--	--
IS-6-GC	--	--	--	--	--	--	--	0.15 ^{2,3,J}	--	--
IS-18-SFAR	--	--	--	--	--	--	--	0.17 ^{2,3,J}	--	--
November (Fall)										
IS-2-LRR	--	--	--	--	--	--	0.07 ^J	0.26 ^{2,3,J}	--	--
IS-7-SFRR	--	--	--	--	--	--	0.18 ^J	--	--	--
IS-8-SFRR	--	--	--	--	--	--	0.24 ^J	--	--	--
IS-9-GCC	--	--	--	--	--	--	0.34 ^J	--	--	--
IS-10-SFSC	--	--	--	--	390	160	0.23 ^J	--	--	--
IS-11-SFSC	--	--	--	--	--	--	0.12 ^J	--	--	--
IS-19-SFAR	--	--	--	--	--	--	0.16 ^J	--	--	--



Site ID	Total Aluminum (ug/L)	Total Cadmium (ug/L)	Dissolved Cadmium (ug/L)	Total Copper (ug/L)	Total Iron (ug/L)	Manganese (ug/L)	Total Silver (ug/L) ¹	Dissolved Silver (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)
Late-November (Fall-Winter)										
IS-4-GC	--	0.27	0.14 ¹	2.66 ^{FB}	--	--	--	--	23.6	17.8 ¹
IS-10-SFSC	--	--	--	--	450	200	--	--	--	--
IS-16-SFAR	--	--	--	--	--	64	--	--	--	--
IS-17-BC	2,400	--	--	--	2,400	76	--	--	--	--

ug/L = micrograms per liter

NA = Not applicable

NRWQC = National Recommended Water Quality Criteria (USEPA 1986)

BPWQO = Basin Plan Water Quality Objectives (CRWQCB 2016)

CTR = California Toxics Rule (USEPA 2000)

-- = No exceedance observed

¹Note that the MDL for total silver is 0.07 ug/L, which is greater than the NRWQC and CTR criteria

²Exceeds USEPA National Recommended Water Quality Criteria, hardness dependent acute and/or chronic criteria (USEPA 2017) (Appendix C, Tables C-9 through C-12)

³Dissolved fraction is greater than total fraction, which may be a result of reporting near the detection limit ⁴Result falls between method detection limit and reporting limit

FB = Field Blank was greater than the MDL for this analyte. Field blank for Late November (Fall-Winter) riverine and reservoir sampling events corresponded to sample "IS-8-SFRR-FBL"

6.2.4. Reservoir Sites

May (Spring) Sampling Event

During the May (Spring) sampling event, there were no exceedances of water quality standards at nine of the 10 sites. Thermal stratification occurred at sites R-IS-11-IHR and R-IS-8-UVR. There were exceedances at of total aluminum, total iron, and manganese at Site R-IS-8-UVR-BOT (suffix "BOT" indicates a sample taken near the reservoir bottom) (Table 6-3).

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

August (Summer) Sampling Event

During the August (Summer) sampling event, there were no exceedances of water quality standards at 22 of 31 sites. Thermal stratification occurred at all sites except for sites R-IS-18-RR, R-IS-4-BC, R-IS-7-UVR, R-IS-6-UVR, and R-IS-13-CR. Exceedances occurred at nine sites, as summarized in Table 6-3.

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

October-November (Fall) Sampling Event

During the October-November (Fall) sampling event, 15 of 19 sites had no exceedances of water quality standards. Thermal stratification occurred at sites R-IS-11-IHR and R-IS-8-UVR. Exceedances occurred at four sites, as summarized in Table 6-3.

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

Late-November (Fall-Winter) Sampling Event

During the November (Fall-Winter) sampling event, there were no exceedances of water quality standards at 13 of 17 sites. Thermal stratification occurred at sites R-IS-11-IHR and R-IS-8-UVR. Exceedances occurred at four sites, as summarized in Table 6-3.

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

Table 6-3. Exceedances of water quality standards observed during 2017 UARP general chemistry reservoir sampling events.

Site ID	Total Aluminum (ug/L)	Total Cadmium (ug/L)	Total Copper (ug/L)	Total Iron (ug/L)	Total Lead (ug/L)	Manganese (ug/L)	Total Mercury (ng/L)	Total Silver (ug/L) ¹	Dissolved Silver (ug/L)	Total Zinc (ug/L)
Water Quality Standards										
NRWQC	750	0.14	NA	1,000	3	50	1,400	0.03	NA	12
BPWQO	NA	5.0	1.0	300	15	50	NA	NA	NA	NA
CTR	NA	0.29	1.0	NA	3	NA	50	0.03	NA	12
May (Spring)										
R-IS-8-UVR-BOT	1,200	--	--	790	--	66	--	--	--	
August (Summer)										
R-IS-1-LL-BOT	--	--	1.09	510	--	--	--	--	--	--
R-IS-9-IHR-BOT	--	--	2.1	--	--	--	--	--	--	--
R-IS-14-SC-SUR	--	--	--	--	--	--	--	--	0.28 ^{2,3,J}	--
R-IS-14-SC-BOT	--	--	1.35	--	--	--	--	--	0.25 ^{2,3,J}	--
R-IS-15-SC-SUR	--	--	--	--	--	--	--	--	0.26 ^{2,3,J}	--
R-IS-15-SC-BOT	--	--	--	--	--	--	--	--	--	--
R-IS-19-BI-SUR	--	--	--	--	--	--	--	--	0.25 ^{2,3,J}	--
R-IS-19-BI-BOT	--	0.22	4.18	650	5.84	--	96.3	--	0.28 ^{2,3,J}	17.3
R-IS-20-BR-BOT	--	--	--	--	--	180	--	--	--	--
October-November (Fall)										
R-IS-1-LL-SUR	--	--	--	--	--	--	--	0.08 ^J	--	--
R-IS-2-LL-SUR	--	--	--	--	--	--	--	0.09 ^J	--	--
R-IS-11-IHR-BOT	1,300	--	--	1,400	--	120	--	--	--	--
R-IS-19-BI-SUR	--	--	--	--	--	--	--	--	0.29 ^{2,3,J}	--



Site ID	Total Aluminum (ug/L)	Total Cadmium (ug/L)	Total Copper (ug/L)	Total Iron (ug/L)	Total Lead (ug/L)	Manganese (ug/L)	Total Mercury (ng/L)	Total Silver (ug/L) ¹	Dissolved Silver (ug/L)	Total Zinc (ug/L)
Late-November (Fall-Winter)										
R-IS-5-UVR-SUR	--	--	--	--	--	--	--	0.11 ^J	--	--
R-IS-6-UVR-SUR	--	--	--	--	--	--	--	--	0.18 ^{2,3,J}	--
R-IS-14-SC-SUR	850	--	--	650	--	--	--	--	--	--
R-IS-20-BR-SUR	2,200	--	--	2,100	--	--	--	--	--	--

ng/L = nanograms per liter

ug/L = micrograms per liter

NA = Not applicable

NRWQC = National Recommended Water Quality Criteria (USEPA 1986)

BPWQO = Basin Plan Water Quality Objectives (CRWQCB 2016)

CTR = California Toxics Rule (USEPA 2000)

-- = No exceedance observed

¹Note that the MDL for total silver is 0.07 ug/L, which is greater than the NRWQC and CTR criteria

²Exceeds USEPA National Recommended Water Quality Criteria, hardness dependent acute and/or chronic criteria (USEPA 2017) (Appendix C, Tables C-9 through C-12)

³Dissolved fraction is greater than total fraction, which may be a result of reporting near the detection limit

^JResult falls between method detection limit and reporting limit

6.2.5. Trend analysis

Trend analyses identified several analytes that exhibited seasonal, reservoir depth, or longitudinal flow trends. The most pronounced seasonal trends were observed for total mercury and total organic carbon (TOC). Total mercury concentrations in surface water samples were generally low (< 2 ng/L) and were relatively higher during Spring and Fall-Winter, as compared with Summer and Fall, sampling events (Figure 6-5). The small relative increases in total mercury in surface waters during Spring and Fall-Winter may have been due to increased runoff and elevated flows during these seasons, where total mercury tends to be associated with fine sediments and colloidal materials that also increase during runoff events. Bottom water total mercury concentrations appeared somewhat higher during Spring and Summer sampling events, however, there were a greater number of bottom samples collected during Spring and Summer due to thermal stratification in several UARP reservoirs, so confirmation of a trend in bottom water concentrations cannot be discerned from the available data. TOC in surface water samples decreased slightly from the Spring to Fall-Winter seasons, with increases observed with distance downstream for a given season (Figure 6-6).

Differences in analyte concentration with depth were observed for dissolved metals aluminum and zinc. Bottom water samples for both analytes were higher compared to surface samples at multiple sites and in various seasons throughout the year (Figure 6-7 and 6-8). Longitudinal flow trends were observed for bicarbonate, copper, total alkalinity, and total hardness in multiple, but not all, seasons. When observed, the trend for each analyte was increasing concentration with distance downstream (Figures 6-9 through 6-12).

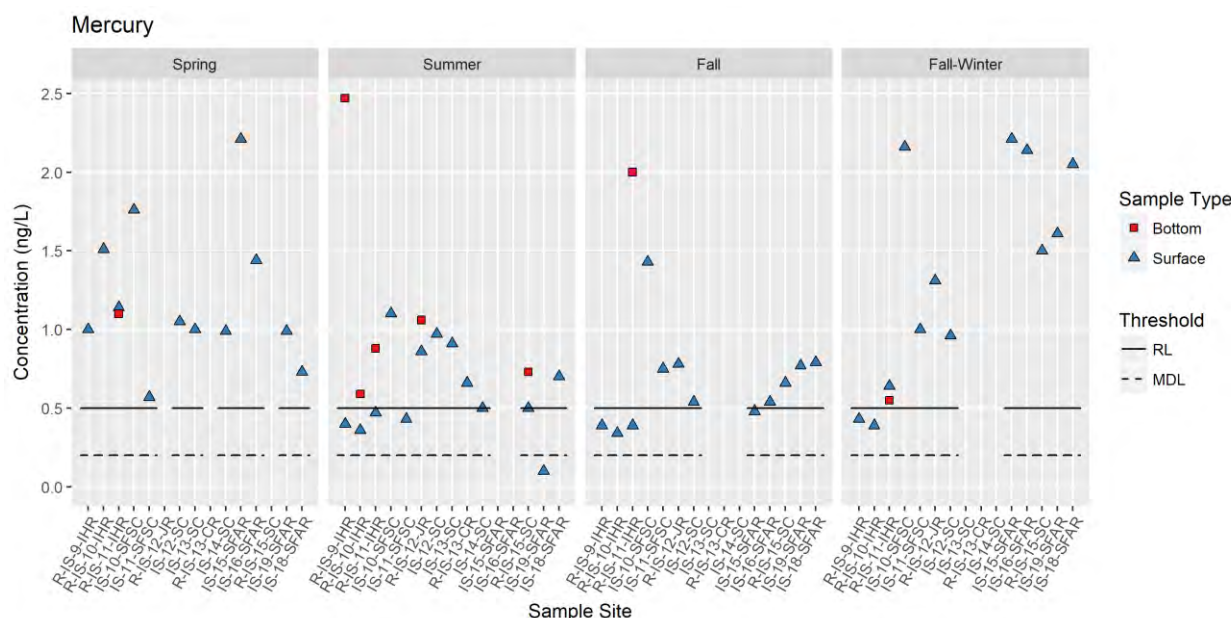


Figure 6-5. Total mercury results for transect R-IS-9-IHR through IS-18-SFAR by survey.

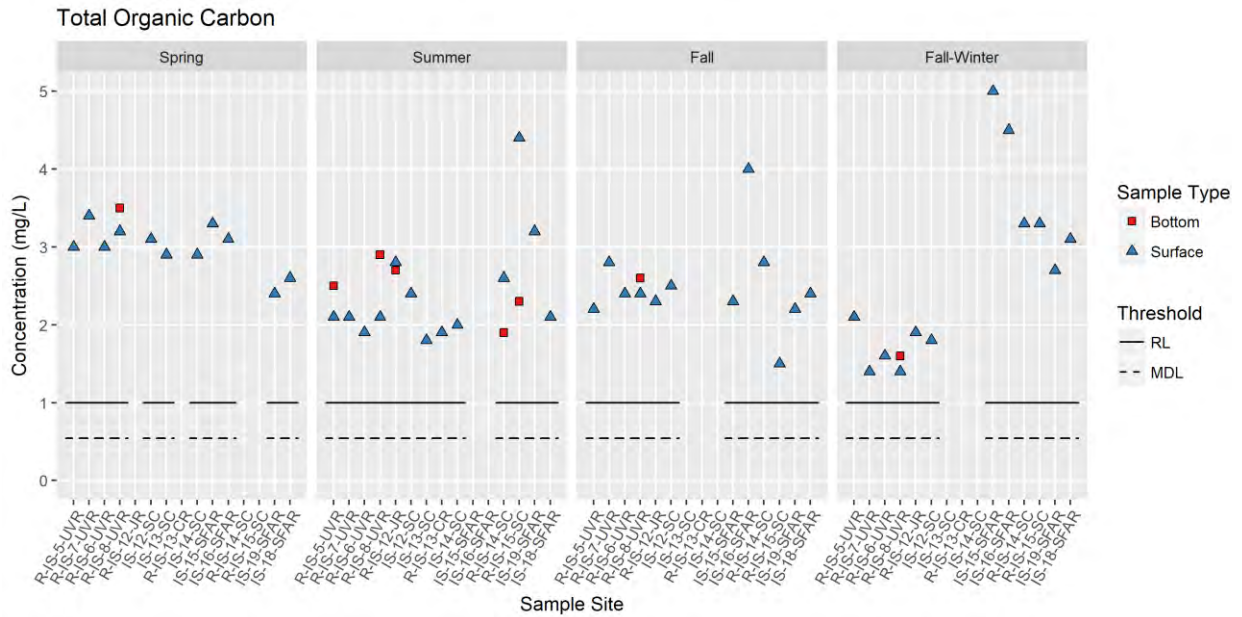


Figure 6-6. Total organic carbon (TOC) results for transect R-IS-5-UVR through IS-18-SFAR by survey.

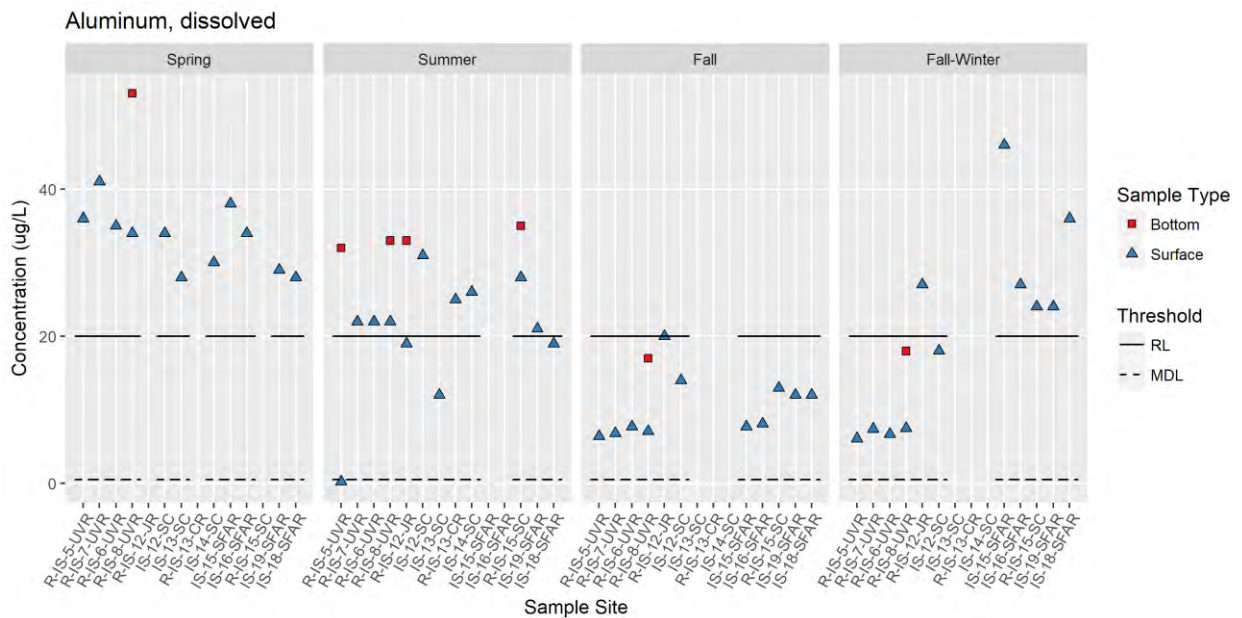


Figure 6-7. Dissolved aluminum results for transect R-IS-5-UVR through IS-18-SFAR by survey.

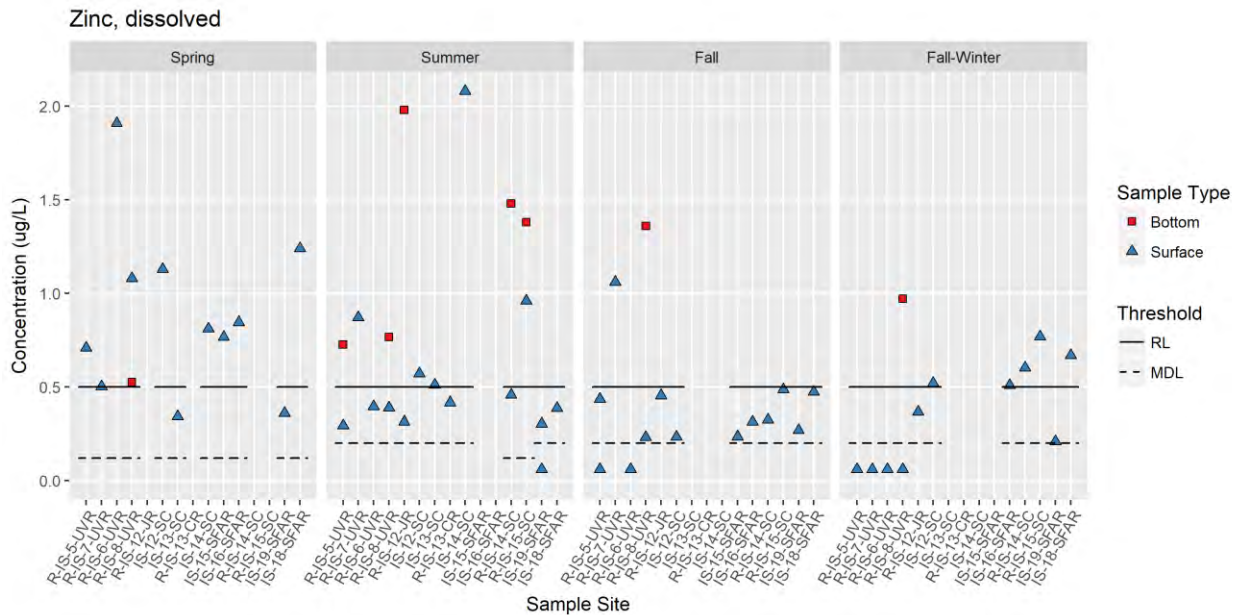


Figure 6-8. Dissolved zinc results for transect R-IS-5-UVR through IS-18-SFAR by survey.

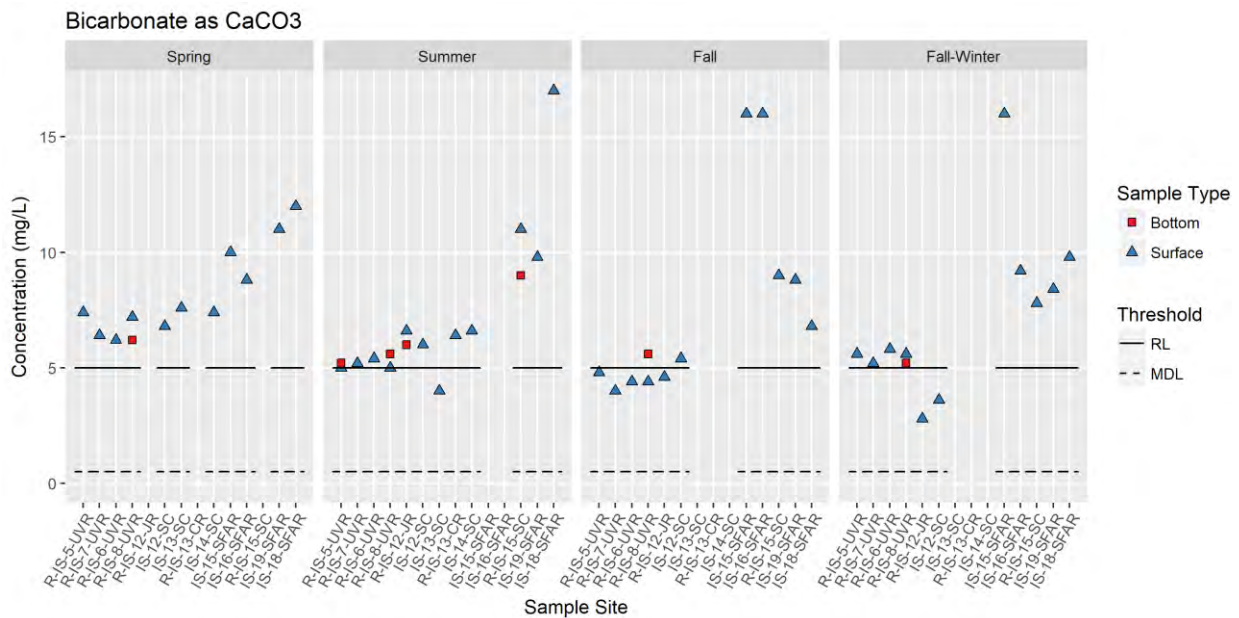


Figure 6-9. Bicarbonate as CaCO₃ results for transect R-IS-5-UVR through IS-18-SFAR by survey.

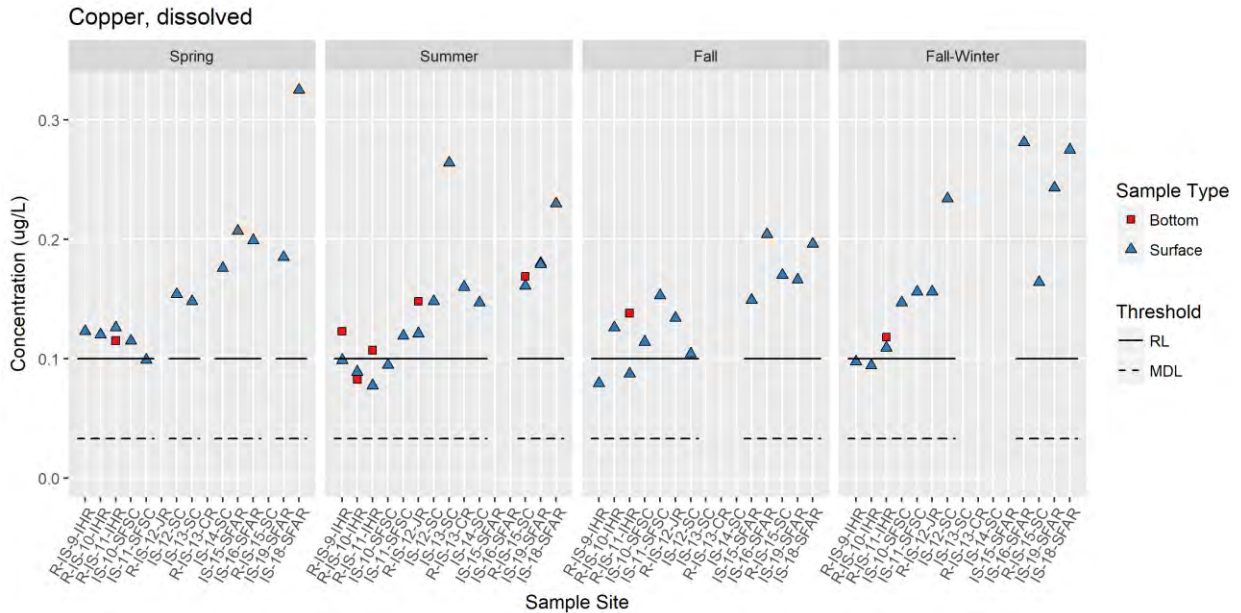


Figure 6-10. Dissolved copper results for transect R-IS-9-IHR through IS-18-SFAR by survey.

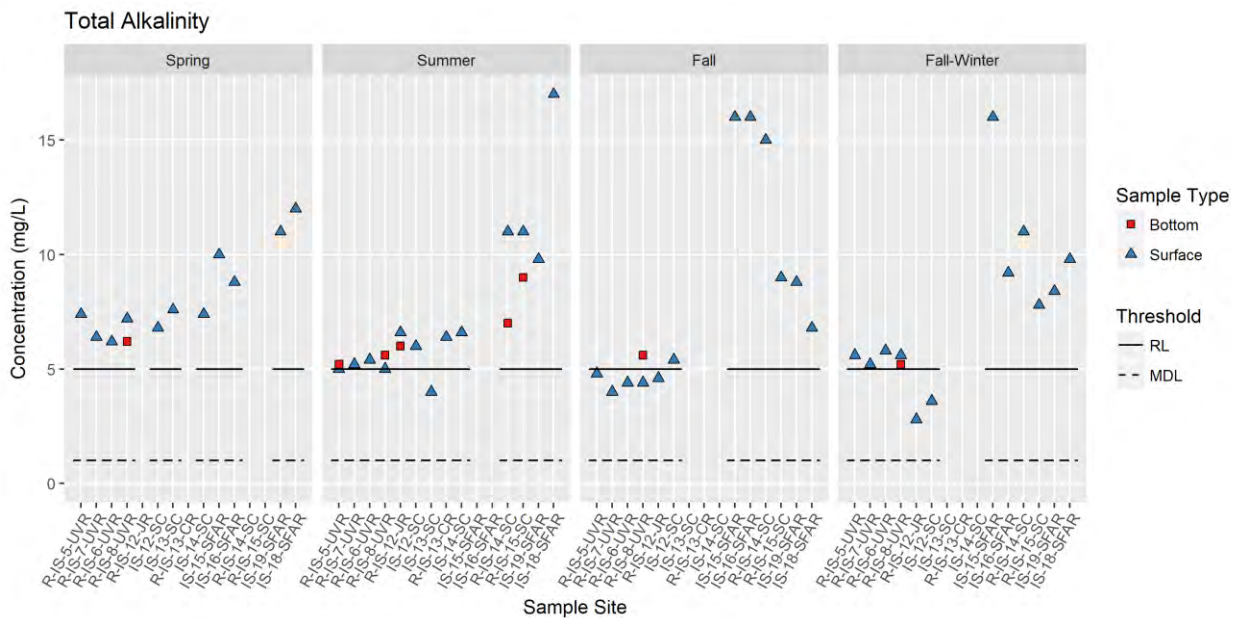


Figure 6-11. Total alkalinity results for transect R-IS-5-UVR through IS-18-SFAR survey.

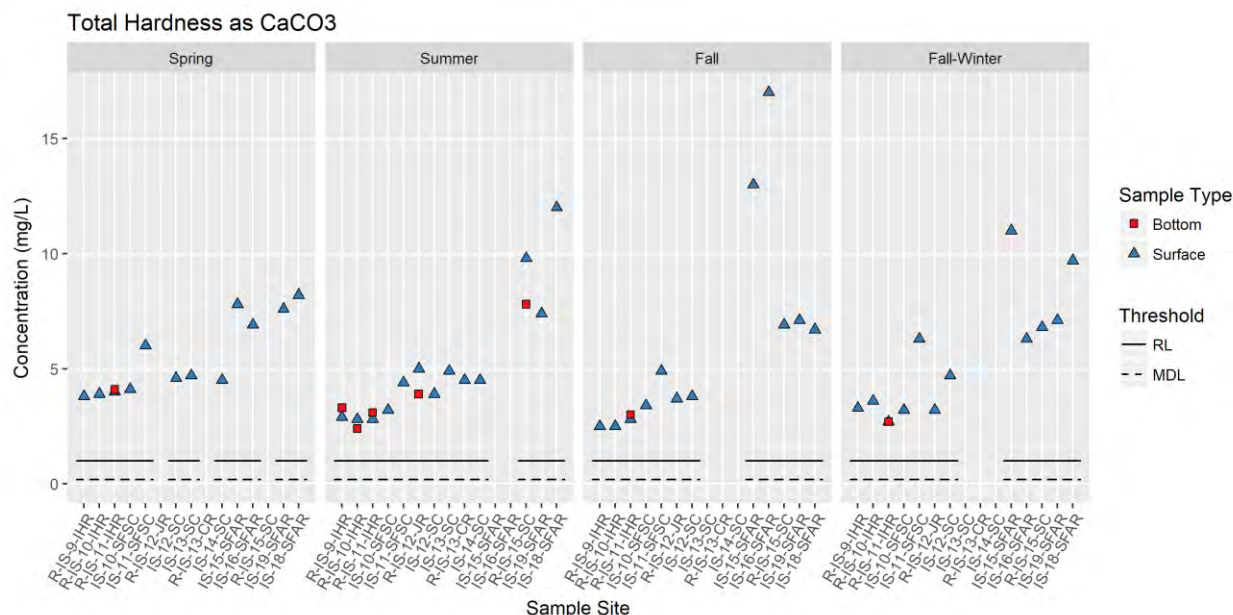


Figure 6-12. Total hardness as CaCO3 results for transect R-IS-5-UVR through IS-18-SFAR by survey.

6.3. BACTERIA

Instantaneous fecal coliform counts ranged from less than the method detection limit (MDL) (1.8 most probable number per 100 milliliters [MPN/100 mL]) to 1,600 MPN/100 mL during both the 2017 Independence Day and Labor Day sampling events (Appendix D, Tables D-1 and D-2). Results less than the MDL were treated as 0.5 x MDL for the calculation. The lowest geometric mean fecal coliform counts (1.2 MPN/100 mL) occurred in Loon Lake (Bac-4-LL) during the Labor Day sampling event. The highest geometric mean fecal coliform count (34.2 MPN/100 mL) occurred in Union Valley Reservoir (Site Bac-7-UVR) during the Independence Day sampling event. 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. Further, none of the 2017 samples exceeded the instantaneous maximum Basin Plan objective of 400 MPN/100 mL. While instantaneous fecal coliform counts at several sites (e.g., Bac-8-UVR, Bac-9-UVR) were greater in 2017 as compared with the same sites in 2016, counts at other sites (e.g., Bac-14-BCR) were lower when compared with 2016 results; overall, the 2017 geometric mean fecal coliform counts were low (1.2 to 34.2 MPN/100 mL) (Table 6-4).

Instantaneous *Escherichia coli* counts ranged from less than the MDL (1 MPN/100 mL) to 435.2 MPN/100 mL during the 2017 Independence Day and Labor Day sampling events (Appendix D, Tables D-1 and D-2). Instantaneous *E. coli* counts at several sites (e.g., BAC-7-UVR, BAC-13-IHR) were greater in 2017 as compared with the same sites in 2016, though overall, the 2017 geometric mean *E. coli* counts were low (0.6 to 18.1 MPN/100 ML) (Table 6-4). Results less than the MDL were treated as 0.5 x MDL for the

calculation. The lowest geometric mean *E. coli* count (0.5 MPN/100 mL) occurred in Loon Lake (Bac-4-LL) during the Labor Day sampling event, while the highest geometric mean *E. coli* count (18.1 MPN/100 mL) occurred in Union Valley Reservoir (Site Bac-7-UVR) during the Independence Day sampling event. There is no Basin Plan numeric objective for *E. coli*.

Table 6-4. Bacteria Counts for UARP Reservoir Sites.

Site ID	Fecal coliform geometric mean ^{1,2} (MPN/100 mL)	<i>E. coli</i> geometric mean (MPN/100 mL)
Independence Day		
Bac-5-GCR	3.5	2.6
Bac-6-GCR	2.8	3.1
Bac-7-UVR	34.2	18.1
Bac-8-UVR	26.6	8.2
Bac-9-UVR	28.1	13.0
Bac-10-UVR	2.9	2.7
Bac-11-JR	24.8	16.1
Bac-12-IHR	1.9	1.1
Bac-13-IHR	25.3	11.0
Bac-14-BCR	1.7	1.1
Bac-15-SCR	18.1	18.0
Labor Day		
Bac-1-BI	4.2	3.3
Bac-2-BI	1.5	1.3
Bac-3-LL	1.9	1.1
Bac-4-LL	1.2	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 2017 *in situ* monitoring results, riverine water quality in the UARP study area consistently met Basin Plan water quality objectives for dissolved oxygen and turbidity. There was one instance of dissolved oxygen measured below the Basin Plan instantaneous minimum objective (7.0 mg/L) for COLD and SPWN, which occurred during the late November (Fall-Winter) sampling event. There were three instances of pH measured below the Basin Plan instantaneous minimum objective (6.5 s.u.), fewer than measured during 2016. 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 summer, fall, and late-fall months in the bottom waters of stratified reservoirs (i.e., Ice House Reservoir, Brush Creek Reservoir). 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 several instances of elevated turbidity, however measured levels would not be expected to cause nuisance or adversely affect beneficial uses.

Sampling results for 2017 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, and some instances of elevated turbidity, 2017 monitoring results indicate that overall, surface waters of the UARP study area support designated beneficial uses, including COLD, SPWN, and REC-1.

The 2017 general chemistry monitoring results indicate that riverine and reservoir water quality in the UARP study area meet water quality criteria, with a small number of exceedances of the National Recommended Water Quality Criteria (NRWQC), Basin Plan Water Quality Objectives (BPWQOs), and/or the California Toxics Rule (CTR) standards. Across a total of 2,693 analyte records for riverine samples, there were 29 instances of exceedances (1%); all were trace elements and there was no seasonal or spatial pattern with respect to exceedances. Across a total of 3,368 analyte records for reservoir samples, there were 31 instances of exceedances (0.9%); all were trace elements and there was no seasonal or spatial pattern with respect to exceedances. Hardness was very low (≤ 17 mg/L) across all seasons and at all sites, such that acute and chronic hardness-dependent criteria were also very low (below the MDL for total and dissolved silver) and thus more easily exceeded by even low concentrations of trace elements. Overall, the 2017 general chemistry monitoring results indicate no particular analytes of concern for the UARP study area.

8.0 LITERATURE CITED

CRWQCB (California Regional Water Quality Control Board). 2016. The Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board Central Valley Region. Fourth Edition.

FERC (Federal Energy Regulatory Commission). 2014. Federal Energy Regulatory Commission Order 148 FERC 62,070 Issuing New License for the Sacramento Municipal Utility District Upper American River Hydroelectric Project No. 2101. Issued July 23.

SMUD (Sacramento Municipal Utilities Department). 2015. Water Quality Monitoring Plan. Hydro License Implementation. Upper American River Project, FERC Project No. 2101. May.

SMUD. 2016. Water Quality Monitoring Plan. Revision 2. Hydro License Implementation. Upper American River Project, FERC Project No. 2101. August.

USEPA (US Environmental Protection Agency). 1986. Quality Criteria for Water 1986. Office of Water Regulations and Standards. Washington, DC.

USEPA. 2000. Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California.

USEPA. 2007. Aquatic Life Ambient Freshwater Quality Criteria – Copper. 2007 Revision. February.

USEPA. 2017. National Recommended Water Quality Criteria – Aquatic Life Criteria Table. Retrieved from <https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table> on November 27.

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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 – May (Spring) *In situ* and General Chemistry Surveys.

Site ID	2017 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	5/10	surface	12.7	9.7	91	11 ^Q	6.9	0.5	4.9
		1	12.1	9.8	91	11 ^Q	6.9	0.6	
		2	11.7	9.8	90	10 ^Q	6.9	0.6	
		3	10.4	10.0	89	10 ^Q	6.9	0.6	
		4	9.1	10.2	88	9 ^Q	6.9	0.6	
		5	8.8	10.3	88	8 ^Q	6.8	0.6	
		6	8.5	10.3	88	11 ^Q	6.8	0.6	
		7	8.1	10.4	88	8 ^Q	7.0	0.7	
		8	7.9	10.4	87	7 ^Q	7.0	0.6	
		9	7.2	10.5	87	7 ^Q	7.0	0.6	
		10	7.0	10.5	87	7 ^Q	7.0	0.6	
		11	6.9	10.5	87	7 ^Q	7.0	0.5	
		12	6.8	10.5	86	7 ^Q	7.0	0.6	
		13	6.7	10.6	86	7 ^Q	7.0	0.6	
		14	6.6	10.6	86	7 ^Q	7.0	0.6	
		15	5.9	10.6	85	7 ^Q	7.1	0.6	
		16	5.7	10.6	84	9 ^Q	7.0	0.7	
		17	5.6	10.6	85	9 ^Q	6.9	0.7	
		18	5.5	10.6	84	6 ^Q	7.0	0.7	
		19	5.5	10.6	84	6 ^Q	7.0	0.7	
		20	5.5	10.6	84	6 ^Q	7.0	0.7	
21	5.5	10.6	84	7 ^Q	7.0	0.7			

Site ID	2017 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	5/10	surface	13.4	8.9	85	15 ^Q	7.2	0.9	5.2
		1	12.8	9.6	91	13 ^Q	7.1	0.6	
		2	11.5	10.0	89	11 ^Q	7.1	0.8	
		3	10.0	10.1	89	10 ^Q	7.1	0.8	
		4	9.1	10.3	89	10 ^Q	7.0	0.7	
		5	8.8	10.4	89	10 ^Q	7.0	0.7	
		6	8.5	10.5	89	9 ^Q	7.0	0.7	
		7	8.2	10.5	88	9 ^Q	7.0	0.8	
		8	7.4	10.5	87	8 ^Q	7.0	0.8	
		9	6.9	10.5	86	8 ^Q	7.0	0.8	
		10	6.8	10.5	85	11 ^Q	7.0	0.7	
		11	6.4	10.5	85	11 ^Q	7.0	0.7	
		12	6.4	10.6	85	8 ^Q	7.0	0.6	
		13	6.3	10.4	84	8 ^Q	7.0	0.7	
		14	6.2	10.4	84	8 ^Q	7.0	0.8	
		15	6.0	10.4	84	8 ^Q	7.0	0.9	
		16	6.0	10.4	83	8 ^Q	7.0	0.8	
		17	5.9	10.4	83	7 ^Q	7.0	0.7	
		18	5.7	10.4	83	7 ^Q	7.0	0.7	
		19	5.7	10.4	82	7 ^Q	7.0	0.7	
		20	5.6	10.3	82	7 ^Q	7.0	0.7	
		21	5.6	10.3	82	7 ^Q	7.0	0.8	
		22	5.5	10.3	82	8 ^Q	7.0	0.8	
		23	5.4	10.3	82	10 ^Q	6.9	0.7	
		24	5.4	10.3	82	7 ^Q	7.0	0.7	
		25	5.3	10.3	81	8 ^Q	7.0	0.7	
		26	5.3	10.3	81	8 ^Q	7.0	0.7	
		27	5.3	10.2	81	8 ^Q	7.0	0.7	
		28	5.2	10.2	80	8 ^Q	6.9	0.7	
29	5.2	10.2	80	8 ^Q	6.9	0.7			

Site ID	2017 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	5/10	30	5.1	10.2	80	8 ^Q	6.9	0.7	5.2
		31	5.0	10.2	80	8 ^Q	6.9	0.6	
		32	5.0	10.1	79	8 ^Q	6.9	0.6	
		33	5.0	10.1	79	8 ^Q	6.9	0.7	
		34	4.9	10.1	79	8 ^Q	6.9	0.7	
		35	4.9	10.1	79	10 ^Q	6.9	0.7	
		36	4.9	10.0	78	8 ^Q	6.9	0.7	
		37	4.9	10.0	78	8 ^Q	6.9	0.7	
R-IS-7-UVR	5/10	surface	14.7	8.9	88	12 ^Q	6.6	1.2	6.7
		1	12.3	9.7	91	11 ^Q	7.2	0.7	
		2	11.6	9.8	92	10 ^Q	7.2	0.6	
		3	10.9	10.1	91	10 ^Q	7.2	0.7	
		4	9.8	10.2	90	9 ^Q	7.2	0.8	
		5	9.6	10.3	90	9 ^Q	7.2	0.7	
		6	8.1	10.4	89	8 ^Q	7.1	0.7	
		7	7.4	10.5	87	11 ^Q	7.2	0.7	
		8	7.2	10.6	87	7 ^Q	7.1	0.7	
		9	7.1	10.5	87	7 ^Q	7.1	0.8	
		10	7.0	10.5	86	8 ^Q	7.1	0.7	
		11	6.7	10.5	86	7 ^Q	7.1	0.7	
		12	6.5	10.5	86	7 ^Q	7.1	0.6	
		13	6.2	10.6	85	7 ^Q	7.1	0.7	
		14	6.1	10.5	85	7 ^Q	7.1	0.6	
		15	6.0	10.5	84	7 ^Q	7.1	0.6	
		16	5.8	10.5	84	7 ^Q	7.0	0.6	
		17	5.7	10.5	84	7 ^Q	7.0	0.7	
		18	5.6	10.5	83	10 ^Q	7.0	0.6	
		19	5.4	10.6	84	7 ^Q	7.1	0.6	
		20	5.4	10.4	83	7 ^Q	7.1	0.7	
21	5.4	10.5	83	7 ^Q	7.1	0.6			

Site ID	2017 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	5/10	22	5.3	10.5	83	7 ^Q	7.1	0.6	6.7
		23	5.3	10.4	82	7 ^Q	7.1	0.6	
		24	5.3	10.4	82	7 ^Q	7.1	0.7	
		25	5.2	10.4	82	7 ^Q	7.1	0.7	
		26	5.2	10.3	82	7 ^Q	7.1	0.7	
		27	5.2	10.4	82	7 ^Q	7.1	0.6	
		28	5.2	10.4	82	7 ^Q	7.0	0.7	
		29	5.2	10.4	81	10 ^Q	7.0	0.7	
		30	5.2	10.4	81	10 ^Q	6.9	0.7	
		31	5.2	10.3	81	8 ^Q	7.0	0.7	
		32	5.1	10.3	81	8 ^Q	7.0	0.7	
		33	5.1	10.3	81	8 ^Q	7.0	0.6	
		34	5.1	10.3	81	8 ^Q	6.9	0.7	
		35	5.0	10.2	80	8 ^Q	7.0	0.7	
		36	5.0	10.2	80	8 ^Q	6.9	0.7	
		37	5.0	10.2	80	8 ^Q	6.9	0.7	
		38	5.0	10.2	79	8 ^Q	6.9	0.7	
		39	4.9	10.1	79	8 ^Q	6.9	0.7	
		40	4.9	10.1	79	8 ^Q	6.9	0.6	
		41	4.9	10.1	79	11 ^Q	6.9	0.6	
42	4.9	10.1	79	10 ^Q	7.0	0.6			
43	1.8	10.0	78	8 ^Q	7.0	0.7			
44	4.8	10.0	78	8 ^Q	6.9	0.6			
45	4.8	10.0	78	9 ^Q	6.9	0.6			

Site ID	2017 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	5/11	surface	12.3	9.8	91	11	7.1	1.0	5.5
		1	12.2	9.2	91	11	7.1	1.0	
		2	12.1	9.8	91	11	7.1	1.0	
		3	11.7	9.9	91	10	7.1	1.0	
		4	11.5	9.9	91	10	7.1	1.1	
		5	11.2	9.9	90	10	7.1	1.1	
		6	9.5	10.1	89	12	7.1	1.1	
		7	8.7	10.5	89	8	7.1	1.1	
		8	8.0	10.6	89	8	7.1	1.1	
		9	7.5	10.7	89	8	7.0	1.1	
		10	7.3	10.7	89	8	7.0	1.1	
		11	7.1	10.7	88	8	7.0	1.1	
		12	7.0	10.7	88	8	7.0	1.2	
		13	6.7	10.6	87	8	7.0	1.1	
		14	6.3	10.7	86	11	7.0	1.1	
		15	6.1	10.7	86	8	7.0	0.8	
		16	6.0	10.5	84	8	7.0	0.9	
		17	6.0	10.4	84	8	7.0	0.9	
		18	5.9	10.4	83	8	7.0	1.0	
		19	5.9	10.4	83	8	6.9	0.9	
		20	5.8	10.4	83	8	6.9	1.0	
		21	5.8	10.3	83	8	7.0	1.0	
		22	5.8	10.3	82	8	6.9	1.0	
		23	5.7	10.3	82	8	6.9	1.0	
		24	5.6	10.3	82	8	6.9	0.9	
		25	5.6	10.3	82	8	6.9	0.9	
		26	5.5	10.3	82	11	7.0	1.0	
		27	5.5	10.3	81	8	6.9	1.0	
		28	5.5	10.2	81	8	6.9	1.0	
29	5.5	10.2	81	8	6.9	1.0			



Site ID	2017 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	5/11	30	5.4	10.2	81	8	7.0	0.9	5.5
		31	5.3	10.2	81	8	6.9	0.9	
		32	5.3	10.2	80	8	6.9	0.9	
		33	5.3	10.2	80	8	6.9	1.0	
		34	5.2	10.2	80	8	6.9	0.1	
		35	5.2	10.2	80	8	6.9	1.0	
		36	5.2	10.2	80	8	6.9	1.0	
		37	5.2	10.2	80	10	6.8	1.0	
		38	5.2	10.2	80	8	6.8	0.9	
		39	5.2	10.1	80	8	6.7	1.0	
		40	5.1	10.1	80	8	6.7	1.0	
		41	5.1	10.1	79	8	6.8	1.0	
		42	5.1	10.1	79	8	6.8	1.0	
		43	5.1	10.1	79	8	6.8	0.9	
		44	5.1	10.1	79	8	6.8	1.1	
		45	5.0	10.1	79	8	6.8	1.1	
		46	5.0	10.1	79	8	6.8	1.0	
		47	5.0	10.1	79	8	6.8	1.0	
		48	5.0	10.0	79	8	6.8	1.1	
		49	5.0	10.0	78	8	6.8	1.0	
		50	4.9	10.1	79	10	6.8	1.0	
		51	4.9	10.0	78	8	6.8	1.0	
		52	4.9	10.0	78	8	6.8	1.0	
		53	4.9	10.0	78	8	6.8	1.0	
		54	4.8	10.0	78	8	6.8	0.9	
		55	4.8	10.0	78	8	6.8	1.0	
		56	4.8	10.0	77	8	6.7	1.0	
		57	4.8	9.9	77	8	6.7	1.0	
58	4.8	9.9	77	8	6.8	1.0			
59	4.7	9.9	77	8	6.8	1.0			

Site ID	2017 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	5/11	60	4.7	9.9	77	8	6.8	1.0	5.5
		61	4.7	9.9	77	8	6.8	1.0	
		62	4.7	9.9	77	11	6.7	1.0	
		63	4.7	9.9	77	8	6.8	1.0	
		64	4.7	9.8	77	8	6.8	1.1	
		65	4.7	9.8	76	8	6.8	1.1	
		66	4.7	9.8	76	8	6.8	1.1	
		67	4.7	9.8	76	8	6.8	1.1	
		68	4.7	9.8	76	8	6.8	1.1	
		69	4.7	9.8	76	8	6.8	1.1	
		70	4.7	9.8	76	8	6.8	1.1	
		71	4.7	9.8	76	8	6.9	1.2	
		72	4.7	9.8	76	8	6.8	1.1	
		73	4.7	9.8	75	8	6.8	1.1	
		74	4.7	9.8	76	8	6.8	1.1	
		75	4.7	9.7	76	11	6.7	1.1	
		76	4.7	9.7	76	8	6.7	1.1	
		77	4.7	9.7	76	8	6.7	1.3	
		78	4.7	9.7	75	8	6.6	1.2	
		79	4.7	9.7	75	8	6.5	1.3	
		80	4.7	9.7	75	8	6.5	1.3	
		81	4.6	9.7	75	8	6.5	1.3	
		82	4.6	9.7	75	8	6.5	1.3	
		83	4.6	9.6	75	8	6.4	1.3	
		84	4.6	9.6	75	8	6.4	1.4	
		85	4.6	9.6	75	8	6.1	1.4	
		86	4.6	9.6	74	8	6.2	1.4	
		87	4.6	9.6	75	8	5.9	1.4	
88	4.6	7.6	74	8	6.0	1.5			
89	4.6	9.6	74	8	6.1	1.5			



Site ID	2017 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	5/11	90	4.6	9.6	74	8	6.2	1.6	5.5
		91	4.6	9.6	74	8	6.2	1.7	
		92	4.6	9.5	74	8	6.1	1.7	
Ice House Reservoir									
R-IS-9-IHR	5/9	surface	11.1	9.1	83	11	7.4	1.1	4.6
		1	10.9	9.6	87	10	7.3	1.2	
		2	9.9	9.7	86	9	7.2	1.2	
		3	8.7	10.1	86	8	7.2	1.2	
		4	7.3	10.3	85	7	7.2	1.2	
		5	7.1	10.3	85	7	7.1	1.2	
		6	6.1	10.5	84	7	7.1	1.5	
		7	5.7	10.5	84	7	7.1	1.3	
		8	5.7	10.6	84	7	7.1	1.3	
		9	5.5	10.6	84	7	7.1	1.3	
		10	5.3	10.6	84	7	7.1	1.3	
		11	5.2	10.6	83	7	7.0	1.3	
		12	5.1	10.6	83	7	6.9	1.4	
		13	5.0	10.6	83	7	7.0	1.7	
		14	5.0	10.6	83	7	7.0	1.5	
		15	4.9	10.6	83	7	7.0	1.5	
		16	4.8	10.6	82	7	7.0	1.5	
		17	4.8	10.6	82	8	6.9	1.5	
		18	4.7	10.5	82	8	7.0	1.4	
		19	4.7	10.4	81	8	7.0	1.4	
		20	4.7	10.4	81	8	7.0	1.3	
		21	4.7	10.3	80	8	7.0	1.3	
		22	4.7	10.3	80	8	6.9	1.3	
		23	4.7	10.3	80	9	7.0	1.4	
		24	4.7	10.2	79	9	7.0	1.3	
25	4.7	10.2	79	9	7.0	1.3			

Site ID	2017 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-10-IHR	5/9	surface	11.6	9.0	83	11	7.3	1.4	4.6
		1	11.5	9.5	87	11	7.2	1.3	
		2	10.9	9.7	88	10	7.2	1.3	
		3	10.5	9.8	88	10	7.1	1.4	
		4	9.4	9.9	86	9	7.1	1.3	
		5	9.0	10.1	87	8	7.1	1.4	
		6	8.8	10.1	87	8	7.1	1.4	
		7	8.3	10.2	87	8	7.1	1.4	
		8	7.3	10.4	86	11	7.0	1.3	
		9	6.9	10.5	86	10	7.0	1.3	
		10	6.6	10.5	85	7	7.1	1.4	
		11	6.5	10.5	85	7	7.0	1.4	
		12	6.0	10.5	85	7	7.0	1.4	
		13	5.9	10.5	84	6	7.0	1.4	
		14	5.7	10.5	84	7	7.0	1.4	
		15	5.4	10.5	83	7	7.0	1.3	
		16	5.2	10.5	82	7	7.0	1.3	
17	5.2	10.5	82	7	7.0	1.3			
R-IS-11-IHR	5/9	surface	12.1	9.0	84	15	7.6	1.6	4.9
		1	11.6	9.6	88	12	7.6	1.4	
		2	11.2	9.8	89	11	7.5	1.3	
		3	11.2	9.9	90	11	7.4	1.3	
		4	11.0	9.9	89	10	7.3	1.3	
		5	8.8	10.2	86	9	7.2	1.2	
		6	7.3	10.3	85	9	7.1	1.1	
		7	6.8	10.4	85	8	7.1	1.5	
		8	6.5	10.5	85	8	7.1	1.2	
		9	6.0	10.5	84	11	7.0	1.3	
		10	5.7	10.6	85	10	7.0	1.3	
11	5.6	10.5	84	8	7.0	1.3			



Site ID	2017 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	5/9	12	5.4	10.5	83	8	7.0	1.3	4.9
		13	5.2	10.5	82	8	7.0	1.2	
		14	5.1	10.4	82	8	7.0	1.1	
		15	5.1	10.4	81	8	6.9	1.1	
		16	5.0	10.3	81	8	6.9	1.1	
		17	4.8	10.3	80	8	7.0	1.1	
		18	4.8	10.3	80	8	6.9	1.1	
		19	4.8	10.2	79	8	6.9	1.1	
		20	4.7	10.2	79	8	6.9	1.1	
		21	4.7	10.2	79	10	6.9	1.1	
		22	4.7	10.1	79	8	6.9	1.2	
		23	4.6	10.1	78	8	6.8	1.1	
		24	4.6	10.1	78	8	6.8	1.2	
		25	4.6	10.1	78	8	6.8	1.2	
		26	4.6	10.0	78	8	6.8	1.1	
		27	4.6	10.0	78	8	6.8	1.2	
28	4.6	10.0	77	8	6.8	1.2			
29	4.6	10.0	77	8	6.8	1.2			



Site ID	2017 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)
Brush Creek Reservoir									
R-IS-20-BC	5/11	surface	16.0	9.2	94	26	7.2	1.7	4.6
		1	16.0	9.2	94	25	7.2	1.8	
		2	15.9	9.3	94	25	7.2	1.7	
		3	15.5	9.3	94	25	7.3	1.8	
		4	14.8	9.5	93	23	7.3	1.9	
		5	14.2	9.6	94	23	7.2	1.9	
		6	14.0	9.6	93	23	7.2	1.9	
		7	13.8	9.6	93	22	7.2	2.0	
		8	13.6	9.6	93	22	7.2	2.0	
		9	13.5	9.7	93	24	7.2	2.0	
		10	13.3	9.8	94	21	7.2	1.9	
		11	13.2	9.8	94	21	7.2	2.0	
		12	13.0	9.8	93	21	7.2	2.0	
		13	13.0	9.8	93	21	7.2	2.0	
		14	12.8	9.8	93	21	7.2	2.1	
		15	12.7	9.8	92	22	7.2	2.2	
		16	12.6	9.8	92	21	7.2	2.3	
		17	12.5	9.8	92	21	7.2	2.5	
		18	12.3	9.8	91	21	7.2	2.8	
		19	12.1	9.8	91	21	7.2	3.3	
		20	11.8	9.9	91	24	7.2	3.4	
		21	11.5	10.0	92	21	7.3	5.8	
		22	11.1	9.8	89	21	7.2	5.6	
23	10.8	9.8	88	21	7.2	5.4			



Site ID	2017 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-20-BC	5/11	24	10.5	9.7	87	20	7.2	5.4	4.6
		25	10.4	9.6	86	21	7.2	6.1	
		26	10.3	9.5	85	21	7.2	6.7	
		27	10.1	9.5	84	20	7.2	7.1	
		28	10.0	9.5	84	20	7.1	7.1	

°C = degrees Celsius
 m = meter
 mg/L = milligrams per liter
 s.u = standard unit of pH
 uS/cm = microsiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 "Q" indicates data qualified based on post-sampling calibration check (see Appendix F).

Table A-2. *In situ* Vertical Profile Data for UARP Reservoir Sites – August (Summer) General Chemistry Survey.

Site ID	2017 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	8/7	surface	21.3	7.2	81	12	1.6	0.0	9.8
		1	21.3	7.2	81	12	7.8	0.0	
		2	21.3	7.2	81	12	7.7	0.0	
		3	21.2	7.2	81	12	7.6	0.1	
		4	21.2	7.2	81	12	7.4	0.0	
		5	21.2	7.2	81	12	7.4	0.1	
		6	21.1	7.2	81	11	7.3	0.2	
		7	20.6	7.4	82	11	7.3	0.1	
		8	20.2	7.5	83	11	7.2	0.1	
		9	19.8	7.6	83	11	7.2	0.1	
		10	18.8	7.7	83	11	7.2	0.1	
		11	18.3	7.9	84	10	7.0	0.1	
		12	17.2	8.0	83	10	7.0	0.1	
		13	16.6	8.1	83	10	6.9	0.1	
		14	15.7	8.2	82	10	6.8	0.1	
		15	15.4	8.3	82	10	6.7	0.1	
		16	15.1	8.1	80	10	6.6	0.2	
		17	14.8	8.0	78	10	6.7	0.1	
		18	13.8	7.8	76	10	6.6	0.1	
		19	12.7	7.7	72	9	6.8	0.2	
		20	11.3	7.6	70	9	6.6	0.1	
		21	9.6	7.7	68	9	6.8	0.1	
		22	9.1	7.7	67	9	6.7	0.1	
		23	7.9	7.8	66	8	6.6	0.1	
		24	7.5	7.9	66	8	6.5	0.2	
		25	7.1	8.0	65	8	6.5	0.1	
		26	6.8	7.8	64	8	6.4	0.2	
27	6.6	7.7	63	8	6.3	0.2			



Site ID	2017 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-1-LL	8/7	28	6.5	7.7	62	8	6.3	0.2	9.8
		29	6.4	7.6	62	8	6.3	0.2	
		30	6.3	7.5	61	8	6.2	0.2	
		31	6.3	7.5	61	8	6.2	0.2	
		32	6.2	7.2	55	11	6.3	0.2	
R-IS-2-LL	8/7	surface	21.5	7.2	82	12	7.4	0.1	9.8
		1	21.5	7.2	82	12	7.4	0.1	
		2	21.5	7.2	81	12	7.3	0.0	
		3	21.2	7.2	81	12	7.3	0.1	
		4	21.2	7.2	81	12	7.3	0.0	
		5	21.3	7.2	81	12	7.2	0.0	
		6	21.2	7.2	81	11	7.2	0.0	
		7	21.1	7.2	81	11	7.2	0.1	
		8	20.9	7.3	81	11	7.2	0.1	
		9	19.7	7.6	83	11	7.2	0.0	
		10	19.6	7.7	84	11	7.2	0.0	
		11	18.4	7.9	84	11	7.2	0.0	
		12	17.6	8.1	84	10	7.2	0.1	
		13	17.0	8.2	84	10	7.2	0.1	
		14	16.5	8.3	84	10	7.3	0.0	
		15	15.8	8.3	84	10	7.3	0.0	
		16	15.2	8.5	84	10	7.3	0.0	
		17	14.58	8.5	83	10	7.4	0.0	
		18	13.9	8.4	81	9	7.4	0.0	
		19	13.4	8.3	80	9	7.4	0.1	
		19	12.4	8.4	78	9	7.4	0.1	
		20	10.8	8.4	75	9	7.5	0.0	
		21	9.4	8.3	72	9	7.6	0.0	
22	8.5	8.3	71	8	7.6	0.0			
23	8.4	8.2	70	8	7.6	0.0			



Site ID	2017 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)
		24	21.5	7.2	82	12	7.4	0.1	
R-IS-3-LL	7/31	surface	21.4	7.2	81	12	6.8	1.7	8.5
		1	21.4	7.2	81	12	6.7	1.6	
		2	21.3	7.2	81	12	6.6	1.7	
		3	21.1	7.2	81	12	6.6	1.7	
		4	21.1	7.7	81	12	6.6	1.7	
		5	20.9	7.2	81	12	6.0	1.7	
		6	20.9	7.2	81	12	6.6	1.7	
		7	20.9	7.2	81	12	6.6	1.7	
		8	20.9	7.2	81	12	6.6	1.7	
		9	20.7	7.2	80	11	6.5	1.7	
		10	15.7	7.4	81	11	7.4	1.7	
		11	18.6	7.7	82	11	7.5	1.7	
		12	17.5	7.9	83	11	7.7	1.8	
		13	16.8	8.2	85	11	7.4	1.8	
		14	16.0	8.5	86	11	7.3	1.8	
		15	14.8	8.4	82	10	7.4	1.8	
		16	14.4	8.5	83	10	7.4	1.8	
		17	14.2	8.3	80	10	7.4	6.6	
18	14.1	8.2	80	10	7.2	6.7			
Gerle Creek Reservoir									
R-IS-4-GC	8/16	surface	16.1	8.5	86	6	6.8	0.6	7.6
		1	15.9	8.5	85	6	6.8	0.6	
		2	15.7	8.5	85	6	6.8	0.6	
		3	15.7	9.5	85	6	6.8	0.6	
		4	15.7	8.4	85	6	6.8	0.7	
		5	15.6	8.4	85	6	6.8	0.7	
		6	15.6	8.4	85	6	6.8	0.7	
		7	15.6	8.4	85	6	6.8	0.7	
		8	15.6	8.4	83	6	6.8	0.7	



Site ID	2017 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	8/8	surface	22.3	7.5	87	11 ^Q	6.7	0.8	8.2
		1	22.3	7.5	86	11 ^Q	6.7	0.8	
		2	22.3	7.5	86	11 ^Q	6.7	0.9	
		3	22.2	7.5	86	11 ^Q	6.6	0.8	
		4	22.2	7.5	86	11 ^Q	6.6	0.8	
		5	21.7	7.6	86	11 ^Q	6.5	0.8	
		6	20.6	7.8	87	11 ^Q	6.6	0.7	
		7	19.8	7.9	87	10 ^Q	6.6	0.7	
		8	19.5	8.0	87	10 ^Q	6.6	0.8	
		9	19.1	8.2	88	10 ^Q	6.6	0.8	
		10	18.9	8.3	90	10 ^Q	6.6	0.8	
		11	18.0	8.5	90	10 ^Q	6.6	0.8	
		12	17.6	8.6	90	10 ^Q	6.6	0.8	
		13	16.8	8.7	89	10 ^Q	6.7	0.8	
		14	16.5	8.8	90	10 ^Q	6.6	0.8	
		15	15.7	8.7	87	9 ^Q	6.6	0.7	
		16	15.1	8.6	85	9 ^Q	6.6	0.7	
		17	14.8	8.5	84	9 ^Q	6.7	0.7	
		18	14.5	8.4	82	9 ^Q	6.7	0.8	
		19	14.0	8.1	78	10 ^Q	6.7	0.8	
20	14.0	7.8	75	10 ^Q	6.6	0.8			

Site ID	2017 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	8/8	surface	22.4	7.6	88	11 ^Q	7.3	0.7	8.8
		1	22.0	7.7	88	11 ^Q	7.2	0.8	
		2	21.8	7.7	87	11 ^Q	7.2	0.8	
		3	21.8	7.6	87	11 ^Q	7.2	0.8	
		4	21.4	7.8	89	11 ^Q	7.1	0.8	
		5	20.6	8.1	91	11 ^Q	7.2	0.8	
		6	20.3	8.4	93	10 ^Q	7.2	0.8	
		7	20.0	8.5	93	10 ^Q	7.2	0.8	
		8	19.6	8.6	94	10 ^Q	7.2	0.8	
		9	19.4	8.4	91	10 ^Q	7.2	0.8	
		10	19.0	8.2	88	10 ^Q	7.2	0.9	
		11	18.8	8.1	86	10 ^Q	7.2	1.0	
		12	18.6	8.0	86	10 ^Q	7.2	0.9	
		13	17.7	7.9	83	10 ^Q	7.3	0.9	
		14	17.1	8.1	84	10 ^Q	7.3	0.9	
		15	16.7	8.3	85	10 ^Q	7.4	0.8	
		16	16.1	8.4	86	9 ^Q	7.4	0.8	
		17	15.1	8.6	85	9 ^Q	7.4	0.7	
		18	14.4	8.6	85	9 ^Q	7.5	0.7	
		19	14.0	8.8	85	9 ^Q	7.5	0.7	
		20	13.5	8.7	83	9 ^Q	7.5	0.7	
		21	12.9	8.7	82	9 ^Q	7.6	0.7	
		22	12.2	8.7	80	9 ^Q	7.7	0.7	
		23	11.2	8.7	79	9 ^Q	7.8	0.7	
		24	10.7	8.7	79	9 ^Q	7.9	0.7	
		25	10.5	8.8	79	9 ^Q	8.0	0.9	
		26	10.2	8.9	79	9 ^Q	8.0	0.6	
		27	10.1	8.9	79	9 ^Q	8.1	0.7	
		28	9.8	9.0	79	9 ^Q	8.2	0.7	
29	9.6	9.0	79	9 ^Q	8.3	0.7			



Site ID	2017 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	8/8	30	9.3	9.1	79	9 ^Q	8.3	0.7	8.8
		31	9.2	9.1	79	9 ^Q	8.3	0.8	
		32	9.0	9.1	78	9 ^Q	8.4	0.7	
		33	8.8	9.1	78	9 ^Q	8.3	0.6	
		34	8.6	9.1	77	9 ^Q	8.3	0.6	
		35	8.5	9.0	77	9 ^Q	8.3	0.7	
		36	8.5	9.0	75	9 ^Q	8.2	0.7	
R-IS-7-UVR	8/8	surface	22.7	7.5	87	11 ^Q	7.4	0.8	7.9
		1	22.4	7.5	87	11 ^Q	7.3	0.8	
		2	22.3	7.5	87	11 ^Q	7.2	0.8	
		3	22.2	7.5	86	11 ^Q	7.1	0.8	
		4	22.2	7.5	86	11 ^Q	7.1	0.8	
		5	21.3	7.7	87	11 ^Q	7.1	0.8	
		6	20.7	7.9	88	11 ^Q	7.0	0.7	
		7	19.9	8.1	89	10 ^Q	7.1	0.8	
		8	19.3	8.3	90	10 ^Q	7.1	0.7	
		9	19.2	8.3	90	10 ^Q	7.0	0.7	
		10	18.6	8.4	90	10 ^Q	7.1	0.7	
		11	18.1	8.5	90	10 ^Q	7.1	0.7	
		12	17.8	8.5	89	10 ^Q	7.1	0.7	
		13	17.5	8.4	88	10 ^Q	7.1	0.7	
		14	16.7	8.8	81	10 ^Q	7.1	0.8	
		15	16.1	8.9	90	9 ^Q	7.1	0.7	
		16	15.4	8.9	88	9 ^Q	7.2	0.7	
		17	14.5	8.8	86	9 ^Q	7.2	0.6	
		18	14.0	8.9	87	9 ^Q	7.2	0.6	
		19	13.5	8.7	84	9 ^Q	7.2	0.6	
		20	13.1	8.7	82	9 ^Q	7.2	0.6	
		21	12.7	8.6	81	9 ^Q	7.3	0.6	
22	12.3	8.7	81	9 ^Q	7.2	0.6			

Site ID	2017 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	8/8	23	12.0	8.7	80	9 ^Q	7.2	0.6	7.9
		24	11.5	8.7	79	9 ^Q	7.2	0.6	
		25	11.4	8.6	79	9 ^Q	7.1	0.6	
		26	11.3	8.6	79	9 ^Q	7.1	0.6	
		27	11.0	8.7	79	9 ^Q	7.1	0.6	
		28	10.5	8.7	78	9 ^Q	7.1	0.6	
		29	10.1	8.8	78	9 ^Q	7.0	0.7	
		30	9.9	8.7	77	9 ^Q	7.0	0.6	
		31	9.9	8.6	76	9 ^Q	7.0	0.6	
		32	9.7	8.6	75	9 ^Q	7.0	0.7	
		33	9.7	8.6	75	9 ^Q	7.0	0.6	
		34	9.6	8.5	75	9 ^Q	6.9	0.6	
		35	9.4	8.5	74	9 ^Q	6.9	0.6	
		36	9.3	8.5	74	9 ^Q	7.0	0.6	
		37	8.8	8.5	74	9 ^Q	7.0	0.7	
		38	8.6	8.6	73	9 ^Q	7.0	0.7	
		39	8.5	8.6	72	9 ^Q	7.0	0.6	
		40	8.4	8.6	73	9 ^Q	7.0	0.7	
		41	8.4	8.5	73	9 ^Q	7.1	0.7	
		42	8.4	8.5	73	9 ^Q	7.1	0.6	
43	8.4	8.5	72	9 ^Q	7.1	0.6			
44	8.2	8.5	72	9 ^Q	7.1	0.7			
45	8.1	8.2	67	9 ^Q	7.1	0.7			
R-IS-8-UVR	8/8	surface	22.3	7.7	88	11 ^Q	7.4	0.8	7.3
		1	22.0	7.7	88	11 ^Q	7.3	0.8	
		2	21.8	7.7	87	11 ^Q	7.2	0.8	
		3	21.8	7.7	87	11 ^Q	7.2	0.8	
		4	21.7	7.7	87	11 ^Q	7.2	0.8	
		5	21.6	7.7	87	11 ^Q	7.2	0.8	
		6	20.4	8.3	92	10 ^Q	7.2	0.7	



Site ID	2017 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	8/8	7	20.2	8.6	95	10 ^Q	7.2	0.7	7.3
		8	19.8	8.8	96	10 ^Q	7.2	0.8	
		9	19.2	8.7	95	10 ^Q	7.3	0.6	
		10	18.8	9.0	97	10 ^Q	7.3	0.8	
		11	18.2	9.0	97	10 ^Q	7.3	0.9	
		12	17.9	9.1	96	10 ^Q	7.3	0.7	
		13	17.8	8.9	93	10 ^Q	7.3	0.7	
		14	17.2	8.9	92	10 ^Q	7.4	0.7	
		15	15.9	8.9	90	9 ^Q	7.4	0.8	
		16	15.1	8.8	88	9 ^Q	7.5	0.8	
		17	14.4	8.8	86	9 ^Q	7.6	0.7	
		18	13.8	8.8	84	9 ^Q	7.6	0.7	
		19	13.4	8.8	85	9 ^Q	7.7	0.7	
		20	13.0	8.7	83	9 ^Q	7.7	0.7	
		21	12.7	8.7	82	9 ^Q	7.9	0.7	
		22	12.2	8.8	81	9 ^Q	7.9	0.7	
		23	11.9	8.8	81	9 ^Q	8.0	0.6	
		24	11.6	8.8	81	9 ^Q	8.1	0.7	
		25	11.4	8.9	81	9 ^Q	8.1	0.7	
		26	11.2	8.9	81	9 ^Q	8.1	0.7	
		27	10.9	9.0	81	9 ^Q	8.1	0.7	
		28	10.7	9.0	81	9 ^Q	8.2	0.7	
		29	10.5	9.0	81	9 ^Q	8.2	0.7	
		30	10.2	9.0	80	9 ^Q	8.2	0.7	
		31	9.9	9.1	80	9 ^Q	8.2	0.7	
		32	9.6	9.2	80	9 ^Q	8.2	0.7	
		33	9.4	9.1	79	9 ^Q	8.2	0.6	
		34	9.2	9.1	79	9 ^Q	8.2	0.6	
		35	9.0	9.2	79	9 ^Q	8.2	0.6	
		36	8.8	9.2	79	9 ^Q	8.1	0.7	

Site ID	2017 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	8/8	37	8.7	9.2	79	9 ^Q	8.1	0.7	7.3
		38	8.7	9.2	79	9 ^Q	8.1	0.7	
		39	8.6	9.3	79	9 ^Q	8.0	0.7	
		40	8.4	9.3	79	9 ^Q	8.0	0.7	
		41	8.3	9.3	79	9 ^Q	7.9	0.7	
		42	8.2	9.3	79	9 ^Q	7.9	0.7	
		43	8.1	9.3	78	9 ^Q	7.8	0.6	
		44	8.0	9.3	78	9 ^Q	7.8	0.6	
		45	7.9	9.3	79	9 ^Q	7.7	0.6	
		46	7.8	9.3	78	9 ^Q	7.7	0.6	
		47	7.8	9.3	77	9 ^Q	7.7	0.6	
		48	7.7	9.2	77	9 ^Q	7.6	0.6	
		49	7.7	9.2	77	9 ^Q	7.6	0.7	
		50	7.6	9.2	77	9 ^Q	7.6	0.7	
		51	7.6	9.2	77	9 ^Q	7.6	0.7	
		52	7.5	9.2	77	9 ^Q	7.6	0.7	
		53	7.5	9.2	77	9 ^Q	7.5	0.7	
		54	7.4	9.2	76	9 ^Q	7.5	0.7	
		55	7.4	9.2	76	9 ^Q	7.5	0.7	
		56	7.4	9.1	76	9 ^Q	7.5	0.7	
		57	7.5	9.1	76	9 ^Q	7.5	0.7	
		58	7.3	9.1	76	9 ^Q	7.4	0.7	
		59	7.3	9.1	75	9 ^Q	7.4	0.7	
		60	7.3	9.1	75	9 ^Q	7.4	0.7	
		61	7.2	9.0	75	9 ^Q	7.4	0.7	
		62	7.2	9.0	75	9 ^Q	7.4	0.7	
		63	7.1	9.0	74	9 ^Q	7.4	0.7	
		64	7.1	8.9	74	9 ^Q	7.3	0.7	
65	7.0	8.9	73	9 ^Q	7.3	0.7			
66	7.0	8.9	73	9 ^Q	7.2	0.7			

Site ID	2017 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	8/8	67	7.0	8.9	73	9 ^Q	7.3	0.7	7.3
		68	7.0	8.8	73	9 ^Q	7.3	0.7	
		69	7.0	8.8	73	9 ^Q	7.3	0.8	
		70	6.9	8.8	72	9 ^Q	7.3	0.7	
		71	6.8	8.8	72	9 ^Q	7.3	0.7	
		72	6.7	8.9	72	9 ^Q	7.3	0.7	
		73	6.5	8.8	71	9 ^Q	7.2	0.8	
		74	6.5	8.8	71	9 ^Q	7.2	0.8	
		75	6.4	8.7	71	9 ^Q	7.2	0.8	
		76	6.3	8.7	70	9 ^Q	7.2	0.8	
		77	6.2	8.7	70	9 ^Q	7.2	0.8	
		78	6.2	8.6	70	9 ^Q	7.2	0.8	
		79	6.2	8.6	69	9 ^Q	7.2	0.8	
		80	6.1	8.6	69	9 ^Q	7.2	0.8	
		81	6.1	8.6	69	9 ^Q	7.2	0.8	
		82	6.1	8.5	69	9 ^Q	7.1	0.8	
		83	6.1	8.5	69	9 ^Q	7.1	0.8	
84	6.1	8.5	68	12 ^Q	7.1	0.8			

Site ID	2017 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	8/10	surface	22.3	7.4	85	10 ^Q	7.3	1.5	7.6
		1	22.3	7.4	85	10 ^Q	7.2	1.5	
		2	22.2	7.4	85	10 ^Q	7.1	1.5	
		3	22.1	7.4	85	10 ^Q	7.1	1.5	
		4	22.1	7.4	85	10 ^Q	7.0	1.5	
		5	22.0	7.4	85	10 ^Q	7.0	1.5	
		6	21.6	7.5	85	10 ^Q	6.9	1.5	
		7	21.2	7.6	85	9 ^Q	6.9	1.4	
		8	20.7	7.6	85	9 ^Q	6.9	1.5	
		9	19.4	7.8	85	8 ^Q	6.9	1.4	
		10	18.3	8.1	87	8 ^Q	6.9	1.4	
		11	16.7	8.6	98	8 ^Q	6.9	1.5	
		12	15.7	8.6	87	8 ^Q	6.9	1.4	
		13	14.7	8.7	85	8 ^Q	6.9	1.4	
		14	13.9	8.8	85	8 ^Q	6.9	1.4	
		15	13.5	7.9	75	8 ^Q	6.9	1.4	
		16	12.4	7.8	73	8 ^Q	7.0	1.4	
		17	11.6	7.9	73	8 ^Q	7.0	1.4	
		18	10.7	7.9	71	8 ^Q	7.1	1.3	
		19	9.4	7.9	69	8 ^Q	7.1	1.3	
		20	8.7	7.6	65	8 ^Q	7.0	1.4	
		21	8.1	7.4	62	8 ^Q	7.0	1.4	
		22	7.8	7.2	61	8 ^Q	6.9	1.4	
		23	7.7	7.1	60	8 ^Q	6.8	1.6	
		24	7.6	7.1	59	8 ^Q	6.7	1.6	
		25	7.6	7.1	59	8 ^Q	7.7	1.6	
26	7.6	6.9	57	8 ^Q	6.7	1.6			

Site ID	2017 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-10-IHR	8/10	surface	22.2	7.5	86	10 ^Q	7.2	1.5	7.3
		1	22.1	7.5	86	10 ^Q	7.2	1.5	
		2	22.1	7.5	86	10 ^Q	7.1	1.6	
		3	22.0	7.5	86	10 ^Q	7.1	1.6	
		4	21.9	7.5	85	10 ^Q	7.1	1.4	
		5	21.9	7.5	85	10 ^Q	7.0	1.4	
		6	21.8	7.5	85	10 ^Q	6.9	1.5	
		7	21.7	7.5	85	10 ^Q	6.9	1.4	
		8	21.6	7.5	85	10 ^Q	6.9	1.4	
		9	19.6	8.0	88	8 ^Q	6.9	1.4	
		10	18.0	8.5	91	8 ^Q	6.9	1.3	
		11	16.6	8.7	90	8 ^Q	6.9	1.3	
		12	14.9	8.9	89	7 ^Q	6.9	1.3	
13	14.8	8.9	88	7 ^Q	7.0	1.3			
R-IS-11-IHR	8/10	surface	22.5	7.5	87	10 ^Q	7.1	1.1	7.6
		1	22.0	7.5	86	10 ^Q	7.0	1.3	
		2	21.9	7.6	86	10 ^Q	7.0	1.3	
		3	21.8	7.6	86	10 ^Q	6.9	1.3	
		4	21.8	7.6	86	10 ^Q	6.9	1.4	
		5	21.7	7.6	86	10 ^Q	6.9	1.4	
		6	21.7	7.5	86	10 ^Q	6.9	1.3	
		7	21.6	7.5	85	10 ^Q	6.9	1.4	
		8	21.6	7.5	85	10 ^Q	6.9	1.4	
		9	18.7	8.0	87	8 ^Q	7.0	1.4	
		10	16.6	9.0	93	8 ^Q	7.1	1.3	
		11	15.8	9.4	94	7 ^Q	7.1	1.3	
		12	15.1	9.2	91	7 ^Q	7.1	1.3	
		13	14.6	9.2	91	7 ^Q	7.1	1.3	
		14	14.3	9.2	89	7 ^Q	7.1	1.4	
15	13.7	9.1	87	7 ^Q	7.0	1.4			



Site ID	2017 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	8/10	16	13.2	8.9	84	7 ^Q	7.0	1.4	7.6
		17	12.2	8.8	82	7 ^Q	6.9	1.3	
		18	11.5	8.7	80	7 ^Q	6.8	1.3	
		19	10.8	8.6	76	7 ^Q	6.7	1.3	
		20	10.3	8.4	74	7 ^Q	6.7	1.3	
		21	9.1	8.4	73	7 ^Q	6.6	1.3	
		22	8.9	8.3	71	8 ^Q	6.6	1.3	
		23	7.9	8.5	72	8 ^Q	6.5	1.3	
		24	7.6	8.2	69	7 ^Q	6.5	1.3	
		25	7.6	8.2	68	7 ^Q	6.5	1.4	
		26	7.5	8.2	69	7 ^Q	6.4	1.4	
		27	7.4	8.3	69	7 ^Q	6.4	1.5	
		28	7.3	8.3	69	7 ^Q	6.4	1.4	
		29	7.3	8.2	68	7 ^Q	6.4	1.4	
		30	7.2	8.1	67	7 ^Q	6.4	1.5	
		31	7.2	7.9	65	7 ^Q	6.4	1.5	
		32	7.1	7.8	64	8 ^Q	6.4	1.5	
		33	7.0	7.6	63	8 ^Q	6.4	1.5	
		34	6.9	7.5	61	8 ^Q	6.4	1.6	
		35	7.0	7.3	60	8 ^Q	6.4	1.6	
36	6.9	7.2	59	8 ^Q	6.4	1.6			
37	6.8	7.2	59	8 ^Q	6.3	1.6			
38	6.8	6.5	53	8 ^Q	6.3	1.6			



Site ID	2017 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)
Junction Reservoir									
R-IS-12-JR	8/15	surface	14.4	8.8	86	11 ^Q	7.5	1.0	8.2
		1	14.8	8.7	84	11 ^Q	7.5	0.9	
		2	9.3	9.1	79	9 ^Q	7.6	0.9	
		3	9.2	9.2	80	9 ^Q	7.6	0.9	
		4	8.7	9.3	80	9 ^Q	7.6	0.9	
		5	8.6	9.4	80	8 ^Q	7.6	0.9	
		6	8.6	9.4	80	8 ^Q	7.6	0.9	
		7	8.4	9.4	80	8 ^Q	7.5	1.0	
		8	8.3	9.4	80	8 ^Q	7.4	0.9	
		9	8.2	9.4	80	8 ^Q	7.4	0.9	
		10	8.2	9.4	79	8 ^Q	7.4	1.0	
		11	8.1	9.3	79	8 ^Q	7.3	1.0	
		12	8.1	9.3	79	8 ^Q	7.3	1.0	
		13	8.1	9.3	79	8 ^Q	7.3	1.0	
		14	8.0	9.3	78	8 ^Q	7.2	1.0	
		15	8.0	9.2	78	8 ^Q	7.2	1.1	
		16	7.9	9.2	78	8 ^Q	7.2	1.0	
		17	7.9	9.2	77	8 ^Q	7.2	1.0	
		18	7.9	9.2	78	8 ^Q	7.1	1.0	
19	7.9	9.2	78	8 ^Q	7.1	1.0			
Camino Reservoir									
R-IS-13-CR	8/15	surface	11.3	9.9	90	11 ^Q	7.6	0.9	6.1
		1	10.5	10.0	90	10 ^Q	7.6	0.9	
		2	9.6	10.2	89	9 ^Q	7.5	0.9	
		3	9.0	10.4	90	9 ^Q	7.4	0.9	
		4	8.7	10.5	89	9 ^Q	7.3	0.9	
		5	8.7	10.5	90	9 ^Q	7.2	1.0	
		6	8.7	10.5	90	9 ^Q	7.1	0.9	
		7	8.7	10.6	91	9 ^Q	7.1	0.9	

Site ID	2017 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)
Slab Creek Reservoir									
R-IS-14-SC	8/3	surface	19.7	9.2	101	10 ^Q	6.8	1.9	5.8
		1	15.6	9.7	93	10 ^Q	7.1	1.7	
		2	12.0	10.3	95	10 ^Q	6.8	1.7	
		3	11.8	10.5	97	10 ^Q	6.7	1.7	
		4	11.6	10.6	98	10 ^Q	6.7	1.7	
		5	11.5	10.7	98	10 ^Q	6.8	1.7	
		6	11.5	10.7	98	9 ^Q	6.9	1.7	
R-IS-15-SC	8/3	surface	21.5	9.1	103	10 ^Q	7.0	1.9	3.7
		1	21.3	9.0	102	10 ^Q	7.0	1.9	
		2	20.7	9.1	102	10 ^Q	7.0	2.1	
		3	17.4	9.4	99	10 ^Q	7.1	1.9	
		4	16.7	9.6	99	10 ^Q	7.1	1.9	
		5	16.3	9.6	98	10 ^Q	7.0	2.0	
		6	16.0	9.8	94	10 ^Q	7.0	2.1	
		7	15.7	9.1	91	10 ^Q	7.0	2.1	
		8	15.4	8.8	88	10 ^Q	7.0	2.0	
		9	15.3	8.7	87	9 ^Q	7.0	2.0	
		10	15.1	8.7	87	9 ^Q	7.0	2.1	
		11	15.0	8.9	88	9 ^Q	7.0	2.0	
		12	15.0	9.0	89	9 ^Q	7.0	2.1	
		13	14.9	9.2	92	9 ^Q	7.0	2.0	
		14	14.9	9.4	93	9 ^Q	7.0	2.0	
		15	14.8	9.5	95	9 ^Q	7.0	2.1	
		16	14.8	9.7	96	9 ^Q	7.0	2.1	
		17	14.7	9.7	96	10 ^Q	7.0	2.3	
		18	14.7	9.7	96	10 ^Q	7.0	2.3	
		19	14.6	9.8	96	10 ^Q	7.0	2.3	
20	14.6	9.8	96	9 ^Q	7.0	2.3			



Site ID	2017 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	8/3	21	14.6	9.8	96	9 ^Q	7.0	2.4	3.7
		22	14.6	9.8	96	9 ^Q	7.1	2.2	
		23	14.4	9.8	96	9 ^Q	7.1	2.2	
		24	14.3	9.9	96	9 ^Q	7.1	2.3	
		25	14.0	9.9	96	8 ^Q	7.2	2.4	
		26	14.0	9.9	96	8 ^Q	7.2	2.4	
		27	13.9	9.9	96	8 ^Q	7.3	2.5	
		28	13.8	9.9	96	8 ^Q	7.3	2.7	
		29	13.7	9.9	96	8 ^Q	7.3	2.9	
		30	13.7	9.9	96	8 ^Q	7.4	3.0	
		31	13.6	9.9	96	8 ^Q	7.4	3.0	
		32	13.55	9.9	95	8 ^Q	7.5	3.3	
		33	13.4	9.9	95	8 ^Q	7.5	3.8	
Rubicon Reservoir									
R-IS-18-RR	8/9	surface	18.1	7.6	81	9 ^Q	7.5	1.0	4.6
		1	17.3	7.6	78	9 ^Q	7.4	1.0	
		2	16.5	7.4	76	9 ^Q	7.3	1.0	
		3	15.8	7.6	77	9 ^Q	7.2	1.0	
		4	15.4	7.7	77	9 ^Q	7.1	1.1	
		5	15.2	7.4	72	12 ^Q	6.9	1.1	
Buck Island Reservoir									
R-IS-19-BI	8/2	surface	19.6	7.6	82	12	7.0	2.1	8.7
		1	19.6	7.6	82	12	6.6	2.0	
		2	19.5	7.6	83	12	6.4	2.0	
		3	19.2	7.5	81	12	6.3	2.0	
		4	19.0	7.5	81	12	3.2	2.0	
		5	18.6	7.6	81	11	6.1	2.0	
		6	17.4	7.7	81	11	6.0	2.0	
		7	16.4	8.0	82	10	5.9	2.1	

Site ID	2017 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-19-BI	8/2	8	14.9	8.3	82	10	6.0	2.1	8.7
		9	12.9	8.4	80	9	6.1	2.1	
		10	11.2	9.0	82	9	7.4	2.0	
		11	11.3	8.3	76	13	7.2	2.0	
Brush Creek Reservoir									
R-IS-20-BC	8/14	surface	21.6	8.6	97	21 ^Q	7.8	1.6	4.9
		1	21.5	8.6	97	21 ^Q	7.8	1.7	
		2	21.2	8.6	97	21 ^Q	7.8	1.7	
		3	21.2	8.7	97	21 ^Q	7.8	1.6	
		4	20.8	8.9	99	21 ^Q	7.9	1.8	
		5	20.4	9.1	101	21 ^Q	8.0	2.0	
		6	20.2	9.2	101	21 ^Q	8.0	2.0	
		7	19.9	9.1	100	20 ^Q	8.0	2.2	
		8	19.7	9.0	98	20 ^Q	7.9	2.3	
		9	19.7	8.8	96	20 ^Q	7.9	2.3	
		10	19.5	8.7	95	20 ^Q	7.8	2.1	
		11	19.4	8.6	93	20 ^Q	7.8	2.3	
		12	19.4	8.4	92	20 ^Q	7.8	2.2	
		13	19.3	8.4	91	20 ^Q	7.8	2.1	
		14	19.3	8.4	90	20 ^Q	7.8	2.1	
		15	19.2	8.3	89	20 ^Q	7.8	2.1	
		16	19.2	8.3	89	20 ^Q	7.7	2.1	
		17	19.1	8.2	88	20 ^Q	7.7	2.3	
		18	19.1	8.1	88	20 ^Q	7.7	2.3	
		19	19.0	8.2	88	20 ^Q	7.7	2.3	
		20	19.0	7.8	83	20 ^Q	7.7	2.4	
		21	18.9	7.6	81	20 ^Q	7.6	2.5	
		22	18.7	7.3	78	22 ^Q	7.6	3.0	
		23	18.4	6.8	72	22 ^Q	7.6	2.8	
24	17.9	6.2	65	22 ^Q	7.5	4.1			



Site ID	2017 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-20-BC	8/14	25	17.1	5.3	54	25 ^Q	7.5	5.7	4.9
		26	15.8	4.4	44	24 ^Q	7.5	5.6	
		27	14.9	3.9	38	24 ^Q	7.5	5.9	
		28	14.2	3.3	32	24 ^Q	7.5	6.5	
		29	13.9	2.8	27	25 ^Q	7.5	7.3	
		30	13.8	2.8	27	27 ^Q	7.5	7.3	
		31	13.7	2.0	19	27 ^Q	7.5	7.3	

°C = degrees Celsius
 m = meter
 mg/L = milligrams per liter
 s.u. = standard unit of pH
 uS/cm = microsiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 "Q" indicates data qualified based on post-sampling calibration check (see Appendix F).

Table A-3. Vertical Profile Data for UARP Reservoir Sites – October/November (Fall) *In situ* and General Chemistry Surveys.

Site ID	2017 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	10/25	surface	10.7	9.1	81	6	6.9	0.1	5.8
		1	10.1	9.1	81	6	6.9	0.1	
		2	10.0	9.0	80	6	6.8	0.2	
		3	10.0	9.0	80	6	6.8	0.2	
		4	10.0	9.0	80	6	6.8	0.2	
		5	9.9	9.0	80	7	6.8	0.2	
		6	9.9	9.0	80	6	6.8	0.2	
		7	9.9	9.0	80	6	6.8	0.1	
		8	9.9	9.0	80	6	6.8	0.2	
		9	9.9	9.0	80	6	6.8	0.2	
		10	9.9	9.0	80	6	6.8	0.2	
		11	9.9	9.0	80	6	6.8	0.2	
		12	9.9	9.0	80	6	6.8	0.2	
		13	9.9	9.0	79	6	6.8	0.2	
		14	9.8	9.0	79	6	6.8	0.3	
R-IS-2-LL	10/25	surface	10.6	9.0	81	6	6.9	0.0	7.0
		1	10.2	9.1	81	6	6.9	0.1	
		2	10.2	9.0	80	6	6.9	0.1	
		3	10.1	9.0	80	6	6.9	0.1	
		4	10.1	9.0	80	6	6.9	0.1	
		5	10.1	9.0	80	6	6.9	0.1	
		6	10.1	9.0	80	6	6.9	0.1	
		7	10.1	9.0	80	6	6.9	0.1	
		8	10.1	9.0	80	6	6.9	0.1	
		9	10.0	9.0	80	6	6.9	0.1	
		10	10.0	9.0	80	6	6.8	0.1	
		11	10.0	9.0	80	6	6.8	0.1	
		12	10.0	9.0	80	6	6.8	0.1	



Site ID	2017 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	10/25	13	10.0	9.0	80	6	6.8	0.1	7.0
		14	10.0	9.0	80	6	6.8	0.1	
		15	10.0	9.0	80	6	6.8	0.1	
		16	10.0	9.0	80	6	6.8	0.2	
		17	10.0	9.0	80	6	6.8	0.2	
		18	10.0	9.0	80	6	6.8	0.1	
		19	10.0	9.0	80	6	6.8	0.1	
		20	10.0	9.0	80	6	6.8	0.1	
		21	10.0	8.9	79	6	7.2	5.8	
R-IS-3-LL	10/25	surface	11.1	9.1	83	6	7.0	0.1	3.7
		1	10.2	9.1	81	6	6.9	0.1	
		2	10.1	9.1	81	6	6.9	0.3	
		3	10.1	9.1	81	6	6.9	0.3	
Gerle Creek Reservoir									
R-IS-4-GC	11/2	surface	10.0	9.2	81	9	6.9	0.3	6.1
		1	10.0	9.1	81	9	6.9	0.2	
		2	9.9	9.1	80	9	6.8	0.4	
		3	9.9	9.1	80	9	6.8	0.3	
		4	9.6	9.2	80	8	6.8	0.3	
		5	9.4	9.1	80	8	6.7	0.3	
		6	9.2	9.0	78	8	6.6	0.4	
		7	8.3	9.1	77	8	6.6	0.4	



Site ID	2017 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	10/24	surface	15.6	8.0	80	8	6.9	0.3	9.1
		1	15.6	8.0	80	8	6.9	0.3	
		2	15.5	8.0	80	8	6.8	0.3	
		3	15.5	8.0	80	8	6.8	0.3	
		4	15.4	8.0	80	8	6.8	0.3	
		5	15.4	8.0	80	8	6.8	0.3	
		6	15.4	7.9	79	8	6.8	0.3	
		7	15.4	7.9	79	8	6.8	0.3	
		8	15.3	7.9	79	8	6.8	0.3	
		9	15.3	7.9	79	8	6.8	0.3	
		10	15.3	7.9	79	8	6.8	0.3	
		11	15.3	7.9	79	8	6.8	0.3	
		12	15.3	7.9	79	8	6.8	0.3	
		13	15.3	7.9	79	8	6.8	0.3	



Site ID	2017 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	surface	17.0	7.8	81	9	6.7	0.2	8.1
		1	15.7	7.9	79	8	6.7	0.2	
		2	15.5	7.9	79	8	6.7	0.2	
		3	15.5	7.9	79	8	6.7	0.3	
		4	15.5	7.9	79	8	6.7	0.3	
		5	15.5	7.8	78	8	6.7	0.2	
		6	15.4	7.8	79	8	6.7	0.3	
		7	15.4	7.9	79	8	6.7	0.3	
		8	15.4	7.8	78	8	6.7	0.3	
		9	15.4	7.8	78	8	6.7	0.3	
		10	15.4	7.8	78	8	6.7	0.2	
		11	15.4	7.8	78	8	6.7	0.3	
		12	15.4	7.8	78	8	6.7	0.2	
		13	15.4	7.8	78	8	6.7	0.3	
		14	15.4	7.8	78	8	6.7	0.2	
		15	15.4	7.8	78	8	6.7	0.2	
		16	15.4	7.8	78	8	6.7	0.3	
		17	15.4	7.8	78	8	6.7	0.3	
		18	15.4	7.8	78	8	6.7	0.3	
		19	15.4	7.8	78	8	6.7	0.3	
		20	15.4	7.8	78	8	6.7	0.2	
		21	15.4	7.8	78	8	6.7	0.2	
		22	15.4	7.8	78	8	6.7	0.2	
		23	15.4	7.8	78	8	6.7	0.2	
		24	15.4	7.8	78	8	6.7	0.3	
		25	15.4	7.8	78	8	6.7	0.3	
		26	15.4	7.8	78	8	6.7	0.2	
		27	15.4	7.8	78	8	6.7	0.2	
		28	15.4	7.8	78	8	6.7	0.2	
29	15.4	7.8	78	8	6.7	0.2			

Site ID	2017 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)
		30	15.3	7.6	76	9	6.7	0.2	
R-IS-7-UVR	10/24	surface	15.9	7.8	79	8	7.1	0.2	9.8
		1	15.7	7.9	80	8	6.8	0.2	
		2	15.6	7.9	79	8	6.8	0.2	
		3	15.6	7.9	79	8	6.8	0.2	
		4	15.5	7.8	79	8	6.8	0.3	
		5	15.5	7.8	79	8	6.8	0.2	
		6	15.5	7.9	79	8	6.8	0.2	
		7	15.5	7.9	79	8	6.8	0.2	
		8	15.5	7.8	78	8	6.7	0.2	
		9	15.5	7.8	78	8	6.7	0.2	
		10	15.5	7.8	78	8	6.7	0.3	
		11	15.5	7.8	78	8	6.7	0.2	
		12	15.5	7.7	78	8	6.7	0.3	
		13	15.5	7.7	77	8	6.7	0.3	
		14	15.4	7.7	77	8	6.7	0.2	
		15	15.4	7.7	77	8	6.7	0.2	
		16	15.4	7.7	78	8	6.7	0.2	
		17	15.4	7.8	78	8	6.7	0.2	
		18	15.4	7.8	78	8	6.7	0.2	
		19	15.4	7.8	78	8	6.7	0.2	
		20	15.4	7.8	78	8	6.7	0.2	
		21	15.4	7.8	78	8	6.7	0.3	
		22	15.4	7.8	78	8	6.7	0.2	
		23	15.4	7.8	78	8	6.7	0.3	
		24	15.4	7.8	78	8	6.7	0.2	
		25	15.4	7.8	78	8	6.7	0.2	
		26	15.4	7.8	78	8	6.7	0.2	
		27	15.4	7.8	78	8	6.7	0.2	
28	15.4	7.8	78	8	6.7	0.2			

Site ID	2017 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	29	15.4	7.8	78	8	6.7	0.2	9.8
		30	15.3	7.8	78	8	6.7	0.2	
		31	15.3	7.8	78	8	6.7	0.2	
		32	15.3	7.8	78	8	6.7	0.2	
		33	15.3	7.8	78	8	6.7	0.3	
		34	15.3	7.8	78	8	6.6	0.3	
R-IS-8-UVR	10/24	surface	16.2	7.9	80	8	6.8	0.3	7.3
		1	16.1	7.9	80	8	6.7	0.3	
		2	15.9	7.9	80	8	6.7	0.3	
		3	15.9	7.9	79	8	6.7	0.3	
		4	15.8	7.8	79	8	6.7	0.3	
		5	15.7	7.8	79	8	6.7	0.2	
		6	15.6	7.8	79	8	6.7	0.3	
		7	15.6	7.8	78	8	6.7	0.3	
		8	15.5	7.8	78	8	6.7	0.2	
		9	15.5	7.8	79	8	6.7	0.3	
		10	15.5	7.8	78	8	6.7	0.2	
		11	15.5	7.8	78	8	6.7	0.3	
		12	15.5	7.8	78	8	6.7	0.3	
		13	15.5	7.7	77	8	6.7	0.2	
		14	15.5	7.7	77	8	6.7	0.2	
		15	15.5	7.7	77	8	6.7	0.2	
		16	15.5	7.7	77	8	6.7	0.2	
		17	15.5	7.7	77	8	6.7	0.3	
		18	15.4	7.7	77	8	6.6	0.2	
		19	15.4	7.7	77	8	6.6	0.2	
		20	15.4	7.7	77	8	6.6	0.3	
		21	15.4	7.7	77	8	6.6	0.2	
		22	15.4	7.7	77	8	6.6	0.3	
23	15.4	7.7	77	8	6.6	0.3			

Site ID	2017 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	24	15.4	7.7	77	8	6.6	0.2	7.3
		25	15.4	7.7	77	8	6.6	0.3	
		26	15.4	7.7	77	8	6.6	0.2	
		27	15.4	7.7	77	8	6.6	0.2	
		28	15.4	7.7	77	8	6.6	0.2	
		29	15.4	7.7	77	8	6.6	0.3	
		30	15.4	7.7	77	8	6.7	0.3	
		31	15.4	7.7	77	8	6.6	0.3	
		32	15.4	7.7	77	8	6.6	0.2	
		33	15.4	7.7	77	8	6.6	0.3	
		34	15.4	7.7	77	8	6.6	0.3	
		35	15.3	7.7	78	8	6.6	0.2	
		36	15.3	7.7	77	8	6.6	0.3	
		37	15.3	7.7	77	8	6.6	0.2	
		38	15.3	7.7	77	8	6.6	0.3	
		39	15.2	7.7	76	8	6.6	0.2	
		40	15.2	7.6	76	8	6.6	0.3	
		41	15.1	7.6	75	8	6.5	0.3	
		42	14.2	7.4	72	8	6.3	0.1	
		43	13.9	7.2	70	8	6.2	0.1	
		44	13.7	7.3	70	8	6.2	0.1	
		45	13.5	7.3	70	8	6.2	0.1	
		46	13.4	7.3	70	8	6.2	0.1	
		47	13.2	7.4	71	8	6.2	0.1	
		48	13.1	7.4	70	8	6.2	0.1	
		49	13.0	7.4	70	8	6.2	0.1	
		50	12.9	7.4	70	8	6.2	0.2	
		51	12.9	7.4	70	8	6.2	0.1	
52	12.8	7.3	70	8	6.2	0.1			
53	12.7	7.4	70	8	6.2	0.1			

Site ID	2017 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	54	12.7	7.4	70	8	6.2	0.1	7.3
		55	12.6	7.4	69	8	6.2	0.1	
		56	12.5	7.4	69	8	6.2	0.1	
		57	12.4	7.3	68	8	6.2	0.1	
		58	12.3	7.4	69	8	6.2	0.1	
		59	12.2	7.3	68	8	6.2	0.2	
		60	12.1	7.2	67	8	6.1	0.1	
		61	12.0	7.0	65	8	6.1	0.2	
		62	11.8	7.0	64	8	6.1	0.2	
		63	11.8	7.0	65	8	6.1	0.1	
		64	11.6	6.9	64	8	6.1	0.2	
		65	11.3	6.8	62	8	6.1	0.2	
		66	10.7	6.7	60	8	6.1	0.2	
		67	9.9	6.8	60	8	6.1	0.2	
		68	8.6	7.2	62	8	6.1	0.2	
		69	7.8	7.5	63	8	6.1	0.2	
		70	7.5	7.6	63	8	6.1	0.2	
		71	7.5	7.6	63	8	6.1	0.3	
		72	7.3	7.6	63	8	6.1	0.2	
		73	7.1	7.4	61	8	6.1	0.3	
		74	7.0	7.4	61	9	6.0	0.2	
		75	6.9	7.5	62	8	6.1	0.2	
		76	6.9	7.6	63	8	6.1	0.3	
		77	6.8	7.7	63	8	6.1	0.2	
		78	6.8	7.7	63	8	6.1	0.3	
		79	6.8	7.7	63	8	6.1	0.3	
80	6.7	7.7	63	8	6.1	0.2			
81	6.7	7.6	62	8	6.1	0.3			
82	6.7	7.6	62	8	6.1	0.3			
83	6.7	7.5	61	8	6.1	0.3			



Site ID	2017 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	84	6.6	7.4	60	8	6.1	0.3	7.3
		85	6.6	7.1	58	9	6.1	0.3	
		86	6.6	7.1	58	9	6.1	0.3	
Ice House Reservoir									
R-IS-9-IHR	10/23	surface	12.5	8.1	76	10	7.5	0.7	7.3
		1	12.5	8.1	76	9	7.5	0.7	
		2	12.5	8.1	76	9	7.5	0.7	
		3	12.5	8.1	76	9	7.5	0.7	
		4	12.5	8.1	76	9	7.5	0.7	
		5	12.5	8.1	76	9	7.5	0.7	
		6	12.5	8.1	75	9	7.4	0.7	
		7	12.5	8.1	75	9	7.4	0.7	
		8	12.4	8.0	75	9	7.4	0.7	
		9	12.4	8.0	75	9	7.4	0.6	
		10	12.4	8.0	75	9	7.4	0.7	
		11	12.4	8.0	75	9	7.4	0.6	
		12	12.4	8.0	75	9	7.4	0.7	
		13	12.4	8.0	75	9	7.3	0.7	
		14	12.4	8.0	75	9	7.3	0.7	
15	12.4	8.0	75	9	7.3	2.4			



Site ID	2017 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-10-IHR	10/23	surface	13.3	8.1	77	7	6.8	0.2	6.1
		1	13.1	8.1	77	7	6.8	0.2	
		2	13.1	8.1	77	7	6.8	0.3	
		3	13.1	8.0	76	7	6.8	0.3	
		4	13.0	8.0	76	7	6.8	0.2	
		5	13.0	8.0	76	7	6.8	0.2	
		6	13.0	8.1	76	7	6.8	0.2	
		7	13.0	8.1	76	7	6.8	0.2	
		8	13.0	8.0	76	7	6.8	0.3	
		9	13.0	8.1	76	7	6.8	0.2	
		10	13.0	8.1	76	7	6.8	0.2	
		11	13.0	8.0	76	7	6.8	0.2	
		12	13.0	8.0	76	7	6.8	0.2	
		13	13.0	8.0	76	7	6.8	0.2	
		14	12.9	8.0	76	7	6.8	0.2	
15	12.9	8.0	76	7	6.8	0.2			
R-IS-11-IHR	10/23	surface	13.4	8.1	78	7	6.9	0.3	8.5
		1	13.3	8.1	77	7	6.9	0.2	
		2	13.2	8.1	77	7	6.9	0.2	
		3	13.2	8.1	77	7	6.9	0.3	
		4	13.2	8.1	77	7	6.9	0.2	
		5	13.2	8.1	77	7	6.9	0.2	
		6	13.2	8.1	77	7	6.9	0.2	
		7	13.2	8.1	77	7	6.9	0.2	
		8	13.1	8.1	77	7	6.9	0.3	
		9	13.1	8.1	77	7	6.9	0.2	
		10	13.1	8.1	77	7	6.9	0.2	
		11	13.1	8.1	77	7	6.9	0.2	
		12	13.1	8.1	77	7	6.9	0.2	
13	13.1	8.1	77	7	6.9	0.3			



Site ID	2017 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	10/23	14	13.1	8.1	77	7	6.9	0.2	8.5
		15	13.0	8.0	76	7	6.9	0.2	
		16	13.0	8.0	76	7	6.9	0.2	
		17	13.0	8.0	76	7	6.9	0.2	
		18	13.0	8.0	76	7	6.8	0.2	
		19	12.9	7.9	75	7	6.8	0.2	
		20	9.6	5.9	51	7	6.2	0.3	
		21	9.0	8.6	49	7	6.1	0.1	
		22	8.8	5.6	48	7	6.1	0.2	
		23	8.7	5.6	48	7	6.1	0.2	
		24	8.6	5.1	43	7	6.1	0.2	
		25	8.5	4.6	39	7	6.0	0.3	
		26	8.4	4.2	35	8	6.0	0.4	
		27	8.3	3.9	33	8	6.0	0.6	
		28	8.2	3.6	30	8	6.0	0.7	
		29	7.9	2.7	23	8	6.0	0.1	
		30	7.7	1.9	16	9	6.0	1.3	
31	7.6	1.2	10	9	6.0	1.5			
32	7.5	0.6	5	10	6.0	2.1			



Site ID	2017 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)
Junction Reservoir									
R-IS-12-JR	11/2	surface	12.0	8.2	76	8	6.3	0.0	9.1
		1	12.0	8.2	76	8	6.3	0.1	
		2	11.9	8.2	76	8	6.3	0.1	
		3	11.9	8.2	76	8	6.2	0.1	
		4	11.8	8.2	76	8	6.3	0.1	
		5	11.7	8.3	76	8	6.3	0.1	
		6	11.7	8.3	76	8	6.3	0.1	
		7	11.7	8.3	76	8	6.3	0.1	
		8	11.6	8.3	76	8	6.3	0.1	
		9	11.7	8.3	76	8	6.3	0.1	
		10	11.6	8.3	76	8	6.3	0.1	
		11	11.5	8.3	76	8	6.3	0.1	
		12	11.4	8.3	76	8	6.3	0.2	
		13	11.3	8.3	76	8	6.3	0.1	
		14	11.2	8.4	76	8	6.3	0.1	
		15	11.1	8.4	77	8	6.3	0.1	
		16	11.0	8.4	77	8	6.3	0.1	
		17	10.4	8.6	77	9	6.4	0.1	
		18	10.3	8.7	77	9	6.4	0.2	
19	10.3	8.5	76	9	6.4	0.2			
Slab Creek Reservoir									
R-IS-14-SC	10/30	surface	11.7	10.3	95	16	6.9	0.6	4.1
		1	11.6	10.3	95	16	6.9	0.6	
		2	11.6	10.3	95	16	6.9	0.6	
		3	11.6	10.3	95	16	6.9	0.5	
		4	11.6	10.3	95	16	6.9	0.6	
		5	11.6	10.3	95	17	6.8	0.5	
		6	11.6	10.3	94	17	6.8	0.5	
		7	11.6	10.3	94	17	6.8	0.6	

Site ID	2017 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)
		8	11.6	10.3	94	17	6.8	0.7	
		9	11.6	10.3	94	17	6.8	0.7	
		10	11.6	10.3	94	17	6.8	0.7	
S-15-SC	10/30	surface	12.1	10.1	94	17	6.8	0.6	3.1
		1	12.1	10.1	94	17	6.8	0.6	
		2	12.0	10.1	94	17	6.8	0.6	
		3	11.9	10.0	93	17	6.8	0.7	
		4	11.8	10.0	93	16	6.8	0.7	
		5	11.8	10.0	93	16	6.8	0.7	
		6	11.8	10.0	92	16	6.8	0.6	
		7	11.8	10.0	93	16	6.8	0.6	
		8	11.8	10.1	93	16	6.8	0.5	
		9	11.8	10.1	93	16	6.8	0.7	
		10	11.7	10.0	93	16	6.7	0.6	
		11	11.7	10.0	92	16	6.7	0.6	
		12	11.6	10.0	92	16	6.7	0.6	
		13	11.5	10.0	92	15	6.7	0.6	
		14	11.4	10.0	92	16	6.7	0.5	
		15	11.3	10.8	92	15	6.7	0.5	
		16	11.2	10.2	93	14	6.7	0.4	
		17	11.1	10.1	92	14	6.6	0.4	
		18	11.1	10.1	92	14	6.6	0.5	
		19	11.1	10.1	92	14	6.6	0.4	
		20	11.0	10.2	92	14	6.6	0.5	
		21	11.0	10.1	92	14	6.6	0.5	
		22	11.0	10.1	91	14	6.6	0.4	
		23	11.0	10.1	91	14	6.6	0.4	
		24	10.9	10.0	91	14	6.6	0.5	
		25	10.9	9.9	90	14	6.6	0.6	
26	10.9	9.8	88	14	6.6	0.5			



Site ID	2017 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	10/30	27	10.9	9.7	88	14	6.6	0.5	3.1
		28	10.9	9.5	86	14	6.6	0.6	
		29	10.9	9.4	85	14	6.5	0.7	
		30	10.9	9.4	85	14	6.5	0.8	
		31	10.8	9.4	85	14	6.5	0.6	
		32	10.8	9.3	84	14	6.5	0.7	
		33	10.8	9.2	83	14	6.5	0.6	
		34	10.8	9.2	83	14	6.5	0.9	
		35	10.8	81.8	82	14	6.5	0.8	
		36	10.8	80.4	80	14	6.5	1.2	
		37	10.8	77.8	78	14	6.5	2.4	
		38	10.8	74.7	75	15	6.5	2.4	
Rubicon Reservoir									
R-IS-18-RR	10/31	surface	9.8	8.3	73	9	6.9	0.4	4.0
		1	9.7	8.3	73	9	6.8	0.4	
		2	9.6	8.3	73	9	6.8	0.5	
		3	9.5	8.2	72	9	6.7	0.5	



Site ID	2017 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)
Buck Island Reservoir									
R-IS-19-BI	10/18	surface	9.9	8.6	76	9	6.8	1.2	5.5
		1	9.8	8.6	76	7	6.9	1.2	
		2	9.8	8.6	76	7	7.0	1.2	
		3	9.8	8.6	76	7	7.0	1.2	
		4	9.8	8.6	76	7	7.1	1.2	
		5	9.7	8.6	75	7	7.1	1.2	
		6	9.8	8.5	75	8	7.1	3.2	

°C = degrees Celsius
 m = meter
 mg/L = milligrams per liter
 s.u. = standard unit of pH
 uS/cm = microsiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 "Q" indicates data qualified based on post-sampling calibration check (see Appendix F).

Table A-4. *In situ* Vertical Profile Data for UARP Reservoir Sites – Late November (Fall-Winter) General Chemistry Survey.

Site ID	2017 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	11/14	surface	7.1	9.6	79	6	6.8	0.5	7.0
		1	7.1	9.6	79	6	6.7	0.6	
		2	7.0	9.6	79	6	6.6	0.5	
		3	7.0	9.6	79	6	6.6	0.6	
		4	7.0	9.5	79	6	6.6	0.6	
		5	7.0	9.5	78	6	6.6	0.7	
		6	7.0	9.5	78	6	6.6	0.7	
		7	7.0	9.5	78	6	6.6	0.7	
		8	7.0	9.5	78	6	6.6	0.7	
		9	7.0	9.5	78	6	6.6	0.6	
		10	7.0	9.5	78	6	6.6	0.7	
		11	7.0	9.5	78	6	6.6	0.5	
		12	7.0	9.5	78	6	6.6	0.6	
		13	7.0	9.5	78	6	6.6	0.5	
		14	7.0	9.5	78	6	6.6	0.6	
		15	7.0	9.5	68	6	6.6	0.6	
		16	7.0	9.5	78	6	6.6	0.6	
		17	7.0	9.5	78	6	6.6	0.7	
		18	7.0	9.5	78	6	6.6	0.6	
19	7.0	9.5	78	6	6.6	0.7			
R-IS-2-LL	11/14	surface	7.4	9.5	79	5	6.8	0.5	5.8
		1	7.4	9.5	79	5	6.8	0.5	
		2	7.4	9.6	79	5	6.8	0.5	
		3	7.4	9.6	80	5	6.8	0.5	
		4	7.4	9.6	80	5	6.8	0.5	
		5	7.4	9.6	79	5	6.8	0.4	
		6	7.4	9.5	79	5	6.8	0.4	
		7	7.4	9.5	79	5	6.8	0.4	

Site ID	2017 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	11/14	8	7.4	9.5	79	5	6.8	0.4	5.8
		9	7.4	9.5	79	5	6.8	0.5	
		10	7.4	9.6	79	5	6.8	0.5	
		11	7.3	9.6	80	5	6.8	0.5	
		12	7.3	9.5	80	6	6.8	0.5	
R-IS-3-LL	11/14	surface	7.2	9.6	79	5	6.8	0.5	5.2
		1	7.2	9.6	79	5	6.8	0.5	
		2	7.2	9.6	79	5	6.7	0.5	
		3	7.1	9.6	79	5	6.7	0.6	
		4	7.1	9.6	79	5	6.7	0.4	
		5	7.1	9.6	79	5	6.7	4.5	
		6	7.0	9.6	79	5	6.7	4.5	
Gerle Creek Reservoir									
R-IS-4-GC	11/21	surface	5.7	10.6	84	9	6.6	0.4	4.0
		1	5.2	10.7	84	8	6.6	0.4	
		2	5.0	10.6	83	9	6.5	0.4	
		3	4.7	10.6	82	9	6.5	0.4	
		4	4.5	10.6	82	8	6.5	0.4	
		5	4.5	10.5	82	8	6.4	0.5	
		6	4.4	10.5	81	9	6.4	0.5	
Union Valley Reservoir									
R-IS-5-UVR	11/15	surface	13.2	8.3	79	8	6.8	0.0	9.1
		1	13.2	8.3	79	8	6.8	0.0	
		2	13.2	8.3	79	8	6.8	0.1	
		3	13.2	8.3	79	8	6.8	0.1	
		4	13.2	8.3	79	8	6.8	0.0	
		5	13.2	8.3	79	8	6.8	0.0	
		6	13.1	8.3	79	8	6.8	0.0	
		7	13.1	8.3	79	8	6.8	0.0	
		8	13.1	8.3	79	8	6.8	0.1	



Site ID	2017 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-5-UVR	11/15	9	13.0	8.3	79	8	6.8	0.0	9.1
		10	12.8	8.3	79	8	6.8	0.1	
		11	12.3	8.4	79	8	6.8	0.1	
		12	11.6	8.5	78	9	6.7	0.1	
R-IS-6-UVR	11/15	surface	13.4	8.1	78	8	6.9	0.0	9.1
		1	13.5	8.1	78	8	6.8	0.0	
		2	13.5	8.1	78	8	6.8	0.0	
		3	13.5	8.1	78	8	6.8	0.0	
		4	13.5	8.1	78	8	6.8	0.0	
		5	13.5	8.1	77	8	6.8	0.0	
		6	13.5	8.1	77	8	6.8	0.0	
		7	13.5	8.1	77	8	6.7	0.1	
		8	13.5	8.1	77	8	6.7	0.0	
		9	13.5	8.0	77	8	6.7	0.1	
		10	13.5	8.0	76	8	6.7	0.2	
		11	13.5	8.0	77	8	6.7	0.1	
		12	13.5	8.0	77	8	6.7	0.1	
		13	13.5	8.0	77	8	6.7	0.1	
		14	13.5	8.0	77	8	6.7	0.1	
		15	13.5	8.0	77	8	6.7	0.0	
		16	13.5	8.0	77	8	6.7	0.0	
		17	13.5	8.0	77	8	6.7	0.1	
		18	13.5	8.0	77	8	6.7	0.1	
		19	13.5	8.0	77	8	6.7	0.1	
		20	13.5	8.0	77	8	6.7	0.1	
		21	13.5	8.0	77	8	6.7	0.1	
		22	13.5	8.0	77	8	6.7	0.1	
		23	13.5	8.0	77	8	6.7	0.0	
		24	13.4	8.0	77	8	6.7	0.0	
25	13.4	8.0	77	8	6.7	0.1			

Site ID	2017 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	11/15	26	13.4	8.0	77	8	6.7	0.0	9.1
		27	13.4	8.1	77	8	6.7	0.1	
		28	13.4	8.1	77	8	6.7	0.1	
		29	13.4	8.1	77	8	6.7	0.1	
		30	13.4	8.1	77	8	6.7	0.0	
		31	13.4	8.1	77	8	6.7	0.0	
		32	13.4	8.1	77	8	6.7	0.0	
		33	13.4	8.1	77	8	6.7	0.0	
		34	13.4	8.1	77	8	6.7	0.0	
		35	13.4	8.1	77	8	6.7	0.0	
		36	13.4	8.1	77	8	6.7	0.0	
		37	13.4	8.1	77	8	6.7	0.1	
		38	13.3	8.1	78	8	6.7	0.1	
		39	12.9	8.2	78	8	6.7	0.0	
		40	12.9	8.3	78	8	6.7	0.0	
		41	12.8	8.3	78	8	6.7	0.1	
		42	12.7	8.3	78	8	6.7	0.1	
43	12.7	8.3	78	8	6.7	0.2			
44	12.7	8.3	78	8	6.7	0.1			
45	12.7	8.3	78	8	6.7	0.1			
R-IS-7-UVR	11/15	surface	13.4	8.1	78	8	6.7	0.1	9.1
		1	13.5	8.1	78	8	6.7	0.0	
		2	13.5	8.1	78	8	6.7	0.0	
		3	13.5	8.1	78	8	6.7	0.0	
		4	13.5	8.1	78	8	6.7	0.0	
		5	13.5	8.1	77	8	6.7	0.0	
		6	13.5	8.1	77	8	6.7	0.0	
		7	13.5	8.1	78	8	6.7	0.0	
		8	13.5	8.1	78	8	6.7	0.0	
9	13.5	8.1	78	8	6.7	0.0			



Site ID	2017 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	11/15	10	13.5	8.1	77	8	6.7	0.1	9.1
		11	13.5	8.0	77	8	6.7	0.0	
		12	13.5	8.0	77	8	6.7	0.1	
		13	13.5	8.0	77	8	6.7	0.1	
		14	13.5	8.0	77	8	6.7	0.1	
		15	13.5	8.0	77	8	6.7	0.0	
		16	13.5	8.0	77	8	6.7	0.0	
		17	13.5	8.0	77	8	6.7	0.0	
		18	13.4	8.0	77	8	6.7	0.0	
		19	13.4	8.0	77	8	6.7	0.1	
		20	13.4	8.0	77	8	6.7	0.0	
		21	13.4	8.0	77	8	6.7	0.0	
		22	13.4	8.0	77	8	6.7	0.0	
		23	13.4	8.0	77	8	6.7	0.0	
		24	13.4	8.0	77	8	6.7	0.0	
		25	13.4	8.0	77	8	6.7	0.0	
		26	13.4	8.0	77	8	6.7	0.0	
		27	13.4	8.0	77	8	6.7	0.0	
		28	13.4	8.1	77	8	6.7	0.1	
		29	13.4	8.1	77	8	6.7	0.0	
		30	13.3	8.1	78	8	6.7	0.0	
		31	13.3	8.1	78	8	6.7	0.1	
		32	13.2	8.2	78	8	6.7	0.1	
		33	13.1	8.2	78	8	6.7	0.1	
		34	13.0	8.2	78	8	6.7	0.1	
		35	13.2	8.2	78	8	6.7	0.1	
		36	12.8	8.3	79	8	6.7	0.1	
		37	2.6	8.4	79	8	6.7	0.1	
		38	12.6	8.4	79	8	6.7	0.0	
39	12.5	8.4	79	8	6.7	0.1			

Site ID	2017 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	11/15	surface	13.5	7.9	76	8	6.7	0.0	9.8
		1	13.5	7.9	76	8	6.7	0.1	
		2	13.5	7.9	76	8	6.7	0.1	
		3	13.5	7.9	76	8	6.7	0.1	
		4	13.5	7.9	76	8	6.6	0.1	
		5	13.5	7.9	76	8	6.7	0.0	
		6	13.5	7.9	76	8	6.6	0.0	
		7	13.5	7.9	76	8	6.6	0.0	
		8	13.5	7.9	76	8	6.6	0.0	
		9	13.5	7.8	75	8	6.6	0.1	
		10	13.5	7.8	75	8	6.6	0.1	
		11	13.5	7.8	75	8	6.6	0.1	
		12	13.5	7.8	75	8	6.6	0.1	
		13	13.5	7.8	75	8	6.6	0.1	
		14	13.5	7.8	75	8	6.6	0.1	
		15	13.5	7.8	75	8	6.6	0.0	
		16	13.5	7.8	75	8	6.6	0.0	
		17	13.5	7.8	75	8	6.6	0.0	
		18	13.5	7.8	75	8	6.6	0.0	
		19	13.5	7.8	75	8	6.6	0.1	
		20	13.5	7.8	75	8	6.6	0.1	
		21	13.5	7.8	75	8	6.6	0.0	
		22	13.5	7.8	75	8	6.6	0.0	
		23	13.5	7.8	75	8	6.6	0.1	
		24	13.5	7.8	75	8	6.6	0.1	
		25	13.5	7.8	75	8	6.6	0.0	
		26	13.5	7.8	75	8	6.6	0.1	
		27	13.5	7.8	75	8	6.6	0.1	
		28	13.5	7.9	75	8	6.6	0.0	
29	13.5	7.9	75	8	6.6	0.1			

Site ID	2017 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	11/15	30	13.5	7.9	76	8	6.6	0.0	9.8
		31	13.5	7.9	76	8	6.6	0.0	
		32	13.5	8.0	76	8	6.6	0.0	
		33	13.5	8.0	76	8	6.6	0.1	
		34	13.4	8.0	76	8	6.6	0.1	
		35	13.4	8.0	76	8	6.7	0.0	
		36	13.4	8.0	76	8	6.6	0.1	
		37	13.4	8.0	76	8	6.6	0.1	
		38	13.4	8.0	76	8	6.6	0.1	
		39	13.4	7.9	76	8	6.6	0.1	
		40	13.4	7.9	76	8	6.6	0.1	
		41	13.4	7.9	76	8	6.6	0.0	
		42	13.4	7.9	76	8	6.6	0.1	
		43	13.4	7.9	75	8	6.6	0.1	
		44	13.4	7.9	75	8	6.6	0.1	
		45	13.4	7.8	75	8	6.6	0.1	
		46	13.4	7.8	75	8	6.6	0.1	
		47	13.4	7.9	76	8	6.6	0.1	
		48	13.4	7.9	76	8	6.6	0.1	
		49	13.4	7.9	76	8	6.6	0.1	
		50	13.3	7.9	76	8	6.6	0.0	
		51	13.3	7.9	75	8	6.6	0.1	
		52	13.3	7.9	75	8	6.6	0.1	
		53	13.2	7.9	75	8	6.6	0.1	
		54	13.3	7.8	75	8	6.6	0.2	
		55	13.2	7.8	74	8	6.6	0.0	
		56	13.2	7.7	74	8	6.5	0.1	
		57	13.2	7.9	73	8	6.5	0.1	
58	13.1	7.6	73	8	6.5	0.1			
59	13.1	7.6	72	8	6.5	0.0			

Site ID	2017 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	11/15	60	13.0	7.4	70	8	6.4	0.1	9.8
		61	13.0	7.2	68	8	6.4	0.1	
		62	12.9	7.1	67	9	6.4	0.1	
		63	12.6	6.5	61	9	6.2	0.1	
		64	11.9	6.0	56	9	6.1	0.1	
		65	11.0	5.8	52	8	6.1	0.1	
		66	9.4	6.2	54	8	6.1	0.1	
		67	8.6	6.6	67	8	6.1	0.0	
		68	8.3	6.7	57	8	6.1	0.0	
		69	7.9	6.8	57	8	6.1	0.1	
		70	7.7	6.9	57	8	6.1	0.1	
		71	7.5	7.0	58	8	6.0	0.1	
		72	7.4	7.1	59	8	6.0	0.1	
		73	7.3	7.1	59	8	6.0	0.0	
		74	7.2	7.1	59	8	6.0	0.0	
		75	7.0	7.1	58	8	6.0	0.0	
		76	7.0	7.1	59	8	6.0	0.0	
77	6.9	7.3	60	8	6.0	0.1			
78	6.8	7.3	60	8	6.0	0.2			
Ice House Reservoir									
R-IS-9-IHR	11/13	surface	11.0	8.6	78	7	6.9	0.1	6.1
		1	11.0	8.5	77	7	6.8	0.0	
		2	11.0	8.5	77	7	6.8	0.0	
		3	11.0	8.5	77	7	6.7	0.0	
		4	10.9	8.5	77	7	6.7	0.1	
		5	10.9	8.5	77	7	6.8	0.1	
		6	10.9	8.5	77	7	6.8	0.1	
		7	10.9	8.4	76	7	6.7	0.1	
		8	10.9	8.4	76	7	6.7	0.2	
		9	10.9	8.4	76	7	6.7	0.1	



Site ID	2017 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	11/13	10	10.9	8.4	76	7	6.7	0.1	6.1
		11	10.9	8.4	76	7	6.7	0.1	
		12	10.9	8.4	76	7	6.7	0.0	
		13	10.9	8.4	76	7	6.7	0.0	
		14	10.9	8.4	76	7	6.7	0.0	
		15	10.9	8.4	76	7	6.7	0.0	
		16	10.9	8.4	76	7	6.7	0.0	
R-IS-10-IHR	11/13	surface	11.0	8.4	76	7	6.9	0.0	7.9
		1	11.0	8.4	76	7	6.8	0.0	
		2	11.0	8.4	76	7	6.8	0.1	
		3	11.0	8.4	76	7	6.8	0.0	
		4	11.0	8.4	76	7	6.8	0.1	
		5	10.9	8.4	76	7	6.8	0.0	
		6	10.9	8.3	76	7	6.8	0.0	
		7	10.9	8.3	76	7	6.8	0.0	
		8	10.9	8.3	76	7	6.8	0.0	
		9	10.9	8.4	76	7	6.8	0.0	
		10	10.9	8.4	76	7	6.8	0.0	
R-IS-11-IHR	11/13	surface	11.0	8.2	74	7	6.8	0.0	8.2
		1	10.9	8.2	74	7	6.7	0.0	
		2	10.9	8.2	75	7	6.7	0.0	
		3	10.9	8.2	74	7	6.7	0.0	
		4	10.9	8.2	74	7	6.7	0.1	
		5	10.9	8.2	74	7	6.7	0.0	
		6	10.9	8.2	74	7	6.7	0.0	
		7	10.9	8.2	74	7	6.7	0.0	
		8	10.9	8.2	74	7	6.7	0.0	
		9	10.9	8.2	74	7	6.7	0.0	
		10	10.9	8.2	74	7	6.7	0.1	
		11	10.9	8.2	74	7	6.7	0.1	

Site ID	2017 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	11/13	12	10.9	8.2	74	7	6.7	0.1	8.2
		13	10.9	8.2	74	7	6.7	0.2	
		14	10.9	8.2	74	7	6.7	0.0	
		15	10.8	8.2	74	7	6.7	0.1	
		16	10.8	8.2	74	7	6.7	0.1	
		17	10.8	8.2	74	7	6.7	0.0	
		18	10.8	8.1	73	7	6.7	0.1	
		19	10.8	8.1	74	7	6.7	0.0	
		20	10.7	8.0	72	7	6.7	0.1	
		21	10.7	8.0	72	7	6.6	0.1	
		22	10.6	7.6	68	7	6.5	0.2	
		23	10.4	6.5	58	8	6.3	0.1	
		24	9.9	5.2	46	8	6.1	0.2	
		25	8.9	4.5	38	8	6.0	0.2	
26	8.5	2.8	23	8	5.9	0.6			
27	8.4	2.2	19	8	5.8	0.7			
28	8.2	1.8	15	9	5.8	0.8			
29	8.1	1.4	12	11	6.1	0.8			
Junction Reservoir									
R-IS-12-JR	11/21	surface	10.9	9.0	81	8	6.7	0.4	5.5
		1	10.9	9.0	81	8	6.7	0.4	
		2	10.9	8.9	81	8	6.6	0.4	
		3	10.9	8.9	81	8	6.6	0.3	
		4	10.9	8.9	81	8	6.6	0.4	
		5	10.9	9.0	81	8	6.5	0.4	
		6	10.9	9.0	81	8	6.5	0.4	
		7	10.9	9.0	81	8	6.5	0.4	
		8	10.9	9.0	81	8	6.5	0.4	
		9	10.9	9.0	81	8	6.5	0.3	
10	10.8	9.0	81	8	6.5	0.4			

Site ID	2017 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-12-JR	11/21	11	10.8	9.1	82	8	6.5	0.4	5.5
		12	10.7	9.2	83	8	6.5	0.2	
		13	10.7	9.2	83	8	6.5	0.4	
		14	10.3	9.3	83	9	6.5	0.4	
		15	10.1	9.3	82	9	6.4	0.4	
		16	10.0	9.2	81	9	6.4	0.4	
		17	9.8	9.3	82	9	6.4	0.4	
		18	9.8	9.4	83	9	6.4	0.5	
		19	9.8	9.4	83	9	6.4	0.4	
		20	9.8	9.4	83	9	6.5	0.4	
		21	9.7	9.5	83	9	6.5	0.5	
		22	9.7	9.4	83	9	6.5	0.4	



Site ID	2017 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)
Slab Creek Reservoir									
R-IS-14-SC	11/27	surface	9.8	10.8	96	21	7.1	15.1	0.9
		1	9.8	10.8	95	22	7.1	13.81	
		2	9.7	10.9	96	22	7.1	15.1	
		3	9.8	10.9	96	21	7.1	14.1	
		4	9.8	10.8	95	22	7.1	16.6	
		5	9.7	10.8	95	22	7.1	14.1	
		6	9.7	10.9	95	22	7.1	20.7	
		7	9.6	10.9	96	23	7.1	14.3	
		8	9.6	10.9	95	23	7.1	15.1	
		9	9.6	10.9	95	23	7.1	15.4	
S-15-SC	11/27	surface	10.2	10.8	96	15	7.0	1.0	3.0
		1	10.2	10.8	96	15	7.0	1.0	
		2	10.2	10.8	96	15	7.0	0.9	
		3	10.2	10.8	96	15	7.0	1.3	
		4	10.1	10.8	96	15	7.0	1.3	
		5	10.1	10.8	97	15	7.0	1.1	
		6	10.1	10.8	96	15	7.0	1.7	
		7	10.0	10.8	96	15	7.0	3.0	
		8	10.0	10.8	96	16	7.0	3.9	
		9	10.0	10.8	95	16	7.0	4.3	
		10	10.0	10.7	95	16	7.0	4.2	
		11	9.8	10.8	95	16	6.9	17.4	
		12	9.6	10.7	94	17	6.9	23.7	
		13	9.1	10.8	94	18	6.9	27.7	
		14	9.0	10.7	93	18	6.9	23.2	
		15	8.7	10.8	92	19	6.9	10.2	
		16	8.5	10.8	92	19	6.8	3.3	
		17	8.4	10.8	92	19	6.8	3.1	
		18	8.4	10.8	92	19	6.8	3.8	



Site ID	2017 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	11/27	19	8.3	10.8	92	19	6.8	3.1	3.0
		20	8.3	10.8	92	19	6.8	2.6	
		21	8.2	10.8	92	19	6.8	2.8	
		22	8.2	10.8	92	19	6.8	3.9	
		23	8.1	10.8	92	19	6.8	3.1	
		24	8.1	10.8	92	19	6.8	3.1	
		25	8.1	10.9	92	19	6.8	3.0	
		26	8.1	10.9	92	19	6.8	3.1	
		27	8.1	10.8	92	19	6.8	3.2	
		28	8.0	10.9	92	19	6.8	3.0	
		29	8.0	10.9	92	19	6.8	3.1	
		30	8.0	10.9	92	19	6.8	2.9	
		31	8.0	10.8	91	19	6.8	2.8	
		32	8.0	10.7	90	19	6.8	2.7	
		33	8.0	10.5	88	19	6.7	2.6	
		34	7.9	10.4	88	19	6.7	2.7	
		35	7.9	10.4	88	19	6.7	2.9	
		36	7.9	10.4	87	19	6.7	2.5	
37	8.0	10.0	84	20	6.7	3.3			
38	8.0	9.6	80	20	6.7	3.6			
Brush Creek Reservoir									
R-IS-20-BC	11/28	surface	10.3	8.8	78	19	6.9	43.7	0.3
		1	10.3	8.8	78	19	6.9	43.9	
		2	10.3	8.8	78	19	6.8	56.1	
		3	10.3	8.8	78	19	6.8	45.7	
		4	10.3	8.7	78	19	6.8	44.5	
		5	10.3	8.7	78	19	6.8	45.8	
		6	10.3	8.7	78	19	6.8	44.8	
		7	10.3	8.7	78	19	6.8	45.8	
		8	10.3	8.7	78	19	6.8	42.2	



Site ID	2017 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-20-BC	11/28	9	10.3	8.7	78	19	6.8	44.5	0.3
		10	10.3	8.7	77	19	6.8	42.6	
		11	10.3	8.7	78	18	6.8	62.9	
		12	10.3	8.9	79	18	6.9	52.0	
		13	10.1	9.0	80	18	6.9	46.0	
		14	10.1	9.1	81	18	6.9	45.0	
		15	10.1	9.1	81	18	6.9	42.3	
		16	10.0	9.1	82	18	6.9	39.0	
		17	10.0	9.1	81	18	6.9	37.0	
		18	10.0	9.1	81	18	6.9	38.2	
		19	10.0	9.1	81	18	6.9	34.0	
		20	10.0	9.1	81	18	6.9	37.1	
		21	10.0	9.1	81	18	6.9	36.7	
		22	9.9	9.1	81	18	6.9	32.2	
		23	9.9	9.1	81	18	6.9	31.4	
		24	9.9	9.2	81	18	6.9	34.8	
		25	9.9	9.2	81	18	6.9	34.1	
26	9.9	9.2	81	18	6.9	34.1			
27	9.8	9.2	81	18	6.9	34.1			

°C = degrees Celsius
 m = meter
 mg/L = milligrams per liter
 s.u. = standard unit of pH
 uS/cm = microsiemens per centimeter
 NTU = Nephelometric Turbidity Unit
 "Q" indicates data qualified based on post-sampling calibration check (see Appendix F).



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APPENDIX B
***In situ* Vertical Profiles for UARP Reservoir Sites**



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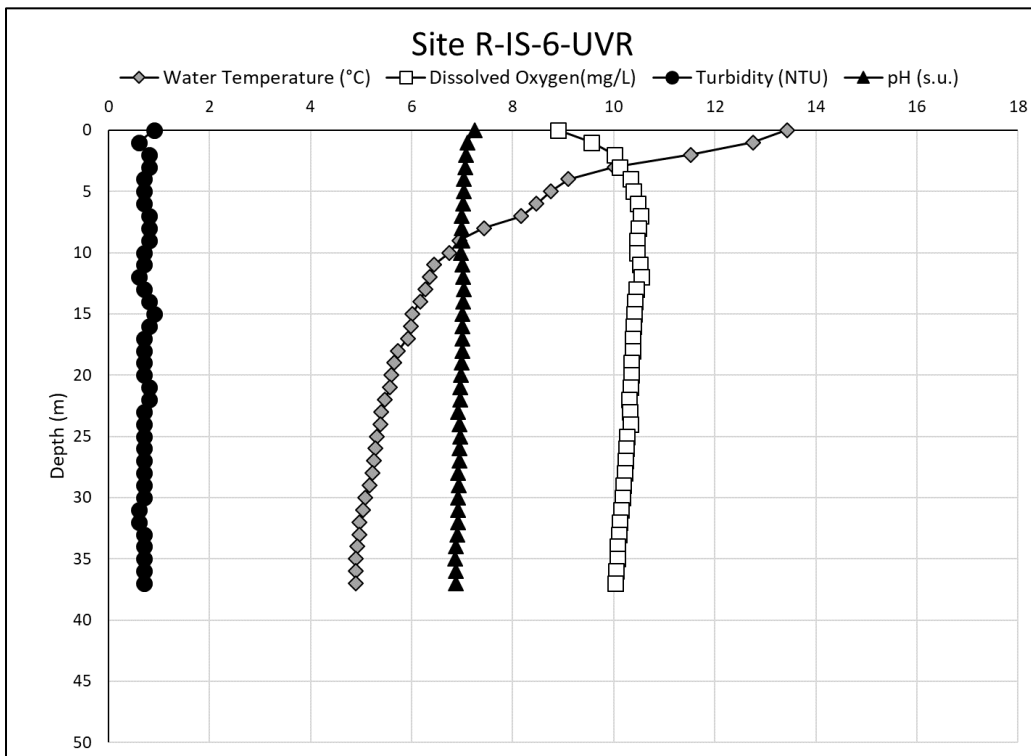
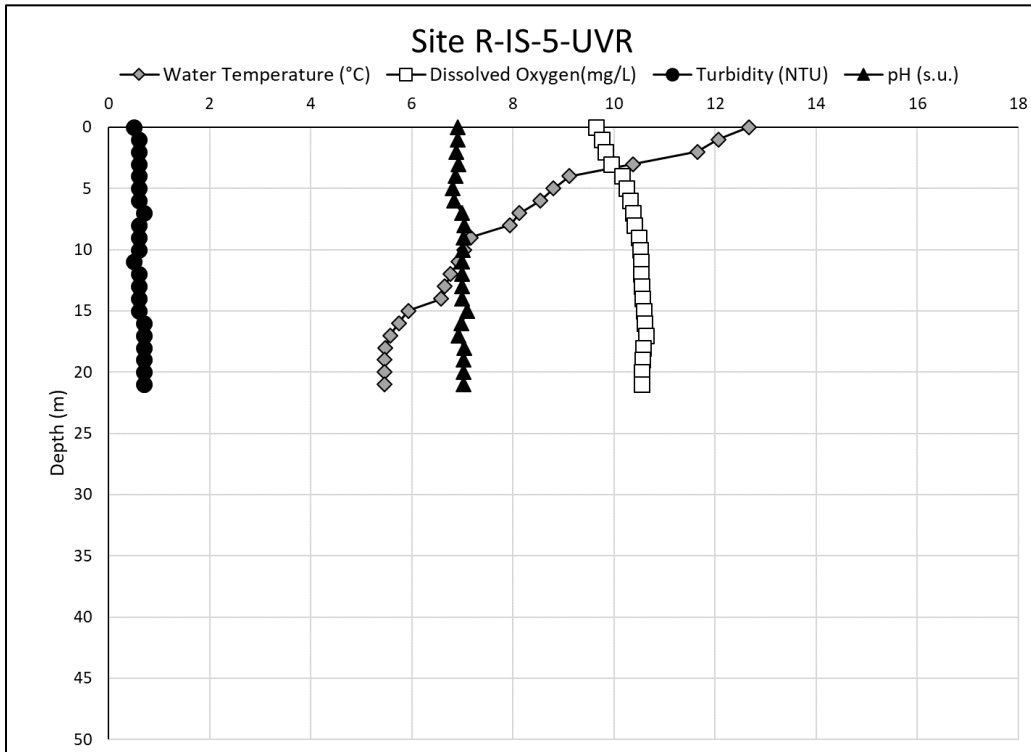


Figure B-1. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Union Valley Reservoir sites R-IS-5-UVR and R-IS-6-UVR during May (Spring) 2017.

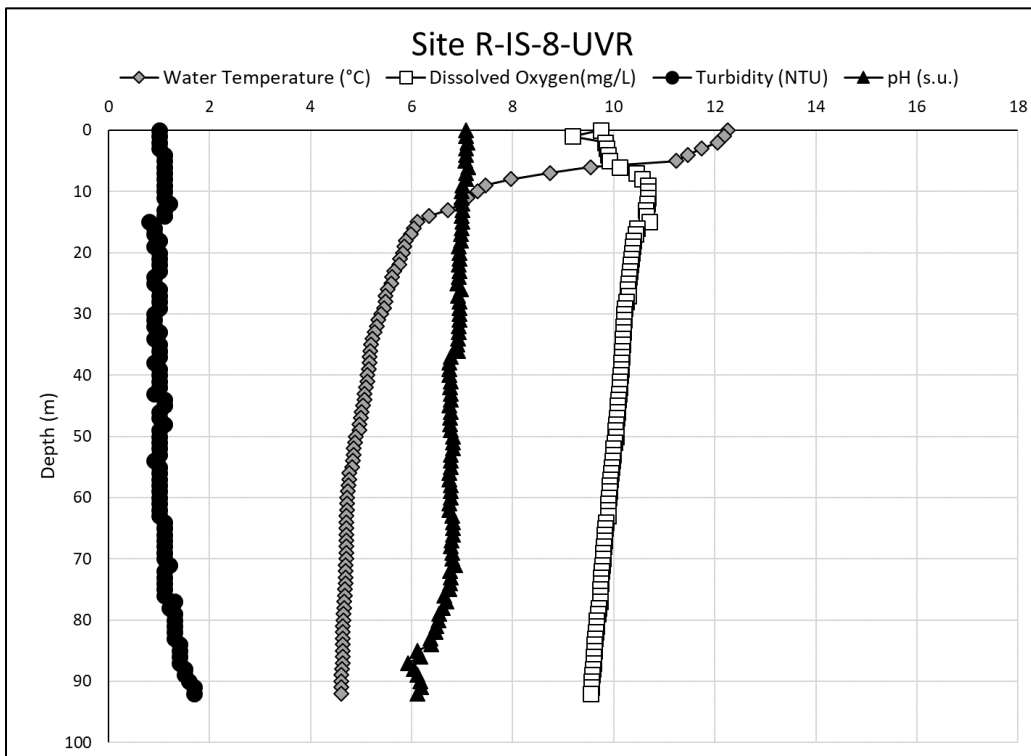
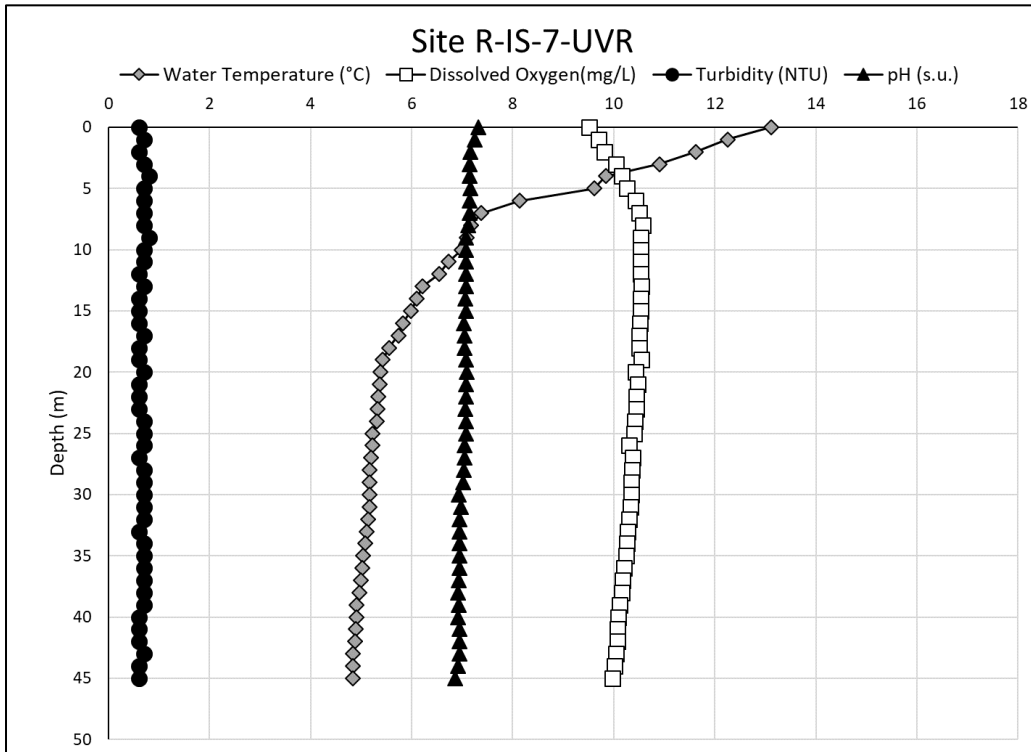


Figure B-2. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Union Valley Reservoir sites R-IS-7-UVR and R-IS-8-UVR during May (Spring) 2017.

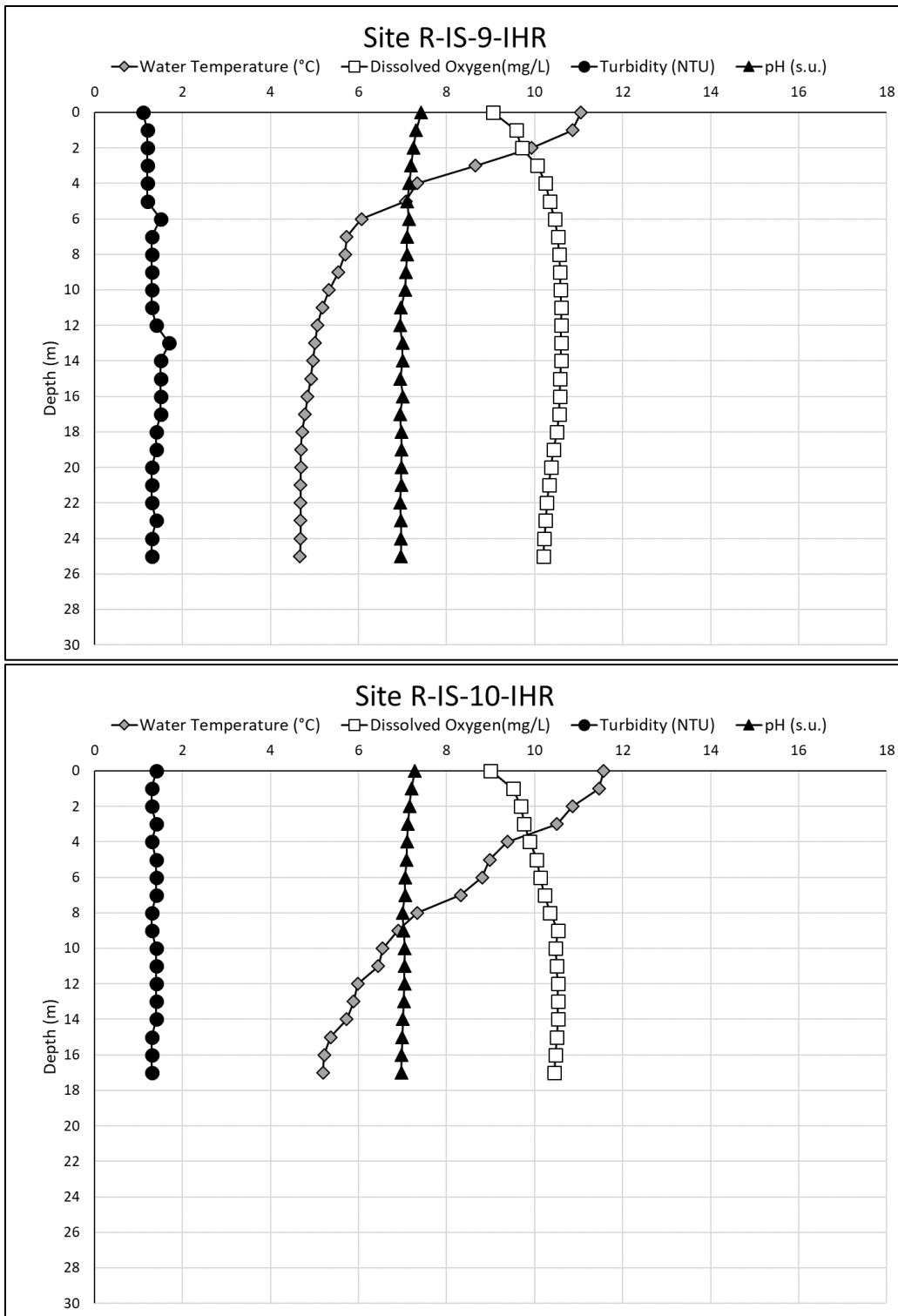


Figure B-3. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Ice House Reservoir sites R-IS-9-IHR and R-IS-10-IHR during May (Spring) 2017.

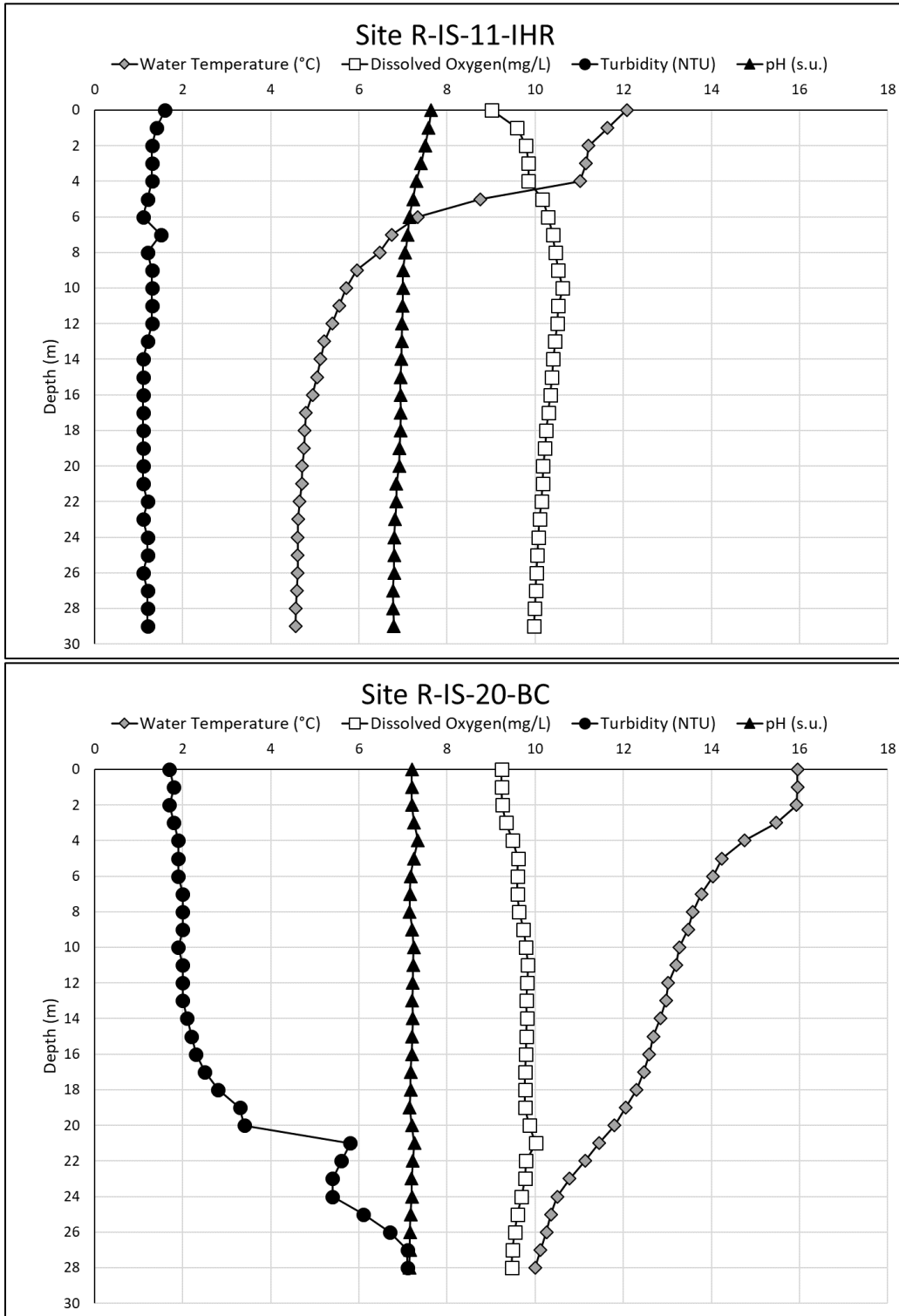


Figure B-4. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Ice House Reservoir and Brush Creek Reservoir sites R-IS-11-IHR and R-IS-20-BC during May (Spring) 2017.

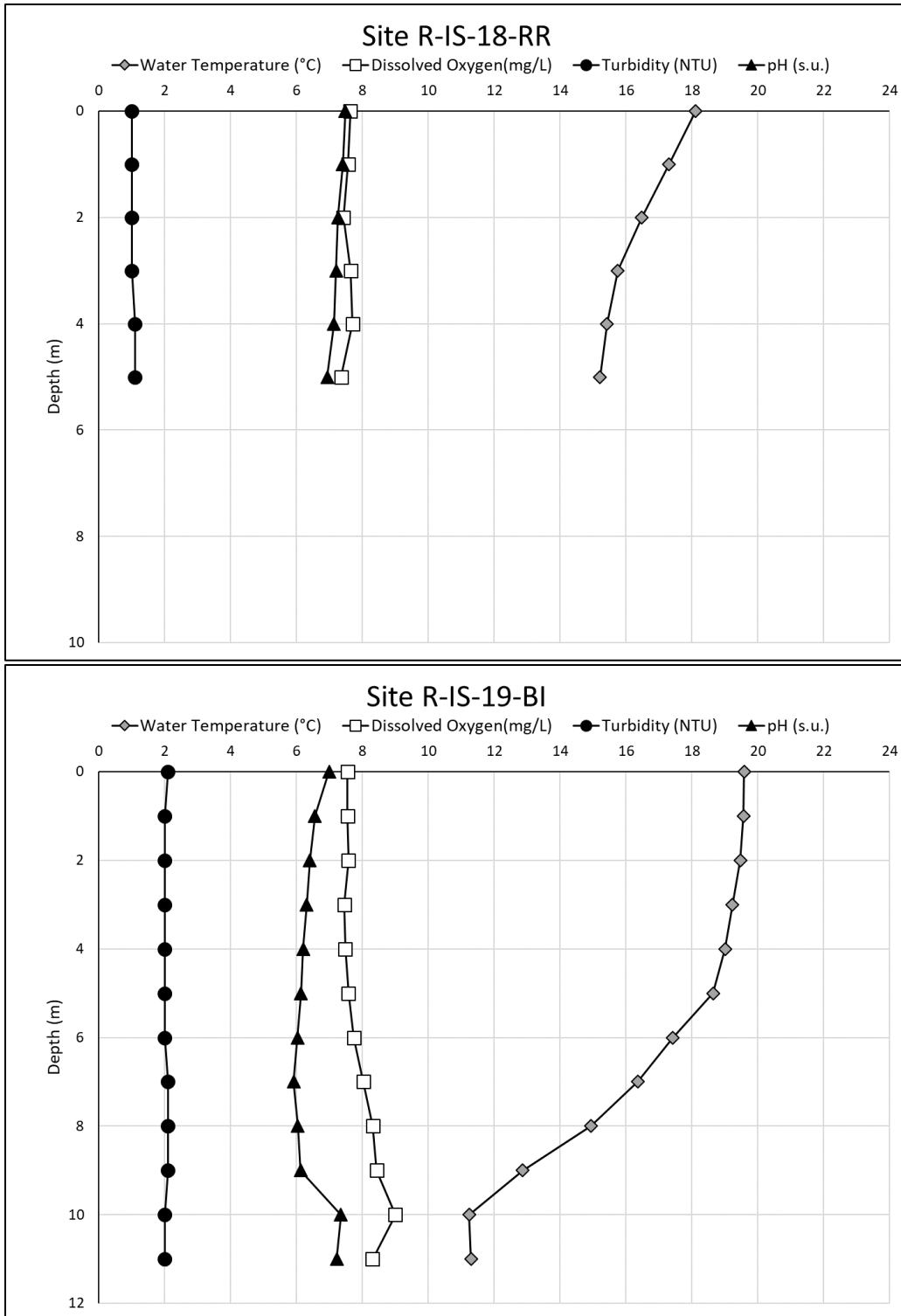


Figure B-5. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Rubicon Reservoir and Buck Island Reservoir sites R-IS-18-RR and R-IS-19-BI during August (Summer) 2017.

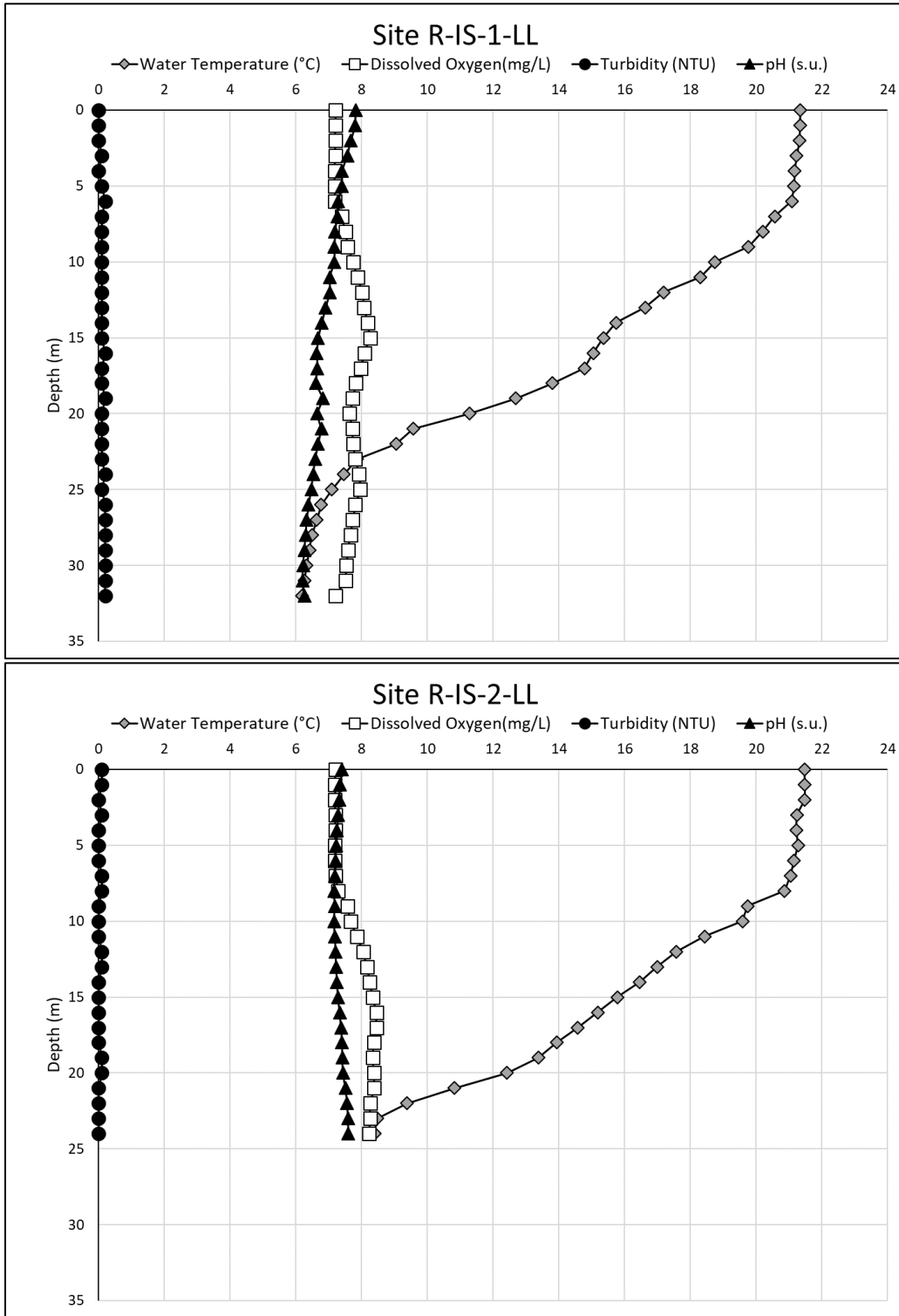


Figure B-6. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Loon Lake sites R-IS-1-LL and R-IS-2-LL during August (Summer) 2017.

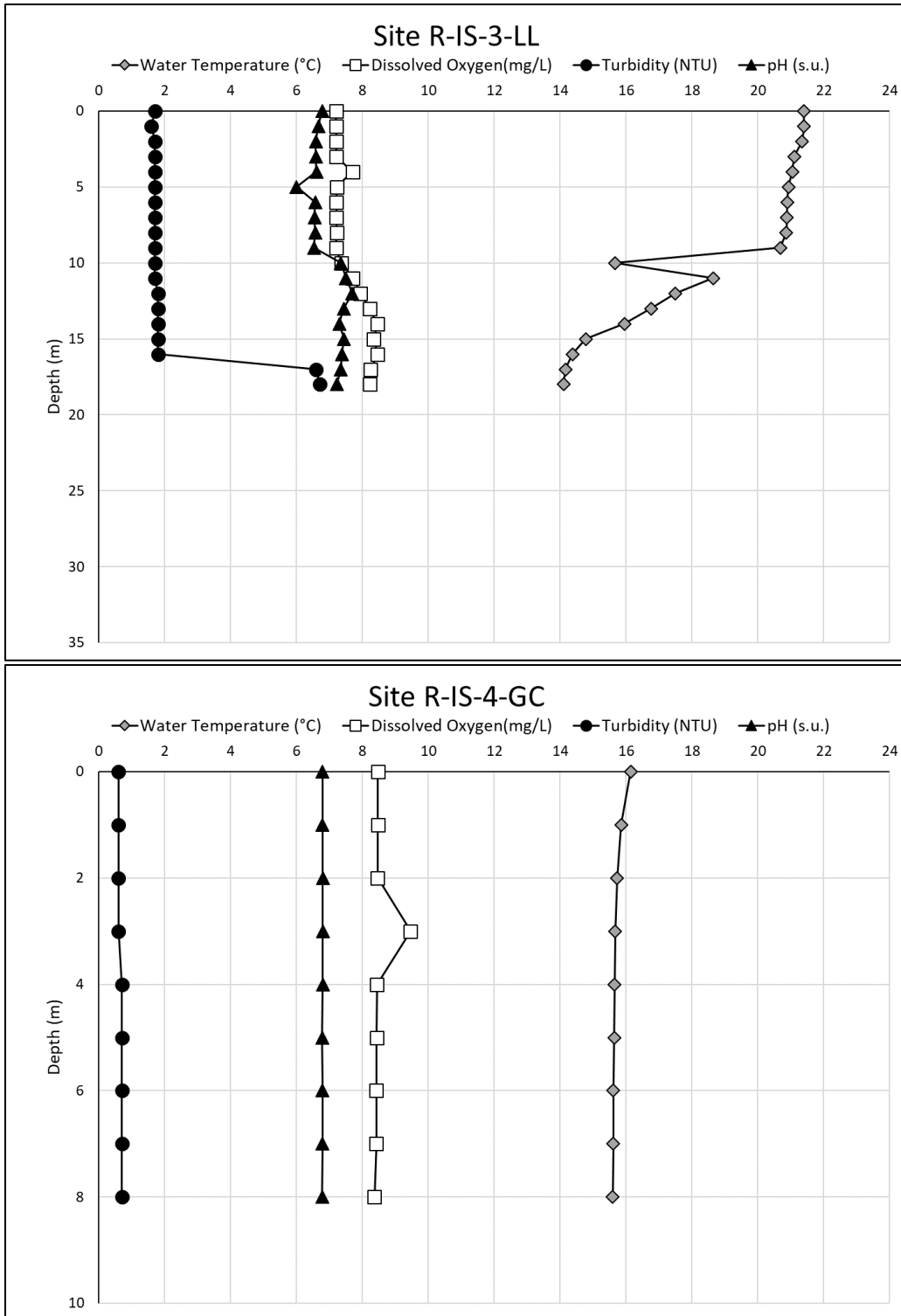


Figure B-7. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Loon Lake and Gerle Creek Reservoir sites R-IS-3-LL and R-IS-4-GC during August (Summer) 2017.

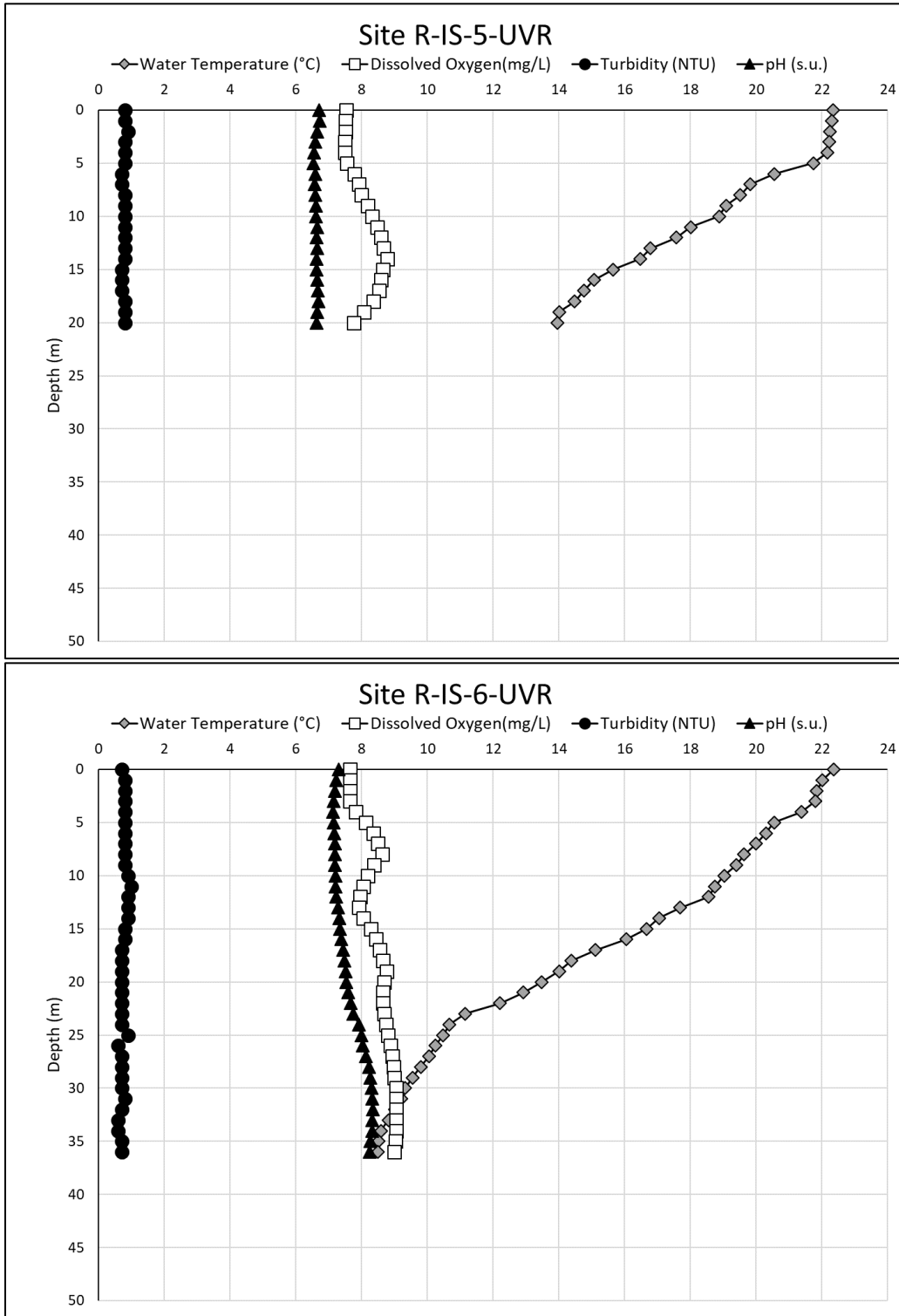


Figure B-8. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Union Valley Reservoir sites R-IS-5-UVR and R-IS-6-UVR during August (Summer) 2017.

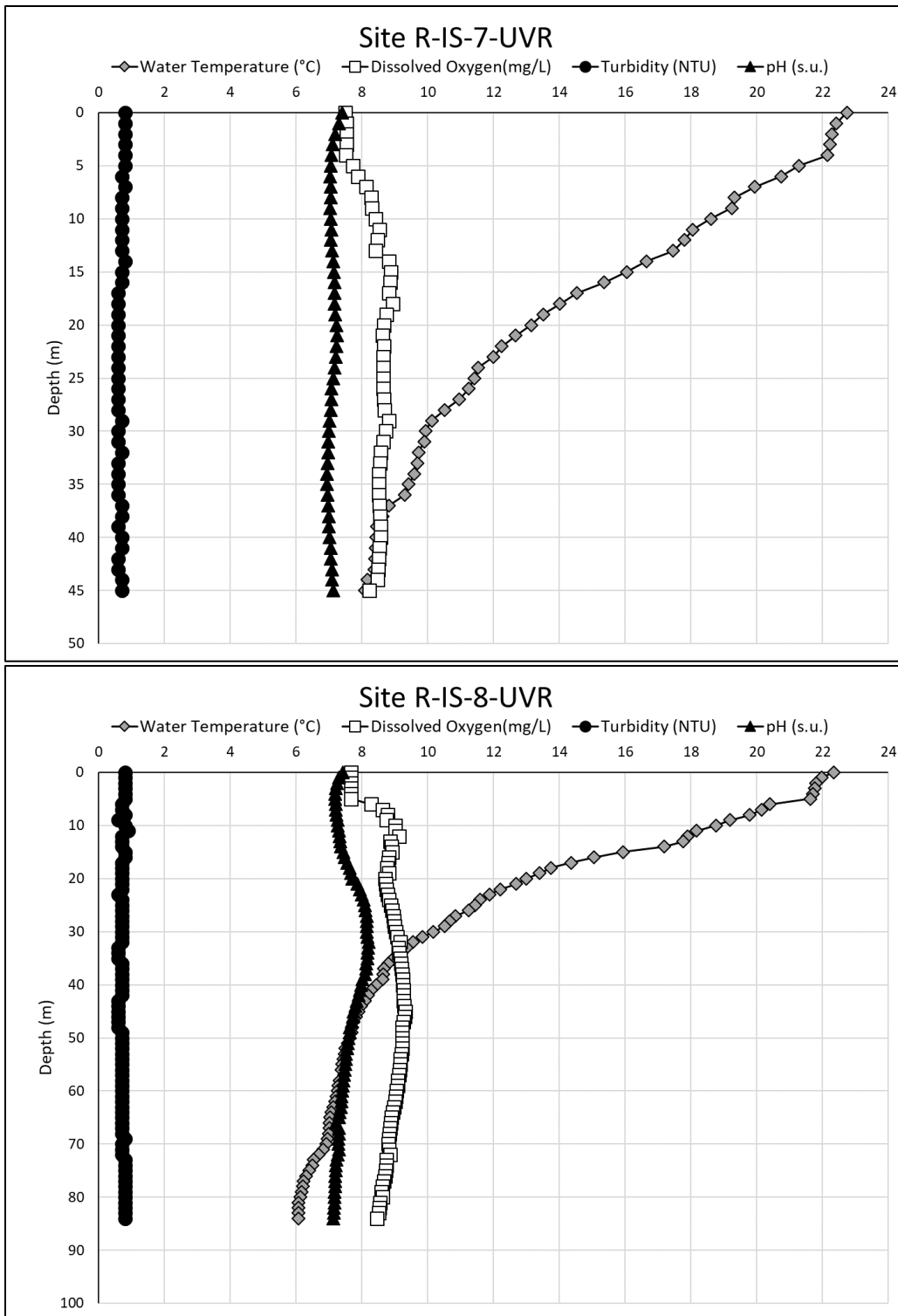


Figure B-9. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Union Valley Reservoir sites R-IS-7-UVR and R-IS-8-UVR during August (Summer) 2017.

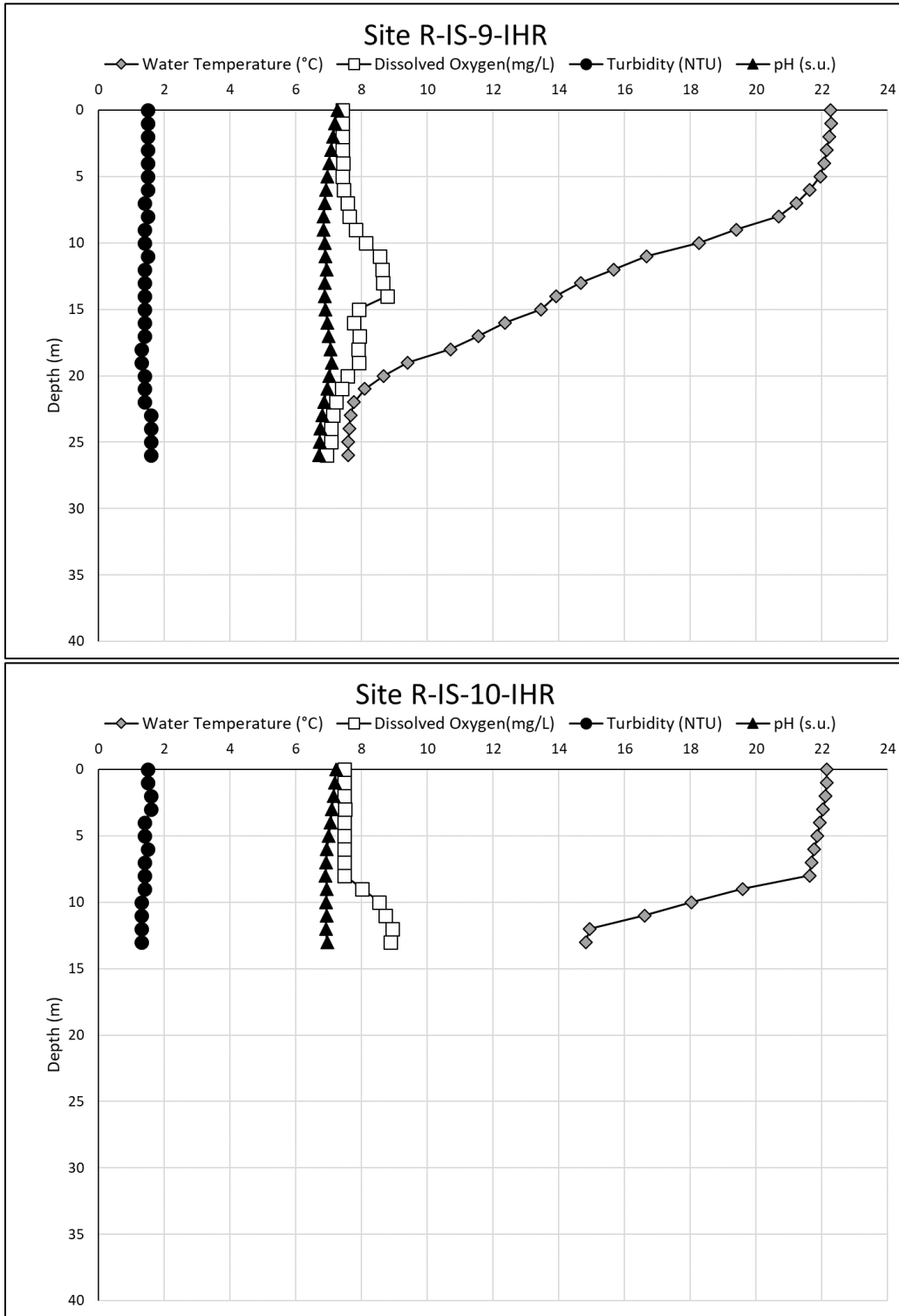


Figure B-10. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Ice House Reservoir sites R-IS-9-IHR and R-IS-10-IHR during August (Summer) 2017.

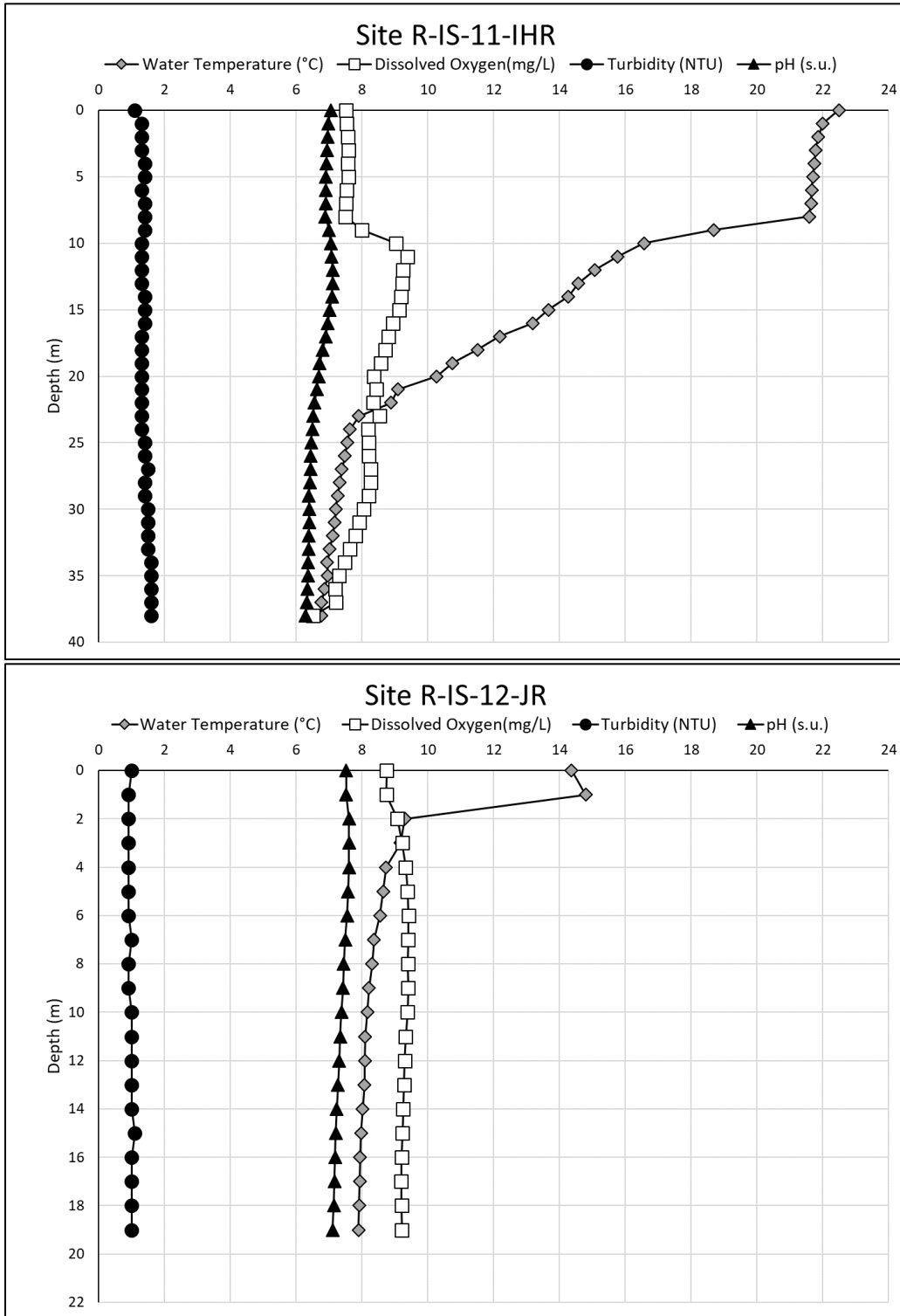


Figure B-11. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Ice House Reservoir and Junction Reservoir sites R-IS-11-IHR and R-IS-12-JR during August (Summer) 2017.

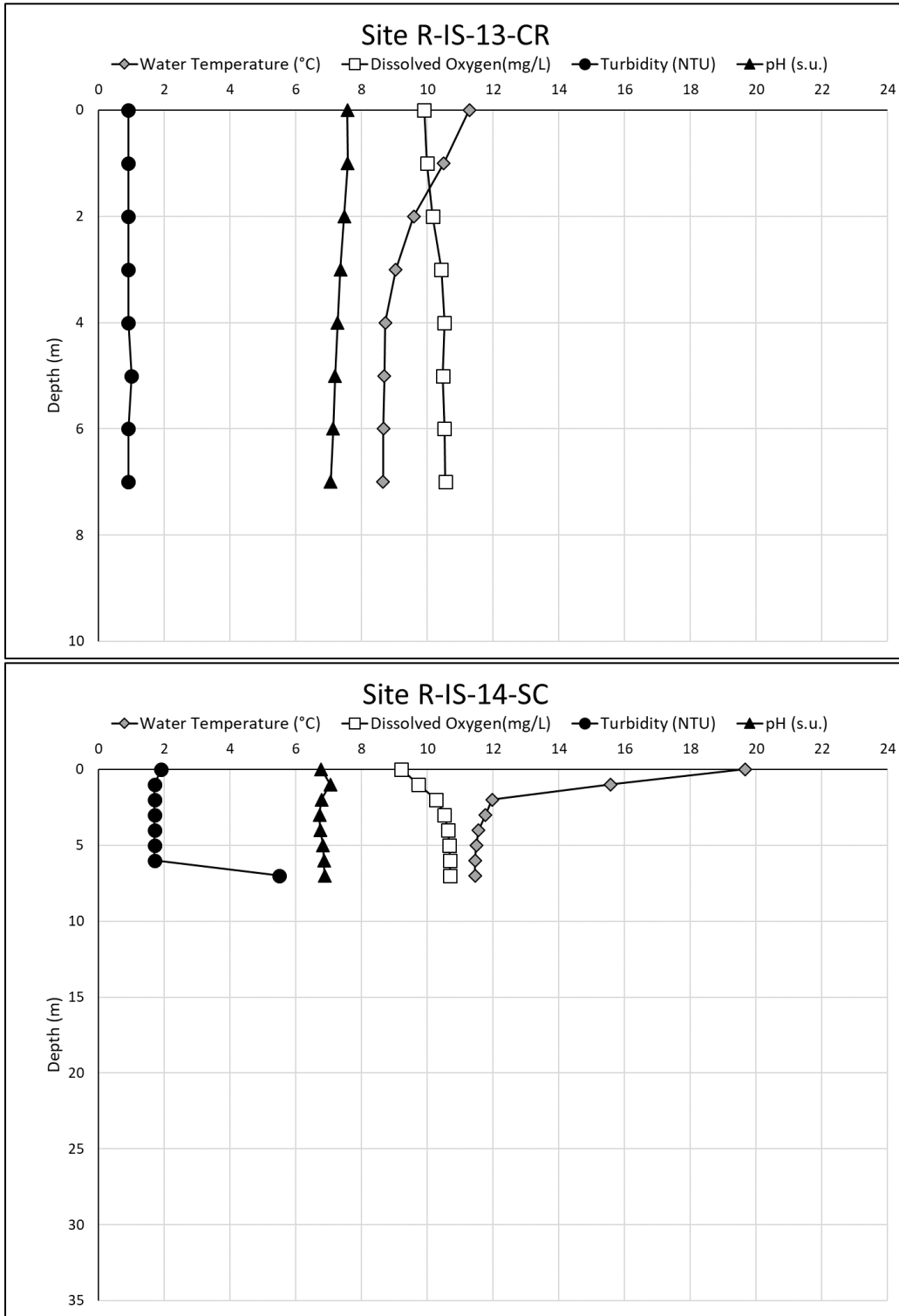


Figure B-12. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Camino Reservoir and Slab Creek Reservoir sites R-IS-13-CR and R-IS-14-SC during August (Summer) 2017.

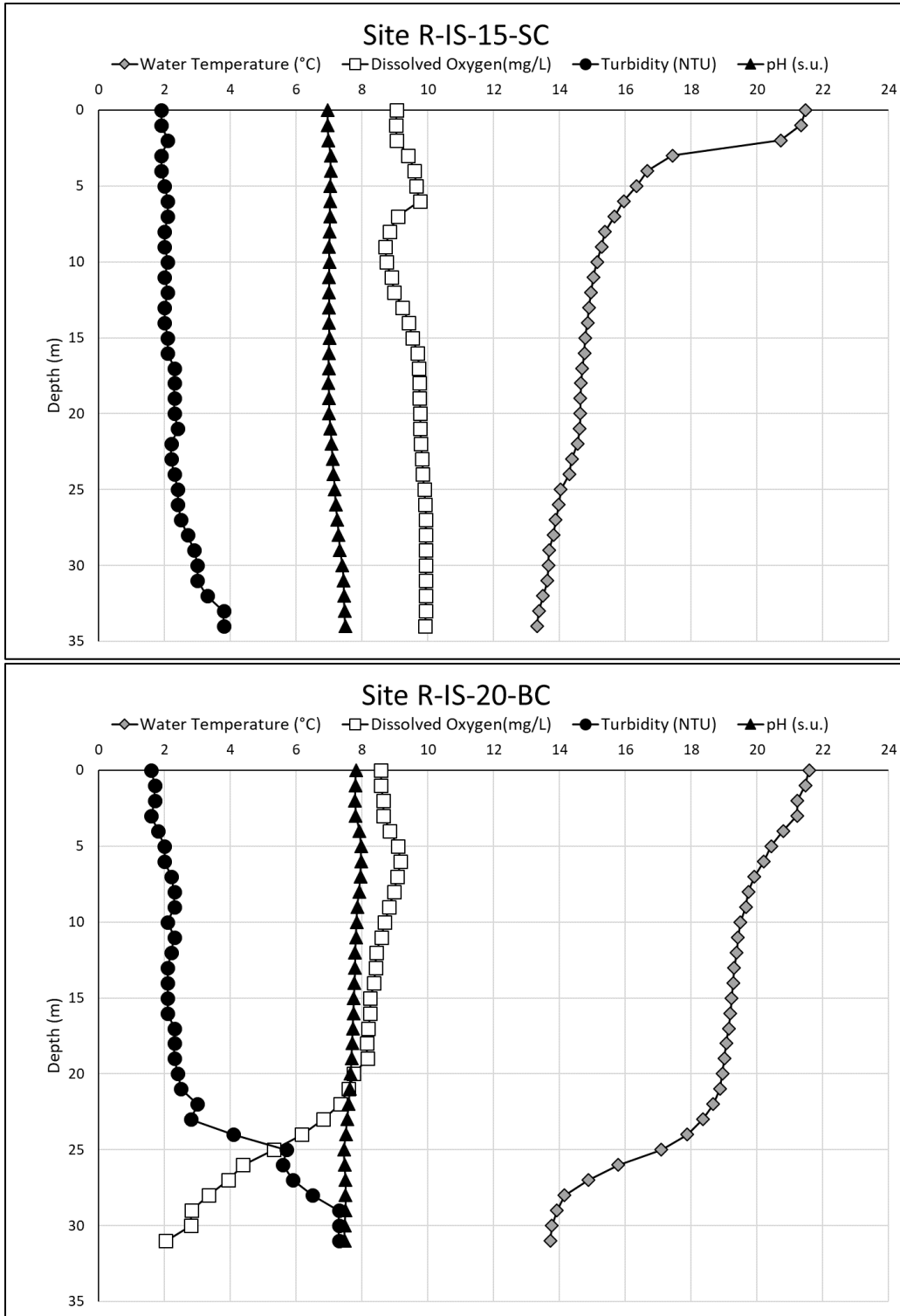


Figure B-13. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Slab Creek Reservoir and Brush Creek Reservoir sites R-IS-15-SC and R-IS-20-BC during August (Summer) 2017.

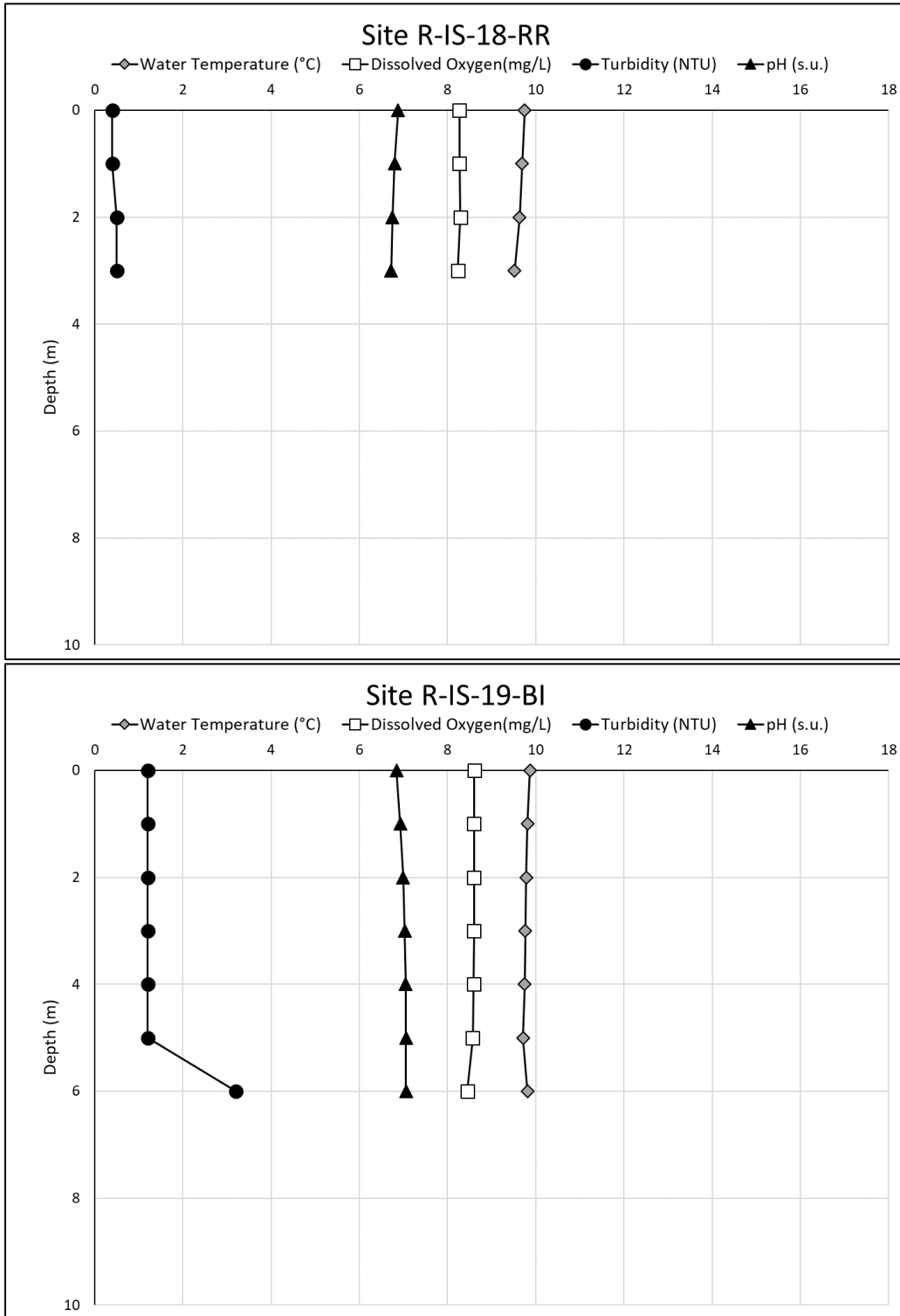


Figure B-14. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Rubicon Reservoir and Buck Island Reservoir sites R-IS-18-RR and R-IS-19-BI during October/November (Fall) 2017.

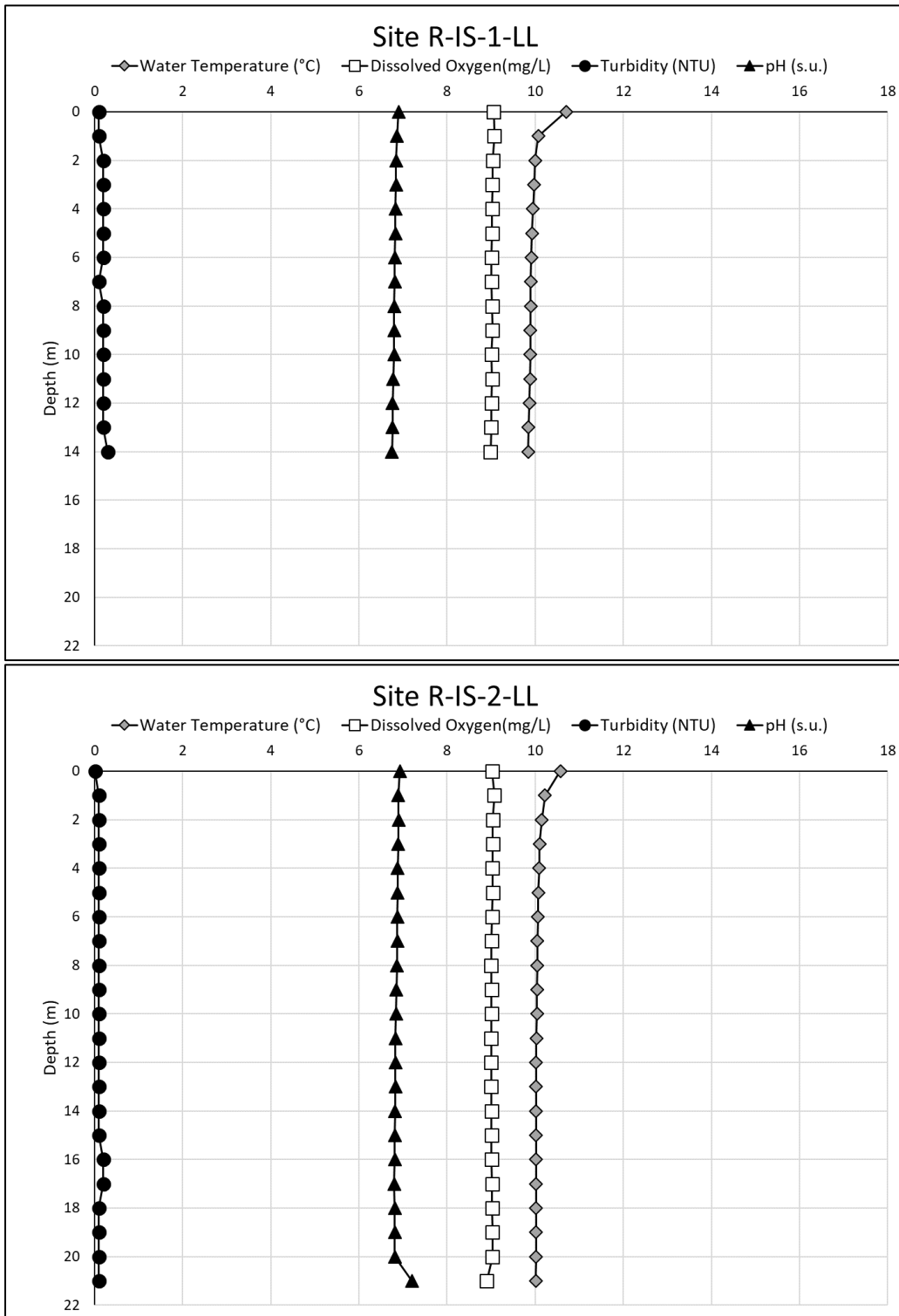


Figure B-15. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Loon Lake sites R-IS-1-LL and R-IS-2-LL during October/November (Fall) 2017.

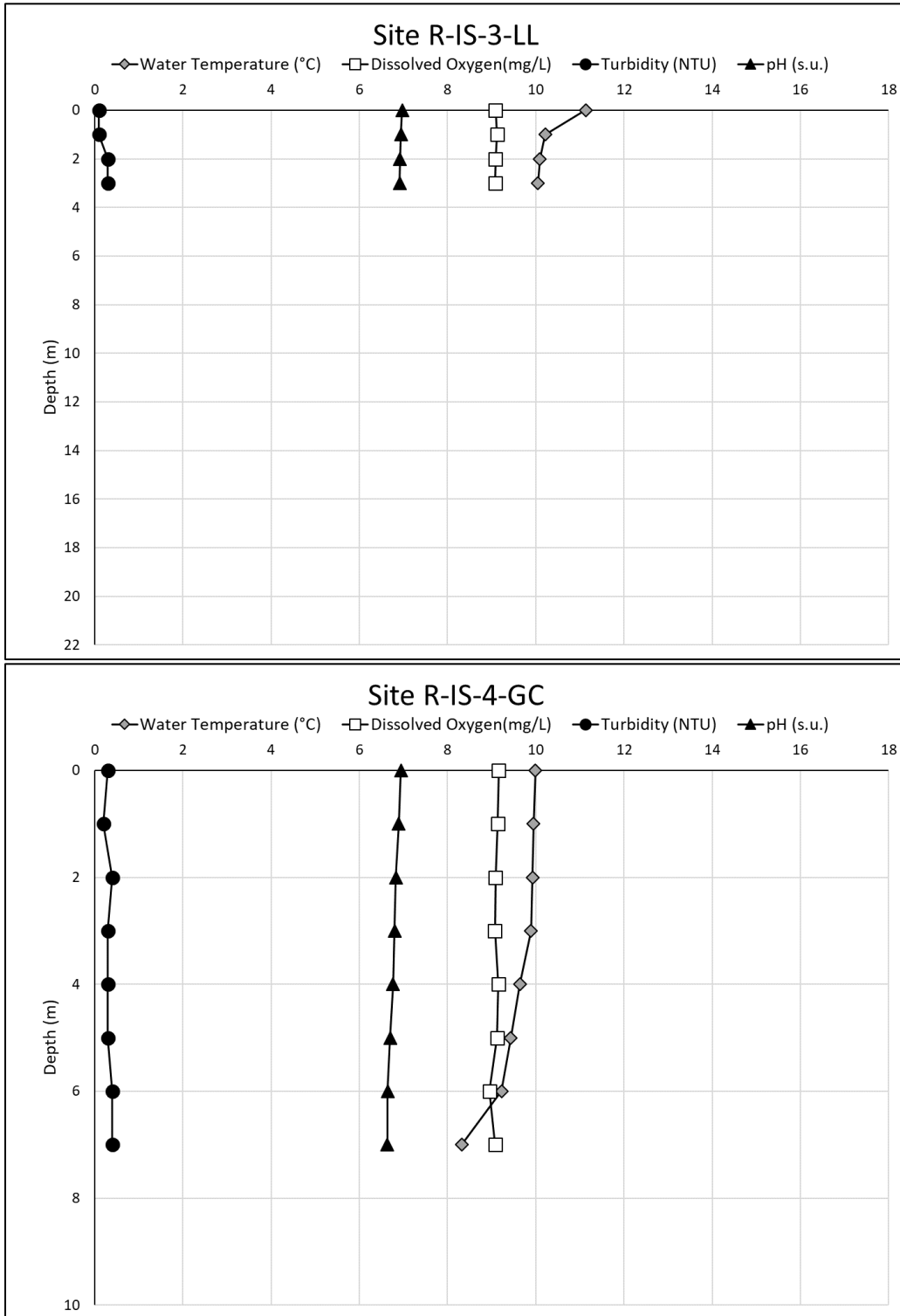


Figure B-16. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Loon Lake and Gerle Creek Reservoir sites R-IS-3-LL and R-IS-4-GC during October/November (Fall) 2017.

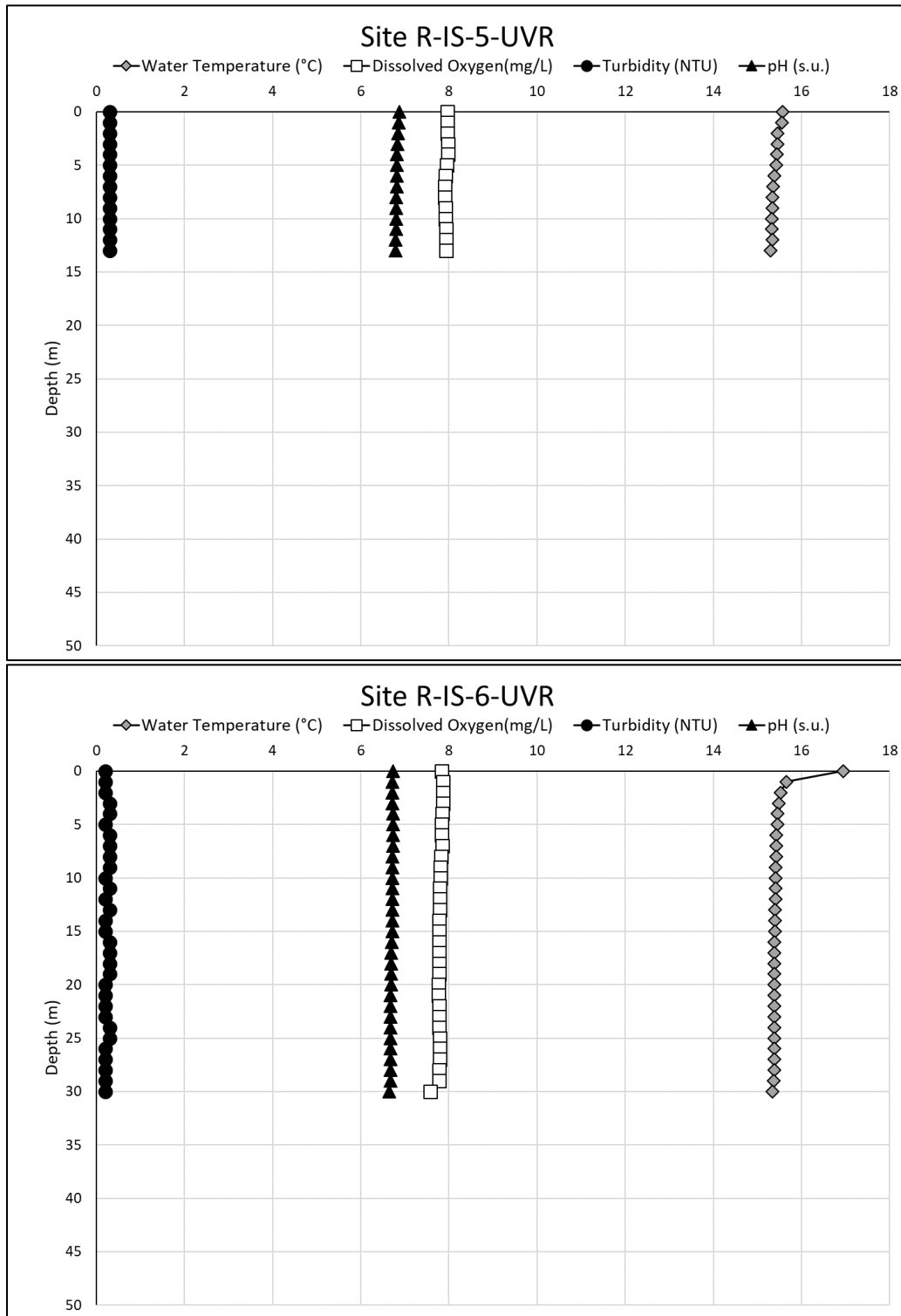


Figure B-17. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Union Valley Reservoir sites R-IS-5-UVR and R-IS-6-UVR during October/November (Fall) 2017.

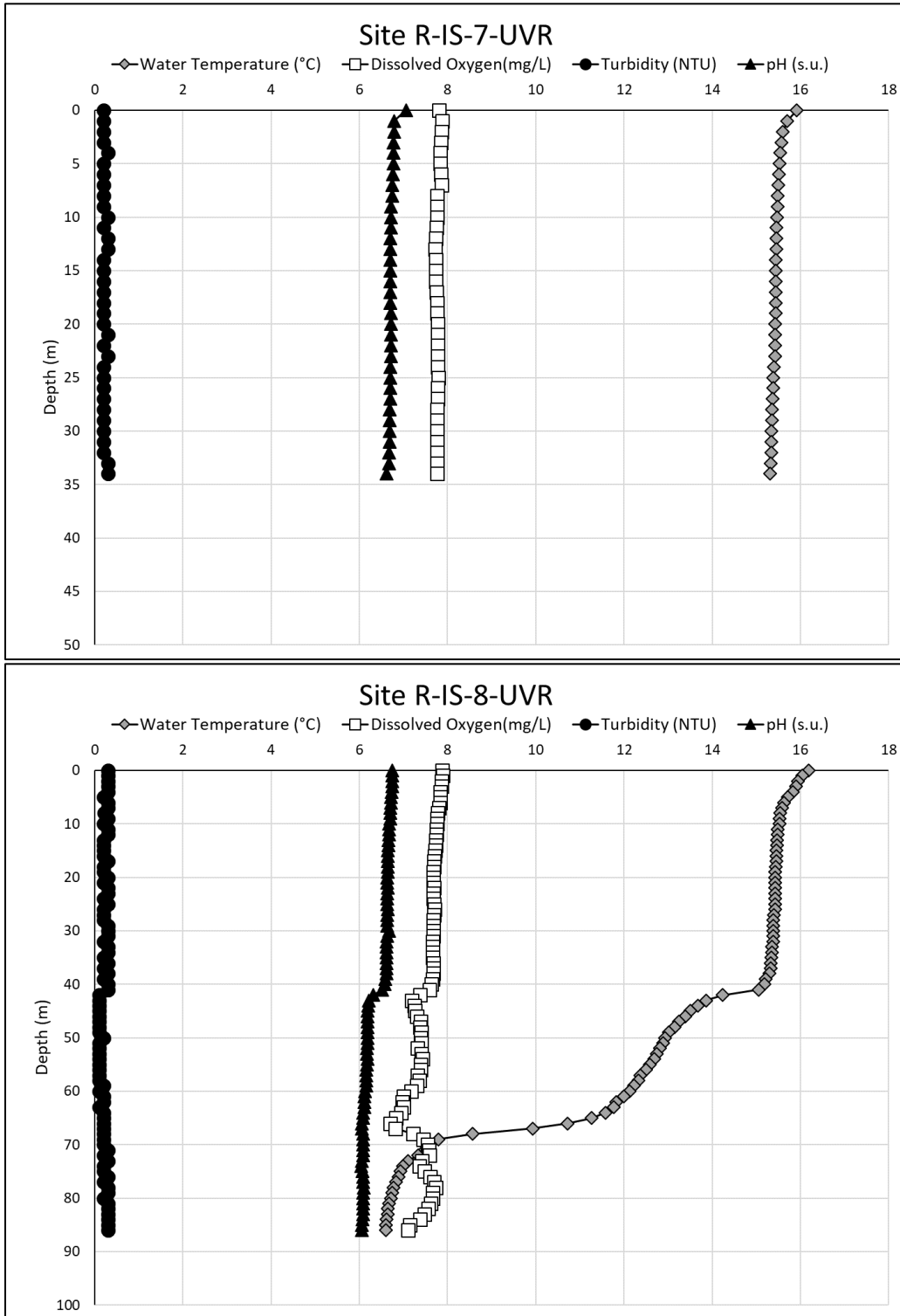


Figure B-18. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Union Valley Reservoir sites R-IS-7-UVR and R-IS-8-UVR during October/November (Fall) 2017.

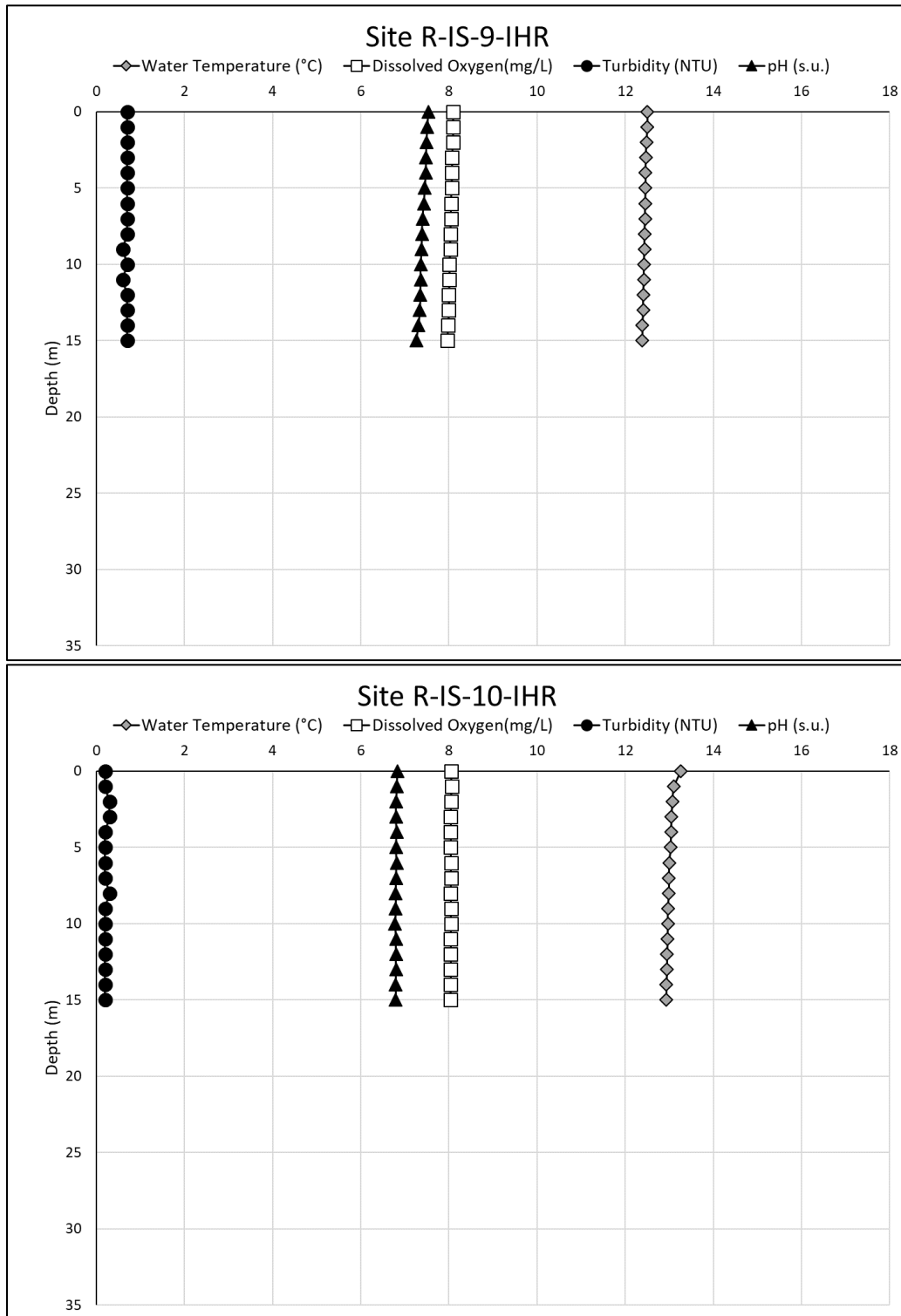


Figure B-19. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Ice House Reservoir sites R-IS-9-UVR and R-IS-10-IHR during October/November (Fall) 2017.

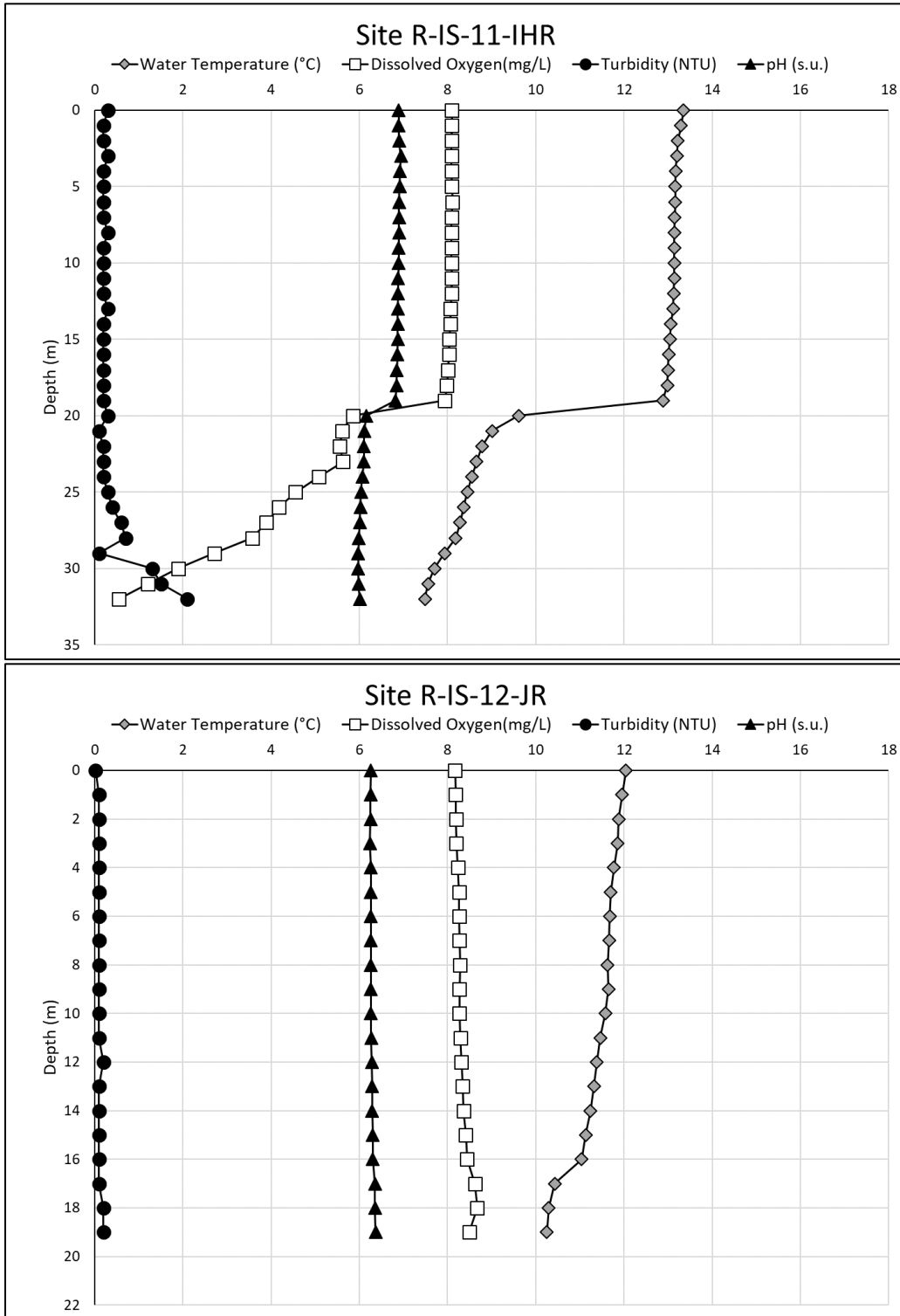


Figure B-20. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Ice House Reservoir and Junction Reservoir sites R-IS-11-IHR and R-IS-12-JR during October/November (Fall) 2017.

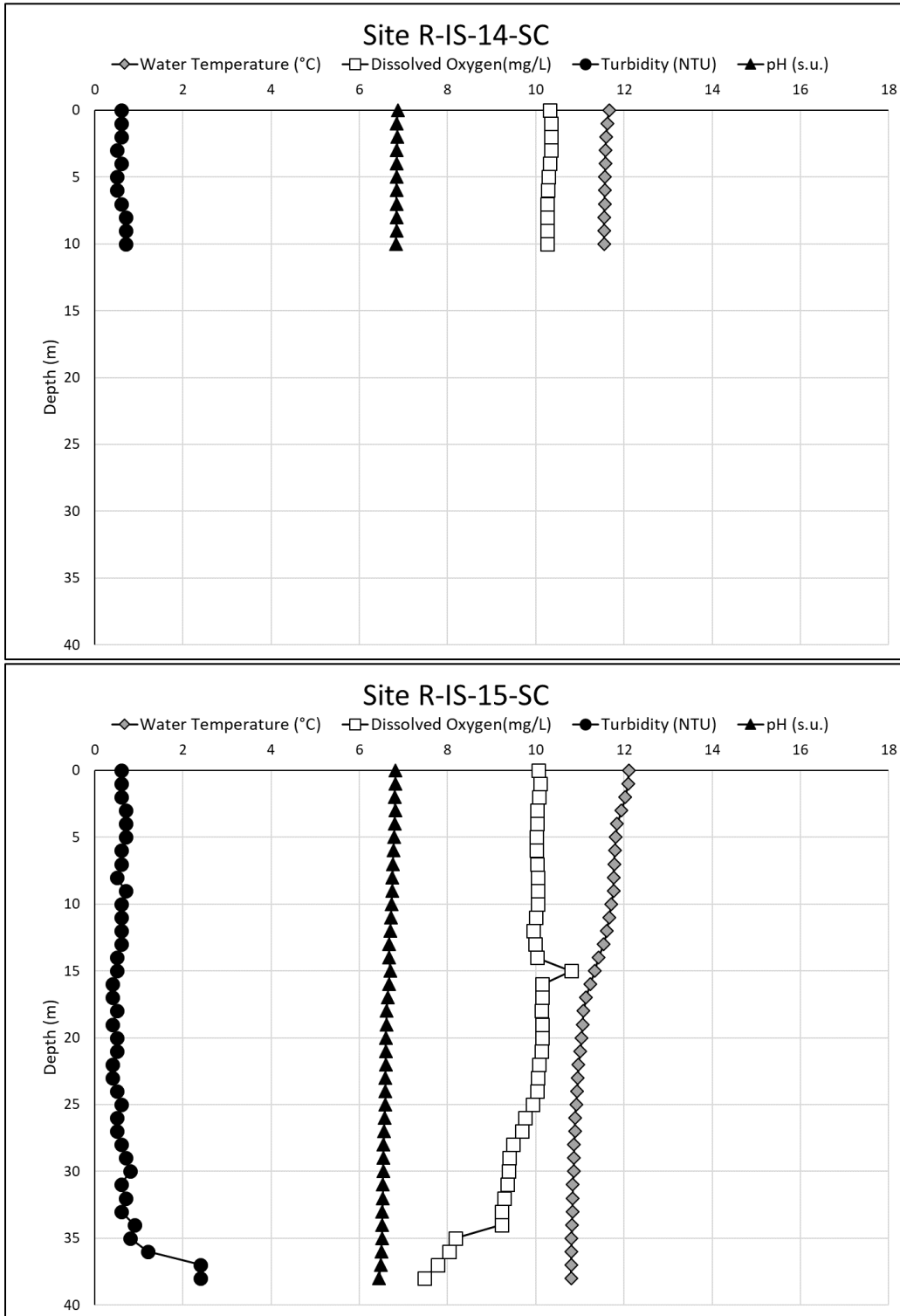


Figure B-21. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Slab Creek Reservoir sites R-IS-14-SC and R-IS-15-SC during October/November (Fall) 2017.

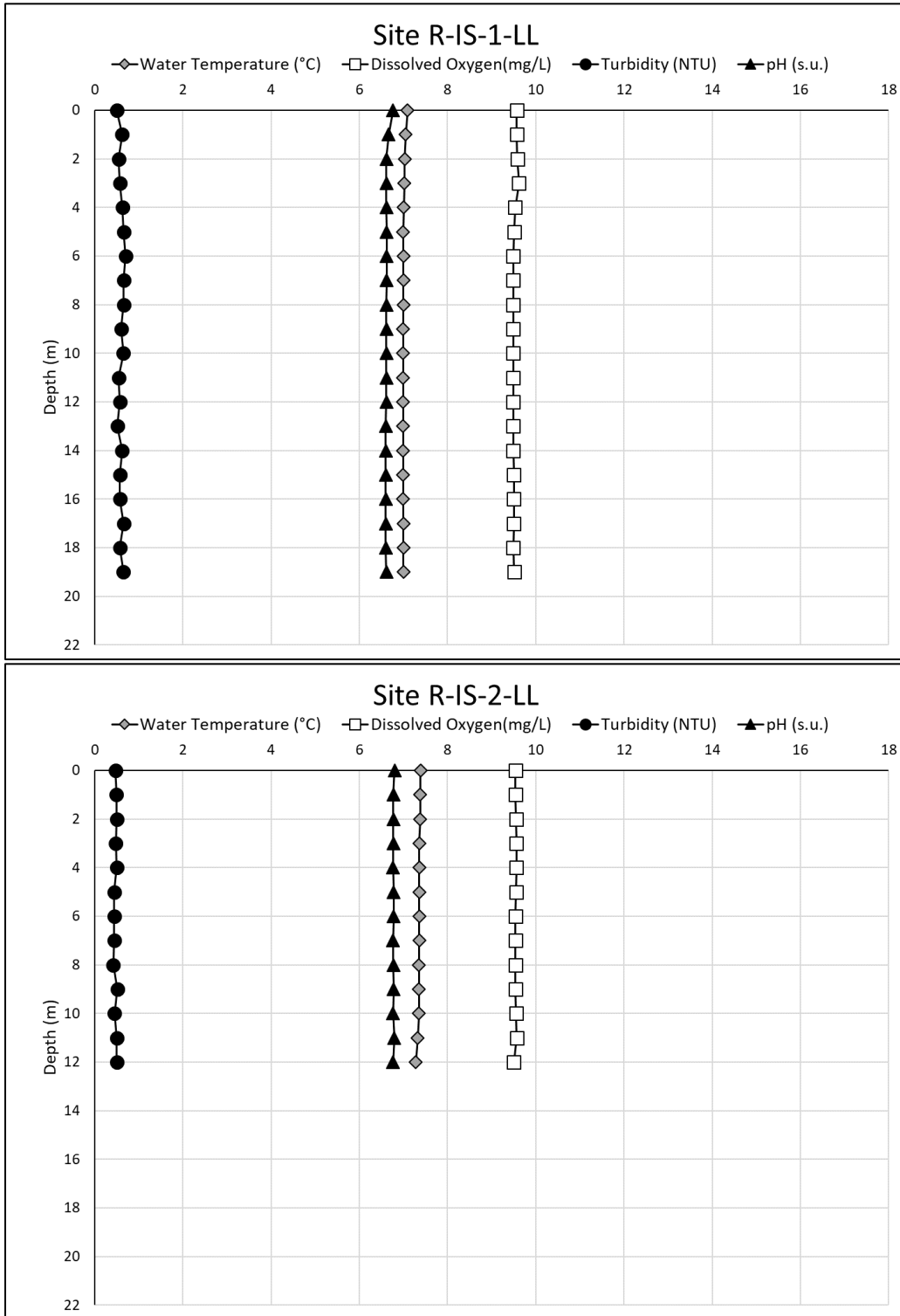


Figure B-22. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Loon Lake sites R-IS-1-LL and R-IS-2-LL during late November (Fall-Winter) 2017.

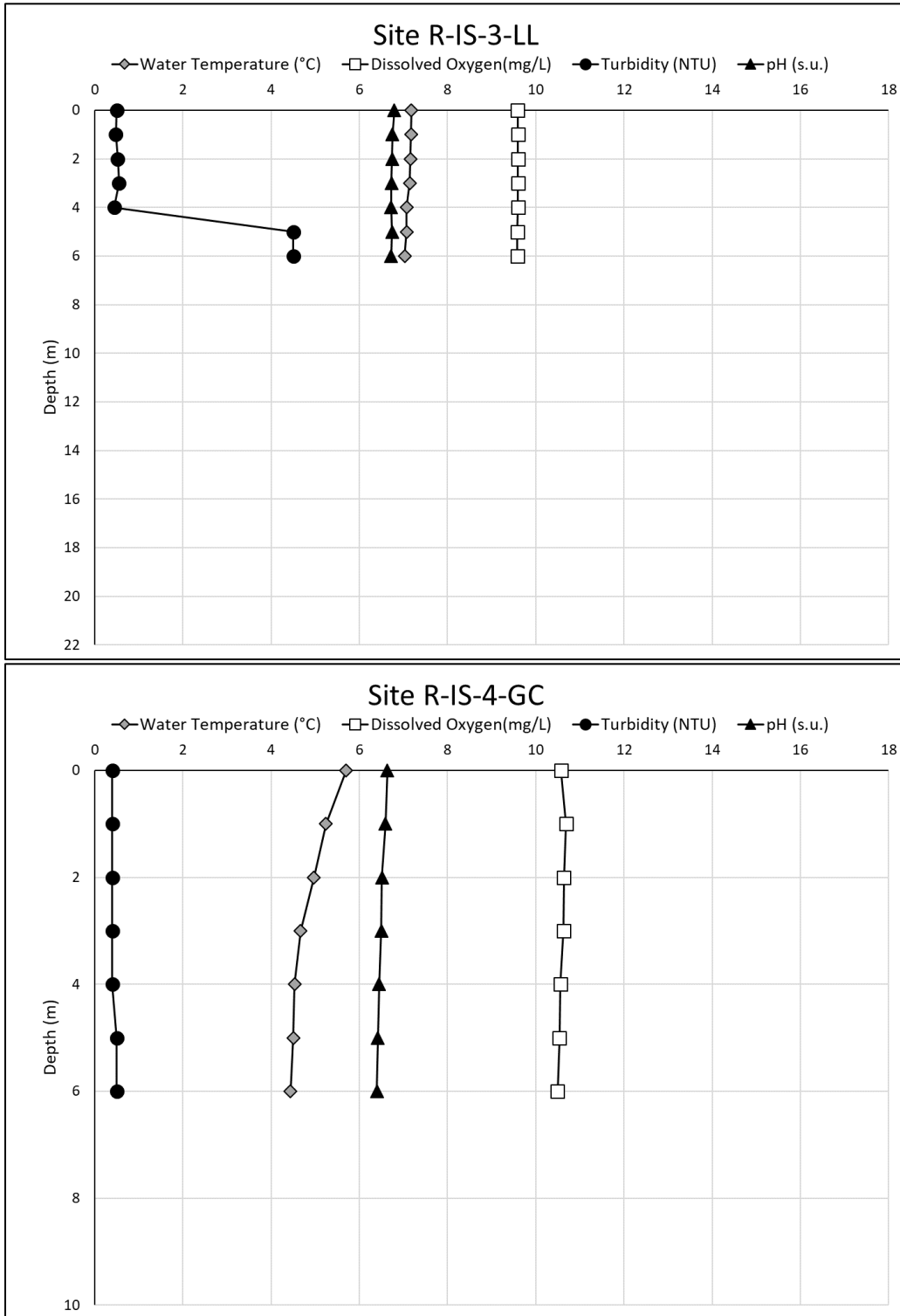


Figure B-23. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Loon Lake and Gerle Creek Reservoir sites R-IS-3-LL and R-IS-4-GC during late November (Fall-Winter) 2017.

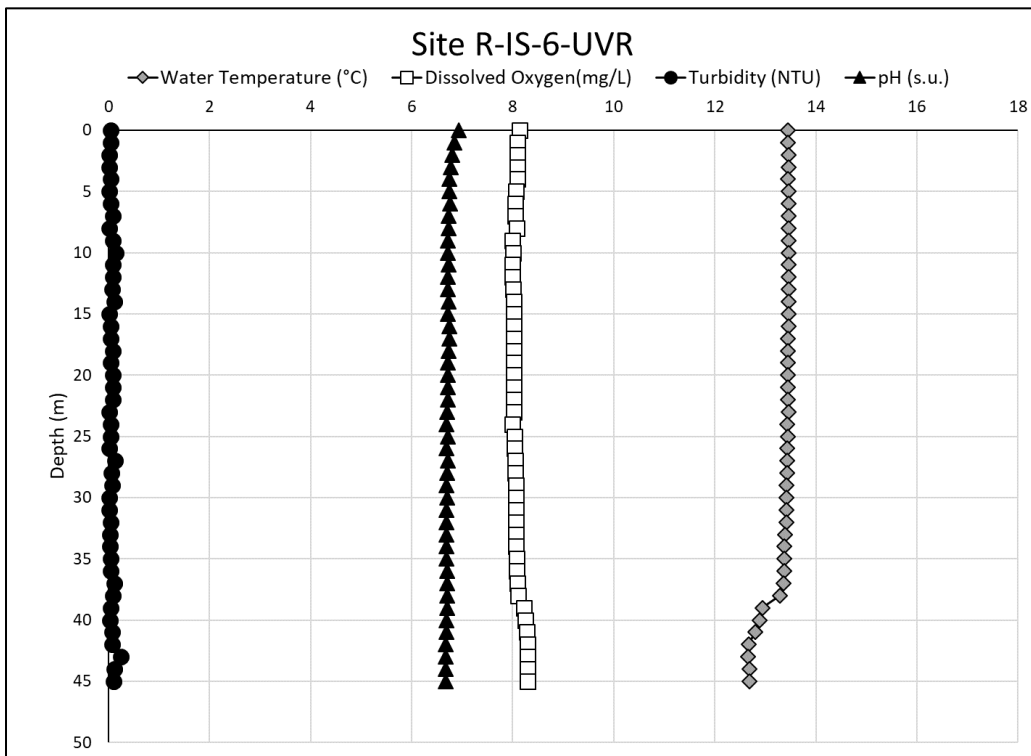
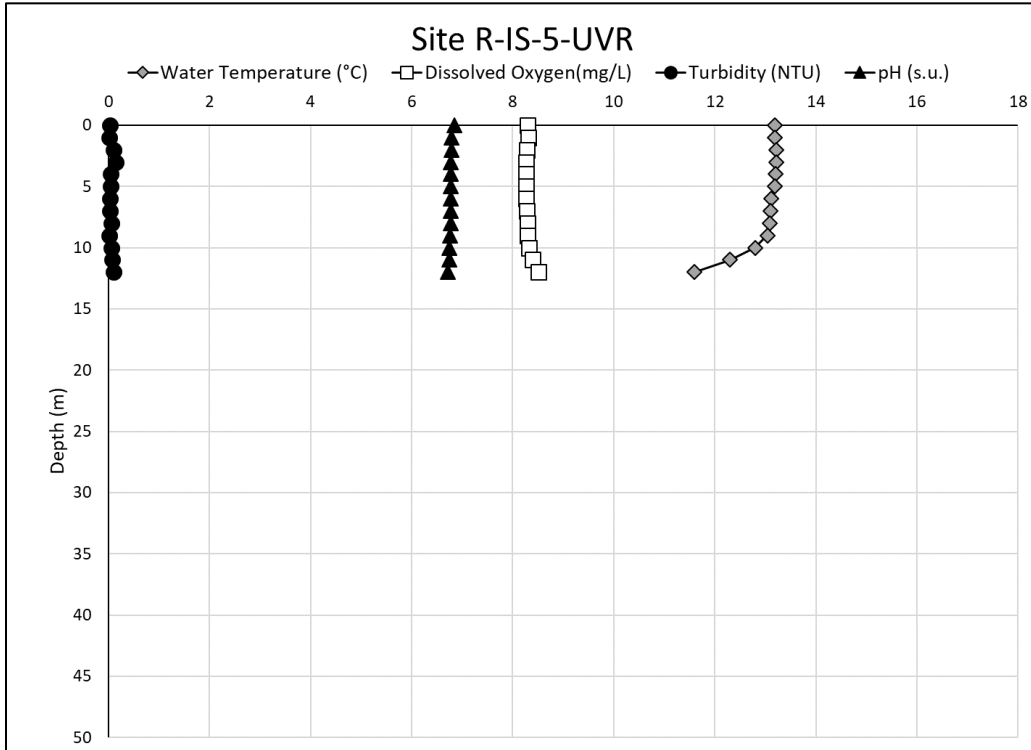


Figure B-24. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Union Valley Reservoir sites R-IS-5-UVR and R-IS-6-UVR during late November (Fall-Winter) 2017.

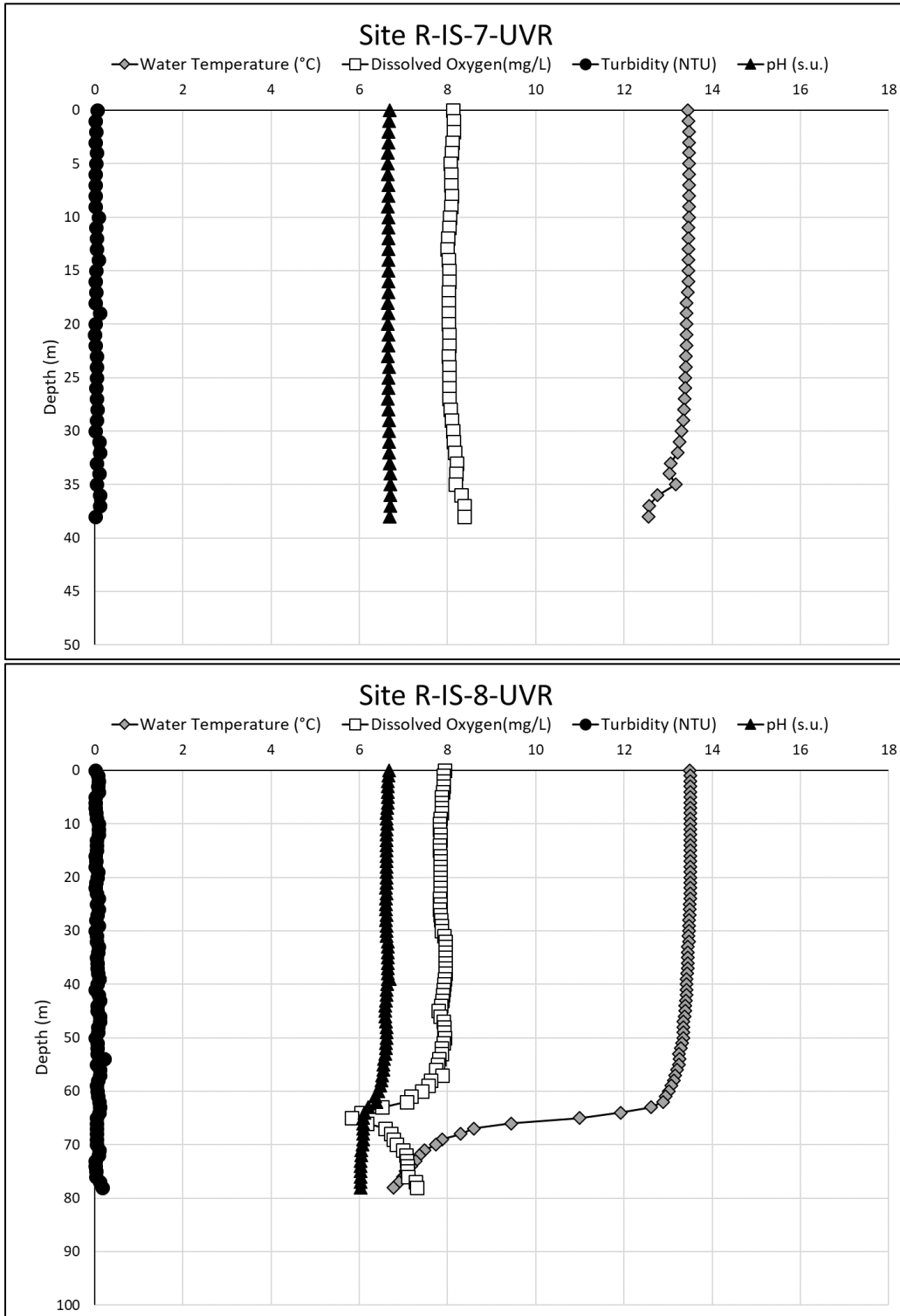


Figure B-25. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Union Valley Reservoir sites R-IS-7-UVR and R-IS-8-UVR during late November (Fall-Winter) 2017.

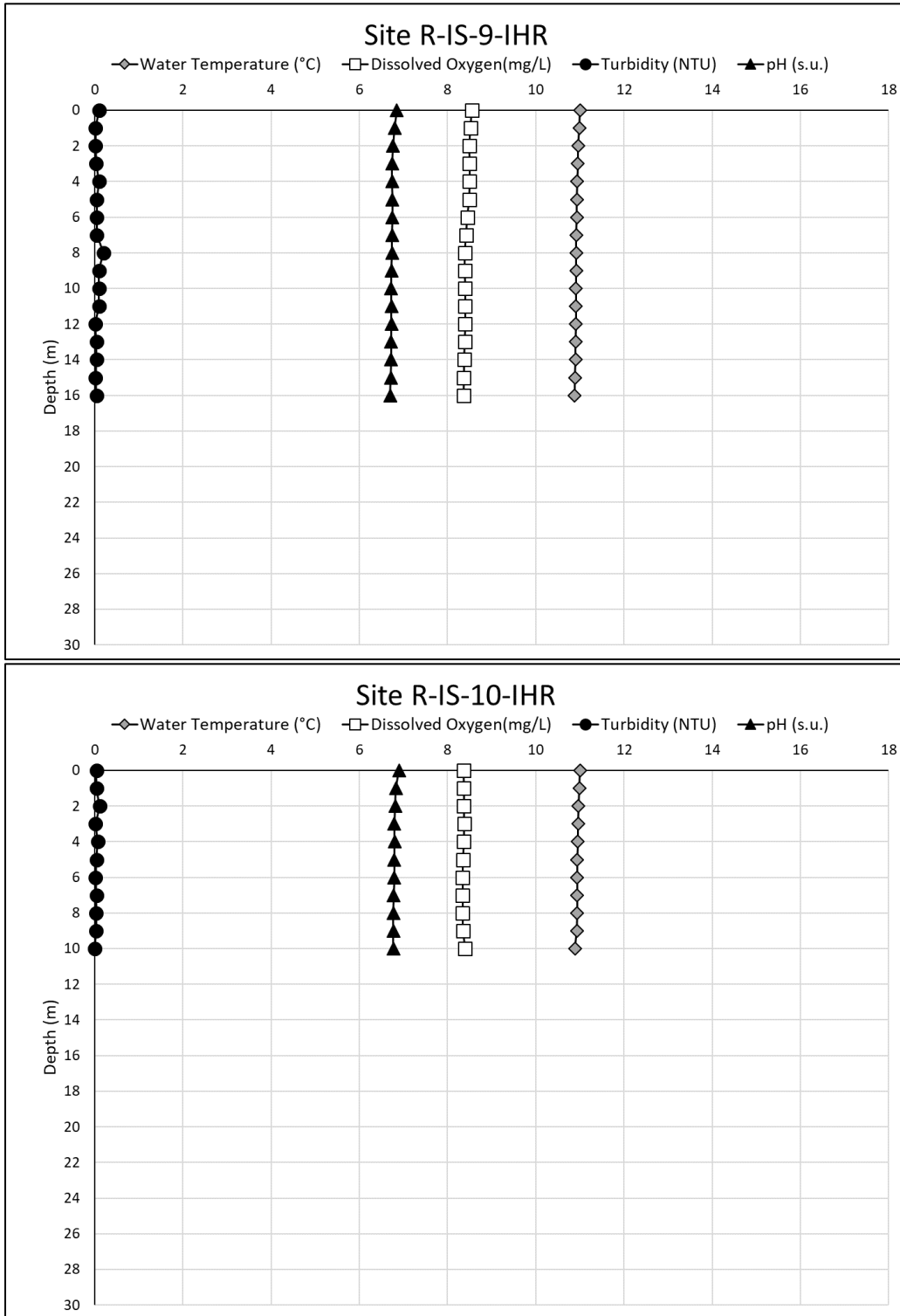


Figure B-26. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Ice House Reservoir sites R-IS-9-IHR and R-IS-10-IHR during late November (Fall-Winter) 2017.

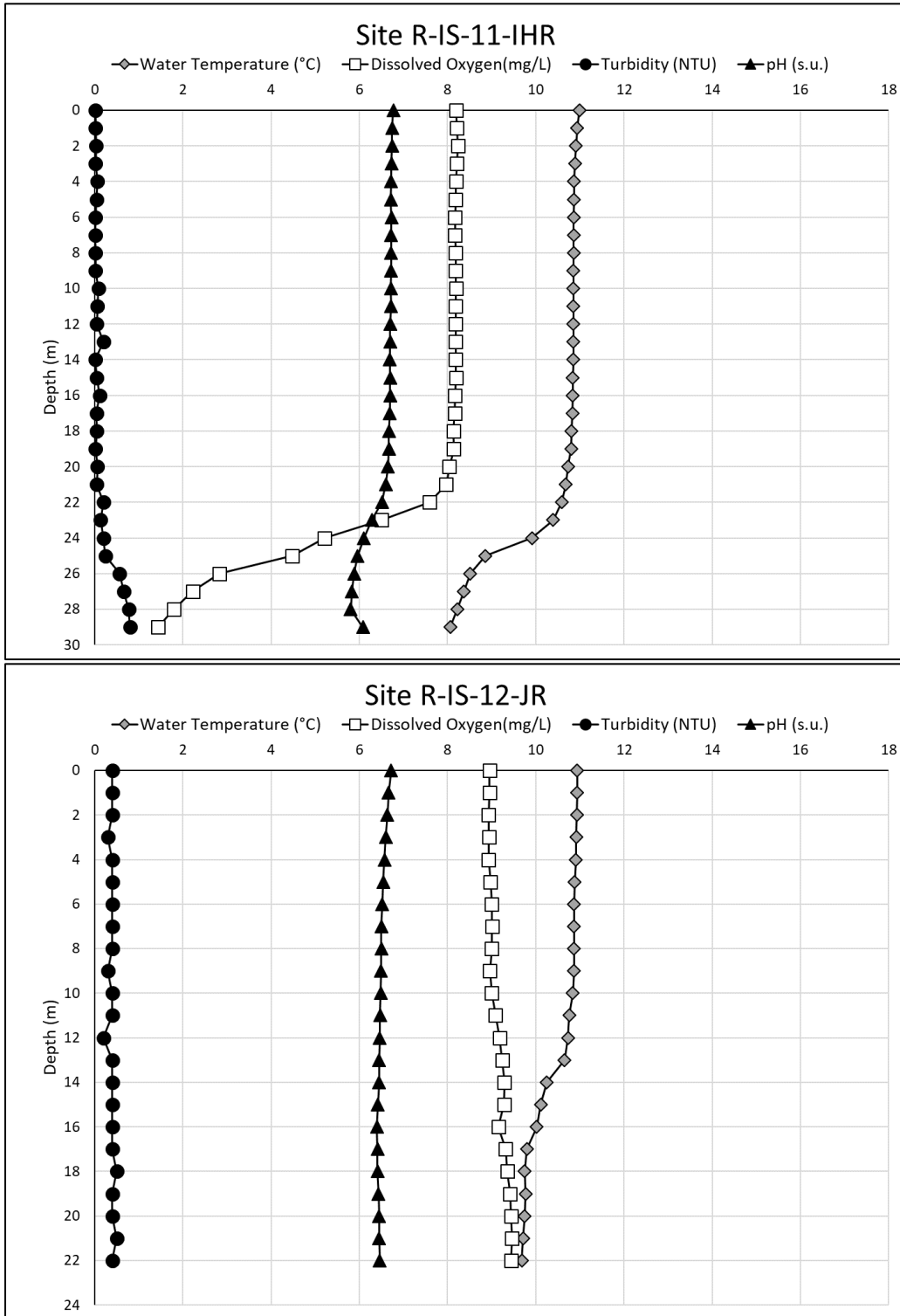


Figure B-27. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Ice House Reservoir and Junction Reservoir sites R-IS-11-IHR and R-IS-12-JR during late November (Fall-Winter) 2017.

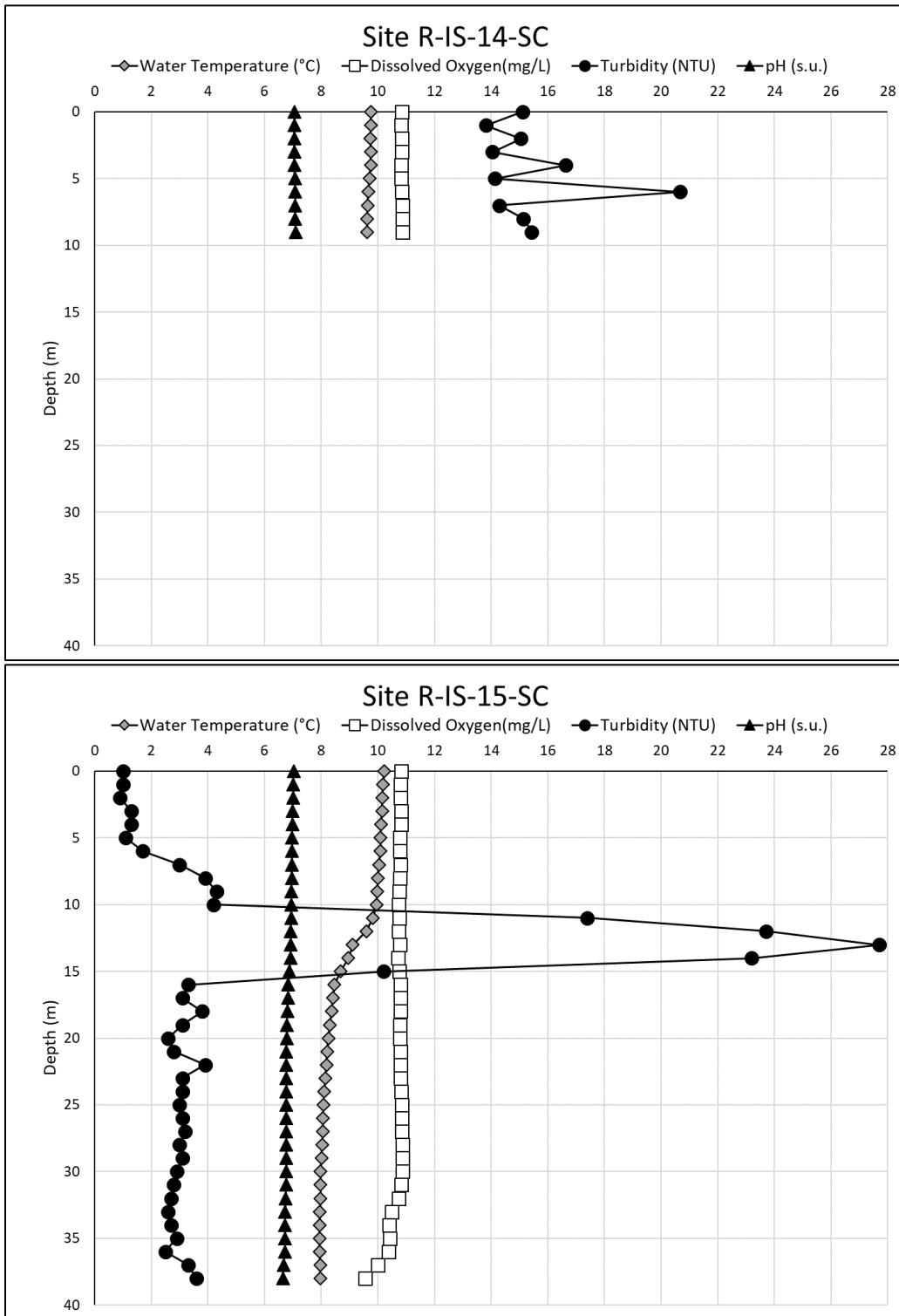


Figure B-28. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Slab Creek Reservoir sites R-IS-14-SC and R-IS-15-SC during late November (Fall-Winter) 2017.

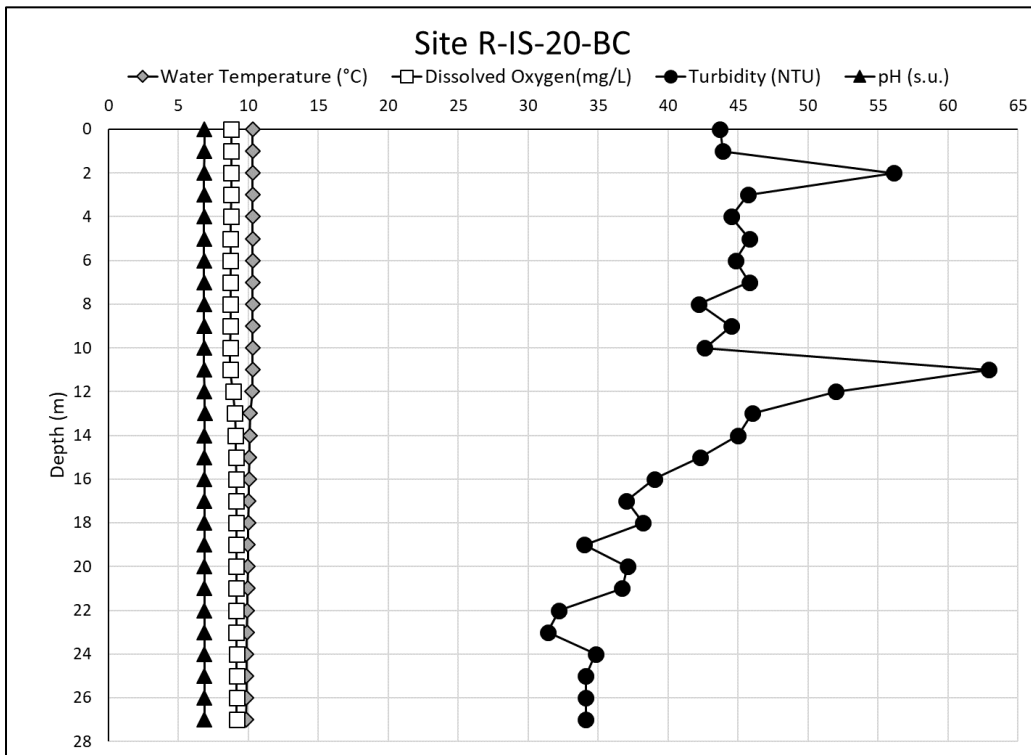


Figure B-29. *In situ* water temperature, dissolved oxygen, turbidity, and pH at Brush Creek Reservoir sites R-IS-20-BC during late November (Fall-Winter) 2017.



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APPENDIX C
Chemistry Results for UARP Riverine and Reservoir Sites



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Table C-1. General chemistry results for UARP riverine sites during the May (Spring) sampling event.

Analyte	Units	IS-1-RR	IS-2-LRR	IS-3-LRR	IS-4-GC	IS-5-GC	IS-9-GCC	IS-6-GC	IS-7-SFRR	IS-8-SFRR	IS-10-SFSC	IS-11-SFSC	IS-12-SC	IS-13-SC	IS-14-SC	IS-17-BC	IS-15-SFAR	IS-16-SFAR	IS-19-SFAR	IS-18-SFAR	Field Blank
Miscellaneous																					
Total Suspended Solids (TSS)	mg/L	--	--	--	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	5.8	<2.0	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids (TDS)	mg/L	--	--	--	--	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	14	12	<10.0	12	16	21	<10.0	10	12	<10.0
Total Organic Carbon (TOC)	mg/L	--	--	--	--	2.5 ^{FB}	2.9 ^{FB}	2.6 ^{FB}	3 ^{FB}	3.4 ^{FB}	3.1 ^{FB}	2.3 ^{FB}	3.1 ^{FB}	2.9 ^{FB}	2.9 ^{FB}	<0.54 ^{FB}	3.3 ^{FB}	3.1 ^{FB}	2.4 ^{FB}	2.6 ^{FB}	1.1
Cyanide	mg/L	--	--	--	--	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012
Oil & Grease	mg/L	--	--	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Petroleum Hydrocarbons (TPH)	ug/L	--	--	--	--	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
MTBE	ug/L	--	--	--	--	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095
Hardness (as CaCO ₃)	mg/L	--	--	--	--	2.9	3.1	3.1	3.9	3.2	4.1	6	4.6	4.7	4.5	9.6	7.8	6.9	7.6	8.2	<0.19
Total Alkalinity (as CaCO ₃)	mg/L	--	--	--	--	<1.0	5	<1.0	5.8	5.4	6	8.4	6.8	7.6	7.4	12	10	8.8	11	12	<1.0
Nutrients																					
Nitrate/Nitrite	mg/L	--	--	--	--	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	0.41	<0.055	<0.055	<0.055
Total Kjeldahl Nitrogen (TKN)	mg/L	--	--	--	--	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	0.26	0.22	0.3	0.22	0.2	<0.040	<0.040	<0.040
Ammonia as N	mg/L	--	--	--	--	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Total Phosphorous	mg/L	--	--	--	--	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023
Orthophosphate	mg/L	--	--	--	--	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051
Trace Elements																					
Aluminum (Total)	ug/L	--	--	--	--	110	65	65	56	68	80	51	65	79	73	410	170	190	98	100	<1.6
Aluminum (Dissolved)	ug/L	--	--	--	--	66	48	46	38	49	42	23	34	28	30	24	38	34	29	28	<0.52
Arsenic (Total)	ug/L	--	--	--	--	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Arsenic (Dissolved)	ug/L	--	--	--	--	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Barium (Total)	ug/L	--	--	--	--	5.4	<0.150	<0.150	<0.150	<0.150	5.3	12	6.9	7	7	16	9.9	9.6	9.1	9.8	<0.14
Cadmium (Total)	ug/L	--	--	--	--	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330
Cadmium (Dissolved)	ug/L	--	--	--	--	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330
Copper (Total)	ug/L	--	--	--	--	0.237	0.198	0.212	0.174	0.213	0.123	0.133	0.181	0.168	0.17	0.272	0.389	0.662	0.241	0.231	<0.0330
Copper (Dissolved)	ug/L	--	--	--	--	0.208 ^{FB}	0.193 ^{FB}	0.197 ^{FB}	0.184 ^{FB}	0.196 ^{FB}	0.115 ^{FB}	0.099 ^{FB}	0.154 ^{FB}	0.148 ^{FB}	0.176 ^{FB}	0.088 ^{J,FB}	0.207 ^{FB}	0.199 ^{FB}	0.185 ^{FB}	0.325 ^{FB}	0.0998 ^J
Iron (Total)	ug/L	--	--	--	--	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	400²	110	120	<6.8	170	<6.8
Iron (Dissolved)	ug/L	--	--	--	--	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8



Analyte	Units	IS-1-RR	IS-2-LRR	IS-3-LRR	IS-4-GC	IS-5-GC	IS-9-GCC	IS-6-GC	IS-7-SFRR	IS-8-SFRR	IS-10-SFSC	IS-11-SFSC	IS-12-SC	IS-13-SC	IS-14-SC	IS-17-BC	IS-15-SFAR	IS-16-SFAR	IS-19-SFAR	IS-18-SFAR	Field Blank
Lead (Total)	ug/L	--	--	--	--	0.0293 ^J	<0.0200	<0.0200	<0.0200	0.0277 ^J	0.023 ^J	0.039 ^J	0.0479 ^J	0.0218 ^J	0.028 ^J	0.288	0.107	0.24	0.0466 ^J	0.0493 ^J	<0.0200
Lead (Dissolved)	ug/L	--	--	--	--	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200
Manganese	ug/L	--	--	--	--	5.9	4	4.1	3.2	3.6	7.5	11	4.9	4.7	5.1	80^{1,2}	6.6	7.5	5	4.8	<0.050
Mercury (Total)	ng/L	--	--	--	--	1.15	1.19	1.14	0.86	1.01	1.76	0.57	1.05	1	0.99	1.24	2.21	1.44	0.99	0.73	<0.20
Methyl mercury	ng/L	--	--	--	--	0.021 ^J	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.02 ^J	<0.020	<0.020	<0.020
Nickel (Total)	ug/L	--	--	--	--	0.289	0.187	0.2	0.16	0.198	0.057 ^J	0.133	0.144	0.132	0.135	0.33	0.21	0.347	0.15	0.177	<0.0330
Nickel (Dissolved)	ug/L	--	--	--	--	0.244	0.172	0.189	0.145	0.18	0.054 ^J	0.112	0.128	0.104	0.121	0.16	0.106	0.105	0.11	0.13	<0.0330
Selenium (Total)	ug/L	--	--	--	--	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Selenium (Dissolved)	ug/L	--	--	--	--	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Silver (Total)	ug/L	--	--	--	--	<0.070	<0.070	<0.070	<0.070	<0.070	0.82^{1,3}	1.3^{1,3}	1.1^{1,3}	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070
Silver (Dissolved)	ug/L	--	--	--	--	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Zinc (Total)	ug/L	--	--	--	--	1.59	1.33	1.09	1.22	0.889	0.295	0.677	1.54	0.4 ^J	1.01	0.846	1.46	2.31	0.539	1.41	<0.200
Zinc (Dissolved)	ug/L	--	--	--	--	1.14	1.09	0.812	0.905	0.582	0.199	0.543	1.13	0.343 ^J	0.811	0.21 ^J	0.767	0.846	0.36 ^J	1.24	<0.200
Standard Minerals																					
Calcium	mg/L	--	--	--	--	<0.044	<0.044	<0.044	1.2	<0.044	1.2	1.7	1.3	1.3	1.2	2.6	2.2	2.1	2.3	2.4	<0.044
Chloride	mg/L	--	--	--	--	<0.026	<0.026	<0.026	<0.026	<0.026	<0.026	0.6	<0.026	<0.026	<0.026	1	0.95	0.82	1	1	<0.026
Magnesium	mg/L	--	--	--	--	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043
Potassium	mg/L	--	--	--	--	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	1	<0.13	<0.13	<0.13	<0.13	<0.13
Sodium	mg/L	--	--	--	--	<0.029	<0.029	<0.029	<0.029	<0.029	1.2	1.4	1	<0.029	<0.029	1.4	1.6	1.5	1.6	1.7	<0.029
Sulfate	mg/L	--	--	--	--	<0.038	<0.038	0.72	<0.038	<0.038	<0.038	<0.038	0.56	<0.038	<0.038	0.6	<0.038	0.68	<0.038	<0.038	<0.038

mg/L = milligrams per liter
ng/L = nanograms per liter
ug/L = micrograms per liter
-- = Not sampled

FB = Field Blank was greater than the MDL for this analyte. Field blank for May (Spring) riverine and reservoir sampling events corresponded to sample "R-IS-20-BR-FBL".

NR = Not reported. Arsenic samples were accidentally not analyzed by the laboratory during the May (Spring) sampling event.

¹Exceeds National Recommended Water Quality Criteria (USEPA 1986)

²Exceeds Basin Plan Water Quality Objectives (CRWQCB 2016)

³Exceeds California Toxics Rule Standards (USEPA 2000)

^JResult falls between MDL and RL

Table C-2. General chemistry results for UARP riverine sites during the August (Summer) sampling event.

Analyte	Units	IS-1-RR	IS-2-LRR	IS-3-LRR	IS-4-GC	IS-5-GC	IS-9-GCC	IS-6-GC	IS-7-SFRR	IS-8-SFRR	IS-10-SFSC	IS-11-SFSC	IS-12-SC	IS-13-SC	IS-14-SC	IS-17-BC	IS-15-SFAR	IS-16-SFAR	IS-19-SFAR	IS-18-SFAR	Field Blank	
Miscellaneous																						
Total Suspended Solids (TSS)	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	--	--	<2.0	<2.0	--	
Total Dissolved Solids (TDS)	mg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	11	13	20	17	19	--	--	21	23	--	
Total Organic Carbon (TOC)	mg/L	1.7	1.3	1.1	1.8	1.8	1.7	1.6	1.6	1.8	2.2	1.8	2.4	1.8	2	1.3	--	--	3.2	2.1	--	
Cyanide	mg/L	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	0.0021 ^J	<0.0012	<0.0012	--	--	<0.0012	<0.0012	--
Oil & Grease	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.1 ^J	<1.0	--	--	<1.0	<1.0	--	
Total Petroleum Hydrocarbons (TPH)	ug/L	<10	<10	<10	19 ^J	<10	11 ^J	12 ^J	14 ^J	11 ^J	<10	<10	<10	<10	<10	<10	--	--	<10	11 ^J	--	
MTBE	ug/L	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	--	--	<0.095	<0.095	--	
Hardness (as CaCO ₃)	mg/L	3.8	3.6	3.7	2.8	3.5	3	2.7	3.1	2.9	3.2	4.4	3.9	4.9	4.5	8.2	--	--	7.4	12	--	
Total Alkalinity (as CaCO ₃)	mg/L	7	<1.0	3.8 ^J	3.8 ^J	5	4.2 ^J	3.6 ^J	2 ^J	<1.0	6.6	6.8	6	4 ^J	6.6	13	--	--	9.8	17	--	
Nutrients																						
Nitrate/Nitrite	mg/L	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	0.95	<0.055	--	--	<0.055	<0.055	--	
Total Kjeldahl Nitrogen (TKN)	mg/L	<0.040	<0.040	0.16 ^J	0.11 ^J	0.12 ^J	0.15 ^J	0.086 ^J	0.078 ^J	0.12 ^J	0.29	0.15 ^J	0.18 ^J	0.27	0.18 ^J	0.1 ^J	--	--	0.13 ^J	0.15 ^J	--	
Ammonia as N	mg/L	0.043 ^J	0.043 ^J	0.043 ^J	0.091 ^J	0.063 ^J	0.083 ^J	0.031 ^J	0.075 ^J	<0.025	<0.025	0.047 ^J	0.031 ^J	0.075 ^J	<0.025	<0.025	--	--	0.055 ^J	0.027 ^J	--	
Total Phosphorous	mg/L	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	--	--	<0.023	<0.023	--	
Orthophosphate	mg/L	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	0.0083 ^J	<0.0051	0.0083 ^J	0.0083 ^J	0.0083 ^J	--	--	0.017 ^J	0.025 ^J	--	
Trace Elements																						
Aluminum (Total)	ug/L	59	31	33	40	28	44	39	28	26	79	35	48	28	48	72	--	--	73	27	--	
Aluminum (Dissolved)	ug/L	25	25	31	22	15 ^J	17 ^J	17 ^J	17 ^J	15 ^J	44	19 ^J	31	12 ^J	26	9 ^J	--	--	21	19 ^J	--	
Arsenic (Total)	ug/L	0.364 ^J	0.286 ^J	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	--	--	<0.150	0.152 ^J	<0.150	
Arsenic (Dissolved)	ug/L	0.399 ^J	0.307 ^J	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	--	--	<0.150	0.161 ^J	<0.150	
Barium (Total)	ug/L	<0.14	<0.14	2 ^J	3.3 ^J	4.7 ^J	2.7 ^J	2.9 ^J	3.6 ^J	3.8 ^J	5.2	7.6	5.6	9.8	7.1	15	--	--	7.6	11	--	
Cadmium (Total)	ug/L	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	--	--	<0.0330	<0.0330	<0.0330	
Cadmium (Dissolved)	ug/L	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	--	--	<0.0330	<0.0330	<0.0330	
Copper (Total)	ug/L	0.361	0.145	0.138	0.169	0.179	0.192	0.202	0.17	0.146	0.129	0.104	0.174	0.17	0.139	0.164	--	--	0.335	0.258	<0.0330	
Copper (Dissolved)	ug/L	0.18	0.137	0.104	0.148	0.161	0.149	0.146	0.135	0.143	0.0948 ^J	0.119	0.148	0.264	0.147	0.0851 ^J	--	--	0.179	0.23	<0.0330	
Iron (Total)	ug/L	120	<6.8	<6.8	53 ^J	110	28 ^J	<6.8	<6.8	<6.8	160	95 ^J	25 ^J	31 ^J	14 ^J	130	--	--	50 ^J	26 ^J	--	
Iron (Dissolved)	ug/L	<6.8	<6.8	38 ^J	<6.8	28 ^J	<6.8	36 ^J	<6.8	8.2 ^J	<6.8	<6.8	<6.8	40 ^J	57 ^J	15 ^J	--	--	60 ^J	44 ^J	--	



Analyte	Units	IS-1-RR	IS-2-LRR	IS-3-LRR	IS-4-GC	IS-5-GC	IS-9-GCC	IS-6-GC	IS-7-SFRR	IS-8-SFRR	IS-10-SFSC	IS-11-SFSC	IS-12-SC	IS-13-SC	IS-14-SC	IS-17-BC	IS-15-SFAR	IS-16-SFAR	IS-19-SFAR	IS-18-SFAR	Field Blank
Lead (Total)	ug/L	0.0739	<0.0200	<0.0200	<0.0200	0.0299 ^J	0.0268 ^J	0.038 ^J	0.0284 ^J	<0.0200	0.0278 ^J	<0.0200	<0.0200	<0.0200	<0.0200	0.112 ^J	--	--	0.0589	<0.0200	<0.0200
Lead (Dissolved)	ug/L	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	--	--	<0.0200	<0.0200	<0.0200
Manganese	ug/L	8.9	5.3	5.1	8.6	6.4	5.8	6.9	3.4	2.6	19	4.1	6.6	1.6 ^J	5.5	39	--	--	13	3.8	--
Mercury (Total)	ng/L	0.83	0.54	0.48 ^J	0.9	0.7	0.81	0.86	0.69	<0.20	1.1	0.43 ^J	0.97	0.91	0.5	0.47 ^J	--	--	<0.20	0.7	<0.20
Methyl mercury	ng/L	<0.020	0.029 ^J	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.026 ^J	<0.020	<0.020	<0.020	<0.020	<0.020	--	--	<0.020	0.023 ^J	<0.020
Nickel (Total)	ug/L	0.21	0.0952 ^J	0.0871 ^J	0.15	0.161	0.119	0.136	0.117	0.0968 ^J	<0.0330	0.069 ^J	0.0937 ^J	0.0996 ^J	0.107	0.162	--	--	0.142	0.237	<0.0330
Nickel (Dissolved)	ug/L	0.13	0.0945 ^J	0.0746 ^J	0.136	0.147	0.104	0.0779 ^J	0.147	0.0828 ^J	0.0527 ^J	0.0647 ^J	0.0843 ^J	0.104	0.091 ^J	0.0829 ^J	--	--	0.0745 ^J	0.194	<0.0330
Selenium (Total)	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	--	--	<0.4	<0.4	<0.4
Selenium (Dissolved)	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	--	--	<0.4	<0.4	<0.4
Silver (Total)	ug/L	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	--	--	<0.070	<0.070	--
Silver (Dissolved)	ug/L	<0.15	<0.15	0.28^{1,2,J}	<0.15	<0.15	<0.15	0.15^{1,2,J}	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	--	--	<0.15	0.17^{1,2,J}	--
Zinc (Total)	ug/L	1.52	2.12	0.367 ^J	0.952	0.882	1.51	0.664	0.514	0.643	0.39 ^J	0.47 ^J	0.553	0.296 ^J	2.96	0.359 ^J	--	--	0.829	0.43 ^J	<0.200
Zinc (Dissolved)	ug/L	0.828	1.75	0.39 ^J	0.574	0.654	0.898	0.362 ^J	0.347 ^J	0.596	0.409 ^J	0.349 ^J	0.571	0.511	2.08	0.259 ^J	--	--	0.304 ^J	0.387 ^J	<0.200
Standard Minerals																					
Calcium	mg/L	1.4	1.1	1.3	0.97 ^J	1.1	1	0.94 ^J	1	0.99 ^J	<0.044	0.99 ^J	1.1	1.1	1.1	1.8	--	--	1.8	3.1	--
Chloride	mg/L	<0.026	0.5	0.32 ^J	0.33 ^J	0.57	0.35 ^J	0.35 ^J	0.35 ^J	1.2	<0.026	0.49 ^J	0.42 ^J	0.57	0.52	1	--	--	0.79	1.3	--
Magnesium	mg/L	<0.043	<0.043	0.086 ^J	0.089 ^J	0.15 ^J	0.09 ^J	0.09 ^J	0.12 ^J	0.11 ^J	<0.043	0.27 ^J	0.26 ^J	0.33 ^J	0.27 ^J	0.63 ^J	--	--	0.45 ^J	1	--
Potassium	mg/L	<0.13	<0.13	0.16 ^J	0.19 ^J	0.64 ^J	<0.13	0.34 ^J	0.48 ^J	<0.13	<0.13	0.4 ^J	0.67 ^J	0.41 ^J	0.2 ^J	0.54 ^J	--	--	1.2	1	--
Sodium	mg/L	<0.029	<0.029	0.26 ^J	0.41 ^J	0.52 ^J	0.3 ^J	0.45 ^J	0.45 ^J	0.37 ^J	<0.029	0.84 ^J	0.75 ^J	0.76 ^J	0.66 ^J	1.1	--	--	1.6	1.8	--
Sulfate	mg/L	0.53	<0.038	0.49 ^J	0.48 ^J	0.49 ^J	0.45 ^J	0.45 ^J	0.44 ^J	0.54	<0.038	0.36 ^J	0.43 ^J	0.51	0.48 ^J	0.58	--	--	0.45 ^J	1.1	--

mg/L = milligrams per liter
 ng/L = nanograms per liter
 ug/L = micrograms per liter
 -- = Not sampled

FB = Field Blank was greater than the MDL for this analyte. Field blank for August (Summer) riverine and reservoir sampling events corresponded to sample "R-IS-4-GC-FBL".

¹Exceeds National Recommended Water Quality Criteria, hardness-dependent acute criteria (USEPA 2017)

²Exceeds California Toxics Rule Standards (USEPA 2000)

^JResult falls between method detection limit and reporting limit

Table C-3. General chemistry results for UARP riverine sites during the November (Fall) sampling event.

Analyte	Units	IS-1-RR	IS-2-LRR	IS-3-LRR	IS-4-GC	IS-5-GC	IS-9-GCC	IS-6-GC	IS-7-SFRR	IS-8-SFRR	IS-10-SFSC	IS-11-SFSC	IS-12-SC	IS-13-SC	IS-14-SC	IS-17-BC	IS-15-SFAR	IS-16-SFAR	IS-19-SFAR	IS-18-SFAR	Field Blank
Miscellaneous																					
Total Suspended Solids (TSS)	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	--	--	--	<2.0	<2.0	<2.0	<2.0	--
Total Dissolved Solids (TDS)	mg/L	16	<10.0	17	<10.0	<10.0	13	<10.0	15	<10.0	14	<10.0	<10.0	--	--	--	27	23	22	16	--
Total Organic Carbon (TOC)	mg/L	2.9	1.6	2.4	1.6	2.2	3.5	1.6	4.3	2.8	2.3	2.1	2.5	--	--	--	2.3	4	2.2	2.4	--
Cyanide	mg/L	<0.0012	0.0013 ^J	<0.0012	<0.0012	<0.0012	0.0021 ^J	0.0017 ^J	0.0013 ^J	0.0013 ^J	0.0021 ^J	0.002 ^J	0.0024 ^J	--	--	--	0.0013 ^J	0.0021 ^J	0.0017 ^J	0.0013 ^J	--
Oil & Grease	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	--	<1.0	<1.0	<1.0	<1.0	--
Total Petroleum Hydrocarbons (TPH)	ug/L	14 ^J	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	--	--	--	<10.0	<10.0	<10.0	<10.0	--
MTBE	ug/L	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	--	--	--	<0.095	<0.095	<0.095	<0.095	--
Hardness (as CaCO ₃)	mg/L	5.1	3.5	4.1	3.8	3.7	4.6	3.9	8.5	5.3	3.4	4.9	3.8	--	--	--	13	17	7.1	6.7	--
Total Alkalinity (as CaCO ₃)	mg/L	4 ^J	4.8 ^J	5.8	5.4	4.4 ^J	5.4	4.8 ^J	10	6.4	5.2	8.8	5.4	--	--	--	16	16	8.8	6.8	--
Nutrients																					
Nitrate/Nitrite	mg/L	<0.055	<0.055	0.071 ^J	0.076 ^J	<0.055	0.079 ^J	0.076 ^J	0.065 ^J	0.066 ^J	0.074 ^J	0.096 ^J	0.23 ^J	--	--	--	0.078 ^J	0.066 ^J	0.067 ^J	0.075 ^J	--
Total Kjeldahl Nitrogen (TKN)	mg/L	0.22	0.12 ^J	0.12 ^J	0.078 ^J	0.11 ^J	0.14 ^J	0.093 ^J	0.1	0.12 ^J	0.18 ^J	0.07 ^J	0.068 ^J	--	--	--	0.11 ^J	0.085 ^J	0.12 ^J	0.11 ^J	--
Ammonia as N	mg/L	0.033 ^J	0.039 ^J	0.095 ^J	0.044 ^J	<0.025	<0.025	0.037 ^J	<0.025	<0.025	0.031	<0.025	0.033 ^J	--	--	--	0.033 ^J	<0.025	<0.025	0.028 ^J	--
Total Phosphorous	mg/L	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	--	--	--	<0.023	<0.023	<0.023	<0.023	--
Orthophosphate	mg/L	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	--	--	--	<0.0051	<0.0051	<0.0051	<0.0051	--
Trace Elements																					
Aluminum (Total)	ug/L	66	22	21	24	27	24	20	18 ^J	21	66	24	30	--	--	--	34	29	52	50	--
Aluminum (Dissolved)	ug/L	35	9.4 ^J	8.5 ^J	4.9 ^J	5.5 ^J	5.9 ^J	6 ^J	10 ^J	11 ^J	31	13 ^J	14 ^J	--	--	--	7.7 ^J	8.1 ^J	12 ^J	12 ^J	--
Arsenic (Total)	ug/L	0.663	0.221 ^J	0.214 ^J	<0.150	<0.150	0.158 ^J	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	--	--	--	0.174 ^J	0.237 ^J	0.174 ^J	<0.150	<0.150
Arsenic (Dissolved)	ug/L	0.59	0.282 ^J	0.203 ^J	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	--	--	--	0.17 ^J	0.199 ^J	<0.150	<0.150	<0.150
Barium (Total)	ug/L	3.3 ^J	2 ^J	2.4 ^J	2.9 ^J	4 ^J	4.9 ^J	4.6 ^J	6.8	5.9	7.5	8.8	6.8	--	--	--	13	13	8.5	8.8	--
Cadmium (Total)	ug/L	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	--	--	--	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330
Cadmium (Dissolved)	ug/L	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	--	--	--	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330
Copper (Total)	ug/L	0.359	0.145	0.169	0.182	0.179	0.211	0.172	0.124	0.207	0.139	0.162	0.0975 ^J	--	--	--	0.195	0.283	0.295	0.259	<0.0330
Copper (Dissolved)	ug/L	0.321	0.127	0.142	0.141	0.144	0.156	0.145	0.114	0.16	0.114	0.153	0.104	--	--	--	0.149	0.204	0.166	0.196	<0.0330
Iron (Total)	ug/L	270	37 ^J	100	68 ^J	160	170	240	86 ^J	110	390²	92 ^J	140	--	--	--	62 ^J	59 ^J	71 ^J	97 ^J	--
Iron (Dissolved)	ug/L	170	11 ^J	23 ^J	10 ^J	41 ^J	61 ^J	45 ^J	45 ^J	57 ^J	120	60 ^J	56 ^J	--	--	--	23 ^J	25 ^J	16 ^J	16 ^J	--



Analyte	Units	IS-1-RR	IS-2-LRR	IS-3-LRR	IS-4-GC	IS-5-GC	IS-9-GCC	IS-6-GC	IS-7-SFRR	IS-8-SFRR	IS-10-SFSC	IS-11-SFSC	IS-12-SC	IS-13-SC	IS-14-SC	IS-17-BC	IS-15-SFAR	IS-16-SFAR	IS-19-SFAR	IS-18-SFAR	Field Blank
Lead (Total)	ug/L	0.0679	<0.0200	0.026 ^J	0.0239 ^J	0.0362 ^J	0.0511	0.0291 ^J	<0.0200	0.0283 ^J	0.0346 ^J	0.0205 ^J	<0.0200	--	--	--	<0.0200	0.0272 ^J	0.0379 ^J	0.0397 ^J	<0.0200
Lead (Dissolved)	ug/L	0.052	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	--	--	--	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200
Manganese	ug/L	14	2.5	7.2	10	9.4	12	12	3.4	3.2	160 ^{1,2}	5.2	22	--	--	--	8.7	3.3	13	14	--
Mercury (Total)	ug/L	1.63 ^{FB}	0.69 ^{FB}	0.73 ^{FB}	0.35 ^{J,FB}	0.54 ^{FB}	0.67 ^{FB}	0.57 ^{FB}	0.63 ^{FB}	0.68 ^{FB}	1.43 ^{FB}	0.75 ^{FB}	0.54 ^{FB}	--	--	--	0.48 ^{J,FB}	0.54 ^{FB}	0.77 ^{FB}	0.79 ^{FB}	0.33 ^J
Methyl mercury	ng/L	0.032 ^J	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.024 ^J	<0.020	<0.020	--	--	--	<0.020	<0.020	<0.020	<0.020	<0.020
Nickel (Total)	ug/L	0.119	0.0777 ^J	0.0607 ^J	0.0781 ^J	0.139	0.185	0.135	0.127	0.16	0.0471 ^J	0.107	0.0675 ^J	--	--	--	0.068 ^J	0.124	0.135	0.143	<0.0330
Nickel (Dissolved)	ug/L	0.107	0.0652 ^J	0.0522 ^J	0.0478 ^J	0.11	0.127	0.119	0.135	0.121	0.0385 ^J	0.0879 ^J	0.0599 ^J	--	--	--	0.0553 ^J	0.102	0.0801 ^J	0.101	<0.0330
Selenium (Total)	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	--	--	--	<0.40	<0.40	<0.40	<0.40	<0.40
Selenium (Dissolved)	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	--	--	--	<0.40	<0.40	<0.40	<0.40	<0.40
Silver (Total)	ug/L	<0.070	0.07 ^{1,3,J}	<0.070	<0.070	<0.070	0.34 ^{1,3,J}	<0.070	0.18 ^{1,3}	0.24 ^{1,3,J}	0.23 ^{1,3,J}	0.12 ^{1,3,J}	<0.070	--	--	--	<0.070	<0.070	0.16 ^{1,3,J}	<0.070	--
Silver (Dissolved)	ug/L	<0.15	0.26 ^{4,J}	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	--	--	--	<0.15	<0.15	<0.15	<0.15	--
Zinc (Total)	ug/L	0.625	0.243 ^J	0.21 ^J	0.625	1.74	1.27	0.632	0.688	0.61	0.225 ^J	0.242 ^J	0.219 ^J	--	--	--	0.331 ^J	0.46 ^J	0.432 ^J	0.436 ^J	<0.200
Zinc (Dissolved)	ug/L	0.523	0.224 ^J	0.251 ^J	0.328 ^J	0.989	0.862	0.462 ^J	0.587	0.475 ^J	<0.200	0.246 ^J	0.233 ^J	--	--	--	0.235 ^J	0.313 ^J	0.27 ^J	0.473 ^J	<0.200
Standard Minerals																					
Calcium	mg/L	2	1.2	1.2	1	1.1	1.7	1.2	2.4	1.6	0.98 ^J	1.2	0.73 ^J	--	--	--	3.4	5.2	1.9	1.8	--
Chloride	mg/L	0.46 ^J	0.28 ^J	0.37 ^J	1.1	0.46 ^J	1	0.55	0.94	0.77	0.35 ^J	0.63	0.47 ^J	--	--	--	2.3	3.6	1.1	1.2	--
Magnesium	mg/L	0.12 ^J	0.079 ^J	0.093 ^J	0.1 ^J	0.11 ^J	0.21 ^J	0.16 ^J	0.72 ^J	0.38 ^J	0.18 ^J	0.31 ^J	0.23 ^J	--	--	--	0.85 ^J	1.3	0.53 ^J	0.55 ^J	--
Potassium	mg/L	0.36 ^J	0.32 ^J	0.23 ^J	<0.13	<0.13	0.67 ^J	<0.13	0.55 ^J	0.48 ^J	0.28 ^J	0.35 ^J	0.32 ^J	--	--	--	0.85 ^J	0.91 ^J	0.22 ^J	0.6 ^J	--
Sodium	mg/L	0.42 ^J	0.25 ^J	0.27 ^J	0.34 ^J	0.44 ^J	2.3	0.53 ^J	1.8	1.7	0.8 ^J	1.2	0.76 ^J	--	--	--	2.1	2.7	1.3	1.2	--
Sulfate	mg/L	0.63	0.49 ^J	0.58	0.46 ^J	0.46 ^J	0.61	0.68	0.43 ^J	0.52	0.45 ^J	0.41 ^J	0.48 ^J	--	--	--	1.3	1.2	0.51	0.66	--

mg/L = milligrams per liter
ng/L = nanograms per liter
ug/L = micrograms per liter
-- = Not sampled

FB = Field Blank was greater than the MDL for this analyte. Field blank for November (Fall) riverine and reservoir sampling events corresponded to sample "IS-8-SFRR-FBL".

¹Exceeds National Recommended Water Quality Criteria (USEPA 1986)

²Exceeds Basin Plan Water Quality Objectives (CRWQCB 2016)

³Exceeds California Toxics Rule Standards (USEPA 2000)

⁴Exceeds US Environmental Protection Agency National Recommended Water Quality Criteria, hardness dependent acute criteria (USEPA 2017)

^JResult falls between MDL and RL

Table C-4. General chemistry results for UARP riverine sites during the Late-November (Fall-Winter) sampling event.

Analyte	Units	IS-1-RR	IS-2-LRR	IS-3-LRR	IS-4-GC	IS-5-GC	IS-9-GCC	IS-6-GC	IS-7-SFRR	IS-8-SFRR	IS-10-SFSC	IS-11-SFSC	IS-12-SC	IS-13-SC	IS-14-SC	IS-17-BC	IS-15-SFAR	IS-16-SFAR	IS-19-SFAR	IS-18-SFAR	Field Blank
Miscellaneous																					
Total Suspended Solids (TSS)	mg/L	--	--	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	--	--	29	<2.0	3 ^J	<2.0	4 ^J	--
Total Dissolved Solids (TDS)	mg/L	--	--	--	10	19	<10	18	15	17	19	15	10	--	--	20	32	16	13	18	--
Total Organic Carbon (TOC)	mg/L	--	--	--	1.9	2.4	2.2	3.3	3.9	4.3	2.1	2.1	1.8	--	--	<0.54	5	4.5	2.7	3.1	--
Cyanide	mg/L	--	--	--	<0.0012	0.0017 ^J	0.0017 ^J	0.0018 ^J	<0.0012	<0.0012	<0.0012	0.0021 ^J	0.0017 ^J	--	--	0.0015 ^J	<0.0012	<0.0012	<0.0012	<0.0012	--
Oil & Grease	mg/L	--	--	--	<1.0	<1.0	6.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	--
Total Petroleum Hydrocarbons (TPH)	ug/L	--	--	--	<10.0	24 ^J	13 ^J	20 ^J	<10.0	<10.0	<10.0	<10.0	<10.0	--	--	11 ^J	<10.0	<10.0	15 ^J	<10	--
MTBE	ug/L	--	--	--	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	--	--	<0.095	<0.095	<0.095	<0.095	<0.095	--
Hardness (as CaCO ₃)	mg/L	--	--	--	3.3	5.4	4	3.9	6.3	5.2	3.2	6.3	4.7	--	--	9.2	11	6.3	7.1	9.7	--
Total Alkalinity (as CaCO ₃)	mg/L	--	--	--	4 ^J	5.8	5.4	4 ^J	12	4.2 ^J	5.2	9.6	3.6 ^J	--	--	11	16	9.2	8.4	9.8	--
Nutrients																					
Nitrate/Nitrite	mg/L	--	--	--	0.077 ^J	0.11 ^J	0.075 ^J	0.083 ^J	0.088 ^J	0.2 ^J	0.14 ^J	0.12 ^J	0.12 ^J	--	--	0.15 ^J	0.11 ^J	0.095 ^J	0.23 ^J	0.11 ^J	--
Total Kjeldahl Nitrogen (TKN)	mg/L	--	--	--	0.13 ^J	0.068 ^J	0.15 ^J	0.11 ^J	0.16 ^J	0.11 ^J	0.14 ^J	0.099 ^J	0.13 ^J	--	--	0.15 ^J	0.14 ^J	0.069 ^J	0.13 ^J	0.095 ^J	--
Ammonia as N	mg/L	--	--	--	<0.025	0.043 ^J	0.042 ^J	<0.025 ^J	0.047 ^J	<0.025	0.029 ^J	0.027 ^J	0.043 ^J	--	--	0.045 ^J	0.026 ^J	0.037 ^J	0.043 ^J	0.028 ^J	--
Total Phosphorous	mg/L	--	--	--	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	--	--	<0.023	<0.023	<0.023	<0.023	<0.023	--
Orthophosphate	mg/L	--	--	--	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	--	--	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	--
Trace Elements																					
Aluminum (Total)	ug/L	--	--	--	59	62	160	88	68	70	57	39	39	--	--	2400¹	120	160	130	310	--
Aluminum (Dissolved)	ug/L	--	--	--	10 ^J	48	20	67	53	60	23	21	18 ^J	--	--	100	46	27	24	36	--
Arsenic (Total)	ug/L	--	--	--	<0.150	<0.150	0.156 ^J	<0.150	<0.150	<0.150	<0.150	<0.150	0.164 ^J	--	--	0.196 ^J	0.172 ^J	<0.150	0.16 ^J	<0.150	<0.150
Arsenic (Dissolved)	ug/L	--	--	--	<0.150	0.217 ^J	0.167 ^J	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	--	--	<0.150	--	<0.150	<0.150	<0.150	<0.150
Barium (Total)	ug/L	--	--	--	3.3 ^J	6.4	7.1	6.7	6.8	6.9	7.9	11	8.4	--	--	22	12	12	8.9	13	--
Cadmium (Total)	ug/L	--	--	--	0.265¹	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	--	--	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330
Cadmium (Dissolved)	ug/L	--	--	--	0.141⁴	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	--	--	<0.0330	--	<0.0330	<0.0330	<0.0330	<0.0330
Copper (Total)	ug/L	--	--	--	2.66^{2,3,FB}	0.318 ^{FB}	0.374 ^{FB}	0.335 ^{FB}	0.281 ^{FB}	0.331 ^{FB}	0.193 ^{FB}	0.213 ^{FB}	0.276 ^{FB}	--	--	0.751 ^{FB}	0.349 ^{FB}	0.551 ^{FB}	0.346 ^{FB}	0.418 ^{FB}	0.112
Copper (Dissolved)	ug/L	--	--	--	0.849 ^{FB}	0.28 ^{FB}	0.252 ^{FB}	0.309 ^{FB}	0.256 ^{FB}	0.309 ^{FB}	0.147 ^{FB}	0.156 ^{FB}	0.234 ^{FB}	--	--	0.116 ^{FB}	--	0.281 ^{FB}	0.243 ^{FB}	0.275 ^{FB}	0.105
Iron (Total)	ug/L	--	--	--	140	110	250	110	79 ^J	78 ^J	450²	110	140	--	--	2400^{1,2}	200	240	130	<6.8	--
Iron (Dissolved)	ug/L	--	--	--	19 ^J	46 ^J	45 ^J	69 ^J	40 ^J	38 ^J	130	36 ^J	36 ^J	--	--	77 ^J	29 ^J	33 ^J	28 ^J	35 ^J	--



Analyte	Units	IS-1-RR	IS-2-LRR	IS-3-LRR	IS-4-GC	IS-5-GC	IS-9-GCC	IS-6-GC	IS-7-SFRR	IS-8-SFRR	IS-10-SFSC	IS-11-SFSC	IS-12-SC	IS-13-SC	IS-14-SC	IS-17-BC	IS-15-SFAR	IS-16-SFAR	IS-19-SFAR	IS-18-SFAR	Field Blank
Lead (Total)	ug/L	--	--	--	0.058	0.034 ^J	0.128	0.0226 ^J	<0.0200	0.0295 ^J	0.0469 ^J	0.0620	0.0307 ^J	--	--	0.874	0.0356 ^J	0.232	0.0607	0.121	<0.0200
Lead (Dissolved)	ug/L	--	--	--	<0.0200	<0.0200	0.0312 ^J	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	--	--	0.0262 ^J	--	<0.0200	<0.0200	<0.0200	<0.0200
Manganese	ug/L	--	--	--	12	11	13	12	5.6	3.9	200 ^{1,2}	9.8	18	--	--	76 ^{1,2}	4.6	64 ^{1,2}	13	11	--
Mercury (Total)	ug/L	--	--	--	0.73	1.59	1.84	2.24	1.59	2.01	2.16	1.00	0.96	--	--	4.55	2.21	2.14	1.61	2.05	<0.20
Methyl mercury	ng/L	--	--	--	<0.02	<0.02	0.033 ^J	0.024 ^J	0.022 ^J	<0.02	<0.02	<0.02	<0.02	--	--	0.035 ^J	0.021 ^J	0.031 ^J	<0.02	0.021 ^J	<0.020
Nickel (Total)	ug/L	--	--	--	3.32	0.356	0.308	0.289	0.236	0.257	0.0715 ^J	0.146	0.26	--	--	0.538	0.0853 ^J	0.368 ^J	0.189	0.244 ^J	<0.0330
Nickel (Dissolved)	ug/L	--	--	--	2.77	0.309	0.2	0.298	0.208	0.244	0.059 ^J	0.102	0.225	--	--	0.087 ^J	--	0.162	0.122	0.156	<0.0330
Selenium (Total)	ug/L	--	--	--	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	--	--	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Selenium (Dissolved)	ug/L	--	--	--	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	--	--	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Silver (Total)	ug/L	--	--	--	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	--	--	<0.070	<0.070	<0.070	<0.070	<0.070	--
Silver (Dissolved)	ug/L	--	--	--	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	--	--	<0.15	<0.15	<0.15	<0.15	<0.15	--
Zinc (Total)	ug/L	--	--	--	23.6 ^{1,3}	1.5	2.28	1.4	0.612	0.752	0.694	0.441 ^J	0.674	--	--	1.63	0.539	1.86	0.455 ^J	0.909	<0.200
Zinc (Dissolved)	ug/L	--	--	--	17.8 ⁴	1.15	1.53	1.19	0.411 ^J	0.614	0.583	0.211 ^J	0.52	--	--	<0.200	--	0.51	0.209 ^J	0.669	<0.200
Standard Minerals																					
Calcium	mg/L	--	--	--	1.2	1.2	1.5	1.1	1.6	1.4	1.3	1.4	1.2	--	--	2.7	3.5	1.9	2.1	2.9	--
Chloride	mg/L	--	--	--	0.32 ^J	1.2	0.73	1.1	0.71	0.8	0.36 ^J	0.71	0.55	--	--	0.97	2.3	1.1	1.3	1.7	--
Magnesium	mg/L	--	--	--	0.11 ^J	0.24 ^J	0.19 ^J	0.27 ^J	0.39 ^J	0.3 ^J	0.17 ^J	0.39 ^J	0.3 ^J	--	--	0.86 ^J	0.88 ^J	0.52 ^J	0.47 ^J	0.73 ^J	--
Potassium	mg/L	--	--	--	0.29 ^J	0.46 ^J	0.19 ^J	0.28 ^J	0.6 ^J	0.49 ^J	0.29 ^J	0.64 ^J	0.47 ^J	--	--	0.98 ^J	0.9 ^J	0.67 ^J	0.61 ^J	0.58 ^J	--
Sodium	mg/L	--	--	--	0.34 ^J	0.91 ^J	0.56 ^J	0.86 ^J	1	0.89 ^J	0.68 ^J	1.2	0.73 ^J	--	--	1.5	2.7	1.4	1.4	1.8	--
Sulfate	mg/L	--	--	--	1.4	0.65	0.51	0.63	0.86	0.62	0.33 ^J	2.7	0.68	--	--	0.62	1	0.68	0.69	0.81	--

mg/L = milligrams per liter
ng/L = nanograms per liter
ug/L = micrograms per liter
-- = Not sampled

FB = Field Blank was greater than the MDL for this analyte. Field blank for Late November (Fall-Winter) riverine and reservoir sampling events corresponded to sample "IS-8-SFRR-FBL"

¹Exceeds National Recommended Water Quality Criteria (USEPA 1986)

²Exceeds Basin Plan Water Quality Objectives (CRWQCB 2016)

³Exceeds California Toxics Rule Standards (USEPA 2000)

⁴Exceeds US Environmental Protection Agency National Recommended Water Quality Criteria, hardness dependent acute criteria (USEPA 2017)

^JResult falls between MDL and RL

Table C-5. General chemistry results for UARP reservoir sites during the May (Spring) sampling event.

Analyte	Units	R-IS-18-RR	R-IS-19-BI	R-IS-1-LL	R-IS-2-LL	R-IS-3-LL	R-IS-4-GC	R-IS-9-IHR-SUR ¹	R-IS-10-IHR-SUR ¹	R-IS-11-IHR-SUR	R-IS-11-IHR-BOT	R-IS-5-UVR-SUR ¹	R-IS-7-UVR-SUR ¹	R-IS-6-UVR-SUR ¹	R-IS-8-UVR-SUR	R-IS-8-UVR-BOT	R-IS-12-JR	R-IS-13-CR	R-IS-20-BR-SUR	R-IS-14-SC	R-IS-15-SC	Field Blank	Equipment Blank
Miscellaneous																							
Total Suspended Solids (TSS)	mg/L	--	--	--	--	--	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	19	--	--	43	--	--	<2.0	<2.0
Total Dissolved Solids (TDS)	mg/L	--	--	--	--	--	--	20	15	<10.0	<10.0	<10.0	11	<10.0	<10.0	<10.0	--	--	<10.0	--	--	<10.0	<10.0
Total Organic Carbon (TOC)	mg/L	--	--	--	--	--	--	3.5 ^{EB, FB}	4.1 ^{EB, FB}	4.5 ^{EB, FB}	3.4 ^{EB, FB}	3 ^{EB, FB}	3.4 ^{EB, FB}	3 ^{EB, FB}	3.2 ^{EB, FB}	3.5 ^{EB, FB}	--	--	1.7 ^{EB, FB}	--	--	1.9	1.1
Cyanide	mg/L	--	--	--	--	--	--	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	--	--	<0.0012	--	--	<0.0012	<0.0012
Oil & Grease	mg/L	--	--	--	--	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	<1.0	--	--	<1.0	<1.0
Total Petroleum Hydrocarbons (TPH)	ug/L	--	--	--	--	--	--	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	--	--	<10.0	--	--	<10.0	<10.0
MTBE	ug/L	--	--	--	--	--	--	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	--	--	<0.095	--	--	<0.095	<0.095
Hardness (as CaCO ₃)	mg/L	--	--	--	--	--	--	3.8	3.9	4	4.1	4.1	4	4.1	4.2	3.9	--	--	7.8	--	--	<0.19	<0.19
Total Alkalinity (as CaCO ₃)	mg/L	--	--	--	--	--	--	6.6	8.6	9	7	7.4	6.4	6.2	7.2	6.2	--	--	11	--	--	<1.0	<1.0
Nutrients																							
Nitrate/Nitrite	mg/L	--	--	--	--	--	--	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	--	--	<0.055	--	--	<0.055	<0.055
Total Kjeldahl Nitrogen (TKN)	mg/L	--	--	--	--	--	--	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	0.22	--	--	<0.040	--	--	<0.040	<0.040
Ammonia as N	mg/L	--	--	--	--	--	--	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	--	--	<0.025	--	--	<0.025	<0.025
Total Phosphorous	mg/L	--	--	--	--	--	--	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	--	--	<0.023	--	--	<0.023	<0.023
Orthophosphate	mg/L	--	--	--	--	--	--	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	--	--	<0.0051	--	--	<0.0051	<0.0051
Trace Elements																							
Aluminum (Total)	ug/L	--	--	--	--	--	--	81	77	80	82	58	60	61	62	1,200²	--	--	49	--	--	<1.6	<1.6
Aluminum (Dissolved)	ug/L	--	--	--	--	--	--	38	36	36	43	36	41	35	34	53	--	--	<0.52	--	--	<0.52	<0.52
Arsenic (Total)	ug/L	--	--	--	--	--	--	NR	NR	NR	NR	NR	NR	NR	NR	NR	--	--	NR	--	--	NR	NR
Arsenic (Dissolved)	ug/L	--	--	--	--	--	--	NR	NR	NR	NR	NR	NR	NR	NR	NR	--	--	NR	--	--	NR	NR
Barium (Total)	ug/L	--	--	--	--	--	--	5.9	7.7	5.4	5.3	5.5	6.3	5.7	5.6	20	--	--	16	--	--	<0.14	<0.14
Cadmium (Total)	ug/L	--	--	--	--	--	--	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	--	--	<0.0330	--	--	<0.0330	<0.0330
Cadmium (Dissolved)	ug/L	--	--	--	--	--	--	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	--	--	<0.0330	--	--	<0.0330	<0.0330
Copper (Total)	ug/L	--	--	--	--	--	--	0.115	0.112	0.117	0.112	0.145	0.153	0.148	0.155	0.162	--	--	0.104	--	--	<0.0330	NR
Copper (Dissolved)	ug/L	--	--	--	--	--	--	0.123 ^{FB}	0.12 ^{FB}	0.126 ^{FB}	0.115 ^{FB}	0.155 ^{FB}	0.149 ^{FB}	0.149 ^{FB}	0.138 ^{FB}	0.152 ^{FB}	--	--	0.089 ^{J, FB}	--	--	0.0998 ^J	NR
Iron (Total)	ug/L	--	--	--	--	--	--	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	790^{2,3}	--	--	<6.8	--	--	<6.8	<6.8
Iron (Dissolved)	ug/L	--	--	--	--	--	--	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	--	--	<6.8	--	--	<6.8	<6.8



Analyte	Units	R-IS-18-RR	R-IS-19-BI	R-IS-1-LL	R-IS-2-LL	R-IS-3-LL	R-IS-4-GC	R-IS-9-IHR-SUR ¹	R-IS-10-IHR-SUR ¹	R-IS-11-IHR-SUR	R-IS-11-IHR-BOT	R-IS-5-UVR-SUR ¹	R-IS-7-UVR-SUR ¹	R-IS-6-UVR-SUR ¹	R-IS-8-UVR-SUR	R-IS-8-UVR-BOT	R-IS-12-JR	R-IS-13-CR	R-IS-20-BR-SUR	R-IS-14-SC	R-IS-15-SC	Field Blank	Equipment Blank
Lead (Total)	ug/L	--	--	--	--	--	--	0.0209 ^J	<0.0200	0.0207 ^J	0.02 ^J	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	--	--	0.042 ^J	--	--	<0.0200	NR
Lead (Dissolved)	ug/L	--	--	--	--	--	--	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	--	--	<0.0200	--	--	<0.0200	NR
Manganese	ug/L	--	--	--	--	--	--	4.8	4.8	4.6	5.6	2.7	2.0	<0.050	<0.050	66^{2,3}	--	--	3.8	--	--	<0.050	<0.050
Mercury (Total)	ng/L	--	--	--	--	--	--	1	1.51	1.14	1.1	0.93	1.01	0.98	0.94	1.08	--	--	0.35 ^J	--	--	<0.20	NR
Methyl mercury	ng/L	--	--	--	--	--	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--	--	<0.020	--	--	<0.020	NR
Nickel (Total)	ug/L	--	--	--	--	--	--	0.064 ^J	0.061 ^J	0.050 ^J	0.051 ^J	0.102	0.119	0.093 ^J	0.094 ^J	0.096 ^J	--	--	0.218	--	--	<0.0330	NR
Nickel (Dissolved)	ug/L	--	--	--	--	--	--	0.0586 ^J	0.059 ^J	0.050 ^J	0.054 ^J	0.086 ^J	0.093 ^J	0.084 ^J	0.084 ^J	0.084 ^J	--	--	0.179	--	--	<0.0330	NR
Selenium (Total)	ug/L	--	--	--	--	--	--	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	--	--	<0.4	--	--	<0.4	<0.4
Selenium (Dissolved)	ug/L	--	--	--	--	--	--	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	--	--	<0.4	--	--	<0.4	<0.4
Silver (Total)	ug/L	--	--	--	--	--	--	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	--	--	<0.070	--	--	<0.070	<0.070
Silver (Dissolved)	ug/L	--	--	--	--	--	--	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	--	--	<0.15	--	--	<0.15	<0.15
Zinc (Total)	ug/L	--	--	--	--	--	--	1.02	0.403 ^J	0.495 ^J	0.431 ^J	0.905	0.584	1.76	1.1	0.648	--	--	0.868	--	--	<0.200	NR
Zinc (Dissolved)	ug/L	--	--	--	--	--	--	0.853	0.312 ^J	0.37 ^J	0.382 ^J	0.709	0.503	1.91	1.08	0.526	--	--	0.612	--	--	<0.200	NR
Standard Minerals																							
Calcium	mg/L	--	--	--	--	--	--	1	1.1	1.1	1	1.1	1.1	1.2	1.1	1.1	--	--	1.7	--	--	<0.044	<0.044
Chloride	mg/L	--	--	--	--	--	--	<0.026	<0.026	<0.026	<0.026	<0.026	<0.026	<0.026	<0.026	<0.026	--	--	1	--	--	<0.026	NR
Magnesium	mg/L	--	--	--	--	--	--	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	--	--	<0.043	--	--	<0.043	<0.043
Potassium	mg/L	--	--	--	--	--	--	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	--	--	<0.13	--	--	<0.13	<0.13
Sodium	mg/L	--	--	--	--	--	--	<0.029	1.0	<0.029	<0.029	1.3	1.2	<0.029	<0.029	<0.029	--	--	1.4	--	--	<0.029	<0.029
Sulfate	mg/L	--	--	--	--	--	--	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038	--	--	0.55	--	--	<0.038	<0.038

mg/L = milligrams per liter
ng/L = nanograms per liter
ug/L = micrograms per liter
-- = Not sampled

EB = Equipment Blank was greater than the MDL for the analyte. Equipment blank for May (Spring) reservoir sampling event corresponded to sample "R-IS-11-IHR-EBL".

FB = Field Blank was greater than the MDL for the analyte. Field blank for May (Spring) riverine and reservoir sampling events corresponded to sample "R-IS-20-BR-FBL".

NR = Not reported. Arsenic was accidentally not analyzed by the lab during the May (Spring) sampling event. Equipment blank results for copper, lead, total mercury, methyl mercury, nickel, zinc, and chloride at reservoir sites are not reported due to contamination of the rinse solution for these analytes. The contamination did not affect sample results or the field blank.

SUR = suffix indicates a surface sample taken at or above approximately one-third of the water depth

BOT = suffix indicates a sample taken near the reservoir bottom

¹Site sampled in the upper portion of the water column only.

²Exceeds National Recommended Water Quality Criteria (USEPA 1986)

³Exceeds California Toxics Rule Standards (USEPA 2000)

^JResult falls between MDL and RL

Table C-6. General chemistry results for UARP reservoir sites during the August (Summer) sampling event.

Analyte	Units	R-IS-18-RR-SUR	R-IS-19-BI-SUR	R-IS-19-BI-BOT	R-IS-1-LL-SUR	R-IS-1-LL-BOT	R-IS-2-LL-SUR	R-IS-2-LL-BOT	R-IS-3-LL-SUR	R-IS-3-LL-BOT	R-IS-4-GC-SUR	R-IS-9-IHR-SUR	R-IS-9-IHR-BOT	R-IS-10-IHR-SUR	R-IS-10-IHR-BOT	R-IS-11-IHR-SUR	R-IS-11-IHR-BOT	Field Blank	Equipment Blank	
Miscellaneous																				
Total Suspended Solids (TSS)	mg/L	<2.0	<2.0	19	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	--	--	
Total Dissolved Solids (TDS)	mg/L	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	11	--	--
Total Organic Carbon (TOC)	mg/L	2.3	1.1	2.0	4	1.9	1.7	1.7	1.4	2.0	1.6	2.1	2.7	2.3	2.3	1.9	5.1	--	--	
Cyanide	mg/L	<0.0012	<0.0012	0.002	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	--	--
Oil & Grease	mg/L	<1.0	<1.0	4.0 ^J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	--
Total Petroleum Hydrocarbons (TPH)	ug/L	<10.0	15	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	12	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	--	--
MTBE	ug/L	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	--	--
Hardness (as CaCO ₃)	mg/L	3.8	3.8	3.1	3.4	3.3	3.3	3.4	3.2	3.1	3.7	2.9	3.3	2.8	2.4	2.8	3.1	--	--	
Total Alkalinity (as CaCO ₃)	mg/L	7.6	2 ^J	3.6 ^J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.6 ^J	<1.0	5.4	<1.0	6	5.2	5.6	--	--	
Nutrients																				
Nitrate/Nitrite	mg/L	<0.055	0.13 ^J	0.06 ^J	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	0.14 ^J	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	--	--
Total Kjeldahl Nitrogen (TKN)	mg/L	<0.040	0.13 ^J	0.3	<0.040	<0.040	<0.040	<0.040	0.28	0.26	0.19 ^J	<0.040	<0.040	0.27	<0.040	<0.040	<0.040	<0.040	--	--
Ammonia as N	mg/L	<0.025	0.055 ^J	0.047 ^J	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.043 ^J	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	--	--
Total Phosphorous	mg/L	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	--	--
Orthophosphate	mg/L	<0.0051	0.034 ^J	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	--	--
Trace Elements																				
Aluminum (Total)	ug/L	32	32	190	30	170	31	40	250	40	36	48	140	42	58	32	85	--	--	
Aluminum (Dissolved)	ug/L	34	29	35	23	27	24	26	23	25	20	21	41	25	31	21	43	--	--	
Arsenic (Total)	ug/L	0.344 ^J	<0.150	2.05	NR	NR	NR	NR	<0.150	<0.150	<0.150	<0.150	0.599	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150
Arsenic (Dissolved)	ug/L	0.387 ^J	<0.150	<0.150	NR	NR	NR	NR	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150
Barium (Total)	ug/L	<0.14	2 ^J	3 ^J	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	2.8 ^J	<0.14	6.2	<0.14	<0.14	<0.14	5.2	--	--	
Cadmium (Total)	ug/L	<0.0330	<0.0330	0.217¹	<0.0330	0.0354 ^J	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330
Cadmium (Dissolved)	ug/L	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330
Copper (Total)	ug/L	0.159	0.137	4.18^{2,3}	0.143	1.09^{2,3}	0.15	0.141	0.143	0.296	0.173	0.103	2.1^{2,3}	0.0982 ^J	0.105	0.0985 ^J	0.116	<0.0330	NR	
Copper (Dissolved)	ug/L	0.153	0.12	0.107	0.127	0.629	0.135	0.154	0.119	0.166	0.145	0.0987 ^J	0.123	0.0889 ^J	0.0826 ^J	0.0774 ^J	0.107	<0.0330	NR	
Iron (Total)	ug/L	110	59 ^J	650²	<6.8	510²	<6.8	<6.8	260	<6.8	23 ^J	<6.8	250	<6.8	<6.8	<6.8	110	--	--	



Analyte	Units	R-IS-18-RR-SUR	R-IS-19-BI-SUR	R-IS-19-BI-BOT	R-IS-1-LL-SUR	R-IS-1-LL-BOT	R-IS-2-LL-SUR	R-IS-2-LL-BOT	R-IS-3-LL-SUR	R-IS-3-LL-BOT	R-IS-4-GC-SUR	R-IS-9-IHR-SUR	R-IS-9-IHR-BOT	R-IS-10-IHR-SUR	R-IS-10-IHR-BOT	R-IS-11-IHR-SUR	R-IS-11-IHR-BOT	Field Blank	Equipment Blank
Iron (Dissolved)	ug/L	<6.8	91 ^J	160	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	--	--
Lead (Total)	ug/L	<0.0200	<0.0200	5.84 ^{1,3}	<0.0200	0.83	<0.0200	<0.0200	<0.0200	0.0364 ^J	<0.0200	<0.0200	1.98	<0.0200	<0.0200	<0.0200	0.0246 ^J	<0.0200	NR
Lead (Dissolved)	ug/L	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	0.0279 ^J	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	NR
Manganese	ug/L	10	4.8	17	2.8	13	3.1	5.1	17	2.6	7.5	4.1	21	3.4	4.9	2.8	13	--	--
Mercury (Total)	ng/L	0.65	0.28 ^J	96.3 ³	0.65	2.28	0.58	0.8 ³	0.52	0.72	0.9	0.4 ^J	2.47	0.36 ^J	0.59	0.47 ^J	0.88	<0.20	NR
Methyl mercury	ng/L	0.051 ^J	0.034 ^J	0.647 ^J	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.023 ^J	0.046 ^J	<0.020	0.034 ^J	<0.020	0.03 ^J	<0.020	<0.020
Nickel (Total)	ug/L	0.11	0.0935 ^J	1.42	0.0929 ^J	0.431	0.102	0.0874 ^J	0.101	0.12	0.101	<0.0330	0.881	0.0336 ^J	0.0395 ^J	<0.0330	0.0463 ^J	<0.0330	NR
Nickel (Dissolved)	ug/L	0.101	0.063 ^J	0.0388 ^J	0.0951 ^J	0.0748 ^J	0.103	0.0872 ^J	0.0832 ^J	0.07 ^J	0.116	0.0336 ^J	0.0397 ^J	0.0341 ^J	0.0427 ^J	<0.0330	0.0575 ^J	<0.0330	NR
Selenium (Total)	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Selenium (Dissolved)	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Silver (Total)	ug/L	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	--
Silver (Dissolved)	ug/L	<0.15	0.25 ^{4,J}	0.28 ^{4,J}	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	--
Zinc (Total)	ug/L	0.522	0.547	17.3 ^{1,3}	0.681	5.93	0.705	1.65	1.76	1.17	0.971	<0.200	8.29	0.211 ^J	0.905	0.217 ^J	1.06	<0.200	NR
Zinc (Dissolved)	ug/L	0.425 ^J	0.503	0.849	0.504	1.91	0.5	1.08	1.97	1.12	0.879	0.208 ^J	0.792	<0.200	0.679	<0.200	0.96	<0.200	NR
Standard Minerals																			
Calcium	mg/L	1.3	1.3	1.2	1.1	1.1	1.0	1.0	1.4	1.2	1.3	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044	--	--
Chloride	mg/L	<0.026	0.34 ^J	0.36 ^J	<0.026	<0.026	<0.026	<0.026	0.52	<0.026	0.50	<0.026	0.74	<0.026	<0.026	<0.026	<0.026	--	--
Magnesium	mg/L	<0.043	0.088 ^J	0.13 ^J	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	0.11 ^J	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	--	--
Potassium	mg/L	<0.13	0.23 ^J	0.17 ^J	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	0.69 ^J	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	--	--
Sodium	mg/L	<0.029	0.32 ^J	0.27 ^J	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	0.33 ^J	<0.029	<0.029	1.3	<0.029	<0.029	<0.029	--	--
Sulfate	mg/L	0.51	0.51	0.47 ^J	<0.038	<0.038	0.50	<0.038	0.57	0.57	0.45 ^J	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038	--	--

mg/L = milligrams per liter
ng/L = nanograms per liter
ug/L = micrograms per liter
-- = Not sampled

EB = Equipment Blank was greater than the MDL for the analyte. Equipment Blank for August (Summer) reservoir sampling event corresponded to sample "R-IS-4-GC-EBL".

FB = Field Blank was greater than the MDL for the analyte. Field Blank for August (Summer) riverine and reservoir sampling events corresponded to sample "R-IS-4-GC-FBL".

NR = Not reported. Equipment Blank results for copper, lead, total mercury, nickel, and zinc at reservoir sites are not reported due to contamination of the rinse solution for these analytes. The contamination did not affect sample results or the field blank.

SUR = suffix indicates a surface sample taken at or above approximately one-third of the water depth

BOT = suffix indicates a sample taken near the reservoir bottom

¹Exceeds National Recommended Water Quality Criteria (USEPA 1986)

²Exceeds Basin Plan Water Quality Objectives (CRWQCB 2016)

³Exceeds California Toxics Rule Standards (USEPA 2000)

⁴Exceeds USEPA National Recommended Water Quality Criteria, hardness dependent acute criteria (USEPA 2017)

^JResult falls between MDL and RL

Table C-6 (continued). General chemistry results for UARP reservoir sites during the August (Summer) sampling event.

Analyte	Units	R-IS-5-UVR-SUR	R-IS-5-UVR-BOT	R-IS-7-UVR-SUR	R-IS-6-UVR-SUR ¹	R-IS-8-UVR-SUR	R-IS-8-UVR-BOT	R-IS-12-JR-SUR	R-IS-12-JR-BOT	R-IS-13-CR-SUR	R-IS-20-BR-SUR	R-IS-20-BR-BOT	R-IS-14-SC-SUR	R-IS-14-SC-BOT	R-IS-15-SC-SUR	R-IS-15-SC-BOT	Field Blank	Equipment Blank
Miscellaneous																		
Total Suspended Solids (TSS)	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	7	<2.0	<2.0	--	--
Total Dissolved Solids (TDS)	mg/L	12	14	<10.0	<10.0	<10.0	13	12	10	20	19	20	24	14	18	14	--	--
Total Organic Carbon (TOC)	mg/L	2.1	2.5	2.1	1.9	2.1	2.9	2.8	2.7	1.8	2.1	0.57	2.6	1.9	4.4	2.3	--	--
Cyanide	mg/L	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	0.0017	0.0021	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	--	--
Oil & Grease	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	--
Total Petroleum Hydrocarbons (TPH)	ug/L	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	22 ^J	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	12 ^J	--	--
MTBE	ug/L	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	--	--
Hardness (as CaCO ₃)	mg/L	3.6	3.2	3.6	3.5	3.6	4	5	3.9	4.9	7.4	11	10	6.6	9.8	7.8	--	--
Total Alkalinity (as CaCO ₃)	mg/L	5	5.2	5.2	5.4	5	5.6	6.6	6	4 ^J	12	14	11	7	11	9	--	--
Nutrients																		
Nitrate/Nitrite	mg/L	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	--	--
Total Kjeldahl Nitrogen (TKN)	mg/L	<0.040	<0.040	<0.040	<0.040	0.22	0.21	0.074 ^J	0.29	0.27	0.082 ^J	0.094 ^J	0.18 ^J	0.16 ^J	0.18 ^J	0.16 ^J	--	--
Ammonia as N	mg/L	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.035	<0.025	0.075	0.051	<0.025	0.051	0.039	0.031	0.047	--	--
Total Phosphorous	mg/L	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	--	--
Orthophosphate	mg/L	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	0.0083 ^J	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	0.017 ^J	<0.0051	<0.0051	--	--
Trace Elements																		
Aluminum (Total)	ug/L	39	53	45	38	41	61	41	58	28	27	91	65	160	27	58	--	--
Aluminum (Dissolved)	ug/L	<0.52	32	22	22	22	33	19 ^J	33	12 ^J	11 ^J	6.5 ^J	28	42	28	35	--	--
Arsenic (Total)	ug/L	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	0.168	<0.150	<0.150	<0.150	<0.150
Arsenic (Dissolved)	ug/L	0.172 ^J	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150
Barium (Total)	ug/L	<0.14	<0.14	<0.14	<0.14	<0.14	5.7	7.5	5.8	9.8	14	18	12	8.2	8.7	8.1	--	--
Cadmium (Total)	ug/L	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330
Cadmium (Dissolved)	ug/L	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330
Copper (Total)	ug/L	0.145	0.134	0.142	0.185	0.141	0.244	0.132	0.15	0.163	0.108	0.201	0.214	1.35^{3,4}	0.248	0.492	<0.0330	NR
Copper (Dissolved)	ug/L	0.162	0.123	0.135	0.129	0.135	0.272	0.121	0.148	0.16	0.0923 ^J	0.122	0.176	0.186	0.161	0.169	<0.0330	NR
Iron (Total)	ug/L	<6.8	<6.8	<6.8	<6.8	<6.8	130	64 ^J	26 ^J	31 ^J	53 ^J	210	95 ^J	97 ^J	66 ^J	70 ^J	--	--
Iron (Dissolved)	ug/L	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8	29 ^J	14 ^J	40 ^J	20 ^J	<6.8	49 ^J	28 ^J	<6.8	92 ^J	--	--



Analyte	Units	R-IS-5-UVR-SUR	R-IS-5-UVR-BOT	R-IS-7-UVR-SUR	R-IS-6-UVR-SUR ¹	R-IS-8-UVR-SUR	R-IS-8-UVR-BOT	R-IS-12-JR-SUR	R-IS-12-JR-BOT	R-IS-13-CR-SUR	R-IS-20-BR-SUR	R-IS-20-BR-BOT	R-IS-14-SC-SUR	R-IS-14-SC-BOT	R-IS-15-SC-SUR	R-IS-15-SC-BOT	Field Blank	Equipment Blank	
Lead (Total)	ug/L	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	0.0909	<0.0200	0.0299 ^J	<0.0200	0.0292 ^J	0.136	<0.0200	0.584	<0.0200	0.178	--	--	
Lead (Dissolved)	ug/L	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	NR
Manganese	ug/L	3.1	6.6	3.2	2.7	2.6	17	17	24	1.6	3.9	180 ^{2,3}	15	12	6	14	<0.0200	NR	
Mercury (Total)	ng/L	0.64	0.85	0.54	0.55	0.51	1.13	0.86	1.06	0.66	0.2 ^J	0.45 ^J	0.52	1.87	0.5	0.73	--	--	
Methyl mercury	ng/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.024 ^J	0.047 ^J	0.226	<0.020	0.038 ^J	<0.20	NR	
Nickel (Total)	ug/L	0.0914 ^J	0.118	0.102	0.0952 ^J	0.093 ^J	0.142	0.111	0.127	0.114	0.126	0.218	0.107	0.787	0.0953 ^J	0.261	<0.020	<0.020	
Nickel (Dissolved)	ug/L	0.0809 ^J	0.0931 ^J	0.0768 ^J	0.0955 ^J	0.0874 ^J	0.0958 ^J	0.0908 ^J	0.109	0.0993 ^J	0.103	0.159	0.0762 ^J	0.0912 ^J	0.0753 ^J	0.0902 ^J	<0.0330	NR	
Selenium (Total)	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.0330	NR	
Selenium (Dissolved)	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	
Silver (Total)	ug/L	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.4	<0.4	
Silver (Dissolved)	ug/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	0.28 ^{5,J}	<0.15	0.26 ^{5,J}	0.25 ^{5,J}	--	--	
Zinc (Total)	ug/L	0.422 ^J	0.999	1.32	0.704	0.58	1.41	0.367 ^J	2.05	0.531	1.02	2.13	0.511	6.16	1.43	2.54	--	--	
Zinc (Dissolved)	ug/L	0.294 ^J	0.727	0.871	0.396 ^J	0.39 ^J	0.767	0.315 ^J	1.98	0.417 ^J	0.878	1.5	0.459 ^J	1.48	0.961	1.38	<0.200	NR	
Standard Minerals																			
Calcium	mg/L	1.2	<0.044	1.1	<0.044	1	1.1	1	0.94 ^J	1.1	1.4	2.4	2.7	1.8	2.6	2.1	--	--	
Chloride	mg/L	<0.026	<0.026	<0.026	<0.026	<0.026	<0.026	0.46 ^J	0.42 ^J	0.57	1.1	1.1	1.2	0.87	1.2	0.99	--	--	
Magnesium	mg/L	<0.043	<0.043	<0.043	<0.043	<0.043	<0.043	0.26 ^J	0.26 ^J	0.33 ^J	0.6 ^J	0.78 ^J	0.69 ^J	0.44 ^J	0.66 ^J	0.49 ^J	--	--	
Potassium	mg/L	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	0.23 ^J	0.22 ^J	0.41 ^J	0.5 ^J	0.56 ^J	2.3	0.76 ^J	0.81 ^J	0.73 ^J	--	--	
Sodium	mg/L	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	0.8 ^J	0.76 ^J	0.76 ^J	1.1	1	2.6	1.4	1.8	1.4	--	--	
Sulfate	mg/L	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038	0.36 ^J	0.35 ^J	0.51	0.39 ^J	0.63	6	0.43 ^J	0.53	0.47 ^J	--	--	

mg/L = milligrams per liter
ng/L = nanograms per liter
ug/L = micrograms per liter
-- = Not sampled

EB = Equipment Blank was greater than the MDL for the analyte. Equipment Blank for August (Summer) reservoir sampling event corresponded to sample "R-IS-4-GC-EBL".

FB = Field Blank was greater than the MDL for the analyte. Field Blank for August (Summer) riverine and reservoir sampling events corresponded to sample "R-IS-4-GC-FBL".

NR = Not reported. Equipment Blank results for copper, lead, total mercury, nickel, and zinc at reservoir sites are not reported due to contamination of the rinse solution for these analytes. The contamination did not affect sample results or the field blank.

SUR = suffix indicates a surface sample taken at or above approximately one-third of the water depth

BOT = suffix indicates a sample taken near the reservoir bottom

¹Site sampled in the upper portion of the water column only

²Exceeds National Recommended Water Quality Criteria (USEPA 1986)

³Exceeds Basin Plan Water Quality Objectives (CRWQCB 2016)

⁴Exceeds California Toxics Rule Standards (USEPA 2000)

⁵Exceeds USEPA National Recommended Water Quality Criteria, hardness dependent acute criteria (USEPA 2017)

^JResult falls between MDL and RL

Table C-7. General chemistry results for UARP reservoir sites during the October-November (Fall) sampling event.

Analyte	Units	R-IS-18-RR-SUR	R-IS-19-BI-SUR	R-IS-1-LL-SUR	R-IS-2-LL-SUR	R-IS-3-LL-SUR	R-IS-4-GC-SUR	R-IS-9-IHR-SUR	R-IS-10-IHR-SUR	R-IS-11-IHR-SUR	R-IS-11-IHR-BOT	R-IS-5-UVR-SUR	Field Blank	Equipment Blank
Miscellaneous														
Total Suspended Solids (TSS)	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	54	<2.0	--	--
Total Dissolved Solids (TDS)	mg/L	<10.0	18	<10.0	<10.0	10	<10.0	<10.0	<10.0	17	<10.0	<10.0	--	--
Total Organic Carbon (TOC)	mg/L	4.2	1.6	1.6	1.3	1.5	2	1.7	2.1	2.5	3.3	2.2	--	--
Cyanide	mg/L	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	0.0017 ^J	0.0013 ^J	0.0013 ^J	<0.0012	<0.0012	<0.0012	--	--
Oil & Grease	mg/L	<1.0	1.1 ^J	<1.0	<1.0	<1.0	1.1 ^J	<1.0	1.1 ^J	<1.0	<1.0	<1.0	--	--
Total Petroleum Hydrocarbons (TPH)	ug/L	<10.0	11 ^J	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	23 ^J	<10.0	<10.0	--	--
MTBE	ug/L	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	--	--
Hardness (as CaCO ₃)	mg/L	5.8	3.2	2.7	3.7	3.4	5	2.5	2.5	2.8	3	3.7	--	--
Total Alkalinity (as CaCO ₃)	mg/L	6.2	4 ^J	4.8 ^J	4.2 ^J	4 ^J	5.6	4.8 ^J	3.6 ^J	2.8 ^J	3.2 ^J	4.8 ^J	--	--
Nutrients														
Nitrate/Nitrite	mg/L	0.47	0.056 ^J	<0.055	<0.055	0.21 ^J	0.13 ^J	<0.055	<0.055	0.086 ^J	0.081 ^J	0.072 ^J	--	--
Total Kjeldahl Nitrogen (TKN)	mg/L	0.17 ^J	0.085 ^J	0.13 ^J	0.11 ^J	0.13 ^J	0.16 ^J	0.21	0.26	0.19 ^J	0.19 ^J	0.093 ^J	--	--
Ammonia as N	mg/L	0.038 ^J	0.033 ^J	0.053 ^J	0.025 ^J	0.047 ^J	0.033 ^J	0.04 ^J	0.082 ^J	<0.025	0.045 ^J	<0.025	--	--
Total Phosphorous	mg/L	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	0.039 ^J	<0.023	--	--
Orthophosphate	mg/L	<0.0051	<0.0051	0.011 ^J	0.011 ^J	<0.0051	<0.0051	0.011 ^J	<0.0051	<0.0051	<0.0051	<0.0051	--	--
Trace Elements														
Aluminum (Total)	ug/L	73	19 ^J	22	16 ^J	26	18 ^J	18 ^J	15 ^J	16 ^J	1300¹	19 ^J	--	--
Aluminum (Dissolved)	ug/L	29	14 ^J	4 ^J	3.1 ^J	2.3 ^J	5.4 ^J	5.7 ^J	3.9 ^J	4.8 ^J	20	6.4 ^J	--	--
Arsenic (Total)	ug/L	0.511	0.274 ^J	<0.150	<0.150	<0.150	0.162 ^J	<0.150	<0.150	<0.150	0.186 ^J	<0.150	<0.150	<0.150
Arsenic (Dissolved)	ug/L	0.559	0.212 ^J	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150
Barium (Total)	ug/L	3.7 ^J	2.4 ^J	2.9 ^J	2.6 ^J	2.6 ^J	4.7 ^J	5.9	5	4.6 ^J	16	16	--	--
Cadmium (Total)	ug/L	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330
Cadmium (Dissolved)	ug/L	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330
Copper (Total)	ug/L	0.369	0.171	0.172	0.155	0.175	0.165	0.126	0.106	0.0996 ^J	0.675	0.158	<0.0330	NR
Copper (Dissolved)	ug/L	0.307	0.127	0.12	0.108	0.124	0.147	0.0794 ^J	0.126	0.0874 ^J	0.138	0.101	<0.0330	NR
Iron (Total)	ug/L	250	57 ^J	120	59 ^J	100	140	43 ^J	29 ^J	20 ^J	1400^{1,2}	30 ^J	--	--



Analyte	Units	R-IS-18-RR-SUR	R-IS-19-BI-SUR	R-IS-1-LL-SUR	R-IS-2-LL-SUR	R-IS-3-LL-SUR	R-IS-4-GC-SUR	R-IS-9-IHR-SUR	R-IS-10-IHR-SUR	R-IS-11-IHR-SUR	R-IS-11-IHR-BOT	R-IS-5-UVR-SUR	Field Blank	Equipment Blank
Iron (Dissolved)	ug/L	130	19 ^J	34 ^J	10 ^J	15 ^J	38 ^J	18 ^J	<6.8	<6.8	110	<6.8	--	--
Lead (Total)	ug/L	0.0714	<0.0200	<0.0200	<0.0200	0.0234 ^J	0.0246 ^J	<0.0200	<0.0200	<0.0200	0.525	<0.0200	<0.0200	NR
Lead (Dissolved)	ug/L	0.0489 ^J	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	0.0201 ^J	<0.0200	<0.0200	NR
Manganese	ug/L	15	5.7	13	8.8	11	11	11	8	6.5	120 ^{1,2}	5.2	--	--
Mercury (Total)	ng/L	1.52	0.65	0.43 ^J	0.24 ^J	0.34 ^J	4.4	0.39 ^J	0.34 ^J	0.39 ^J	2	0.28 ^J	<0.20	NR
Methyl mercury	ng/L	0.053	0.038 ^J	<0.020	<0.020	<0.020	0.02 ^J	<0.020	<0.020	<0.020	0.034 ^J	<0.020	<0.020	<0.020
Nickel (Total)	ug/L	0.123	0.0722 ^J	0.0573 ^J	0.062 ^J	0.0588 ^J	0.136	<0.0330	0.0335 ^J	<0.0330	0.267	0.0912 ^J	<0.0330	NR
Nickel (Dissolved)	ug/L	0.11	0.0562 ^J	0.0403 ^J	0.0351 ^J	0.0336 ^J	0.112	0.0381 ^J	<0.0330	<0.0330	0.0666 ^J	0.061 ^J	<0.0330	NR
Selenium (Total)	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Selenium (Dissolved)	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Silver (Total)	ug/L	<0.070	<0.070	0.08 ^{1,3,J}	0.09 ^{1,3,J}	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	--	--
Silver (Dissolved)	ug/L	<0.15	0.29 ^{4,J}	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	--	--
Zinc (Total)	ug/L	1.7	0.333 ^J	0.348 ^J	0.249 ^J	0.264 ^J	0.609	<0.200	0.258 ^J	0.923	4.22	<0.200	<0.200	NR
Zinc (Dissolved)	ug/L	1.45	0.275 ^J	0.258 ^J	0.208 ^J	<0.200	0.507	<0.200	0.208 ^J	0.649	1.65	0.436 ^J	<0.200	NR
Standard Minerals														
Calcium	mg/L	1.5	1.1	1.1	1	1	1.5	0.85 ^J	1	0.83 ^J	0.99 ^J	1.3	--	--
Chloride	mg/L	0.41 ^J	0.3 ^J	0.32 ^J	0.34 ^J	0.31 ^J	0.76	0.34 ^J	0.34 ^J	0.35 ^J	0.55	0.37 ^J	--	--
Magnesium	mg/L	0.12 ^J	0.11 ^J	0.11 ^J	0.092 ^J	0.091 ^J	0.16 ^J	0.14 ^J	0.15 ^J	0.14 ^J	0.32 ^J	0.19 ^J	--	--
Potassium	mg/L	1.1	0.23 ^J	<0.13	<0.13	<0.13	<0.13	0.19 ^J	0.18 ^J	0.22 ^J	0.23 ^J	<0.13	--	--
Sodium	mg/L	0.91	0.38 ^J	0.088 ^J	<0.29	<0.29	0.66	0.5	0.56	0.55	0.62	0.056 ^J	--	--
Sulfate	mg/L	0.66 ^J	0.45 ^J	0.45 ^J	0.45 ^J	0.46 ^J	0.56 ^J	0.25 ^J	0.25 ^J	0.24 ^J	0.31 ^J	0.36 ^J	--	--

mg/L = milligrams per liter
ng/L = nanograms per liter
ug/L = micrograms per liter
-- = Not sampled

EB = Equipment Blank was greater than the MDL for the analyte. Equipment Blank for October-November (Fall) reservoir sampling event corresponded to sample "R-IS-8-UVR-EBL".

FB = Field Blank was greater than the MDL for the analyte. Field Blank for October-November (Fall) riverine and reservoir sampling events corresponded to sample "R-IS-5-UVR-FBL".

NR = Not reported. Equipment Blank results for copper, lead, total mercury, nickel, and zinc at reservoir sites are not reported due to contamination of the rinse solution for these analytes. The contamination did not affect sample results or the field blank.

SUR = suffix indicates a surface sample taken at or above approximately one-third of the water depth

BOT = suffix indicates a sample taken near the reservoir bottom

¹Exceeds National Recommended Water Quality Criteria (USEPA 1986)

²Exceeds Basin Plan Water Quality Objectives (CRWQCB 2016)

³Exceeds California Toxics Rule Standards (USEPA 2000)

⁴Exceeds USEPA National Recommended Water Quality Criteria, hardness dependent acute criteria (USEPA 2017)

^JResult falls between MDL and RL

Table C-7 (Continued). General chemistry results for UARP reservoir sites during the October-November (Fall) sampling event.

Analyte	Units	R-IS-7-UVR-SUR	R-IS-6-UVR-SUR ¹	R-IS-8-UVR-SUR	R-IS-8-UVR-BOT	R-IS-12-JR-SUR	R-IS-13-CR	R-IS-20-BR-SUR	R-IS-14-SC-SUR	R-IS-15-SC-SUR	Field Blank	Equipment Blank
Miscellaneous												
Total Suspended Solids (TSS)	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	--	22	<2.0	<2.0	--	--
Total Dissolved Solids (TDS)	mg/L	<10.0	<10.0	<10.0	<10.0	<10.0	--	18	19	17	--	--
Total Organic Carbon (TOC)	mg/L	2.8	2.4	2.4	2.6	2.3	--	<0.54	2.8	1.5	--	--
Cyanide	mg/L	<0.0012	<0.0012	<0.0012	<0.0012	0.0013	--	<0.0012	<0.0012	<0.0012	--	--
Oil & Grease	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	--	--
Total Petroleum Hydrocarbons (TPH)	ug/L	<10.0	<10.0	21 ^J	21 ^J	<10.0	--	<10.0	21 ^J	21 ^J	--	--
MTBE	ug/L	<0.095	<0.095	<0.095	<0.095	<0.095	--	<0.095	<0.095	<0.095	--	--
Hardness (as CaCO ₃)	mg/L	3.5	3.7	3.5	3.8	3.7	--	9.1	7.3	6.9	--	--
Total Alkalinity (as CaCO ₃)	mg/L	4 ^J	4.4 ^J	4.4 ^J	5.6	4.6 ^J	--	12	15	9	--	--
Nutrients												
Nitrate/Nitrite	mg/L	0.1 ^J	0.13 ^J	0.096 ^J	<0.055	0.09 ^J	--	0.14 ^J	0.062 ^J	0.08 ^J	--	--
Total Kjeldahl Nitrogen (TKN)	mg/L	0.098 ^J	0.099 ^J	0.18 ^J	0.2	0.048 ^J	--	0.14 ^J	0.099 ^J	0.076 ^J	--	--
Ammonia as N	mg/L	<0.025	<0.025	<0.025	0.065 ^J	0.093 ^J	--	<0.025	0.045 ^J	0.056 ^J	--	--
Total Phosphorous	mg/L	<0.023	<0.023	<0.023	<0.023	<0.023	--	<0.023	<0.023	<0.023	--	--
Orthophosphate	mg/L	<0.0051	0.007 ^J	<0.0051	<0.0051	<0.0051	--	<0.0051	0.011 ^J	0.019 ^J	--	--
Trace Elements												
Aluminum (Total)	ug/L	18 ^J	18 ^J	24	33	35	--	2200²	51	39	--	--
Aluminum (Dissolved)	ug/L	6.8 ^J	7.7 ^J	7.1 ^J	17 ^J	20	--	97	11 ^J	13 ^J	--	--
Arsenic (Total)	ug/L	<0.150	<0.150	<0.150	<0.150	<0.150	--	0.163 ^J	<0.150	<0.150	<0.150	<0.150
Arsenic (Dissolved)	ug/L	<0.150	<0.150	<0.150	<0.150	<0.150	--	<0.150	<0.150	<0.150	<0.150	<0.150
Barium (Total)	ug/L	4.6 ^J	4.3 ^J	4.5 ^J	5.3	5.7	--	20	9.7	8.9	--	--
Cadmium (Total)	ug/L	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	--	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330
Cadmium (Dissolved)	ug/L	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	--	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330
Copper (Total)	ug/L	0.132	0.134	0.12	0.132	0.158	--	0.612	0.194	0.208	<0.0330	NR
Copper (Dissolved)	ug/L	0.123	0.108	0.0973 ^J	0.129	0.134	--	0.111	0.175	0.17	<0.0330	NR
Iron (Total)	ug/L	24 ^J	19 ^J	21 ^J	66 ^J	58 ^J	--	2100^{2,3}	74 ^J	58 ^J	--	--
Iron (Dissolved)	ug/L	<6.8	<6.8	42 ^J	13 ^J	13 ^J	--	58 ^J	<6.8	<6.8	--	--



Analyte	Units	R-IS-7-UVR-SUR	R-IS-6-UVR-SUR ¹	R-IS-8-UVR-SUR	R-IS-8-UVR-BOT	R-IS-12-JR-SUR	R-IS-13-CR	R-IS-20-BR-SUR	R-IS-14-SC-SUR	R-IS-15-SC-SUR	Field Blank	Equipment Blank
Lead (Total)	ug/L	<0.0220	<0.0220	<0.0220	<0.0220	<0.0220	--	0.702	<0.0220	<0.0220	<0.0200	NR
Lead (Dissolved)	ug/L	<0.0220	<0.0220	<0.0220	<0.0220	<0.0220	--	0.0243 ^J	<0.0220	<0.0220	<0.0200	NR
Manganese	ug/L	4.4	4.3	4.3	23	21	--	27	12	12	--	--
Mercury (Total)	ng/L	0.42 ^J	0.35 ^J	1.08	0.74	0.78	--	3.86	0.76	0.66	<0.20	NR
Methyl mercury	ng/L	<0.020	<0.020	<0.020	<0.020	<0.020	--	0.026 ^J	<0.020	<0.020	<0.020	<0.020
Nickel (Total)	ug/L	0.075 ^J	0.0784 ^J	0.0941 ^J	0.124	0.129	--	0.418	0.0916 ^J	0.125	<0.0330	NR
Nickel (Dissolved)	ug/L	0.0645 ^J	0.053 ^J	0.0706 ^J	0.107	0.114	--	0.0844 ^J	0.0817 ^J	0.0958 ^J	<0.0330	NR
Selenium (Total)	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	--	<0.4	<0.4	<0.4	<0.4	<0.4
Selenium (Dissolved)	ug/L	<0.4	<0.4	<0.4	<0.4	<0.4	--	<0.4	<0.4	<0.4	<0.4	<0.4
Silver (Total)	ug/L	<0.070	<0.070	<0.070	<0.070	<0.070	--	<0.070	<0.070	<0.070	--	--
Silver (Dissolved)	ug/L	<0.15	<0.15	<0.15	<0.15	<0.15	--	<0.15	<0.15	<0.15	--	--
Zinc (Total)	ug/L	1.33	<0.200	0.326 ^J	1.48	0.532	--	1.5	0.43 ^J	0.7	<0.200	NR
Zinc (Dissolved)	ug/L	1.06	<0.200	0.231 ^J	1.36	0.455 ^J	--	0.268 ^J	0.325 ^J	0.488 ^J	<0.200	NR
Standard Minerals												
Calcium	mg/L	1.1	1.4	1.2	1.2	0.92 ^J	--	2.4	1.8	1.7	--	--
Chloride	mg/L	0.38 ^J	0.4 ^J	0.35 ^J	0.39 ^J	0.38 ^J	--	0.98	1.2	1.3	--	--
Magnesium	mg/L	0.2 ^J	0.19 ^J	0.21 ^J	0.25 ^J	0.23 ^J	--	0.85 ^J	0.4 ^J	0.39 ^J	--	--
Potassium	mg/L	<0.13	<0.13	<0.13	<0.13	<0.13	--	0.93 ^J	0.61 ^J	0.53 ^J	--	--
Sodium	mg/L	<0.029	<0.029	0.17 ^J	0.16 ^J	0.55 ^J	--	1.5	1.1	1.2	--	--
Sulfate	mg/L	0.36 ^J	0.38 ^J	0.45 ^J	0.39 ^J	0.44 ^J	--	0.62	0.5	0.55	--	--

mg/L = milligrams per liter
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ug/L = micrograms per liter
-- = Not sampled

EB = Equipment Blank was greater than the MDL for the analyte. Equipment Blank for October-November (Fall) reservoir sampling event corresponded to sample "R-IS-8-UVR-EBL".

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NR = Not reported. Equipment Blank results for copper, lead, total mercury, nickel, and zinc at reservoir sites are not reported due to contamination of the rinse solution for these analytes. The contamination did not affect sample results or the field blank.

SUR = suffix indicates a surface sample taken at or above approximately one-third of the water depth

BOT = suffix indicates a sample taken near the reservoir bottom

¹Site sampled in the upper portion of the water column only.

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³Exceeds Basin Plan Water Quality Objectives (CRWQCB 2016)

⁴Exceeds California Toxics Rule Standards (USEPA 2000)

⁵Exceeds USEPA National Recommended Water Quality Criteria, hardness dependent acute criteria (USEPA 2017)

^JResult falls between MDL and RL

Table C-8. General chemistry results for UARP reservoir sites during the Late-November (Fall-Winter) sampling event.

Analyte	Units	R-IS-18-RR	R-IS-19-BI	R-IS-1-LL-SUR	R-IS-2-LL-SUR	R-IS-3-LL-SUR	R-IS-4-GC-SUR	R-IS-9-IHR-SUR	R-IS-10-IHR-SUR	R-IS-11-IHR-SUR	R-IS-11-IHR-BOT	R-IS-5-UVR-SUR	R-IS-7-UVR-SUR	R-IS-6-UVR-SUR	R-IS-8-UVR-SUR	R-IS-8-UVR-BOT	R-IS-12-JR-SUR	R-IS-13-CR-SUR	R-IS-20-BR-SUR	R-IS-14-SC-SUR	R-IS-15-SC-SUR	Field Blank	Equipment Blank
Miscellaneous																							
Total Suspended Solids (TSS)	mg/L	--	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	--	22	8.3	<2.0	--	--
Total Dissolved Solids (TDS)	mg/L	--	--	<10	<10	<10	15	16	15	12	<10	<10	<10	<10	<10	12	<10	--	18	21	11	--	--
Total Organic Carbon (TOC)	mg/L	--	--	1.4	1.4	1.4	3.2	2	2.2	1.7	1.7	2.1	1.4	1.6	1.4	1.6	1.9	--	<0.54	3.3	3.3	--	--
Cyanide	mg/L	--	--	<0.0012	<0.0012	<0.0012	0.0015 ^J	0.0013 ^J	0.0013 ^J	0.0017 ^J	0.0017 ^J	<0.0012	<0.0012	<0.0012	<0.0012	0.0017 ^J	0.0015 ^J	--	<0.0012	<0.0012	0.0018 ^J	--	--
Oil & Grease	mg/L	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	--	--
Total Petroleum Hydrocarbons (TPH)	ug/L	--	--	<10	<10	<10	<10	18 ^J	<10	<10	<10	23 ^J	<10	<10	<10	<10	<10	--	<10	20 ^J	<10	--	--
MTBE	ug/L	--	--	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	--	<0.095	<0.095	<0.095	--	--
Hardness (as CaCO ₃)	mg/L	--	--	3.3	2.9	3.1	4.5	3.3	3.6	2.7	2.7	3.4	3.4	3.4	3.3	3.6	3.2	--	9.1	9.8	6.8	--	--
Total Alkalinity (as CaCO ₃)	mg/L	--	--	<1.0	<1.0	5	4.4 ^J	5.2	<1.0	5	4.8 ^J	5.6	5.2	5.8	5.6	5.2	2.8 ^J	--	12	11	7.8	--	--
Nutrients																							
Nitrate/Nitrite	mg/L	--	--	<0.055	<0.055	<0.055	0.16 ^J	<0.055	0.073 ^J	<0.055	<0.055	<0.055	<0.055	<0.055	<0.055	0.092 ^J	0.11 ^J	--	0.14 ^J	0.1 ^J	0.077 ^J	--	--
Total Kjeldahl Nitrogen (TKN)	mg/L	--	--	<0.040	<0.040	<0.040	0.11 ^J	0.16 ^J	0.14 ^J	0.19 ^J	0.099 ^J	0.13 ^J	0.14 ^J	0.13 ^J	0.13 ^J	0.18 ^J	0.14 ^J	--	0.14 ^J	0.081 ^J	0.074 ^J	--	--
Ammonia as N	mg/L	--	--	<0.025	<0.025	<0.025	0.027 ^J	<0.025	<0.025	<0.025	<0.025	0.035 ^J	0.035 ^J	0.026 ^J	0.039 ^J	0.029 ^J	0.035 ^J	--	<0.025	<0.025	0.031 ^J	--	--
Total Phosphorous	mg/L	--	--	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	--	<0.023	0.026 ^J	<0.023	--	--
Orthophosphate	mg/L	--	--	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	--	<0.0051	<0.0051	<0.0051	--	--
Trace Elements																							
Aluminum (Total)	ug/L	--	--	26	<1.6	21	95	13 ^J	13 ^J	16 ^J	18 ^J	16 ^J	16 ^J	15 ^J	17 ^J	32	65	--	2200¹	850¹	86	--	--
Aluminum (Dissolved)	ug/L	--	--	<0.52	<0.52	<0.52	71	5.2 ^J	5 ^J	5.7 ^J	6.3 ^J	6.1 ^J	7.4 ^J	6.7 ^J	7.5 ^J	18 ^J	27	--	97	59	24	--	--
Arsenic (Total)	ug/L	--	--	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	0.162	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	--	0.163 ^J	0.214 ^J	0.227 ^J	<0.150	<0.150
Arsenic (Dissolved)	ug/L	--	--	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	--	<0.150	0.185 ^J	0.17 ^J	<0.150	<0.150
Barium (Total)	ug/L	--	--	<0.14	<0.14	<0.14	6.3	4.6 ^J	4.6 ^J	4.7 ^J	4.7 ^J	4.6 ^J	4.3 ^J	4.5 ^J	4.6 ^J	6.2	5.7	--	20	16	7.8	--	--
Cadmium (Total)	ug/L	--	--	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	--	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330
Cadmium (Dissolved)	ug/L	--	--	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330	--	<0.0330	<0.0330	<0.0330	<0.0330	<0.0330
Copper (Total)	ug/L	--	--	0.169 ^{FB}	0.129 ^{FB}	0.165 ^{FB}	0.359 ^{FB}	0.111 ^{FB}	0.109 ^{FB}	0.132 ^{FB}	0.136 ^{FB}	0.15 ^{FB}	0.156 ^{FB}	0.153 ^{FB}	0.152 ^{FB}	0.199 ^{FB}	0.181 ^{FB}	--	0.612 ^{FB}	0.718 ^{FB}	0.234 ^{FB}	0.112	NR
Copper (Dissolved)	ug/L	--	--	0.127 ^{FB}	0.0963 ^{J,FB}	0.127 ^{FB}	0.353 ^{FB}	0.0975 ^{J,FB}	0.0943 ^{J,FB}	0.109 ^{FB}	0.118 ^{FB}	0.129 ^{FB}	0.129 ^{FB}	0.123 ^{FB}	0.133 ^{FB}	0.212 ^{FB}	0.156 ^{FB}	--	0.111 ^{FB}	0.315 ^{FB}	0.164 ^{FB}	0.105	NR



Analyte	Units	R-IS-18-RR	R-IS-19-BI	R-IS-1-LL-SUR	R-IS-2-LL-SUR	R-IS-3-LL-SUR	R-IS-4-GC-SUR	R-IS-9-IHR-SUR	R-IS-10-IHR-SUR	R-IS-11-IHR-SUR	R-IS-11-IHR-BOT	R-IS-5-UVR-SUR	R-IS-7-UVR-SUR	R-IS-6-UVR-SUR	R-IS-8-UVR-SUR	R-IS-8-UVR-BOT	R-IS-12-JR-SUR	R-IS-13-CR-SUR	R-IS-20-BR-SUR	R-IS-14-SC-SUR	R-IS-15-SC-SUR	Field Blank	Equipment Blank
Iron (Total)	ug/L	--	--	250	<6.8	110	110	45 ^J	44 ^J	43 ^J	44 ^J	25 ^J	30 ^J	23 ^J	35 ^J	180	52 ^J	--	2100 ^{1,2}	650 ²	96 ^J	--	--
Iron (Dissolved)	ug/L	--	--	<6.8	<6.8	<6.8	52 ^J	7 ^J	<6.8	11 ^J	8.7 ^J	<6.8	<6.8	<6.8	9.4 ^J	39 ^J	15 ^J	--	58 ^J	34 ^J	26 ^J	--	--
Lead (Total)	ug/L	--	--	0.0262 ^J	0.0421 ^J	0.0247 ^J	0.024	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	0.0211 ^J	<0.0200	--	0.702	0.316	0.0437 ^J	<0.0200	NR
Lead (Dissolved)	ug/L	--	--	<0.0200	<0.0200	<0.0200	0.0239 ^J	<0.0200	<0.0200	<0.0200	0.0262 ^J	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	--	0.0243 ^J	0.0214 ^J	<0.0200	<0.0200	NR
Manganese	ug/L	--	--	14	8.7	11	14	9	12	15	14	5.3	5.4	5.7	7.8	41	14	--	27	19	12	--	--
Mercury (Total)	ng/L	--	--	0.56	0.41 ^J	0.51	2.65	0.43 ^J	0.39 ^J	0.64	0.55	0.57	0.51	0.48 ^J	0.52	0.76	1.31	--	3.86	3.11	1.5	<0.20	NR
Methyl mercury	ng/L	--	--	<0.02	<0.02	<0.02	0.032 ^J	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	--	0.026 ^J	0.029 ^J	0.022 ^J	<0.020	<0.020
Nickel (Total)	ug/L	--	--	0.0553 ^J	0.0798 ^J	0.0776 ^J	0.308	0.0594 ^J	<0.0330	0.0414 ^J	0.0497 ^J	0.0946 ^J	0.0915 ^J	0.0844 ^J	0.0889 ^J	0.171	0.0964 ^J	--	0.418	0.319	0.146	<0.0330	NR
Nickel (Dissolved)	ug/L	--	--	0.036 ^J	0.0638 ^J	0.0628 ^J	0.302	0.06 ^J	<0.0330	0.0336 ^J	0.0473 ^J	0.0713 ^J	0.0751 ^J	0.075 ^J	0.0761 ^J	0.163	0.0991 ^J	--	0.0844 ^J	0.149	0.117	<0.0330	NR
Selenium (Total)	ug/L	--	--	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	--	<0.4	<0.4	<0.4	<0.4	<0.4
Selenium (Dissolved)	ug/L	--	--	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	--	<0.4	<0.4	<0.4	<0.4	<0.4
Silver (Total)	ug/L	--	--	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	<0.070	0.11 ^{1,3,J}	<0.070	<0.070	<0.070	<0.070	<0.070	--	<0.070	<0.070	<0.070	--	--
Silver (Dissolved)	ug/L	--	--	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	0.18 ^{4,J}	<0.15	<0.15	<0.15	--	<0.15	<0.15	<0.15	--	--
Zinc (Total)	ug/L	--	--	0.221 ^J	1.82	0.221 ^J	1.4	<0.200	<0.200	0.208 ^J	0.37 ^J	<0.200	0.2 ^J	<0.200	0.222 ^J	1.2	0.498 ^J	--	1.5	1.84	1.1	<0.200	NR
Zinc (Dissolved)	ug/L	--	--	<0.200	1.44	<0.200	1.21	<0.200	<0.200	<0.200	0.339 ^J	<0.200	<0.200	<0.200	<0.200	0.972	0.367 ^J	--	0.268 ^J	0.602	0.77	<0.200	NR
Standard Minerals																							
Calcium	mg/L	--	--	<0.044	<0.044	<0.044	1.7	0.89 ^J	0.91 ^J	0.87 ^J	1.2	1.2	1.2	1.2	1.1	1.2	1.1	--	2.4	3.1	2.4	--	--
Chloride	mg/L	--	--	<0.026	<0.026	<0.026	0.91	0.35 ^J	0.35 ^J	0.34 ^J	0.36 ^J	0.36 ^J	0.36 ^J	0.35 ^J	0.36 ^J	0.42 ^J	0.41 ^J	--	0.98	1.7	1.2	--	--
Magnesium	mg/L	--	--	<0.043	<0.043	<0.043	0.26 ^J	0.16 ^J	0.16 ^J	0.14 ^J	0.13 ^J	0.2 ^J	0.19 ^J	0.19 ^J	0.19 ^J	0.25 ^J	0.2 ^J	--	0.85 ^J	0.68 ^J	0.42 ^J	--	--
Potassium	mg/L	--	--	<0.13	<0.13	<0.13	0.33 ^J	0.31 ^J	0.25 ^J	0.36 ^J	0.22 ^J	0.49 ^J	0.7 ^J	0.58 ^J	0.17 ^J	0.62 ^J	0.16 ^J	--	0.93 ^J	0.76 ^J	0.69 ^J	--	--
Sodium	mg/L	--	--	<0.029	<0.029	<0.029	0.86 ^J	1.2	1.2	0.62 ^J	0.61 ^J	0.51 ^J	0.5 ^J	0.49 ^J	0.49 ^J	0.6 ^J	0.59 ^J	--	1.5	1.7	1.3	--	--
Sulfate	mg/L	--	--	<0.038	<0.038	<0.038	0.79	0.24 ^J	4.9	<0.038	0.27 ^J	0.75	0.35 ^J	0.35 ^J	0.35 ^J	0.48 ^J	0.42 ^J	--	0.62	8	0.54	--	--

mg/L = milligrams per liter
ng/L = nanograms per liter
ug/L = micrograms per liter
-- = Not sampled

EB = Equipment Blank was greater than the MDL for the analyte. Equipment Blank for Late-November (Fall-Winter) reservoir sampling event corresponded to sample "R-IS-17-CB-EBL".

FB = Field Blank was greater than the MDL for the analyte. Field Blank for Late-November (Fall-Winter) riverine and reservoir sampling events corresponded to sample "IS-8-SFRR-FBL".

NR = Not reported. Equipment Blank results for copper, lead, total mercury, nickel, and zinc at reservoir sites are not reported due to contamination of the rinse solution for these analytes. The contamination did not affect sample results or the field blank.

SUR = suffix indicates a surface sample taken at or above approximately one-third of the water depth

BOT = suffix indicates a sample taken near the reservoir bottom

¹Exceeds National Recommended Water Quality Criteria (USEPA 1986)

²Exceeds Basin Plan Water Quality Objectives (CRWQCB 2016)

³Exceeds California Toxics Rule Standards (USEPA 2000)

⁴Exceeds USEPA National Recommended Water Quality Criteria, hardness dependent acute criteria (USEPA 2017)

^JResult falls between MDL and RL

Table C-9. Dissolved metals results for UARP riverine sites during the May (Spring) sampling event and USEPA recommended hardness-dependent acute and chronic criteria.

Site	Dissolved					Hardness as CaCO ₃ (mg/L)	Acute Criteria					Chronic Criteria				
	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)		Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)
IS-1-RR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IS-2-LRR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IS-3-LRR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IS-4-GC	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IS-5-GC	<0.0330	<0.200	0.24	<0.15	1.14	2.9	0.06	1.18	23.42	0.01	5.84	0.05	0.05	2.60	NA	5.88
IS-9-GCC	<0.0330	<0.200	0.17	<0.15	1.09	3.1	0.07	1.27	24.78	0.01	6.17	0.05	0.05	2.75	NA	6.22
IS-6-GC	<0.0330	<0.200	0.19	<0.15	0.812	3.1	0.07	1.27	24.78	0.01	6.17	0.05	0.05	2.75	NA	6.22
IS-7-SFRR	<0.0330	<0.200	0.15	<0.15	0.91	3.9	0.09	1.66	30.10	0.01	7.50	0.06	0.06	3.34	NA	7.56
IS-8-SFRR	<0.0330	<0.200	0.18	<0.15	0.58	3.2	0.07	1.32	25.46	0.01	6.34	0.05	0.05	2.83	NA	6.39
IS-10-SFSC	<0.0330	<0.200	0.05 ^J	<0.15	0.20 ^J	4.1	0.09	1.76	31.40	0.01	7.82	0.06	0.07	3.49	NA	7.89
IS-11-SFSC	<0.0330	<0.200	0.11	<0.15	0.54	6.0	0.13	2.73	43.33	0.03	10.80	0.09	0.11	4.81	NA	10.89
IS-12-SC	<0.0330	<0.200	0.13	<0.15	1.13	4.6	0.10	2.01	34.61	0.02	8.63	0.07	0.08	3.84	NA	8.70
IS-13-SC	<0.0330	<0.200	0.104	<0.15	0.34 ^J	4.7	0.10	2.06	35.24	0.02	8.78	0.07	0.08	3.91	NA	8.86
IS-14-SC	<0.0330	<0.200	0.12	<0.15	0.81	4.5	0.10	1.96	33.97	0.02	8.47	0.07	0.08	3.77	NA	8.54
IS-17-BC	<0.0330	<0.200	0.16	<0.15	0.21 ^J	9.6	0.20	4.68	64.49	0.06	16.09	0.12	0.18	7.16	NA	16.22
IS-15-SFAR	<0.0330	<0.200	0.11	<0.15	0.77	7.8	0.16	3.69	54.10	0.04	13.49	0.10	0.14	6.01	NA	13.60
IS-16-SFAR	<0.0330	<0.200	0.11	<0.15	0.85	6.9	0.15	3.21	48.77	0.03	12.16	0.10	0.12	5.42	NA	12.26
IS-19-SFAR	<0.0330	<0.200	0.11	<0.15	0.36 ^J	7.6	0.16	3.58	52.92	0.04	13.20	0.10	0.14	5.88	NA	13.31
IS-18-SFAR	<0.0330	<0.200	0.13	<0.15	1.24	8.2	0.17	3.91	56.44	0.04	14.08	0.11	0.15	6.27	NA	14.19

mg/L = milligrams per liter
 ug/L = micrograms per liter
 -- = Not sampled
 NA = Chronic criteria not applicable for silver
^JResult falls between MDL and RL

Table C-10. Dissolved metals results for UARP riverine sites during the August (Summer) sampling event and USEPA recommended hardness-dependent acute and chronic criteria.

Site	Dissolved					Hardness as CaCO ₃ (mg/L)	Acute Criteria					Chronic Criteria				
	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)		Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)
IS-1-RR	<0.0330	<0.200	0.13	<0.15	0.83	3.8	0.08	1.61	29.44	0.01	7.34	0.06	0.06	3.27	NA	7.40
IS-2-LRR	<0.0330	<0.200	0.09 ^J	<0.15	1.75	3.6	0.08	1.51	28.13	0.01	7.01	0.06	0.06	3.12	NA	7.07
IS-3-LRR	<0.0330	<0.200	0.07 ^J	0.28^{1,J}	0.39 ^J	3.7	0.08	1.56	28.78	0.01	7.17	0.06	0.06	3.20	NA	7.23
IS-4-GC	<0.0330	<0.200	0.14	<0.15	0.57	2.8	0.06	1.13	22.74	0.01	5.66	0.05	0.04	2.53	NA	5.71
IS-5-GC	<0.0330	<0.200	0.15	<0.15	0.65	3.5	0.08	1.46	27.46	0.01	6.84	0.06	0.06	3.05	NA	6.90
IS-9-GCC	<0.0330	<0.200	0.10	<0.15	0.90	3.0	0.07	1.22	24.11	0.01	6.01	0.05	0.05	2.68	NA	6.05
IS-6-GC	<0.0330	<0.200	0.08 ^J	0.15^{1,J}	0.36 ^J	2.7	0.06	1.08	22.05	0.01	5.49	0.05	0.04	2.45	NA	5.54
IS-7-SFRR	<0.0330	<0.200	0.15	<0.15	0.35 ^J	3.1	0.07	1.27	24.78	0.01	6.17	0.05	0.05	2.75	NA	6.22
IS-8-SFRR	<0.0330	<0.200	0.08 ^J	<0.15	0.60	2.9	0.06	1.18	23.42	0.01	5.84	0.05	0.05	2.60	NA	5.88
IS-10-SFSC	<0.0330	<0.200	0.05 ^J	<0.15	0.41 ^J	3.2	0.07	1.32	25.46	0.01	6.34	0.05	0.05	2.83	NA	6.39
IS-11-SFSC	<0.0330	<0.200	0.06 ^J	<0.15	0.35 ^J	4.4	0.10	1.91	33.33	0.01	8.31	0.07	0.07	3.70	NA	8.38
IS-12-SC	<0.0330	<0.200	0.08 ^J	<0.15	0.57	3.9	0.09	1.66	30.10	0.01	7.50	0.06	0.06	3.34	NA	7.56
IS-13-SC	<0.0330	<0.200	0.10	<0.15	0.51	4.9	0.11	2.16	36.51	0.02	9.10	0.07	0.08	4.05	NA	9.17
IS-14-SC	<0.0330	<0.200	0.09 ^J	<0.15	2.08	4.5	0.10	1.96	33.97	0.02	8.47	0.07	0.08	3.77	NA	8.54
IS-17-BC	<0.0330	<0.200	0.08 ^J	<0.15	0.26 ^J	8.2	0.17	3.91	56.44	0.04	14.08	0.11	0.15	6.27	NA	14.19
IS-15-SFAR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IS-16-SFAR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
IS-19-SFAR	<0.0330	<0.200	0.07 ^J	<0.15	0.30 ^J	7.4	0.16	3.47	51.74	0.04	12.90	0.10	0.14	5.75	NA	13.01
IS-18-SFAR	<0.0330	<0.200	0.19	0.17^{1,J}	0.39 ^J	12	0.25	6.04	77.88	0.08	19.44	0.15	0.24	8.65	NA	19.60

mg/L = milligrams per liter

ug/L = micrograms per liter

-- = Not sampled

NA = Chronic criteria not applicable for silver

¹Exceeds US Environmental Protection Agency National Recommended Water Quality Criteria, acute criteria (USEPA 2017)

^JResult falls between MDL and RL

Table C-11. Dissolved metals results for UARP riverine sites during the November (Fall) sampling event and USEPA recommended hardness-dependent acute and chronic criteria.

Site	Dissolved					Hardness as CaCO ₃ (mg/L)	Acute Criteria					Chronic Criteria				
	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)		Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)
IS-1-RR	<0.0330	0.05	0.11	<0.15	0.52	5.1	0.11	2.26	37.76	0.02	9.41	0.08	0.09	4.19	NA	9.49
IS-2-LRR	<0.0330	<0.200	0.07 ^J	0.26^{1,J}	0.22 ^J	3.5	0.08	1.46	27.46	0.01	6.84	0.06	0.06	3.05	NA	6.90
IS-3-LRR	<0.0330	<0.200	0.05 ^J	<0.15	0.25 ^J	4.1	0.09	1.76	31.40	0.01	7.82	0.06	0.07	3.49	NA	7.89
IS-4-GC	<0.0330	<0.200	0.05 ^J	<0.15	0.33 ^J	3.8	0.08	1.61	29.44	0.01	7.34	0.06	0.06	3.27	NA	7.40
IS-5-GC	<0.0330	0.04 ^J	0.11	<0.15	1.74	3.7	0.08	1.56	28.78	0.01	7.17	0.06	0.06	3.20	NA	7.23
IS-9-GCC	<0.0330	<0.200	0.13	<0.15	0.86	4.6	0.10	2.01	34.61	0.02	8.63	0.07	0.08	3.84	NA	8.70
IS-6-GC	<0.0330	<0.200	0.12	<0.15	0.46 ^J	3.9	0.09	1.66	30.10	0.01	7.50	0.06	0.06	3.34	NA	7.56
IS-7-SFRR	<0.0330	<0.200	0.14	<0.15	0.69	8.5	0.18	4.07	58.18	0.05	14.51	0.11	0.16	6.46	NA	14.63
IS-8-SFRR	<0.0330	<0.200	0.12	<0.15	0.48 ^J	5.3	0.11	2.37	39.01	0.02	9.73	0.08	0.09	4.33	NA	9.81
IS-10-SFSC	<0.0330	<0.200	0.04 ^J	<0.15	<0.200	3.4	0.08	1.42	26.80	0.01	6.68	0.06	0.06	2.98	NA	6.73
IS-11-SFSC	<0.0330	<0.200	0.09 ^J	<0.15	0.25 ^J	4.9	0.11	2.16	36.51	0.02	9.10	0.07	0.08	4.05	NA	9.17
IS-12-SC	<0.0330	<0.200	0.06 ^J	<0.15	0.23 ^J	3.8	0.08	1.61	29.44	0.01	7.34	0.06	0.06	3.27	NA	7.40
IS-15-SFAR	<0.0330	<0.200	0.06 ^J	<0.15	0.24 ^J	13	0.27	6.62	83.34	0.10	20.80	0.15	0.26	9.26	NA	20.97
IS-16-SFAR	<0.0330	<0.200	0.10	<0.15	0.31 ^J	17	0.34	8.98	104.57	0.15	26.11	0.19	0.35	11.61	NA	26.32
IS-19-SFAR	<0.0330	<0.200	0.08 ^J	<0.15	0.27 ^J	7.1	0.15	3.31	49.96	0.03	12.46	0.10	0.13	5.55	NA	12.56
IS-18-SFAR	<0.0330	<0.200	0.10	<0.15	0.47 ^J	6.7	0.14	3.10	47.57	0.03	11.86	0.09	0.12	5.28	NA	11.96

mg/L = milligrams per liter

ug/L = micrograms per liter

NA = Chronic criteria not applicable for silver

¹Exceeds US Environmental Protection Agency National Recommended Water Quality Criteria, acute criteria (USEPA 2017)

^JResult falls between MDL and RL

Table C-12. Dissolved metals results for UARP riverine sites during the Late-November (Fall-Winter) sampling event and USEPA recommended hardness-dependent acute and chronic criteria.

Site	Dissolved					Hardness as CaCO ₃ (mg/L)	Acute Criteria					Chronic Criteria				
	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)		Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)
IS-1-RR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	NA	--
IS-2-LRR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	NA	--
IS-3-LRR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	NA	--
IS-4-GC	0.14^{1,2}	<0.0200	2.77	<0.15	17.8^{1,2}	3.3	0.07	1.37	26.13	0.01	6.51	0.05	0.05	2.90	NA	6.56
IS-5-GC	<0.0330	<0.0200	0.31	<0.15	1.15	5.4	0.12	2.42	39.63	0.02	9.88	0.08	0.09	4.40	NA	9.93
IS-9-GCC	<0.0330	0.03 ^J	0.20	<0.15	1.53	4.0	0.09	1.71	30.75	0.01	7.66	0.06	0.07	3.42	NA	7.73
IS-6-GC	<0.0330	<0.0200	0.30	<0.15	1.19	3.9	0.09	1.66	30.10	0.01	7.50	0.06	0.06	3.34	NA	7.56
IS-7-SFRR	<0.0330	<0.0200	0.21	<0.15	0.41 ^J	6.3	0.13	2.89	45.16	0.03	11.26	0.09	0.11	5.02	NA	11.35
IS-8-SFRR	<0.0330	<0.0200	0.24	<0.15	0.61	5.2	0.11	2.31	38.39	0.02	9.57	0.08	0.09	4.26	NA	9.65
IS-10-SFSC	<0.0330	<0.0200	0.06 ^J	<0.15	0.58	3.2	0.07	1.32	25.46	0.01	6.34	0.05	0.05	2.83	NA	6.39
IS-11-SFSC	<0.0330	<0.0200	0.10	<0.15	0.21 ^J	6.3	0.13	2.89	45.16	0.03	11.26	0.09	0.11	5.02	NA	11.35
IS-12-SC	<0.0330	<0.0200	0.23	<0.15	0.52	4.7	0.10	2.06	35.24	0.02	8.78	0.07	0.08	3.91	NA	8.86
IS-13-SC	--	--	--	--	--	--	--	--	--	--	--	--	--	--	NA	--
IS-14-SC	--	--	--	--	--	--	--	--	--	--	--	--	--	--	NA	--
IS-17-BC	<0.03	0.03 ^J	0.09 ^J	<0.15	<0.200	9.2	0.19	4.46	62.21	0.05	15.52	0.12	0.17	6.91	NA	15.65
IS-15-SFAR	--	0.04 ^J	--	<0.15	0.54	11	0.23	5.47	72.36	0.07	18.06	0.14	0.21	8.04	NA	18.20
IS-16-SFAR	<0.0330	<0.0200	0.16	<0.15	0.51	6.3	0.13	2.89	45.16	0.03	11.26	0.09	0.11	5.02	NA	11.35
IS-19-SFAR	<0.0330	<0.0200	0.12	<0.15	0.21 ^J	7.1	0.15	3.31	49.96	0.03	12.46	0.10	0.13	5.55	NA	12.56
IS-18-SFAR	<0.0330	<0.0200	0.16	<0.15	0.67	9.7	0.20	4.74	65.05	0.06	16.23	0.12	0.18	7.23	NA	16.36

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

-- = Not sampled

NA = Chronic criteria not applicable for silver

¹Exceeds US Environmental Protection Agency National Recommended Water Quality Criteria, acute criteria (USEPA 2017)

²Exceeds US Environmental Protection Agency National Recommended Water Quality Criteria, chronic criteria (USEPA 2017)

^JResult falls between MDL and RL

Table C-13. Dissolved metals results for UARP reservoir sites during the May (Spring) sampling event and USEPA recommended hardness-dependent acute and chronic criteria.

Site	Dissolved					Hardness as CaCO ₃ (mg/L)	Acute Criteria					Chronic Criteria				
	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)		Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)
R-IS-18-RR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-IS-19-BI	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-IS-1-LL	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-IS-2-LL	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-IS-3-LL	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-IS-4-GC	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-IS-9-IHR-SUR ¹	<0.0330	<0.200	0.06 ^J	<0.15	0.85	3.8	0.08	1.61	29.44	0.01	7.34	0.06	0.06	3.27	NA	7.40
R-IS-10-IHR-SUR ¹	<0.0330	<0.200	0.06 ^J	<0.15	0.31 ^J	3.9	0.09	1.66	30.10	0.01	7.50	0.06	0.06	3.34	NA	7.56
R-IS-11-IHR-SUR	<0.0330	<0.200	0.05 ^J	<0.15	0.37 ^J	4.0	0.09	1.71	30.75	0.01	7.66	0.06	0.07	3.42	NA	7.73
R-IS-11-IHR-BOT	<0.0330	<0.200	0.05 ^J	<0.15	0.38 ^J	4.1	0.09	1.76	31.40	0.01	7.82	0.06	0.07	3.49	NA	7.89
R-IS-5-UVR-SUR ¹	<0.0330	<0.200	0.09 ^J	<0.15	0.71	4.1	0.09	1.76	31.40	0.01	7.82	0.06	0.07	3.49	NA	7.89
R-IS-7-UVR-SUR ¹	<0.0330	<0.200	0.09 ^J	<0.15	0.50	4.0	0.09	1.71	30.75	0.01	7.66	0.06	0.07	3.41	NA	7.73
R-IS-6-UVR-SUR ¹	<0.0330	<0.200	0.08 ^J	<0.15	1.91	4.1	0.09	1.76	31.40	0.01	7.82	0.06	0.07	3.49	NA	7.89
R-IS-8-UVR-SUR	<0.0330	<0.200	0.08 ^J	<0.15	1.08	4.2	0.09	1.81	32.04	0.01	7.99	0.07	0.07	3.56	NA	8.05
R-IS-8-UVR-BOT	<0.0330	<0.200	0.08 ^J	<0.15	0.53	3.9	0.09	1.66	30.10	0.01	7.50	0.06	0.06	3.34	NA	7.56
R-IS-12-JR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-IS-13-CR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-IS-20-BR-SUR	<0.0330	<0.200	0.18	<0.15	0.61	7.8	0.16	3.69	54.10	0.04	13.50	0.10	0.14	6.01	NA	13.60
R-IS-14-SC	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-IS-15-SC	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

mg/L = milligrams per liter
 ug/L = micrograms per liter
 -- = Not sampled

NA = Chronic criteria not applicable for silver

SUR = suffix indicates a surface sample taken at or above approximately one-third of the water depth

BOT = suffix indicates a sample taken near the reservoir bottom

¹ Site sampled at mid-depth only.

^JResult falls between MDL and RL

Table C-14. Dissolved metals results for UARP reservoir sites during the August (Summer) sampling event and USEPA recommended hardness-dependent acute and chronic criteria.

Site	Dissolved					Hardness as CaCO ₃ (mg/L)	Acute Criteria					Chronic Criteria				
	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)		Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)
R-IS-18-RR-SUR	<0.0330	<0.200	0.10	<0.15	0.43 ^J	3.8	0.08	1.61	29.44	0.01	7.34	0.06	0.06	3.27	NA	7.40
R-IS-19-BI-SUR	<0.0330	<0.200	0.06 ^J	0.25^{2,J}	0.50	3.8	0.08	1.61	29.44	0.01	7.34	0.06	0.06	3.27	NA	7.40
R-IS-19-BI-BOT	<0.0330	<0.200	0.04 ^J	0.28^{2,J}	0.85	3.1	0.07	1.27	24.78	0.01	6.17	0.05	0.05	2.75	NA	6.22
R-IS-1-LL-SUR	<0.0330	<0.200	0.10	<0.15	0.50	3.4	0.08	1.42	26.80	0.01	6.68	0.06	0.06	2.98	NA	6.73
R-IS-1-LL-BOT	<0.0330	<0.200	0.07 ^J	<0.15	1.91	3.3	0.07	1.37	26.13	0.01	6.51	0.05	0.05	2.90	NA	6.56
R-IS-2-LL-SUR	<0.0330	<0.200	0.10	<0.15	0.50	3.3	0.07	1.37	26.13	0.01	6.51	0.05	0.05	2.90	NA	6.56
R-IS-2-LL-BOT	<0.0330	<0.200	0.09 ^J	<0.15	1.08	3.4	0.08	1.42	26.80	0.01	6.68	0.06	0.06	2.98	NA	6.73
R-IS-3-LL-SUR	<0.0330	<0.200	0.08 ^J	<0.15	1.97	3.2	0.07	1.32	25.46	0.01	6.34	0.05	0.05	2.83	NA	6.39
R-IS-3-LL-BOT	<0.0330	<0.200	0.07 ^J	<0.15	1.12	3.1	0.07	1.27	24.78	0.01	6.17	0.05	0.05	2.75	NA	6.22
R-IS-4-GC-SUR	<0.0330	<0.200	0.12	<0.15	0.88	3.7	0.08	1.56	28.78	0.01	7.17	0.06	0.06	3.20	NA	7.23
R-IS-9-IHR-SUR	<0.0330	<0.200	0.03 ^J	<0.15	0.21	2.9	0.06	1.18	23.42	0.01	5.84	0.05	0.05	2.60	NA	5.88
R-IS-9-IHR-BOT	<0.0330	0.03 ^J	0.04 ^J	<0.15	0.79	3.3	0.07	1.37	26.13	0.01	6.51	0.05	0.05	2.90	NA	6.56
R-IS-10-IHR-SUR	<0.0330	<0.200	0.03 ^J	<0.15	<0.200	2.8	0.06	1.13	22.74	0.01	5.66	0.05	0.04	2.53	NA	5.71
R-IS-10-IHR-BOT	<0.0330	<0.200	0.04 ^J	<0.15	0.68	2.4	0.05	0.94	19.96	0.01	4.97	0.04	0.04	2.22	NA	5.01
R-IS-11-IHR-SUR	<0.0330	<0.200	<0.0330	<0.15	<0.200	2.8	0.06	1.13	22.74	0.01	5.66	0.05	0.04	2.53	NA	5.71
R-IS-11-IHR-BOT	<0.0330	<0.200	0.06 ^J	<0.15	0.96	3.1	0.07	1.27	24.78	0.01	6.17	0.05	0.05	2.75	NA	6.22
R-IS-5-UVR-SUR	<0.0330	<0.200	0.08 ^J	<0.15	0.29 ^J	3.6	0.08	1.51	28.13	0.01	7.01	0.06	0.06	3.12	NA	7.07
R-IS-5-UVR-BOT	<0.0330	<0.200	0.09 ^J	<0.15	0.73	3.2	0.07	1.32	25.46	0.01	6.34	0.05	0.05	2.83	NA	6.39
R-IS-7-UVR-SUR	<0.0330	<0.200	0.08 ^J	<0.15	0.87	3.6	0.08	1.51	28.13	0.01	7.01	0.06	0.06	3.12	NA	7.07
R-IS-6-UVR-SUR ¹	<0.0330	<0.200	0.10	<0.15	0.40 ^J	3.5	0.08	1.46	27.46	0.01	6.84	0.06	0.06	3.05	NA	6.90
R-IS-8-UVR-SUR	<0.0330	<0.200	0.09 ^J	<0.15	0.39 ^J	3.6	0.08	1.51	28.13	0.01	7.01	0.06	0.06	3.12	NA	7.07
R-IS-8-UVR-BOT	<0.0330	<0.200	0.10	<0.15	0.77	4	0.09	1.71	30.75	0.01	7.66	0.06	0.07	3.42	NA	7.73
R-IS-12-JR-SUR	<0.0330	<0.200	0.09 ^J	<0.15	0.32 ^J	5	0.11	2.21	37.14	0.02	9.26	0.07	0.09	4.12	NA	9.33
R-IS-12-JR-BOT	<0.0330	<0.200	0.11	<0.15	1.98	3.9	0.09	1.66	30.10	0.01	7.50	0.06	0.06	3.34	NA	7.56
R-IS-13-CR-SUR	<0.0330	<0.200	0.10	<0.15	0.42 ^J	4.9	0.11	2.16	36.51	0.02	9.10	0.07	0.08	4.05	NA	9.17

Site	Dissolved					Hardness as CaCO ₃ (mg/L)	Acute Criteria					Chronic Criteria				
	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)		Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)
R-IS-20-BR-SUR	<0.0330	<0.200	0.10	<0.15	0.88	7.4	0.16	3.47	51.74	0.04	12.90	0.10	0.14	5.75	NA	13.01
R-IS-20-BR-BOT	<0.0330	<0.200	0.16	<0.15	1.50	11	0.23	5.47	72.36	0.07	18.06	0.14	0.21	8.04	NA	18.20
R-IS-14-SC-SUR	<0.0330	<0.200	0.08 ^J	0.28^{2,J}	0.46 ^J	10	0.21	4.91	66.75	0.06	16.66	0.13	0.19	7.41	NA	16.79
R-IS-14-SC-BOT	<0.0330	<0.200	0.09 ^J	<0.15	1.48	6.6	0.14	3.05	46.97	0.03	11.71	0.09	0.12	5.22	NA	11.81
R-IS-15-SC-SUR	<0.0330	<0.200	0.08 ^J	0.26^{2,J}	0.96	9.8	0.20	4.79	65.62	0.06	16.37	0.12	0.19	7.29	NA	16.51
R-IS-15-SC-BOT	<0.0330	<0.200	0.09 ^J	0.25^{2,J}	1.38	7.8	0.16	3.69	54.10	0.04	13.49	0.10	0.14	6.01	NA	13.60

mg/L = milligrams per liter

ug/L = micrograms per liter

NA = Chronic criteria not applicable for silver

SUR = suffix indicates a surface sample taken at or above approximately one-third of the water depth

BOT = suffix indicates a sample taken near the reservoir bottom

¹Site sampled in the upper portion of the water column only

²Exceeds US Environmental Protection Agency National Recommended Water Quality Criteria, acute criteria (USEPA 2017)

^JResult falls between MDL and RL

Table C-15. Dissolved metals results for UARP reservoir sites during the October-November (Fall) sampling event and USEPA recommended hardness-dependent acute and chronic criteria.

Site	Dissolved					Hardness as CaCO ₃ (mg/L)	Acute Criteria					Chronic Criteria				
	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)		Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)
R-IS-18-RR-SUR	<0.0330	0.05	0.11	<0.15	1.45	5.8	0.12	2.62	42.10	0.02	10.50	0.08	0.10	4.68	NA	10.58
R-IS-19-BI-SUR	<0.0330	<0.200	0.06 ^J	0.29^{2,J}	0.28 ^J	3.2	0.07	1.32	25.46	0.01	6.34	0.05	0.05	2.83	NA	6.39
R-IS-1-LL-SUR	<0.0330	<0.200	0.04 ^J	<0.15	0.26 ^J	2.7	0.06	1.08	22.05	0.01	5.49	0.05	0.04	2.45	NA	5.54
R-IS-2-LL-SUR	<0.0330	<0.200	0.04 ^J	<0.15	0.21 ^J	3.7	0.08	1.56	28.78	0.01	7.17	0.06	0.06	3.20	NA	7.23
R-IS-3-LL-SUR	<0.0330	<0.200	0.04 ^J	<0.15	<0.200	3.4	0.08	1.42	26.80	0.01	6.68	0.06	0.06	2.98	NA	6.73
R-IS-4-GC-SUR	<0.0330	<0.200	0.11	<0.15	0.51	5.0	0.11	2.21	37.14	0.02	9.26	0.07	0.09	4.12	NA	9.33
R-IS-9-IHR-SUR	<0.0330	<0.200	<0.0330	<0.15	<0.200	2.5	0.06	0.99	20.66	0.01	5.15	0.04	0.04	2.29	NA	5.19
R-IS-10-IHR-SUR	<0.0330	<0.200	<0.0330	<0.15	0.21 ^J	2.5	0.06	0.99	20.66	0.01	5.15	0.04	0.04	2.29	NA	5.19
R-IS-11-IHR-SUR	<0.0330	<0.200	<0.0330	<0.15	0.65	2.8	0.06	1.13	22.74	0.01	5.66	0.05	0.04	2.53	NA	5.71
R-IS-11-IHR-BOT	<0.0330	0.02 ^J	0.07 ^J	<0.15	1.65	3.0	0.07	1.22	24.11	0.01	6.01	0.05	0.05	2.68	NA	6.05
R-IS-5-UVR-SUR	<0.0330	<0.200	0.06 ^J	<0.15	0.44 ^J	3.7	0.08	1.56	28.78	0.01	7.17	0.06	0.06	3.20	NA	7.23
R-IS-7-UVR-SUR	<0.0330	<0.200	0.06 ^J	<0.15	1.06	3.5	0.08	1.46	27.46	0.01	6.84	0.06	0.06	3.05	NA	6.90
R-IS-6-UVR-SUR ¹	<0.0330	<0.200	0.05 ^J	<0.15	<0.200	3.7	0.08	1.56	28.78	0.01	7.17	0.06	0.06	3.20	NA	7.23
R-IS-8-UVR-SUR	<0.0330	<0.200	0.07 ^J	<0.15	0.23 ^J	3.5	0.08	1.46	27.46	0.01	6.84	0.06	0.06	3.05	NA	6.90
R-IS-8-UVR-BOT	<0.0330	<0.200	0.11	<0.15	1.36	3.8	0.08	1.61	29.44	0.01	7.34	0.06	0.06	3.27	NA	7.40
R-IS-12-JR-SUR	<0.0330	<0.200	0.11	<0.15	0.46 ^J	3.7	0.08	1.56	28.78	0.01	7.17	0.06	0.06	3.20	NA	7.23
R-IS-13-CR-SUR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-IS-20-BR-SUR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-IS-14-SC-SUR	<0.0330	<0.200	0.08 ^J	<0.15	0.33 ^J	7.3	0.15	3.42	51.15	0.04	12.76	0.10	0.13	5.68	NA	12.86
R-IS-15-SC-SUR	<0.0330	<0.200	0.10	<0.15	0.49 ^J	6.9	0.15	3.21	48.77	0.03	12.16	0.10	0.12	5.42	NA	12.26

mg/L = milligrams per liter

ug/L = micrograms per liter

-- = Not sampled due to conditions

NA = Chronic criteria not applicable for silver

SUR = suffix indicates a surface sample taken at or above approximately one-third of the water depth

BOT = suffix indicates a sample taken near the reservoir bottom

¹Site sampled in the upper portion of the water column only

²Exceeds US Environmental Protection Agency National Recommended Water Quality Criteria, acute criteria (USEPA 2017)

^JResult falls between MDL and RL

Table C-16. Dissolved metals results for UARP reservoir sites during the Late-November (Fall-Winter) sampling event and USEPA recommended hardness-dependent acute and chronic criteria.

Site	Dissolved					Hardness as CaCO ₃ (mg/L)	Acute Criteria					Chronic Criteria				
	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)		Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)	Cadmium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Silver (ug/L)	Zinc (ug/L)
R-IS-18-RR-SUR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-IS-19-BI-SUR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-IS-1-LL-SUR	<0.0330	<0.0200	0.04 ^J	<0.15	<0.200	3.3	0.07	1.37	26.13	0.01	6.51	0.05	0.05	2.90	NA	6.56
R-IS-2-LL-SUR	<0.0330	<0.0200	0.06 ^J	<0.15	1.44	2.9	0.06	1.18	23.42	0.01	5.84	0.05	0.05	2.60	NA	5.88
R-IS-3-LL-SUR	<0.0330	<0.0200	0.06 ^J	<0.15	<0.200	3.1	0.07	1.27	24.78	0.01	6.17	0.05	0.05	2.75	NA	6.22
R-IS-4-GC-SUR	<0.0330	0.35	0.30	<0.15	1.21	4.5	0.10	1.96	33.97	0.02	8.47	0.07	0.08	3.77	NA	8.54
R-IS-9-IHR-SUR	<0.0330	<0.0200	0.06 ^J	<0.15	<0.200	3.3	0.07	1.37	26.13	0.01	6.51	0.05	0.05	2.90	NA	6.56
R-IS-10-IHR-SUR	<0.0330	<0.0200	<0.0330	<0.15	<0.200	3.6	0.08	1.51	28.13	0.01	7.01	0.06	0.06	3.12	NA	7.07
R-IS-11-IHR-SUR	<0.0330	<0.0200	0.03 ^J	<0.15	<0.200	2.7	0.06	1.08	22.05	0.01	5.49	0.05	0.04	2.45	NA	5.54
R-IS-11-IHR-BOT	<0.0330	0.03 ^J	0.05 ^J	<0.15	0.34 ^J	2.7	0.06	1.08	22.05	0.01	5.49	0.05	0.04	2.45	NA	5.54
R-IS-5-UVR-SUR	<0.0330	<0.0200	0.07 ^J	<0.15	<0.200	3.4	0.08	1.42	26.80	0.01	6.68	0.06	0.06	2.98	NA	6.73
R-IS-7-UVR-SUR	<0.0330	<0.0200	0.08 ^J	<0.15	<0.200	3.4	0.08	1.42	26.80	0.01	6.68	0.06	0.06	2.98	NA	6.73
R-IS-6-UVR-SUR	<0.0330	<0.0200	0.08 ^J	0.18^{1,J}	<0.200	3.4	0.08	1.42	26.80	0.01	6.68	0.06	0.06	2.98	NA	6.73
R-IS-8-UVR-SUR	<0.0330	<0.0200	0.08 ^J	<0.15	<0.200	3.3	0.07	1.37	26.13	0.01	6.51	0.05	0.05	2.90	NA	6.56
R-IS-8-UVR-BOT	<0.0330	<0.0200	0.16	<0.15	0.97	3.6	0.08	1.51	28.13	0.01	7.01	0.06	0.06	3.12	NA	7.07
R-IS-12-JR-SUR	<0.0330	0.16	0.10	<0.15	0.37	3.2	0.07	1.32	25.46	0.01	6.34	0.05	0.05	2.83	NA	6.39
R-IS-13-CR-SUR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-IS-20-BR-SUR	<0.0330	0.02 ^J	0.08 ^J	<0.15	0.27	9.1	0.19	4.40	61.63	0.05	15.38	0.12	0.17	6.85	NA	15.50
R-IS-14-SC-SUR	<0.0330	0.02 ^J	0.15	<0.15	0.60	9.8	0.20	4.79	65.62	0.06	16.37	0.12	0.19	7.29	NA	16.51
R-IS-15-SC-SUR	<0.0330	<0.0200	0.12	<0.15	0.77	6.8	0.14	3.15	48.17	0.03	12.01	0.09	0.12	5.35	NA	12.11

mg/L = milligrams per liter

ug/L = micrograms per liter

-- = Not sampled due to conditions

NA = Chronic criteria not applicable for silver

SUR = suffix indicates a surface sample taken at or above approximately one-third of the water depth

BOT = suffix indicates a sample taken near the reservoir bottom

¹Exceeds US Environmental Protection Agency National Recommended Water Quality Criteria, acute criteria (USEPA 2017)

^JResult falls between MDL and RL

Table C-17. Relative percent difference (RPD) values for each duplicate sample pair collected in 2017

Analyte	Date	Relative Percent Difference (%)
Aluminum	5/3/2017	2
Aluminum, dissolved	5/3/2017	7
Ammonia as N	5/3/2017	59 ^J
Barium	5/3/2017	2
Bicarbonate as CaCO ₃	5/3/2017	0
Cadmium, dissolved	5/3/2017	0
Cadmium, total	5/3/2017	0
Calcium	5/3/2017	4
Carbonate as CaCO ₃	5/3/2017	0
Chloride	5/3/2017	0
Copper, dissolved	5/3/2017	7
Copper, total	5/3/2017	5
Cyanide (total), total	5/3/2017	0
Diesel	5/3/2017	0
Gasoline	5/3/2017	0
Hexane Extractable Material (HEM, Oil & Grease)	5/3/2017	0
Hydraulic Oil	5/3/2017	0
Iron	5/3/2017	9 ^J
Iron, dissolved	5/3/2017	6 ^J
Kerosene	5/3/2017	0
Lead, dissolved	5/3/2017	0
Lead, total	5/3/2017	8 ^J
Magnesium	5/3/2017	2 ^J
Manganese	5/3/2017	2
Mercury	5/3/2017	14
Methyl Mercury as Mercury	5/3/2017	0
MTBE	5/3/2017	0
Mineral Oil	5/3/2017	0
Motor Oil	5/3/2017	0
Nickel, dissolved	5/3/2017	11 ^J
Nickel, total	5/3/2017	4
Nitrate/Nitrite as N	5/3/2017	0
Orthophosphate as PO ₄	5/3/2017	0
Potassium	5/3/2017	5 ^J

Analyte	Date	Relative Percent Difference (%)
Selenium, dissolved	5/3/2017	0
Selenium, total	5/3/2017	0
Silver	5/3/2017	0
Silver, dissolved	5/3/2017	0
Sodium	5/3/2017	0
Sulfate as SO ₄	5/3/2017	51
Toluene-d8	5/3/2017	1
Total Alkalinity	5/3/2017	0
Total Dissolved Solids, dissolved	5/3/2017	67
Total Hardness as CaCO ₃	5/3/2017	0
Total Kjeldahl Nitrogen	5/3/2017	86 ^J
Total Organic Carbon	5/3/2017	4
Total Phosphorus as P	5/3/2017	0
Total Suspended Solids	5/3/2017	0
Zinc, dissolved	5/3/2017	54 ^J
Zinc, total	5/3/2017	17 ^J
Aluminum	5/9/2017	1
Aluminum, dissolved	5/9/2017	9
Ammonia as N	5/9/2017	0 ^J
Barium	5/9/2017	35
Bicarbonate as CaCO ₃	5/9/2017	29
Cadmium, dissolved	5/9/2017	0
Cadmium, total	5/9/2017	0
Calcium	5/9/2017	0
Carbonate as CaCO ₃	5/9/2017	0
Chloride	5/9/2017	0
Copper, dissolved	5/9/2017	3
Copper, total	5/9/2017	4
Cyanide (total), total	5/9/2017	0
Diesel	5/9/2017	0
Gasoline	5/9/2017	0
Hexane Extractable Material (HEM, Oil & Grease)	5/9/2017	0
Hydraulic Oil	5/9/2017	0
Iron	5/9/2017	0
Iron, dissolved	5/9/2017	0
Kerosene	5/9/2017	0

Analyte	Date	Relative Percent Difference (%)
Lead, dissolved	5/9/2017	0
Lead, total	5/9/2017	0
Magnesium	5/9/2017	0
Manganese	5/9/2017	6
Mercury	5/9/2017	29
Methyl Mercury as Mercury	5/9/2017	0
MTBE	5/9/2017	0
Mineral Oil	5/9/2017	0
Motor Oil	5/9/2017	0
Nickel, dissolved	5/9/2017	14 ^J
Nickel, total	5/9/2017	4 ^J
Nitrate/Nitrite as N	5/9/2017	0
Orthophosphate as PO ₄	5/9/2017	0
Potassium	5/9/2017	0
Selenium, dissolved	5/9/2017	0
Selenium, total	5/9/2017	0
Silver	5/9/2017	0
Silver, dissolved	5/9/2017	0
Sodium	5/9/2017	194
Sulfate as SO ₄	5/9/2017	0
Toluene-d8	5/9/2017	1
Total Alkalinity	5/9/2017	29
Total Dissolved Solids, dissolved	5/9/2017	100
Total Hardness as CaCO ₃	5/9/2017	3
Total Kjeldahl Nitrogen	5/9/2017	165
Total Organic Carbon	5/9/2017	2
Total Phosphorus as P	5/9/2017	0
Total Suspended Solids	5/9/2017	0
Zinc, dissolved	5/9/2017	128
Zinc, total	5/9/2017	117
Arsenic, dissolved	8/10/2017	0
Arsenic, total	8/10/2017	0
Cadmium, dissolved	8/10/2017	0
Cadmium, total	8/10/2017	0
Copper, dissolved	8/10/2017	4
Copper, total	8/10/2017	3

Analyte	Date	Relative Percent Difference (%)
Lead, dissolved	8/10/2017	0
Lead, total	8/10/2017	0
Mercury	8/10/2017	5 ^J
Methyl Mercury as Mercury	8/10/2017	14 ^J
Nickel, dissolved	8/10/2017	68
Nickel, total	8/10/2017	97 ^J
Selenium, dissolved	8/10/2017	0
Selenium, total	8/10/2017	0
Zinc, dissolved	8/10/2017	14 ^J
Zinc, total	8/10/2017	101 ^J
Arsenic, dissolved	10/25/2017	0
Arsenic, total	10/25/2017	0
Cadmium, dissolved	10/25/2017	0
Cadmium, total	10/25/2017	0
Copper, dissolved	10/25/2017	0
Copper, total	10/25/2017	4
Lead, dissolved	10/25/2017	0
Lead, total	10/25/2017	0 ^J
Mercury	10/25/2017	9 ^J
Methyl Mercury as Mercury	10/25/2017	0
Nickel, dissolved	10/25/2017	11 ^J
Nickel, total	10/25/2017	13 ^J
Selenium, dissolved	10/25/2017	0
Selenium, total	10/25/2017	0
Zinc, dissolved	10/25/2017	13 ^J
Zinc, total	10/25/2017	17 ^J
Arsenic, dissolved	11/7/2017	0
Arsenic, total	11/7/2017	0
Cadmium, dissolved	11/7/2017	0
Cadmium, total	11/7/2017	0
Copper, dissolved	11/7/2017	8
Copper, total	11/7/2017	19
Lead, dissolved	11/7/2017	0
Lead, total	11/7/2017	80 ^J
Mercury	11/7/2017	2
Methyl Mercury as Mercury	11/7/2017	67 ^J

Analyte	Date	Relative Percent Difference (%)
Nickel, dissolved	11/7/2017	29
Nickel, total	11/7/2017	8
Selenium, dissolved	11/7/2017	0
Selenium, total	11/7/2017	0
Zinc, dissolved	11/7/2017	41 ^J
Zinc, total	11/7/2017	58 ^J
Arsenic, dissolved	11/20/2017	0
Arsenic, total	11/20/2017	0
Cadmium, dissolved	11/20/2017	0
Cadmium, total	11/20/2017	0
Copper, dissolved	11/20/2017	7
Copper, total	11/20/2017	22
Lead, dissolved	11/20/2017	0
Lead, total	11/20/2017	144
Mercury	11/20/2017	30
Methyl Mercury as Mercury	11/20/2017	71 ^J
Nickel, dissolved	11/20/2017	8 ^J
Nickel, total	11/20/2017	25
Selenium, dissolved	11/20/2017	0
Selenium, total	11/20/2017	0
Zinc, dissolved	11/20/2017	1 ^J
Zinc, total	11/20/2017	58 ^J

^JResult falls between MDL and RL

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APPENDIX D
Bacteria Results for UARP Reservoir and Riverine Sites



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Table D-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	<i>E. coli</i> geometric mean ¹
	Fecal coliform	<i>E. coli</i>	Fecal coliform	<i>E. coli</i>	Fecal coliform	<i>E. coli</i>	Fecal coliform	<i>E. coli</i>	Fecal coliform	<i>E. coli</i>		
Bac-5-GCR	14.0	42.6	23.0	1.0	2.0	1.0	<1.8	5.2	<1.8	<1	3.5	2.6
Bac-6-GCR	17.0	4.1	<1.8	<1	<1.8	2.0	<1.8	2.0	13.0	37.4	2.8	3.1
Bac-7-UVR	1600.0	344.8	23.0	20.3	13.0	21.1	49.0	26.2	2.0	<1	34.2	18.1
Bac-8-UVR	140.0	111.2	33.0	27.9	13.0	2.0	110	12.0	2.0	<1	26.6	8.2
Bac-9-UVR	130.0	53.8	49.0	7.4	7.8	20.1	79.0	47.1	4.5	1.0	28.1	13.0
Bac-10-UVR	13.0	187.2	<1.8	<1	4.5	3.1	4.5	1.0	<1.8	<1	2.9	2.7
Bac-11-JR	79.0	10.9	2.0	2.0	13.0	49.5	13.0	10.9	350.0	90.7	24.8	16.1
Bac-12-IHR	7.8	7.5	<1.8	<1	4.5	1.0	<1.8	1.0	<1.8	<1	1.9	1.1
Bac-13-IHR	33.0	21.6	22.0	10.9	2.0	3.1	1600.0	435.2	4.5	<1	25.3	11.0
Bac-14-BCR	2.0	1.0	2.0	3.0	4.0	1.0	<1.8	<1	<1.8	1.0	1.7	1.1
Bac-15-SCR	13.0	9.7	4.5	6.3	14.0	14.8	49.0	18.5	49.0	111.9	18.1	18.0
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



Table D-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	<i>E. coli</i> geometric mean ¹
	Fecal coliform	<i>E. coli</i>	Fecal coliform	<i>E. coli</i>	Fecal coliform	<i>E. coli</i>	Fecal coliform	<i>E. coli</i>	Fecal coliform	<i>E. coli</i>		
Bac-1-BI	21.0	35.5	4.0	2.0	4.0	5.2	4.5	1.0	<1.8	1.0	4.2	3.3
Bac-2-BI	13.0	4.1	<1.8	1.0	<1.8	3.0	<1.8	<1	<1.8	<1	1.5	1.3
Bac-3-LL	2.0	2.0	<1.8	<1	2.5	<1	<1.8	<1	6.8	5.2	1.9	1.1
Bac-4-LL	4.0	1.0	<1.8	<1	<1.8	<1	<1.8	<1	<1.8	<1	1.2	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 E
***In situ* Field Data Sheets**

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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: B. HITCH & M. DAVIS

Site Location: <u>IS-10-SFSC</u>						GPS: _____	
Date: <u>2/7/17</u>						Time: <u>11:30</u>	
Photos: _____						Weather: <u>Heavy rain / overcast</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>3.75</u>	<u>9.95</u>	<u>75.7</u>	<u>10</u>	<u>0.017</u>	<u>7.47</u>	<u>1.9</u>	

Site Location: <u>IS-14-SC</u>						GPS: _____	
Date: <u>2/7/17</u>						Time: <u>13:20</u>	
Photos: _____						Weather: <u>Heavy rain / overcast</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>5.02</u>	<u>10.24</u>	<u>80.2</u>	<u>11</u>	<u>0.018</u>	<u>6.92</u>	<u>78.7</u>	

Site Location: <u>IS-13-SC</u>						GPS: _____	
Date: <u>2/7/17</u>						Time: <u>13:40</u>	
Photos: _____						Weather: <u>Heavy rain / overcast</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>5.05</u>	<u>10.44</u>	<u>81.8</u>	<u>11</u>	<u>0.018</u>	<u>6.7</u>	<u>52.8</u>	


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

 Page 2 of 3

 Instrument(s) used: YSI 6920

 Crew: B. HITCH - M. DAVIS

Site Location: <u>IS-11-SFSC</u>		GPS: _____					
Date: <u>2/7/17</u>		Time: <u>14:41</u>					
Photos: _____		Weather: <u>Heavy rain / overcast</u>					
Notes: _____		_____					
In situ							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>3.10</u>	<u>9.81</u>	<u>73.0</u>	<u>10</u>	<u>0.017</u>	<u>7.25</u>	<u>24.6</u>	

Site Location: <u>IS-12-SC</u>		GPS: _____					
Date: <u>2/7/17</u>		Time: <u>15:03</u>					
Photos: _____		Weather: <u>Heavy rain / overcast</u>					
Notes: _____		_____					
In situ							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>3.25</u>	<u>10.35</u>	<u>77.4</u>	<u>9</u>	<u>0.015</u>	<u>7.17</u>	<u>20.4</u>	

Site Location: <u>IS-19-SFAR</u>		GPS: _____					
Date: <u>2/8/17</u>		Time: <u>09:35</u>					
Photos: _____		Weather: <u>Heavy rain</u>					
Notes: _____		_____					
In situ							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>6.02</u>	<u>12.88</u>	<u>104.0</u>	<u>18</u>	<u>0.028</u>	<u>6.06</u>	<u>63.9</u>	



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

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Instrument(s) used: YSI 6920

Crew: B. HITCH + M. DAVIS

Site Location: <u>IS-18-SRAB</u>		GPS: _____					
Date: <u>2/8/17</u>		Time: <u>10:30</u>					
Photos: _____		Weather: <u>Heavy rain</u>					
Notes: _____		_____					
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>7.22</u>	<u>12.22</u>	<u>101.3</u>	<u>20</u>	<u>0.030</u>	<u>6.25</u>	<u>59.3</u>	

Site Location: _____		GPS: _____					
Date: _____		Time: _____					
Photos: _____		Weather: _____					
Notes: _____		_____					
<i>In situ</i>							
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: _____		_____					
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	


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

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 Instrument(s) used: YSI 6920

 Crew: BTH + KKC

Site Location: <u>IS-10-SFSC</u>						GPS: _____	
Date: <u>5/1/17</u>						Time: <u>10:30 AM</u>	
Photos: _____						Weather: <u>Sunny, Warm</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>4.77</u>	<u>10.68</u>	<u>83.2</u>	<u>0.014</u>	<u>9.0</u>	<u>6.80</u>	<u>1.1</u>	

Site Location: <u>IS-11-SFSC</u>						GPS: _____	
Date: <u>5/1/17</u>						Time: <u>12:05</u>	
Photos: _____						Weather: <u>Sunny, Warm</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>8.73</u>	<u>10.15</u>	<u>87.2</u>	<u>0.017</u>	<u>11.0</u>	<u>7.05</u>	<u>0.9</u>	

Site Location: <u>IS-12-SC</u>						GPS: _____	
Date: <u>5/1/17</u>						Time: <u>12:50</u>	
Photos: _____						Weather: <u>Sunny, Warm</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>6.93</u>	<u>10.71</u>	<u>88.1</u>	<u>0.015</u>	<u>10.0</u>	<u>6.99</u>	<u>0.7</u>	



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

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Instrument(s) used: 751 6920 Crew: KKC + BTH

Site Location: <u>IS-6-GC</u>				GPS: _____			
Date: <u>5/2/17</u>				Time: <u>10:15</u>			
Photos: _____				Weather: <u>Sunny, Warm</u>			
Notes: _____				_____			
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
3.64	10.98	82.9	0.011	6.0	5.9	0.5	

Site Location: <u>IS-9-600</u>				GPS: _____			
Date: <u>5/2/17</u>				Time: <u>10:55</u>			
Photos: _____				Weather: <u>Sunny, Warm</u>			
Notes: _____				_____			
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
3.48	11.33	85.3	0.011	7	5.93	1.1	

Site Location: <u>IS-8-SFR</u>				GPS: _____			
Date: <u>5/2/17</u>				Time: <u>11:50</u>			
Photos: _____				Weather: <u>Sunny, Warm</u>			
Notes: _____				_____			
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
4.85	11.02	85.9	0.009	6	6.66	0.2	


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

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 Instrument(s) used: YSI 6920 Crew: KRC + BTH

Site Location: <u>IS-7-SFRK</u>						GPS:	
Date: <u>5/2/17</u>						Time: <u>12:25</u>	
Photos: _____						Weather: <u>sunny - 42-51</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>5.51</u>	<u>10.65</u>	<u>84.4</u>	<u>0.011</u>	<u>7</u>	<u>6.81</u>	<u>0.5</u>	

Site Location: <u>IS-5-GC</u>						GPS:	
Date: <u>5/5/17</u>						Time: <u>9:35</u>	
Photos: _____						Weather: <u>Sunny - 42-48</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>3.58</u>	<u>10.97</u>	<u>82.7</u>	<u>0.010</u>	<u>6</u>	<u>6.54</u>	<u>1.3</u>	

Site Location: <u>IS-18-SFAR</u>						GPS:	
Date: <u>5/2/17</u>						Time: <u>11:50</u>	
Photos: _____						Weather: <u>sunny 42-51</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>11.20</u>	<u>11.14</u>	<u>101.4</u>	<u>0.031</u>	<u>23</u>	<u>7.22</u>	<u>2.5</u>	



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

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Instrument(s) used: 751 6920 Crew: BTH + KCC

Site Location: <u>IS-19-SFAR</u>				GPS:			
Date: <u>5/3/17</u>				Time: <u>13:20</u>			
Photos: _____				Weather: <u>Sunny warm</u>			
Notes: _____				_____			
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>9.02</u>	<u>10.72</u>	<u>95.7</u>	<u>0.013</u>	<u>10</u>	<u>7.02</u>	<u>1.2</u>	

Site Location: <u>IS 14 SC</u>				GPS:			
Date: <u>5/18/17</u>				Time: <u>8:45</u>			
Photos: _____				Weather: <u>Sunny cool</u>			
Notes: _____				_____			
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>8.57</u>	<u>10.99</u>	<u>94.1</u>	<u>0.014</u>	<u>10</u>	<u>6.47</u>	<u>1.3</u>	

Site Location: <u>IS-13-SC</u>				GPS:			
Date: <u>5/19/17</u>				Time: <u>9:37</u>			
Photos: _____				Weather: _____			
Notes: _____				_____			
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>8.85</u>	<u>10.81</u>	<u>97.2</u>	<u>0.014</u>	<u>10</u>	<u>7.01</u>	<u>1.8</u>	


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

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 Instrument(s) used: YSI 6920

 Crew: BTH + KKC

Site Location: <u>IS-17-BC</u>		GPS: _____					
Date: <u>5/8/17</u>		Time: <u>11:25</u>					
Photos: _____		Weather: _____					
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>10.27</u>	<u>10.01</u>	<u>89.5</u>	<u>0.034</u>	<u>24</u>	<u>6.84</u>	<u>13.7</u>	

Site Location: <u>IS-15-SAR</u>		GPS: _____					
Date: <u>5/8/17</u>		Time: <u>2:20</u>					
Photos: _____		Weather: _____					
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>8.71</u>	<u>11.27</u>	<u>97.0</u>	<u>0.027</u>	<u>18</u>	<u>7.21</u>	<u>4.1</u>	

Site Location: <u>IS-16-SAR</u>		GPS: _____					
Date: <u>5/8/17</u>		Time: _____					
Photos: _____		Weather: _____					
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>9.17</u>	<u>10.78</u>	<u>94.2</u>	<u>0.023</u>	<u>16</u>	<u>7.42</u>	<u>5.4</u>	
					<u>7.33</u>		



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

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Instrument(s) used: YSI 6920

Crew: BTH + kkr

Site Location: <u>UARP-IS-3-LRP</u>		GPS: _____					
Date: <u>8/2/17</u>		Time: <u>9:45</u>					
Photos: _____		Weather: <u>Sunny, Windy, part cloudy</u>					
Notes: _____		_____					
In situ							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>17.96</u>	<u>7.45</u>	<u>82.1</u>	<u>12</u>	<u>9</u>	<u>8.32</u>	<u>0.1</u>	<u>Incorrect units reported for conductivity - should be 0.012 µS/cm² <i>UAG</i></u>

Site Location: <u>UARP-IS-1-LRP</u>		GPS: _____					
Date: <u>8/9/17</u>		Time: <u>10:30</u>					
Photos: _____		Weather: <u>Sunny, warm</u>					
Notes: _____		_____					
In situ							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>16.95</u>	<u>7.82</u>	<u>80.8</u>	<u>0.011</u>	<u>9</u>	<u>7.16</u>	<u>0.9</u>	

Site Location: <u>UARP-IS-2-LRP</u>		GPS: _____					
Date: <u>8/9/17</u>		Time: <u>13:00</u>					
Photos: _____		Weather: <u>Sunny, warm</u>					
Notes: _____		_____					
In situ							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>19.74</u>	<u>7.95</u>	<u>82.6</u>	<u>0.009</u>	<u>9</u>	<u>6.79</u>	<u>0.9</u>	


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

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 Instrument(s) used: YSI 6920

 Crew: KKC + BTH + MND

Site Location: <u>IS-10-SFSC</u>						GPS: _____	
Date: <u>8/10/17</u>						Time: <u>1410</u>	
Photos: _____						Weather: _____	
Notes: <u>Sunny, Hot, Slight breeze</u>							
In situ							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>7.79</u>	<u>10.06</u>	<u>84.5</u>	<u>0.011</u>	<u>8</u>	<u>7.76</u>	<u>2.0</u>	

Site Location: <u>IS-17-BC</u>						GPS: _____	
Date: <u>8/14/17</u>						Time: <u>1430</u>	
Photos: _____						Weather: <u>clear, warm</u>	
Notes: _____							
In situ							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>18.56</u>	<u>8.47</u>	<u>90.6</u>	<u>0.025</u>	<u>22</u>	<u>8.04</u>	<u>5.8</u>	

Site Location: <u>IS-14-5C</u>						GPS: _____	
Date: <u>8/15/17</u>						Time: <u>1010</u>	
Photos: _____						Weather: <u>clear, cool</u>	
Notes: _____							
In situ							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>10.45</u>	<u>10.14</u>	<u>90.8</u>	<u>0.015</u>	<u>11</u>	<u>7.22</u>	<u>1.2</u>	



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

Instrument(s) used: YSI 6920 Crew: BTH MND

Site Location: <u>IS-13-SC</u>				GPS: _____			
Date: <u>8/15/17</u>				Time: <u>1100</u>			
Photos: _____				Weather: _____			
Notes: _____				_____			
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>15.39</u>	<u>9.06</u>	<u>90.6</u>	<u>0.016</u>	<u>13</u>	<u>6.66</u>	<u>1.1</u>	

Site Location: <u>IS-11-SFSC</u>				GPS: _____			
Date: <u>8/15/17</u>				Time: <u>1410</u>			
Photos: _____				Weather: <u>clear warm</u>			
Notes: _____				_____			
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>19.52</u>	<u>7.98</u>	<u>87.0</u>	<u>0.015</u>	<u>14</u>	<u>7.67</u>	<u>1.0</u>	

Site Location: <u>IS-12-SC</u>				GPS: _____			
Date: <u>8/16/17</u>				Time: <u>0845</u>			
Photos: _____				Weather: <u>clear, cool</u>			
Notes: _____				_____			
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>8.44</u>	<u>10.02</u>	<u>85.5</u>	<u>0.010</u>	<u>7</u>	<u>6.90</u>	<u>2.6</u>	


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

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 Instrument(s) used: YSI 6920 Crew: BHJ mwb

Site Location: <u>IS-5-GC</u>				GPS: _____			
Date: <u>8/16/17</u>				Time: <u>1200</u>			
Photos: _____				Weather: <u>clear, warm</u>			
Notes: _____				_____			
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>15.21</u>	<u>8.47</u>	<u>84.3</u>	<u>0.009</u>	<u>8</u>	<u>7.07</u>	<u>0.6</u>	

Site Location: <u>IS-10-SFAR</u>				GPS: _____			
Date: <u>8/16/17</u>				Time: <u>1435</u>			
Photos: _____				Weather: <u>clear, warm</u>			
Notes: _____				_____			
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>19.67</u>	<u>9.35</u>	<u>102.2</u>	<u>0.031</u>	<u>28</u>	<u>7.29</u>	<u>0.7</u>	

Site Location: <u>IS-6-GC</u>				GPS: _____			
Date: <u>8/17/17</u>				Time: <u>0845</u>			
Photos: _____				Weather: <u>clear, warm</u>			
Notes: _____				_____			
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>15.77</u>	<u>8.36</u>	<u>84.3</u>	<u>0.008</u>	<u>7</u>	<u>6.49</u>	<u>0.7</u>	



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

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Instrument(s) used: VISI 6730 Crew: BTH + MAD

Site Location: <u>IS-4-GC</u>						GPS: _____	
Date: <u>8/17/17</u>						Time: <u>0930</u>	
Photos: _____						Weather: <u>clear, cool</u>	
Notes: _____						_____	
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>10.81</u>	<u>8.97</u>	<u>81.0</u>	<u>0.008</u>	<u>6</u>	<u>6.79</u>	<u>0.8</u>	

Site Location: <u>IS-9-GCC</u>						GPS: _____	
Date: <u>8/17/17</u>						Time: <u>1010</u>	
Photos: _____						Weather: <u>clear, warm</u>	
Notes: _____						_____	
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>15.38</u>	<u>8.45</u>	<u>84.5</u>	<u>0.008</u>	<u>6</u>	<u>6.67</u>	<u>0.9</u>	

Site Location: <u>IS-7-SFRR</u>						GPS: _____	
Date: <u>8/17/17</u>						Time: <u>1040</u>	
Photos: _____						Weather: <u>clear, cool</u>	
Notes: _____						_____	
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>14.94</u>	<u>8.65</u>	<u>85.6</u>	<u>0.009</u>	<u>7</u>	<u>7.11</u>	<u>0.7</u>	



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

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Instrument(s) used: YSI 6920 Crew: BTH MND

Site Location: <u>IS-8-SFRR</u>						GPS: _____	
Date: <u>8/17/17</u>						Time: <u>1100</u>	
Photos: _____						Weather: <u>Clear, cool</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
15.17	8.60	85.6	0.009	7	7.15	0.6	

Site Location: <u>IS-19-SFAR</u>						GPS: _____	
Date: <u>8/2/17</u>						Time: <u>1400</u>	
Photos: _____						Weather: <u>Sunny, warm</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
13.70	9.98	96.2	0.031	16	7.32	1.6	

Site Location: _____						GPS: _____	
Date: _____						Time: _____	
Photos: _____						Weather: _____	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	



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

Instrument(s) used: YSI 520 Crew: STH + EES

Site Location: <u>IS-1-RR</u>						GPS: _____	
Date: <u>11/1/17</u>						Time: <u>0915</u>	
Photos: _____						Weather: <u>cool, sunny</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>8.88</u>	<u>8.37</u>	<u>72.2</u>	<u>9.2</u>	<u>0.013</u>	<u>6.77</u>	<u>0.38</u>	

Site Location: <u>IS-2-RR</u>						GPS: _____	
Date: <u>11/1/17</u>						Time: <u>1103</u>	
Photos: _____						Weather: <u>cool, sunny</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>8.80</u>	<u>9.29</u>	<u>79.9</u>	<u>5.7</u>	<u>0.008</u>	<u>6.97</u>	<u>0.2</u>	

Site Location: <u>IS-3-RR</u>						GPS: _____	
Date: <u>11/1/17</u>						Time: <u>1230</u>	
Photos: _____						Weather: <u>cool, sunny</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>9.95</u>	<u>8.62</u>	<u>76.3</u>	<u>6.3</u>	<u>0.009</u>	<u>6.75</u>	<u>0.18</u>	


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

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 Instrument(s) used: YSI EYO

 Crew: BTH MND

Site Location: <u>IS-4-GC</u>				GPS: _____			
Date: <u>11/2/17</u>				Time: <u>0845</u>			
Photos: _____				Weather: <u>overcast, cold</u>			
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>9.97</u>	<u>9.22</u>	<u>81.7</u>	<u>56</u>	<u>0.008</u>	<u>6.82</u>	<u>0.5</u>	

Site Location: <u>IS-5-GC</u>				GPS: _____			
Date: <u>11/2/17</u>				Time: <u>0955</u>			
Photos: _____				Weather: <u>overcast, cold</u>			
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>6.84</u>	<u>10.29</u>	<u>84.4</u>	<u>6.3</u>	<u>0.010</u>	<u>6.88</u>	<u>0.50</u>	

Site Location: <u>IS-6-GC</u>				GPS: _____			
Date: <u>11/2/17</u>				Time: <u>1030</u>			
Photos: _____				Weather: <u>overcast, cold</u>			
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>8.58</u>	<u>9.61</u>	<u>82.3</u>	<u>7.7</u>	<u>0.011</u>	<u>6.79</u>	<u>0.44</u>	



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

Instrument(s) used: YSI EXO Crew: Brian Kicc

Site Location: <u>IS-18 SFAR</u>						GPS: _____	
Date: <u>11/6/17</u>						Time: <u>1110</u>	
Photos: _____						Weather: <u>cloudy, cool</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>17.25</u>	<u>10.86</u>	<u>99.1</u>	<u>173</u>	<u>0.023</u>	<u>7.31</u>	<u>0.94</u>	

Site Location: <u>IS-16 SFAR</u>						GPS: _____	
Date: <u>11/6/17</u>						Time: <u>1302</u>	
Photos: _____						Weather: <u>partly cloudy, cool</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>9.76</u>	<u>11.47</u>	<u>101.1</u>	<u>278</u>	<u>0.039</u>	<u>7.33</u>	<u>0.57</u>	

Site Location: <u>IS-15 SFAR</u>						GPS: _____	
Date: <u>11/6/17</u>						Time: <u>1340</u>	
Photos: _____						Weather: <u>partly cloudy, cool</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>3.94</u>	<u>11.17</u>	<u>96.6</u>	<u>35.2</u>	<u>0.051</u>	<u>7.61</u>	<u>0.55</u>	


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

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 Instrument(s) used: YSI Eyo

 Crew: BTH KEC

Site Location: <u>IS-9-GCC</u>						GPS: _____	
Date: <u>11/7/17</u>						Time: <u>0945</u>	
Photos: _____						Weather: <u>clear, mild</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>7.60</u>	<u>9.58</u>	<u>80.1</u>	<u>93</u>	<u>0.014</u>	<u>6.7</u>	<u>0.45</u>	

Site Location: <u>IS-7-SFR</u>						GPS: _____	
Date: <u>11/7/17</u>						Time: <u>1015</u>	
Photos: _____						Weather: <u>clear, mild</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>4.34</u>	<u>11.31</u>	<u>87.0</u>	<u>14.4</u>	<u>0.024</u>	<u>7.28</u>	<u>0.37</u>	

Site Location: <u>IS-8-SFR</u>						GPS: _____	
Date: <u>11/7/17</u>						Time: <u>1100</u>	
Photos: _____						Weather: <u>cold clear</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>4.94</u>	<u>11.21</u>	<u>87.7</u>	<u>10.8</u>	<u>0.018</u>	<u>7.12</u>	<u>0.33</u>	



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

Instrument(s) used: 751 Exo Crew: Britt KCC

Site Location: <u>IS-10-SFSC</u>						GPS: _____	
Date: <u>11/7/17</u>						Time: <u>1245</u>	
Photos: _____						Weather: <u>clear, cool</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>8.40</u>	<u>9.32</u>	<u>83.6</u>	<u>7.9</u>	<u>0.012</u>	<u>6.74</u>	<u>0.99</u>	

Site Location: <u>IS-19-SFAR</u>						GPS: _____	
Date: <u>11/7/17</u>						Time: <u>1405</u>	
Photos: _____						Weather: <u>clear, cool</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>10.74</u>	<u>10.82</u>	<u>97.5</u>	<u>15.8</u>	<u>0.022</u>	<u>7.22</u>	<u>0.76</u>	

Site Location: <u>IC-11-SFSC</u>						GPS: _____	
Date: <u>11/8/17</u>						Time: <u>1053</u>	
Photos: _____						Weather: <u>overcast, cool</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>5.05</u>	<u>17.32</u>	<u>88.8</u>	<u>10.9</u>	<u>0.018</u>	<u>7.25</u>	<u>0.10</u>	



Stillwater Sciences

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

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 Instrument(s) used: YSI 510 Crew: _____

Site Location: <u>IS-12-SC</u>						GPS: _____	
Date: <u>11/8/17</u>						Time: <u>1120</u>	
Photos: _____						Weather: <u>overcast cold</u>	
Notes: _____						_____	
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>9.08</u>	<u>9.75</u>	<u>84.5</u>	<u>8.8</u>	<u>0.013</u>	<u>7.01</u>	<u>0.12</u>	

Site Location: _____						GPS: _____	
Date: _____						Time: _____	
Photos: _____						Weather: _____	
Notes: _____						_____	
<i>In situ</i>							
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: _____						_____	
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	



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

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Instrument(s) used: YSI 870

Crew: BPH, MLD

Site Location: <u>IS-10-SFSC</u>						GPS: _____	
Date: <u>11/15/17</u>						Time: <u>1100</u>	
Photos: _____						Weather: <u>cloudy, 10.1</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>8.35</u>	<u>9.67</u>	<u>82.4</u>	<u>83</u>	<u>0.012</u>	<u>6.85</u>	<u>0.94</u>	

Site Location: <u>IS-11-SC</u>						GPS: _____	
Date: <u>11/16/17</u>						Time: <u>1200</u>	
Photos: _____						Weather: <u>rain, 10.1</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>6.64</u>	<u>2.73</u>	<u>81.8</u>	<u>71</u>	<u>0.011</u>	<u>6.94</u>	<u>0.69</u>	

Site Location: <u>IS-9-SC</u>						GPS: _____	
Date: <u>11/16/17</u>						Time: <u>1215</u>	
Photos: _____						Weather: <u>rain, cold</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>6.73</u>	<u>1.05</u>	<u>80.1</u>	<u>59</u>	<u>0.004</u>	<u>6.86</u>	<u>0.84</u>	


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

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Instrument(s) used: _____

 Crew: SMU 18K

Site Location: <u>IS 5 GC</u>						GPS: _____	
Date: <u>11/20/17</u>						Time: <u>0928</u>	
Photos: _____						Weather: <u>overcast, cold</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>4.5</u>	<u>10.88</u>	<u>84.1</u>	<u>89</u>	<u>0.018</u>	<u>6.78</u>	<u>0.11</u>	

Site Location: <u>IS 5 SFAR</u>						GPS: _____	
Date: <u>11/20/17</u>						Time: <u>1030</u>	
Photos: _____						Weather: <u>overcast, slight rain</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>4.80</u>	<u>11.04</u>	<u>86.1</u>	<u>81.1</u>	<u>0.016</u>	<u>6.84</u>	<u>0.02</u>	

Site Location: <u>IS 7 SFAR</u>						GPS: _____	
Date: <u>11/20/17</u>						Time: <u>045</u>	
Photos: _____						Weather: <u>overcast, mild</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>4.22</u>	<u>10.88</u>	<u>85.4</u>	<u>77.2</u>	<u>0.018</u>	<u>7.16</u>	<u>0.08</u>	



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

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Instrument(s) used: _____ Crew: _____

Site Location: <u>ES-6-60C</u>						GPS: _____	
Date: <u>11/20/18</u>						Time: <u>1:30</u>	
Photos: _____						Weather: <u>overcast, light rain</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>16.24</u>	<u>12.19</u>	<u>86.8</u>	<u>126</u>	<u>0.126</u>	<u>7.24</u>	<u>0.07</u>	

Site Location: <u>ES-6-60C</u>						GPS: _____	
Date: <u>11/20/18</u>						Time: <u>1:35</u>	
Photos: _____						Weather: <u>overcast, light rain</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>18.52</u>	<u>9.89</u>	<u>84.9</u>	<u>97</u>	<u>0.097</u>	<u>7.04</u>	<u>0.21</u>	

Site Location: <u>ES-6-60C</u>						GPS: _____	
Date: <u>11/20/18</u>						Time: <u>1:52</u>	
Photos: _____						Weather: <u>overcast</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>19.42</u>	<u>10.27</u>	<u>83.9</u>	<u>87</u>	<u>0.087</u>	<u>6.60</u>	<u>0.32</u>	


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

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 Instrument(s) used: YSI 590 Crew: STW, JBC

Site Location: <u>IS-12 SKAR</u>				GPS: _____			
Date: <u>10/17/17</u>				Time: <u>1423</u>			
Photos: _____				Weather: <u>clear, sunny, 64°</u>			
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>9.145</u>	<u>11.82</u>	<u>99.0</u>	<u>20.3</u>	<u>0.029</u>	<u>7.41</u>	<u>1.74</u>	

Site Location: <u>IS-14 SKAR</u>				GPS: _____			
Date: <u>11/25/17</u>				Time: <u>1327</u>			
Photos: _____				Weather: <u>Sunny, 61°</u>			
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>8.07</u>	<u>10.76</u>	<u>91.6</u>	<u>15.3</u>	<u>0.027</u>	<u>7.06</u>	<u>5.16</u>	

Site Location: _____				GPS: _____			
Date: _____				Time: _____			
Photos: _____				Weather: _____			
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	



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

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Instrument(s) used: 1151 DO Crew: BOB LEE

Site Location: <u>25-19-SAR</u>						GPS: _____	
Date: <u>11/29/17</u>						Time: <u>1400</u>	
Photos: _____						Weather: <u>clear cold</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>17.95</u>	<u>11.42</u>	<u>101.0</u>	<u>158</u>	<u>0.022</u>	<u>7.25</u>	<u>1.31</u>	

Site Location: <u>25-12-BC</u>						GPS: _____	
Date: <u>11/28/17</u>						Time: <u>1150</u>	
Photos: _____						Weather: <u>sunny cold</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>9.53</u>	<u>10.51</u>	<u>92.0</u>	<u>19.9</u>	<u>0.028</u>	<u>7.18</u>	<u>49.63</u>	

Site Location: <u>25-15-SAR</u>						GPS: _____	
Date: <u>11/28/17</u>						Time: <u>1255</u>	
Photos: _____						Weather: <u>sunny mild</u>	
Notes: _____							
<i>In situ</i>							
Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Notes
(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)	
<u>5.27</u>	<u>12.82</u>	<u>97.9</u>	<u>25.4</u>	<u>0.030</u>	<u>7.31</u>	<u>1.09</u>	



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

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Date: 5/9/17
 Time: 10:27

Reservoir - Water Quality Vertical Profiles

Site Location: R-15-9
 Lat/Long (NAD83): _____

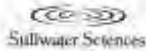
Instrument used: YSI 6920
 Water depth: 86 ft.

Personnel: BTH MND

Secchi (ft): 15 ft.

Site Notes: _____

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		11.05	9.05	82.7	0.015	11	7.42	1.1		
3.3	1	10.86	9.58	86.7	0.014	10	7.31	1.2		
6.6	2	9.93	9.71	85.7	0.013	9	7.24	1.2		
9.8	3	8.66	10.06	86.3	0.012	8	7.19	1.2		
13.1	4	7.33	10.25	85.1	0.011	7	7.15	1.2		
16.4	5	7.07	10.34	85.4	0.011	7	7.11	1.2		
19.7	6	6.07	10.46	84.2	0.011	7	7.14	1.5		
23.0	7	5.73	10.53	83.9	0.011	7	7.10	1.3		
26.2	8	5.69	10.56	84.2	0.011	7	7.10	1.3		
29.5	9	5.54	10.58	83.9	0.011	7	7.08	1.3		
32.8	10	5.33	10.59	83.6	0.011	7	7.06	1.3		
36.1	11	5.18	10.61	83.4	0.011	7	6.96	1.3		
39.4	12	5.06	10.60	83.1	0.011	7	6.94	1.4		
42.7	13	5.01	10.60	83.0	0.011	7	7.00	1.7		
46.0	14	4.96	10.60	82.9	0.012	7	7.00	1.5		
49.2	15	4.92	10.58	82.6	0.012	7	6.95	1.5		
52.5	16	4.84	10.57	82.4	0.012	7	7.01	1.5		
55.8	17	4.78	10.56	82.2	0.012	8	6.94	1.5		
59.1	18	4.72	10.51	81.7	0.013	8	6.97	1.4		
62.3	19	4.69	10.43	81.0	0.014	8	6.98	1.4		
65.6	20	4.69	10.37	80.5	0.014	8	6.97	1.3		
68.9	21	4.68	10.33	80.2	0.014	8	6.97	1.3		
72.2	22	4.68	10.28	79.8	0.014	8	6.94	1.3		
75.5	23	4.68	10.25	79.5	0.014	9	6.96	1.4		
78.7	24	4.68	10.22	79.3	0.014	9	6.96	1.3		
82.0	25	4.67	10.20	79.2	0.014	9	6.96	38.2		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									



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

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Date: 5/9/17
 Time: 1115

Reservoir - Water Quality Vertical Profiles

Site Location: R-15-10
 Lat/Long (NAD83): _____

Instrument used: YSI 6920
 Water depth: 59.5 ft

Personnel: BTH MAR

Secchi (ft): 15

Site Notes: _____

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(p.u.)	(NTU)		
surface		11.57	9.00	82.7	0.020	11	7.28	1.4		
3.3	1	11.46	9.51	87.4	0.014	11	7.20	1.3		
6.6	2	10.86	9.69	87.5	0.014	10	7.16	1.3		
9.8	3	10.51	9.76	87.5	0.013	10	7.12	1.4		
13.1	4	9.38	9.89	86.4	0.013	9	7.10	1.3		
16.4	5	8.98	10.05	86.9	0.012	8	7.09	1.4		
19.7	6	8.81	10.13	87.3	0.012	8	7.06	1.4		
23.0	7	8.32	10.23	86.8	0.012	8	7.06	1.4		
26.2	8	7.34	10.35	85.8	0.016	11	7.00	1.3		
29.5	9	6.90	10.53	86.3	0.015	10	7.02	1.3		
32.8	10	6.55	10.48	85.3	0.011	7	7.05	1.4		
36.1	11	6.45	10.50	85.3	0.011	7	7.04	1.4		
39.4	12	5.98	10.53	84.5	0.010	7	7.04	1.4		
42.7	13	5.89	10.53	84.3	0.010	6	7.03	1.4		
45.9	14	5.73	10.53	83.9	0.011	7	7.01	1.4		
49.2	15	5.36	10.51	82.9	0.011	7	6.99	1.3		
52.5	16	5.22	10.47	82.9	0.011	7	6.98	1.3		
55.8	17	5.19	10.45	82.0	0.011	7	6.97	39.9		Bottom
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									



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

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Date: 5/9/17

Time: 1245

Reservoir - Water Quality Vertical Profiles

Site Location: R-15-11
 Lat/Long (NAD83): _____

Instrument used: YSI 6420

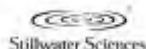
Water depth: 105

Personnel: BTM MND

Sacchi (ft): 16

Site Notes: _____

Depth		Temp (°C)	DO		Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
(ft)	(m)		(mg/L)	(%)						
surface		12.08	9.01	83.7	0.019	15	7.64	1.6		
3.3	1	11.64	9.59	88.3	0.017	12	7.58	1.4		
6.6	2	11.21	9.79	89.2	0.016	11	7.50	1.3		
9.8	3	11.15	9.85	89.6	0.015	11	7.41	1.3		
13.1	4	11.02	9.85	89.3	0.014	10	7.30	1.3		
16.4	5	8.76	10.16	85.7	0.013	9	7.23	1.2		
19.7	6	7.34	10.29	84.9	0.013	9	7.14	1.1		
23.0	7	6.75	10.40	84.9	0.013	8	7.11	1.5		
26.2	8	6.47	10.46	84.6	0.013	8	7.05	1.2		
29.5	9	5.95	10.52	84.4	0.017	11	7.00	1.3		
32.8	10	5.71	10.62	84.6	0.016	10	7.00	1.3		
36.1	11	5.55	10.52	83.5	0.013	8	6.99	1.3		
39.4	12	5.37	10.50	82.9	0.013	8	6.98	1.3		
42.7	13	5.21	10.45	82.1	0.013	8	6.97	1.2		
45.9	14	5.13	10.41	81.7	0.013	8	6.96	1.1		
49.2	15	5.05	10.38	81.3	0.013	8	6.94	1.1		
52.5	16	4.95	10.34	80.7	0.013	8	6.94	1.1		
55.8	17	4.80	10.30	80.2	0.013	8	6.95	1.1		
59.1	18	4.77	10.25	79.8	0.013	8	6.94	1.1		
62.3	19	4.75	10.22	79.4	0.013	8	6.92	1.1		
65.6	20	4.71	10.18	79.1	0.013	8	6.91	1.1		
68.9	21	4.70	10.17	79.0	0.016	10	6.85	1.1		
72.2	22	4.65	10.14	78.7	0.013	8	6.85	1.2		
75.5	23	4.62	10.10	78.3	0.013	8	6.82	1.1		
78.7	24	4.61	10.07	78.1	0.013	8	6.80	1.2		
82.0	25	4.61	10.05	77.8	0.013	8	6.80	1.2		
85.3	26	4.61	10.03	77.7	0.013	8	6.80	1.1		
88.6	27	4.59	10.01	77.5	0.013	8	6.77	1.2		
91.9	28	4.57	9.99	77.3	0.013	8	6.78	1.2		
95.1	29	4.56	9.97	77.1	0.013	8	6.79	711.2		Bottom
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									



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

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Date: 5/10/17
 Time: 0950

Reservoir - Water Quality Vertical Profiles

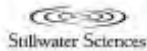
Site Location: R-15-5
 Lat/Long (NAD83): _____

Instrument used: YSI 6920
 Water depth: 71
 Secchi (ft): 16

Personnel: BTH MWD

Site Notes: _____

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		12.17	9.65	90.9	0.015	11	6.91	0.5		
3.3	1	12.06	9.76	90.7	0.014	11	6.90	0.6		
6.6	2	11.65	9.83	90.2	0.014	10	6.88	0.6		
9.8	3	10.58	9.95	88.9	0.013	10	6.92	0.6		
13.1	4	9.12	10.16	88.2	0.012	9	6.87	0.6		
16.4	5	8.80	10.25	88.2	0.012	8	6.81	0.6		
19.7	6	8.54	10.32	88.3	0.017	11	6.83	0.6		
23.0	7	8.13	10.37	87.8	0.011	8	7.00	0.7		
26.2	8	7.94	10.41	87.3	0.011	7	7.03	0.6		
29.5	9	7.16	10.49	86.8	0.011	7	7.02	0.6		
32.8	10	7.04	10.52	86.6	0.011	7	7.01	0.6		
36.1	11	6.92	10.53	86.6	0.011	7	7.00	0.5		
39.4	12	6.77	10.54	86.2	0.011	7	7.00	0.6		
42.7	13	6.65	10.55	86.1	0.011	7	7.00	0.6		
45.9	14	6.58	10.56	86.1	0.011	7	7.00	0.6		
49.2	15	5.93	10.59	84.7	0.010	7	7.10	0.6		
52.5	16	5.74	10.60	84.4	0.010	9	6.98	0.7		
55.8	17	5.67	10.63	84.5	0.014	9	6.92	0.7		
59.1	18	5.48	10.58	83.8	0.010	6	7.03	0.7		
62.3	19	5.46	10.56	83.7	0.010	6	7.02	0.7		
65.6	20	5.46	10.55	83.6	0.010	6	7.02	0.7		
68.9	21	5.46	10.55	83.5	0.011	7	7.02	96.7		Bottom
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									



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

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Date: 5/10/17
 Time: 1140

Reservoir - Water Quality Vertical Profiles

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

Instrument used: YSI 6520
 Water depth: 129

Personnel: BTH MNA

Secchi (ft): 17

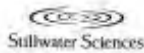
Site Notes: _____

Depth		Temp (°C)	DO		Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
(ft)	(m)		(mg/L)	(%)						
surface		13.43	8.85	85.1	0.019	15	7.24	0.9		
3.3	1	12.75	9.56	91.1	0.016	13	7.10	0.6		
6.6	2	11.52	10.01	88.9	0.016	11	7.07	0.8		
9.8	3	10.01	10.11	88.9	0.015	10	7.06	0.8		
13.1	4	9.10	10.33	89.4	0.014	10	7.03	0.7		
16.4	5	8.75	10.39	89.0	0.014	10	7.03	0.7		
19.7	6	8.47	10.48	89.3	0.014	9	7.02	0.7		
23.0	7	8.17	10.54	88.2	0.013	9	6.99	0.8		
26.2	8	7.43	10.49	86.9	0.013	8	6.99	0.8		
29.5	9	6.94	10.46	85.9	0.013	8	7.00	0.8		
32.8	10	6.75	10.46	85.3	0.013	11	6.97	0.7		
36.1	11	6.44	10.52	85.9	0.017	11	7.01	0.7		
39.4	12	6.35	10.55	84.7	0.013	8	7.02	0.6		
42.7	13	6.27	10.44	84.4	0.013	8	7.03	0.7		
45.9	14	6.17	10.42	84.0	0.013	8	7.02	0.8		
49.2	15	6.01	10.40	83.5	0.013	8	7.01	0.9		
52.5	16	5.99	10.39	83.4	0.012	8	7.00	0.8		
55.8	17	5.92	10.38	83.1	0.011	7	7.00	0.7		
59.1	18	5.73	10.37	82.7	0.012	7	7.00	0.7		
62.3	19	5.65	10.35	82.4	0.012	7	6.99	0.7		
65.6	20	5.60	10.34	82.2	0.012	7	6.98	0.7		
68.9	21	5.57	10.33	82.1	0.012	7	6.96	0.8		
72.2	22	5.47	10.31	81.7	0.012	8	6.96	0.8		
75.5	23	5.39	10.32	81.6	0.017	10	6.91	0.7		
78.7	24	5.38	10.33	81.7	0.012	7	6.95	0.7		
82.0	25	5.31	10.26	81.0	0.012	8	6.96	0.7		
85.3	26	5.28	10.25	80.8	0.012	8	6.95	0.7		
88.6	27	5.25	10.23	80.6	0.012	8	6.95	0.7		
91.9	28	5.22	10.21	80.4	0.012	8	6.92	0.7		
95.1	29	5.17	10.19	80.1	0.012	8	6.93	0.7		
98.4	30	5.08	10.18	79.8	0.013	8	6.92	0.7		
101.7	31	5.03	10.15	79.5	0.013	8	6.91	0.6		
105.0	32	4.97	10.12	79.1	0.013	8	6.91	0.6		
108.3	33	4.96	10.10	78.9	0.013	8	6.90	0.7		
111.5	34	4.92	10.08	78.7	0.013	8	6.88	0.7		



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	4.89	10.07	78.7	0.016	10	6.86	0.7		
118.1	38	4.88	10.04	78.4	0.013	8	6.87	0.7		
121.4	37	4.90	10.03	78.3	0.013	8	6.87	76.2		Bottom
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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Date: 5/10/17
 Time: 1035

Reservoir - Water Quality Vertical Profiles

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

Instrument used: YSI 6920
 Water depth: 142

Personnel: BTH MJD

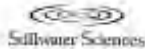
Secchi (ft): 22

Site Notes: _____

Depth		Temp (°C)	DO		Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
(ft)	(m)		(mg/L)	(%)						
surface		13.12	9.52	90.7	0.015	12	7.32	0.6		
3.3	1	12.25	9.70	90.6	0.014	11	7.24	0.7		
6.6	2	11.63	9.82	91.7	0.013	10	7.16	0.6		
9.8	3	10.90	10.05	90.5	0.013	10	7.15	0.7		
13.1	4	9.84	10.16	89.6	0.013	9	7.15	0.8		
16.4	5	9.61	10.26	90.0	0.012	9	7.16	0.7		
19.7	6	8.13	10.43	88.5	0.012	8	7.14	0.7		
23.0	7	7.38	10.51	87.3	0.016	11	7.15	0.7		
26.2	8	7.17	10.58	86.8	0.011	7	7.12	0.7		
29.5	9	7.09	10.53	86.8	0.011	7	7.08	0.8		
32.8	10	6.99	10.53	86.4	0.012	8	7.08	0.7		
36.1	11	6.73	10.54	86.2	0.011	7	7.08	0.7		
39.4	12	6.54	10.53	85.8	0.011	7	7.08	0.6		
42.7	13	6.21	10.55	85.1	0.011	7	7.08	0.7		
45.9	14	6.10	10.54	84.8	0.011	7	7.06	0.6		
49.2	15	5.99	10.53	84.2	0.011	7	7.07	0.6		
52.5	16	5.82	10.52	84.1	0.011	7	7.03	0.6		
55.8	17	5.74	10.51	83.8	0.011	7	7.04	0.7		
59.1	18	5.55	10.51	83.4	0.016	10	7.04	0.6		
62.3	19	5.43	10.55	83.6	0.015	7	7.07	0.6		
65.6	20	5.38	10.43	82.9	0.011	7	7.09	0.7		
68.9	21	5.37	10.47	82.7	0.011	7	7.07	0.6		
72.2	22	5.34	10.45	82.6	0.012	7	7.07	0.6		
75.5	23	5.33	10.44	82.4	0.012	7	7.06	0.6		
78.7	24	5.31	10.42	82.2	0.012	7	7.07	0.7		
82.0	25	5.23	10.40	81.9	0.012	7	7.07	0.7		
85.3	26	5.22	10.30	81.8	0.012	7	7.05	0.7		
88.6	27	5.19	10.38	81.7	0.012	7	7.05	0.6		
91.9	28	5.17	10.36	81.5	0.012	7	7.03	0.7		
95.1	29	5.17	10.35	81.4	0.012	10	7.02	0.7		
98.4	30	5.16	10.35	81.4	0.016	10	6.93	0.7		
101.7	31	5.16	10.33	81.2	0.012	8	6.97	0.7		
105.0	32	5.14	10.31	81.0	0.012	8	6.95	0.7		
108.3	33	5.11	10.28	80.7	0.013	8	6.95	0.6		
111.5	34	5.08	10.26	80.5	0.013	8	6.94	0.7		


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)	(a.u.)	(NTU)		
(CONTINUED)										
114.8	35	5.04	10.24	80.2	0.013	8	6.95	0.7		
118.1	36	5.02	10.20	79.8	0.013	8	6.94	0.7		
121.4	37	5.00	10.18	79.6	0.013	8	6.93	0.7		
124.7	38	4.97	10.16	79.4	0.013	8	6.92	0.7		
128.0	39	4.91	10.12	79.0	0.013	8	6.93	0.7		
131.2	40	4.91	10.09	78.8	0.013	8	6.92	0.6		
134.5	41	4.89	10.07	78.6	0.018	11	6.94	0.6		
137.8	42	4.88	10.08	78.7	0.017	10	6.95	0.6		
141.1	43	4.83	10.04	78.2	0.013	8	6.95	0.7		
144.4	44	4.83	10.01	78.0	0.013	8	6.92	0.6		
147.6	45	4.83	9.98	77.7	0.015	9	6.86	883.7		Bottom
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									


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

 Page 1 of 3

 Date: 5/11/17
 Time: 1130
Reservoir - Water Quality Vertical Profiles

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

 Instrument used: YSI 6920
 Water depth: _____

 Personnel: BTH MND

 Secchi (ft): 18

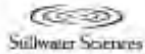
 Site Notes: Light wind, small waves

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		12.26	9.75	91.1	0.015	11	7.08	1.0		
3.3	1	12.19	9.18	91.3	0.015	11	7.08	1.0		
6.6	2	12.05	9.83	91.4	0.014	11	7.10	1.0		
9.8	3	11.74	9.86	91.0	0.013	10	7.08	1.0		
13.1	4	11.46	9.89	90.7	0.013	10	7.08	1.1		
16.4	5	11.23	9.92	90.3	0.013	10	7.06	1.1		
19.7	6	9.54	10.11	89.9	0.012	12	7.12	1.1		
23.0	7	8.74	10.45	88.8	0.012	8	7.08	1.1		
26.2	8	7.97	10.56	88.7	0.012	8	7.08	1.1		
29.5	9	7.46	10.67	88.8	0.012	8	7.01	1.1		
32.8	10	7.30	10.67	88.6	0.012	8	6.99	1.1		
36.1	11	7.10	10.67	88.1	0.012	8	6.99	1.1		
39.4	12	6.99	10.61	87.7	0.012	8	7.00	1.2		
42.7	13	6.72	10.64	86.7	0.012	8	7.00	1.1		
45.9	14	6.34	10.65	86.2	0.017	11	6.95	1.1		
49.2	15	6.11	10.71	86.3	0.016	8	7.01	0.8		
52.5	16	6.04	10.46	84.1	0.012	8	6.99	0.9		
55.8	17	5.99	10.43	83.7	0.012	8	6.98	0.9		
59.1	18	5.88	10.39	83.2	0.012	8	6.97	1.0		
62.3	19	5.86	10.38	83.0	0.012	8	6.93	0.9		
65.6	20	5.82	10.36	82.8	0.012	8	6.94	1.0		
68.9	21	5.77	10.34	82.6	0.012	8	6.95	1.0		
72.2	22	5.75	10.33	82.4	0.012	8	6.93	1.0		
75.5	23	5.65	10.32	82.1	0.012	8	6.94	1.0		
78.7	24	5.61	10.30	81.9	0.012	8	6.93	0.9		
82.0	25	5.59	10.29	81.7	0.013	8	6.90	0.9		
85.3	26	5.52	10.28	81.6	0.017	11	6.98	1.0		
88.6	27	5.48	10.29	81.3	0.013	8	6.92	1.0		
91.9	28	5.48	10.24	81.1	0.013	8	6.94	1.0		
95.1	29	5.45	10.22	80.9	0.013	8	6.94	1.0		
98.4	30	5.40	10.20	80.7	0.013	8	6.95	0.9		
101.7	31	5.34	10.20	80.5	0.013	8	6.94	0.9		
105.0	32	5.31	10.19	80.4	0.013	8	6.93	0.9		
108.3	33	5.27	10.19	80.3	0.013	8	6.93	1.0		
111.5	34	5.23	10.18	80.2	0.013	8	6.91	0.9		

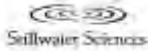


Reservoir - Water Quality Vertical Profiles

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	5.20	10.17	80.0	0.013	8	6.90	1.0		
118.1	36	5.18	10.16	79.9	0.013	8	6.92	1.0		
121.4	37	5.16	10.16	79.9	0.017	10	6.78	1.0		
124.7	38	5.16	10.15	79.8	0.013	8	6.75	0.9		
128.0	39	5.15	10.14	79.7	0.013	8	6.74	1.0		
131.2	40	5.13	10.13	79.6	0.013	8	6.74	1.0		
134.5	41	5.12	10.12	79.4	0.013	8	6.77	1.0		
137.8	42	5.10	10.11	79.4	0.013	8	6.76	1.0		
141.1	43	5.06	10.10	79.4	0.013	8	6.77	0.9		
144.4	44	5.06	10.09	79.1	0.013	8	6.77	1.1		
147.6	45	5.04	10.08	78.9	0.003	8	6.75	1.1		
150.9	46	5.01	10.07	78.9	0.013	8	6.77	1.0		
154.2	47	5.00	10.06	78.7	0.013	8	6.76	1.0		
157.5	48	4.97	10.04	78.5	0.013	8	6.76	1.1		
160.8	49	4.96	10.03	78.4	0.013	8	6.77	1.0		
164.0	50	4.90	10.05	78.5	0.016	10	6.81	1.0		
167.3	51	4.88	10.01	78.1	0.013	8	6.81	1.0		
170.6	52	4.85	9.99	78.0	0.013	8	6.81	1.0		
173.9	53	4.85	9.99	77.9	0.013	8	6.77	1.0		
177.2	54	4.84	9.97	77.7	0.013	8	6.78	0.9		
180.4	55	4.82	9.96	77.6	0.013	8	6.77	1.0		
183.7	56	4.77	9.95	77.4	0.013	8	6.74	1.0		
187.0	57	4.76	9.93	77.3	0.013	8	6.74	1.0		
190.3	58	4.75	9.92	77.2	0.013	8	6.77	1.0		
193.6	59	4.74	9.91	77.0	0.013	8	6.78	1.0		
196.8	60	4.72	9.90	76.9	0.013	8	6.77	1.0		
200.1	61	4.72	9.88	76.8	0.012	8	6.75	1.0		
203.4	62	4.72	9.88	76.8	0.017	11	6.74	1.0		
206.7	63	4.71	9.88	76.8	0.016	8	6.80	1.0		
210.0	64	4.71	9.84	76.5	0.013	8	6.81	1.1		
213.3	65	4.70	9.83	76.4	0.013	8	6.81	1.1		
216.5	66	4.70	9.82	76.3	0.013	8	6.81	1.1		
219.8	67	4.70	9.81	76.1	0.013	8	6.79	1.1		
223.1	68	4.70	9.80	76.1	0.013	8	6.78	1.1		
226.4	69	4.70	9.79	76.0	0.013	8	6.80	1.1		
229.7	70	4.70	9.78	76.0	0.013	8	6.80	1.1		
232.9	71	4.69	9.77	75.8	0.013	8	6.86	1.2		
236.2	72	4.69	9.76	75.8	0.013	8	6.76	1.1		


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)	(p.u.)	(NTU)		
(CONTINUED)										
239.5	73	4.69	9.75	75.1	0.013	8	6.77	1.1		
242.8	74	4.69	9.75	75.7	0.013	8	6.76	1.1		
246.1	75	4.68	9.73	75.6	0.012	4	6.74	1.1		
249.3	76	4.68	9.73	75.6	0.013	8	6.65	1.1		
252.6	77	4.67	9.73	75.6	0.013	8	6.69	1.3		
255.9	78	4.66	9.70	75.3	0.013	8	6.61	1.2		
259.2	79	4.65	9.68	75.1	0.014	8	6.53	1.3		pH 6.54
262.5	80	4.65	9.66	75.0	0.014	8	6.53	1.3		
265.7	81	4.64	9.66	74.9	0.014	8	6.49	1.3		
269.0	82	4.64	9.65	74.8	0.014	8	6.47	1.3		
272.3	82	4.63	9.63	74.7	0.013	8	6.37	1.3		
275.6	84	4.63	9.62	74.6	0.013	8	6.38	1.4		
278.9	85	4.63	9.62	74.6	0.014	8	6.12	1.4		
282.1	86	4.63	9.60	74.4	0.014	8	6.17	1.4		
285.4	87	4.63	9.60	74.5	0.013	8	5.93	1.4		
288.7	88	4.62	9.59	74.3	0.013	8	6.04	1.5		
292.0	89	4.61	9.57	74.2	0.014	8	6.12	1.5		
295.3	90	4.61	9.56	74.1	0.014	8	6.17	1.6		
298.6	91	4.61	9.55	74.0	0.014	8	6.19	1.7		
301.8	92	4.61	9.54	73.9	0.014	8	6.12	1.7		Not bottom; ran out of YSI cable
305.1	93									
308.4	94									



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

Page 1 of 1

Date: 5/11/17
 Time: 0840

Reservoir - Water Quality Vertical Profiles

Site Location: R-IS-20
 Lat/Long (NAD83): _____

Instrument used: YSI 6920
 Water depth: 96

Personnel: BTH MWD

Secchi (ft): 15

Site Notes: Large amount of floating woody debris in reservoir

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		15.95	9.27	93.5	0.031	26	7.20	1.7		
3.3	1	15.95	9.24	93.6	0.031	25	7.20	1.8		
6.6	2	15.93	9.25	93.5	0.030	25	7.20	1.7		
9.8	3	15.47	9.34	93.8	0.030	25	7.25	1.8		
13.1	4	14.75	9.49	93.4	0.029	23	7.34	1.9		
16.4	5	14.24	9.61	93.7	0.029	23	7.24	1.9		
19.7	6	14.04	9.60	93.1	0.029	23	7.17	1.9		
23.0	7	13.77	9.60	92.6	0.029	22	7.16	2.0		
26.2	8	13.58	9.63	92.6	0.028	22	7.15	2.0		
29.5	9	13.47	9.73	93.3	0.027	24	7.21	2.0		
32.8	10	13.27	9.79	93.5	0.028	21	7.24	1.9		
36.1	11	13.20	9.83	93.7	0.028	21	7.23	2.0		
39.4	12	13.02	9.82	93.2	0.027	21	7.22	2.0		
42.7	13	12.97	9.80	92.9	0.027	21	7.21	2.0		
45.9	14	12.84	9.81	92.7	0.027	21	7.22	2.1		
49.2	15	12.68	9.80	92.3	0.028	22	7.21	2.2		
52.5	16	12.52	9.79	92.0	0.028	21	7.20	2.3		
55.8	17	12.47	9.77	91.6	0.028	21	7.17	2.5		
59.1	18	12.30	9.77	91.1	0.028	21	7.17	2.8		
62.3	19	12.05	9.77	90.7	0.028	21	7.15	3.3		
65.6	20	11.90	9.87	91.1	0.032	24	7.20	3.4		
68.9	21	11.45	10.01	91.5	0.028	21	7.26	5.8		
72.2	22	11.13	9.79	88.9	0.028	21	7.22	5.6		
75.5	23	10.78	9.77	87.9	0.029	21	7.19	5.4		
78.7	24	10.50	9.69	86.8	0.028	20	7.20	5.4		
82.0	25	10.36	9.60	85.7	0.029	21	7.17	6.1		
85.3	26	10.26	9.54	84.8	0.029	21	7.16	6.7		
88.6	27	10.12	9.48	84.1	0.028	20	7.16	7.1		
91.9	28	10.00	9.47	83.8	0.028	20	7.14	14.6		Bottom
95.1	29									
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									



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

Page 1 of 1

Date: 7/30/17

Time: 11:30

Reservoir - Water Quality Vertical Profiles

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

Instrument used: 6920

Water depth: 51.6

Personnel: KKC + BTH

Secchi (ft): 28.0

Site Notes: sunny, warm, breezy

Depth (ft)	Temp (m)	DO		Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
		(mg/L)	(%)						
surface	21.39	7.20	81.4	0.013	12	6.78	1.7		
3.3	1	21.40	7.20	81.4	0.013	12	6.66	1.6	
6.6	2	21.34	7.21	81.4	0.012	12	6.59	1.7	
9.8	3	21.10	7.20	81.0	0.012	12	6.59	1.7	
13.1	4	21.05	7.20	80.8	0.012	12	6.61	1.7	
16.4	5	20.93	7.22	80.9	0.012	12	6.00	1.7	
19.7	6	20.89	7.21	80.7	0.012	12	6.57	1.7	
23.0	7	20.88	7.21	80.7	0.012	12	6.55	1.7	
26.2	8	20.86	7.22	80.8	0.012	12	6.57	1.7	
29.5	9	20.68	7.20	80.2	0.012	11	6.53	1.7	
32.8	10	19.66	7.26	80.5	0.012	11	7.35	1.7	
36.1	11	18.64	7.71	82.4	0.012	11	7.50	1.7	
39.4	12	17.50	7.94	83.0	0.012	11	7.69	1.8	
42.7	13	16.76	8.22	84.6	0.012	11	7.43	1.8	
46.0	14	15.95	8.45	85.6	0.012	11	7.30	1.8	
49.2	15	14.78	8.35	82.3	0.012	10	7.44	1.8	
52.5	16	14.37	8.46	82.7	0.012	10	7.37	1.8	
55.8	17	14.16	8.25	80.2	0.013	10	7.35	4.6	
59.1	18	14.10	8.23	80.1	0.013	10	7.22	6.7	
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								



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

Page 1 of 1

Date: 8/2/17

Time: 0815

Reservoir - Water Quality Vertical Profiles

Site Location: R-15-19-131
 Lat/Long (NAD83): N 39.00289 W 120.2537

Instrument used: YSI 6920

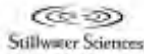
Water depth: 34.1 ft

Personnel: KKC + STT

Secchi (ft): 28.5 ft

Site Notes: partly cloudy, calm, cool

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		17.53	7.55	82.3	0.010	12	6.99	2.1		
3.3	1	17.57	7.55	82.3	0.010	12	6.56	2.0		
6.6	2	17.47	7.58	82.5	0.010	12	6.40	2.0		
9.8	3	17.25	7.45	80.6	0.010	12	6.31	2.0		
13.1	4	17.01	7.48	80.6	0.010	12	6.20	2.0		
16.4	5	16.64	7.58	81.1	0.010	11	6.13	2.0		
19.7	6	17.42	7.74	80.8	0.010	11	6.03	2.0		
23.0	7	14.35	8.03	81.9	0.010	10	5.91	2.1		
26.2	8	14.93	8.32	82.3	0.010	10	6.04	2.1		
29.5	9	12.86	8.43	79.9	0.009	9	6.12	2.1		
32.8	10	11.24	9.00	82.1	0.009	9	7.35	2.0		
36.1	11	11.30	8.31	75.9	0.009	13	7.22	128.3		
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									
111.6	34									



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

Page 1 of 1

Date: 8/2/17

Time: _____

Reservoir - Water Quality Vertical Profiles

Site Location: R-15-14-5C
 Lat/Long (NAD83): _____

Instrument used: YSI 6920

Water depth: 19.3 ft

Personnel: KKC + BTH

Secchi (ft): 19 ft

Site Notes: Sunny, warm, calm

Depth (ft)	Temp (m)	DO		Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
		(mg/L)	(%)						
surface	19.66	9.21	100.7	0.010	10	6.77	1.9		
3.3	1	16.58	8.72	92.7	0.010	10	7.05	1.7	
6.6	2	11.97	10.27	95.4	0.010	10	6.78	1.7	
9.9	3	11.77	10.52	97.1	0.010	10	6.72	1.7	
13.1	4	11.56	10.62	97.5	0.010	10	6.79	1.7	
16.4	5	11.49	10.67	97.9	0.009	10	6.83	1.7	
19.7	6	11.45	10.68	97.9	0.009	9	6.86	1.7	
23.0	7	11.45	10.69	97.9	0.009	9	6.87	5.5	
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								



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

Page 1 of 1

Date: 8/2/17
 Time: 1145

Reservoir - Water Quality Vertical Profiles

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

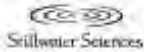
Instrument used: YSI 6920
 Water depth: 114 ft

Personnel: KRC & BTH

Secchi (ft): 12 ft

Site Notes: slurry, warm, slight breeze

Depth (ft)	Temp (m)	DO		Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
		(mg/L)	(%)						
surface	21.48	9.06	105.5	0.010	10	6.96	1.9		
3.3	1	21.33	9.03	105.0	0.010	10	6.95	1.9	
6.6	2	20.72	9.06	101.9	0.010	10	6.98	2.1	
9.8	3	17.43	9.40	98.5	0.010	10	7.05	1.9	
13.1	4	16.67	9.66	98.5	0.010	10	7.05	1.9	
16.4	5	16.34	9.64	98.3	0.010	10	7.04	2.0	
19.7	6	15.95	9.76	93.9	0.010	10	7.03	2.1	
23.0	7	15.67	9.09	91.1	0.010	10	7.03	2.1	
26.2	8	15.33	8.84	88.2	0.010	10	7.02	2.0	
29.5	9	15.28	8.71	86.8	0.009	9	7.00	2.0	
32.8	10	15.14	8.74	87.2	0.009	9	7.01	2.1	
36.1	11	15.03	8.89	88.3	0.009	9	7.00	2.0	
39.4	12	14.96	8.93	89.1	0.009	9	7.00	2.1	
42.7	13	14.89	9.23	91.5	0.009	9	7.00	2.0	
45.9	14	14.85	9.42	93.4	0.009	9	7.00	2.0	
49.2	15	14.78	9.53	94.6	0.009	9	7.01	2.1	
52.5	16	14.76	9.69	95.6	0.009	9	6.99	2.1	
55.8	17	14.69	9.75	95.8	0.009	10	6.99	2.3	
59.1	18	14.65	9.74	95.9	0.010	10	6.98	2.3	
62.3	19	14.63	9.75	95.9	0.010	10	7.00	2.3	
65.6	20	14.63	9.77	96.1	0.009	9	7.00	2.3	
68.9	21	14.61	9.77	96.1	0.009	9	7.01	2.4	
72.2	22	14.55	9.79	96.0	0.009	9	7.00	2.2	
75.5	23	14.37	9.83	96.2	0.009	9	7.11	2.2	
78.7	24	14.30	9.85	96.2	0.009	9	7.13	2.3	
82.0	25	14.04	9.89	96.1	0.009	8	7.17	2.4	
85.3	26	13.98	9.92	96.1	0.008	8	7.20	2.4	
88.6	27	13.88	9.94	96.1	0.008	8	7.25	2.5	
91.9	28	13.82	9.93	95.7	0.008	8	7.29	2.7	
95.1	29	13.68	9.94	95.7	0.008	8	7.33	2.9	
98.4	30	13.60	9.93	95.7	0.008	8	7.40	3.0	
101.7	31	13.63	9.94	95.7	0.008	8	7.44	3.0	
105.0	32	13.55	9.93	95.4	0.008	8	7.45	3.3	
108.3	33	13.37	9.94	95.0	0.008	8	7.47	3.8	
111.5	34	13.32	9.91	94.7	0.008	8	7.49	4.4	



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

Page 1 of 1

Date: 8/7/17

Time: 10:30

Reservoir - Water Quality Vertical Profiles

Site Location: UARP-R-K-1-LL
 Lat/Long (NAD83): _____

Instrument used: YSI 6920
 Water depth: 83 ft

Personnel: B. Hitch, M. Davis

Secchi (ft): 32 ft

Site Notes: _____

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		21.34	7.21	81.4	0.013	12	8.05	0.0		
3.3	1	21.33	7.20	81.2	0.013	12	7.81	0.0		
6.6	2	21.32	7.20	81.2	0.013	12	7.67	0.0		
9.9	3	21.23	7.26	81.0	0.013	12	7.56	0.1		
13.1	4	21.17	7.18	80.8	0.013	12	7.40	0.0		
16.4	5	21.15	7.18	80.7	0.013	12	7.40	0.1		
19.7	6	21.08	7.19	80.8	0.012	11	7.29	0.2		
23.0	7	20.57	7.39	82.3	0.012	11	7.26	0.1		
26.2	8	20.70	7.51	82.9	0.012	11	7.19	0.1		
29.5	9	19.77	7.58	83.1	0.012	11	7.17	0.1		
32.8	10	18.75	7.74	83.2	0.012	11	7.17	0.1		
36.1	11	18.31	7.87	83.7	0.012	10	7.03	0.1		
39.4	12	17.18	8.02	83.3	0.012	10	7.04	0.1		
42.7	13	16.62	8.08	82.9	0.012	10	6.90	0.1		
45.9	14	15.74	8.18	82.4	0.012	10	6.75	0.1		
49.2	15	15.35	8.26	82.1	0.012	10	6.67	0.1		
52.5	16	15.03	8.09	80.1	0.012	10	6.63	0.2		
55.8	17	14.78	7.98	78.4	0.012	10	6.65	0.1		
59.1	18	13.81	7.83	75.6	0.012	10	6.61	0.1		
62.3	19	12.69	7.73	72.4	0.012	9	6.83	0.2		
65.6	20	11.78	7.63	69.6	0.012	9	6.64	0.1		
68.9	21	9.57	7.72	67.6	0.012	9	6.78	0.1		
72.2	22	9.05	7.74	66.5	0.013	9	6.67	0.1		
75.5	23	7.86	7.81	65.6	0.013	8	6.59	0.1		
78.7	24	7.46	7.92	66.0	0.013	8	6.53	0.2		
82.0	25	7.10	7.96	65.3	0.013	8	6.47	0.1		
85.3	26	6.77	7.81	63.8	0.013	8	6.38	0.2		
88.6	27	6.63	7.73	62.8	0.013	8	6.33	0.2		
91.9	28	6.49	7.66	62.1	0.013	8	6.30	0.2		
95.1	29	6.41	7.59	61.5	0.013	8	6.26	0.2		
98.4	30	6.33	7.54	61.0	0.013	8	6.22	0.2		
101.7	31	6.26	7.51	60.7	0.013	8	6.20	0.2		
105.0	32	6.18	7.20	54.7	0.018	11	6.27	50.3		BOTTOM
108.3	33									
111.5	34									



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

Page 1 of 1

Date: 8/7/17

Time: 12:39

Reservoir - Water Quality Vertical Profiles

Site Location: ~~R-15-2-LL~~ UARP-R-15-2-LL
 Lat/Long (NAD83): _____

Instrument used: YSI 6720

Water depth: 78

Personnel: BTH MND

Secchi (ft): 32

Site Notes: _____

Depth (ft)	Temp (m)	DO		Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
		(mg/L)	(%)						
surface	21.47	7.20	81.5	0.013	12	7.40	0.1		
3.3	1	21.48	7.19	81.5	0.013	12	7.35	0.1	
6.6	2	21.48	7.19	81.4	0.013	12	7.32	0.0	
9.8	3	21.24	7.20	81.1	0.013	12	7.29	0.1	
13.1	4	21.22	7.20	81.0	0.012	12	7.25	0.0	
16.4	5	21.18	7.19	80.9	0.012	12	7.23	0.0	
19.7	6	21.15	7.19	80.8	0.012	11	7.20	0.0	
23.0	7	21.05	7.21	80.9	0.012	11	7.18	0.1	
26.2	8	20.86	7.28	81.3	0.012	11	7.16	0.1	
29.5	9	19.74	7.57	82.9	0.012	11	7.18	0.0	
32.8	10	19.58	7.66	83.5	0.012	11	7.16	0.0	
36.1	11	18.43	7.86	83.8	0.012	11	7.18	0.0	
39.4	12	17.58	8.05	84.4	0.012	10	7.21	0.1	
42.7	13	16.99	8.16	84.4	0.012	10	7.22	0.1	
45.9	14	16.46	8.25	84.4	0.012	10	7.25	0.0	
49.2	15	15.78	8.34	84.0	0.012	10	7.28	0.0	
52.5	16	15.18	8.45	84.1	0.012	10	7.34	0.0	
55.8	17	14.58	8.45	82.8	0.012	10	7.37	0.0	
59.1	18	13.93	8.37	81.1	0.012	9	7.40	0.0	
62.3	19	13.37	8.34	79.7	0.012	9	7.41	0.1	
65.6	20	12.42	8.37	78.3	0.012	9	7.43	0.1	
68.9	21	10.83	8.38	75.2	0.012	9	7.51	0.0	
72.2	22	9.38	8.26	72.1	0.012	9	7.56	0.0	
75.5	23	8.47	8.26	70.5	0.012	8	7.59	0.0	
78.7	24	8.39	8.23	70.1	0.012	8	7.60	48.4	BOTTOM
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								



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

Page 1 of 1

Date: 8/8/17

Time: 0900

Reservoir - Water Quality Vertical Profiles

Site Location: UARP-R-15-5-UWR
 Lat/Long (NAD83): _____

Instrument used: YSI 1920

Water depth: 65 ft

Personnel: BTM MJD

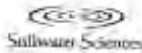
Secchi (ft): 27 ft

Site Notes: _____

Depth		Temp (°C)	DO		Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (a.u.)	Turbidity (NTU)	Water Sample	Notes
(ft)	(m)		(mg/L)	(%)						
surface		22.33	7.53	86.6	0.012	11	6.70	0.8		
3.3	1	22.31	7.52	86.4	0.012	11	6.72	0.8		
6.6	2	22.25	7.51	86.3	0.012	11	6.65	0.9		
9.9	3	22.23	7.50	86.2	0.012	11	6.59	0.8		
13.1	4	22.16	7.49	86.0	0.012	11	6.56	0.8		
16.4	5	21.74	7.53	85.8	0.012	11	6.54	0.8		
19.7	6	20.56	7.79	86.8	0.012	11	6.60	0.7		
23.0	7	19.82	7.92	86.9	0.012	10	6.58	0.7		
26.2	8	19.52	8.00	87.2	0.011	10	6.59	0.8		
29.5	9	19.08	8.18	88.4	0.011	10	6.61	0.8		
32.8	10	18.87	8.32	89.5	0.011	10	6.61	0.8		
36.1	11	18.01	8.48	89.7	0.011	10	6.64	0.8		
39.4	12	17.58	8.60	90.0	0.011	10	6.62	0.8		
42.7	13	16.79	8.67	89.3	0.011	10	6.65	0.8		
45.9	14	16.48	8.78	89.7	0.011	10	6.62	0.8		
49.2	15	15.65	8.65	86.8	0.011	9	6.62	0.7		
52.5	16	15.07	8.60	85.3	0.011	9	6.64	0.7		
55.8	17	14.76	8.54	84.1	0.012	9	6.66	0.7		
59.1	18	14.48	8.36	81.8	0.012	9	6.69	0.8		
62.3	19	14.01	8.07	78.2	0.012	10	6.65	0.8		
65.6	20	13.95	7.77	74.5	0.012	10	6.62	204.8		BOTTOM
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									


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	8.51	9.04	77.2	0.013	9	8.26	0.7		
118.1	36	8.49	9.00	87.1	0.013	9	8.24	17.5		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									



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

Page 1 of 2

Date: 8/8/17

Time: 1000

Reservoir - Water Quality Vertical Profiles

Site Location: UARP - R-15 - 7 - UVR
 Lat/Long (NAD83): _____

Instrument used: YSI 6520

Water depth: 138 ft

Personnel: BTM MJD

Secchi (ft): 26

Site Notes: _____

Depth		Temp (°C)	DO		Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
(ft)	(m)		(mg/L)	(%)						
surface		22.74	7.50	87.0	0.012	11	7.40	0.8		
3.3	1	22.42	7.53	86.8	0.012	11	7.30	0.8		
6.6	2	22.29	7.53	86.6	0.012	11	7.18	0.8		
9.9	3	22.22	7.53	86.4	0.012	11	7.11	0.8		
13.1	4	22.15	7.52	86.2	0.012	11	7.07	0.8		
16.4	5	21.29	7.72	87.2	0.012	11	7.05	0.8		
19.7	6	20.74	7.88	88.0	0.012	11	7.04	0.7		
23.0	7	19.94	8.13	89.3	0.012	10	7.06	0.8		
26.2	8	19.32	8.28	89.8	0.011	10	7.06	0.7		
29.5	9	19.24	8.30	89.9	0.011	10	7.04	0.7		
32.8	10	18.60	8.41	89.8	0.012	10	7.05	0.7		
36.1	11	18.06	8.54	90.3	0.012	10	7.07	0.7		
39.4	12	17.80	8.47	88.5	0.012	10	7.05	0.7		
42.7	13	17.46	8.42	88.4	0.011	10	7.09	0.7		
45.9	14	16.65	8.82	90.7	0.011	9	7.13	0.8		
49.2	15	16.05	8.88	90.1	0.011	9	7.14	0.7		
52.5	16	15.36	8.86	88.4	0.011	9	7.16	0.7		
55.8	17	14.53	8.82	86.4	0.011	9	7.16	0.6		
59.1	18	14.02	8.94	86.7	0.011	9	7.17	0.6		
62.3	19	13.51	8.74	83.8	0.012	9	7.19	0.6		
65.6	20	13.14	8.66	82.3	0.012	9	7.23	0.6		
68.9	21	12.67	8.63	81.2	0.012	9	7.25	0.6		
72.2	22	12.25	8.66	80.8	0.012	9	7.23	0.6		
75.5	23	12.00	8.65	80.2	0.012	9	7.20	0.6		
78.7	24	11.54	8.65	79.4	0.012	9	7.16	0.6		
82.0	25	11.41	8.64	79.0	0.012	9	7.12	0.6		
85.3	26	11.25	8.64	78.7	0.012	9	7.08	0.6		
88.6	27	10.95	8.67	78.5	0.012	9	7.07	0.6		
91.9	28	10.52	8.69	77.9	0.012	9	7.06	0.6		
95.1	29	10.12	8.82	78.3	0.012	9	7.02	0.7		
98.4	30	9.93	8.72	77.1	0.012	9	7.00	0.6		
101.7	31	9.89	8.64	76.2	0.012	9	6.97	0.6		
105.0	32	9.72	8.58	75.4	0.012	9	6.97	0.7		
108.3	33	9.68	8.55	75.1	0.012	9	6.95	0.6		
111.5	34	9.60	8.52	74.7	0.012	9	6.94	0.6		


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	9.42	8.51	74.4	0.012	9	6.94	0.6		
118.1	36	9.30	8.51	74.1	0.012	9	6.96	0.6		
121.4	37	8.83	8.54	73.5	0.012	9	6.98	0.7		
124.7	38	8.63	8.55	73.2	0.013	9	6.99	0.7		
128.0	39	8.46	8.57	73.2	0.013	9	6.99	0.6		
131.2	40	8.43	8.58	73.3	0.013	9	7.02	0.7		
134.5	41	8.41	8.54	72.8	0.013	9	7.05	0.7		
137.8	42	8.39	8.51	72.5	0.013	9	7.06	0.6		
141.1	43	8.38	8.49	72.3	0.013	9	7.09	0.6		
144.4	44	8.17	8.47	71.7	0.013	9	7.10	0.7		
147.6	45	8.09	8.23	67.1	0.013	9	7.12	68.5		BOTTOM
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									



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

Page 1 of 3

Date: 8/8/17
 Time: 1230

Reservoir - Water Quality Vertical Profiles

Site Location: UARP-R-15-8-UWR
 Lat/Long (NAD83): _____

Instrument used: YSI 6920
 Water depth: _____

Personnel: STH MWD

Secchi (ft): 24

Site Notes: _____

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		22.83	7.66	88.2	0.012	11	7.42	0.8		
3.3	1	21.97	7.66	87.6	0.012	11	7.31	0.8		
6.6	2	21.81	7.67	87.4	0.012	11	7.24	0.8		
9.9	3	21.76	7.66	87.2	0.012	11	7.20	0.8		
13.1	4	21.71	7.67	87.2	0.012	11	7.19	0.8		
16.4	5	21.62	7.67	87.1	0.012	11	7.18	0.8		
19.7	6	20.40	8.28	92.3	0.011	10	7.20	0.7		
23.0	7	20.15	8.63	95.1	0.011	10	7.21	0.7		
26.2	8	19.79	8.28	95.8	0.011	10	7.22	0.8		
29.5	9	19.19	8.79	95.2	0.011	10	7.26	0.6		
32.8	10	18.77	9.01	96.7	0.011	10	7.27	0.8		
36.1	11	18.17	9.01	96.6	0.011	10	7.31	0.9		
39.4	12	17.90	9.12	96.0	0.011	10	7.33	0.7		
42.7	13	17.76	8.86	92.9	0.011	10	7.34	0.7		
45.9	14	17.18	8.89	92.1	0.011	10	7.36	0.7		
49.2	15	15.93	8.91	89.8	0.011	9	7.43	0.8		
52.5	16	15.85	8.83	87.5	0.011	9	7.48	0.8		
55.8	17	14.35	8.81	85.8	0.011	9	7.55	0.7		
59.1	18	13.75	8.77	84.4	0.012	9	7.62	0.7		
62.3	19	13.40	8.83	84.6	0.012	9	7.66	0.7		
65.6	20	13.00	8.71	82.5	0.012	9	7.71	0.7		
68.9	21	12.69	8.72	81.8	0.012	9	7.86	0.7		
72.2	22	12.21	8.75	81.4	0.012	9	7.93	0.7		
75.5	23	11.88	8.78	81.2	0.012	9	7.95	0.6		
78.7	24	11.59	8.83	81.2	0.012	9	8.06	0.7		
82.0	25	11.44	8.88	81.3	0.012	9	8.09	0.7		
85.3	26	11.24	8.91	81.2	0.012	9	8.11	0.7		
88.6	27	10.85	8.96	80.9	0.012	9	8.14	0.7		
91.9	28	10.66	8.97	80.6	0.012	9	8.15	0.7		
95.1	29	10.52	8.99	80.5	0.012	9	8.15	0.7		
98.4	30	10.17	9.03	80.2	0.012	9	8.15	0.7		
101.7	31	9.85	9.07	80.0	0.012	9	8.16	0.7		
105.0	32	9.56	9.16	80.2	0.012	9	8.21	0.7		
108.3	33	9.36	9.11	79.4	0.012	9	8.19	0.6		
111.5	34	9.20	9.13	79.3	0.012	9	8.16	0.6		



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	8.96	9.16	79.2	0.013	9	8.16	0.6		
118.1	38	8.80	9.14	79.0	0.013	9	8.12	0.7		
121.4	37	8.66	9.21	79.0	0.013	9	8.13	0.7		
124.7	38	8.65	9.23	79.3	0.013	9	8.08	0.7		
128.0	39	8.63	9.25	79.3	0.013	9	8.02	0.7		
131.2	40	8.44	9.25	78.9	0.013	9	7.98	0.7		
134.5	41	8.28	9.27	78.8	0.012	8	7.93	0.7		
137.8	42	8.18	9.27	78.5	0.013	9	7.89	0.7		
141.1	43	8.09	9.27	78.4	0.013	8	7.84	0.6		
144.4	44	7.98	9.29	78.4	0.013	8	7.80	0.6		
147.8	45	7.90	9.32	78.5	0.013	9	7.74	0.6		
150.9	46	7.82	9.30	78.1	0.013	9	7.72	0.6		
154.2	47	7.75	9.27	77.1	0.013	8	7.68	0.6		
157.5	48	7.71	9.25	77.4	0.013	9	7.63	0.6		
160.8	49	7.68	9.23	77.4	0.012	9	7.62	0.7		
164.0	50	7.63	9.23	77.1	0.013	9	7.59	0.7		
167.3	51	7.57	9.22	77.0	0.013	9	7.57	0.7		
170.6	52	7.50	9.23	77.0	0.013	9	7.55	0.7		
173.9	53	7.47	9.20	76.6	0.013	9	7.52	0.7		
177.2	54	7.43	9.17	76.3	0.013	9	7.51	0.7		
180.4	55	7.40	9.17	76.2	0.013	9	7.50	0.7		
183.7	56	7.38	9.14	76.0	0.013	9	7.48	0.7		
187.0	57	7.36	9.12	75.7	0.013	9	7.45	0.7		
190.3	58	7.33	9.10	75.5	0.013	9	7.44	0.7		
193.6	59	7.29	9.09	75.4	0.013	9	7.41	0.7		
196.8	60	7.26	9.06	75.1	0.013	9	7.39	0.7		
200.1	61	7.22	9.04	74.8	0.013	9	7.38	0.7		
203.4	62	7.18	9.01	74.5	0.013	9	7.37	0.7		
206.7	63	7.12	8.98	74.1	0.013	9	7.36	0.7		
210.0	64	7.08	8.93	73.6	0.013	9	7.33	0.7		
213.3	65	7.03	8.89	73.2	0.013	9	7.31	0.7		
216.5	66	7.02	8.87	73.1	0.013	9	7.21	0.7		
219.8	67	7.01	8.86	73.0	0.013	9	7.31	0.7		
223.1	68	6.99	8.84	72.8	0.013	9	7.30	0.7		
226.4	69	6.95	8.83	72.6	0.013	9	7.29	0.8		
229.7	70	6.92	8.81	72.4	0.013	9	7.29	0.7		
232.9	71	6.82	8.83	72.4	0.013	9	7.31	0.7		
236.2	72	6.64	8.86	72.4	0.013	9	7.27	0.7		


Reservoir - Water Quality Vertical Profiles

Depth (ft)	Temp (m)	DD		Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
		(mg/L)	(%)						
(CONTINUED)									
114.8	35	6.54	8.75	71.3	0.013	9	7.23	0.8	
118.1	36	6.50	8.75	71.1	0.014	9	7.21	0.8	
121.4	37	6.40	8.73	70.8	0.014	9	7.20	0.8	
124.7	38	6.31	8.71	70.4	0.014	9	7.19	0.8	
128.0	39	6.23	8.66	69.9	0.014	9	7.19	0.8	
131.2	40	6.20	8.63	69.6	0.014	9	7.19	0.8	
134.5	41	6.16	8.60	69.9	0.014	9	7.17	0.8	
137.8	42	6.17	8.62	69.4	0.014	9	7.16	0.8	
141.1	43	6.08	8.56	68.9	0.014	9	7.16	0.8	
144.4	44	6.07	8.54	68.7	0.014	9	7.14	0.8	
147.6	45	6.07	8.51	68.5	0.014	9	7.14	0.8	
150.9	46	6.07	8.46	67.7	0.019	12	7.13	496.7	BOTTOM
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								
196.9	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								



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

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Date: 8/9/17

Time: 9:30

Reservoir - Water Quality Vertical Profiles

Site Location: E-TS-18-RR
 Lat/Long (NAD83): N 38.98793 W 120.22252

Instrument used: YSI 6920

Water depth: 15 ft

Personnel: BTH + KKC

Secchi (ft): 15 ft

Site Notes: Sunny, warm, clear

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		18.11	7.63	80.8	0.011	7	7.48	1.0		
3.3	1	17.31	7.51	78.1	0.011	9	7.40	1.0		
6.6	2	16.48	7.42	76.0	0.011	9	7.26	1.0		
9.8	3	15.75	7.64	77.1	0.011	7	7.20	1.0		
13.1	4	15.42	7.70	76.5	0.011	9	7.13	1.1		
16.4	5	15.21	7.36	72.1	0.014	12	6.93	23.4		
19.7	6									
23.0	7									
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									



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

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Date: 8/10/17
 Time: 9:45

Reservoir - Water Quality Vertical Profiles

Site Location: R-15-9-IHR
 Lat/Long (NAD83): _____

Instrument used: YSI 6920
 Water depth: 82ft

Personnel: BTW + KCC

Secchi (ft): 25ft

Site Notes: Warm, Sunny, 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		22.26	7.42	85.3	0.011	10	7.26	1.5		
3.3	1	22.29	7.42	85.3	0.011	10	7.19	1.5		
6.6	2	22.23	7.41	85.1	0.011	10	7.13	1.5		
9.8	3	22.14	7.42	85.1	0.011	10	7.07	1.5		
13.1	4	22.07	7.44	85.1	0.011	10	7.01	1.5		
16.4	5	21.95	7.41	84.8	0.011	10	6.95	1.5		
19.7	6	21.63	7.46	84.7	0.010	10	6.91	1.5		
23.0	7	21.23	7.57	85.4	0.010	9	6.88	1.4		
26.2	8	20.69	7.63	84.9	0.010	9	6.85	1.5		
29.5	9	19.39	7.82	85.1	0.010	8	6.85	1.4		
32.8	10	18.27	8.13	86.6	0.009	8	6.87	1.4		
36.1	11	16.67	8.55	87.8	0.009	8	6.89	1.5		
39.4	12	15.67	8.63	86.9	0.009	8	6.93	1.4		
42.7	13	14.66	8.65	84.7	0.010	8	6.87	1.4		
45.9	14	13.91	8.78	84.9	0.010	8	6.87	1.4		
49.2	15	13.46	7.91	75.4	0.010	8	6.89	1.4		
52.5	16	12.36	7.76	72.6	0.010	8	6.96	1.4		
55.8	17	11.56	7.94	72.8	0.010	9	7.00	1.4		
59.1	18	10.70	7.90	71.0	0.011	8	7.06	1.3		
62.3	19	9.40	7.91	68.9	0.011	8	7.09	1.3		
65.6	20	8.67	7.58	69.9	0.011	8	7.02	1.4		
68.9	21	8.10	7.39	62.4	0.012	8	6.95	1.4		
72.2	22	7.77	7.23	60.6	0.012	8	6.86	1.4		
75.5	23	7.66	7.13	59.6	0.012	8	6.80	1.6		
78.7	24	7.62	7.07	59.2	0.012	8	6.74	1.6		
82.0	25	7.60	7.08	59.2	0.012	8	6.72	1.6		
85.3	26	7.60	6.94	57.2	0.012	8	6.70	42.5		
88.6	27									
91.9	28									
95.1	29									
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									



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

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Date: 8/10/17
 Time: 11:00

Reservoir - Water Quality Vertical Profiles

Site Location: R-15-10 - IHR
 Lat/Long (NAD83): _____

Instrument used: YSI 6920
 Water depth: 39.9 ft

Personnel: KKC + BTH

Secchi (ft): 24 ft

Site Notes: Sunny, warm, Breezy

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		22.15	7.47	85.7	0.011	10	7.22	1.5		
3.3	1	22.14	7.47	85.7	0.011	10	7.19	1.5		
6.6	2	22.11	7.47	85.6	0.011	10	7.14	1.6		
9.8	3	22.04	7.49	85.7	0.011	10	7.10	1.6		
13.1	4	21.94	7.47	85.3	0.011	10	7.06	1.4		
16.4	5	21.86	7.47	85.2	0.010	10	7.00	1.4		
19.7	6	21.77	7.48	85.1	0.010	10	6.94	1.5		
23.0	7	21.68	7.48	85.1	0.010	10	6.92	1.4		
26.2	8	21.62	7.48	85.0	0.010	10	6.90	1.4		
29.5	9	19.58	8.02	87.8	0.009	8	6.94	1.4		
32.8	10	18.04	8.54	90.5	0.009	8	6.92	1.3		
36.1	11	16.60	8.73	89.6	0.009	8	6.93	1.3		
39.4	12	14.94	8.94	88.6	0.009	7	6.91	1.3		
42.7	13	14.82	8.88	87.7	0.009	7	6.95	93.0		
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									



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

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Date: 8/10/17
 Time: 12:30

Reservoir - Water Quality Vertical Profiles

Site Location: R-15-11-IHR
 Lat/Long (NAD83): _____

Instrument used: YSI 6920
 Water depth: 123 ft

Personnel: KKC + BTH

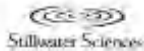
Secchi (ft): 25 ft

Site Notes: Warm, Sunny, Breezy

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		22.49	7.52	86.8	0.010	10	7.06	1.1		
3.3	1	22.00	7.53	86.2	0.010	10	6.97	1.3		
6.6	2	21.86	7.57	86.3	0.010	10	6.96	1.3		
9.9	3	21.78	7.59	86.4	0.010	10	6.93	1.3		
13.1	4	21.75	7.58	86.3	0.010	10	6.92	1.4		
16.4	5	21.70	7.59	86.2	0.010	10	6.90	1.4		
19.7	6	21.66	7.54	85.6	0.010	10	6.90	1.3		
23.0	7	21.64	7.51	85.3	0.010	10	6.90	1.4		
26.2	8	21.58	7.50	85.1	0.010	10	6.88	1.4		
29.5	9	18.69	7.89	86.6	0.009	8	7.00	1.4		
32.8	10	16.57	9.03	92.8	0.009	8	7.05	1.3		
36.1	11	15.77	9.38	94.3	0.009	7	7.08	1.3		
39.4	12	15.08	9.24	91.4	0.009	7	7.11	1.3		
42.7	13	14.58	9.23	90.5	0.009	7	7.11	1.3		
45.9	14	14.27	9.19	89.4	0.009	7	7.09	1.4		
49.2	15	13.66	9.12	87.4	0.009	7	7.02	1.4		
52.5	16	13.19	8.94	83.5	0.009	7	6.96	1.4		
55.8	17	12.18	8.81	81.8	0.009	7	6.89	1.3		
59.1	18	11.51	8.70	79.6	0.010	7	6.81	1.3		
62.3	19	10.75	8.58	76.1	0.010	7	6.71	1.3		
65.6	20	10.27	8.36	74.2	0.010	7	6.68	1.3		
68.9	21	9.09	8.44	73.0	0.011	7	6.62	1.3		
72.2	22	8.88	8.34	71.4	0.011	8	6.56	1.3		
75.5	23	7.90	8.53	71.8	0.011	8	6.51	1.3		
78.7	24	7.63	8.18	68.5	0.011	7	6.49	1.3		
82.0	25	7.55	8.20	68.4	0.011	7	6.45	1.4		
85.3	26	7.48	8.21	68.5	0.011	7	6.44	1.4		
88.6	27	7.38	8.26	68.6	0.011	7	6.43	1.5		
91.9	28	7.33	8.26	68.5	0.011	7	6.41	1.4		
95.1	29	7.26	8.20	67.9	0.011	7	6.38	1.4		
98.4	30	7.20	8.06	66.6	0.011	7	6.39	1.5		
101.7	31	7.17	7.91	65.4	0.011	7	6.39	1.5		
105.0	32	7.11	7.81	64.1	0.011	8	6.38	1.5		
108.3	33	7.02	7.63	62.8	0.012	8	6.38	1.5		
111.5	34	6.94	7.47	61.4	0.012	8	6.36	1.6		


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	6.96	7.31	60.0	0.012	8	6.36	1.6		
118.1	36	6.86	7.18	58.9	0.012	8	6.35	1.6		
121.4	37	6.77	7.20	59.0	0.012	8	6.33	1.6		
124.7	38	6.76	6.51	52.8	0.012	8	6.29	33.4		
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									



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

Page 1 of 1

Date: 8/14/17
 Time: 1315

Reservoir - Water Quality Vertical Profiles

Site Location: R-15-20 BC
 Lat/Long (NAD83): _____

Personnel: BTH MAD

Instrument used: YSI 6920
 Water depth: 107 ft.

Secchi (ft): 16 ft.

Site Notes: _____

Depth (ft)	Temp (°C)	DO		Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
		(mg/L)	(%)						
surface	21.58	8.58	97.4	0.023	21	7.82	1.6		
3.3	21.47	8.58	97.2	0.023	21	7.80	1.7		
6.6	21.23	8.64	97.4	0.023	21	7.79	1.7		
9.8	21.22	8.65	97.4	0.023	21	7.81	1.6		
13.1	20.80	8.85	99.4	0.023	21	7.92	1.8		
16.4	20.43	9.09	100.7	0.023	21	7.97	2.0		
19.7	20.21	9.17	101.3	0.023	21	7.97	2.0		
23.0	19.92	9.08	99.6	0.023	20	7.95	2.2		
26.2	19.74	8.97	97.9	0.023	20	7.91	2.3		
29.5	19.66	8.83	96.2	0.023	20	7.86	2.3		
32.8	19.50	8.69	94.5	0.023	20	7.84	2.1		
36.1	19.42	8.59	93.2	0.023	20	7.82	2.3		
39.4	19.38	8.43	91.5	0.023	20	7.79	2.2		
42.7	19.31	8.41	91.2	0.023	20	7.77	2.1		
45.9	19.28	8.36	90.4	0.023	20	7.77	2.1		
49.2	19.23	8.25	89.4	0.023	20	7.75	2.1		
52.5	19.19	8.25	89.2	0.023	20	7.74	2.1		
55.8	19.14	8.19	88.3	0.023	20	7.72	2.3		
59.1	19.07	8.14	87.9	0.023	20	7.70	2.3		
62.3	19.01	8.16	88.0	0.023	20	7.68	2.3		
65.6	18.95	7.75	83.2	0.023	20	7.65	2.4		
68.9	18.87	7.60	81.4	0.023	20	7.62	2.5		
72.2	18.67	7.34	78.1	0.024	21	7.60	3.0		
75.5	18.35	6.82	71.6	0.025	22	7.55	3.8		
78.7	17.88	6.17	64.6	0.026	22	7.51	4.1		
82.0	17.09	5.32	54.3	0.029	25	7.45	5.7		
85.3	15.79	4.38	43.5	0.030	24	7.47	5.6		
88.6	14.87	3.93	38.1	0.030	24	7.50	5.9		
91.9	14.15	3.34	31.8	0.031	24	7.50	6.5		
95.1	13.92	2.82	27.0	0.032	25	7.50	7.3		
98.4	13.77	2.80	27.0	0.034	27	7.47	7.3		
101.7	13.72	2.04	19.4	0.034	27	7.47	757.8		BOTTOM
105.0									
108.3									
111.6									



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

Page 1 of

Date: 8/15/17
 Time: 1235

Reservoir - Water Quality Vertical Profiles

Site Location: R-15-12-JR
 Lat/Long (NAD83):

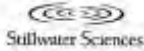
Instrument used: YSI 6920
 Water depth: 66

Personnel: BTH MND

Secchi (ft): 27

Site Notes:

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		14.36	8.75	85.5	0.014	u	7.52	1.0		
3.3	1	14.80	8.74	84.4	0.014	ll	7.52	0.9		
6.6	2	9.30	9.08	79.2	0.013	9	7.61	0.9		
9.8	3	9.17	9.22	80.1	0.013	9	7.61	0.9		
13.1	4	8.73	9.33	80.2	0.012	9	7.61	0.9		
16.4	5	8.64	9.38	80.4	0.012	8	7.58	0.9		
19.7	6	8.55	9.41	80.3	0.012	8	7.55	0.9		
23.0	7	8.36	9.40	80.1	0.012	8	7.44	1.0		
26.2	8	8.31	9.39	79.9	0.012	8	7.44	0.9		
29.5	9	8.21	9.40	79.8	0.012	8	7.42	0.9		
32.8	10	8.16	9.38	79.4	0.012	8	7.37	1.0		
36.1	11	8.10	9.33	78.9	0.012	8	7.34	1.0		
39.4	12	8.09	9.30	78.6	0.012	8	7.31	1.0		
42.7	13	8.08	9.28	78.5	0.012	8	7.27	1.0		
45.9	14	8.02	9.25	78.1	0.012	8	7.23	1.0		
49.2	15	7.97	9.23	77.8	0.012	8	7.20	1.1		
52.5	16	7.94	9.20	77.5	0.012	8	7.18	1.0		
55.8	17	7.93	9.19	77.4	0.012	8	7.16	1.0		
59.1	18	7.91	9.20	77.5	0.012	8	7.14	1.0		
62.3	19	7.89	9.21	77.6	0.012	8	7.11	205.6		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									



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

Page 1 of 1

Date: 8/15/07
 Time: 0900

Reservoir - Water Quality Vertical Profiles

Site Location: UARP-R-15-13-CR
 Lat/Long (NAD83): _____

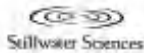
Instrument used: YSI 6920
 Water depth: 20 ft

Personnel: BTU MND

Secchi (ft): 20 ft

Site Notes: _____

Depth		Temp (°C)	DO		Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
(ft)	(m)		(mg/L)	(%)						
surface		11.28	9.90	90.4	0.014	11	7.57	0.9		
3.3	1	10.50	9.99	89.5	0.014	10	7.58	0.9		
6.6	2	9.99	10.16	89.2	0.013	9	7.47	0.9		
9.8	3	9.04	10.47	90.7	0.013	9	7.36	0.9		
13.1	4	8.72	10.52	89.9	0.013	9	7.27	0.9		
16.4	5	8.69	10.47	89.9	0.013	9	7.19	1.0		
19.7	6	8.66	10.52	90.4	0.013	9	7.13	0.9		
23.0	7	8.65	10.55	90.5	0.013	9	7.06	10.7		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									



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

Page 1 of 1

Date: 8/16/17
 Time: 1010

Reservoir - Water Quality Vertical Profiles

Site Location: R-15-9-GC
 Lat/Long (NAD83): _____

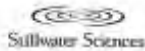
Instrument used: YSI 6720
 Water depth: 27 ft.

Personnel: BTH MWD

Secchi (ft): 25

Site Notes: _____

Depth (ft)	(m)	Temp		DO		Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (u.u.)	Turbidity (NTU)	Water Sample	Notes
		(°C)	(mg/L)	(%)	(mg/L)						
surface		16.14	8.47	86.2	0.008	6	6.79	0.6			
3.3	1	15.85	8.47	85.4	0.008	6	6.79	0.6			
6.6	2	15.73	8.46	85.2	0.008	6	6.80	0.6			
9.8	3	15.67	8.46	85.1	0.008	6	6.80	0.6			
13.1	4	15.65	8.44	84.9	0.008	6	6.80	0.7			
16.4	5	15.64	8.43	84.7	0.008	6	6.78	0.7			
19.7	6	15.61	8.42	84.6	0.008	6	6.79	0.7			
23.0	7	15.61	8.42	84.6	0.008	6	6.79	0.7			
26.2	8	15.59	8.36	83.4	0.008	6	6.78	267.7		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										



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

Page 1 of 1

Date: 10/18/17
 Time: 0930

Reservoir - Water Quality Vertical Profiles

Site Location: UARP - R-15-19 - BT
 Lat/Long (NAD83): _____

Instrument used: YSI 6920
 Water depth: 18.8 ft

Personnel: KKC + BTH

Secchi (ft): 18.0

Site Notes: Sunny, water calm

Depth		Temp (°C)	DO		Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
(ft)	(m)		(mg/L)	(%)						
surface		9.87	8.61	76.1	0.013	9	6.84	1.2		
3.3	1	9.81	8.60	75.8	0.010	7	6.93	1.2		
6.6	2	9.78	8.60	75.8	0.010	7	6.99	1.2		
9.8	3	9.76	8.60	75.8	0.010	7	7.03	1.2		
13.1	4	9.75	8.59	75.7	0.010	7	7.05	1.2		
16.4	5	9.71	8.57	75.4	0.010	7	7.06	1.2		
19.7	6	9.81	8.45	74.5	0.011	8	7.06	3.2		
23.0	7									
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									



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

Page 1 of 1

Date: 10/23/17
 Time: 1130

Reservoir - Water Quality Vertical Profiles

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

Instrument used: YSI 6920
 Water depth: 92 ft

Personnel: KKC + BTH

Secchi (ft): 28 ft

Site Notes: Sunny, Warm, 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		13.35	8.10	77.6	7.4	0.009	6.89	0.3		
3.3	1	13.29	8.10	77.3	7.4	0.009	6.89	0.2		
6.6	2	13.22	8.09	77.1	7.4	0.009	6.9	0.2		
9.8	3	13.20	8.09	77.1	7.4	0.009	6.94	0.3		
13.1	4	13.17	8.09	77.1	7.4	0.009	6.92	0.2		
16.4	5	13.16	8.10	77.2	7.4	0.009	6.91	0.2		
19.7	6	13.16	8.11	77.2	7.4	0.009	6.90	0.2		
23.0	7	13.15	8.09	77.1	7.4	0.009	6.90	0.2		
26.2	8	13.14	8.09	77.1	7.4	0.009	6.90	0.3		
29.5	9	13.14	8.09	77.0	7.4	0.009	6.89	0.2		
32.8	10	13.14	8.09	77.0	7.4	0.009	6.89	0.2		
36.1	11	13.14	8.10	77.0	7.4	0.009	6.88	0.2		
39.4	12	13.13	8.09	77.0	7.4	0.009	6.88	0.2		
42.7	13	13.11	8.07	76.8	7.4	0.009	6.87	0.3		
45.9	14	13.06	8.06	76.6	7.4	0.009	6.87	0.2		
49.2	15	13.04	8.04	76.3	7.4	0.009	6.87	0.2		
52.5	16	13.01	8.03	76.2	7.4	0.009	6.86	0.2		
55.8	17	13.00	8.01	76.0	7.4	0.009	6.85	0.2		
59.1	18	12.98	7.98	75.6	7.4	0.009	6.84	0.2		
62.3	19	12.88	7.94	75.1	7.4	0.009	6.82	0.2		
65.6	20	9.41	5.85	51.3	7.4	0.040	6.16	0.3		
68.9	21	9.01	5.61	48.6	7.2	0.010	6.11	0.1		
72.2	22	8.78	5.56	47.8	7.2	0.010	6.10	0.2		
75.5	23	8.66	5.63	48.4	7.1	0.010	6.10	0.2		
78.7	24	8.55	5.08	43.4	7.2	0.010	6.07	0.2		
82.0	25	8.45	4.55	38.6	7.4	0.010	6.04	0.3		
85.3	26	8.36	4.17	35.4	7.5	0.011	6.02	0.4		
88.6	27	8.28	3.89	32.8	7.7	0.011	6.01	0.6		
91.9	28	8.18	3.57	30.2	7.7	0.011	5.99	0.7		
95.1	29	7.93	2.71	22.8	8.3	0.012	5.97	0.1		
98.4	30	7.70	1.89	15.8	8.9	0.013	5.97	1.5		
101.7	31	7.56	1.21	10.0	9.4	0.014	5.98	1.5		
105.0	32	7.49	0.55	4.5	10.2	0.015	6.01	2.1		(Bottom)
108.3	33									
111.5	34									



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

Page ___ of ___

Date: 10/23/17
 Time: 10:30

Reservoir - Water Quality Vertical Profiles

Site Location: VAPP - R - JS - 10 - IHR
 Lat/Long (NAD83): _____

Instrument used: YSI 6920
 Water depth: 27.5 ft

Personnel: KKC + BTH

Secchi (ft): 20 ft

Site Notes: Sunny, cool, Breezy

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		13.26	8.05	76.9	7.4	0.009	6.83	0.2		
3.3	1	13.10	8.06	76.6	7.4	0.009	6.82	0.2		
6.6	2	13.07	8.05	76.5	7.4	0.009	6.80	0.3		
9.8	3	13.05	8.04	76.4	7.4	0.009	6.80	0.3		
13.1	4	13.04	8.04	76.3	7.4	0.009	6.81	0.2		
16.4	5	13.03	8.04	76.3	7.4	0.009	6.80	0.2		
19.7	6	13.00	8.05	76.4	7.4	0.009	6.81	0.2		
23.0	7	12.99	8.05	76.4	7.4	0.009	6.80	0.2		
26.2	8	12.99	8.04	76.4	7.4	0.009	6.79	0.3		
29.5	9	12.97	8.05	76.3	7.4	0.009	6.79	0.2		
32.8	10	12.97	8.05	76.4	7.4	0.009	6.78	0.2		
36.1	11	12.96	8.04	76.3	7.4	0.009	6.80	0.2		
39.4	12	12.95	8.04	76.2	7.4	0.009	6.80	0.2		
42.7	13	12.95	8.04	76.2	7.4	0.009	6.80	0.2		
45.9	14	12.93	8.04	76.2	7.4	0.009	6.79	0.2		
49.2	15	12.93	8.03	76.0	7.4	0.009	6.79	0.2		
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									



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

Page 1 of 1

Date: 10/23/17
 Time: 0915

Reservoir - Water Quality Vertical Profiles

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

Instrument used: YSI 6920
 Water depth: 42.9 ft

Personnel: KKC + BTH

Secchi (ft): 24 ft

Site Notes: Sunny, Cool

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		12.50	8.09	76.0	10	0.012	7.53	0.7		
3.3	1	12.50	8.46	76.0	9	0.012	7.51	0.7		
6.6	2	12.48	8.09	75.8	9	0.012	7.49	0.7		
9.8	3	12.47	8.07	75.7	9	0.012	7.48	0.7		
13.1	4	12.46	8.07	75.7	9	0.012	7.47	0.7		
16.4	5	12.46	8.06	75.6	9	0.012	7.45	0.7		
19.7	6	12.45	8.05	75.4	9	0.012	7.43	0.7		
23.0	7	12.45	8.05	75.4	9	0.012	7.40	0.7		
26.2	8	12.44	8.03	75.2	9	0.012	7.39	0.7		
29.5	9	12.44	8.03	75.3	9	0.012	7.38	0.6		
32.8	10	12.42	8.01	75.1	9	0.012	7.36	0.7		
36.1	11	12.42	8.01	75.0	9	0.012	7.36	0.6		
39.4	12	12.41	8.00	74.9	9	0.012	7.35	0.7		
42.7	13	12.41	8.00	74.8	9	0.012	7.34	0.7		
45.9	14	12.39	7.98	74.7	9	0.012	7.31	0.7		
49.2	15	12.39	7.96	74.5	9	0.012	7.26	2.4		
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									



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

Page 1 of 3

Date: 10/24/17
 Time: 1400

Reservoir - Water Quality Vertical Profiles

Site Location: APP - R - IS - B - UVR
 Lat/Long (NAD83): _____

Instrument Used: EXO
 Water depth: _____

Personnel: KKC + BTH

Secchi (ft): 24 ft

Site Notes: Sunny, Warm, Calm

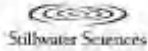
Depth (ft)	Temp (m)	DO		Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
		(mg/L)	(%)						
surface	16.18	7.88	80.2	8.4	0.010	6.75	0.3		
3.3	1	16.05	7.89	80.0	8.3	0.010	6.74	0.3	
6.6	2	15.94	7.87	79.7	8.3	0.010	6.74	0.3	
9.8	3	15.90	7.86	79.4	8.3	0.010	6.74	0.3	
13.1	4	15.83	7.84	79.1	8.3	0.010	6.73	0.3	
16.4	5	15.71	7.84	79.0	8.3	0.010	6.72	0.2	
19.7	6	15.62	7.84	78.8	8.2	0.010	6.72	0.3	
23.0	7	15.59	7.80	78.4	8.2	0.010	6.70	0.3	
26.2	8	15.54	7.78	78.1	8.2	0.010	6.70	0.2	
29.5	9	15.53	7.77	78.9	8.2	0.010	6.70	0.3	
32.8	10	15.52	7.76	77.8	8.2	0.010	6.68	0.2	
36.1	11	15.49	7.75	77.7	8.2	0.010	6.67	0.3	
39.4	12	15.48	7.75	77.6	8.2	0.010	6.67	0.3	
42.7	13	15.47	7.73	77.3	8.2	0.010	6.66	0.2	
45.9	14	15.47	7.73	77.4	8.2	0.010	6.66	0.2	
49.2	15	15.46	7.72	77.3	8.2	0.010	6.65	0.2	
52.5	16	15.45	7.71	77.2	8.2	0.010	6.65	0.2	
55.8	17	15.45	7.69	77.1	8.2	0.010	6.65	0.3	
59.1	18	15.44	7.69	77.0	8.2	0.010	6.64	0.2	
62.3	19	15.43	7.68	76.9	8.2	0.010	6.64	0.2	
65.6	20	15.43	7.68	76.8	8.2	0.010	6.63	0.3	
68.9	21	15.43	7.68	76.9	8.2	0.010	6.63	0.2	
72.2	22	15.43	7.69	76.9	8.2	0.010	6.64	0.3	
75.5	23	15.42	7.68	76.9	8.2	0.010	6.63	0.3	
78.7	24	15.42	7.68	76.9	8.2	0.010	6.63	0.2	
82.0	25	15.42	7.69	77.0	8.2	0.010	6.63	0.3	
85.3	26	15.42	7.71	77.2	8.2	0.010	6.64	0.2	
88.6	27	15.40	7.69	76.9	8.3	0.010	6.63	0.2	
91.9	28	15.39	7.68	76.8	8.3	0.010	6.63	0.2	
95.1	29	15.39	7.68	76.8	8.3	0.010	6.63	0.3	
98.4	30	15.39	7.68	76.8	8.2	0.010	6.63	0.3	
101.7	31	15.39	7.68	76.8	8.2	0.010	6.63	0.3	
105.0	32	15.38	7.67	76.7	8.2	0.010	6.62	0.2	
108.3	33	15.36	7.66	76.6	8.3	0.010	6.62	0.3	
111.5	34	15.35	7.67	76.6	8.3	0.010	6.62	0.3	



Stillewater 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)	(p.u.)	(NTU)		
(CONTINUED)										
114.8	36	15.34	7.67	77.6	8.3	2.010	6.62	0.2		
118.1	36	15.33	7.68	76.7	8.3	2.010	6.62	0.3		
121.4	37	15.32	7.68	76.7	8.3	2.010	6.61	0.2		
124.7	38	15.29	7.68	76.6	8.3	2.010	6.61	0.3		
128.0	38	15.21	7.66	76.3	8.3	2.010	6.59	0.2		
131.2	40	15.18	7.63	75.9	8.3	2.010	6.57	0.3		
134.5	41	15.16	7.59	75.3	8.2	2.010	6.52	0.3		
137.8	42	14.24	7.37	71.8	8.2	2.010	6.31	0.1		
141.1	43	13.86	7.19	69.5	8.1	2.010	6.21	0.1		
144.4	44	13.68	7.25	69.8	8.1	2.010	6.2	0.1		
147.6	45	13.50	7.26	69.7	8.1	2.010	6.19	0.1		
150.9	46	13.39	7.3	69.9	8.1	2.010	6.18	0.1		
154.2	47	13.24	7.39	70.6	8.0	2.010	6.19	0.1		
157.5	48	13.14	7.38	70.2	8.0	2.010	6.18	0.1		
160.8	48	13.02	7.4	70.3	8.0	2.010	6.18	0.1		
164.0	50	12.93	7.39	70.0	8.0	2.010	6.18	0.2		
167.3	51	12.89	7.4	70.0	8.0	2.010	6.18	0.1		
170.6	52	12.82	7.32	69.9	8.0	2.010	6.17	0.1		
173.9	53	12.74	7.4	69.8	8.0	2.010	6.17	0.1		
177.2	54	12.68	7.42	70.0	7.9	2.010	6.18	0.1		
180.4	55	12.58	7.39	69.4	8.0	2.010	6.17	0.1		
183.7	56	12.50	7.39	69.4	8.0	2.010	6.16	0.1		
187.0	57	12.37	7.32	68.4	8.0	2.010	6.15	0.1		
190.3	58	12.32	7.36	68.8	8.0	2.010	6.16	0.1		
193.6	58	12.23	7.30	68.0	8.0	2.010	6.15	0.2		
196.8	60	12.13	7.18	66.8	8.0	2.010	6.13	0.1		
200.1	61	12.00	7.01	65.0	8.1	2.010	6.12	0.2		
203.4	62	11.83	6.97	64.4	8.1	2.011	6.11	0.2		
206.7	63	11.76	7.00	64.6	8.1	2.011	6.11	0.1		
210.0	64	11.58	6.94	63.5	8.1	2.011	6.09	0.2		
213.3	65	11.27	6.83	62.3	8.1	2.011	6.08	0.2		
216.5	66	10.72	6.70	60.4	8.2	2.011	6.06	0.2		
219.8	67	9.93	6.82	60.3	8.1	2.011	6.06	0.2		
223.1	68	8.56	7.22	61.9	8.1	2.012	6.08	0.2		
226.4	69	7.79	7.45	62.7	8.2	2.012	6.08	0.2		
229.7	70	7.51	7.55	63.0	8.1	2.012	6.08	0.2		
232.9	71	7.48	7.57	63.1	8.1	2.012	6.08	0.3		
236.2	72	7.33	7.59	63.0	8.2	2.012	6.08	0.2		


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	7.10	7.42	61.4	8.3	0.013	6.06	0.3		
242.8	74	6.99	7.36	62.5	8.5	0.013	6.04	0.2		
246.1	75	6.93	7.48	61.6	8.4	0.013	6.07	0.2		
249.3	76	6.89	7.6	62.5	8.2	0.013	6.08	0.3		
252.6	77	6.83	7.69	63.2	8.2	0.012	6.09	0.2		
255.9	78	6.78	7.74	63.4	8.1	0.012	6.10	0.3		
259.2	79	6.75	7.67	62.8	8.2	0.013	6.09	0.3		
262.5	80	6.72	7.67	62.7	8.2	0.013	6.09	0.2		
265.7	81	6.68	7.62	62.3	8.2	0.013	6.09	0.3		
269.0	82	6.65	7.56	61.7	8.3	0.012	6.08	0.3		
272.3	83	6.65	7.48	61.1	8.3	0.013	6.08	0.3		
275.6	84	6.62	7.38	60.2	8.4	0.013	6.07	0.3		
278.9	85	6.60	7.14	58.2	8.6	0.013	6.06	0.3		
282.1	86	6.60	7.10	57.8	8.6	0.013	6.05	857.7		(Bottom)
285.4	87									
288.7	88									
292.0	89									
295.3	90									
298.6	91									
301.9	92									
305.1	93									
308.4	94									



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

Page 1 of 1

Date: 10/24/17

Time: 1200

Reservoir - Water Quality Vertical Profiles

Site Location: UARP R. IS. 7. UVR

Lat/Long (NAD83):

Personnel: BTH KKC

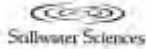
Instrument used: EXO

Water depth: 110 ft

Secchi (ft): 32 ft

Site Notes: sunny, warm, 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		15.92	7.80	79.2	8.4	0.010	7.06	0.2		
3.3	1	15.70	7.88	79.5	8.3	0.010	6.79	0.2		
6.6	2	15.60	7.87	79.1	8.3	0.010	6.79	0.2		
9.8	3	15.57	7.85	78.8	8.3	0.010	6.78	0.2		
13.1	4	15.54	7.84	78.7	8.3	0.010	6.77	0.3		
16.4	5	15.52	7.84	78.6	8.3	0.010	6.77	0.2		
19.7	6	15.51	7.85	78.7	8.3	0.010	6.76	0.2		
23.0	7	15.50	7.86	78.8	8.5	0.010	6.75	0.2		
26.2	8	15.49	7.76	77.8	8.2	0.010	6.74	0.2		
29.5	9	15.48	7.76	77.7	8.2	0.010	6.72	0.2		
32.8	10	15.47	7.76	77.7	8.3	0.010	6.71	0.3		
36.1	11	15.46	7.75	77.6	8.3	0.010	6.71	0.2		
39.4	12	15.46	7.73	77.5	8.3	0.010	6.70	0.3		
42.7	13	15.45	7.72	77.4	8.3	0.010	6.70	0.3		
45.9	14	15.44	7.73	77.4	8.3	0.010	6.70	0.2		
49.2	15	15.44	7.73	77.4	8.3	0.010	6.70	0.2		
52.5	16	15.44	7.74	77.5	8.3	0.010	6.70	0.2		
55.8	17	15.44	7.75	77.7	8.3	0.010	6.70	0.2		
59.1	18	15.44	7.76	77.7	8.3	0.010	6.70	0.2		
62.3	19	15.44	7.76	77.7	8.3	0.010	6.71	0.2		
65.6	20	15.43	7.78	77.9	8.3	0.010	6.71	0.2		
68.9	21	15.43	7.78	77.9	8.3	0.010	6.71	0.3		
72.2	22	15.43	7.78	77.9	8.3	0.010	6.71	0.2		
75.5	23	15.42	7.78	77.9	8.3	0.010	6.71	0.3		
78.7	24	15.40	7.78	77.9	8.3	0.010	6.70	0.2		
82.0	25	15.39	7.79	77.9	8.4	0.010	6.70	0.2		
85.3	26	15.38	7.78	77.8	8.4	0.010	6.70	0.2		
88.6	27	15.37	7.78	77.8	8.4	0.010	6.70	0.2		
91.9	28	15.36	7.77	77.7	8.4	0.010	6.69	0.2		
95.1	29	15.35	7.76	77.6	8.4	0.010	6.69	0.2		
98.4	30	15.34	7.76	77.5	8.4	0.010	6.69	0.2		
101.7	31	15.34	7.76	77.5	8.4	0.010	6.69	0.2		
105.0	32	15.34	7.76	77.6	8.4	0.010	6.68	0.2		
108.3	33	15.33	7.77	77.6	8.4	0.010	6.68	0.3		
111.5	34	15.31	7.77	77.7	8.4	0.010	6.62	100.30		(Bottom)



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

Page 1 of 1

Date: 10/24/17
 Time: 13:15

Reservoir - Water Quality Vertical Profiles

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

Instrument used: YSI 6920
 Water depth: 102 ft

Personnel: BTH + KVC

Secchi (ft): 26.5 ft

Site Notes: Sunny, Cool

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		14.95	7.83	81.4	8.6	0.010	6.73	0.2		
3.3	1	15.65	7.87	79.1	8.3	0.010	6.72	0.2		
6.6	2	15.53	7.87	79.0	8.3	0.010	6.72	0.2		
9.8	3	15.48	7.86	78.8	8.3	0.010	6.72	0.3		
13.1	4	15.45	7.85	78.6	8.3	0.010	6.73	0.2		
16.4	5	15.45	7.83	78.3	8.7	0.010	6.73	0.2		
19.7	6	15.43	7.84	78.5	8.3	0.010	6.73	0.3		
23.0	7	15.42	7.85	78.5	8.3	0.010	6.73	0.3		
26.2	8	15.42	7.82	78.3	8.3	0.010	6.72	0.3		
29.5	9	15.41	7.8	78.0	8.3	0.010	6.72	0.3		
32.8	10	15.41	7.8	78.0	8.7	0.010	6.72	0.2		
36.1	11	15.41	7.79	78.0	8.3	0.010	6.72	0.3		
39.4	12	15.41	7.79	78.0	8.3	0.010	6.71	0.2		
42.7	13	15.40	7.79	77.9	8.2	0.010	6.71	0.3		
45.9	14	15.40	7.78	77.9	8.3	0.010	6.71	0.2		
49.2	15	15.40	7.78	77.8	8.3	0.010	6.71	0.2		
52.5	16	15.39	7.78	77.7	8.3	0.010	6.70	0.3		
55.8	17	15.39	7.78	77.7	8.2	0.010	6.69	0.3		
59.1	18	15.39	7.78	77.8	8.2	0.010	6.69	0.3		
62.3	19	15.39	7.78	77.8	8.3	0.010	6.69	0.3		
65.6	20	15.39	7.77	77.7	8.3	0.010	6.69	0.2		
68.9	21	15.39	7.77	77.8	8.2	0.010	6.68	0.2		
72.2	22	15.39	7.78	77.8	8.2	0.010	6.68	0.2		
75.5	23	15.38	7.78	77.8	8.2	0.010	6.68	0.2		
78.7	24	15.38	7.78	77.9	8.3	0.010	6.68	0.3		
82.0	25	15.38	7.77	77.9	8.3	0.010	6.68	0.3		
85.3	26	15.38	7.79	77.9	8.3	0.010	6.68	0.2		
88.6	27	15.38	7.79	77.9	8.3	0.010	6.68	0.2		
91.9	28	15.38	7.78	77.8	8.3	0.010	6.68	0.2		
95.1	29	15.37	7.78	77.8	8.3	0.010	6.69	0.2		
98.4	30	15.24	7.58	75.8	8.7	0.011	6.65	11.01		Bottom
101.7	31									
105.0	32									
108.3	33									
111.5	34									



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

Page 1 of 1

Date: 10/24/17
 Time: 1100

Reservoir - Water Quality Vertical Profiles

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

Instrument used: YSI 6920
 Water depth: 43.5 ft

Personnel: BTH + KKC

Secchi (ft): 30 ft

Site Notes: Sunny, Cool

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		15.57	7.96	79.9	8.4	0.010	6.88	0.3		
3.3	1	15.55	7.96	79.8	8.4	0.010	6.86	0.3		
6.6	2	15.46	7.97	79.8	8.4	0.010	6.84	0.3		
9.8	3	15.45	7.98	80.0	8.4	0.010	6.87	0.3		
13.1	4	15.44	7.98	79.9	8.4	0.010	6.82	0.2		
16.4	5	15.42	7.95	79.6	8.4	0.010	6.82	0.3		
19.7	6	15.39	7.92	79.2	8.4	0.010	6.81	0.3		
23.0	7	15.35	7.91	79.0	8.4	0.010	6.81	0.3		
26.2	8	15.34	7.91	79.0	8.4	0.010	6.80	0.3		
29.5	9	15.34	7.92	79.1	8.4	0.010	6.80	0.3		
32.8	10	15.33	7.92	79.1	8.4	0.010	6.80	0.3		
36.1	11	15.33	7.93	79.2	8.4	0.010	6.80	0.3		
39.4	12	15.34	7.93	79.3	8.4	0.010	6.79	0.3		
42.7	13	15.30	7.94	79.3	8.4	0.010	6.79	4.5		(Bottom)
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									



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

Page 1 of 1

Date: 10/25/17
 Time: 1045

Reservoir - Water Quality Vertical Profiles

Site Location: UARP-R-15-1-LL
 Lat/Long (NAD83): _____

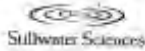
Instrument used: Exo
 Water depth: 52ft.

Personnel: BTH + KKC

Secchi (ft): 19 ft

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		10.70	9.06	81.4	6.1	0.008	6.90	0.1		
3.3	1	10.07	9.07	80.5	6.0	0.008	6.86	0.1		
6.6	2	10.00	9.04	80.0	6.0	0.008	6.84	0.2		
9.8	3	9.98	9.03	80.0	6.0	0.008	6.84	0.2		
13.1	4	9.95	9.02	79.8	6.0	0.008	6.83	0.2		
16.4	5	9.93	9.02	79.8	6.0	0.008	6.83	0.2		
19.7	6	9.91	9.01	79.6	5.9	0.008	6.81	0.2		
23.0	7	9.90	9.01	79.6	6.0	0.008	6.81	0.1		
26.2	8	9.90	9.02	79.8	6.0	0.008	6.80	0.2		
29.5	9	9.89	9.03	79.8	6.0	0.008	6.80	0.2		
32.8	10	9.89	9.01	79.7	5.9	0.008	6.80	0.2		
36.1	11	9.88	9.02	79.7	5.9	0.008	6.78	0.2		
39.4	12	9.87	9.01	79.6	5.9	0.008	6.76	0.2		
42.7	13	9.85	9.00	79.4	6.0	0.008	6.76	0.2		
45.9	14	9.84	8.99	79.2	6.0	0.008	6.75	0.3		
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									



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

Page 1 of 1

Date: 10/25/17
 Time: 1145

Reservoir - Water Quality Vertical Profiles

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

Instrument used: EXO
 Water depth: 89.4

Personnel: RTH + KKC

Secchi (ft): 23.4

Site Notes: Sunny, warm, calm

Depth (ft)	Temp (°C)	DO		Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
		(mg/L)	(%)						
surface	10.57	9.02	81.0	5.7	0.008	6.93	0.01		
3.3	10.22	9.07	80.7	5.7	0.008	6.89	0.1		
6.6	10.15	9.04	80.4	5.7	0.008	6.90	0.1		
8.8	10.10	9.04	80.2	5.7	0.008	6.89	0.1		
13.1	10.09	9.03	80.2	5.7	0.008	6.88	0.1		
16.4	10.07	9.04	80.2	5.7	0.008	6.88	0.1		
18.7	10.06	9.02	80.0	5.7	0.008	6.87	0.1		
23.0	10.05	9.01	79.9	5.7	0.008	6.87	0.1		
26.2	10.05	9.00	79.8	5.7	0.008	6.86	0.1		
29.5	10.04	9.01	79.8	5.7	0.008	6.85	0.1		
32.8	10.04	9.01	79.8	5.6	0.008	6.84	0.1		
36.1	10.03	9.00	79.8	5.7	0.008	6.83	0.1		
39.4	10.02	9.00	79.8	5.7	0.008	6.83	0.1		
42.7	10.02	9.00	79.8	5.7	0.008	6.83	0.1		
45.9	10.02	9.01	79.8	5.7	0.008	6.82	0.1		
49.2	10.02	9.01	79.9	5.6	0.008	6.81	0.1		
52.5	10.02	9.01	79.9	5.7	0.008	6.81	0.2		
55.8	10.02	9.02	79.9	5.7	0.008	6.80	0.2		
59.1	10.02	9.02	80.0	5.7	0.008	6.81	0.1		
62.3	10.02	9.03	80.0	5.7	0.008	6.81	0.1		
65.6	10.02	9.03	80.0	5.7	0.008	6.81	0.1		
68.9	10.01	8.90	79.0	5.7	0.008	6.80	5.76		
72.2									
75.5									
78.7									
82.0									
85.3									
88.6									
91.9									
95.1									
98.4									
101.7									
105.0									
108.3									
111.5									



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

Page 1 of 1

Date: 10/25/17
 Time: 1315

Reservoir - Water Quality Vertical Profiles

Site Location: UARP-R-TS-3-1L
 Lat/Long (NAD83): _____

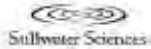
Instrument used: EXO
 Water depth: 10 ft

Personnel: BTH + KKC

Secchi (ft): 12 ft

Site Notes: Sunny, warm, Breezy

Depth		Temp (°C)	DO		Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
(ft)	(m)		(mg/L)	(%)						
surface		11.13	9.09	82.7	5.8	0.008	6.97	0.1		
3.3	1	10.21	9.12	81.2	5.6	0.008	6.94	0.1		
6.6	2	10.09	9.09	80.7	5.6	0.008	6.92	0.3		
9.8	3	10.05	9.08	80.6	5.6	0.008	6.91	0.3		
13.1	4									
16.4	5									
19.7	6									
23.0	7									
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									


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

 Page 1 of 2

 Date: 10/30/2017
 Time: 1306
Reservoir - Water Quality Vertical Profiles

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

 Instrument used: YSI EXD
 Water depth: 129.11

 Personnel: BTH WMS

 Secchi (ft): 10.2

Site Notes: _____

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		12.11	10.06	93.6	16.5	0.022	6.82	0.6		
3.3	1	12.09	10.10	93.9	16.5	0.022	6.81	0.6		
6.6	2	12.03	10.08	93.6	16.5	0.022	6.80	0.6		
9.9	3	11.94	10.03	93.0	16.5	0.022	6.81	0.7		
13.1	4	11.84	10.03	92.7	16.4	0.022	6.80	0.7		
16.4	5	11.81	10.01	92.5	16.4	0.022	6.79	0.7		
19.7	6	11.79	10.01	92.4	16.3	0.022	6.77	0.6		
23.0	7	11.78	10.03	92.6	16.2	0.022	6.76	0.6		
26.2	8	11.76	10.05	92.7	16.2	0.022	6.75	0.5		
29.5	9	11.76	10.05	92.7	16.1	0.022	6.75	0.7		
32.8	10	11.71	10.04	92.6	16.0	0.021	6.73	0.6		
36.1	11	11.66	10.00	92.0	16.0	0.021	6.72	0.6		
39.4	12	11.61	9.95	91.5	15.8	0.021	6.70	0.6		
42.7	13	11.54	9.96	91.8	14.9	0.020	6.67	0.6		
45.9	14	11.47	10.02	91.9	16.0	0.022	6.68	0.5		
49.2	15	11.34	10.80	92.2	15.1	0.020	6.70	0.5		
52.5	16	11.23	10.15	92.6	13.6	0.018	6.67	0.4		
55.8	17	11.14	10.14	92.2	13.7	0.019	6.64	0.4		
59.1	18	11.08	10.13	92.1	13.6	0.019	6.62	0.5		
62.3	19	11.06	10.14	92.2	13.5	0.018	6.61	0.4		
65.6	20	11.04	10.15	92.1	13.6	0.019	6.60	0.5		
68.9	21	11.01	10.13	91.9	13.6	0.019	6.60	0.5		
72.2	22	10.97	10.08	91.3	13.6	0.019	6.60	0.4		
75.5	23	10.95	10.05	91.0	13.5	0.018	6.59	0.4		
78.7	24	10.94	10.03	90.8	13.5	0.019	6.59	0.5		
82.0	25	10.92	9.93	89.8	13.5	0.019	6.59	0.6		
85.3	26	10.89	9.76	88.2	13.5	0.019	6.57	0.5		
88.6	27	10.89	9.68	87.5	13.6	0.019	6.56	0.5		
91.9	28	10.87	9.49	85.8	13.7	0.019	6.55	0.6		
95.1	29	10.87	9.40	84.9	13.7	0.019	6.54	0.7		
98.4	30	10.86	9.38	84.9	13.7	0.019	6.54	0.8		
101.7	31	10.84	9.35	84.5	13.7	0.019	6.53	0.6		
105.0	32	10.84	9.28	83.8	13.7	0.019	6.53	0.7		
108.3	33	10.83	9.23	83.4	13.8	0.019	6.52	0.6		
111.5	34	10.82	9.22	83.2	13.7	0.019	6.52	0.9		



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	10.81	9.09	81.8	13.9	0.019	6.51	0.8		
118.1	36	10.81	8.91	80.4	14.0	0.019	6.50	1.2		
121.4	37	10.80	8.61	77.8	14.3	0.021	6.48	2.4		
124.7	38	10.80	8.35	74.7	14.7	0.020	6.45	21.45		BOTTOM
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									



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

Page 1 of 1

Date: 10/30/2017
 Time: 1130

Reservoir - Water Quality Vertical Profiles

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

Instrument used: YSI EXO
 Water depth: 34.2

Personnel: BTH MJD

Secchi (ft): 13.5

Site Notes: _____

Depth		Temp (°C)	DO		Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
(ft)	(m)		(mg/L)	(%)						
surface		11.66	10.32	95.0	16.4	0.022	6.87	0.6		
3.3	1	11.62	10.34	95.7	16.3	0.022	6.85	0.6		
6.6	2	11.60	10.34	95.2	16.4	0.022	6.86	0.6		
9.8	3	11.58	10.34	95.0	16.4	0.022	6.85	0.5		
13.1	4	11.58	10.32	94.8	16.4	0.022	6.85	0.6		
16.4	5	11.57	10.29	94.6	16.5	0.022	6.84	0.5		
19.7	6	11.56	10.27	94.4	16.6	0.022	6.84	0.5		
23.0	7	11.56	10.26	94.3	16.6	0.022	6.84	0.6		
26.2	8	11.55	10.26	94.3	16.7	0.022	6.84	0.7		
29.5	9	11.55	10.26	94.3	16.7	0.022	6.84	0.7		
32.8	10	11.55	10.26	94.2	16.7	0.022	6.83	45.6		BOTTOM
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									



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

Page 1 of 1

Date: 10/31/17
 Time: 1035

Reservoir - Water Quality Vertical Profiles

Site Location: UARP-R-15-18-2R
 Lat/Long (NAD83): _____

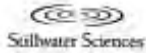
Instrument used: YSI EXO
 Water depth: 13

Personnel: BTH MND

Secchi (ft): 13.1

Site Notes: _____

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(in)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		9.75	8.27	72.8	8.8	0.012	6.88	0.4		
3.3	1	9.69	8.27	72.7	8.8	0.012	6.80	0.4		
6.6	2	9.63	8.29	72.9	8.8	0.012	6.75	0.5		
9.8	3	9.52	8.23	72.0	8.8	0.012	6.72	0.5		BOTTOM
13.1	4									
16.4	5									
19.7	6									
23.0	7									
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									



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

Page 1 of 1

Date: 11/2/17

Time: 1135

Reservoir - Water Quality Vertical Profiles

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

Instrument used: YSI EXD

Water depth: 23ft

Personnel: BTH MND

Secchi (ft): 20ft

Site Notes: _____

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.p.)	(NTU)		
surface		9.99	9.16	81.0	9.3	0.013	6.94	0.3		
3.3	1	9.95	9.14	80.9	9.2	0.013	6.89	0.2		
6.6	2	9.93	9.09	80.4	9.0	0.013	6.83	0.4		
9.8	3	9.89	9.07	80.2	8.9	0.012	6.80	0.3		
13.1	4	9.64	9.15	80.4	8.1	0.011	6.76	0.3		
16.4	5	9.43	9.12	79.6	7.9	0.011	6.70	0.3		
19.7	6	9.22	8.95	77.8	7.9	0.011	6.64	0.4		
23.0	7	8.32	9.08	77.4	8.2	0.012	6.63	28.3		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									



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

Page 1 of 1

Date: 11/2/17
 Time: 1350

Reservoir - Water Quality Vertical Profiles

Site Location: R-11-12-JR
 Lat/Long (NAD83): _____

Instrument used: YSI EXO
 Water depth: 64 F+

Personnel: RTH MMS

Secchi (ft): 30ft

Site Notes: _____

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		12.04	8.17	75.9	8.2	0.011	6.26	0.02		
3.3	1	11.96	8.18	75.9	8.2	0.011	6.25	0.1		
6.6	2	11.89	8.19	75.8	8.2	0.011	6.25	0.1		
9.8	3	11.86	8.20	75.8	8.2	0.011	6.24	0.1		
13.1	4	11.77	8.23	76.0	8.2	0.011	6.26	0.1		
16.4	5	11.70	8.26	76.2	8.2	0.011	6.26	0.1		
19.7	6	11.68	8.26	76.1	8.1	0.011	6.26	0.1		
23.0	7	11.66	8.27	76.1	8.1	0.011	6.26	0.1		
26.2	8	11.63	8.28	76.2	8.1	0.011	6.26	0.1		
29.5	9	11.61	8.27	76.1	8.1	0.011	6.26	0.1		
32.8	10	11.58	8.27	76.0	8.1	0.011	6.26	0.1		
36.1	11	11.46	8.29	76.0	8.2	0.011	6.27	0.1		
39.4	12	11.38	8.31	76.1	8.2	0.011	6.28	0.2		
42.7	13	11.32	8.34	76.1	8.3	0.011	6.29	0.1		
45.9	14	11.24	8.36	76.3	8.2	0.011	6.29	0.1		
49.2	15	11.13	8.41	76.5	8.3	0.011	6.30	0.1		
52.5	16	11.04	8.44	76.6	8.3	0.011	6.30	0.1		
55.8	17	10.43	8.67	77.1	8.5	0.012	6.35	0.1		
59.1	18	10.29	8.67	77.4	8.5	0.012	6.35	0.2		
62.3	19	10.25	8.49	75.7	8.9	0.012	6.37	137.95		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									



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

Page 7 of 1

Date: 11/13/17
 Time: 10:25

Reservoir - Water Quality Vertical Profiles

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

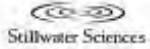
Instrument used: YSI EXO
 Water depth: 51.5-A

Personnel: BTH, KKC

Secchi (ft): 20ft

Site Notes: Cloudy, Cold

Depth		Temp (°C)	DO		Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
(ft)	(m)		(mg/L)	(%)						
surface		11.00	8.55	77.5	7.2	0.010	6.85	0.1		
3.3	1	10.99	8.52	77.2	7.2	0.010	6.80	0.02		
6.6	2	10.96	8.49	76.9	7.2	0.010	6.76	0.02		
9.8	3	10.95	8.50	77.0	7.2	0.010	6.74	0.03		
13.1	4	10.94	8.50	77.0	7.2	0.010	6.74	0.1		
16.4	5	10.93	8.49	76.9	7.2	0.010	6.75	0.05		
19.7	8	10.93	8.45	76.6	7.2	0.010	6.75	0.05		
23.0	7	10.92	8.42	76.2	7.2	0.010	6.74	0.05		
26.2	8	10.92	8.39	76.0	7.2	0.010	6.74	0.2		
29.5	9	10.92	8.39	76.0	7.2	0.010	6.73	0.1		
32.8	10	10.91	8.40	76.0	7.2	0.010	6.72	0.1		
36.1	11	10.91	8.40	76.0	7.2	0.010	6.73	0.1		
39.4	12	10.91	8.40	76.1	7.2	0.010	6.73	0.01		
42.7	13	10.90	8.39	75.9	7.2	0.010	6.72	0.04		
45.9	14	10.90	8.38	75.8	7.2	0.010	6.72	0.04		
49.2	15	10.89	8.37	75.8	7.2	0.010	6.71	0.02		
52.5	16	10.88	8.36	75.5	7.2	0.010	6.70	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									



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

Page 1 of 1

Date: 11/13/17
 Time: 1100

Reservoir - Water Quality Vertical Profiles

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

Instrument used: YSI EXO
 Water depth: 34 ft

Personnel: KKC, BTH

Secchi (ft): 26 ft

Site Notes: Cloudy, Cold

Depth (ft)	Temp (m)	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface	11.00	8.36	75.9	7.2	0.010	6.90	0.04		
3.3	1	10.99	8.37	75.9	7.2	0.010	6.83	0.04	
6.6	2	10.97	8.37	75.9	7.2	0.010	6.81	0.11	
9.8	3	10.96	8.38	75.9	7.2	0.010	6.79	0.02	
13.1	4	10.95	8.37	75.8	7.2	0.010	6.80	0.07	
16.4	5	10.94	8.35	75.6	7.2	0.010	6.79	0.04	
19.7	6	10.94	8.34	75.5	7.2	0.010	6.79	0.02	
23.0	7	10.94	8.34	75.5	7.2	0.010	6.78	0.04	
26.2	8	10.94	8.34	75.5	7.2	0.010	6.77	0.03	
29.5	9	10.93	8.35	75.6	7.1	0.010	6.77	0.03	
32.8	10	10.89	8.40	76.0	7.2	0.010	6.77	123.84	Surface BOTTOM
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								



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

Page 1 of 1

Date: 11/13/17
 Time: 1145

Reservoir - Water Quality Vertical Profiles

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

Instrument used: YSI 600
 Water depth: 54.6 ft

Personnel: BTM, KKC

Secchi (ft): 27 ft

Site Notes: Cloudy, cold

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(p.u.)	(NTU)		
surface		10.99	8.19	74.3	7.2	0.010	6.77	0.02		
3.3	1	10.94	8.21	74.4	7.2	0.010	6.74	0.02		
6.6	2	10.91	8.23	74.5	7.2	0.010	6.74	0.03		
9.8	3	10.89	8.21	74.3	7.2	0.010	6.73	0.02		
13.1	4	10.87	8.19	74.0	7.2	0.010	6.72	0.06		
16.4	5	10.87	8.18	73.9	7.2	0.010	6.71	0.04		
19.7	6	10.86	8.17	73.9	7.2	0.010	6.73	0.02		
23.0	7	10.86	8.17	73.9	7.2	0.010	6.72	0.01		
26.2	8	10.86	8.18	74.0	7.2	0.010	6.72	0.02		
29.5	9	10.85	8.18	74.0	7.2	0.010	6.72	0.02		
32.8	10	10.85	8.19	74.0	7.2	0.010	6.71	0.08		
36.1	11	10.85	8.18	74.0	7.2	0.010	6.72	0.06		
39.4	12	10.85	8.18	73.9	7.2	0.010	6.69	0.05		
42.7	13	10.85	8.18	73.9	7.2	0.010	6.70	0.20		
45.9	14	10.85	8.18	74.0	7.2	0.010	6.70	0.01		
49.2	15	10.84	8.19	73.9	7.2	0.010	6.69	0.05		
52.5	16	10.84	8.17	73.9	7.2	0.010	6.70	0.11		
55.8	17	10.83	8.16	73.7	7.2	0.010	6.69	0.04		
59.1	18	10.81	8.15	73.4	7.2	0.010	6.67	0.05		
62.3	19	10.80	8.14	73.5	7.2	0.010	6.67	0.02		
65.6	20	10.73	8.04	72.4	7.2	0.010	6.65	0.06		
68.9	21	10.68	7.97	71.5	7.2	0.010	6.60	0.05		
72.2	22	10.59	7.59	68.2	7.3	0.010	6.51	0.20		
75.5	23	10.39	6.50	58.1	7.6	0.011	6.28	0.13		
78.7	24	9.91	5.21	45.6	7.7	0.011	6.10	0.20		
82.0	25	8.86	4.48	38.4	7.6	0.011	5.96	0.24		
85.3	26	8.61	2.83	23.1	8.1	0.012	5.88	0.56		
88.6	27	8.37	2.22	18.6	8.4	0.012	5.83	0.66		
91.9	28	8.22	1.79	15.0	8.7	0.013	5.80	0.77		
95.1	29	8.06	1.43	12.0	11.3	0.017	6.08	739.21		BOTTOM
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									



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

Page 1 of 1

Date: 11/14/17
 Time: 1045

Reservoir - Water Quality Vertical Profiles

Site Location: UARR-E-IS-1-U
 Lat/Long (NAD83): _____

Instrument used: YSI EXO
 Water depth: 48.5ft

Personnel: BTJ, KKC

Secchi (ft): 23.54

Site Notes: clear, sunny, cold, windy

Depth		Temp	DD		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		7.09	9.57	79.0	5.7	0.009	6.76	0.5		
3.3	1	7.05	9.57	78.9	5.7	0.009	6.66	0.62		
6.6	2	7.03	9.58	79.0	5.7	0.009	6.61	0.54		
9.8	3	7.02	9.62	79.2	5.7	0.009	6.61	0.57		
13.1	4	7.01	9.53	78.6	5.7	0.009	6.61	0.63		
16.4	5	6.99	9.51	78.3	5.7	0.009	6.62	0.66		
19.7	6	7.00	9.49	78.2	5.7	0.009	6.62	0.70		
23.0	7	7.00	9.49	78.2	5.7	0.009	6.62	0.66		
26.2	8	7.00	9.49	78.2	5.7	0.009	6.61	0.66		
29.5	9	6.99	9.49	78.2	5.7	0.009	6.61	0.60		
32.8	10	6.99	9.49	78.2	5.7	0.009	6.61	0.65		
36.1	11	6.99	9.49	78.1	5.7	0.009	6.61	0.54		
39.4	12	6.99	9.49	78.2	5.7	0.009	6.61	0.57		
42.7	13	6.99	9.49	78.2	5.7	0.009	6.60	0.51		
45.9	14	6.99	9.49	78.2	5.7	0.009	6.60	0.62		
49.2	15	6.99	9.50	78.2	5.7	0.009	6.60	0.57		
52.5	16	6.99	9.50	78.2	5.7	0.009	6.60	0.57		
55.8	17	7.00	9.50	78.3	5.7	0.009	6.60	0.66		
59.1	18	7.00	9.49	78.2	5.7	0.009	6.60	0.57		
62.3	19	7.00	9.51	78.3	5.7	0.009	6.61	0.65		
65.6	20									BOTTOM
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									



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

Page 1 of 1

Date: 6/14/17
 Time: 11:15

Reservoir - Water Quality Vertical Profiles

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

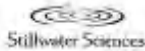
Instrument used: YSI EXO
 Water depth: 70ft

Personnel: KKC, BTA

Secchi (ft): 19ft

Site Notes: Clear, 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		7.39	9.54	79.4	5.3	0.008	6.80	0.47		
3.3	1	7.38	9.54	79.4	5.3	0.008	6.77	0.49		
6.6	2	7.38	9.55	79.4	5.3	0.008	6.77	0.50		
9.8	3	7.36	9.56	79.5	5.3	0.008	6.77	0.48		
13.1	4	7.36	9.56	79.5	5.3	0.008	6.76	0.50		
16.4	5	7.36	9.55	79.4	5.3	0.008	6.78	0.44		
19.7	6	7.36	9.54	79.4	5.3	0.008	6.78	0.44		
23.0	7	7.36	9.54	79.3	5.3	0.008	6.76	0.44		
26.2	8	7.35	9.54	79.3	5.3	0.008	6.77	0.42		
29.5	9	7.35	9.54	79.3	5.3	0.008	6.78	0.51		
32.8	10	7.35	9.55	79.4	5.3	0.008	6.76	0.45		
36.1	11	7.32	9.57	79.5	5.3	0.008	6.79	0.50		
39.4	12	7.28	9.50	78.9	5.7	0.009	6.76	35.20		Bottom
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									



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

Page 1 of 1

Date: 11/14/17
 Time: 1230

Reservoir - Water Quality Vertical Profiles

Site Location: UARP-R-TS-3-LL
 Lat/Long (NAD83): _____

Instrument used: YSI EXO
 Water depth: 22 ft

Personnel: KKC, BTH

Secchi (ft): 17 ft

Site Notes: Clear, 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		7.18	9.59	79.4	5.3	0.008	6.79	0.50		
3.3	1	7.17	9.60	79.4	5.3	0.008	6.75	0.48		
6.6	2	7.16	9.60	79.4	5.3	0.008	6.74	0.52		
9.8	3	7.14	9.60	79.3	5.3	0.008	6.73	0.55		
13.1	4	7.07	9.60	79.3	5.3	0.008	6.72	0.44		
16.4	5	7.07	9.58	79.1	5.3	0.008	6.74	4.5		
19.7	6	7.03	9.58	79.0	5.3	0.008	6.72	63.31		BOTTOM
23.0	7									
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									



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

Page 1 of 1

Date: 11/15/17
 Time: 15:00

Reservoir - Water Quality Vertical Profiles

Site Location: R-15-S-UNR
 Lat/Long (NAD83): _____

Instrument used: YSI EXO
 Water depth: 38 ft

Personnel: RTU JAND

Secchi (ft): 30

Site Notes: ONE POINT, SKINNY

Depth		Temp (°C)	DO		Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (a.u.)	Turbidity (NTU)	Water Sample	Notes
(ft)	(m)		(mg/L)	(%)						
surface		13.19	8.29	79.0	7.9	0.010	6.84	0.03		
3.3	1	13.16	8.31	79.2	7.9	0.010	6.79	0.02		
6.6	2	13.21	8.28	79.1	7.9	0.010	6.79	0.10		
9.8	3	13.21	8.27	78.9	7.9	0.010	6.78	0.14		
13.1	4	13.20	8.26	78.8	7.9	0.010	6.77	0.04		
16.4	5	13.19	8.26	78.8	7.9	0.010	6.77	0.04		
19.7	6	13.12	8.27	78.7	7.9	0.010	6.77	0.03		
23.0	7	13.10	8.28	78.8	7.9	0.010	6.78	0.03		
26.2	8	13.09	8.29	78.9	7.9	0.010	6.77	0.06		
29.5	9	13.04	8.30	78.9	7.9	0.010	6.76	0.02		
32.8	10	13.00	8.32	78.7	8.0	0.010	6.75	0.06		
36.1	11	12.30	8.46	78.5	8.2	0.011	6.75	0.07		
39.4	12	11.59	8.61	78.0	8.5	0.011	6.72	124.41		Bottom
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									



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

Page 1 of 2

Date: 11/15/17
 Time: 1:35

Reservoir - Water Quality Vertical Profiles

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

Instrument used: YSI EXO
 Water depth: 101

Personnel: BTH MND

Secchi (ft): 30ft

Site Notes: OVERCAST RAINING

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		13.44	8.14	78.1	8.0	0.010	6.93	0.01		
3.3	1	13.45	8.09	77.6	8.0	0.010	6.89	0.04		
6.6	2	13.46	8.11	77.7	8.0	0.010	6.90	0.02		
9.8	3	13.46	8.10	77.7	8.0	0.010	6.77	0.02		
13.1	4	13.45	8.09	77.6	8.0	0.010	6.75	0.04		
16.4	5	13.46	8.06	77.3	8.0	0.010	6.75	0.02		
19.7	6	13.46	8.05	77.2	8.0	0.010	6.76	0.04		
23.0	7	13.46	8.05	77.2	8.0	0.010	6.73	0.09		
26.2	8	13.46	8.03	77.4	8.0	0.010	6.73	0.01		
29.5	9	13.46	8.00	77.2	8.0	0.010	6.72	0.09		
32.8	10	13.46	8.01	76.3	8.0	0.010	6.72	0.15		
36.1	11	13.46	8.00	76.7	8.0	0.010	6.73	0.08		
39.4	12	13.46	8.00	76.7	8.0	0.010	6.71	0.09		
42.7	13	13.46	8.01	76.8	8.0	0.010	6.72	0.07		
45.9	14	13.46	8.02	76.8	8.0	0.010	6.73	0.11		
49.2	15	13.46	8.02	76.9	8.0	0.010	6.71	0.01		
52.5	16	13.46	8.02	76.9	8.0	0.010	6.74	0.04		
55.8	17	13.45	8.02	76.9	8.0	0.010	6.74	0.05		
59.1	18	13.45	8.02	76.9	8.0	0.010	6.73	0.09		
62.3	19	13.45	8.02	76.9	8.0	0.010	6.72	0.05		
65.6	20	13.45	8.02	76.9	8.0	0.010	6.71	0.09		
68.9	21	13.45	8.02	76.9	8.0	0.010	6.71	0.09		
72.2	22	13.45	8.02	76.9	8.0	0.010	6.72	0.08		
75.5	23	13.46	8.02	76.9	8.0	0.010	6.70	0.02		
78.7	24	13.43	8.00	77.0	8.0	0.010	6.69	0.04		
82.0	25	13.44	8.03	77.0	8.0	0.010	6.71	0.05		
85.3	26	13.43	8.04	77.1	8.0	0.010	6.69	0.02		
88.6	27	13.43	8.05	77.2	8.0	0.010	6.71	0.13		
91.9	28	13.43	8.05	77.2	8.0	0.010	6.70	0.06		
95.1	29	13.42	8.06	77.2	8.0	0.010	6.69	0.07		
98.4	30	13.41	8.06	77.2	8.0	0.010	6.70	0.02		
101.7	31	13.41	8.07	77.2	8.0	0.010	6.69	0.02		
105.0	32	13.41	8.07	77.2	8.0	0.010	6.69	0.04		
108.3	33	13.39	8.07	77.3	8.0	0.010	6.69	0.03		
111.5	34	13.38	8.07	77.3	8.0	0.010	6.69	0.03		


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	17.78	8.18	77.5	8.0	0.076	6.65	0.04		
118.1	36	18.37	8.08	77.7	8.0	0.076	6.70	0.04		
121.4	37	18.26	8.08	77.7	8.0	0.076	6.70	0.11		
124.7	38	18.24	8.11	77.6	8.0	0.076	6.70	0.09		
128.0	39	17.94	8.22	77.9	8.2	0.071	6.70	0.04		
131.2	40	18.09	8.25	78.1	8.2	0.071	6.69	0.03		
134.5	41	12.80	8.25	78.2	8.2	0.071	6.69	0.07		
137.8	42	12.57	8.30	78.2	8.2	0.071	6.68	0.07		
141.1	43	12.06	8.30	78.2	8.2	0.071	6.68	0.24		
144.4	44	12.68	8.30	78.2	8.2	0.071	6.68	0.12		
147.6	45	12.30	8.30	78.3	8.2	0.071	6.68	0.17.65		bottom
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									



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

Page 1 of 2

Date: 11/15/17
 Time: 10:30

Reservoir - Water Quality Vertical Profiles

Site Location: R-15-7- UVR
 Lat/Long (NAD83): _____

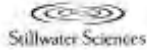
Instrument used: YSI Exo
 Water depth: 108

Personnel: BTU MAD

Secchi (ft): 30

Site Notes: DUE TO RAINING

Depth (ft)	Temp (m)	DO		Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
		(mg/L)	(%)						
surface	13.44	8.12	77.8	8.0	0.010	6.69	0.06		
3.3	13.46	8.10	78.0	8.0	0.010	6.67	0.03		
6.6	13.47	8.13	78.0	8.0	0.010	6.66	0.03		
9.8	13.47	8.11	77.8	8.0	0.010	6.66	0.02		
13.1	13.47	8.09	77.6	8.0	0.010	6.65	0.04		
16.4	13.47	8.07	77.4	8.0	0.010	6.65	0.03		
19.7	13.47	8.08	77.4	8.0	0.010	6.65	0.02		
23.0	13.47	8.08	77.5	8.0	0.010	6.66	0.02		
26.2	13.47	8.09	77.5	8.0	0.010	6.66	0.02		
29.5	13.47	8.08	77.5	8.0	0.010	6.65	0.02		
32.8	13.47	8.06	77.2	8.0	0.010	6.66	0.03		
36.1	13.47	8.04	77.0	8.0	0.010	6.66	0.03		
39.4	13.46	8.01	76.8	8.0	0.010	6.66	0.05		
42.7	13.46	8.00	76.9	8.0	0.010	6.66	0.05		
45.9	13.46	8.02	76.9	8.0	0.010	6.66	0.08		
49.2	13.46	8.03	77.0	8.0	0.010	6.66	0.03		
52.5	13.46	8.03	77.0	8.0	0.010	6.66	0.02		
55.8	13.45	8.02	76.9	8.0	0.010	6.66	0.03		
59.1	13.42	8.02	76.8	8.0	0.010	6.65	0.02		
62.3	13.42	8.02	76.9	8.0	0.010	6.66	0.12		
65.6	13.42	8.02	76.9	8.0	0.010	6.65	0.02		
68.9	13.41	8.02	76.9	8.0	0.010	6.66	0.01		
72.2	13.41	8.03	76.9	8.0	0.010	6.66	0.01		
75.5	13.40	8.02	76.9	8.0	0.010	6.65	0.04		
78.7	13.40	8.03	76.9	8.0	0.010	6.67	0.04		
82.0	13.39	8.03	76.9	8.0	0.010	6.66	0.04		
85.3	13.39	8.03	76.9	8.0	0.010	6.66	0.03		
88.6	13.37	8.03	76.9	8.0	0.010	6.65	0.04		
91.9	13.36	8.07	77.2	8.0	0.010	6.66	0.06		
95.1	13.35	8.08	77.4	8.0	0.010	6.67	0.04		
98.4	13.30	8.17	77.4	8.0	0.010	6.68	0.02		
101.7	13.26	8.14	77.7	8.10	0.010	6.68	0.10		
105.0	13.21	8.17	77.9	8.00	0.010	6.68	0.11		
108.3	13.06	8.21	78.0	8.10	0.010	6.69	0.05		
111.5	13.03	8.20	78.1	8.10	0.010	6.70	0.10		


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	13.17	8.16	77.9	8.0	0.010	6.70	0.05		
118.1	36	12.76	8.31	78.5	8.2	0.011	6.70	0.11		
121.4	37	12.51	8.35	78.8	8.3	0.011	6.70	0.12		
124.7	38	12.55	8.38	78.8	8.3	0.011	6.69	0.02		
128.0	39	12.54	8.34	78.5	8.3	0.011	6.69	0.10		Bottom
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									
216.6	66									
219.8	67									
223.1	68									
226.4	69									
229.7	70									
232.9	71									
236.2	72									



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

Page 1 of 3

Date: 11/15/17
 Time: 1257

Reservoir - Water Quality Vertical Profiles

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

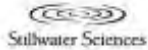
Instrument used: YSI Exo
 Water depth: _____

Personnel: BTJ MND

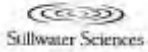
Secchi (ft): 32

Site Notes: _____

Depth (ft)	Temp (°C)	DO		Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
		(mg/L)	(%)						
surface	13.49	7.94	76.2	8.1	0.010	6.68	0.02		
3.3	13.50	7.90	75.8	8.1	0.010	6.66	0.07		
6.6	13.50	7.90	75.8	8.1	0.010	6.65	0.09		
9.8	13.50	7.91	75.9	8.1	0.010	6.65	0.07		
13.1	13.50	7.89	75.7	8.1	0.010	6.64	0.09		
16.4	13.50	7.87	75.7	8.1	0.010	6.65	0.01		
19.7	13.50	7.86	75.5	8.1	0.010	6.64	0.01		
23.0	13.50	7.87	75.6	8.1	0.010	6.63	0.01		
26.2	13.50	7.86	75.5	8.1	0.010	6.61	0.03		
29.5	13.50	7.83	75.1	8.1	0.010	6.62	0.05		
32.8	13.50	7.82	75.1	8.1	0.010	6.63	0.09		
36.1	13.50	7.82	75.1	8.1	0.010	6.62	0.09		
39.4	13.50	7.83	75.1	8.1	0.010	6.62	0.08		
42.7	13.50	7.83	75.1	8.1	0.010	6.62	0.05		
45.9	13.50	7.82	75.1	8.1	0.010	6.61	0.05		
49.2	13.50	7.82	75.1	8.1	0.010	6.61	0.04		
52.5	13.50	7.83	75.1	8.1	0.010	6.61	0.02		
55.8	13.50	7.83	75.2	8.1	0.010	6.61	0.03		
59.1	13.50	7.84	75.2	8.1	0.010	6.61	0.01		
62.3	13.50	7.84	75.2	8.1	0.010	6.61	0.07		
65.6	13.50	7.83	75.2	8.1	0.010	6.61	0.06		
68.9	13.50	7.82	75.1	8.1	0.010	6.61	0.03		
72.2	13.50	7.83	75.1	8.1	0.010	6.60	0.02		
75.5	13.50	7.83	75.1	8.1	0.010	6.61	0.05		
78.7	13.50	7.82	75.1	8.1	0.010	6.60	0.09		
82.0	13.49	7.83	75.1	8.1	0.010	6.60	0.04		
85.3	13.49	7.82	75.0	8.1	0.010	6.60	0.08		
88.6	13.49	7.82	75.1	8.1	0.010	6.61	0.06		
91.9	13.48	7.85	75.4	8.1	0.010	6.60	0.03		
95.1	13.48	7.86	75.4	8.1	0.010	6.61	0.09		
98.4	13.48	7.87	75.5	8.1	0.010	6.62	0.02		
101.7	13.46	7.92	76.1	8.1	0.010	6.62	0.04		
105.0	13.48	7.95	76.2	8.1	0.010	6.64	0.04		
108.3	13.45	7.95	76.3	8.1	0.010	6.64	0.09		
111.5	13.44	7.95	76.2	8.1	0.010	6.64	0.07		


Reservoir - Water Quality Vertical Profiles

Depth		Temp (°C)	DO		Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
(ft)	(m)		(mg/L)	(%)						
(CONTINUED)										
114.8	35	13.41	7.95	76.2	8.1	0.010	6.65	0.04		
118.1	36	13.44	7.95	76.2	8.1	0.010	6.64	0.06		
121.4	37	13.44	7.95	76.2	8.1	0.010	6.64	0.06		
124.7	38	13.43	7.95	76.2	8.1	0.010	6.64	0.07		
128.0	39	13.42	7.93	76.0	8.1	0.010	6.64	0.10		
131.2	40	13.41	7.92	75.9	8.1	0.010	6.63	0.10		
134.5	41	13.41	7.91	75.8	8.1	0.010	6.62	0.102		
137.8	42	13.41	7.89	75.6	8.1	0.010	6.62	0.09		
141.1	43	13.40	7.86	75.4	8.2	0.010	6.60	0.11		
144.4	44	13.39	7.85	75.2	8.2	0.011	6.59	0.06		
147.6	45	13.37	7.79	74.5	8.2	0.011	6.58	0.06		
150.9	46	13.37	7.84	75.1	8.2	0.011	6.58	0.11		
154.2	47	13.35	7.90	75.6	8.1	0.010	6.60	0.11		
157.5	48	13.35	7.92	75.7	8.1	0.010	6.61	0.07		
160.8	49	13.33	7.92	75.8	8.2	0.010	6.62	0.07		
164.0	50	13.34	7.93	75.8	8.2	0.011	6.62	0.08		
167.3	51	13.32	7.90	75.4	8.2	0.011	6.60	0.06		
170.6	52	13.29	7.87	75.2	8.2	0.011	6.60	0.06		
173.9	53	13.24	7.87	75.1	8.2	0.011	6.58	0.06		
177.2	54	13.26	7.81	74.6	8.2	0.011	6.58	0.22		
180.4	55	13.21	7.78	74.2	8.2	0.011	6.55	0.49		
183.7	56	13.20	7.74	73.7	8.2	0.011	6.54	0.71		
187.0	57	13.16	7.86	75.1	8.2	0.011	6.52	0.12		
190.3	58	13.12	7.67	72.9	8.3	0.011	6.50	0.07		
193.6	59	13.07	7.56	71.8	8.3	0.011	6.47	0.09		
196.8	60	13.01	7.42	70.3	8.3	0.011	6.43	0.06		
200.1	61	12.99	7.17	68.0	8.4	0.011	6.34	0.07		
203.4	62	12.88	7.05	66.5	8.5	0.010	6.33	0.10		
206.7	63	12.81	6.92	64.2	8.4	0.010	6.20	0.12		
210.0	64	11.90	6.04	55.8	8.6	0.010	6.12	0.10		
213.3	65	10.89	5.87	52.8	8.5	0.012	6.09	0.05		
216.5	66	9.44	6.17	54.3	8.4	0.012	6.09	0.05		
219.8	67	8.59	6.58	66.5	8.3	0.012	6.09	0.04		
223.1	68	8.30	6.72	57.1	8.3	0.012	6.08	0.04		
226.4	69	7.88	6.78	57.2	8.3	0.012	6.09	0.05		
229.7	70	7.64	6.85	57.3	8.2	0.012	6.07	0.05		
232.9	71	7.47	6.99	58.7	8.2	0.017	6.04	0.10		
236.2	72	7.36	7.06	58.7	8.2	0.022	6.04	0.08		



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	7.27	7.07	58.6	8.3	0.013	6.02	0.02		
242.8	74	7.17	7.05	58.7	8.7	0.013	6.03	0.02		
246.1	75	7.04	7.01	58.4	8.11	0.013	6.02	0.03		
249.3	76	6.95	7.11	58.6	8.4	0.013	6.02	0.03		
252.6	77	6.90	7.28	59.4	8.3	0.013	6.03	0.11		
255.9	78	6.77	7.30	59.7	8.3	0.013	6.03	0.17		Bottom
259.2	79									
262.5	80									
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									



SMUD in situ Monitoring in the Upper American River Project and Chill Bar Project

Page 1 of 1

Date: 11/2/2017
 Time: 12:45

Reservoir - Water Quality Vertical Profiles

Site Location: R-23-4 GC
 Lat/Long (NAD83): _____

Instrument used: YSI EXO
 Water depth: 28 m

Personnel: Brian C. C.

Secchi (ft): 13.2

Site Notes: Sampling 10m

Depth		Temp (°C)	DO		Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
(ft)	(m)		(mg/L)	(%)						
surface		6.70	10.57	84.4	8.7	0.014	6.63	0.4		
3.3	1	6.24	10.67	84.3	8.3	0.013	6.59	0.4		
6.6	2	4.97	10.64	83.2	8.5	0.014	6.57	0.4		
9.9	3	4.67	10.67	82.4	8.6	0.014	6.5	0.4		
13.1	4	4.53	10.56	81.7	8.4	0.014	6.45	0.4		
16.4	5	4.50	10.54	81.5	8.4	0.014	6.42	0.5		
19.7	6	4.44	10.49	80.9	8.7	0.014	6.4	0.5		(Bottom)
23.0	7									
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									



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

Page 1 of 1

Date: 11/21/17
 Time: 1000

Reservoir - Water Quality Vertical Profiles

Site Location: R-15-12-JR
 Lat/Long (NAD83): _____

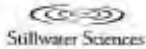
Instrument used: YSI 600
 Water depth: 80ft

Personnel: KKC, BTH

Secchi (ft): 18ft

Site Notes: Clear, Calm, Cool

Depth (ft)		Temp (°C)	DO		Conductivity (µS/cm)	Specific Conductance (mS/cm)	pH (s.u.)	Turbidity (NTU)	Water Sample	Notes
			(mg/L)	(%)						
surface		10.94	8.95	81.1	7.8	0.011	6.72	0.4		
3.3	1	10.94	8.95	81.1	7.8	0.011	6.66	0.4		
6.6	2	10.93	8.93	80.9	7.8	0.011	6.63	0.4		
9.9	3	10.92	8.94	80.8	7.8	0.011	6.60	0.3		
13.1	4	10.91	8.93	80.8	7.8	0.011	6.57	0.4		
16.4	5	10.88	8.97	81.1	7.8	0.011	6.54	0.4		
19.7	6	10.87	9.00	81.4	7.9	0.011	6.52	0.4		
23.0	7	10.87	9.01	81.4	7.9	0.011	6.50	0.4		
26.2	8	10.87	9.05	81.4	7.9	0.011	6.50	0.4		
29.5	9	10.87	8.96	81.0	7.8	0.011	6.49	0.3		
32.8	10	10.84	9.00	81.4	7.9	0.011	6.48	0.4		
36.1	11	10.76	9.09	82.1	8.0	0.011	6.47	0.4		
39.4	12	10.73	9.18	82.7	8.0	0.011	6.46	0.2		
42.7	13	10.65	9.24	83.2	8.1	0.011	6.45	0.4		
45.9	14	10.25	9.29	82.8	8.5	0.012	6.45	0.4		
49.2	15	10.11	9.28	82.3	8.7	0.012	6.42	0.4		
52.5	16	10.02	9.15	81.1	8.8	0.012	6.40	0.4		
55.8	17	9.80	9.32	82.2	9.0	0.013	6.41	0.4		
59.1	18	9.75	9.35	82.5	9.0	0.013	6.41	0.5		
62.3	19	9.77	9.42	83.1	9.1	0.013	6.43	0.4		
65.6	20	9.75	9.44	83.2	9.1	0.013	6.45	0.4		
68.9	21	9.71	9.46	83.2	9.1	0.013	6.45	0.5		
72.2	22	9.68	9.44	83.0	9.2	0.013	6.46	0.4		BOTTOM
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									



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

Page 1 of 1

Date: 11/27/17

Time: 11:25

Reservoir - Water Quality Vertical Profiles

Site Location: UARP - R-33-14-S
 Lat/Long (NAD83): _____

Instrument used: YSI 660

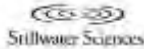
Water depth: 34.4

Personnel: KKC, BTH

Secchi (ft): 3ft

Site Notes: Clear, calm, cool, Morning after rain event.

Depth		Temp	DO		Conductivity	Specific Conductance	pH	Turbidity	Water Sample	Notes
(ft)	(m)	(°C)	(mg/L)	(%)	(µS/cm)	(mS/cm)	(s.u.)	(NTU)		
surface		9.76	10.84	95.5	21.4	0.030	7.06	15.12		
3.3	1	9.75	10.83	95.4	21.5	0.030	7.05	13.81		
6.6	2	9.74	10.85	95.5	21.6	0.030	7.05	15.05		
9.8	3	9.75	10.85	95.6	21.4	0.030	7.05	14.05		
13.1	4	9.75	10.83	95.4	21.5	0.031	7.05	16.62		
16.4	5	9.70	10.83	95.3	22.0	0.031	7.01	14.13		
19.7	6	9.66	10.85	95.4	22.4	0.032	7.08	20.66		
23.0	7	9.64	10.87	95.6	22.5	0.031	7.08	14.28		
26.2	8	9.63	10.88	95.4	22.8	0.032	7.08	15.14		
29.5	9	9.61	10.86	95.3	22.9	0.032	7.09	15.43		
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									



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

Page 1 of 2

Date: 11/27/17
 Time: 1220

Reservoir - Water Quality Vertical Profiles

Site Location: UARP-R-IS-15-SC-SOR
 Lat/Long (NAD83): _____

Instrument used: YSI EXO
 Water depth: 126ft

Personnel: KCC, BTU

Secchi (ft): 10-ft

Site Notes: Sunny, 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		10.22	10.82	96.3	15.1	0.021	7.03	1.00		
3.3	1	10.19	10.80	96.1	15.1	0.021	7.02	1.0		
6.6	2	10.15	10.81	96.1	15.1	0.021	7.01	0.9		
9.8	3	10.15	10.83	96.3	15.1	0.021	6.98	1.3		
13.1	4	10.11	10.83	96.2	15.1	0.021	6.98	1.3		
16.4	5	10.10	10.79	95.8	15.1	0.021	6.97	1.1		
19.7	6	10.09	10.78	95.7	15.1	0.021	6.97	1.7		
23.0	7	10.04	10.81	95.8	15.3	0.021	6.96	3.0		
26.2	8	9.99	10.78	95.5	15.5	0.022	6.96	3.9		
29.5	9	9.98	10.75	95.2	15.6	0.022	6.95	4.3		
32.8	10	9.95	10.73	95.0	15.6	0.022	6.95	4.2		
36.1	11	9.83	10.75	94.8	16.3	0.023	6.94	17.4		
39.4	12	9.59	10.74	94.4	17.0	0.024	6.93	23.7		
42.7	13	9.11	10.78	93.5	17.9	0.026	6.93	27.7		
45.9	14	8.96	10.72	92.6	18.4	0.027	6.91	23.2		
49.2	15	8.68	10.76	92.4	18.5	0.027	6.88	10.28		
52.5	16	8.47	10.81	92.3	18.5	0.027	6.84	3.3		
55.8	17	8.41	10.82	92.1	18.5	0.027	6.82	3.1		
59.1	18	8.37	10.80	92.1	18.5	0.027	6.80	3.8		
62.3	19	8.31	10.79	91.8	18.5	0.027	6.79	3.1		
65.6	20	8.25	10.79	91.6	18.5	0.027	6.78	2.6		
68.9	21	8.21	10.81	91.7	18.6	0.027	6.77	2.8		
72.2	22	8.19	10.80	91.6	18.6	0.027	6.77	3.9		
75.5	23	8.14	10.81	91.6	18.7	0.027	6.77	3.1		
78.7	24	8.11	10.82	91.7	18.6	0.028	6.77	3.1		
82.0	25	8.07	10.85	91.8	18.7	0.028	6.77	3.0		
85.3	26	8.06	10.85	91.7	18.7	0.028	6.77	3.1		
88.6	27	8.06	10.84	91.6	18.7	0.028	6.77	3.2		
91.9	28	8.03	10.86	91.9	18.7	0.028	6.77	3.0		
95.1	29	8.01	10.88	91.9	18.7	0.028	6.77	3.1		
98.4	30	7.98	10.86	91.7	18.7	0.028	6.77	2.9		
101.7	31	7.98	10.83	91.3	18.8	0.028	6.76	2.8		
105.0	32	7.97	10.73	90.4	18.9	0.028	6.75	2.7		
108.3	33	7.95	10.49	88.3	19.2	0.028	6.73	2.6		
111.5	34	7.94	10.46	87.7	19.2	0.028	6.72	2.7		


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	7.94	10.45	87.9	19.2	0.028	6.72	2.9		
118.1	36	7.94	10.38	87.4	19.2	0.029	6.72	2.5		
121.4	37	7.96	10.01	83.9	20.1	0.030	6.67	3.3		
124.7	38	7.96	9.56	80.4	20.3	0.030	6.65	3.6		
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									



SMUD In situ Monitoring in the Upper American River Project and Chilbar Project

Page 1 of 1

Date: 11/28/17
 Time: 1020

Reservoir - Water Quality Vertical Profiles

Site Location: R-TS-20-BC
 Lat/Long (NAD83): _____

Instrument used: YSI 600
 Water depth: 97ft

Personnel: BTH, KKC

Secchi (ft): 1ft

Site Notes: Clear, 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		10.31	8.77	78.3	18.5	0.026	6.86	43.7		
3.3	1	10.31	8.78	78.3	18.5	0.026	6.85	43.9		
6.6	2	10.31	8.78	78.4	18.5	0.026	6.84	46.1		
9.8	3	10.31	8.77	78.2	18.6	0.026	6.83	45.7		
13.1	4	10.30	8.74	78.0	18.5	0.026	6.83	44.5		
16.4	5	10.30	8.73	77.9	18.5	0.026	6.82	45.8		
19.7	6	10.29	8.71	77.7	18.6	0.026	6.82	44.8		
23.0	7	10.29	8.71	77.7	18.6	0.026	6.83	45.8		
26.2	8	10.29	8.71	77.7	18.5	0.026	6.83	42.2		
29.5	9	10.29	8.71	77.8	18.5	0.026	6.83	44.5		
32.8	10	10.29	8.69	77.4	18.5	0.026	6.83	42.6		
36.1	11	10.30	8.70	77.7	18.4	0.026	6.84	62.9		
39.4	12	10.27	8.90	79.4	17.8	0.025	6.85	52.0		
42.7	13	10.13	9.02	80.2	17.8	0.025	6.87	46.0		
45.9	14	10.08	9.09	80.7	17.8	0.025	6.86	45.0		
49.2	15	10.06	9.11	80.9	17.8	0.025	6.86	42.3		
52.5	16	10.03	9.13	81.9	17.8	0.025	6.86	39.0		
55.8	17	10.01	9.14	81.0	17.8	0.025	6.86	37.0		
59.1	18	9.98	9.13	80.9	17.9	0.025	6.86	38.2		
62.3	19	9.97	9.14	80.9	17.9	0.025	6.86	34.0		
65.6	20	9.96	9.14	80.9	17.9	0.025	6.86	37.1		
68.9	21	9.95	9.13	80.8	17.9	0.025	6.86	36.7		
72.2	22	9.92	9.13	80.8	18.0	0.025	6.86	32.2		
75.5	23	9.89	9.14	80.8	18.0	0.025	6.86	31.4		
78.7	24	9.85	9.16	80.8	18.0	0.025	6.86	34.8		
82.0	25	9.85	9.16	80.8	18.0	0.025	6.86	34.1		
85.3	26	9.85	9.16	80.9	18.0	0.025	6.86	34.1		
88.6	27	9.83	9.15	80.7	18.1	0.025	6.85	265.9		
91.9	28									
95.1	29									
98.4	30									
101.7	31									
105.0	32									
108.3	33									
111.5	34									

APPENDIX F
***In situ* Field Calibration Sheets**



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Water Quality YSI 6920 Sonde Calibration - Daily Use

Project: SMUD WQ MONITOR RIVERINE IN SITU

Unit ID: YSI 6920

Sampling Event Date(s): 2/7 - 2/8

PRE-SAMPLING CALIBRATION

Date and time 2/7/2017 7:00 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	12.29	925	1000	
Cond (uS/cm @ 25°C)	1,413	12.63	1232	1410	
DO (%)		16.15	96.1	95.0	721.9 mm/H ₂
DO (mg/L)*		16.15	9.43	9.33	Check solubility table* ⇒ 9.3 mg/L
pH4	pH4	12.33	3.73	4.00	
pH7	pH7	12.40	7.13	7.00	
pH10	pH10	12.53	10.19	10.03	
Turbidity	12.7	12.49	12.4	12.7	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

Date and time 2/7/2017 17:15 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	17.08	1121	NO		Q	
Cond (uS/cm @ 25°C)	1,413	17.07	1488	NO		A	
DO (%)		16.74	94.0	NO		A	708.6 mm/H ₂
DO (mg/L)		16.74	9.13	NO		A	Check solubility table
pH4	pH4	16.47	4.04	NO		A	⇒ 9.0 mg/L
pH7	pH7	16.77	6.96	NO		A	
pH10	pH10	16.75	9.97	NO		A	
Turbidity	12.7	16.81	12.2	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	Quality	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%


Water Quality YSI 6920 Sonde Calibration - Daily Use

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 Project: SMUD HQ MONITOR RIVERINE IN SUTL

 Unit ID: YSI 6920

 Sampling Event Date(s): 2/7 - 2/8
PRE-SAMPLING CALIBRATION

 Date and time 2/8 7:00 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	17.80	1161	1000	
Cond (uS/cm @ 25°C)	1,413	17.70	1362	1412	
DO (%)		17.99	94.3	93.5	710.5 mm / Hg 05.8 mg/L
DO (mg/L)*		17.99	8.92	8.85	Check solubility table*
pH4	pH4	17.95	4.06	4.00	
pH7	pH7	17.91	6.85	7.00	
pH10	pH10	17.91	10.21	10.04	
Turbidity	12.7	17.63	13.5	12.7	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

 Date and time 2/8 17:15 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	18.72	1073	NO		Q	
Cond (uS/cm @ 25°C)	1,413	18.90	1557	NO		Q	
DO (%)		18.73	96.2	NO		A	727.2 mm / Hg 5.2
DO (mg/L)		18.73	9.00	NO		A	Check solubility table 8.9 mg/L
pH4	pH4	18.50	4.01	NO		A	
pH7	pH7	18.55	6.96	NO		A	
pH10	pH10	18.82	10.01	NO		A	
Turbidity	12.7	18.74	13.2	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	Quality	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



Water Quality YSI 6920 Sonde Calibration - Daily Use

Project: SMUD UARD WQ 2017

Unit ID: YSI 6920

Sampling Event Date(s): 5/1/17 - 5/11/17

Date and time 4/29/17 PRE-SAMPLING CALIBRATION Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	25.11	1155	1000	
Cond (uS/cm @ 25°C)	1,413	23.18	1282	1414	
DO (%)		22.14	96.2	96.1	729.1 mm/Hg / 8.4 mg/L
DO (mg/L)*		22.14	8.38	8.34	Check solubility table*
pH4	pH4	23.97	4.02	4.00	2.635.8 mm/Hg / 7.7 mg/L
pH 7	pH 7	22.90	6.89	7.00	Table = 7.6 mg/L
pH 10	pH 10	23.55	10.09	10.01	
Turbidity	12.7	21.63	12.8	12.7	
Turbidity					

Date and time 5/1/17 POST-SAMPLING CALIBRATION CHECK 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	21.86	1058	No		A	
Cond (uS/cm @ 25°C)	1,413	26.84	1375	No		A	
DO (%)		23.43	95.4	No		A	710.2 mm/Hg
DO (mg/L)		23.43	8.07	No		A	Check solubility table
pH4	pH 4	23.44	4.05	No		A	8.0 mg/L
pH 7	pH 7	27.78	6.96	No		A	
pH 10	pH 10	27.56	10.06	No		A	
Turbidity	12.7	26.96	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: SMUD UARP WQ 2017

 Unit ID: YSI 6920

 Sampling Event Date(s): 5/1/17 - 5/11/17
PRE-SAMPLING CALIBRATION

 Date and time 5/2/17 6:30 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	22.95	1096	1000	
Cond (uS/cm @ 25°C)	1,413	23.07	1160	1413	
DO (%)		22.71	94.3	93.3	710.3 mm/Hg
DO (mg/L)*		22.71	8.11	8.00	Check solubility table†
pH4	pH4	23.61	4.07	3.99	8.0 mg/L
pH 7	pH 7	24.00	6.95	7.00	
pH 10	pH 10	23.63	10.15	10.02	
Turbidity	12.7	23.44	14.4	12.7	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

 Date and time 5/2/17 17:00 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Post-Sampling Value	Re-Cal Yes or No?	Post-Cal Value	MQO Code†	Notes
Cond (uS/cm @ 25°C)	1,000	23.27	1123	NO		A	
Cond (uS/cm @ 25°C)	1,413	23.25	1389	NO		A	
DO (%)		23.79	93.4	NO		A	710 mm/Hg
*DO (mg/L)		23.79	7.89	NO		A	Check solubility table†
pH4	pH 4	24.05	4.00	NO		A	8.0 mg/L
pH 7	pH 7	24.77	6.96	NO		A	
pH 10	pH 10	24.92	9.94	NO		A	
Turbidity	12.7	23.23	11.9	NO		A	
Turbidity							

† 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. 01/2006



Water Quality YSI 6920 Sonde Calibration - Daily Use

Project: SMUD VARP WQ 2017
 Unit ID: YSI 6920
 Sampling Event Date(s): 5/1/17 - 5/11/17

PRE-SAMPLING CALIBRATION

Date and time 5/3/17 4:00 Name BRUCE HATCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	23.44	1278	1000	
Cond (uS/cm @ 25°C)	1,413	23.42	1014	1412	
DO (%)		22.09	93.7	93.3	709.7 mm/Hg
DO (mg/L)*		22.09	8.18	8.12	Check solubility table*
pH4	pH4	24.37	4.04	4.00	8.1 mg/L
pH 7	pH 7	24.79	6.95	7.00	
pH 10	pH 10	24.91	10.11	10.02	
Turbidity	12.7	23.27	10.3	12.7	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

Date and time 5/3/17 12:00 Name BRUCE HATCH

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	23.85	1120	NO		A	
Cond (uS/cm @ 25°C)	1,413	24.05	1430	NO		A	
DO (%)		22.51	92.2	NO		A	711.3 mm/Hg
DO (mg/L)		22.51	8.04	NO		A	Check solubility table
pH4	pH 4	24.88	5.97	NO		A	8.1 mg/L
pH 7	pH 7	25.10	6.91	NO		A	
pH 10	pH 10	25.18	9.97	NO		A	
Turbidity	12.7	23.79	12.7	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	Quality	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%


Water Quality YSI 6920 Sonde Calibration - Daily Use

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 Project: SMUD WARD + CB HQ MAH 2017

 Unit ID: YSI 6920

 Sampling Event Date(s): 5/1/17 - 5/11/17
PRE-SAMPLING CALIBRATION

 Date and time 5/4/17 6:15 Name BRUCE HUTCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	22.55	1333	1000	
Cond (uS/cm @ 25°C)	1,413	23.91	1114	1415	
DO (%)		22.79	92.2	93.2	708 um / Hg
DO (mg/L)*		22.79	7.92	8.01	Check solubility table*
pH4	pH4	24.65	4.01	4.00	8.0 mg/L
pH 7	pH 7	25.00	6.92	7.00	
pH 10	pH 10	25.12	10.13	10.02	
Turbidity	12.7	23.71	13.9	12.6	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

 Date and time 5/4/17 18:30 Name BRUCE HUTCH

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	30.28	1082	No		A	
Cond (uS/cm @ 25°C)	1,413	31.12	1463	No		A	
DO (%)		27.79	95.5	No		A	723.9 um / Hg
DO (mg/L)		27.79	7.58	No		A	Check solubility table
pH4	pH 4	28.81	4.01	No		A	7.5 mg/L
pH 7	pH 7	29.96	6.95	No		A	
pH 10	pH 10	29.06	9.96	No		A	
Turbidity	12.7	29.10	13.2	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%

Ver. 01/2016



Water Quality YSI 6920 Sonde Calibration - Daily Use

Project: SMUD UARR WQ MAY 2017
 Unit ID: Ysi 6920
 Sampling Event Date(s): 5/1/17 = 5/11/17

PRE-SAMPLING CALIBRATION

Date and time 5/7/2017 10:00 Name KELLY KROWE

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	24.17	1303	1000	
Cond (uS/cm @ 25°C)	1,413	25.04	1038	1414	
DO (%)		22.15	96.2	98.2	723.5 mg/L
DO (mg/L)*		22.15	8.38	8.25	Check solubility table
pH4	pH4	24.48	4.06	4.00	8.2 mg/L
pH 7	pH 7	24.48	6.94	7.00	
pH 10	pH 10	23.73	10.14	10.02	
Turbidity	12.7	19.50	12.2	12.7	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

Date and time 5/8/17 19:00 Name BRUCE HATCH

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	22.59	1032	No		-A	
Cond (uS/cm @ 25°C)	1,413	22.18	1479	No		A	
DO (%)		21.79	92.7	No		A	707.2 mg/L
*DO (mg/L)		21.79	8.13	No		A	Check solubility table
pH4	pH 4	22.35	3.96	No		A	8.0 mg/L
pH 7	pH 7	21.58	6.94	No		A	
pH 10	pH 10	21.97	9.89	No		-A	
Turbidity	12.7	22.68	13.3	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%


Water Quality YSI 6920 Sonde Calibration – Daily Use

 Project: SMUD UARP WQ SUMMER 2017

 Unit ID: YSI 6920

 Sampling Event Date(s): 7/31 - 8/22
PRE-SAMPLING CALIBRATION

 Date and time 7/30 20:30 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	26.73	1071	1000	
Cond (uS/cm @ 25°C)	1,413	36.89	1409	1413	
DO (%)		32.99	95.9	95.7	728.0 mm/Hg
DO (mg/L)*		32.99	6.88	6.86	Check solubility table* 6.9 mg/L
pH4	pH4	39.07	3.91	4.00	
pH 7	pH 7	34.73	4.53	7.01	
pH 10	pH 10	35.28	10.02	10.00	
Turbidity	12.7	37.11	7.9	12.7	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

 Date and time 7/31 18:00 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	21.36	1031	NO		A	
Cond (uS/cm @ 25°C)	1,413	20.65	1396	NO		A	
DO (%)		20.08	91.2	NO		A	707.2 mm/Hg
*DO (mg/L)		20.08	8.26	NO		A	Check solubility table
pH4	pH 4	23.08	4.16	NO		A	8.5 mg/L
pH 7	pH 7	23.12	6.92	NO		A	
pH 10	pH 10	21.96	9.98	NO		A	
Turbidity	12.7	20.46	12.4	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%



Water Quality YSI 6920 Sonde Calibration - Daily Use

Project: SMUD VARP WQ Summer 2017

Unit ID: YSI 6920

Sampling Event Date(s): 7/31 - 8/22

PRE-SAMPLING CALIBRATION

Date and time 8/1 7:00 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	21.31	784	1000	
Cond (uS/cm @ 25°C)	1,413	20.74	982	1414	
DO (%)		20.70	91.2	93.1	707.4 mm / 4g
DO (mg/L)*		20.70	8.2	8.33	Check solubility table*
pH4	pH4	22.55	4.61	4.00	8.5 mg/L
pH 7	pH 7	22.87	6.19	7.01	
pH 10	pH 10	21.87	10.04	10.83	
Turbidity					
Turbidity					

POST-SAMPLING CALIBRATION CHECK

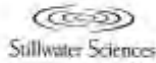
Date and time 8/2 16:30 Name BRUCE HITCH

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	22.09	1013	NO		A	
Cond (uS/cm @ 25°C)	1,413	22.14	1434	NO		A	
DO (%)		21.80	94.0	NO		A	708.5 mm / 4g
DO (mg/L)		21.80	8.24	NO		A	Check solubility table
pH4	pH 4	22.58	3.98	NO		A	8.3 mg/L
pH 7	pH 7	22.53	6.94	NO		A	
pH 10	pH 10	22.44	9.85	NO		A	
Turbidity	12.7	22.18	12.3	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%


Water Quality YSI 6920 Sonde Calibration - Daily Use

 Project: SMUD UARP WQ Summer 2017

 Unit ID: YSI 6920

 Sampling Event Date(s): 7/31 - 8/22
PRE-SAMPLING CALIBRATION

 Date and time 8/3 6:00 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	21.75	890	1000	
Cond (uS/cm @ 25°C)	1,413	21.86	625	743	
DO (%)		21.46	91.6	93.5	710.2 mm/Hg
DO (mg/L)*		21.46	8.08	8.23	Check solubility table*
pH4	pH4	22.50	0.77	4.00	8.3 mg/L
pH 7	pH 7	22.37	6.91	7.00	
pH 10	pH 10	22.10	9.88	10.00	
Turbidity	12.7	21.83	12.1	12.7	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

 Date and time 8/3 19:30 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	23.30	936	NO		A	
Cond (uS/cm @ 25°C)	1,413	23.14	1247	NO		A	
DO (%)		22.84	97.2	NO		A	724.3 mm/Hg
DO (mg/L)		22.84	8.35	NO		A	Check solubility table
pH4	pH 4	23.15	4.32	NO		Q	8.3 mg/L
pH 7	pH 7	23.35	7.41	NO		Q	
pH 10	pH 10	23.45	10.17	NO		A	
Turbidity	12.7	22.88	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	Quality	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%



Water Quality YSI 6920 Sonde Calibration - Daily Use

Project: SMUD UARP WA Summer 2017

Unit ID: YSI 6920

Sampling Event Date(s): 7/31 - 8/22

PRE-SAMPLING CALIBRATION

Date and time 8/6 18:30 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	23.48	1489	1000	
Cond (uS/cm @ 25°C)	1,413	23.47	1028	1413	
DO (%)		23.16	97.0	95.3	724.3 mm/Hg
DO (mg/L)*		23.16	8.29	8.15	Check solubility table* 0
pH4	pH4	23.26	4.39	4.00	8.1 mg/L
pH 7	pH 7	23.49	6.92	7.00	
pH 10	pH 10	23.63	10.05	10.01	
Turbidity	12.7	23.15	14.1	12.7	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

Date and time 8/7 18:30 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	20.93	987	No		A	
Cond (uS/cm @ 25°C)	1,413	20.73	1375	No		A	
DO (%)		22.22	93.7	No		A	7085 mm/Hg
DO (mg/L)		22.22	8.05	No		A	Check solubility table
pH4	pH 4	26.99	4.07	No		A	8.1 mg/L
pH 7	pH 7	26.79	6.89	No		A	
pH 10	pH 10	23.85	9.86	No		A	
Turbidity	12.7	23.40	12.0	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%


Water Quality YSI 6920 Sonde Calibration - Daily Use

Project: SMUD UARP HQ SUMMER 2017
Unit ID: YSI 6920
Sampling Event Date(s): 7/31 - 8/22

PRE-SAMPLING CALIBRATION

Date and time 8/8 600 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	22.11	1342	1000	
Cond (uS/cm @ 25°C)	1,413	22.20	1365	1413	
DO (%)		22.37	93.4	93.2	708.5 mm/Hg
DO (mg/L)*		22.37	8.10	8.07	Check solubility table* 0
pH4	pH4	23.15	3.88	4.00	8.1 mg/L
pH 7	pH 7	22.95	7.00	7.00	
pH 10	pH 10	22.87	9.99	10.00	
Turbidity	12.7	23.14	12.2	12.7	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

Date and time 8/8 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	23.64	1092	No		G	
Cond (uS/cm @ 25°C)	1,413	24.02	1459	No		A	
DO (%)		22.72	95.7	No		A	707.9 mm/Hg
DO (mg/L)		22.72	8.2	No		A	Check solubility table
pH4	pH 4	24.86	4.01	No		A	8.0 mg/L
pH 7	pH 7	24.97	7.08	No		A	
pH 10	pH 10	24.99	10.11	No		A	
Turbidity	12.7	27.12	12.7	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%



Water Quality YSI 6920 Sonde Calibration - Daily Use

Project: SMUD UARP WQ Summer 2017
 Unit ID: YSI 6920
 Sampling Event Date(s): 7/31 - 8/22

PRE-SAMPLING CALIBRATION

Date and time 8/5 0430 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	22.14	830	1000	
Cond (uS/cm @ 25°C)	1,413	22.16	1695	1413	
DO (%)	281.6%	22.66	92.8	92.9	707.9 mm/Hg
DO (mg/L)*	82.66	22.66	7.98	7.99	Check solubility table*
pH4	pH4	22.70	3.97	4.00	8.7 mg/L
pH 7	pH 7	22.80	7.06	7.00	
pH 10	pH 10	22.67	10.01	10.00	
Turbidity	12.7	22.17	12.3	12.7	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

Date and time 8/7 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	18.30	961	No		A	
Cond (uS/cm @ 25°C)	1,413	18.26	1304	No		Q	
DO (%)		18.60	93.0	No		A	707.6 mm/Hg
DO (mg/L)		18.60	8.68	No		A	Check solubility table
pH4	pH 4	19.76	4.03	No		A	8.8 mg/L
pH 7	pH 7	20.02	7.07	No		A	
pH 10	pH 10	19.59	10.00	No		A	
Turbidity	12.7	18.43	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%


Water Quality YSI 6920 Sonde Calibration - Daily Use

 Project: SMUD UARP WQ SUMMER 2017

 Unit ID: YSI 6920

 Sampling Event Date(s): 7/31 - 8/22
PRE-SAMPLING CALIBRATION

 Date and time 8/10 0600 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	18.47	965	1000	
Cond (uS/cm @ 25°C)	1,413	18.47	1182	1413	
DO (%)		19.09	93.2	93.1	707.6 mm/Hg
DO (mg/L)*		19.09	8.63	8.61	Check solubility table*
pH4	pH4	19.73	4.13	4.00	8.6 mg/L
pH 7	pH 7	20.00	7.07	7.00	
pH 10	pH 10	19.65	9.79	9.98	
Turbidity	12.7	18.63	12.4	12.7	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

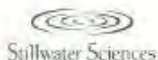
 Date and time 8/10 1900 Name BRUCE HITCH

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	24.87	1043	No		Q	
Cond (uS/cm @ 25°C)	1,413	24.86	1416	No		A	
DO (%)		24.87	97.3	No		B	724.2 mm/Hg
DO (mg/L)		24.87	8.05	No		A	Check solubility table
pH4	pH 4	25.30	3.95	No		A	7.2 mg/L
pH 7	pH 7	25.32	6.87	No		A	
pH 10	pH 10	25.50	10.08	No		A	
Turbidity	12.7	25.29	13.0	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%



Water Quality YSI 6920 Sonde Calibration - Daily Use

Project: SMUD UARP HQ Summer 2017

Unit ID: YSI 6920

Sampling Event Date(s): 7/31 - 8/22

PRE-SAMPLING CALIBRATION

Date and time 8/13 1730 Name BRUCE HATCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	24.73	1031	995	
Cond (uS/cm @ 25°C)	1,413	24.80	1640	1409	
DO (%)		24.05	96.7	95.2	723.3 mm/Hg
DO (mg/L)*		24.05	8.12	7.97	Check solubility table* 0
pH4	pH4	24.15	4.04	4.00	8.0 mg/L
pH 7	pH 7	24.00	7.03	7.00	
pH 10	pH 10	24.09	10.03	10.01	
Turbidity	12.7	24.36	12.6	12.7	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

Date and time 8/14 1935 Name BRUCE HATCH

Parameter	Std. Value	Std. Temp (°C)	Post-Sampling Value	Re-Cal Yes or No?	Post-Cal Value	MQO Code [†]	Notes
Cond (uS/cm @ 25°C)	1,000	22.72	927	No		Q	
Cond (uS/cm @ 25°C)	1,413	22.87	1382	No		A	
DO (%)		21.62	87.0	No		A	659.9 mm/Hg
DO (mg/L)		21.62	7.72	No		A	Check solubility table
pH4	pH 4	23.05	4.03	No		A	7.7 mg/L
pH 7	pH 7	23.40	7.02	No		A	
pH 10	pH 10	23.20	10.00	No		A	
Turbidity	12.7	23.76	13.1	No		A	
Turbidity							

[†] 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%


Water Quality YSI 6920 Sonde Calibration - Daily Use

 Project: SMUD UARP WA SUMMER 2017

 Unit ID: YSI 6920

 Sampling Event Date(s): 7/31 - 8/22
PRE-SAMPLING CALIBRATION

 Date and time 8/15 0530 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	22.53	824	989	
Cond (uS/cm @ 25°C)	1,413	22.68	1354	1351	
DO (%)		21.98	87.2	86.8	659.9 mm Hg
DO (mg/L)*		21.98	7.68	7.60	Check solubility table*
pH4	pH4	22.87	3.77	4.00	7.5 mg/L
pH 7	pH 7	23.10	7.04	7.00	
pH 10	pH 10	22.98	10.04	10.01	
Turbidity	12.7	23.35	13.1	12.7	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

 Date and time 8/15 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	22.87	957	No		A	
Cond (uS/cm @ 25°C)	1,413	22.57	1497	No		Q	
DO (%)		21.53	87.6	No		A	662.2 mm Hg
DO (mg/L)		21.53	7.79	No		A	Check solubility table
pH4	pH 4	21.74	4.00	No		A	7.5 mg/L
pH 7	pH 7	22.98	7.06	No		A	
pH 10	pH 10	22.79	10.00	No		A	
Turbidity	12.7	23.01	12.3	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%



Water Quality YSI 6920 Sonde Calibration - Daily Use

Project: SMUD UARD WQS SUMMER 2017

Unit ID: YSI 6920

Sampling Event Date(s): 7/31-8/22

PRE-SAMPLING CALIBRATION

Date and time 8/16 0545 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	22.72	738	989	
Cond (uS/cm @ 25°C)	1,413	22.41	1572	1344	
DO (%)		22.34	86.5	87.3	662.2 mm Hg
DO (mg/L)*		22.34	7.51	7.58	Check solubility table*
pH4	pH4	22.56	4.00	4.00	7.5 mg/L
pH 7	pH 7	22.84	7.04	7.00	
pH 10	pH 10	22.80	10.00	10.00	
Turbidity	12.7	23.02	13.1	12.7	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

Date and time 8/16 1745 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	24.53	968	NO		A	
Cond (uS/cm @ 25°C)	1,413	24.34	1409	NO		A	
DO (%)		23.21	88.9	NO		A	664.2 mm Hg
DO (mg/L)		23.21	7.55	NO		A	Check solubility table
pH4	pH 4	24.23	3.88	NO		A	7.5 mg/L
pH 7	pH 7	24.00	6.91	NO		A	
pH 10	pH 10	24.08	9.54	NO		A	
Turbidity	12.7	24.10	12.1	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%


Water Quality YSI 6920 Sonde Calibration - Daily Use

 Project: SMUD UARP WQ SUMMER 2017

 Unit ID: YSI 6920

 Sampling Event Date(s): 7/31/17 - 8/22/17
PRE-SAMPLING CALIBRATION

 Date and time 8/17 0615 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	23.12	850	1000	
Cond (uS/cm @ 25°C)	1,413	23.02	1547	1413	
DO (%)		22.83	87.7	87.4	664.3 mm/Hg
DO (mg/L)*		22.83	7.55	7.52	Check solubility table*
pH4	pH4	23.15	3.93	4.00	7.5 mg/L
pH 7	pH 7	23.26	6.96	7.00	
pH 10	pH 10	23.06	10.13	10.02	
Turbidity	12.7	23.43	12.5	12.7	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

 Date and time 8/17 1935 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	23.51	970	no		A	
Cond (uS/cm @ 25°C)	1,413	23.15	1415	no		A	
DO (%)		22.54	96.2	no		A	725.4 mm/Hg
DO (mg/L)		22.54	8.31	no		A	Check solubility table
pH4	pH 4	23.76	4.10	no		A	8.1 mg/L
pH 7	pH 7	23.75	7.04	no		A	
pH 10	pH 10	23.79	10.02	no		A	
Turbidity	12.7	23.98	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%



Water Quality YSI 6920 Sonde Calibration - Daily Use

Project: SMUD UARP WQ 2017

Unit ID: YSI 6920

Sampling Event Date(s): 7/31 - 8/22

PRE-SAMPLING CALIBRATION

Date and time 8/21 0600 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	23.47	950	1000	
Cond (uS/cm @ 25°C)	1,413	23.19	1399	1413	
DO (%)		22.84	56.0	95.4	725.3 mg/L
DO (mg/L)*		22.84	8.26	8.22	Check solubility table* 0
pH4	pH4	23.66	4.11	4.00	8.1 mg/L
pH7	pH7	23.73	6.96	7.00	
pH10	pH10	23.73	10.06	10.01	
Turbidity	12.7	23.86	12.8	12.7	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

Date and time 8/21 1930 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	24.97	1029	No		A	
Cond (uS/cm @ 25°C)	1,413	25.11	1488	No		Q	
DO (%)		24.22	96.3	No		A	725.6 mg/L
DO (mg/L)		24.22	8.07	No		A	Check solubility table 0
pH4	pH4	23.67	3.92	No		A	8.0 mg/L
pH7	pH7	25.08	6.96	No		A	
pH10	pH10	24.86	10.09	No		A	
Turbidity	12.7	25.87	12.7	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%


Water Quality YSI 6920 Sonde Calibration - Daily Use

 Project: SMUD WQ FALL SURVEY

 Unit ID: YSI 6920

 Sampling Event Date(s): 10/18 - 11/8
PRE-SAMPLING CALIBRATION

 Date and time 10/17 20:30 Name BRUCE WITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	22.57	983	1000	
Cond (uS/cm @ 25°C)	1,413	23.19	1420	1413	
DO (%)		21.81	89.0	87.7	666.4 mm Hg
DO (mg/L)*		21.81	7.77	7.64	Check solubility table*
pH4	pH4	22.66	4.23	4.00	
pH 7	pH 7	22.24	6.88	7.00	
pH 10	pH 10	22.80	10.11	10.02	
Turbidity	12.7	22.03	12.0	12.7	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

 Date and time 10/18 19:00 Name BRUCE WITCH

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	22.61	984	No		A	
Cond (uS/cm @ 25°C)	1,413	23.14	1413	No		A	
DO (%)		22.45	95.5	No		A	725.7 mm Hg
DO (mg/L)		22.45	8.24	No		A	Check solubility table
pH4	pH 4	22.05	3.95	No		A	
pH 7	pH 7	21.87	6.91	No		A	
pH 10	pH 10	22.17	9.84	No		A	
Turbidity	12.7	22.69	12.8	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%



Water Quality YSI 6920 Sonde Calibration - Daily Use

Project: SMUD Q2 FALL SURVEY
Unit ID: YSI 6920
Sampling Event Date(s): 10/18-11/8

PRE-SAMPLING CALIBRATION

Date and time 10/22 12:00 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	18.45	998	1000	
Cond (uS/cm @ 25°C)	1,413	18.47	1284	1413	
DO (%)		17.73	96.3	96.6	733.9 mg/L _s
DO (mg/L)*		17.73	9.15	9.15	Check solubility table ¹
pH4	pH4	18.09	4.83	4.00	
pH 7	pH 7	18.22	6.85	7.00	
pH 10	pH 10	18.15	9.96	10.00	
Turbidity	12.7	18.19	13.6	12.7	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

Date and time 10/23 1930 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	23.45	1011	No		A	
Cond (uS/cm @ 25°C)	1,413	23.12	1412	No		A	
DO (%)		21.87	87.6	No		A	730.03 mg/L _s
*DO (mg/L)		21.87	7.70	No		A	Check solubility table ¹ 0
pH4	pH 4	23.16	5.98	No		A	
pH 7	pH 7	23.28	7.12	No		A	
pH 10	pH 10	21.74	9.97	No		A	
Turbidity	12.4	21.32	12.44	No		A	
Turbidity				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: SACRAMENTO FALL SUDS

 Unit ID: YSI 6920

 Sampling Event Date(s): 10/18 - 11/18
PRE-SAMPLING CALIBRATION

 Date and time 10/24 0600 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	23.04	1021	1000	
Cond (uS/cm @ 25°C)	1,413	23.08	1395	1413	
DO (%)		22.30	87.5	87.6	
DO (mg/L)*		22.30	7.60	7.60	6.67 mg/L Hg Check solubility table*
pH4	pH4	22.72	3.99	4.00	
pH 7	pH 7	22.71	7.02	7.00	
pH 10	pH 10	22.86	10.05	10.00	
Turbidity	12.4	23.20	13.1	12.4	
Turbidity					

POST-SAMPLING CALIBRATION CHECK

 Date and time 10/24 7000 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	23.17	1022	No		A	
Cond (uS/cm @ 25°C)	1,413	23.11	1414	No		A	
DO (%)		21.86	87.5	No		A	6.67 mg/L Hg
DO (mg/L)		21.86	7.60	No		A	Check solubility table
pH4	pH 4	23.09	3.97	No		A	
pH 7	pH 7	23.27	7.02	No		A	
pH 10	pH 10	23.19	9.97	No		A	
Turbidity	12.4	23.26	12.44	No		B	
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 WQ FALL SURVEY

Unit ID: YSI 6920

Sampling Event Date(s): 10/18 - 11/8

PRE-SAMPLING CALIBRATION

Date and time 10/25 0800 Name KELEIGH CROWE

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	22.89	1024	1000	
Cond (uS/cm @ 25°C)	1,413	22.82	1382	1413	
DO (%)		22.30	87.5	87.6	
DO (mg/L)*		22.30	7.60	7.60	6.65.6 m/m Hg Check solubility table* <input type="checkbox"/>
pH4	pH4	22.8	3.99	4.00	
pH 7	pH 7	23.0	7.02	7.00	
pH 10	pH 10	23.0	10.05	10.00	
Turbidity	0.0	23.4	0.0	0.0	
Turbidity	12.4	22.6	14.92	12.4	

POST-SAMPLING CALIBRATION CHECK

Date and time 10/25 1930 Name BRUCE HUTCH

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	22.83	1026	No		A	
Cond (uS/cm @ 25°C)	1,413	22.83	1431	No		A	
DO (%)		22.73	86.6	No		A	6.62.8 m/m Hg
DO (mg/L)		22.73	7.47	No		A	Check solubility table <input type="checkbox"/>
pH4	pH 4	23.74	3.92	No		A	
pH 7	pH 7	23.06	6.99	No		A	
pH 10	pH 10	23.06	10.03	No		A	
Turbidity	12.4	22.82	12.1	No		A	
Turbidity	0	22.76	0.1	No		A	

¹ See Table 1

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

Parameter	Units	Accept	Quality	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%


Water Quality YSI 6920 Sonde Calibration - Daily Use

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 Project: SMUD M4 FALL SURVEY

 Unit ID: YSI 520

 Sampling Event Date(s): 10/18 - 11/8
PRE-SAMPLING CALIBRATION

 Date and time 10/26 1800 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	22.88	1025	1000	
Cond (uS/cm @ 25°C)	1,413	23.13	1414	1413	
DO (%)		22.20	87.7	87.2	162.9 / no LL
DO (mg/L)*		22.20	7.59	7.59	Check solubility table* 0
pH4	pH4	22.20	4.07	4.00	
pH 7	pH 7	23.10	7.01	7.00	
pH 10	pH 10	23.10	9.98	10.00	
Turbidity	0	23.50	0.22	0.00	
Turbidity	12.4	23.50	10.12	12.4	

POST-SAMPLING CALIBRATION CHECK

 Date and time 10/26 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	19.96	1043	No		A	
Cond (uS/cm @ 25°C)	1,413	20.24	1375	No		A	
DO (%)		21.76	101.0	No		A	71.0 / no LL
DO (mg/L)		21.76	8.79	No		A	Check solubility table 0
pH4	pH 4	20.3	4.02	No		A	
pH 7	pH 7	20.2	7.03	No		A	
pH 10	pH 10	20.4	9.96	No		A	
Turbidity	12.4	22.0	12.2	No		A	
Turbidity	0	22.6	0.17	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 WQ FALL SURVEY

Unit ID: YSI EXO

Sampling Event Date(s): 10/18 - 11/8

PRE-SAMPLING CALIBRATION

Date and time 10/27/17 12:00 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	18.81	1062	1000	
Cond (uS/cm @ 25°C)	1,413	18.61	1,374	1,413	
DO (%)		19.3	94.7	95.1	722.8 um/Hg
DO (mg/L)*		19.3	8.75	8.74	Check solubility table*
pH4	pH4	18.90	4.03	4.00	8.7 mg/L
pH 7	pH 7	19.00	7.02	7.00	
pH 10	pH 10	19.00	10.02	10.00	
Turbidity	0	20.00	0.66	0.00	
Turbidity	12.4	20.10	12.43	12.4	

POST-SAMPLING CALIBRATION CHECK

Date and time 10/30/17 18:30 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	19.47	1001	No		A	
Cond (uS/cm @ 25°C)	1,413	19.30	1390	No		A	
DO (%)		18.35	92.6	No		A	724.4 um/Hg
DO (mg/L)		18.35	8.70	No		A	Check solubility table
pH4	pH 4	19.43	4.06	No		A	
pH 7	pH 7	19.37	7.04	No		A	
pH 10	pH 10	19.36	10.00	No		A	
Turbidity	12.4	18.43	12.33	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	Quality	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%


Water Quality YSI 6920 Sonde Calibration - Daily Use

Project: SACRAMENTO FALL SURVEY
Unit ID: YSI 6920
Sampling Event Date(s): 10/18 - 11/8

PRE-SAMPLING CALIBRATION

Date and time 11/1 0500 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	18.73	1010	1000	
Cond (uS/cm @ 25°C)	1,413	18.82	1328	1417	
DO (%)		18.3	72.7	93.1	710.2 mm Hg
DO (mg/L)*		18.3	8.77	8.77	Check solubility table*
pH4	pH4	18.8	4.04	4.00	
pH 7	pH 7	18.8	7.03	7.00	
pH 10	pH 10	18.8	10.01	10.00	
Turbidity	0.0	18.6	0.02	0.00	
Turbidity	12.4	19.4	14.65	12.4	

POST-SAMPLING CALIBRATION CHECK

Date and time 11/1 1300 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	17.52	1016	No		A	
Cond (uS/cm @ 25°C)	1,413	18.82	1405	No		A	
DO (%)		17.51	93.6	No		A	708.5 mm Hg
DO (mg/L)		17.51	8.95	No		A	Check solubility table
pH4	pH 4	17.54	3.99	No		A	
pH 7	pH 7	17.41	7.01	No		A	
pH 10	pH 10	17.55	9.98	No		A	
Turbidity	0	17.79	0.07	No		A	
Turbidity	12.4	18.06	12.4	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%



Water Quality YSI 6920 Sonde Calibration - Daily Use

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Project: SMUD UARP WQ FALL SURVEY - 2017

Unit ID: YSI EXO

Sampling Event Date(s): 10/18 - 11/8

PRE-SAMPLING CALIBRATION

Date and time 11/2/17 0530 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	18.14	1024	1000	
Cond (uS/cm @ 25°C)	1,413	18.04	1391	1413	
DO (%)		17.5	93.6	93.2	708.3 -- / H ₂
DO (mg/L)*		17.5	8.89	8.92	Check solubility table* <input checked="" type="checkbox"/>
pH4	pH4	17.8	4.00	4.00	
pH 7	pH 7	17.8	7.01	7.00	
pH 10	pH 10	17.8	9.97	10.00	
Turbidity	0	18.7	0.00	0.00	
Turbidity	12.4	19.0	11.34	12.4	

POST-SAMPLING CALIBRATION CHECK

Date and time 11/2/17 1830 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	19.10	998	No		A	
Cond (uS/cm @ 25°C)	1,413	18.96	1376	No		A	
DO (%)		17.51	97.1	No		A	728.9 -- / H ₂
DO (mg/L)		17.51	9.28	No		A	Check solubility table <input checked="" type="checkbox"/>
pH4	pH 4	18.08	4.01	No		A	
pH 7	pH 7	17.99	7.04	No		A	
pH 10	pH 10	17.98	10.00	No		A	
Turbidity	0	18.04	0.02	No		A	
Turbidity	12.4	18.05	12.3	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 2017 FALL SURVEY

 Unit ID: YSI 6920

 Sampling Event Date(s): 10/18 - 11/8
PRE-SAMPLING CALIBRATION

 Date and time 11/5 1100 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	19.08	996	1000	
Cond (uS/cm @ 25°C)	1,413	19.24	1374	1413	
DO (%)		17.5	95.9	95.8	733.8 mm/Hg
DO (mg/L)*		17.6	9.78	9.17	Check solubility table*
pH4	pH4	19.5	4.06	4.00	
pH 7	pH 7	18.5	7.06	7.00	
pH 10	pH 10	18.5	10.00	10.00	
Turbidity	0	19.2	0.03	0.00	
Turbidity	12.4	19.3	12.27	12.4	

POST-SAMPLING CALIBRATION CHECK

 Date and time 11/6/17 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	21.21	1037	No		A	
Cond (uS/cm @ 25°C)	1,413	21.15	1448	No		A	
DO (%)		20.07	93.4	No		A	712.1 mm/Hg
DO (mg/L)		20.07	8.38	No		A	Check solubility table
pH4	pH 4	21.41	3.91	No		A	
pH 7	pH 7	21.66	6.99	No		A	
pH 10	pH 10	21.56	10.05	No		A	
Turbidity	0	20.43	0.02	No		A	
Turbidity	12.4	20.25	12.2	No		A	

¹ See Table 1

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

Parameter	Units	Accept	Quality	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

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Project: SMUD UARP N4 FALL SURVEY

Unit ID: YSI 6920

Sampling Event Date(s): 10/18 - 11/18

PRE-SAMPLING CALIBRATION

Date and time 11/7/17 0600 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	21.03	1028	1000	
Cond (uS/cm @ 25°C)	1,413	21.11	1406	1413	
DO (%)		20.2	92.5	93.7	
DO (mg/L)*		20.2	8.48	8.48	Check solubility table*
pH4	pH4	21.2	3.99	4.00	
pH 7	pH 7	21.0	7.04	7.00	
pH 10	pH 10	21.3	10.05	10.00	
Turbidity	0	21.3	0.03	0.00	
Turbidity	12.4	21.0	12.33	12.40	

POST-SAMPLING CALIBRATION CHECK

Date and time 11/7/17 1020 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	19.56	1022	No		A	
Cond (uS/cm @ 25°C)	1,413	20.07	1412	No		A	
DO (%)		19.54	93.4	No		A	70.9 - 14g
DO (mg/L)		19.54	8.57	No		A	Check solubility table
pH4	pH 4	19.86	3.93	No		A	
pH 7	pH 7	19.95	6.99	No		A	
pH 10	pH 10	20.19	9.97	No		A	
Turbidity	0	19.53	0.03	No		A	
Turbidity	12.4	19.72	12.9	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 UAPP WQ FALL SURVEY

 Unit ID: YSI EXO

 Sampling Event Date(s): 10/18 - 11/8
PRE-SAMPLING CALIBRATION

 Date and time 11/8 0600 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	20.23	1045	1000	
Cond (uS/cm @ 25°C)	1,413	20.26	1364	1413	
DO (%)		19.8	94.1	93.4	709.9 mm Hg
DO (mg/L)*		19.8	8.52	8.52	Check solubility table*
pH4	pH4	20.0	3.99	4.00	
pH 7	pH 7	20.1	6.96	7.00	
pH 10	pH 10	20.4	9.93	10.00	
Turbidity	0	20.6	0.22	0.00	
Turbidity	12.4	20.7	12.33	12.4	

POST-SAMPLING CALIBRATION CHECK

 Date and time 11/8 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	20.10	1039	NO		A	
Cond (uS/cm @ 25°C)	1,413	20.19	1431	NO		A	
DO (%)		19.32	95.8	NO		A	728.4 mm Hg
DO (mg/L)		19.32	8.85	NO		A	Check solubility table
pH4	pH 4	19.83	3.89	NO		A	
pH 7	pH 7	19.67	6.99	NO		A	
pH 10	pH 10	19.91	10.05	NO		A	
Turbidity	0	19.87	0.02	NO		A	
Turbidity	12.4	19.73	12.48	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%



Water Quality YSI 6920 Sonde Calibration - Daily Use

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Project: SMUD LARP WQ WINTER SURVEY
 Unit ID: YSI 6920
 Sampling Event Date(s): 11/13 - 11/30

PRE-SAMPLING CALIBRATION

Date and time 11/12/17 1800 Name KELIEGH CRANE

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	20.02	1048	1000	
Cond (uS/cm @ 25°C)	1,413	20.13	1381	1413	
DO (%)		19.43	96.1	95.9	728.4 mm Hg
DO (mg/L)*		19.43	8.24	8.19	Check solubility table*
pH4	pH4	19.90	3.97	4.00	
pH 7	pH 7	19.80	7.00	7.00	
pH 10	pH 10	20.40	10.06	10.00	
Turbidity	0	20.60	0.02	0.00	
Turbidity	12.4	20.70	12.43	12.4	

POST-SAMPLING CALIBRATION CHECK

Date and time 11/13/17 1800 Name BRUCE WITCH

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	18.31	1048	No		A	
Cond (uS/cm @ 25°C)	1,413	18.71	1410	No		A	
DO (%)		19.52	86.7	No		A	666.4 mm Hg
DO (mg/L)		19.52	7.96	No		A	Check solubility table
pH4	pH 4	18.63	4.00	No		A	
pH 7	pH 7	18.17	7.02	No		A	
pH 10	pH 10	18.27	10.02	No		A	
Turbidity	0	19.23	0.09	No		A	
Turbidity	12.4	19.01	12.39	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

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 Project: SIMLD UAR2 NG WINTER SURVEY

 Unit ID: YSI 690

 Sampling Event Date(s): 11/13 - 11/30
PRE-SAMPLING CALIBRATION

 Date and time 11/14/17 0600 Name BRUCE HUTCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	19.7	1051	1000	
Cond (uS/cm @ 25°C)	1,413	20.0	1344	1413	
DO (%)		18.7	86.9	87.8	667.1 mg/L H ₂ O
DO (mg/L)*		18.7	8.21	8.21	Check solubility table* 0
pH4	pH4	19.5	5.99	4.00	
pH 7	pH 7	19.5	7.05	7.00	
pH 10	pH 10	19.2	10.02	10.00	
Turbidity	0	20.5	0.17	0.00	
Turbidity	12.4	20.3	12.39	12.4	

POST-SAMPLING CALIBRATION CHECK

 Date and time 11/14/17 1830 Name BRUCE HUTCH

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	19.38	1038	No		A	
Cond (uS/cm @ 25°C)	1,413	19.43	1412	No		A	
DO (%)		19.39	87.2	No		A	615.0 mg/L H ₂ O
DO (mg/L)		19.39	8.02	No		A	Check solubility table 0
pH4	pH 4	19.44	4.03	No		A	
pH 7	pH 7	19.37	7.00	No		A	
pH 10	pH 10	19.22	9.82	No		A	
Turbidity	0	19.16	0.02	No		A	
Turbidity	12.4	19.63	12.5	No		A	

¹ See Table I

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 WARP N3 WINTER SURVEY

Unit ID: YSI 6920

Sampling Event Date(s): 11/13 - 11/30

PRE-SAMPLING CALIBRATION

Date and time 11/15/17 0630 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	18.15	994	1000	
Cond (uS/cm @ 25°C)	1,413	18.20	1421	1413	
DO (%)		17.5	87.2	87.2	663.1 uS/cm
DO (mg/L)*		17.5	8.35	8.35	Check solubility table*
pH4	pH4	18.0	4.04	4.00	
pH 7	pH 7	18.0	6.99	7.00	
pH 10	pH 10	17.8	9.87	10.00	
Turbidity	0	18.8	3.13	2.00	
Turbidity	12.4	18.8	12.5	12.4	

POST-SAMPLING CALIBRATION CHECK

Date and time 11/15/17 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	20.10	1033	No		A	
Cond (uS/cm @ 25°C)	1,413	20.65	1412	No		A	
DO (%)		20.17	87.1	No		A	659.6 uS/cm
DO (mg/L)		20.17	7.89	No		A	Check solubility table
pH4	pH 4	20.20	4.00	No		A	
pH 7	pH 7	20.01	7.02	No		A	
pH 10	pH 10	19.96	9.92	No		A	
Turbidity	0	18.61	0.16	No		A	
Turbidity	12.4	18.48	12.7	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%


Water Quality YSI 6920 Sonde Calibration - Daily Use

 Project: SMUD VARP HQ WINTER SURVEY

 Unit ID: YSI 6920

 Sampling Event Date(s): 11/17 - 11/30
PRE-SAMPLING CALIBRATION

 Date and time 11/16/17 0600 Name BRUCE HATCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	18.75	1031	1000	
Cond (uS/cm @ 25°C)	1,413	18.75	1366	1413	
DO (%)		17.9	86.9	86.6	658.3 mm Hg
DO (mg/L)*		17.9	8.23	8.23	Check solubility table ¹
pH4	pH4	19.0	3.94	4.00	
pH 7	pH 7	19.0	7.03	7.00	
pH 10	pH 10	18.9	10.03	10.00	
Turbidity	0	19.3	0.14	0.00	
Turbidity	12.4	19.2	12.45	12.4	

POST-SAMPLING CALIBRATION CHECK

 Date and time 11/16/17 17:30 Name BRUCE HATCH

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	18.94	1075	No		R	
Cond (uS/cm @ 25°C)	1,413	18.14	1399	No		A	
DO (%)		18.13	93.9	No		A	722.4 mm Hg
*DO (mg/L)		18.13	8.86	No		A	Check solubility table ¹
pH4	pH 4	17.51	3.97	No		A	
pH 7	pH 7	17.45	7.10	No		A	
pH 10	pH 10	17.89	10.13	No		A	
Turbidity	0	16.39	0.04	No		A	
Turbidity	12.4	16.58	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%



Water Quality YSI 6920 Sonde Calibration - Daily Use

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Project: SMUD UARP WQ WINTER SURVEY

Unit ID: 751 50

Sampling Event Date(s): 11/13 - 11/30

PRE-SAMPLING CALIBRATION

Date and time 11/19/17 2000 Name KELLEGH CROWE

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	18.04	1034	1000	
Cond (uS/cm @ 25°C)	1,413	18.22	1306	1413	
DO (%)		17.80	97.4	95.7	727.6 months
DO (mg/L)*		17.80	9.09	9.09	Check solubility table*
pH4	pH4	18.70	4.00	4.00	
pH 7	pH 7	18.00	7.03	7.00	
pH 10	pH 10	18.30	9.99	10.00	
Turbidity	0.0	18.90	0.16	0.00	
Turbidity	12.4	18.80	12.37	12.4	

POST-SAMPLING CALIBRATION CHECK

Date and time 11/20/17 1800 Name KELLEGH 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	16.65	1038	NO		A	
Cond (uS/cm @ 25°C)	1,413	16.59	1417	NO		A	
DO (%)		17.65	92.6	NO		A	712.2 months
DO (mg/L)		17.65	8.84	NO		A	Check solubility table
pH4	pH 4	16.83	4.04	NO		A	
pH 7	pH 7	16.38	7.05	NO		A	
pH 10	pH 10	16.55	9.98	NO		A	
Turbidity	0.0	17.25	0.20	NO		A	
Turbidity	12.4	17.50	12.44	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 WATER SURVEY

 Unit ID: YSI 520

 Sampling Event Date(s): 11/13 - 11/20
PRE-SAMPLING CALIBRATION

 Date and time 11/21/17 0600 Name ISAAC HIRSH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	19.31	1054	1000	
Cond (uS/cm @ 25°C)	1,413	19.25	1336	1413	
DO (%)		18.8	94.3	93.8	715.2 → 148
DO (mg/L)*		18.9	8.71	87.1	Check solubility table*
pH4	pH4	19.6	4.05	4.00	
pH 7	pH 7	19.6	7.03	7.00	
pH 10	pH 10	19.5	9.94	10.00	
Turbidity	0	20.5	0.3	0.00	
Turbidity	12.4	20.6	13.14	12.4	

POST-SAMPLING CALIBRATION CHECK

 Date and time 11/21/17 1830 Name ISAAC HIRSH

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	17.93	1038	No		A	
Cond (uS/cm @ 25°C)	1,413	18.04	1417	No		A	
DO (%)		18.35	94.4	No		A	723.5 → 148
DO (mg/L)		18.35	8.87	No		A	Check solubility table
pH4	pH 4	17.97	3.96	No		A	
pH 7	pH 7	17.80	7.03	No		A	
pH 10	pH 10	17.95	10.02	No		A	
Turbidity	0	17.94	0.05	No		A	
Turbidity	12.4	18.02	12.5	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 M4 UARP WINTER SURVEY

Unit ID: YSI 6920

Sampling Event Date(s): 11/23 - 11/30

PRE-SAMPLING CALIBRATION

Date and time 11/24/17 1400 Name BRUCE HITCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	18.77	1044	1000	
Cond (uS/cm @ 25°C)	1,413	18.62	1353	1413	
DO (%)		20.7	95.2	95.2	728.5 mm Hg
DO (mg/L)*		20.7	8.53	8.54	Check solubility table*
pH4	pH4	18.9	3.97	4.00	
pH 7	pH 7	18.5	7.05	7.00	
pH 10	pH 10	18.6	10.05	10.00	
Turbidity	0	19.9	0.62	0.00	
Turbidity	12.4	19.9	13.3	12.4	

POST-SAMPLING CALIBRATION CHECK

Date and time 11/27/17 1830 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	16.90	1032	NO		A	
Cond (uS/cm @ 25°C)	1,413	17.70	1416	NO		A	
DO (%)		19.58	95.2	NO		A	710.9 mm Hg
DO (mg/L)		19.58	8.72	NO		A	Check solubility table
pH4	pH 4	17.70	4.06	NO		A	
pH 7	pH 7	16.62	7.05	NO		A	
pH 10	pH 10	16.59	9.99	NO		A	
Turbidity	0	19.55	0.02	NO		A	
Turbidity	12.4	19.70	12.3	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

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 Project: SMD 6-4 WINTER SURVEY 2017

 Unit ID: YSI 6920

 Sampling Event Date(s): 11/13 - 11/20
PRE-SAMPLING CALIBRATION

 Date and time 11/20/17 0600 Name BRUCE WITTE

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	18.25	1019	1000	
Cond (uS/cm @ 25°C)	1,413	18.04	1295	1413	
DO (%)		20.0	94.0	93.6	
DO (mg/L)*		20.0	8.52	8.52	711.3 mm Hg Check solubility table*
pH4	pH4	18.2	3.99	4.00	
pH 7	pH 7	17.8	7.03	7.00	
pH 10	pH 10	18.2	9.98	10.00	
Turbidity		20.7	0.20	0.20	
Turbidity		21.0	10.77	12.4	

POST-SAMPLING CALIBRATION CHECK

 Date and time 11/25/17 2000 Name BRUCE WITTE

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	19.97	1043	NO		A	
Cond (uS/cm @ 25°C)	1,413	20.22	1373	NO		A	
DO (%)		21.75	100.0	NO		A	
DO (mg/L)		21.75	8.79	NO		A	711.0 mm Hg Check solubility table
pH4	pH 4	20.7	4.02	NO		A	
pH 7	pH 7	20.4	7.03	NO		A	
pH 10	pH 10	20.2	9.96	NO		A	
Turbidity		22.0	0.17	NO		A	
Turbidity		22.6	12.2	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

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Project: SMUD UAR WATER SURVEY 2017

Unit ID: YSI 690

Sampling Event Date(s): 11/15 - 11/30

PRE-SAMPLING CALIBRATION

Date and time 11/29/17 0600 Name BRUCE HITEH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	19.97	1080	1000	
Cond (uS/cm @ 25°C)	1,413	20.22	1311	1413	
DO (%)		21.7	93.3	93.6	711.5 mm Hg
DO (mg/L)*		21.8	3.18	3.21	Check solubility table*
pH4	pH4	20.7	4.02	4.00	
pH 7	pH 7	20.4	7.03	7.00	
pH 10	pH 10	20.2	9.96	10.00	
Turbidity		22.0	0.15	0.00	
Turbidity		22.6	12.2	12.4	

POST-SAMPLING CALIBRATION CHECK

Date and time 11/29/17 2000 Name BRUCE HITEH

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	20.19	1032	No		A	
Cond (uS/cm @ 25°C)	1,413	19.73	1389	No		A	
DO (%)		21.27	92.6	No		A	712.2 mm Hg
DO (mg/L)		21.27	3.21	No		A	Check solubility table
pH4	pH 4	19.7	3.97	No		A	
pH 7	pH 7	19.7	7.02	No		A	
pH 10	pH 10	20.0	9.95	No		A	
Turbidity		21.2	0.92	No		A	
Turbidity		21.4	12.5	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

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 Project: SMUD 100 WINTER SURVEY 2017

 Unit ID: YSI 6920

 Sampling Event Date(s): 11/13 - 11/30
PRE-SAMPLING CALIBRATION

 Date and time 11/20/17 0600 Name BRUCE HATCH

Parameter	Std. Value	Std. Temp (°C)	Pre-Cal Value	Post-Cal Value	Notes
Cond (uS/cm @ 25°C)	1,000	20.19	1023	1000	
Cond (uS/cm @ 25°C)	1,413	19.76	1388	1413	
DO (%)		21.3	92.7	93.7	711.0 mm Hg
DO (mg/L)*		21.3	8.31	8.31	Check solubility table*
pH4	pH4	19.7	3.97	4.00	
pH 7	pH 7	19.7	7.02	7.00	
pH 10	pH 10	20.0	9.95	10.00	
Turbidity		22.1	0.99	0	
Turbidity		22.4	12.2	12.4	

POST-SAMPLING CALIBRATION CHECK

 Date and time 11/20/17 1930 Name BRUCE HATCH

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	20.59	1021	No		A	
Cond (uS/cm @ 25°C)	1,413	20.55	1414	No		A	
DO (%)		20.45	101.5	No		A	772 mm Hg
DO (mg/L)		20.45	9.15	No		A	Check solubility table
pH4	pH 4	20.51	4.03	No		A	
pH 7	pH 7	20.47	7.06	No		A	
pH 10	pH 10	20.54	9.96	No		A	
Turbidity		20.62	0.03	No		A	
Turbidity		20.74	12.5	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%

Ver. 01/2016

APPENDIX H
Analytical Laboratory Bacteria Reports



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CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

June 28, 2017

CLS Work Order #: 17F0875
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 06/21/17 13:16. 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 DOHS ELAP Accreditation/Registration number 1233



CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. PH0875 (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 758.10 Task 0100.02 Destination Laboratory Rancho Cordova <input checked="" type="checkbox"/> CLS (916) 638-7301 3249 Fitzgerald Road Rancho Cordova, CA 95742 www.californialab.com <input type="checkbox"/> OTHER		ANALYSIS REQUESTED				GLOBTRACKER REP-REPORT YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> GLOBAL ID. FIELD CONDITIONS TURNAROUND TIME IN DAYS SPECIAL INSTRUCTIONS			
DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	TYPE	Fecal coliform-5 Tube	E. coli Quant-100	1	2	3	5	
6/21/17	11:35	BAC-12-IHR		Surface water			6 X	X					X
6/21/17	11:20	BAC-13-IHR		Surface water			6 X	X					X
6/21/17	10:00	BAC-14-BCP		Surface water			6 X	X					X
6/21/17	8:40	BAC-15-SCP		Surface water			6 X	X					X
				Surface water			6						X
				Surface water			6						X
				Surface water			6						X
				Surface water			6						X
				Surface water			6						X
				Surface water			6						X
				Surface water			6						X
				Surface water			6						X
				Surface water			6						X
SUSPECTED CONSTITUENTS							SAMPLE RETENTION TIME		PRESERVATIVES (1) HCL (3) - UCLD (2) HNO3 (4) - H2SO4				
RELINQUISHED BY (Signature)			PRINT NAME/COMPANY		DATE/TIME		RECEIVED BY (Signature)			PRINT NAME/COMPANY			
<i>[Signature]</i>			KELLEIGH CROWE STILLWATER SCIENCES		6/21/17 13:16		<i>[Signature]</i>						
RECEIVED AT LAB BY: <i>[Signature]</i>							DATE/TIME: 6/21/17 13:16		CONDITIONS/COMMENTS: 1-2				
SHIPPED BY: <input type="checkbox"/> FED EX <input type="checkbox"/> UPS <input type="checkbox"/> OTHER							AIR BILL #						

CALIFORNIA LABORATORY SERVICES

Page 2 of 3

06/28/17 10:43

Stillwater Sciences 2855 Telegraph Ave., Suite 400 Berkeley, CA 94705	Project: SMUD In situ, Bac-T, & Chemistry Monitoring Project Number: 750.10 Task 0100.02 Project Manager: Maia Singer	CLS Work Order #: 17F0875 COC #:
---	---	-------------------------------------

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-12-IHR (17F0875-01) Surface water Sampled: 06/21/17 11:35 Received: 06/21/17 13:16									
E. Coli	7.5	1.0	MPN/100 mL	1	1704608	06/21/17	06/22/17	SM9223	
Fecal Coliforms	7.8	1.8	*	"	1704604	*	06/24/17	SM 9221	
BAC-13-IHR (17F0875-02) Surface water Sampled: 06/21/17 11:20 Received: 06/21/17 13:16									
E. Coli	21.6	1.0	MPN/100 mL	1	1704608	06/21/17	06/22/17	SM9223	
Fecal Coliforms	33	1.8	*	"	1704604	*	06/24/17	SM 9221	
BAC-14-BCR (17F0875-03) Surface water Sampled: 06/21/17 10:00 Received: 06/21/17 13:16									
E. Coli	1.0	1.0	MPN/100 mL	1	1704608	06/21/17	06/22/17	SM9223	
Fecal Coliforms	2.0	1.8	*	"	1704604	*	06/24/17	SM 9221	
BAC-15-SCR (17F0875-04) Surface water Sampled: 06/21/17 08:40 Received: 06/21/17 13:16									
E. Coli	9.7	1.0	MPN/100 mL	1	1704608	06/21/17	06/22/17	SM9223	
Fecal Coliforms	13	1.8	*	"	1704604	*	06/24/17	SM 9221	

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CALIFORNIA LABORATORY SERVICES

Page 3 of 3

06/28/17 10:43

Stillwater Sciences 2855 Telegraph Ave., Suite 400 Berkeley, CA 94705	Project: SMUD In situ, Bac-T, & Chemistry Monitoring Project Number: 750.10 Task 0100.02 Project Manager: Maia Singer	CLS Work Order #: 17F0875 COC #:
---	---	-------------------------------------

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

June 29, 2017

CLS Work Order #: 17F0951
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 06/22/17 14:18. 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 DOHS ELAP Accreditation/Registration number 1233



CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. 17F0451 (of)

Report To:				Client Job Number 750.10 Task 0100.02		ANALYSIS REQUESTED				GEOTRACKER							
Stillwater Sciences 2855 Telegraph Ave. Suite 400 Berkeley, CA 94705				Destination Laboratory Rancho Cordova		Fecal coliform-15 Tube PRESERVATIVES E. coli Quantitative				EDF REPORT YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>							
Project Manager Maia Singer maia@stillwatersci.com				<input checked="" type="checkbox"/> CLS (916) 638-7301 3249 Fitzgerald Road Rancho Cordova, CA 95742 www.californialab.com						GLOBAL ID.							
Project Name SMUD In situ, Bac-T, & Chemistry Monitoring				<input type="checkbox"/> OTHER		FIELD CONDITIONS:				TURNAROUND TIME IN DAYS							
Sampled by										SPECIAL INSTRUCTIONS							
Job Description Monitor seasonal bacteria levels in UARP reaches.																	
Site Location UARP																	
DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	TYPE	1	2	3	5	INVOICE TO:						
6/22/17	1020	BAC-5-GCR		Surface water			X				X	Stillwater Sciences					
6/22/17	1035	BAC-6-GCR		Surface water			X				X	Same as above					
6/22/17	0930	BAC-7-UVR		Surface water			X				X	Project No. 750.10 Task 0100.02					
6/22/17	0945	BAC-8-UVR		Surface water			X				X	QUOTE#					
6/22/17	1130	BAC-9-UVR		Surface water			X				X	(1) HCL (3) = COLD					
6/22/17	1106	BAC-10-UVR		Surface water			X				X	(2) HNO3 (4) = H2SO4					
6/22/17	1204	BAC-11-UR		Surface water			X				X						
SUSPECTED CONSTITUENTS				SAMPLE RETENTION TIME				PRESERVATIVES									
RELINQUISHED BY (Signature)				PRINT NAME/COMPANY		DATE/TIME		RECEIVED BY (Signature)				PRINT NAME/COMPANY					
<i>[Signature]</i>				Eric Somerville / Stillwater Sciences		6/22/17 14:18		<i>[Signature]</i>									
RECEIVED AT LAB BY: <i>[Signature]</i>				DATE/TIME: 6-22-17 14:18		CONDITIONS/COMMENTS: 0.9.											
SHIPPED BY:				<input type="checkbox"/> FED EX <input type="checkbox"/> UPS <input type="checkbox"/> OTHER				AIR BILL #									

CALIFORNIA LABORATORY SERVICES

Page 2 of 3

06/29/17 15:43

Stillwater Sciences 2855 Telegraph Ave., Suite 400 Berkeley, CA 94705	Project: SMUD In situ, Bac-T, & Chemistry Monitoring Project Number: 750.10 Task 0100.02 CLS Work Order #: 17F0951 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 (17F0951-01) Surface Water Sampled: 06/22/17 10:20 Received: 06/22/17 14:18									
E. Coli	42.6	1.0	MPN/100 mL	1	1704662	06/22/17	06/23/17	SM9223	
Fecal Coliforms	14	1.8	*	"	1704661	06/22/17	06/25/17	SM 9221	
BAC-6-GCR (17F0951-02) Surface Water Sampled: 06/22/17 10:35 Received: 06/22/17 14:18									
E. Coli	4.1	1.0	MPN/100 mL	1	1704662	06/22/17	06/23/17	SM9223	
Fecal Coliforms	17	1.8	*	"	1704661	06/22/17	06/25/17	SM 9221	
BAC-7-UVR (17F0951-03) Surface Water Sampled: 06/22/17 09:30 Received: 06/22/17 14:18									
E. Coli	344.8	1.0	MPN/100 mL	1	1704662	06/22/17	06/23/17	SM9223	
Fecal Coliforms	1600	1.8	*	"	1704661	06/22/17	06/25/17	SM 9221	
BAC-8-UVR (17F0951-04) Surface Water Sampled: 06/22/17 09:45 Received: 06/22/17 14:18									
E. Coli	111.2	1.0	MPN/100 mL	1	1704662	06/22/17	06/23/17	SM9223	
Fecal Coliforms	140	1.8	*	"	1704661	06/22/17	06/25/17	SM 9221	
BAC-9-UVR (17F0951-05) Surface Water Sampled: 06/22/17 11:30 Received: 06/22/17 14:18									
E. Coli	53.8	1.0	MPN/100 mL	1	1704662	06/22/17	06/23/17	SM9223	
Fecal Coliforms	130	1.8	*	"	1704661	06/22/17	06/25/17	SM 9221	
BAC-10-UVR (17F0951-06) Surface Water Sampled: 06/22/17 11:06 Received: 06/22/17 14:18									
E. Coli	187.2	1.0	MPN/100 mL	1	1704662	06/22/17	06/23/17	SM9223	
Fecal Coliforms	13	1.8	*	"	1704661	06/22/17	06/25/17	SM 9221	
BAC-11-JR (17F0951-07) Surface Water Sampled: 06/22/17 12:04 Received: 06/22/17 14:18									
E. Coli	10.9	1.0	MPN/100 mL	1	1704662	06/22/17	06/23/17	SM9223	
Fecal Coliforms	79	1.8	*	"	1704661	06/22/17	06/25/17	SM 9221	

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CALIFORNIA LABORATORY SERVICES

Page 3 of 3

06/29/17 15:43

Stillwater Sciences 2855 Telegraph Ave., Suite 400 Berkeley, CA 94705	Project: SMUD In situ, Bac-T, & Chemistry Monitoring Project Number: 750.10 Task 0100.02 Project Manager: Maia Singer	CLS Work Order #: 17F0951 COC #:
---	---	-------------------------------------

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

July 06, 2017

CLS Work Order #: 17F1192

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 06/28/17 15:00. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

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

Sincerely,



James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233



CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. 17F192 (1 of 1)

Report To: Stillwater Sciences 2855 Telegraph Ave. Suite 400 Berkeley, CA 94705				Client Job Number 750.10 Task 0100.02				ANALYSIS REQUESTED				GUTRACKER							
Project Manager Maia Singer maia@stillwatersci.com				Destination Laboratory Rancho Cordova				Fecal coliform-15 Tube PRESERVATIVES				EDF REPORT YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>							
Project Name SMUD In situ, Bac-T, & Chemistry Monitoring				<input checked="" type="checkbox"/> CLS (916) 638-7304 3249 Fitzgerald Road Rancho Cordova, CA 95742 www.californialab.com <input type="checkbox"/> OTHER								GLOBAL ID.							
Sampled By												FIELD CONDITIONS							
Job Description Monitor seasonal bacteria levels at UARP reaches.												TURNAROUND TIME IN DAYS							
Site Location UARP												SPECIAL INSTRUCTIONS							
DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	CONTAINER		VOLUME	PRESERVATIVE	ANALYSIS	ANALYSIS	ANALYSIS	ANALYSIS	TURNAROUND TIME IN DAYS							
				MATRIX	NO.							TYPE	1	2	3	4	5		
6/28/17	11:40	BAC-12-IHR		Surface water		6	X												
6/28/17	11:25	BAC-13-IHR		Surface water		6	X												
6/28/17	10:05	BAC-14-BOR		Surface water		6	X												
6/28/17	8:30	BAC-15-SCR		Surface water		6	X												
				Surface water		6													
				Surface water		6													
				Surface water		6													INVOICE TO:
				Surface water		6													Stillwater Sciences
				Surface water		6													Same as above
				Surface water		6													
				Surface water		6													
				Surface water		6													Project No. 750.10 Task 0100.02
				Surface water		6													QUOTE#
SUSPECTED CONSTITUENTS				SAMPLE RETENTION TIME				PRESERVATIVES (1) HCL (2) HNO3 (3) H2SO4											
RELINQUISHED BY (Signature)				PRINT NAME/COMPANY				RECEIVED BY (Signature)				PRINT NAME/COMPANY							
<i>Maia Singer</i>				KELEIGH CROWE				<i>Keleigh Crowe</i>											
				STILLWATER SCIENCES 1500															
RECEIVED AT LAB BY: <i>Keleigh Crowe</i>				DATE/TIME: 6/28/17 1500				CONDITIONS/COMMENTS: 0-0											
SHIPPED BY:				<input type="checkbox"/> FED EX <input type="checkbox"/> UPS <input type="checkbox"/> OTHER				AIR BILL #											

CALIFORNIA LABORATORY SERVICES

Page 2 of 3

07/06/17 15:01

Stillwater Sciences 2855 Telegraph Ave., Suite 400 Berkeley, CA 94705	Project: SMUD In situ, Bac-T, & Chemistry Monitoring Project Number: 750.10 Task 0100.02 Project Manager: Maia Singer	CLS Work Order #: 17F1192 COC #:
---	---	-------------------------------------

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-12-IHR (17F1192-01) Water Sampled: 06/28/17 11:40 Received: 06/28/17 15:00									
E. Coli	<1	1.0	MPN/100 mL	1	1704813	06/28/17	06/29/17	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1704814	06/28/17	07/01/17	SM 9221	
BAC-13-IHR (17F1192-02) Water Sampled: 06/28/17 11:25 Received: 06/28/17 15:00									
E. Coli	10.9	1.0	MPN/100 mL	1	1704813	06/28/17	06/29/17	SM9223	
Fecal Coliforms	22	1.8	"	"	1704814	06/28/17	07/01/17	SM 9221	
BAC-14-BCR (17F1192-03) Water Sampled: 06/28/17 10:05 Received: 06/28/17 15:00									
E. Coli	3.0	1.0	MPN/100 mL	1	1704813	06/28/17	06/29/17	SM9223	
Fecal Coliforms	2.0	1.8	"	"	1704814	06/28/17	07/01/17	SM 9221	
BAC-15-SCR (17F1192-04) Water Sampled: 06/28/17 08:30 Received: 06/28/17 15:00									
E. Coli	6.3	1.0	MPN/100 mL	1	1704813	06/28/17	06/29/17	SM9223	
Fecal Coliforms	4.5	1.8	"	"	1704814	06/28/17	07/01/17	SM 9221	

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CALIFORNIA LABORATORY SERVICES

Page 3 of 3

07/06/17 15:01

Stillwater Sciences 2855 Telegraph Ave., Suite 400 Berkeley, CA 94705	Project: SMUD In situ, Bac-T, & Chemistry Monitoring Project Number: 750.10 Task 0100.02 Project Manager: Maia Singer	CLS Work Order #: 17F1192 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

CA DOHS ELAP Accreditation/Registration Number 1233

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CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

July 07, 2017

CLS Work Order #: 17F1262

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 06/29/17 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 DOHS ELAP Accreditation/Registration number 1233



CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. 17F202 (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 759.10 Task 010002 Destination Laboratory Rancho Cordova <input checked="" type="checkbox"/> CLS (916) 638-7301 3249 Fitzgerald Road Rancho Cordova, CA 95742 www.californialab.com <input type="checkbox"/> OTHER		ANALYSIS REQUESTED				GLOBAL TRACKER						
				Preservatives Treated coliform-15 Tube E. coli Quant-17m				DEF-REPORT: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> GLOBAL ID: FIELD CONDITIONS: TURNAROUND TIME IN DAYS: 1 2 3 5 SPECIAL INSTRUCTIONS:								
DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	CONTAINER		6	X	X								
				MATRIX	NO.									TYPE		
6/29/17	11:20	BAC-5-GCR		Surface water		6	X	X					X			
6/29/17	11:00	BAC-6-GCR		Surface water		6	X	X					X			
6/29/17	10:40	BAC-7-UVR		Surface water		6	X	X					X			
6/29/17	10:35	BAC-8-UVR		Surface water		6	X	X					X			
6/29/17	13:00	BAC-9-UVR		Surface water		6	X	X					X			
6/29/17	11:45	BAC-10-UVR		Surface water		6	X	X					X			
6/29/17	12:35	BAC-11-JR		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			
SUSPECTED CONSTITUENTS						SAMPLE RETENTION TIME				PRESERVATIVES (1) HCL (3) = COLD (2) HNO3 (4) = H2SO4						
RELINQUISHED BY (Signature) <i>Evan Steel</i>			PRINT NAME/COMPANY Evan Steel Stillwater			DATE/TIME 6/29/17 1452			RECEIVED BY (Signature)				PRINT NAME/COMPANY			
RECEIVED AT LAB BY: <i>D. J. [Signature]</i>						DATE/TIME: 6/29/17				CONDITIONS/COMMENTS:						
SHIPPED BY: <input type="checkbox"/> FED EX <input type="checkbox"/> UPS <input type="checkbox"/> OTHER						1452 (0.5)				AIR BILL #						

CALIFORNIA LABORATORY SERVICES

Page 2 of 3

07/07/17 12:48

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

Project: SMUD In situ, Bac-T, & Chemistry Monitoring
 Project Number: 750.10 Task 0100.02
 Project Manager: Maia Singer
 CLS Work Order #: 17F1262
 COC #:

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-5-GCR (17F1262-01) Surface Water Sampled: 06/29/17 11:20 Received: 06/29/17 14:52									
E. Coli	1.0	1.0	MPN/100 mL	1	1704853	06/29/17	06/30/17	SM9223	
Fecal Coliforms	23	1.8	"	"	1704848	06/29/17	07/02/17	SM 9221	
BAC-6-GCR (17F1262-02) Surface Water Sampled: 06/29/17 11:00 Received: 06/29/17 14:52									
E. Coli	<1	1.0	MPN/100 mL	1	1704853	06/29/17	06/30/17	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1704848	06/29/17	07/02/17	SM 9221	
BAC-7-UVR (17F1262-03) Surface Water Sampled: 06/29/17 10:10 Received: 06/29/17 14:52									
E. Coli	20.3	1.0	MPN/100 mL	1	1704853	06/29/17	06/30/17	SM9223	
Fecal Coliforms	23	1.8	"	"	1704848	06/29/17	07/02/17	SM 9221	
BAC-8-UVR (17F1262-04) Surface Water Sampled: 06/29/17 10:35 Received: 06/29/17 14:52									
E. Coli	27.9	1.0	MPN/100 mL	1	1704853	06/29/17	06/30/17	SM9223	
Fecal Coliforms	33	1.8	"	"	1704848	06/29/17	07/02/17	SM 9221	
BAC-9-UVR (17F1262-05) Surface Water Sampled: 06/29/17 13:00 Received: 06/29/17 14:52									
E. Coli	7.4	1.0	MPN/100 mL	1	1704853	06/29/17	06/30/17	SM9223	
Fecal Coliforms	49	1.8	"	"	1704848	06/29/17	07/02/17	SM 9221	
BAC-10-UVR (17F1262-06) Surface Water Sampled: 06/29/17 11:45 Received: 06/29/17 14:52									
E. Coli	<1	1.0	MPN/100 mL	1	1704853	06/29/17	06/30/17	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1704848	06/29/17	07/02/17	SM 9221	
BAC-11-JR (17F1262-07) Surface Water Sampled: 06/29/17 12:35 Received: 06/29/17 14:52									
E. Coli	2.0	1.0	MPN/100 mL	1	1704853	06/29/17	06/30/17	SM9223	
Fecal Coliforms	2.0	1.8	"	"	1704848	06/29/17	07/02/17	SM 9221	

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CALIFORNIA LABORATORY SERVICES

Page 3 of 3

07/07/17 12:48

Stillwater Sciences 2855 Telegraph Ave., Suite 400 Berkeley, CA 94705	Project: SMUD In situ, Bac-T, & Chemistry Monitoring Project Number: 750.10 Task 0100.02 Project Manager: Maia Singer	CLS Work Order #: 17F1262 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

3249 Fitzgerald Road Rancho Cordova, CA 95742

July 12, 2017

CLS Work Order #: 17G0136

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 07/05/17 14:15. 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 DOHS ELAP Accreditation/Registration number 1233



CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. 176036 (1 of 1)

Report To:				Client Job Number 750.10 Task 0100.02		ANALYSIS REQUESTED				GEOTRACKER				
Stillwater Sciences 2855 Telegraph Ave. Suite 400 Berkeley, CA 94705				Destination Laboratory Rancho Cordova		Fecal coliform-15 Tube PRESERVATIVES				E. coli Quant-try				FIELD REPORT YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>
Project Manager Maia Singer maia@stillwatersci.com				<input checked="" type="checkbox"/> CLS (916) 658-7301 3249 Fitzgerald Road Rancho Cordova, CA 95742 www.californialab.com										GLOBAL ID:
Project Name SMUD In situ, Bac-T, & Chemistry Monitoring				<input type="checkbox"/> OTHER						FIELD CONDITIONS:				
Sampled By										TURNAROUND TIME IN DAYS				
Job Description Monitor seasonal bacteria levels in UARP reaches.										SPECIAL INSTRUCTIONS				
Site Location UARP														
DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	TYPE	1	2	3	5	INVOICE TO:			
7/5/17	11:45	BAC-12-IHR		Surface water		6	X				X	Stillwater Sciences		
7/5/17	11:30	BAC-13-IHR		Surface water		6	X				X	Same as above		
7/5/17	10:15	BAC-14-BCP		Surface water		6	X				X	Project No. 750.10 Task 0100.02		
7/5/17	8:55	BAC-15-BCP		Surface water		6	X				X	QUOTE#		
				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 0100.02		
				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						
<i>Evan Steel</i>		Evan Steel Stillwater Sciences		7/5/17 11:15										
RECEIVED AT LAB BY: <i>[Signature]</i>				DATE/TIME: 7/4/17 14:5		CONDITIONS/COMMENTS:								
SHIPPED BY: <input type="checkbox"/> FED EX <input checked="" type="checkbox"/> UPS <input type="checkbox"/> OTHER						AIR BILL #								

CALIFORNIA LABORATORY SERVICES

Page 2 of 3

07/12/17 12:59

Stillwater Sciences 2855 Telegraph Ave., Suite 400 Berkeley, CA 94705	Project: SMUD In situ, Bac-T, & Chemistry Monitoring Project Number: 750.10 Task 0100.02 Project Manager: Maia Singer	CLS Work Order #: 17G0136 COC #:
---	---	-------------------------------------

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-12-IHR (17G0136-01) Water Sampled: 07/05/17 11:45 Received: 07/05/17 14:15									
E. Coli	1.0	1.0	MPN/100 mL	1	1704982	07/05/17	07/06/17	SM9223	
Fecal Coliforms	4.5	1.8	*	"	1704981	07/05/17	07/08/17	SM 9221	
BAC-13-IHR (17G0136-02) Water Sampled: 07/05/17 11:30 Received: 07/05/17 14:15									
E. Coli	3.1	1.0	MPN/100 mL	1	1704982	07/05/17	07/06/17	SM9223	
Fecal Coliforms	2.0	1.8	*	"	1704981	07/05/17	07/08/17	SM 9221	
BAC-14-BCR (17G0136-03) Water Sampled: 07/05/17 10:15 Received: 07/05/17 14:15									
E. Coli	1.0	1.0	MPN/100 mL	1	1704982	07/05/17	07/06/17	SM9223	
Fecal Coliforms	4.0	1.8	*	"	1704981	07/05/17	07/08/17	SM 9221	
BAC-15-SCR (17G0136-04) Water Sampled: 07/05/17 08:55 Received: 07/05/17 14:15									
E. Coli	14.8	1.0	MPN/100 mL	1	1704982	07/05/17	07/06/17	SM9223	
Fecal Coliforms	14	1.8	*	"	1704981	07/05/17	07/08/17	SM 9221	

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Page 3 of 3

07/12/17 12:59

Stillwater Sciences 2855 Telegraph Ave., Suite 400 Berkeley, CA 94705	Project: SMUD In situ, Bac-T, & Chemistry Monitoring Project Number: 750.10 Task 0100.02 Project Manager: Maia Singer	CLS Work Order #: 17G0136 COC #:
---	---	-------------------------------------

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

July 13, 2017

CLS Work Order #: 17G0212
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 07/06/17 15:22.
Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved
methodologies. I certify that the results are in compliance both technically and for completeness.

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

Sincerely,



James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

Page 2 of 3

07/13/17 13:01

Stillwater Sciences 2855 Telegraph Ave., Suite 400 Berkeley, CA 94705	Project: SMUD In situ, Bac-T, & Chemistry Monitoring Project Number: 750.10 Task 0100.02 Project Manager: Maia Singer	CLS Work Order #: 17G0212 COC #:
---	---	-------------------------------------

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-11-JR (17G0212-01) Surface Water Sampled: 07/06/17 10:15 Received: 07/06/17 15:22									
E. Coli	49.5	1.0	MPN/100 mL	1	1705025	07/06/17	07/07/17	SM9223	
Fecal Coliforms	13	1.8	"	"	1705026	*	07/09/17	SM 9221	
BAC-5-GCR (17G0212-02) Surface Water Sampled: 07/06/17 13:00 Received: 07/06/17 15:22									
E. Coli	1.0	1.0	MPN/100 mL	1	1705025	07/06/17	07/07/17	SM9223	
Fecal Coliforms	2.0	1.8	"	"	1705026	*	07/09/17	SM 9221	
BAC-6-GCR (17G0212-03) Surface Water Sampled: 07/06/17 13:15 Received: 07/06/17 15:22									
E. Coli	2.0	1.0	MPN/100 mL	1	1705025	07/06/17	07/07/17	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1705026	*	07/09/17	SM 9221	
BAC-9-UVR (17G0212-04) Surface Water Sampled: 07/06/17 10:45 Received: 07/06/17 15:22									
E. Coli	20.1	1.0	MPN/100 mL	1	1705025	07/06/17	07/07/17	SM9223	
Fecal Coliforms	7.8	1.8	"	"	1705026	*	07/09/17	SM 9221	
BAC-10-UVR (17G0212-05) Surface Water Sampled: 07/06/17 12:30 Received: 07/06/17 15:22									
E. Coli	3.1	1.0	MPN/100 mL	1	1705025	07/06/17	07/07/17	SM9223	
Fecal Coliforms	4.5	1.8	"	"	1705026	*	07/09/17	SM 9221	
BAC-8-UVR (17G0212-06) Surface Water Sampled: 07/06/17 12:00 Received: 07/06/17 15:22									
E. Coli	2.0	1.0	MPN/100 mL	1	1705025	07/06/17	07/07/17	SM9223	
Fecal Coliforms	13	1.8	"	"	1705026	*	07/09/17	SM 9221	
BAC-7-UVR (17G0212-07) Surface Water Sampled: 07/06/17 11:40 Received: 07/06/17 15:22									
E. Coli	21.1	1.0	MPN/100 mL	1	1705025	07/06/17	07/07/17	SM9223	
Fecal Coliforms	13	1.8	"	"	1705026	*	07/09/17	SM 9221	

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Page 3 of 3

07/13/17 13:01

Stillwater Sciences 2855 Telegraph Ave., Suite 400 Berkeley, CA 94705	Project: SMUD In situ, Bac-T, & Chemistry Monitoring Project Number: 750.10 Task 0100.02 Project Manager: Maia Singer	CLS Work Order #: 17G0212 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

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CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

July 19, 2017

CLS Work Order #: 17G0485

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 07/12/17 13:30. 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 DOHS ELAP Accreditation/Registration number 1233



CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. 17G 2485 (1 of 1)

Report To:				Client Job Number 750.10 Task 0100.02		ANALYSIS REQUESTED				GEOTRACKER					
Stillwater Sciences 2855 Telegraph Ave. Suite 400 Berkeley, CA 94705				Destination Laboratory Rancho Cordova		Preservatives: <input type="checkbox"/> Formalin, <input type="checkbox"/> I2, <input type="checkbox"/> HNO3, <input type="checkbox"/> H2SO4 Matrix: <input type="checkbox"/> Solid, <input type="checkbox"/> Liquid, <input type="checkbox"/> Gas Quantity: <input type="checkbox"/> Any, <input type="checkbox"/> Specific				EDF REPORT YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>					
Project Manager Maia Singer maia@stillwatersci.com				<input checked="" type="checkbox"/> CLS (916) 638-7301 3249 Fitzgerald Road Rancho Cordova, CA 95742 www.californialab.com <input type="checkbox"/> OTHER						GLOBAL ID.					
Project Name SMUD In situ, Bac-T, & Chemistry Monitoring										FIELD CONDITIONS:					
Sampled By										TURNAROUND TIME IN DAYS					
Job Description Monitor seasonal bacteria levels in UARP reaches.										SPECIAL INSTRUCTIONS					
Site Location UARP										1 2 3 5					
DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	TYPE	1	2	3	5	INVOICE TO:				
7/12/17	9:00	BAC-15-SCR		Surface water		6	X				X	Stillwater Sciences			
7/12/17	10:10	BAC-13-IHR		Surface water		6	X				X	Same as above			
7/12/17	10:25	BAC-12-IHR		Surface water		6	X				X	Project No. 750.10 Task 0100.02			
7/12/17	12:00	BAC-14-BCR		Surface water		6	X				X	QUOTE#			
				Surface water		6					X	PRESERVATIVES (1) HCL (3) = COLD (2) HNO3 (4) = H2SO4			
				Surface water		6					X	SAMPLE RETENTION TIME			
				Surface water		6					X	RECEIVED BY (Signature)			
				Surface water		6					X	DATE/TIME: 7/12/17 1330			
				Surface water		6					X	CONDITIONS/COMMENTS: 0.7.			
SUSPECTED CONSTITUENTS										SHIPPED BY: <input checked="" type="checkbox"/> FED EX <input type="checkbox"/> UPS <input type="checkbox"/> OTHER					
RELINQUISHED BY (Signature) <i>Evan Steel</i>				PRINT NAME/COMPANY Evan Steel Stillwater Sciences		DATE/TIME 7/12/17 1330				AIR BILL #					

CALIFORNIA LABORATORY SERVICES

Page 2 of 3

07/19/17 11:30

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

Project: SMUD In situ, Bac-T, & Chemistry Monitoring
 Project Number: 750.10 Task 0100.02 **CLS Work Order #: 17G0485**
 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 (17G0485-01) Surface Water Sampled: 07/12/17 09:00 Received: 07/12/17 13:30									
E. Coli	18.5	1.0	MPN/100 mL	1	1705178	07/12/17	07/13/17	SM9223	
Fecal Coliforms	49	1.8	"	"	1705180	07/12/17	07/15/17	SM 9221	
BAC-13-IHR (17G0485-02) Surface Water Sampled: 07/12/17 10:10 Received: 07/12/17 13:30									
E. Coli	435.2	1.0	MPN/100 mL	1	1705178	07/12/17	07/13/17	SM9223	
Fecal Coliforms	1600	1.8	"	"	1705180	07/12/17	07/15/17	SM 9221	
BAC-12-IHR (17G0485-03) Surface Water Sampled: 07/12/17 10:25 Received: 07/12/17 13:30									
E. Coli	1.0	1.0	MPN/100 mL	1	1705178	07/12/17	07/13/17	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1705180	07/12/17	07/15/17	SM 9221	
BAC-14-BCR (17G0485-04) Surface Water Sampled: 07/12/17 12:00 Received: 07/12/17 13:30									
E. Coli	<1	1.0	MPN/100 mL	1	1705178	07/12/17	07/13/17	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1705180	07/12/17	07/15/17	SM 9221	

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Page 3 of 3

07/19/17 11:30

Stillwater Sciences 2855 Telegraph Ave., Suite 400 Berkeley, CA 94705	Project: SMUD In situ, Bac-T, & Chemistry Monitoring Project Number: 750.10 Task 0100.02 Project Manager: Maia Singer	CLS Work Order #: 17G0485 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

3249 Fitzgerald Road Rancho Cordova, CA 95742

July 20, 2017

CLS Work Order #: 17G0574

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 07/13/17 14:59. 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 DOHS ELAP Accreditation/Registration number 1233



CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. 17G0574 (1 of 1)

Report To:				Client Job Number 750.10 Task 0100.02		ANALYSIS REQUESTED				GLOBAL TRACKER									
Stillwater Sciences 2855 Telegraph Ave. Suite 400 Berkeley, CA 94705				Destination Laboratory Rancho Cordova		Fecal Coliforms 5 Tube PRESERVATIVES E. coli Quant-174				FIELD REPORT YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> GLOBAL ID: FIELD CONDITIONS:									
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				<input checked="" type="checkbox"/> CLS (916) 638-7301 3249 Fitzgerald Road Rancho Cordova, CA 95742 www.californialab.com <input type="checkbox"/> OTHER						TURNDOWN TIME IN DAYS SPECIAL INSTRUCTIONS <table border="1"> <tr> <th>1</th> <th>2</th> <th>3</th> <th>5</th> <th></th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>				1	2	3	5		
1	2	3	5																
DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	NO.	TYPE	1	2	3	5	INVOICE TO:								
7/13/17	10:10	BAC-7-UVR		Surface water	6		X				X	Stillwater Sciences							
7/13/17	10:30	BAC-8-UVR		Surface water	6		X				X	Same as above							
7/13/17	10:50	BAC-10-UVR		Surface water	6		X				X								
7/13/17	11:20	BAC-5-GCR		Surface water	6		X				X								
7/13/17	12:30	BAC-11-JR		Surface water	6		X				X								
7/13/17	12:50	BAC-9-UVR		Surface water	6		X				X								
7/13/17	11:30	BAC-6-GCR		Surface water	6		X				X	Project No. 750.10 Task 0100.02							
SUSPECTED CONTAMINANTS				SAMPLE RETENTION TIME				PRESERVATIVES (1) ICL, (2) UNO, (3) = COLD, (4) = H2SO4											
RELINQUISHED BY (Signature)			PRINT NAME/COMPANY		DATE/TIME		RECEIVED BY (Signature)			PRINT NAME/COMPANY									
<i>Evan Steel</i>			Evan Steel Stillwater Sciences		7/13/17 1500														
RECEIVED AT LAB BY: <i>[Signature]</i>				DATE/TIME: 7/19/17		CONDITIONS/COMMENTS: 1459 (0.3)													
SHIPPED BY: <input type="checkbox"/> FED EX <input type="checkbox"/> UPS <input type="checkbox"/> OTHER				AIR BILL #															

CALIFORNIA LABORATORY SERVICES

Page 2 of 3

07/20/17 13:08

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

Project: SMUD In situ, Bac-T, & Chemistry Monitoring
 Project Number: 750.10 Task 0100.02 **CLS Work Order #: 17G0574**
 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 (17G0574-01) Surface Water Sampled: 07/13/17 10:10 Received: 07/13/17 14:59									
E. Coli	26.2	1.0	MPN/100 mL	1	1705225	07/13/17	07/14/17	SM9223	
Fecal Coliforms	49	1.8	"	"	1705224	*	07/16/17	SM 9221	
BAC-8-UVR (17G0574-02) Surface Water Sampled: 07/13/17 10:30 Received: 07/13/17 14:59									
E. Coli	12.0	1.0	MPN/100 mL	1	1705225	07/13/17	07/14/17	SM9223	
Fecal Coliforms	110	1.8	"	"	1705224	*	07/16/17	SM 9221	
BAC-10-UVR (17G0574-03) Surface Water Sampled: 07/13/17 10:50 Received: 07/13/17 14:59									
E. Coli	1.0	1.0	MPN/100 mL	1	1705225	07/13/17	07/14/17	SM9223	
Fecal Coliforms	4.5	1.8	"	"	1705224	*	07/16/17	SM 9221	
BAC-5-GCR (17G0574-04) Surface Water Sampled: 07/13/17 11:20 Received: 07/13/17 14:59									
E. Coli	5.2	1.0	MPN/100 mL	1	1705225	07/13/17	07/14/17	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1705224	*	07/16/17	SM 9221	
BAC-11-JR (17G0574-05) Surface Water Sampled: 07/13/17 12:30 Received: 07/13/17 14:59									
E. Coli	10.9	1.0	MPN/100 mL	1	1705225	07/13/17	07/14/17	SM9223	
Fecal Coliforms	13	1.8	"	"	1705224	*	07/16/17	SM 9221	
BAC-9-UVR (17G0574-06) Surface Water Sampled: 07/13/17 12:50 Received: 07/13/17 14:59									
E. Coli	47.1	1.0	MPN/100 mL	1	1705225	07/13/17	07/14/17	SM9223	
Fecal Coliforms	79	1.8	"	"	1705224	*	07/16/17	SM 9221	
BAC-6-GCR (17G0574-07) Surface Water Sampled: 07/13/17 11:30 Received: 07/13/17 14:59									
E. Coli	2.0	1.0	MPN/100 mL	1	1705225	07/13/17	07/14/17	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1705224	*	07/16/17	SM 9221	

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Page 3 of 3

07/20/17 13:08

Stillwater Sciences 2855 Telegraph Ave., Suite 400 Berkeley, CA 94705	Project: SMUD In situ, Bac-T, & Chemistry Monitoring Project Number: 750.10 Task 0100.02 Project Manager: Maia Singer	CLS Work Order #: 17G0574 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

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CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

July 26, 2017

CLS Work Order #: 17G0871

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 07/19/17 15:13. 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 DOHS ELAP Accreditation/Registration number 1233



CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. 1760871 (1 of 1)

Report To: Stillwater Sciences 2855 Telegraph Ave. Suite 400 Berkeley, CA 94705				Client Job Number 758.10 Task 0100.02			ANALYSIS REQUESTED					GEOTRACKER				
Project Manager Maia Singer maia@stillwatersci.com				Destination Laboratory Rancho Cordova			Fecal coliform-15 Tube PRESERVATIVES E. coli Quantitative					EDF REPORT YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>				
Project Name SMUD In situ, Bac-T, & Chemistry Monitoring				<input checked="" type="checkbox"/> CLS (916) 638-7301 3249 Fitzgerald Road Rancho Cordova, CA 95742 www.californialab.com								GLOBAL ID:				
Sampled By				<input type="checkbox"/> OTHER			FIELD CONDITIONS:					TURNAROUND TIME IN DAYS				
Job Description Monitor seasonal bacteria levels in UARP reaches.												SPECIAL INSTRUCTIONS				
Site Location UARP																
DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	NO.	TYPE	1	2	3	5	INVOICE TO:					
7/19/17	9:00	BAC-15-SCR		Surface water			6	X							X	Stillwater Sciences Same as above Project No. 758.10 Task 0100.02 QUOTE#
7/19/17	10:50	BAC-14-BCR		Surface water			6	X							X	
7/19/17	12:35	BAC-13-IHR		Surface water			6	X							X	
7/19/17	13:35	BAC-12-IHR		Surface water			6	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	
SUSPECTED CONSTITUENTS							SAMPLE RETENTION TIME					PRESERVATIVES (1) HCL (3) = COLD (2) HNO ₃ (4) = HESOM				
RELINQUISHED BY (Signature)			PRINT NAME/COMPANY			DATE/TIME	RECEIVED BY (Signature)					PRINT NAME/COMPANY				
<i>Evan Steel</i>			Evan Steel			7/19/17										
RECEIVED AT LAB BY: <i>Maia Singer</i>			DATE/TIME: 7-19-17 1512			CONDITIONS/COMMENTS: 0-0										
SHIPPED BY: <input type="checkbox"/> FED EX <input type="checkbox"/> UPS <input type="checkbox"/> OTHER							AIR BILL #									



CALIFORNIA LABORATORY SERVICES

Page 2 of 3

07/26/17 13:34

Stillwater Sciences 2855 Telegraph Ave., Suite 400 Berkeley, CA 94705	Project: SMUD In situ, Bac-T, & Chemistry Monitoring Project Number: 750.10 Task 0100.02 Project Manager: Maia Singer	CLS Work Order #: 17G0871 COC #:
---	---	-------------------------------------

Microbiological Parameters by APHA Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-15-SCR (17G0871-01) Surface Water Sampled: 07/19/17 09:00 Received: 07/19/17 15:13									
E. Coli	111.9	1.0	MPN/100 mL	1	1705398	07/19/17	07/20/17	SM9223	
Fecal Coliforms	49	1.8	"	"	1705397	07/19/17	07/22/17	SM 9221	
BAC-14-BCR (17G0871-02) Surface Water Sampled: 07/19/17 10:50 Received: 07/19/17 15:13									
E. Coli	1.0	1.0	MPN/100 mL	1	1705398	07/19/17	07/20/17	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1705397	07/19/17	07/22/17	SM 9221	
BAC-13-IHR (17G0871-03) Surface Water Sampled: 07/19/17 12:35 Received: 07/19/17 15:13									
E. Coli	<1	1.0	MPN/100 mL	1	1705398	07/19/17	07/20/17	SM9223	
Fecal Coliforms	4.5	1.8	"	"	1705397	07/19/17	07/22/17	SM 9221	
BAC-12-IHR (17G0871-04) Surface Water Sampled: 07/19/17 13:35 Received: 07/19/17 15:13									
E. Coli	<1	1.0	MPN/100 mL	1	1705398	07/19/17	07/20/17	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1705397	07/19/17	07/22/17	SM 9221	

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Page 3 of 3

07/26/17 13:34

Stillwater Sciences 2855 Telegraph Ave., Suite 400 Berkeley, CA 94705	Project: SMUD In situ, Bac-T, & Chemistry Monitoring Project Number: 750.10 Task 0100.02 Project Manager: Maia Singer	CLS Work Order #: 17G0871 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

3249 Fitzgerald Road Rancho Cordova, CA 95742

July 27, 2017

CLS Work Order #: 17G0922

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 07/20/17 14:50. 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,

A handwritten signature in black ink, appearing to read "James Liang".

James Liang, Ph.D.
Laboratory Director

CA SWRCB ELAP Accreditation/Registration number 1233



CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. 1760922 (1 of 1)

Report To: Stillwater Sciences 2855 Telegraph Ave. Suite 400 Berkeley, CA 94705				Client Job Number 750.10 Task 0100.02		ANALYSIS REQUESTED				GEOTRACKER					
Project Manager Maia Singer maia@stillwatersci.com				Destination Laboratory Rancho Cordova		Fecal coliform-15 Tube PRESERVATIVES E. coli Quant-100				FIELD REPORT YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>					
Project Name SMUD In situ, Bac-T, & Chemistry Monitoring				<input checked="" type="checkbox"/> CLS (916) 638-7301 3249 Fitzgerald Road Rancho Cordova, CA 95742 www.californialab.com						FIELD CONDITIONS:					
Sampled By:				<input type="checkbox"/> OTHER		TURNAROUND TIME IN DAYS				SPECIAL INSTRUCTIONS					
Job Description Monitor seasonal bacteria levels in UARP reaches.						1				2					
Site Location: UARP						3				4					
DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	TYPE	6	X	X				X		
7/20/17	11:00	BAC-7-UVR		Surface water			6	X	X				X		
7/20/17	11:20	BAC-8-UVR		Surface water			6	X	X				X		
7/20/17	11:50	BAC-5-GCR		Surface water			6	X	X				X		
7/20/17	12:10	BAC-6-GCR		Surface water			6	X	X				X		
7/20/17	12:30	BAC-10-UVR		Surface water			6	X	X				X		
7/20/17	12:50	BAC-9-UVR		Surface water			6	X	X				X		
7/20/17	13:15	BAC-11-JR		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		
SUSPECTED CONSTITUENTS							SAMPLE RETENTION TIME:				PRESERVATIVES: (1) HCL (2) HNO3 (3) - UCLD (4) - H2SO4				
REQUISITIONED BY (Signature)			PRINT NAME/COMPANY			DATE/TIME			RECEIVED BY (Signature)			PRINT NAME/COMPANY			
<i>Evan Steel</i>			Evan Steel Stillwater			7/20/17 1449									
RECEIVED AT LAB BY: <i>Christy</i>							DATE/TIME: 7/20/17 1458			CONDITIONS/COMMENTS: 0.1					
SHIPPED BY:							<input type="checkbox"/> FED EX <input type="checkbox"/> UPS <input type="checkbox"/> OTHER				AIR BILL #				

CALIFORNIA LABORATORY SERVICES

Page 2 of 3

07/27/17 10:07

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

Project: SMUD In situ, Bac-T, & Chemistry Monitoring
 Project Number: 750.10 Task 0100.02 **CLS Work Order #: 17G0922**
 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 (17G0922-01) Surface Water Sampled: 07/20/17 11:00 Received: 07/20/17 14:50									
E. Coli	<1	1.0	MPN/100 mL	1	1705442	07/20/17	07/21/17	SM9223	
Fecal Coliforms	2.0	1.8	"	"	1705440	07/20/17	07/23/17	SM 9221	
BAC-8-UVR (17G0922-02) Surface Water Sampled: 07/20/17 11:20 Received: 07/20/17 14:50									
E. Coli	<1	1.0	MPN/100 mL	1	1705442	07/20/17	07/21/17	SM9223	
Fecal Coliforms	2.0	1.8	"	"	1705440	07/20/17	07/23/17	SM 9221	
BAC-5-GCR (17G0922-03) Surface Water Sampled: 07/20/17 11:50 Received: 07/20/17 14:50									
E. Coli	<1	1.0	MPN/100 mL	1	1705442	07/20/17	07/21/17	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1705440	07/20/17	07/23/17	SM 9221	
BAC-6-GCR (17G0922-04) Surface Water Sampled: 07/20/17 12:10 Received: 07/20/17 14:50									
E. Coli	37.4	1.0	MPN/100 mL	1	1705442	07/20/17	07/21/17	SM9223	
Fecal Coliforms	13	1.8	"	"	1705440	07/20/17	07/23/17	SM 9221	
BAC-10-UVR (17G0922-05) Surface Water Sampled: 07/20/17 12:30 Received: 07/20/17 14:50									
E. Coli	<1	1.0	MPN/100 mL	1	1705442	07/20/17	07/21/17	SM9223	
Fecal Coliforms	<1.8	1.8	"	"	1705440	07/20/17	07/23/17	SM 9221	
BAC-9-UVR (17G0922-06) Surface Water Sampled: 07/20/17 12:50 Received: 07/20/17 14:50									
E. Coli	1.0	1.0	MPN/100 mL	1	1705442	07/20/17	07/21/17	SM9223	
Fecal Coliforms	4.5	1.8	"	"	1705440	07/20/17	07/23/17	SM 9221	
BAC-11-JR (17G0922-07) Surface Water Sampled: 07/20/17 13:15 Received: 07/20/17 14:50									
E. Coli	90.7	1.0	MPN/100 mL	1	1705442	07/20/17	07/21/17	SM9223	
Fecal Coliforms	350	1.8	"	"	1705440	07/20/17	07/23/17	SM 9221	

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CALIFORNIA LABORATORY SERVICES

Page 3 of 3

07/27/17 10:07

Stillwater Sciences 2855 Telegraph Ave., Suite 400 Berkeley, CA 94705	Project: SMUD In situ, Bac-T, & Chemistry Monitoring Project Number: 750.10 Task 0100.02 Project Manager: Maia Singer	CLS Work Order #: 17G0922 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

3249 Fitzgerald Road Rancho Cordova, CA 95742

August 30, 2017

CLS Work Order #: 17H1049
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 08/23/17 11:08. 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

08/30/17 10:43

Stillwater Sciences 2855 Telegraph Ave., Suite 400 Berkeley, CA 94705	Project: SMUD In situ, Bac-T, & Chemistry Monitoring Project Number: 750.10 Task 0100.02 Project Manager: Maia Singer	CLS Work Order #: 17H1049 COC #:
---	---	-------------------------------------

Microbiological Parameters by APHA Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-1-BI (17H1049-01) Surface Water Sampled: 08/23/17 07:20 Received: 08/23/17 11:08										
E. Coli	35.5	1.0	1.0	MPN/100 mL	1	1706379	08/23/17	08/24/17	SM9223	
Fecal Coliforms	21	1.8	1.8	"	"	1706376	08/23/17	08/26/17	SM 9221	
BAC-2-BI (17H1049-02) Surface Water Sampled: 08/23/17 07:40 Received: 08/23/17 11:08										
E. Coli	4.1	1.0	1.0	MPN/100 mL	1	1706379	08/23/17	08/24/17	SM9223	
Fecal Coliforms	13	1.8	1.8	"	"	1706376	08/23/17	08/26/17	SM 9221	
BAC-3-LL (17H1049-03) Surface Water Sampled: 08/23/17 08:40 Received: 08/23/17 11:08										
E. Coli	2.0	1.0	1.0	MPN/100 mL	1	1706379	08/23/17	08/24/17	SM9223	
Fecal Coliforms	2.0	1.8	1.8	"	"	1706376	08/23/17	08/26/17	SM 9221	
BAC-4-LL (17H1049-04) Surface Water Sampled: 08/23/17 09:00 Received: 08/23/17 11:08										
E. Coli	1.0	1.0	1.0	MPN/100 mL	1	1706379	08/23/17	08/24/17	SM9223	
Fecal Coliforms	4.0	1.8	1.8	"	"	1706376	08/23/17	08/26/17	SM 9221	

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CALIFORNIA LABORATORY SERVICES

08/30/17 10:43

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

Project: SMUD In situ, Bac-T, & Chemistry Monitoring
Project Number: 750.10 Task 0100.02 **CLS Work Order #: 17H1049**
Project Manager: Maia Singer COC #:

Notes and Definitions

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference

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

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CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. 1741047 (1 of 1)

Report To:				Client Job Number 750.10 Task 0100.02				ANALYSIS REQUESTED				DETRACKER							
Stillwater Sciences 2855 Telegraph Ave. Suite 400 Berkeley, CA 94705				Destination Laboratory Rancho Cordova				Fecal coliform-15 Tube PRESERVATIVES Es. coli Quantitative				EHE REPORT YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>							
Project Manager Maia Singer main@stillwatersci.com				<input checked="" type="checkbox"/> CLS (916) 638-7301 3249 Fitzgerald Road Rancho Cordova, CA 95742 www.eniformialab.com <input type="checkbox"/> OTHER								GLOBAL ID:							
Project Name SMUD In situ, Bae-T, & Chemistry Monitoring												FIELD CONDITIONS:							
Sampled by																			
Job Description Mon for seasonal bacteria levels in UARP reaches																			
Site Location UARP												TURNAROUND TIME IN DAYS							
												SPECIAL INSTRUCTIONS							
DATE		TIME		SAMPLE IDENTIFICATION		FIELD ID.		CONTAINER				1		2		3		5	
								MATRIX		NO.									
8/23/17		0720		BAC-1-BI				Surface water		6		X						X	
8/23/17		0740		BAC-2-BI				Surface water		6		X		X				X	
8/23/17		0840		BAC-3-LL				Surface water		6		X		X				X	
8/23/17		0900		BAC4-LL				Surface water		6		X		X				X	
								Surface water		6								X	
								Surface water		6								X	
								Surface water		6								X	
								Surface water		6								X	
								Surface water		6								X	
								Surface water		6								X	
								Surface water		6								X	
								Surface water		6								X	
SUSPECTED CONSTITUENTS				SAMPLE RETENTION TIME				PRESERVATIVES				(1)=FCL (3)=COLD (2)=H2O2 (4)=H2SO4							
RELEASING BY (Signature)				PRINT NAME/COMPANY				DATE/TIME				RECEIVED BY (Signature)				PRINT NAME/COMPANY			
<i>Maia Singer</i>				Stillwater Sciences Kellen Cross				8/23/17 1100											
RECEIVED AT LAB BY: <i>Maia Singer</i>				DATE/TIME: 8/23/17 1100				CONDITIONS/COMMENTS: 0.2											
SHIPPED BY:				<input type="checkbox"/> FED EX <input type="checkbox"/> UPS <input type="checkbox"/> OTHER				AIR BILL #											

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

September 07, 2017

CLS Work Order #: 17H1335
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 08/30/17 10:43. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

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

09/07/17 13:21

Stillwater Sciences 2855 Telegraph Ave., Suite 400 Berkeley, CA 94705	Project: SMUD In situ, Bac-T, & Chemistry Monitoring Project Number: 750.10 Task 0100.02 Project Manager: Maia Singer	CLS Work Order #: 17H1335 COC #:
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Microbiological Parameters by APHA Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-1-BI (17H1335-01) Surface Water Sampled: 08/30/17 08:00 Received: 08/30/17 10:43										
E. Coli	2.0	1.0	1.0	MPN/100 mL	1	1706591	08/30/17	08/31/17	SM9223	
Fecal Coliforms	4.0	1.8	1.8	"	"	1706586	08/30/17	09/02/17	SM 9221	
BAC-2-BI (17H1335-02) Surface Water Sampled: 08/30/17 07:30 Received: 08/30/17 10:43										
E. Coli	1.0	1.0	1.0	MPN/100 mL	1	1706591	08/30/17	08/31/17	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1706586	08/30/17	09/02/17	SM 9221	
BAC-3-LL (17H1335-03) Surface Water Sampled: 08/30/17 08:20 Received: 08/30/17 10:43										
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1706591	08/30/17	08/31/17	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1706586	08/30/17	09/02/17	SM 9221	
BAC-4-LL (17H1335-04) Surface Water Sampled: 08/30/17 08:40 Received: 08/30/17 10:43										
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1706591	08/30/17	08/31/17	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1706586	08/30/17	09/02/17	SM 9221	

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CALIFORNIA LABORATORY SERVICES

09/07/17 13:21

Stillwater Sciences 2855 Telegraph Ave., Suite 400 Berkeley, CA 94705	Project: SMUD In situ, Bac-T, & Chemistry Monitoring Project Number: 750.10 Task 0100.02 Project Manager: Maia Singer	CLS Work Order #: 17H1335 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.

CA SWRCB ELAP Accreditation/Registration Number 1233

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916-638-7301

Fax: 916-638-4510



CALIFORNIA LABORATORY SERVICES CHAIN OF CUSTODY CLS ID. NO. 1711335 (1 of 1)

Report To:				Client Job Number 750.10 Task 0100.02		ANALYSIS REQUESTED				DETRACKER					
Stillwater Sciences 2855 Telegraph Ave. Suite 400 Berkeley, CA 94705				Destination Laboratory Rancho Cordova		Fecal coliform-15 Tubes PRESERVATIVES E. coli Quant-tray				BDF REPORT YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>					
Project Manager: Maia Singer maia@stillwatersci.com Project Name: SMUD In situ, Bac-T, & Chemistry Monitoring Sampled By:				<input checked="" type="checkbox"/> CLS (916) 638-7301 3249 Fitzgerald Road Rancho Cordova, CA 95742 www.californialab.com <input type="checkbox"/> OTHER						GLOBAL ID:					
Job Description Monitor seasonal bacteria levels in UARP reaches										FIELD CONDITIONS:					
Site Location: UARP										TURNAROUND TIME IN DAYS					
										SPECIAL INSTRUCTIONS					
DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	TYPE	1	2	3	4					
8/30/17	0800	BAC-1-B1		Surface water		6	X							X	
8/30/17	0730	BAC-2-B1		Surface water		6	X							X	
8/30/17	0830	BAC-3-L		Surface water		6	X							X	
8/30/17	0840	BAC-4-L		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 0100.02
				Surface water		6								X	QUOTE#
SUSPECTED CONSTITUENTS						SAMPLE RETENTION TIME				PRESERVATIVES (1)=HCL (3)=COLD (2)=HNO3 (4)=H2SO4					
RELINQUISHED BY (Signature)			PRINT NAME/COMPANY			DATE/TIME			RECEIVED BY (Signature)			PRINT NAME/COMPANY			
<i>Eric DeSilva</i>			Eric DeSilva Stillwater Sciences			8/30/17 10:43									
RECEIVED AT LAB BY: <i>[Signature]</i>						DATE/TIME: 8-30-17			CONDITIONS/COMMENTS: (11)						
SHIPPED BY: <input type="checkbox"/> FED EX <input type="checkbox"/> UPS <input type="checkbox"/> OTHER						1043			AIR BILL #						

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

September 13, 2017

CLS Work Order #: 1710155
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 09/06/17 11:24. 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

09/13/17 11:49

Stillwater Sciences 2855 Telegraph Ave., Suite 400 Berkeley, CA 94705	Project: SMUD In situ, Bac-T, & Chemistry Monitoring Project Number: 750.10 Task 0100.02 Project Manager: Maia Singer	CLS Work Order #: 1710155 COC #:
---	---	-------------------------------------

Microbiological Parameters by APHA Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-4-LL (1710155-01) Surface Water Sampled: 09/06/17 09:21 Received: 09/06/17 11:24										
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1706761	09/06/17	09/07/17	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1706755	09/06/17	09/09/17	SM 9221	
BAC-2-BI (1710155-02) Surface Water Sampled: 09/06/17 08:20 Received: 09/06/17 11:24										
E. Coli	3.0	1.0	1.0	MPN/100 mL	1	1706761	09/06/17	09/07/17	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1706755	09/06/17	09/09/17	SM 9221	
BAC-1-BI (1710155-03) Surface Water Sampled: 09/06/17 08:41 Received: 09/06/17 11:24										
E. Coli	5.2	1.0	1.0	MPN/100 mL	1	1706761	09/06/17	09/07/17	SM9223	
Fecal Coliforms	4.0	1.8	1.8	"	"	1706755	09/06/17	09/09/17	SM 9221	
BAC-3-LL (1710155-04) Surface Water Sampled: 09/06/17 09:02 Received: 09/06/17 11:24										
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1706761	09/06/17	09/07/17	SM9223	
Fecal Coliforms	2.5	1.8	1.8	"	"	1706755	09/06/17	09/09/17	SM 9221	

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CALIFORNIA LABORATORY SERVICES

09/13/17 11:49

Stillwater Sciences 2855 Telegraph Ave., Suite 400 Berkeley, CA 94705	Project: SMUD In situ, Bac-T, & Chemistry Monitoring Project Number: 750.10 Task 0100.02 Project Manager: Maia Singer	CLS Work Order #: 1710155 COC #:
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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. 172 0155 (1 of 1)

Report To:				Client Job Number 750.10 Task 0100.02		ANALYSIS REQUESTED				GEO TRACKER					
Stillwater Sciences 2855 Telegraph Ave, Suite 400 Berkeley, CA 94705				Destination Laboratory Rancho Cordova		Fecal coliform, 15 Tube PRESERVATIVES E. coli Quantity				FIELD REPORT: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>					
Project Manager Maia Singer maia@stillwatersci.com				<input checked="" type="checkbox"/> CLS (916) 638-7301 3249 Fitzgerald Road Rancho Cordova, CA 95742 www.californialab.com						GLOBAL ID:					
Project Name SMUD In situ, Bac-T, & Chemistry Monitoring				<input type="checkbox"/> OTHER		FIELD CONDITIONS:				TURNAROUND TIME IN DAYS					
Sampled By EES KKC										1 2 3 5				SPECIAL INSTRUCTIONS	
Job Description Monitor seasonal bacteria levels in UARP reaches															
Site Location UARP															
DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	CONTAINER											
				MATRIX	NO.	TYPE									
9-6-17	0921	Bac-4-LL		Surface water			f	x						x	
9-6-17	0920	Bac-2-BI		Surface water			f	x						x	
9-6-17	0941	Bac-1-BI		Surface water			f	x						x	
9-6-17	0902	Bac-3-LL		Surface water			f	x						x	
				Surface water			f							x	
				Surface water			f							x	
				Surface water			f							x	
				Surface water			f							x	
				Surface water			f							x	
				Surface water			f							x	
				Surface water			f							x	
SUSPECTED CONSTITUENTS								SAMPLE RETENTION TIME				PRESERVATIVES (1) HCL (5) - COLD (2) HNO ₃ (4) - 12504			
RELINQUISHED BY (Signature)		PRINT NAME/COMPANY		DATE/TIME		RECEIVED BY (Signature)				PRINT NAME/COMPANY					
<i>Eric Sommer</i>		Eric Sommer / Stillwater		9/6/17											
RECEIVED AT LAB BY: <i>[Signature]</i>				DATE/TIME: 9-6-17-1124		CONDITIONS/COMMENTS: 2-2									
SHIPPED BY: <input type="checkbox"/> FED EX <input type="checkbox"/> UPS <input type="checkbox"/> OTHER								AIR BILL #							

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

September 20, 2017

CLS Work Order #: 1710514
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 09/13/17 12:16. 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

09/20/17 13:18

Stillwater Sciences 2855 Telegraph Ave., Suite 400 Berkeley, CA 94705	Project: SMUD In situ, Bac-T, & Chemistry Monitoring Project Number: 750.10 Task 0100.02 Project Manager: Maia Singer	CLS Work Order #: 1710514 COC #:
---	---	-------------------------------------

Microbiological Parameters by APHA Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-1-BI (1710514-01) Surface Water Sampled: 09/13/17 08:30 Received: 09/13/17 12:16										
E. Coli	1.0	1.0	1.0	MPN/100 mL	1	1706980	09/13/17	09/14/17	SM9223	
Fecal Coliforms	4.5	1.8	1.8	"	"	1706961	"	09/16/17	SM 9221	
BAC-2-BI (1710514-02) Surface Water Sampled: 09/13/17 08:10 Received: 09/13/17 12:16										
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1706960	09/13/17	09/14/17	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1706961	"	09/16/17	SM 9221	
BAC-3-LL (1710514-03) Surface Water Sampled: 09/13/17 09:30 Received: 09/13/17 12:16										
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1706960	09/13/17	09/14/17	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1706961	"	09/16/17	SM 9221	
BAC-4-LL (1710514-04) Surface Water Sampled: 09/13/17 10:00 Received: 09/13/17 12:16										
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1706960	09/13/17	09/14/17	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1706961	"	09/16/17	SM 9221	

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CALIFORNIA LABORATORY SERVICES

09/20/17 13:18

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

Project: SMUD In situ, Bac-T, & Chemistry Monitoring
Project Number: 750.10 Task 0100.02 **CLS Work Order #: 1710514**
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. 1710514 (1 of 1)

Report To:				Client Job Number 750.10 Task 0100.02			ANALYSIS REQUESTED				GEO TRACKER			
Stillwater Sciences 2855 Telegraph Ave. Suite 400 Berkeley, CA 94705				Destination Laboratory Rancho Cordova			Fecal Coliform-15 Tube PRESERVATIVES Es. coli Quantitative				EHE REPORT: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>			
Project Manager Mata Singer mata@stillwatersci.com				<input checked="" type="checkbox"/> CLS (916) 638-7301 3249 Fitzgerald Road Rancho Cordova, CA 95742 www.californiaiab.com							GLOBAL ID:			
Project Name SMUD In situ, Bac-T, & Chemistry Monitoring				<input type="checkbox"/> OTHER			FIELD CONDITIONS:				TURNAROUND TIME IN DAYS			
Sampled By:											SPECIAL INSTRUCTIONS			
Job Description Monitor seasonal bacterial levels in UARP reaches														
Site Location UARP														
DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	NO.	TYPE	1	2	3	5	INVOICE TO:			
9/13/17	0830	BAC-1-B1		Surface water			X				X			
9/13/17	0810	BAC-2-B1		Surface water			X				X			
9/13/17	0930	BAC-3-L		Surface water			X				X			
9/13/17	1000	BAC-4-L		Surface water			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 0100.02		
				Surface water							X	QUOTE#		
SUSPECTED CONSTITUENTS							SAMPLE RETENTION TIME				PRESERVATIVES (1) ICE (3) = COLD (2) HNO ₃ (4) = H ₂ SO ₄			
REINQUISHED BY (Signature)			PRINT NAME/COMPANY			DATE/TIME			RECEIVED BY (Signature)			PRINT NAME/COMPANY		
KEISTA BRATLIEN			Stillwater Sciences			9/13/17 12:10								
RECEIVED AT LAB BY			DATE/TIME			CONDITIONS/COMMENTS								
SHIPPED BY:			<input type="checkbox"/> FED EX <input type="checkbox"/> UPS <input type="checkbox"/> OTHER			AIR BILL #			3-0					

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

September 27, 2017

CLS Work Order #: 1710830
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 09/20/17 12:15. 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

09/27/17 13:18

Stillwater Sciences 2855 Telegraph Ave., Suite 400 Berkeley, CA 94705	Project: SMUD In situ, Bac-T, & Chemistry Monitoring Project Number: 750.10 Task 0100.02 Project Manager: Maia Singer	CLS Work Order #: 1710830 COC #:
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Microbiological Parameters by APHA Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BAC-4-LL (1710830-01) Surface Water Sampled: 09/20/17 09:35 Received: 09/20/17 12:15										
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1707175	09/20/17	09/21/17	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1707177	09/20/17	09/23/17	SM 9221	
BAC-3-LL (1710830-02) Surface Water Sampled: 09/20/17 09:13 Received: 09/20/17 12:15										
E. Coli	5.2	1.0	1.0	MPN/100 mL	1	1707175	09/20/17	09/21/17	SM9223	
Fecal Coliforms	6.8	1.8	1.8	"	"	1707177	09/20/17	09/23/17	SM 9221	
BAC-2-BI (1710830-03) Surface Water Sampled: 09/20/17 08:12 Received: 09/20/17 12:15										
E. Coli	<1	1.0	1.0	MPN/100 mL	1	1707175	09/20/17	09/21/17	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1707177	09/20/17	09/23/17	SM 9221	
BAC-1-BI (1710830-04) Surface Water Sampled: 09/20/17 08:40 Received: 09/20/17 12:15										
E. Coli	1.0	1.0	1.0	MPN/100 mL	1	1707175	09/20/17	09/21/17	SM9223	
Fecal Coliforms	<1.8	1.8	1.8	"	"	1707177	09/20/17	09/23/17	SM 9221	

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CALIFORNIA LABORATORY SERVICES

09/27/17 13:18

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

Project: SMUD In situ, Bac-T, & Chemistry Monitoring
Project Number: 750.10 Task 0100.02 **CLS Work Order #: 1710830**
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. 1710830 (of)

Report To: Stillwater Sciences 2855 Telegraph Ave. Suite 400 Berkeley, CA 94705				Client Job Number 750.10 Task 0100.02				ANALYSIS REQUESTED				GEOTRACKER			
Project Manager Maia Singer maia@stillwatersci.com				Destination Laboratory Rancho Cordova				Fecal coliform-15 Tube PRESERVATIVES Each Quantity				EDF REPORT YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>			
Project Name SMUD In situ, Bac-T, & Chemistry Monitoring				<input checked="" type="checkbox"/> CLS (916) 638-7301 3249 Fitzgerald Road Rancho Cordova, CA 95742 www.californialab.com								GLOBAL ID.			
Sampled By				<input type="checkbox"/> OTHER				FIELD CONDITIONS:				TURNAROUND TIME IN DAYS			
Job Description Mon for seasonal bacteria levels in UARP reaches.												SPECIAL INSTRUCTIONS			
Site Location UARP															
DATE	TIME	SAMPLE IDENTIFICATION	FIELD ID.	MATRIX	CONTAINER NO.	TYPE	1	2	3	4	5	SPECIAL INSTRUCTIONS			
9-20-17	0935	BAL-4-LL		Surface water		6	X							X	
9-20-17	0915	BAL-3-LL		Surface water		6	X							X	
9-20-17	0812	BAL-2-BI		Surface water		6	X							X	
9-20-17	0840	BAL-1-BI		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 0100.02
				Surface water		6								X	QUOTE#
SUSPECTED CONSTITUENTS				SAMPLE RETENTION TIME				PRESERVATIVES (1) FFL (1) - CSLD (2) HNO ₃ (4) - 112804							
RELINQUISHED BY (Signature)			PRINT NAME/COMPANY			DATE/TIME			RECEIVED BY (Signature)			PRINT NAME/COMPANY			
<i>Eric Sommer</i>			Eric Sommer / Stillwater			9/20/17 12:06									
RECEIVED AT LAB BY: <i>Maia Singer</i>				DATE/TIME: 9-20-17 12:15				CONDITIONS/COMMENTS: 1.8							
SHIPPED BY:				<input type="checkbox"/> FED EX <input type="checkbox"/> UPS <input type="checkbox"/> OTHER				AIR BILL #							