Draft
Truckee Meadows Storm Water Monitoring Annual Report
Water Year 2018

Prepared for: CITY OF RENO

In Cooperation with:

City of Sparks

NEVADA DOT SAFE AND CONNECTED

WASHOE COUNTY, NEVADA 1861

WESTERN REGIONAL WATER COMMISSION

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(NPDES MS4 Discharge Permit No. NV000001)

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EXECUTIVE SUMMARY

In 1990, the Nevada Division of Environmental Protection (NDEP) issued the Municipal Separate Storm Sewer System (MS4) permit to the Truckee Meadows Region, which includes the City of Reno, City of Sparks, and Washoe County. The permit requires the continued administration, implementation, and enforcement of a Stormwater Management Program (SWMP) to mitigate pollution from stormwater runoff within the Truckee Meadows permit area including receiving waters of the Truckee River and its tributaries.

The Truckee River through Truckee Meadows has impaired water quality by water temperature, excessive nutrients, and increased total dissolved solids (TDS). Water quality is of particular concern because the river has a number of beneficial uses including aquatic habitat, recreation, and potable water. To attain nutrient-related water quality objectives in the Truckee River the NDEP has developed a Total Maximum Daily Load (TMDL) for nitrogen, phosphorus, and TDS.

Storm event and baseflow (ambient) water quality samples have been collected since 2003 as part of the SWMP to better characterize stormwater quality. This annual report is required under the MS4 permit to: (a) report stormwater quality measured in water year 2017 (WY2017); (b) continue developing a robust data set of stormwater quality to facilitate identification of water quality or environmental degradation problems of the Truckee Meadows; (c) document changes in water quality over time in response to land management, sediment control strategies, and other improvement measures; and (d) promote continued protection of the Truckee River.

Balance Hydrologics evaluated water quality in stormwater and baseflow at 15 monitoring stations as part of the Truckee Meadows Regional Storm Water Quality Management Program in FY2018. Grab samples and instantaneous loads were quantified for 7 stations, while automated samplers at 4 urban outfalls and 3 tributary stations allowed us to quantify constituent loads to the Truckee River during stormwater and baseflow conditions.

Total annual precipitation in the Truckee Meadows in FY2018, as measured at the Reno-Tahoe International Airport, was slightly above the long-term normal of 7.40 inches. Most of this precipitation fell in November and March with some summer convective storms observed in August, September and October, and late winter storms in April and May. June was dry.

We collected 2 stormwater samples at each station during 7 different storm events to characterize stormwater pollutant concentrations and pollutant loads. Baseflow water quality was also measured on 8 tributaries to characterize summer baseflow (September 19-20, 2017) and winter baseflow (February 6-7, 2018). In general, baseflow and stormwater runoff volumes were above long-term daily median established for long-term (USGS) gaging stations. Flow conditions likely reflect the cumulative effects of a near average precipitation year following the wettest year on record.

Across all storms sampled at all stations Total-N concentrations in stormwater exceeded WQS in all storms and at all locations where WQS are established. Total-N concentrations in tributary baseflow also exceed WQS across all locations sampled and where WQS are established. Highest stormwater concentrations were measured from urban outfalls. Whereas the highest baseflow concentrations were measured from North Truckee Drain and Yori Drain.

Across all storms sampled at all stations Total-P concentrations in stormwater ranged between 0.47 mg/L and 1.4 mg/L. While annual average WQS are provided for many of the tributaries monitored, single value WQS are limited to Whites Creek. In one of two storm events, Total-P concentrations exceeded the Whites Creek WQS. Highest stormwater concentrations were measured from urban outfalls and Whites Creek. Whereas the highest baseflow concentrations were measured from Chalk Creek; however, North Truckee Drain at Orr Ditch and Steamboat Creek exhibited only slightly lower concentrations.

TDS concentrations in stormwater were also measured and compared across all stations. At least one stormwater sample collected from all 4 urban outfalls exceeded the specified requirement and most, if not all samples exceeded their requirements in Chalk Creek, Alum Creek, and North Truckee Drain. There are no WQS or requirements for Steamboat Creek and tributaries with the exception of Steamboat Creek at Rhodes Road; where both storm samples met WQS or requirements. Highest stormwater concentrations were measured from Chalk Creek and North Truckee Drain. Highest baseflow concentrations were also measured from Chalk Creek and North Truckee Drain.

Limited samples were collected or analyzed for E. coli in FY2018 due to holding time constraints at the time of sampling. Samples were limited to Alum Creek, Whites Creek, and Steamboat Creek at Rhodes Road. Counts exceeded WQS for Whites Creek in a stormwater sample and Steamboat Creek at Rhodes Road in both a stormwater and baseflow sample.

Physical parameters are measured manually upon every station visit and when water is present, including pH, specific conductance, DO, and turbidity. All measures of DO met WQS where established with the exception of a few measurements from urban outfalls (Arlington and Oxbow Nature Park) and Boynton Slough during summer convective stormwater runoff events. Most measures of pH generally met established WQS to protect beneficial uses with few exceptions. There are no WQS established for specific conductance or turbidity.

Stormwater loads were measured from 2 storms at every station. Loads measured suggest that both spatial and temporal scales are important. For example, tributaries draining large areas typically measure the highest loads; however, if stations are compared by yields, areas with more urban land-uses typically are responsible for higher pollutant yields. On a temporal scale, fall frontal storms generate higher loads than storms measured in other times of the year. These results may reflect the time since last rainfall-runoff event; fall frontal storms typically occur after a long dry period when pollutants accumulate over time and are flushed into local waters by the first large storm event, also informally known as the *first flush*.

Similarly, a baseflow daily load was measured from Steamboat Creek during the summer of 2017 and from North Truckee Drain, Steamboat Creek, and a tributary of Steamboat Creek (Yori Drain) in the winter of 2018. Summer daily loads in Steamboat Creek exceeded TMDLs established for three constituents (Total-N, Total-P, and TDS) in the Truckee River at Lockwood. We note that Steamboat Creek baseflows in September 2017 were measured to be much higher than long-term average baseflow, conditions reflective of the wettest year on record (WY2017). Winter baseflow daily loads measured from two main tributaries were less than the established TMDLs; however, the majority of nutrient loads originated from Steamboat Creek.

1 INTRODUCTION AND PROJECT PURPOSE

1.1 Introduction

The Truckee Meadows Storm Water Permit Coordinating Committee (SWPCC), composed of representatives of the City of Reno, City of Sparks and Washoe County, is responsible for the development, administration, and implementation of the Stormwater Management Program (SWMP) for the Truckee Meadows (**Figure 1-1**). This is part of a National Pollution Discharge Elimination System (NPDES) Permit to monitor and implement source controls designed to reduce and prevent harmful pollutants from being washed by stormwater runoff into local water bodies. The SWPCC is required to conduct a stormwater monitoring program following a Sampling and Analysis Plan (SAP) that describes the sampling program and approach. Under this program, sampling has been conducted since 2003 at a number of established monitoring stations across the Truckee Meadows with results reported to the Nevada Department of Environmental Protection (NDEP). In fiscal year[1] 2018 (FY2018), Balance Hydrologics (Balance) was contracted to continue implementing the stormwater monitoring program under the guidance of the SWPCC and in accordance with the 2018 SAP (Trustman and others, 2018).

1.2 Project Purpose

The primary goal of the stormwater monitoring program is to develop a better understanding of how stormwater runoff affects receiving waters within the MS4 permit area over time through monitoring, research and investigation (Stantec, 2012). With accurate, and representative monitoring data, program effectiveness can be assessed and new or revised stormwater Best Management Practices (BMPs) can be identified. In support of this overall program goal, four monitoring objectives have been identified:

1. Characterize stormwater quality in tributaries and urban stormwater outfalls to the Truckee River;
2. Collect the data necessary to improve our understanding of stormwater effects on listed constituents in impaired receiving waters;
3. Measure the baseflow (ambient) water quality in selected tributaries with varying land-use types within the study area; and

[1] Fiscal year corresponds to the City of Reno's 12-month fiscal period beginning July 1, for a given year through June 30 of the following named year.

4. Conduct special studies and investigations as needs arise and funding is available to better understand stormwater issues in the area.

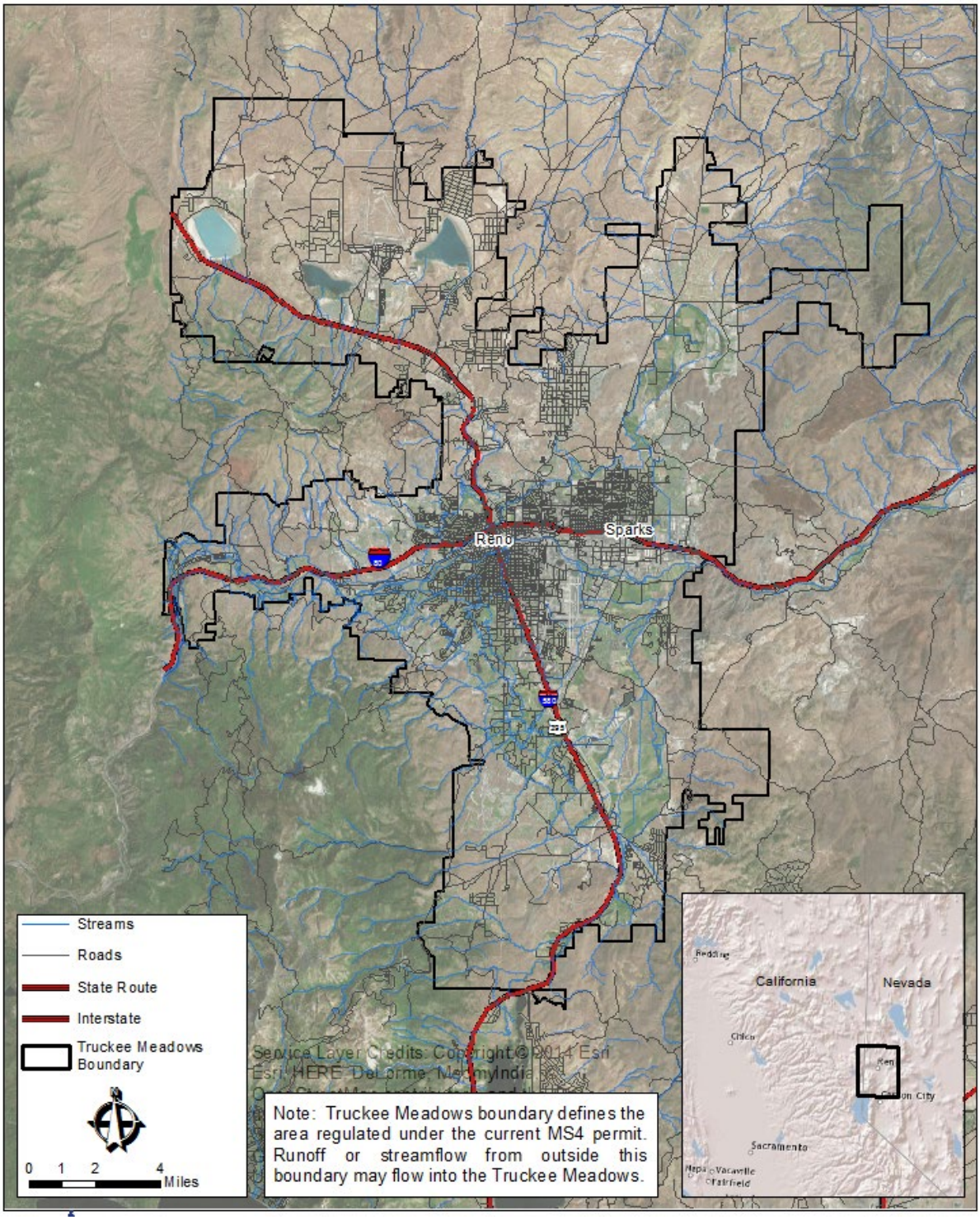


Figure 1-1 Location Map for Truckee Meadows, including City of Reno, City of Sparks and parts of Washoe County, Nevada

1.3 Regulatory Background

The discharge of municipal stormwater runoff within the Truckee Meadows is regulated under a single discharge permit, a Municipal Separate Storm Sewer System (MS4) permit. The permit is jointly issued to the City of Reno, City of Sparks, and Washoe County and allows the co-permittees to discharge municipal stormwater runoff into the receiving waters of the Truckee River and tributaries. The permit also requires stormwater monitoring, defined as regular observation and sampling that is representative of the volume and nature of the monitored discharge (NDEP, 2010).

In addition to the NPDES Stormwater Permit Program, Section 303(d) of the Clean Water Act also established a program to manage water pollution in water bodies that are not meeting federal water quality standards. Section 303(d) requires that states establish a list of impaired water bodies and assess the sources of that pollution.

Every two years, NDEP is required to prepare and submit an updated 303(d) list to the U.S. Environmental Protection Agency (USEPA). The most recent list (NDEP, 2016) identifies the Truckee River, 10 tributaries, and 3 other water bodies (i.e., lakes) within the Truckee Meadows as impaired (**Table 1-1**). Impairment differs between listed water bodies, but cited constituents of concern include nutrients, bacteria, metals, and general physical parameters such as pH, dissolved oxygen, specific conductance, and temperature.

Table 1-1 2014 Impaired Waters and Listed Constituents, 303(d) List, Truckee Meadows, Nevada (adapted from NDEP, 2016)

Impaired Waters and Listed Constituents, 2014 303(d) List, Truckee Meadows

Monitoring	Water Name	Reach Impaired	Impairment	Impaired Beneficial Use
FY2018	Truckee River	From NV-CA state line to E. McCarran	Water Temperature	AQL
Yes	Alum Creek	Entire reach	pH	PWL, RWC
			Total-P	AQL, RWC
			Ortho-P	AQL, RWC
			Water Temperature	AQL
			TDS	MDS
			TSS	AQL
Yes	Chalk Creek	Entire reach	Nitrate	AQL, RWC
			Total-P	AQL, RWC
			Ortho-P	AQL, RWC
			Selenium	AQL
			Sulfates	MDS
			Temperature	AQL
			TDS	MDS
			TSS	AQL
No	Sparks Marina	Entire reservoir	Total-N	AQL, RWC
			Total-P	AQL, RWC
			TDS	MDS
No	Tracy Pond	Entire area	pH	AQL, PWL, RWC
No	Dry Creek	Headwaters to Boynton Slough	E-coli	RWC
No	Evans Creek	HWY 395 to Dry Creek	E-coli	RWC
No	Franktown Creek	From irrigation diversion to Washoe Lake	Iron	AQL
No	Galena Creek	(see NDEP, 2014)	pH	AQL, PWL, RWC
No	Hunter Creek	From Hunter Lake to its confluence with the Truckee River	pH	AQL
Yes	Steamboat Creek	Little Washoe Lake to USGS 10349300	E-coli	RWC
		USGS 10349300 to Truckee River	Arsenic	AQL, IRR, WLS
			Boron	IRR, WLS
			E-coli	RWC
			Iron	AQL
Yes	Thomas Creek	Below Steamboat Ditch	Arsenic	AQL, IRR, WLS
			Boron	IRR, WLS
No	Washoe Lakes	Entire lakes	Mercury in fish tissue	FC
Yes (N. Fork Only)	Whites Creek	Middle Fork	E-coli	RWC
			Iron	AQL
		North and South Forks and Whites Creek	Total-P	AQL, RWC
		North Fork	Total-P	AQL, RWC
			E-coli	RWC

Notes:

Monitoring indicated with "yes" include at least one station of the listed waters monitored by Balance Hydrologics, Inc. as part of this program

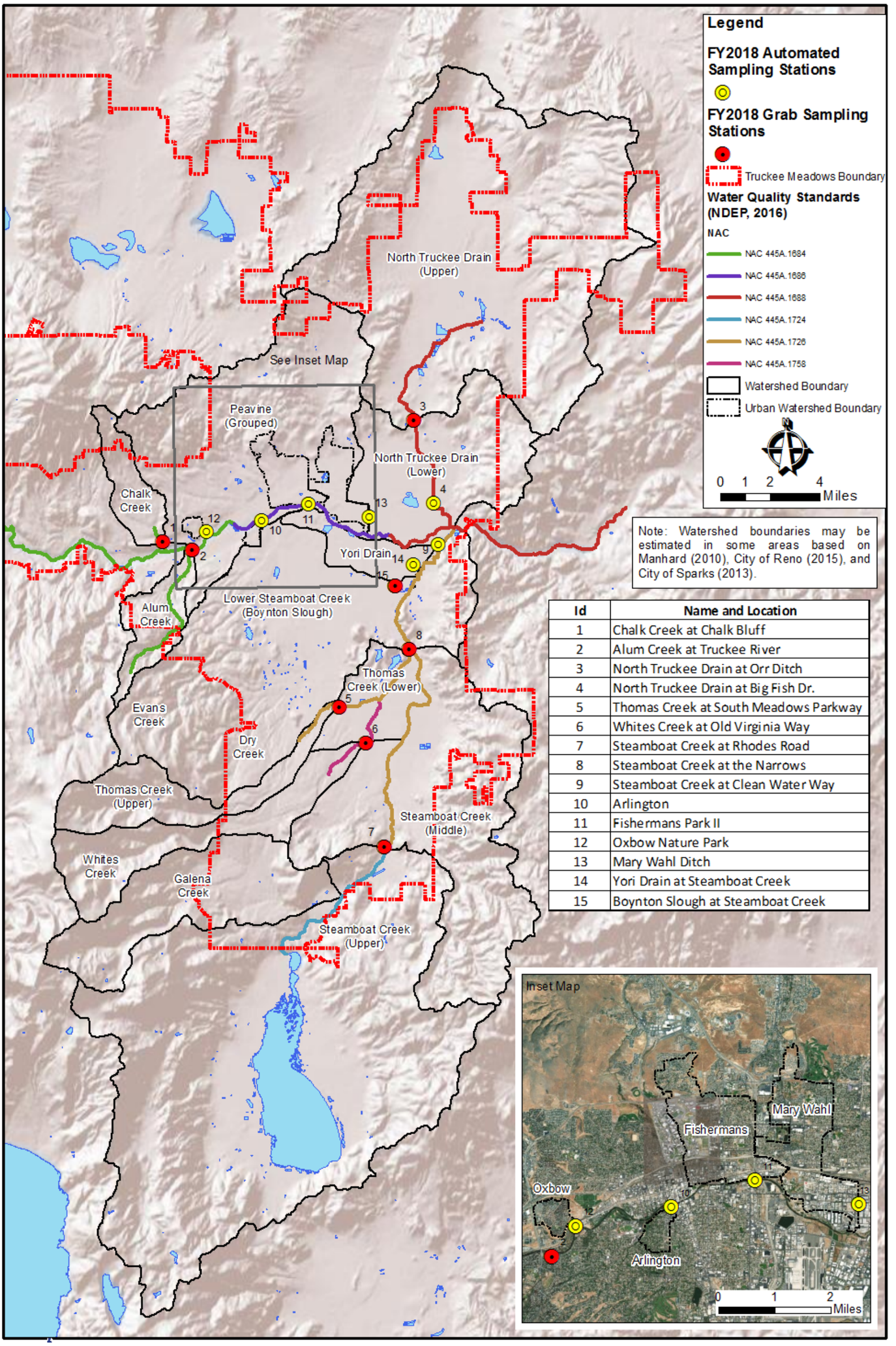
AQL = aquatic life, FC = fish consumption, IRR = irrigation, MDS = municipal domestic supply, PWL = propagation of wildlife, RNC = recreation not involving contact with water, RWC = recreation involving contact with water, WLS = watering of livestock.

Ortho-P = Orthophosphate, Total-N = Total Nitrogen, Total-P = Total Phosphorus, TDS = Total Dissolved Solids, TSS = Total Suspended Solids.

Annually, the SWPCC prioritizes listed water bodies for monitoring by sample collection and analysis. Ultimately, the monitoring program is devised to be efficient in administering the program within the annual budget allocated each year. As a result, selected constituents of concern and water bodies are targeted for sampling and analysis while others are reserved for future monitoring as additional funding becomes available. Opportunities to revise monitoring locations, add and remove constituents of concern or monitoring stations are addressed in annual reviews and possible revisions or addendums to the SAP.

Nevada's water quality standards, as contained in the Nevada Administrative Code (NAC) 445A.11704 – 445A.2234, define the water quality goals for a segment or length of a stream, river or entire waterbody by designating beneficial uses of the water and setting criteria necessary to protect the beneficial uses and/or requirements to maintain existing higher quality. Beneficial uses include, but are not limited to, irrigation, recreation, aquatic life, and drinking water supply. In many cases, listed waters have different beneficial uses and different numeric criteria. Some listed waters have two or more segments, each segment having different beneficial uses and numeric criteria.

For the purposes of this program, specific water-quality numeric criteria were identified for each tributary or segment monitored in accordance with current NACs and their control points. **Figure 1-2** identifies watershed boundaries for tributaries monitored under this program, stations monitored in FY2018 and tributary or stream segments with specific beneficial uses and numeric criteria used to compare water quality results measured in this program. Each monitoring station as they relate to tributary or segment-specific water quality standards is outlined in **Table 1-2**. Finally, we present water quality parameters, beneficial uses, and water quality standards and/or requirements for each of the six different tributaries or stream segments listed in **Table 1-2**(**Table 1-3** to **Table 1-8**). We note that some numeric criteria include single value (S.V.) measures and/or annual averages (A- Avg.). Samples collected as part of this program are considered single value measures and are compared to S.V. standards when they exist. If S.V. standards do not exist for a given parameter, results will be compared to A-Avg., but should be interpreted with caution.



Id	Name and Location
1	Chalk Creek at Chalk Bluff
2	Alum Creek at Truckee River
3	North Truckee Drain at Orr Ditch
4	North Truckee Drain at Big Fish Dr.
5	Thomas Creek at South Meadows Parkway
6	Whites Creek at Old Virginia Way
7	Steamboat Creek at Rhodes Road
8	Steamboat Creek at the Narrows
9	Steamboat Creek at Clean Water Way
10	Arlington
11	Fishermans Park II
12	Oxbow Nature Park
13	Mary Wahl Ditch
14	Yori Drain at Steamboat Creek
15	Boynton Slough at Steamboat Creek

Figure 1-2 Truckee Meadows Monitoring Map with Sampling Locations, Watersheds, and 303(d) Listed Stream Segment and Water Quality Standards.

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Table 1-2 FY2018 Monitoring Stations with Current Tributary or Stream Segments Water Quality Standards, per Nevada Administrative Code

Nevada Administrative Code	Description of Water Quality Control	Monitored Waters That Apply	Monitoring Station	Monitoring Station Code
NAC 445a. 1684	*Truckee River from California/Nevada State Line to Idlewild*			
		Chalk Creek	Chalk Bluff	CC@CB
		Alum Creek	at Truckee River	AC@TR
		Urban Outfall	Oxbow Nature Park	C-24
NAC 445a. 1686	*Truckee River from Idlewild to E. McCarren Boulevard Bridge*			
		Urban Outfall	Island Ave. at S. Arlington Ave	H-19
		Urban Outfall	Fisherman's Park II	D-16
		Urban Outfall	Freeport Blvd. nr Marietta Way	SDOE 008936
NAC 445a. 1688	*Truckee River from E. McCarren Boulevard Bridge to Lockwood*			
		North Truckee Drain	at Orr Ditch	NTD@ORR
		North Truckee Drain	at Big Fish Drive	NTD@BFD
NAC 445a. 1724	*Steamboat Creek at gaging station (Rhodes Road upstream to Washoe Lake)*			
		Steamboat Creek	at Rhodes Road	SBC@RR
NAC 445a. 1726	*Steamboat Creek from USGS gage 10349300 to confluence with Truckee River*			
		Steamboat Creek	at the Narrows	SBC@NAR
		Steamboat Creek	at Clean Water Way	SBC@CWW
		Yori Drain	at Steamboat Creek	YD@SBC
		Boynton Slough	at Steamboat Creek	BS@SBC
		Thomas Creek	at South Meadow Parkway	TC@SMP
NAC 445a. 1758	*Whites Creek below Steamboat Ditch*			
		N.F. Whites Creek	at Old Virginia Highway	WC@OVH

Table 1-3 Standards of Water Quality, Truckee River from California/Nevada State Line to Idlewild (NAC 445a. 1684)

STANDARDS OF WATER QUALITY
Truckee River at Idlewild

PARAMETER	REQUIREMENTS TO MAINTAIN EXISTING HIGHER QUALITY	WATER QUALITY STANDARDS FOR BENEFICIAL USES	Beneficial Use[a]										
			Livestock	Irrigation	Aquatic	Contact	Noncontact	Municipal	Industrial	Wildlife	Aesthetic	Enhance	Marsh
Beneficial Uses			X	X	X	X	X	X	X	X			
Aquatic Life Species of Concern			Juvenile and adult rainbow trout and brown trout.										
Temperature - °C ΔT^b - °C	 ΔT= 0	S.V. Nov-Mar ≤ 7 S.V. Apr ≤ 13 S.V. May ≤ 17 S.V. Jun ≤21 S.V. Jul ≤ 22 S.V. Aug ≤ 23 S.V. Sep-Oct ΔT ≤ 2			*	X							
pH - SU	S.V. 7.2 - 8.3	S.V. 6.5 - 9.0 ΔpH ± 0.5	X	X	X	*		X	X	*			
Dissolved Oxygen - mg/l		S.V. Nov-Mar ≤ 6.0 S.V. Apr-Oct ≤ 5.0	X		*	X	X	X		X			
Total Phosphates (as P) - mg/l	A-Avg.≤ 0.05	A-Avg.≤ 0.10			*	*	X	X					
Ortho Phosphates (as P) - mg/l	S.V. ≤ 0.02	S.V. ≤ 0.05			*	*	X	X					
Nitrogen Species (as N) - mg/l	Total N A-Avg. ≤ 0.3 Total N S.V. ≤ 0.43	Nitrate S.V. ≤ 2.0 Nitrite S.V. ≤ 0.04			*	*	X	X					
Total Ammonia (as N) - mg/l		c			*								
Suspended Solids - mg/l	A-Avg.≤ 15.0	S.V.≤ 25			*								
Turbidity - NTU	A-Avg. ≤ 80.0 S.V. ≤ 9.0	S.V. ≤ 10			*			X					
Color - PCU	d	S.V. ≤ 75						*					
Total Dissolved Solids - mg/l	A-Avg. ≤ 80.0 S.V. ≤ 95.0	A-Avg.≤ 500	X	X				*					
Chloride - mg/l	A-Avg. ≤ 7.0 S.V. ≤ 10.0	S.V.≤ 250	X	X				*		X			
Sulfate - mg/l	A-Avg. ≤ 7.0 S.V. ≤ 8.0	S.V.≤ 250						*					
Sodium - SAR	A-Avg. ≤ 0.5 S.V. ≤ 0.6	A-Avg.≤ 8		*				X					
Alkalinity (as CaCO3) - mg/l		< 25% change from natural conditions			*					X			
E. coli - No./100 ml		A.G.M. ≤ 126 S.V. ≤ 410				*	X						
Fecal Coliform - No./100 ml	A.G.M. ≤ 50.0 S.V. ≤ 200.0	S.V.≤ 1000	X	*			X	X		X			
BOD- mg/l		A.G.M. ≤ 2.5 S.V. ≤ 3.0						*					

* = The most restrictive beneficial use.

X = Beneficial use.

a Refer to NAC 445A.122 and 445A.1622 for beneficial use terminology.

b Maximum allowable increase in temperature above water temperature at the boundary of an approved mixing zone, but the increase must not cause a violation of the single value

c The ambient water quality criteria for ammonia are specified in NAC 445A.118.

d Increase in color must not be more than 10 PCU above natural conditions.

A.G.M annual geometric mean

A-AVG means annual average

ΔT change in temperature

NTU nephelometric turbidity units, a measure of turbidity

PCU platinum cobalt unit, a measure of color

S.V. single value

Table 1-4 Standards of Water Quality, Truckee River from Idlewild to E. McCarren Boulevard Bridge (NAC 445a. 1686)

STANDARDS OF WATER QUALITY

Truckee River at East McCarran

PARAMETER	REQUIREMENTS TO MAINTAIN EXISTING HIGHER QUALITY	WATER QUALITY STANDARDS FOR BENEFICIAL USES	Beneficial Use[a]										
			Livestock	Irrigation	Aquatic	Contact	Noncontact	Municipal	Industrial	Wildlife	Aesthetic	Enhance	Marsh
Beneficial Uses			X	X	X	X	X	X	X	X			
Aquatic Life Species of Concern			Juvenile and adult rainbow trout and brown trout.										
Temperature - °C ΔT^b - °C	 $\Delta T = 0$	S.V. Nov-Mar ≤ 7 S.V. Apr ≤ 13 S.V. May ≤ 17 S.V. Jun ≤21 S.V. Jul ≤ 22 S.V. Aug ≤ 23 S.V. Sep-Oct $\Delta T \leq 2$			*	X							
pH - SU	S.V. 7.0 - 8.5	S.V. 6.5 - 9.0 $\Delta pH \pm 0.5$	X	X	X	*		X	X	*			
Dissolved Oxygen - mg/l		S.V. Nov-Mar ≤ 6.0 S.V. Apr-Oct ≤ 5.0	X		*	X	X	X		X			
Total Phosphates (as P) - mg/l	A-Avg.≤ 0.05	A-Avg.≤ 0.10			*	*	X	X					
Ortho Phosphates (as P) - mg/l	S.V. ≤ 0.02	S.V. ≤ 0.05			*	*	X	X					
Nitrogen Species (as N) - mg/l	Total N A-Avg. ≤ 0.3 Total N S.V. ≤ 0.43	Nitrate S.V. ≤ 2.0 Nitrite S.V. ≤ 0.04			*	*	X	X					
Total Ammonia (as N) - mg/l		c			*								
Suspended Solids - mg/l	A-Avg.≤ 15.0	S.V.≤ 250			*								
Turbidity - NTU	A-Avg. ≤ 6.0	S.V. ≤ 10			*			X					
Color - PCU	d	S.V. ≤ 75						*					
Total Dissolved Solids - mg/l	A-Avg. ≤ 90.0 S.V. ≤ 120.0	A-Avg.≤ 500	X	X				*					
Chloride - mg/l	A-Avg. ≤ 7.0 S.V. ≤ 10.0	S.V.≤ 250	X	X				*		X			
Sulfate - mg/l	A-Avg. ≤ 7.0 S.V. ≤ 8.0	S.V.≤ 250						*					
Sodium - SAR	A-Avg. ≤ 0.5 S.V. ≤ 0.6	A-Avg.≤ 8		*				X					
Alkalinity (as CaCO3) - mg/l		< 25% change from natural conditions			*					X			
E. coli - No./100 ml		A.G.M. ≤ 126 S.V. ≤ 410				*	X						
Fecal Coliform - No./100 ml	A.G.M. ≤ 75.0 S.V. ≤ 350.0	S.V.≤ 1000	X	*			X	X		X			
BOD- mg/l		A.G.M. ≤ 3.0 S.V. ≤ 5.0						*					

* = The most restrictive beneficial use.

X = Beneficial use.

a Refer to NAC 445A.122 and 445A.1622 for beneficial use terminology.

b Maximum allowable increase in temperature above water temperature at the boundary of an approved mixing zone, but the increase must not cause

c The ambient water quality criteria for ammonia are specified in NAC 445A.118.

d Increase in color must not be more than 10 PCU above natural conditions.

A.G.M. the annual geometric mean

A-AVG annual average

ΔT change in temperature

NTU nephelometric turbidity units, a measure of turbidity

PCU platinum cobalt unit, a measure of color

S.V. single value

Table 1-5 Standards of Water Quality, Truckee River from E. McCarren Boulevard Bridge to Lockwood (NAC 445a. 1688)

STANDARDS OF WATER QUALITY
Truckee River at Lockwood Bridge

PARAMETER	REQUIREMENTS TO MAINTAIN EXISTING QUALITY	WATER QUALITY STANDARDS FOR BENEFICIAL USES	Beneficial Use[a]									
			Livestock	Irrigation	Aquatic	Contact	Noncontact	Municipal	Industrial	Wildlife	Aesthetic	Enhance	Marsh
Beneficial Uses			X	X	X	X	X	X	X	X			
Aquatic Life Species of Concern			Juvenile and adult rainbow trout and brown trout.										
Temperature - °C		S.V. Nov-Mar ≤ 13 S.V. Apr ≤ 21c S.V. May ≤ 22c,d S.V. Jun-Oct ≤ 23c,d			*	X							
ΔT[b] - °C	ΔT= 0	ΔT ≤ 2											
pH - SU	S.V. 7.1 - 8.5	S.V. 6.5 - 9.0 ΔpH ± 0.5	X	X	X	*		X	X	*			
Dissolved Oxygen - mg/l		S.V. Nov-Mar ≤ 6.0 S.V. Apr-Oct ≤ 5.0	X		*	X	X	X		X			
Total Phosphates (as P) - mg/l		A-Avg.≤ 0.05			*	*	X	X					
Nitrogen Species (as N) - mg/l		Total N A-Avg. ≤ 0.75 Total N S.V.≤ 1.2 Nitrate S.V.≤ 2.0 Nitrite S.V.≤ 0.04			*	*	X	X					
Total Ammonia (as N) - mg/l		e			*								
Suspended Solids - mg/l	A-Avg.≤ 25.0	S.V.≤ 50			*								
Turbidity - NTU		S.V. ≤ 10			*			X					
Color - PCU	f	S.V. ≤ 75						*					
Total Dissolved Solids - mg/l	A-Avg. ≤ 210.0 S.V. ≤ 260.0	A-Avg.≤ 500	X	X				*					
Chloride - mg/l	A-Avg. ≤ 26.0 S.V. ≤ 30.0	S.V.≤ 250	X	X				*		X			
Sulfate - mg/l	A-Avg. ≤ 39.0 S.V. ≤ 46.0	S.V.≤ 250						*					
Sodium - SAR	A-Avg. ≤ 1.5 S.V. ≤ 2.0	A-Avg.≤ 8		*				X					
Alkalinity (as CaCO3) - mg/l		< 25% change from natural conditions			*					X			
E. coli - No./100 ml		A.G.M. ≤ 126 S.V. ≤ 410				*	X						
Fecal Coliform - No./100 ml	A.G.M. ≤ 90.0 S.V. ≤ 300.0	S.V.≤ 1000	X	*			X	X		X			

* = The most restrictive beneficial use.
X = Beneficial use.

a Refer to NAC 445A.122 and 445A.1622 for beneficial use terminology.

b Maximum allowable increase in temperature above water temperature at the boundary of an approved mixing zone, but the increase must not cause a

c When flows are adequate to induce spawning runs of cui-ui and Lahontan cutthroat trout, the standard is 14°C from April through June.

d The desired temperature for the protection of juvenile Lahontan cutthroat trout is 21°C, even though that temperature is not attainable at all times.

e The ambient water quality criteria for ammonia are specified in NAC 445A.118.

f Increase in color must not be more than 10 PCU above natural conditions.

A.G.M annual geometric mean

A-AVG annual average

ΔT change in temperature

NTU nephelometric turbidity units, a measure of turbidity

PCU platimun cobalt unit, a measure of color

S.V. single value

Table 1-6 Standards of Water Quality, Steamboat Creek at Gaging Station (NAC 445a. 1724)

STANDARDS OF WATER QUALITY
Steamboat Creek at the gaging station (Rhodes Road)

PARAMETER	REQUIREMENTS TO MAINTAIN EXISTING HIGHER QUALITY	WATER QUALITY STANDARDS FOR BENEFICIAL USES	Beneficial Use[a]										
			Livestock	Irrigation	Aquatic	Contact	Noncontact	Municipal	Industrial	Wildlife	Aesthetic	Enhance	Marsh
Beneficial Uses			X	X	X	X	X	X	X	X			
Aquatic Life Species of Concern													
Temperature - °C ΔT^b - °C		S.V. ≤ 34 ΔT ≤ 3			*	X							
pH - SU		S.V. 6.5 - 9.0	X	X	*	*		X	X	*			
Dissolved Oxygen - mg/l		S.V. ≥ 5.0	X		*	X	X	X		X			
Total Phosphorus (as P) - mg/l		S.V. ≤ 0.33			*	*	X	X					
Total Ammonia (as N) - mg/l		c			*			X					
Total Dissolved Solids - mg/l		S.V. ≤ 500 or the 95th percentile (whichever is less).	X	X				*					
E. coli - No./100 ml		A.G.M. ≤ 126 S.V. ≤ 410				*	X						
Fecal Coliform - No./100 ml		S.V. ≤ 1,000	X	*			X	X		X			

Table 1-7 Standards of Water Quality, Steamboat Creek from USGS Gaging Station 10349300 to Confluence with Truckee River (NAC 445a. 1726)

STANDARDS OF WATER QUALITY
Steamboat Creek at Truckee River

PARAMETER	REQUIREMENTS TO MAINTAIN EXISTING HIGHER QUALITY	WATER STANDARDS FOR BENEFICIAL USES	Beneficial Use[a]										
			Livestock	Irrigation	Aquatic	Contact	Noncontact	Municipal	Industrial	Wildlife	Aesthetic	Enhance	Marsh
Beneficial Uses			X	X	X	X	X	X	X	X			
Aquatic Life Species of Concern			Juvenile and adult rainbow trout and brown trout.										
pH - SU		S.V. 6.0 - 9.0	X	X	*	X		X	X	*			
Dissolved Oxygen - mg/l		S.V. ≤ 3.0	X		*	X	X			X			
Total Ammonia (as N) - mg/l		b			*								
E. coli - No./100 ml		A.G.M. ≤ 126 S.V. 576				*	X						

* = The most restrictive beneficial use.
X = Beneficial use.

a Refer to NAC 445A.122 and 445A.1622 for beneficial use terminology.
b The ambient water quality criteria for ammonia are specified in NAC 445A.118.
A.G.M. the annual geometric mean
A-AVG annual average
S.V. single value

Table 1-8 Standards of Water Quality, Whites Creek below Steamboat Ditch (NAC 445a. 1758)

STANDARDS OF WATER QUALITY
Whites Creek at Steamboat Creek

PARAMETER	REQUIREMENTS TO MAINTAIN EXISTING HIGHER QUALITY	WATER QUALITY STANDARDS FOR BENEFICIAL USES	Beneficial Use[a]										
			Livestock	Irrigation	Aquatic	Contact	Noncontact	Municipal	Industrial	Wildlife	Aesthetic	Enhance	Marsh
Beneficial Uses			X	X	X	X	X	X	X	X			
Aquatic Life Species of Concern			Juvenile and adult rainbow trout and brown trout.										
Temperature - °C ΔT^b - °C		S.V. ≤ 24 ΔT = 0			*	X							
pH - SU		S.V. 6.5 - 9.0	X	X	*	*		X	X	*			
Dissolved Oxygen - mg/l		S.V. ≤ 5.0	X		*	X	X	X		X			
Total Phosphates (as P) - mg/l		S.V. ≤ 0.10			*	*	X	X					
Total Ammonia (as N) - mg/l		c			*			X					
Total Dissolved Solids - mg/l		S.V. ≤ 500 or the 95th percentile (whichever is less)	X	X				*					
E. coli - No./100 ml		A.G.M. ≤ 126 S.V. ≤ 410				*	X						
Fecal Coliform - No./100 ml		S.V.≤ 1000	X	*			X	X		X			

* = The most restrictive beneficial use.

X = Beneficial use.

a Refer to NAC 445A.122 and 445A.1622 for beneficial use terminology.

b Maximum allowable increase in temperature above water temperature at the boundary of an approved mixing zone, but the increase must not cause a violation of the

c The ambient water quality criteria for ammonia are specified in NAC 445A.118.

A.G.M the annual geometric mean

A-AVG annual average

ΔT change in temperature

S.V. single value

For water bodies listed as impaired, states must assess the amount of pollution that a water body can receive without violating water quality standards. That amount of pollution is termed a Total Maximum Daily Load (TMDL). Loads are then allocated among the different sources, including point sources, non-point sources, and natural or background sources (Stantec, 2011). In 1994, TMDLs for the Truckee River were established for three different constituents: total nitrogen (Total-N), total phosphorus (Total-P), and total dissolved solids (TDS) (**Table 1-9**). The control point for these constituents is the Truckee River at Lockwood (see **Figure 1-2**). Sampling and analysis of waters in the Truckee River at Lockwood is not a component of this monitoring program but is conducted by the Truckee Meadows Water Reclamation Facility (TMWRF) and

results are available on the Truckee River Information Gateway (TRIG; http://truckeeriverinfo.org/). Three constituents with TMDLs and other constituents of concern are measured under this stormwater monitoring program at urban outfalls and tributaries to the Truckee River to better understand the quality of waters entering the Truckee River (receiving waters) from Truckee Meadows. Possible revisions to these TMDLs are currently under review by NDEP.

Table 1-9 Total Maximum Daily Loads (TMDLs), Truckee River at Lockwood

Total Maximum Daily Load	Total Nitrogen	Total Phosphorus	Total Dissolved Solids
Point of Compliance	*lbs/day*	*lbs/day*	*lbs/day*
	TMDL		
Truckee River at Lockwood	1,000	214	900,528
Non-Point Source or Load Allocation			
Truckee River at Lockwood	500	80	780,360

2 SAMPLING AND ANALYSIS PLAN (2017) AND ADDENDUMS

Every year, a revised Sampling and Analysis Plan (SAP) is submitted to the NDEP and outlines the sampling program and approach, including locations of sampling, the stormwater sampling activities to be conducted, and lists of constituents for laboratory analysis. During implementation of the SAP, field realities often necessitate minor modifications to the SAP before a revised SAP can be completed. These revisions are documented in the annual report and/or as addenda to the SAP.

2.1.1 SAMPLING AND ANALYSIS PLAN

In FY2018, Balance conducted the monitoring program based on the 2017 SAP, dated November 2017 (Trustman and others, 2017). The SAP identifies two different sampling activities: (1) scheduled, non-rain event, tributary baseflow sampling; and (2) unscheduled stormwater sampling. The 2017 SAP identifies 16 monitoring stations, including 12 tributary monitoring stations on 9 tributaries that require both scheduled baseflow sampling and unscheduled storm event sampling, and 4 urban outfall monitoring sites that require only unscheduled, storm event sampling.

All four urban outfalls and three selected tributaries utilize near-continuous streamflow gages and automated samplers to collect multiple samples across a given storm runoff event to characterize constituent loading to the Truckee River. Also, in FY2018, in accordance with the 2017 SAP, Balance continued to operate additional streamflow gaging stations on three tributaries to the Truckee River (Chalk Creek, Alum Creek, and Thomas Creek), while Truckee Meadows Water Authority (TMWA) operates and maintains a streamflow gaging station on Whites Creek. Streamflow data helps quantify stormwater runoff volumes and calculate instantaneous loading rates at these stations.

2.1.2 SPECIAL STUDY: BASEFLOW SAMPLING AND ANALYSIS FROM TWO MAIN TRIBUTARIES

Steamboat Creek and North Truckee Drain have been identified as key sources of excess nutrients to the Truckee River (Shump, 1985, Romeis, 1999, and Hastings and Shaw, 2015). Baseflow water quality data was limited. Therefore, and as part of the objectives (Objective #4) of this program, Balance conducted a special study to evaluate baseflow selected constituent loading from these two tributaries since WY2016. In FY2018, Balance continued to operate automated samplers, co-located at USGS streamflow gaging stations, to measure baseflow constituent loading over a 24-hour period to the Truckee River from these two main tributaries. Results are described in this report and fulfill the ambient monitoring requirements of this program.

2.2 Constituents of Concern

The 2017 SAP identifies the following constituents of concern:

- Total nitrogen (Total-N),
- Nitrate as nitrogen (NO_3),
- Total Kjeldahl nitrogen (TKN),
- Total phosphorus (Total-P),
- Ortho-phosphate (Ortho-P),
- Total dissolved solids (TDS),
- Total suspended solids (TSS),
- Total Escherichia coli bacteria (E. coli), and
- Standard physical parameters including: water temperature, turbidity, pH, dissolved oxygen (DO), and specific conductance (SC).

Other forms of nitrogen include nitrite as nitrogen (NO_2) and ammonia as nitrogen (NH_3) are also presented. Below, we define and briefly discuss the importance of these parameters as they relate to stormwater in the Truckee Meadows.

2.2.1 Nitrogen and Phosphorus

Nitrogen and phosphorus are the principal constituents of concern in urban stormwater. The major sources of these nutrients in urban stormwater are urban landscape runoff, atmospheric deposition, animal waste, improperly functioning septic systems, and/or undertreated wastewater returned to the river (Terrene Institute, 1996). The degree to which nitrogen and phosphorus are present in a river can affect the trophic status and amount of algal biomass produced. Excess nutrients tend to increase primary biological productivity, which in turn cause algal blooms. A secondary impact is the residual negative effects of decomposing algae, which depletes dissolved oxygen concentrations necessary to support other aquatic life (USEPA, 1999).

There are several forms of nitrogen and phosphorus found in stormwater runoff. Total-N includes four forms including NO_3, NO_2, NH_3, and ammonium (NH_4). NO_3 and NO_2 are the inorganic fractions of nitrogen. NO_2 is uncommon in stormwater because it can quickly

transform to NO_3 by bacteria. NO_3 is stable over a considerable range of conditions and is readily transported in water. NO_3 is highly toxic to humans and fish at high concentrations and long exposure. NH_3 is more volatile and is quickly converted to NO_2 and NO_3 through oxidation, but usually is the most readily toxic to aquatic life. NH_3 typically reacts or dissolves in water to also form NH_4 at neutral pH levels (i.e., near 7). NH_4 is strongly adsorbed on mineral surfaces or soil particles, therefore, can be easily transported by sediment in the water (Hem, 1985).

TKN is a measure of the total concentration of organic nitrogen and ammonia. TKN is a good indicator of forms of nitrogen most biologically available to aquatic life. Sources of nitrogen in surface waters include both residential and agricultural fertilizers, septic tanks, leaking sewer lines, and leach fields. Unsanitary disposal of human and pet excrement are also common sources in urban areas and are frequently observed in the Truckee Meadows urban areas.

Total-P is a measure of both organic and inorganic forms of phosphorus. Ortho-P is commonly present in stormwater and the fraction of Total-P that is most immediately biologically available to aquatic life (Hem, 1985). Sources of phosphorus in surface waters include the natural weathering and erosion of local bedrock, especially areas underlain by igneous rocks (e.g., granodiorite, volcanic rocks). Erosion of areas with current (e.g., construction) or historical disturbance (e.g., mining) can exacerbate the concentrations of phosphorus in stormwater. Other sources may include sewage and household detergents, runoff from fertilized lawns and cropland, runoff from animal manure storage areas, drained wetlands, decomposition of organic matter, and commercial cleaning preparations.

2.2.2 Suspended and Dissolved Solids

TSS is a measure of both organic and inorganic solids suspended in the water column, whereas TDS is a measure of all inorganic and organic substances dissolved in the water column (Hem, 1985). Both TSS and TDS have been reported to increase in waters that receive urban stormwater. Their concentrations originate from many sources including erosion of pervious surfaces, dust, litter, other particles deposited on impervious surfaces from human activities, sediment runoff at construction sites, and streambank erosion (Burton and Pitt, 2002).

Elevated TSS and TDS concentrations increase turbidity, reduce light penetration in streams, and limit the growth of desirable aquatic plants. TSS can settle in backwater

areas or in the main channel during periods of low flow and can alter or impair aquatic habitat and aquatic life. TSS can also provide a medium for accumulation, transport, and storage of other pollutants including nutrients and metals (USEPA, 1999).

Although TSS and TDS are not typically associated with human health effects, they are used as aesthetic indicators as well as aggregate indicators of the presence of chemical contaminants. Concentrations can also be naturally elevated from natural erosion of geologic sources. For instance, naturally high sulfates are found in the Chalk Creek watershed and commonly are a source of high TDS concentrations. Increases over background TSS and/or TDS may originate from agricultural and residential runoff as well as point-source pollution discharge from industrial and sewage treatment plants. Most aquatic ecosystems can tolerate TDS levels of 1,000 mg/L (Boyd, 1999).

2.2.3 Pathogens

Pathogens are disease-producing organisms that present a potential public health threat when they are present in waters (USEPA, 1999). Pathogens typically originate from warm-blooded animal excrement which can include wild animals, urban animals (e.g., pigeons, raccoons, crows, dogs), or humans (i.e., raw sewage spills). Direct exposure to pathogens in stormwater is usually limited; however, when runoff is discharged to recreational waters such as the Truckee River, there is a potential public health risk. Runoff can contain many different pathogens that cannot be measured directly; therefore, indicator organisms such as E. coli are used to predict the health risks (NDEP, 2012). High counts of bacteria may not necessarily confirm the presence of pathogens but provides an indicator for risk. In this report, bacteria measured is reported in units of Most Probable Number (MPN) per 100 mL of water.

2.2.4 Other Physical Parameters

Standard physical parameters provide additional context for stormwater quality and conditions relative to receiving waters. In addition, NDEP has water quality standards for physical parameters including temperature, dissolved oxygen, and pH for the Truckee River and listed tributaries (NAC 445a.).

Water temperature in an important measure of water quality and the Truckee River is listed as impaired for water temperature (NDEP, 2016). Specifically, water holds less oxygen as it becomes warmer, resulting in less oxygen available for respiration by aquatic organisms (USEPA, 1999). Stormwater runoff from high-temperature impervious surfaces

can increase water temperature in the river or receiving waters and impair trout species (Jones and others, 2007).

Dissolved oxygen (DO) concentration is a measure of the amount of oxygen dissolved in water. DO is critical to biological organisms and fish. High DO levels in streams are needed to sustain the more sensitive biological organisms (MacDonald and others, 1991). Low DO levels are commonly associated with point source pollution or decomposing organic matter in the water column. Urban stormwater typically has low to moderate levels of DO but commonly increases when diluted in receiving waters. As mentioned earlier, decomposing algae—from increased nutrient loads—can deplete DO concentrations to the point where aquatic life is affected. Waters rich in algae (eutrophic) can register wide swings in DO concentrations between algae respiration at night and photosynthesis during daylight hours. Wide diurnal fluctuations can stress aquatic life more than constant low DO concentrations.

Most aquatic ecosystems are also sensitive to variations in pH. Most pH impacts in urban waters are caused by runoff of rainwater with low pH levels (USEPA, 1999) or rapid changes in water temperatures (i.e., runoff heated by sun-warmed asphalt). Urban and industrial areas tend to have more acidic rainfall than less developed areas. Additionally, high pH levels can be caused by eutrophication or abundance of nutrients in waters.

Specific conductance (SC) of waters refers to the ability of water to conduct an electrical current and is related to the concentration of dissolved solids. SC indicates the quantity of dissolved ions in the water and can also be used as a proxy for salinity. While there are no recommended water quality criteria for conductivity, it can be used as a surrogate for other dissolved ions. SC can exhibit a wide range if waters move through areas of differing geology. Waters that drain granitic and/or volcanic rocks tend to have a very low SC (< 400 µS (micro Siemens). Alternatively, waters that drain marine sedimentary rocks (i.e., Chalk Creek) or geothermal areas (i.e., Steamboat Creek) will typically have a much higher SC (>2,000 µS). The acceptable range for fresh water fish is between 100 and 2,000 µS (MacDonald and others, 1991).

3 STORM MONITORING STATIONS

The FY2018 stormwater monitoring program includes a total of 16 monitoring stations per the 2017 SAP: 12 tributary stations, and 4 stormwater urban outfall stations. Locations of monitoring stations, rain gages, and streamflow gages used for this monitoring program are shown in **Figure 3-1**. **Table 2-1** describes the characteristics of the sites and their drainage areas, including land-uses, constituents of concern, instrumentation, comments, and known existing studies. We have used information summarized in recent watershed assessments, special studies, zoning maps from Washoe County, stormwater system maps from Cities of Reno and Sparks, aerial imagery available on Google Earth®, and field observations to establish the drainage areas for each monitoring station.

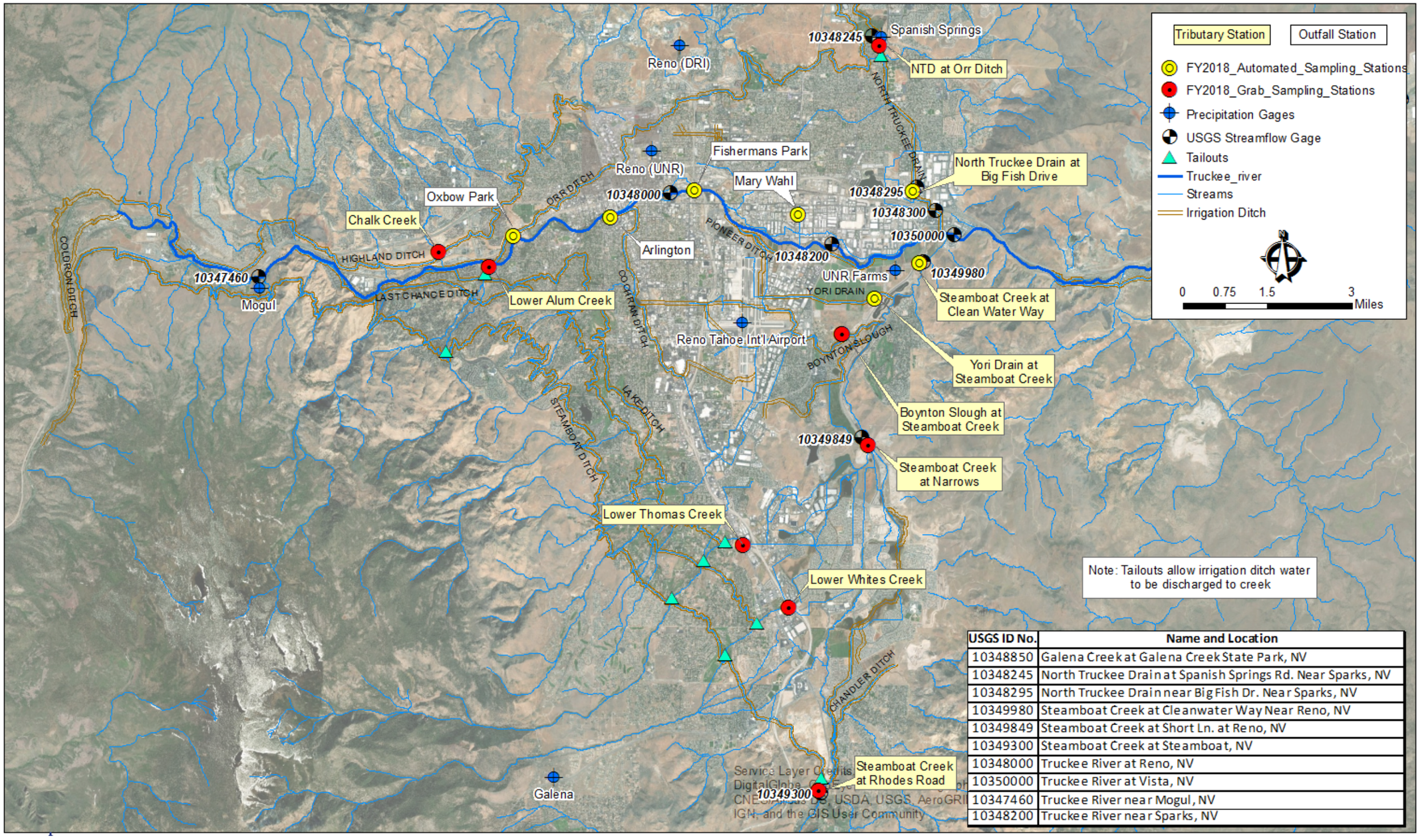
3.1 Tributary Stations

The 2017 SAP assigns 12 monitoring stations to 8 tributaries. Two of the largest tributaries to the Truckee River in the Truckee Meadows, Steamboat Creek and North Truckee Drain, have more than one monitoring station at different locations along the mainstem of each stream, allowing for evaluation of possible water-quality degradation from specific subwatersheds.

Delineation of drainage areas for tributary monitoring stations is confounded in many cases by irrigation ditches that divert waters from the Truckee River upstream of the Truckee Meadows, receive stormwater runoff from intervening areas, then discharge water to other tributaries, or 'tailwaters,' at 'tailouts' and may affect water quality in the receiving tributary. Although water quality of tailwaters has not been investigated as part of this study, awareness of this confounding factor is required during interpretation of hydrology and water quality at affected monitoring sites. **Table 3-2** lists the locations where tailouts exist or where irrigation ditches can discharge to tributaries. These locations are also identified in **Figure 3-1**.

3.2 Stormwater Outfall Stations

The 2017 SAP identifies 4 stormwater urban outfalls as monitoring stations, each with a pre-designated code (e.g., D-16). Stormwater quality from discharge at these outfalls can affect water quality and beneficial uses in receiving waters of the Truckee River. Analysis of water quality from stormwater outfalls provides a perspective on the concentrations and loading from these point sources and can also be compared to water quality from monitored tributaries.



USGS ID No.	Name and Location
10348850	Galena Creek at Galena Creek State Park, NV
10348245	North Truckee Drain at Spanish Springs Rd. Near Sparks, NV
10348295	North Truckee Drain near Big Fish Dr. Near Sparks, NV
10349980	Steamboat Creek at Cleanwater Way Near Reno, NV
10349849	Steamboat Creek at Short Ln. at Reno, NV
10349300	Steamboat Creek at Steamboat, NV
10348000	Truckee River at Reno, NV
10350000	Truckee River at Vista, NV
10347460	Truckee River near Mogul, NV
10348200	Truckee River near Sparks, NV

Figure 3-1 Truckee Meadows Stormwater Monitoring Stations, Streamflow Gaging Stations, Rain Gages, and Station Equipment, FY2018

Table 3-1 Monitoring Location Descriptions, Truckee Meadows Stormwater Monitoring Program, FY2018

Monitoring Station Name	Station ID	Watershed	Watershed Area (mi^2)	Primary Land-Uses	Instrumentation	Comments	Existing Studies
Tributaries							
Chalk Creek at Chalk Bluff	CC@CB	Tributary to Truckee River	4.6	Upper watershed is undeveloped; lower watershed is residential; I-80 and some commercial	Balance gaging station	Watershed includes geology of the Hunter Creek Formation: diatomaceous fine sandstone or "chalk" and lacustrine deposits which bear high concentrations of sulfates	JBR Environmental, 2010
Lower Alum Creek at Truckee River	AC@TR	Tributary to Truckee River	4.9	Residential, commercial, open space	Balance gaging station	Watershed geology includes Hunter Creek Formation, hydrous aluminum sulfates. 2007 Hawkin Fire burned 1,000 acres in upper watershed; artifical irrigation ponds provide some flood detention; Steamboat Ditch discharges to creek at times.	Fennema, 2013; Jesch, 2008 and 2011
North Truckee Drain at Orr Ditch	NTD@ORD	Tributary to Truckee River	76.1	agriculture, residential, and commercial	USGS gaging station 10348245	Receives return flows from irrigation ditches; drains much of Spanish Springs Valley; part of USACE flood control project	Jesch, 2005
Thomas Creek at S. Meadows Pkwy	TC@SMP	Tributary to Steamboat Creek	18.5	Mixed residential and commercial, some small agriculture, golf course, new construction	Balance gaging station	Lower portions of creek are conveyed via concrete or lined flood control channels, culverts and ditches;	Jesch, 2011, Curtis, 2013
NF Whites Creek at Old Virginia Hwy	WC@OVH	Tributary to Steamboat Creek	18.5	urban (mixed commercial and residential); new construction; open space in upper watershed	Washoe County gaging station	Additional 303(d) listed constituents for downstream reaches; channel is actively eroding in segments and increasing with increased urbanization of watershed	Jesch, 2011
Steamboat Creek at Rhodes Road	SBC@RHR	Tributary to Truckee River	123	Rural residential; major roads, historic gold and silver mining; geothermal operations	USGS gaging station 10349300	Washoe Lake located short distance upstream	Parametrix and Wenk Associates, 2007; Codega, 1998
Steamboat Creek at Narrows	SBC@NAR	Tributary to Truckee River	192	Mixed residential-commercial, major roads, agriculture, historic gold and silver mining; geothermal operations, new construction	USGS gaging station 10349849	Downstream from hot springs and geothermal operations; channel in poor condition; Southeast Connector construction completed spring 2018	Parametrix and Wenk Associates, 2007; Codega, 1999
Boynton Slough at Steamboat Creek	BS@SBC	Tributary to Steamboat Creek	*48.5*	Upper watershed is open space; lower:mixed residential-commercial, agriculture, golf courses, historical mining, geothermal operations, new construction, airport, major roadways	Balance staff plate	Upper watershed includes open space from Mt. Rose; Lower section captures a large amount of urban runoff from South Reno, including outflow from Virginia Lake via Dry Creek	City of Reno, 2016 (Virginia Lake)
Yori Drain @ Steamboat Creek	YD@SBC	Tributary to Steamboat Creek	*4.2*	Mixed residential-commercial, agriculture, golf courses, historical mining, geothermal operations, new construction, airport, major roadways	ISCO automated sampler and area-velocity module	Drains portions of urban Reno including Mill Street west to Renown Hospital, UNR Farms.; Receives Truckee River water from Pioneer Ditch; last portion of Yori Drain is directly connected to engineered overflow wetlands adjacent to the Southeast Connector	Kennedy Jenks Consultants, 2004
Steamboat Creek at Clean Water Way	SBC@CWW	Tributary to Truckee River	244	Mixed residential-commercial, major roads, agriculture, golf courses, historic mining; geothermal operations, new construction, Reno-Tahoe Airport	USGS gaging station 10349980	Southeast Connector construction completed spring 2018	RTCWC, 2013; Parametrix and Wenk Associates, 2007; Codega, 2000
Stormwater Urban Outfalls							
Island at Arlington	H-19	Outfalls to Truckee River	0.32	Residential (single family), commercial with urban landscaping	ISCO automated sampler and area-velocity module	One of the oldest neighborhoods in Reno; most homes built before 1940; possible cross connections with domestic sewer lines; sampling location is an outfall directly to Truckee River	n/a
Fisherman's Park II	D-16	Outfalls to Truckee River	5.1	Mixed residential, commercial, industrial and some agriculture, major roadways, UPRR and new construction	ISCO automated sampler and area-velocity module	Area drains portions of University of Nevada-Reno, Nevada State Fair Grounds, U.S. Agriculture Research Services; sampling location is an outfall directly to the Truckee River	n/a
Oxbow Nature Park	C-24	Outfalls to Truckee River	0.36	Residential (single family and multi-family units), commercial and urban landscaping	ISCO automated sampler and area-velocity module	Drainage area is 100 percent built out with an estimated 85+ percent impervious surface; access is via a storm drain manhole cover approximately 400 feet from outfall to the Truckee River	n/a
Mary Wahl Drain	SDOE-008936	Outfalls to Truckee River	2.5	Mixed residential, commercial, industrial and some agriculture, major roads, UPRR and new construction	ISCO automated sampler and area-velocity module	Recently enclosed in a concrete box culvert (December, 2014); culvert accumulates sediment; sampling location is a manhole roughly 750 feet upstream of the outfall to the Truckee River	n/a

Table 3-2 Tributary Monitoring Sites Receiving Tailwaters from Irrigation Ditches

Irrigation Ditch	Monitoring Sites that Receive Tailwaters
Steamboat Ditch	Alum Creek at Truckee River
	Thomas Creek at S. Meadows Parkway
	Whites Creek at Old Virginia Highway
	Steamboat Creek at Narrows and Clean Wate
Last Chance Ditch	Alum Creek at Truckee River
	Thomas Creek at S. Meadows Parkway
	Whites Creek at Old Virginia Highway
Lake Ditch	Thomas Creek at S. Meadows Parkway
	Alum Creek at Truckee River
Orr Ditch	North Truckee Drain at Orr Ditch
	North Truckee Drain at Kleppe Lane
Cochrane Ditch	Steamboat Creek at Clean Water Way
	Boynton Slough at Steamboat Creek
Pioneer Ditch	Yori Drain at Steamboat Creek

Notes: See **Figure 3-1** for locations of ditches and diversions to tributaries.

4 STORM MONITORING PROGRAM METHODS

This chapter describes the sampling equipment and methods used to collect water quality samples, measure and gage discharge or streamflow, and measure physical parameters of stormwater.

4.1 Types of Equipment

Table 4-1 lists the field parameters measured, instruments used, and the resolution and accuracy of each instrument.

Table 4-1 Instruments Used to Measure Water Quality, Runoff and Physical Parameters during Storm Events

Parameter	Units	Instrument	Range	Accuracy	Calibration	Comments
Velocity	ft/s	Hach velocity meter	-0.5 to +20	+/- 2%	Factory	Used for calculation of instantaneous discharge rate
Velocity	ft/s	Teledyne-ISCO 750 AV module	-5 to +5	+/- 1%	Factory	Measures near-continuous velocity; used for calculation of discharge volume
Velocity	ft/s	Bucket-wheel meter	0.2 to 25	+/- 2%	Manual	Used for calculation of instantaneous discharge rate
Depth	ft	Teledyne-ISCO 750 AV module	0.03 to 5.0	+/- 0.008	Factory	Measures near-continuous depth; used for calculation of discharge volume
Water Temperature	deg. C	YSI-Professional Plus	-5 to +70	+/- 0.2	Manual	
Conductance	µS	YSI-Professional Plus	0 to 200,000	+/- 0.5%	Manual	Four electrode cell
Specific Conductance	µS at 25 deg. C	YSI-Professional Plus	0 to 200,000	+/- 0.5%	Manual	Four electrode cell
Dissolved Oxygen	mg/L, %	YSI-Professional Plus	0-500 %	+/- 2%	Manual	Polarographic
pH	--	YSI-Professional Plus	0 to 14 units	+/- 0.2	Manual	Glass combination electrode
Turbidity	NTU	HF Scientific-Micro TPW	0 to 1,100	+/- 2%	Manual	EPA Method 180.1

4.2 Sampling Procedures

Stormwater samples were collected using a variety of methods depending on the site and instrumentation. Samples collected at automated sampling stations used either time-interval or flow-interval techniques to automatically fill discrete sample bottles over the duration of the storm hydrograph. This method is further described in **Section 4.4**, below; other sites require grab samples. Unless otherwise noted, grab samples were collected using a clean, triple-rinsed container, and were collected, composited, and mixed to fill laboratory-required volumes and laboratory-supplied bottles.

When site conditions permitted, Balance staff used a hand-held DH-48 sampler with a 1/4-inch nozzle, as adopted by the Federal Interagency Sedimentation Project (FISP), to

capture a depth-integrated sample of water across the width of an open channel or pipe. Water samples were collected using the Equal Transit Rate (ETR) method such that each sample was collected by raising and lowering the sampler at a number of equally-spaced verticals across the stream channel or pipe; collection in each vertical was integrated across the full depth of the water column; and a constant transit rate was maintained while raising and lowering the equipment until the sample bottle was just less than full (Edwards and Glysson, 1999). Water samples were typically collected from between three and eight verticals, and each vertical was executed within 5 to 15 seconds, for a total of approximately 30 to 60 elapsed seconds per sample.

All storm samples collected during an event were delivered to Alpha Analytical Laboratory in Sparks, Nevada under Chain-of-Custody (COC) procedures.

Baseflow or ambient samples were delivered to the Truckee Meadows Water Reclamation Facility (TMWRF) Laboratory under COC by City of Reno staff. Sample processing and procedures were completed as outlined in the 2015 SAP.

4.3 Streamflow/Discharge Gaging

Under this program, Balance operates and maintains 5 streamflow gaging stations using standard hydrologic practices. The primary purpose of the gaging stations is to record near-continuous streamflow and quantify constituent loading during sampled storm events. Secondarily, annual runoff volume is computed to compare relative quantities across tributaries to the Truckee River for context of potential constituent loading each year. Four stations are equipped with Type C staff plates that indicate water stage and In-Situ® pressure transducers that record water pressure depth every 3 minutes and averages them into 15-minute data records. Near-continuous records of water pressure depth are converted to stage (in feet) and calibrated with each observation. Manual measurements of streamflow are completed over a range of stages to develop a stage-to-streamflow rating curve. The rating curve is used to convert the near-continuous record of stage to a near-continuous record of streamflow. If channel conditions suggest a change in the stage-to-streamflow rating curve, a stage shift is applied when appropriate.

A fifth gaging station is located within a culvert or pipe (Yori Drain) and equipped with a ISCO 750 velocity-area module. The module records velocities and water depths every 10 seconds and averages them into 5-minute near-continuous records. The ISCO program converts water depths into a cross-sectional area using a known culvert

diameter and calculates discharge or streamflow using the Continuity Equation (flow = area x velocity). As a check on the velocity-area, in-program calculation, a secondary computation of discharge is also computed using a standard pipe flow equation with the near-continuous water depth data and manual measurements of pipe diameter and slope.

While every effort is made to collect near-continuous, accurate data, we identify the following possible limitations of this program and gaging in urban systems:

- Site visits may be limited to less than 6 times per year and may not document some changes in conditions that affect flow (e.g., channel erosion, sediment or garbage accumulation in a culvert, vandalism, stream depths that are lower than instrument sensor, etc.).
- Some gaging stations are near confluences with larger tributaries or the Truckee River and therefore backwatering can occur. Efforts are made to identify periods of backwatering and replace erroneous data with periods of estimated streamflow or discharge.
- The gaging program is not intended to be used to quantify flood magnitude, frequency or recurrence intervals. Oftentimes urban flooding generates unsafe conditions to access the gage. Moreover, while stormwater can cause flooding, not all flood waters are stormwater and sampling floodwaters may be inappropriate for the purposes of this program.

4.4 Manual Streamflow/Discharge Measurements

Balance utilized standard streamflow equipment and practices appropriate for the conditions encountered in the field (Carter and Davidian, 1968). Discharge was measured or estimated each time stormwater was sampled. A digital velocity meter was used to measure velocity and compute instantaneous stormwater discharge in closed stormwater systems (i.e., pipes) accessed by a manhole, whereas a pygmy, standard Price AA (bucket-wheel) meter or a digital velocity meter was used in open channel systems. The Mid-Section Method for computing cross-sectional flow area using multiple verticals and the Six-Tenths-Depth Method for computing mean velocity at each vertical were used (Turnipseed and Sauer, 2010). A minimum of 2 verticals were used to measure velocity in a pipe. A minimum of 4 verticals were used to measure channel depth and velocity in open channels. The total number of verticals was established based on how quickly water depth was changing. Each open channel monitoring station includes a staff plate, which allowed for a consistent datum to be used for stage readings. The

cross-sectional area of the pipe or open channel was then multiplied by the velocity measured at the cross-section to compute an instantaneous discharge. Streamflow estimates were completed using measured flow widths (feet) and depths (feet) and measurements of surface velocity using a float's movement across a known distance with a stopwatch (feet/sec).

4.5 Automated Sampling and Discharge Computation

In FY2018, Balance operated and maintained Teledyne-ISCO® 6712 automated samplers at 7 Stations (4 stormwater urban outfall stations and 3 tributaries):

1. Arlington (station code: H-19);
2. Oxbow Nature Park (station code: C-24);
3. Fisherman's Park II (station code: D-16);
4. Mary Wahl Drain (station code: SDOE-008936);
5. Yori Drain at Steamboat Creek (YD@SBC);
6. North Truckee Drain at Big Fish Drive (NTD@BFD); and
7. Steamboat Creek at Clean Water Way (SBC@CWW).

Automated samplers at 5 of these stations (1-5) are equipped with ISCO® 750 area-velocity module, which allows for computation of discharge rates and discharge volume for the duration of sampled events. Automated samplers were programmed to measure stormwater depth and velocity every 5 minutes and initiate sampling once an increase in flow was detected.

Rainfall depth-runoff volume rating-curves were established at each stormwater urban outfall in an effort to use flow-weighted sampling techniques—such that samples are automatically collected at intervals of equal runoff volume. Harmel and others (2003) note that flow-weighted sampling best represents storm loads because a greater number of samples are collected at higher flow rates.

The Yori Drain station (5) hydrology is complicated by the fact that it can receive a significant volume of discharge from the Truckee River via the Pioneer Ditch. These discharges are not based on precipitation but are controlled by diversion operations. As such, flow-weighted sampling is not possible and time-weighted sampling is performed.

The 2 remaining stations (6 and 7) included automated samplers co-located with USGS stream gages and programmed for time-weighted sampling. Samples were collected at equal time intervals based on the anticipated duration of the storm-runoff event. Time intervals ranged between 30 minutes and 2 hours, and often times were changed to a more or less frequent interval to accommodate changes in the event and appropriately characterize stormwater quality.

Following each sampling event, the storm hydrograph and timing of sample collection was examined at all automated sampling stations in order to evaluate which samples best captured different portions of the storm hydrograph. Discrete samples were composited into 4 final samples, each representing a component of the hydrograph: 1) first flush, 2) rising limb, 3) peak discharge, and 4) falling limb. Composites were used to fill laboratory-provided bottles and delivered to the laboratory in accordance with the 2015 SAP. Physical water quality parameters were measured directly[2] from the source upon readying the sampler and upon retrieving samples.

4.6 Calculation of Constituent Loads and Yields

Constituent concentrations from grab samples only provide limited information on the range of concentrations in a single storm event for a given location. We know from the collection of grab samples over an entire hydrograph for a single event, concentrations can range from one to three orders of magnitude, depending on the constituent. Ultimately, the grab sample or 'snapshot' approach leaves many gaps in characterization of the system (McKay and others, 2013). Instantaneous discharge measured at the time of sample collection can improve our knowledge because it provides a measure of instantaneous load; however, without information about the range of likely concentrations over a runoff event or season, this technique provides limited information.

Calculation of constituent loads for a given event is a key objective for many non-point source monitoring projects and is usually a more meaningful indicator than constituent concentration. Constituent loads are a measure of mass transported over time, and can

[2] Efforts are made to measure physical water quality parameters directly from the runoff source; however, runoff may not be active at some locations (e.g., urban outfalls) upon each site visit (e.g., processing samples from an automated sampler). In these cases, parameters are measured directly from the composited samples; however, some measures may not be representative of the runoff source due to the residence time of the samples in the sampler.

only be calculated when both the constituent concentration (mass/volume of water) and discharge (volume of water/time) are known:

Load (lbs.) = stormwater discharge volume (cubic feet) x concentration (mg/L) x conversion coefficient

Once loads are calculated, they can then be compared to TMDLs established for the Truckee River.

4.7 Quality Assurance and Quality Control

The 2017 SAP outlines a quality assurance and quality control (QA/QC) project plan. Balance followed this plan using a combination of field quality control activities and data assessment and validation techniques during the monitoring program. Field quality control activities included: a) assigning a minimum of one senior and experienced staff to each field team, both members of which are trained in stormwater sampling procedures and streamflow or discharge measurements; b) adherence to approved methods and procedures; c) pre- and post-event calibration of field equipment and instruments; d) field collection and analysis of duplicates and bottle blanks, and; e) complete documentation of sampling and observations.

In some cases, laboratory results indicated a 'non-detect' for constituents common in stormwater or were measured below the laboratory's reporting limits. If we suspected concentrations to be present, but below the laboratory reporting limits, we requested the measured values from the laboratory (often referred to as J-values or the respective note number or ID in the laboratory report).

All site visits, staff present, and observations were documented in observer logs and are provided in **Appendix A**. All field equipment and instruments were calibrated before and after each storm and records of calibrations are provided in **Appendix B**.

Separately, Balance designated a staff member who was not involved with the field activities to perform a review of all collected data, calculations, and laboratory results, in accordance with the Quality Assurance and Quality Control (QA/QC) procedures in the 2017 SAP.

4.8 Deviations from the Sampling and Analysis Plan

Weather conditions, hydrologic response, time of day, and/or need for expediency occasionally required deviations from procedures set forth in the 2017 SAP. The following are deviations from the 2017 SAP during the FY2018 monitoring year:

- Stormwater sampling excluded analysis for E. coli during many events because the laboratory hold times could not be met (storm sampling was conducted after hours and on weekends).
- In some cases, where automated samplers are used, samples were not collected during one or more segments of the storm hydrograph (i.e., rising limb, peak flow, etc.) as the result of instrument malfunction, power loss, and/or insufficient sample volume. In these cases, loads reported are underestimates of the actual load. This occurred at H-19 (Arlington) on September 6, 2017 and Mary Wahl on November 15-17, 2017.
- Some stations can be subject to backwatering from downstream flooding (i.e., Truckee River). This occurred during the April 6-7, 2018 at Yori Drain and Steamboat Creek at Clean Water Way. As a result, grab samples were collected upstream of backwater influenced waters to characterize the stormwater quality.

5 MONITORING RESULTS FY2018

Below, we describe total precipitation for FY2018, characterize the storms targeted for sampling and the regional hydrologic response, and conclude with a summary of results for constituent concentrations and calculated instantaneous daily, and total storm loads. Analytical results are presented graphically for visual analysis herein. The tabular results and laboratory reports can be found in **Appendix C** and **Appendix D**, respectively.

5.1 Work Conducted in FY2018

In accordance with the 2017 SAP, Balance collected 2 stormwater samples at all 15 monitoring stations across 7 different storms. (**Table 5-1**). Separately, baseflow or ambient samples were collected at all the tributary stations on September 20, 2017 to characterize summer baseflow and on February 6, 2018 to characterize winter baseflow. Summer baseflow may also coincide with the irrigation season (April to October). Baseflow conditions were defined as a non-storm period with a minimum of 10 consecutive dry days preceding the day of sampling.

Table 5-1 Storm events sampled in FY2018 and stations sampled in each event

Fiscal Year 2018 (July 1, 2017 - June 30, 2018)		Storms Sampled							
		August 6, 2017	*August 22, 2017*	*September 6, 2017*	*Nov 15-17, 2017*	*January 18, 2018*	*March 13, 2017*	*April 6, 2018*	FY2018 Sample Count
Station	*Station ID*								
Tributaries									
Steamboat Cr at Rhodes Rd	SBC@RR				X			X	2
Steamboat Cr at Narrows	SBC@NAR				X			X	2
Steamboat Cr at Clean Water Way	SBC@CWW				X			X	2
Whites Cr at Old Virginia Hwy	WC@OVH		X		X				**2**
Thomas Cr at S. Meadows Pkwy	TC@SMP				X		X		**2**
North Truckee Drain at Orr Ditch	NTD@ORD				X			X	2
North Truckee Drain at Big Fish Dr.	NTD@BFD				X			X	2
Chalk Cr at Chalk Bluff	CC@CB				X		X		**2**
Alum Creek at Truckee River	AC@TR				X			X	2
Yori Drain at Steamboat Creek	YD@SBC				X			X	2
Boynton Slough at Steamboat Creek	BS@SBC		X		X				**2**
Urban Outfalls									
Oxbow Nature Park	C-24			X	X				**2**
Arlington	H-19	X		X					**2**
Fisherman's Park II	D-16				X	X			**2**
Mary Wahl Ditch	SDOE008936				X			X	2

Notes:

X = Denotes that samples were collected at this station during the identified storm event

In FY2018, Balance operated and maintained 4 near-continuous streamflow gaging stations on monitored tributaries: (1) Chalk Creek at Chalk Bluff (CC@CB); (2) Alum Creek at Truckee River (AC@TR); (3) Thomas Creek at South Meadows Parkway (TC@SMP); and (4) Yori Drain at Steamboat Creek (YD@SBC). Near-continuous streamflow records (15-minute data were collected for all stations except Yori Drain. Near-continuous streamflow data were collected at 5-minute intervals for Yori Drain. All stations were calibrated with manual observations of stage and stage shifts were applied where appropriate to produce an annual hydrograph at each station. Annual hydrographs from other monitored tributary stations were sourced from near-continuous streamflow gaging stations operated and maintained by the US Geological Survey (USGS) or Truckee

Meadows Water Authority (TMWA). Instantaneous and cumulative streamflow volumes measured at all stations together with sampled constituent concentrations were used to calculate instantaneous, daily, and/or total storm loads.

5.2 Precipitation Summary FY2018

Due to the spatial and temporal variability in rainfall across the Truckee Meadows, precipitation data used for this study were evaluated from 6 precipitation stations (see **Figure 3-1**). Cumulative daily precipitation across stations is compared in **Figure 5-1** and highlights the spatial variability of precipitation in the Truckee Meadows in FY2018. Rainfall spatial variability in the Truckee Meadows is common along the Sierra Nevada Front and is associated with several factors including storm type (frontal, convective, etc.) and storm direction. Most storms having a west to east direction result in a rain-shadow effect in which less rainfall is observed further east of the Carson Range mountain front. During isolated summer thunderstorms, measurable rainfall may fall on some portions of the Truckee Meadows while other areas receive none. Across the Truckee Meadows total annual precipitation in FY2018 ranged from as low as 4.71 inches in North Truckee Drain at Orr Ditch (North Sparks) to 15.29 inches in Thomas Creek (South Reno), illustrating the rain-shadow effect. Precipitation spatial variability in each storm sampled is shown in **Table 5-2** and further highlights the rain shadow effect across the Truckee Meadows. For instance, the November 15-17, 2017 storm exhibited between 0.46 inches (North Truckee Drain at Orr Ditch) and 3.81 inches (Mogul). FY2018 annual precipitation at the Reno-Tahoe International Airport, centrally located in the Truckee Meadows, was 8.16 inches, slightly above the long-term climate normal precipitation (7.40 inches; 1981-2010) for this station.

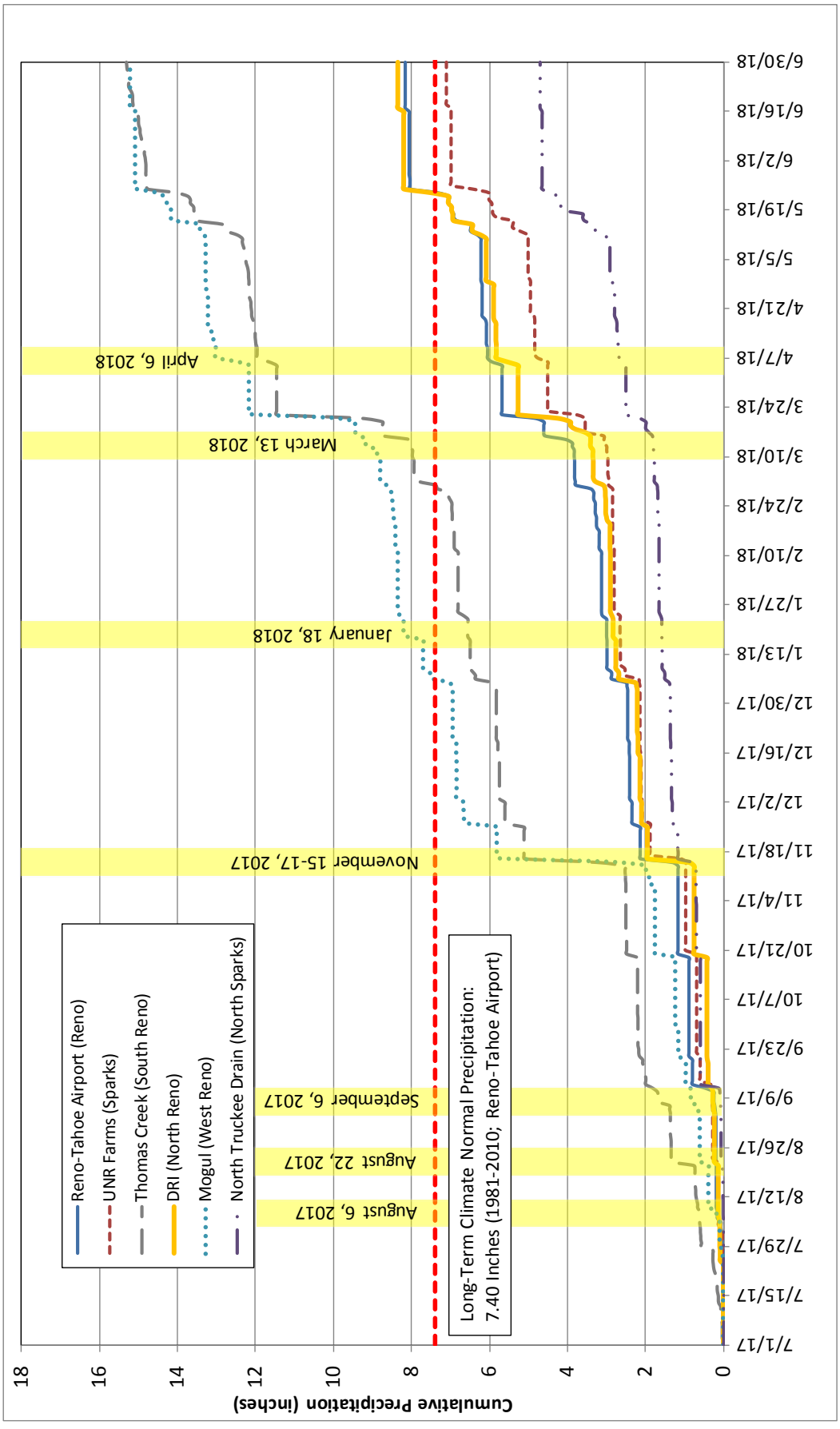


Figure 5-1 Cumulative Precipitation at 6 Different Rain Gages, Truckee Meadows, Nevada, FY2018
Precipitation occurrence, depths and durations varied widely across the area. The 7 events that were sampled are highlighted.

Table 5-2 Summary of Precipitation Depths for 6 Stations over Sampled Storm Events, Truckee Meadows, FY2018

Rainfall gage	Location	Storm Events Sampled						
		August 6, 2017	*August 22, 2017*	*September 6, 2017*	*November 15-17, 2017*	*January 18, 2018*	*March 13, 2018*	*April 6, 2018*
		(inches)						
Reno-Tahoe Airport	Reno	0.09	0.01	0.01	0.97	0.01	0.05	0.26
UNR-Farms	Sparks	--	0.12	0.01	0.91	0.01	0.07	0.24
DRI	North Reno	0.02	0.10	0.02	1.20	0.07	0.06	0.28
USGS-Mogul	West Reno (Mogul)	0.03	0.22	0.10	3.81	0.45	0.27	0.35
USGS-N. Truckee Drain	North Sparks	0.01	0.04	0.01	0.46	0.01	0.03	0.09
Thomas Creek	South Reno	--	0.58	0.02	2.59	0.06	0.09	0.20
	Min	0.01	0.01	0.01	0.46	0.01	0.03	0.09
	Max	0.09	0.58	0.10	3.81	0.45	0.27	0.35

5.3 FY2018 Hydrologic Response

Annual hydrographs for 7 tributaries to the Truckee River monitored in FY2018 are presented in this section along with descriptions of hydrologic response to storms according to near-continuous streamflow records from gaging stations operated and maintained by Balance Hydrologics, TMWA, and USGS. We show daily mean streamflow for the Truckee River and near-continuous streamflow (5- or 15-minute data) for all monitored tributaries. The higher resolution 5-minute data are required at some stations to illustrate the urban nature of stormwater runoff in these tributaries where instantaneous streamflow can exceed the daily mean streamflow by an order of magnitude.

5.3.1 Truckee River Hydrologic Response, FY2018

Figure 5-2 shows FY2018 daily mean streamflow for the Truckee River at three different USGS gaging stations within the Truckee Meadows: Truckee River at Mogul, Truckee River at Reno, and Truckee River at Vista, in FY2018. These gaging stations were selected because they bracket the upstream and downstream extents of the Truckee Meadows where tributaries and outfalls sampled under this program discharge to the Truckee River.

At the beginning of the fiscal year (July 2017), during baseflow conditions, daily mean streamflow continued to recede from the spring snowmelt recession and dam storage operations upstream and measured 1,773 cfs (Mogul), 1,725 cfs (Reno), and 2,092 cfs (Vista) on July 1, 2017. Baseflow receded to between 300 cfs and 500 cfs by end of July. Several convective storms were observed and sampled in August and September; however, these events marginally increased daily mean streamflow in the Truckee River. A significant frontal storm on November 15-17, 2017 increased daily mean streamflow to over 2,000 cfs at Reno and Vista gaging stations. Natural runoff and releases from upstream reservoirs sustained daily mean streamflow in the Truckee River between 300 cfs and 500 cfs through the winter months with small increases from smaller events in January and March 2018. Additional larger events occurred in late March and early April and resulted in the peak daily mean flow (5,249 cfs, Vista), and annual peak flow on April 7, 2018. Daily streamflow receded to baseflows into the summer months with occasional increases from smaller storm events.

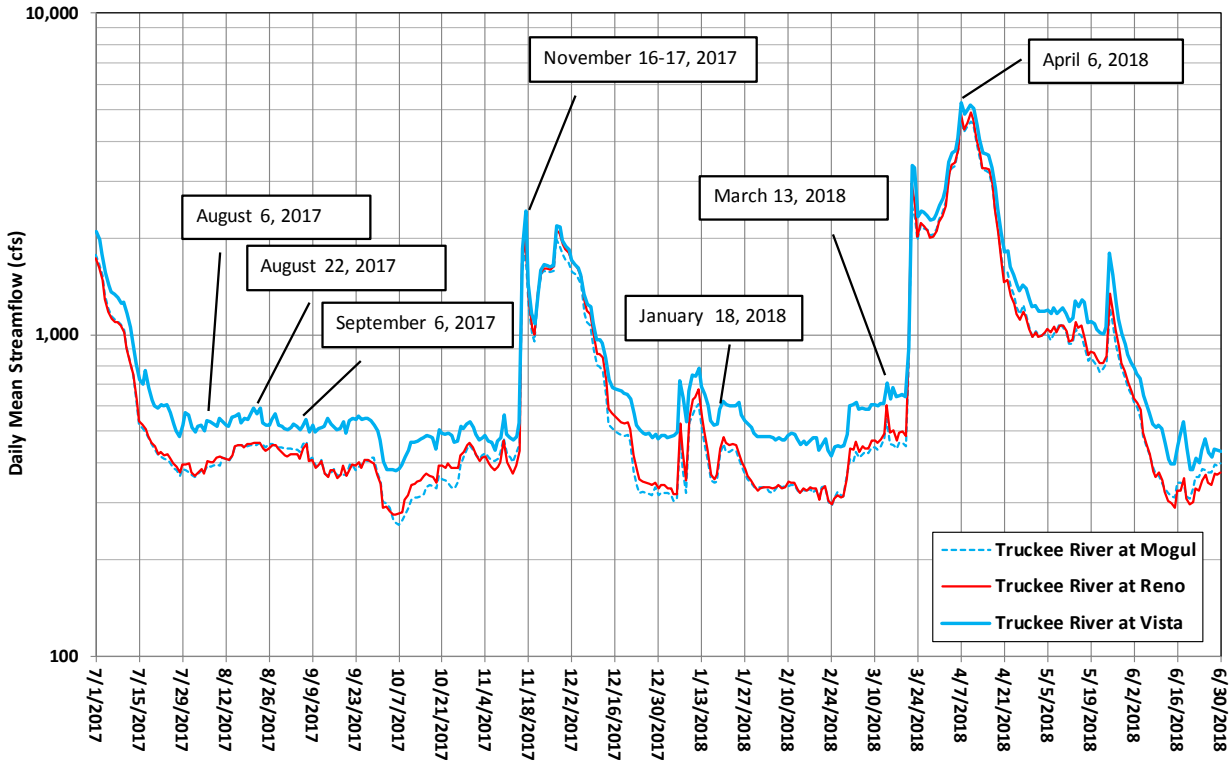


Figure 5-2 **Daily Mean Streamflow, Truckee River at Three Stations, Truckee Meadows, Nevada, FY2018** As the Truckee River flows through the Cities of Reno and Sparks, it receives contributing flows from North Truckee Drain, Steamboat Creek and several other smaller tributaries and stormwater urban outfalls. Hydrologic response in the Truckee River to 7 sampled storms in FY2018 are identified.

5.3.2 North Truckee Drain Hydrologic Response, FY2018

Figure 5-3 displays a record of near-continuous (15-minute) streamflow in the North Truckee Drain (NTD) at two monitoring stations, Orr Ditch (NTD@ORD) and Big Fish Drive (NTD@BFD) in FY2018. At the beginning of the fiscal year, baseflow in the North Truckee Drain was measured to be near 1 cfs at NTD@ORD and approximately 5 cfs downstream at NTD@BFD. Streamflow records at both stations exhibited rapid rising and falling limbs of the hydrograph during storm events and reflected a high degree of imperviousness in the watershed. Notable storms and peak flows were measured at NTD@BFD on November 16, 2018 (97 cfs), March 22, 2018 (74 cfs), May 19, 2018 (80 cfs), and May 25, 2018 (112 cfs). The last storm, on May 25was the annual peak flow for this station. Streamflow in June 2018 returned to values similar to those observed in the beginning of the fiscal year. Stormwater was sampled from both stations on November 16, 2017 and April 7, 2018. Baseflow was sampled from both stations on September 20, 2017 and

February 7, 2018 to characterize the summer and winter ambient water quality, respectively.

We note that automated sampling equipment at NTD@BFD was not installed until October 2017; therefore, a grab sample was collected at this location in the absence of continuous samples in a 24-hour period.

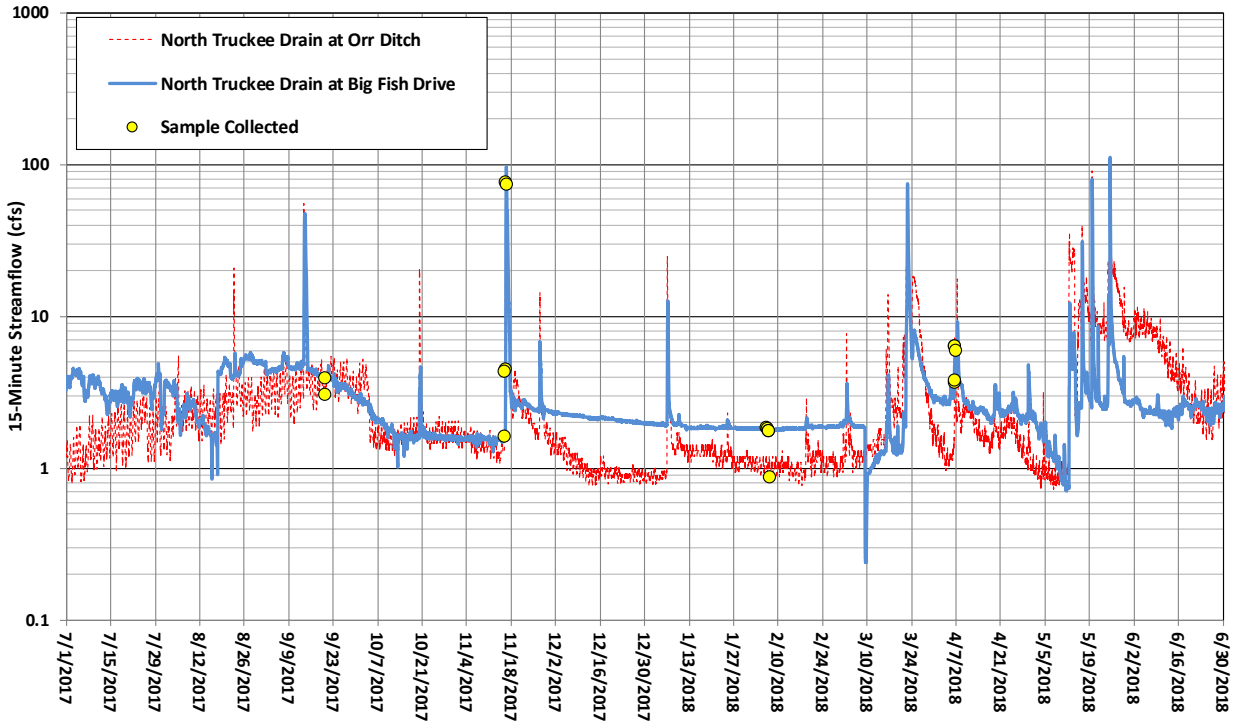


Figure 5-3 Continuous (15-minute) Streamflow, North Truckee Drain at Orr Ditch and Big Fish Drive, Truckee Meadows, Nevada, FY2018

5.3.3 Steamboat Creek Hydrologic Response, FY2018

FY2018 continuous streamflow for three monitoring stations on Steamboat Creek at Rhodes Road (SBC@RR), the Narrows (SBC@NAR), and Clean Water Way (SBC@CWW) are shown in **Figure 5-4**. Snowmelt recession continued into early August with streamflows measuring 150 cfs (SBC@RR), 221 cfs (SBC@NAR), and 237 cfs (SBC@CWW) measured on July 1 and falling to seasonal lows of 8 cfs (SBC@RR), 21 cfs (SBC@NAR), and 38 cfs (SBC@CWW) by mid-October. Notable storms and peak flows were measured at SBC@CWW on November 17, 2018 (477 cfs), March 22, 2018 (n/a cfs), May 16, 2018 (317 cfs), and May 25, 2018 (467 cfs). SBC@CWW became backwatered by high flows on the Truckee River between March 22 and April 20, 2018; however, based on the peak flow of

773 cfs measured at SBC@NAR on March 22, 2018, we can assume this was also the annual peak flow for the downstream station (SBC@CWW). Streamflow in June 2018 rapidly receded to values similar to or much below those observed in the beginning of the fiscal year. Stormwater was sampled from both stations on November 16, 2017 and April 7, 2018. Baseflow was sampled from both stations on September 20, 2017 and February 7, 2018 to characterize the summer and winter ambient water quality, respectively.

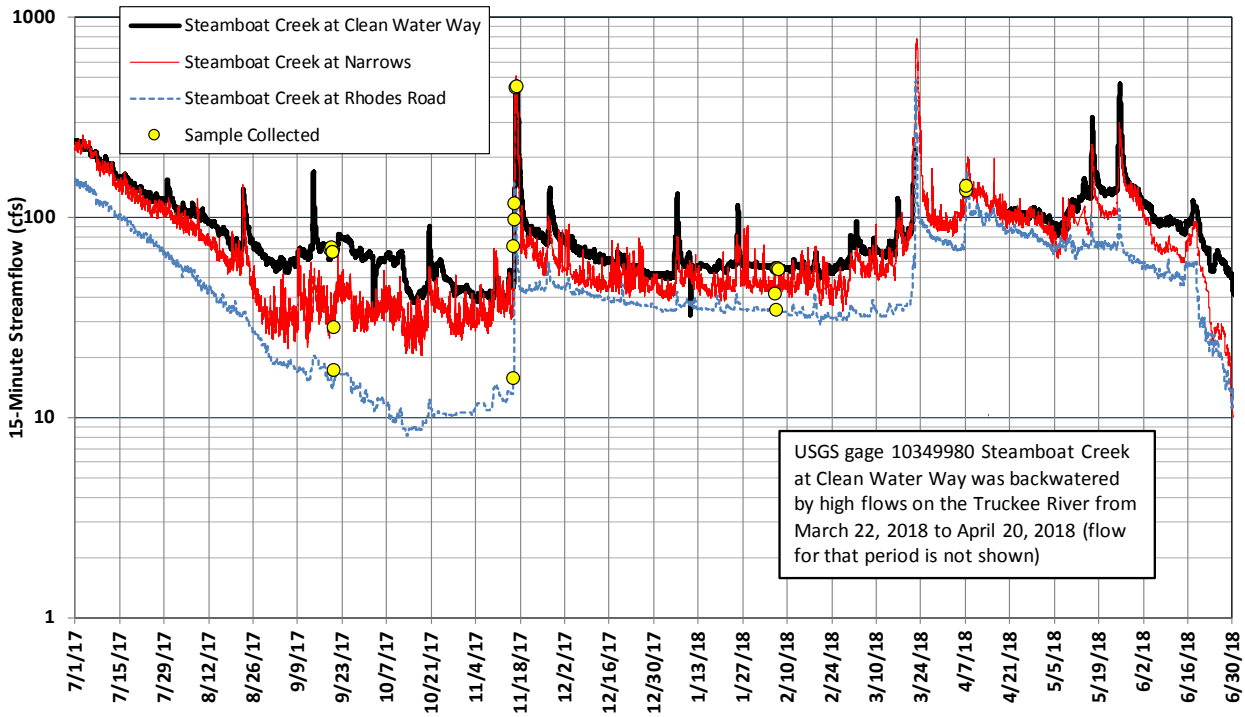


Figure 5-4 Continuous (15-minute) Streamflow, Steamboat Creek at Three Stations, Truckee Meadows, Nevada, FY2018

5.3.4 Alum Creek Hydrologic Response, FY2018

Figure 5-5 shows 15-minute streamflow for Alum Creek at Truckee River in FY2018. Manual measurements of streamflow and the collection dates of water quality samples are also shown. The hydrograph for Alum Creek exhibited flashy peak flows with rapid rise and fall of stage, indicative of an urbanized watershed. In the absence of manual streamflow measurements greater than 10 cfs at this station, a record of continuous streamflow required estimating peak flows. We used standard hydrographic techniques including the continuity equation (Flow = Area*Velocity) where cross-sectional area was measured from high-water marks at the station, and velocity was obtained using the Manning's

Equation. Because peak flows are estimated, the stage-discharge rating curve for this gage is rated fair. Streamflow below roughly 0.2 cfs is also difficult to measure accurately at this station.

Alum Creek exhibited a baseflow near 1.5 cfs in the beginning of the fiscal year. The streamflow instrument was intermittently above the water surface between late July and early October and therefore, a record of streamflow is unreported. Streamflow was measured below 1 cfs into October, but gradually increased into November. An estimated peak flow of 43 cfs occurred on November 16, 2017. Streamflow receded below 0.25 cfs into the winter months with some short-lived increases and small peaks above 1 cfs. Annual peak flow estimated to be roughly 90 cfs was recorded on March 22, 2018 with smaller peak flows on April 7, 2018 (13 cfs), April 23, 2018 (16 cfs), May 7, 2018 (30 cfs), May 16, 2018 (21 cfs), and May 25, 2018 (29 cfs). Streamflow continued into the end of the fiscal year above 2.0 cfs.

Stormwater samples were collected on November 15, 2017 and April 7, 2018. Baseflow samples were collected on September 20, 2017 and February 7, 2018.

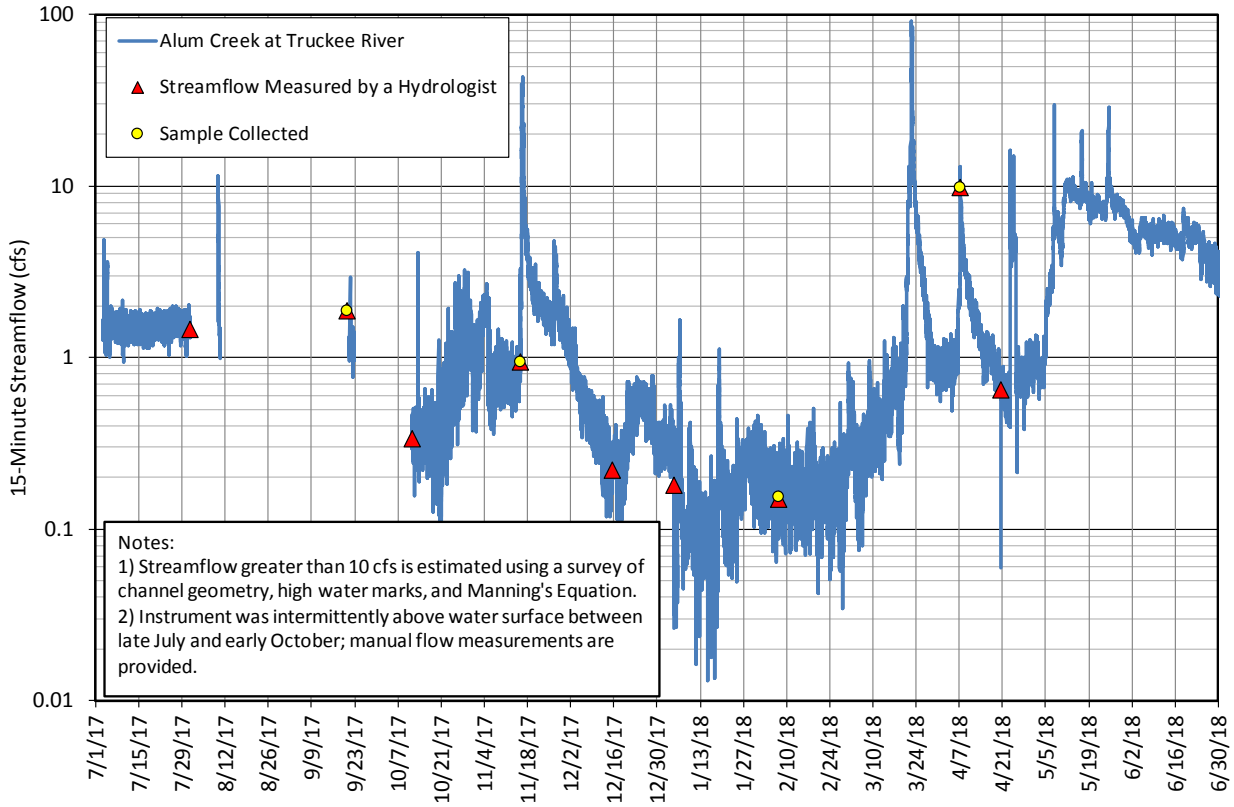


Figure 5-5 Continuous (15-minute) Streamflow, Alum Creek at Truckee River, FY2018

5.3.5 Chalk Creek Hydrologic Response, FY2018

Figure 5-6 shows 15-minute continuous streamflow for Chalk Creek at Chalk Bluff in FY2018. Manual measurements of streamflow and collection of water quality samples are also shown. Chalk Creek exhibited flashy peak flows with rapid rise and fall in streamflow, indicative of an urbanized watershed. Streamflow exceeding 16 cfs is based on an extrapolation of the stage-discharge rating curve as estimated using high-water marks and hydraulic geometry.

Chalk Creek exhibited perennial streamflow with daily mean baseflow measured between roughly 0.6 and 1.0 cfs. Storm events increased streamflow on multiple occasions in FY2018 with estimated peak flows between 20 and 26 cfs. The annual peak flow was estimated to be roughly 26 cfs on May 25, 2018.

Stormwater samples were collected on November 15, 2017, and March 13, 2018. Baseflow water samples were collected on September 20, 2017, and February 2, 2018.

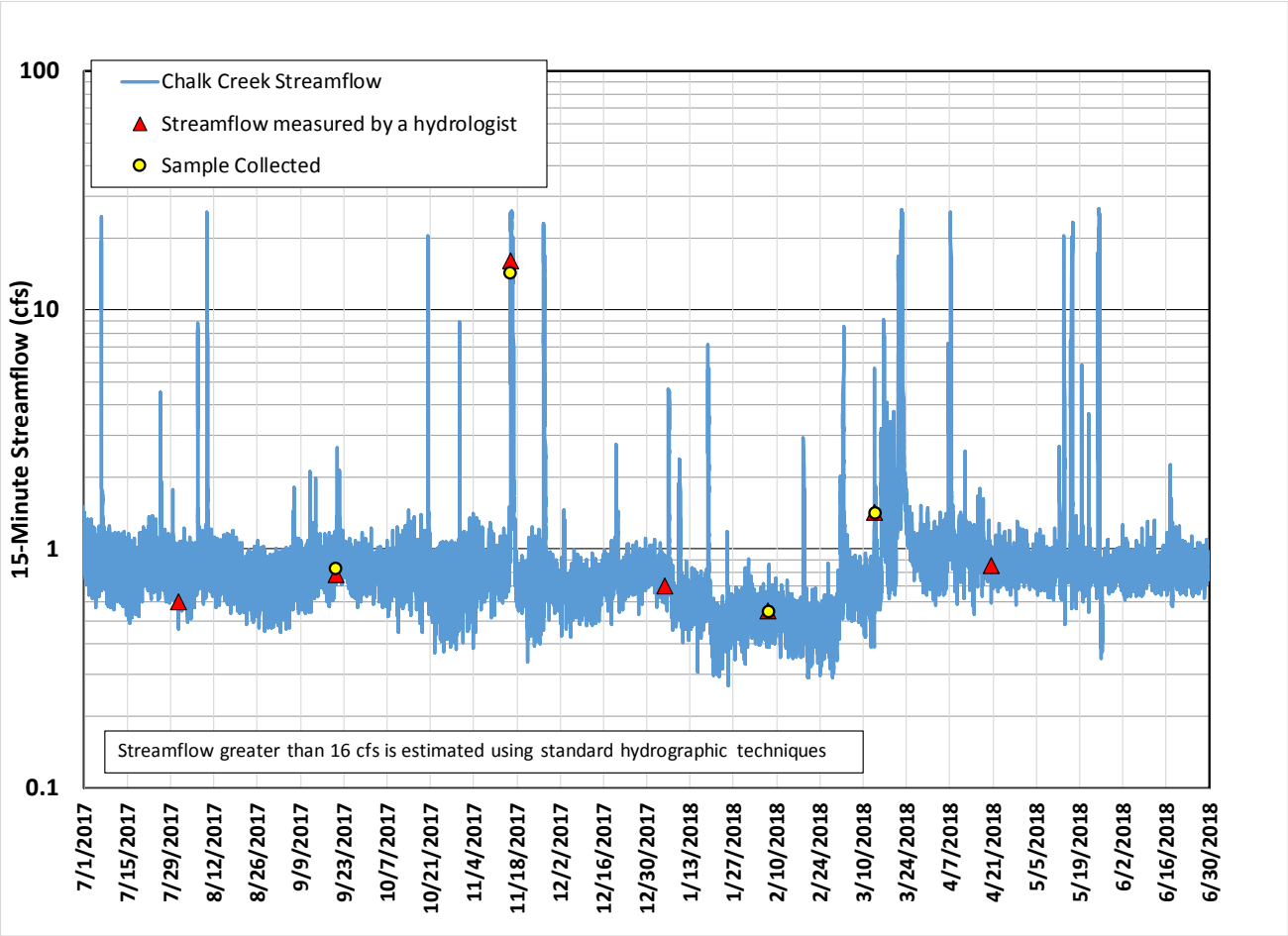


Figure 5-6 Continuous Streamflow (15-minute), Chalk Creek at Chalk Bluff, FY2018

5.3.6 Thomas Creek Hydrologic Response, FY2018

Figure 5-7 shows 15-minute continuous streamflow for Thomas Creek at South Meadows Parkway in FY2018. Manual measurements of streamflow and collection of water quality samples are also shown. Thomas Creek originates above 8,000 feet and receives snowmelt runoff from Mount Rose, urban runoff from the lower watershed, and irrigation return flows from Last Chance Ditch. As such, we observed daily fluctuations in streamflow associated with a diurnal snowmelt cycle and flashy peak flows (rapid rise and fall of stage), indicative of urban stormwater runoff and/or irrigation return flows.

In FY2018, we observed a beaver dam downstream of the gaging station that backwatered the instruments. The period of record subject to backwatering was removed. A new gaging station was installed approximately 150 feet upstream and beyond the influence of the beaver dam. A preliminary stage-to-discharge rating curve for the new station is still being developed. Therefore, streamflow is estimated using standard hydrographic methods for values above those manually measured (3.7 cfs).

Thomas Creek exhibited perennial streamflow in FY2018. Baseflow in the beginning of the fiscal year continued to reflect a snowmelt recession with daily mean baseflow measured around 10.0 cfs but rapidly falling to near 2.0 cfs. Fluctuations in streamflow, absent of precipitation, are likely associated with irrigation return flows. Storm events increased streamflow on multiple occasions in FY2018 with peak flows recorded on October 23, 2017, November 16, 2017 (observed), March 22, 2018, April 7, 2018, and May 16 and 25, 2018. Streamflow receded into the summer months to near 1.0 cfs by the end of the fiscal year.

Stormwater samples were collected on November 16, 2017, and March 13, 2018. Baseflow water samples were collected on September 20, 2017, and February 6, 2018.

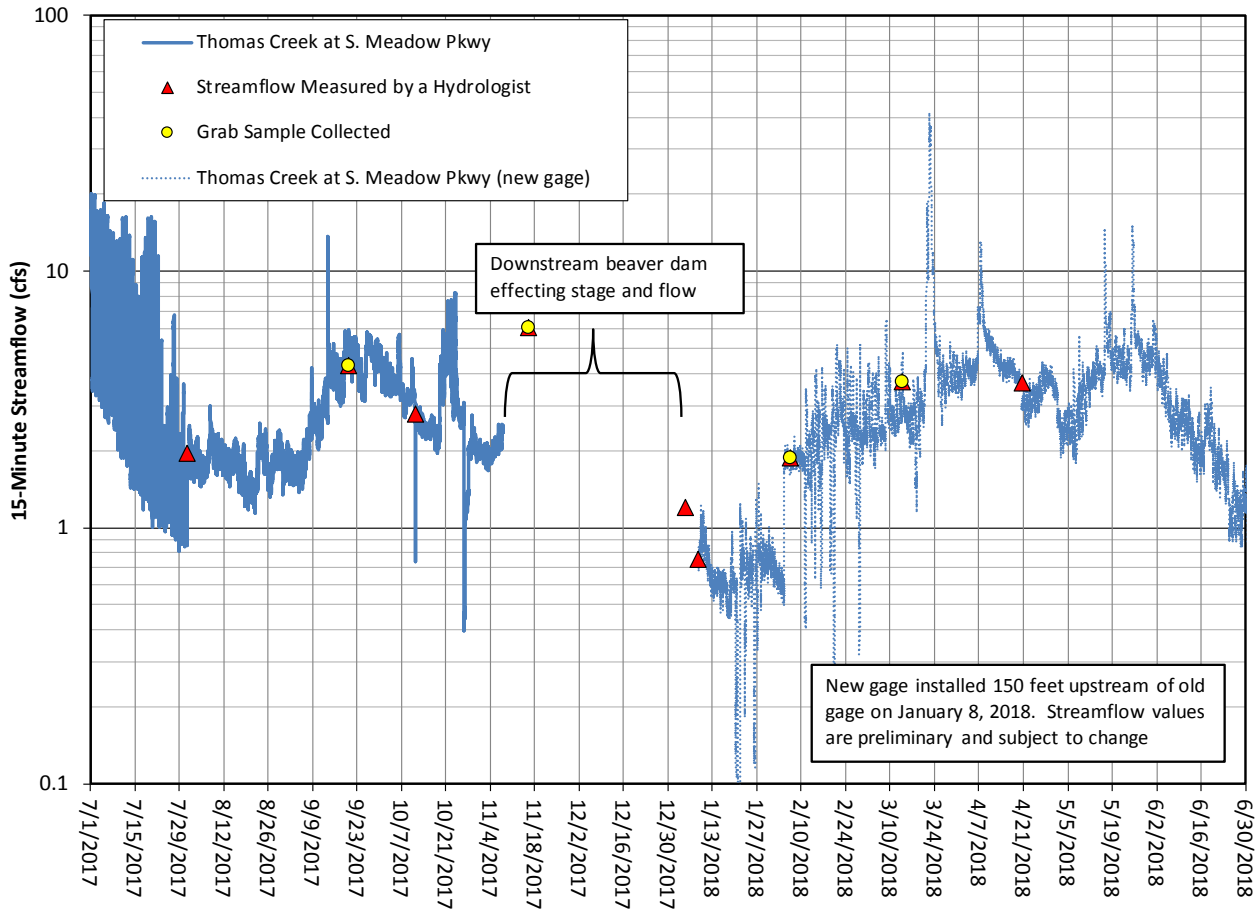


Figure 5-7 Continuous Streamflow (15-minute), Thomas Creek at S. Meadows Parkway, FY2018

5.3.7 WHITES CREEK HYDROLOGIC RESPONSE, FY2018

Figure 5-8 shows hourly streamflow on Whites Creek at Old Virginia Highway and collection of water quality samples. This gaging station is operated and maintained by TMWA; accuracy of streamflow was not verified. Whites Creek exhibited perennial streamflow in FY2018. Baseflow in the beginning of the fiscal year followed a snow-melt recession from over 25 cfs on July 1 to a steady baseflow between 7 cfs and 9 cfs by August. A rapid reduction in baseflow from roughly 7.5 cfs to 3.0 cfs occurred on October 20, 2017 and may be related to the end of irrigation season. A storm event increased streamflow on November 15, 2017; however, power failures prevented recorded streamflow for this period. Annual peak flow occurred on March 22, 2018 for this station; however, we documented high-water marks above the top of the flume which suggested that the flow exceeded the capacity of the flume. The maximum capacity of the flume is approximately 45 cfs (Steeland, K., pers. comm., 2018). Baseflow increased

from about 4 cfs to over 10 cfs on May 7, 2018; likely the result of irrigation releases. Additional storms increased streamflow over 20 cfs on May 15, May 24, and June 6, 2018. Baseflow receded to near 4 cfs by the end of the fiscal year.

Stormwater quality samples were collected on August 22, 2017 and November 15, 2017; however, no streamflow information is available for the November sampling event, as such, no constituent instantaneous loads were calculated. Baseflow water quality samples were collected on September 20, 2017 and February 7, 2018.

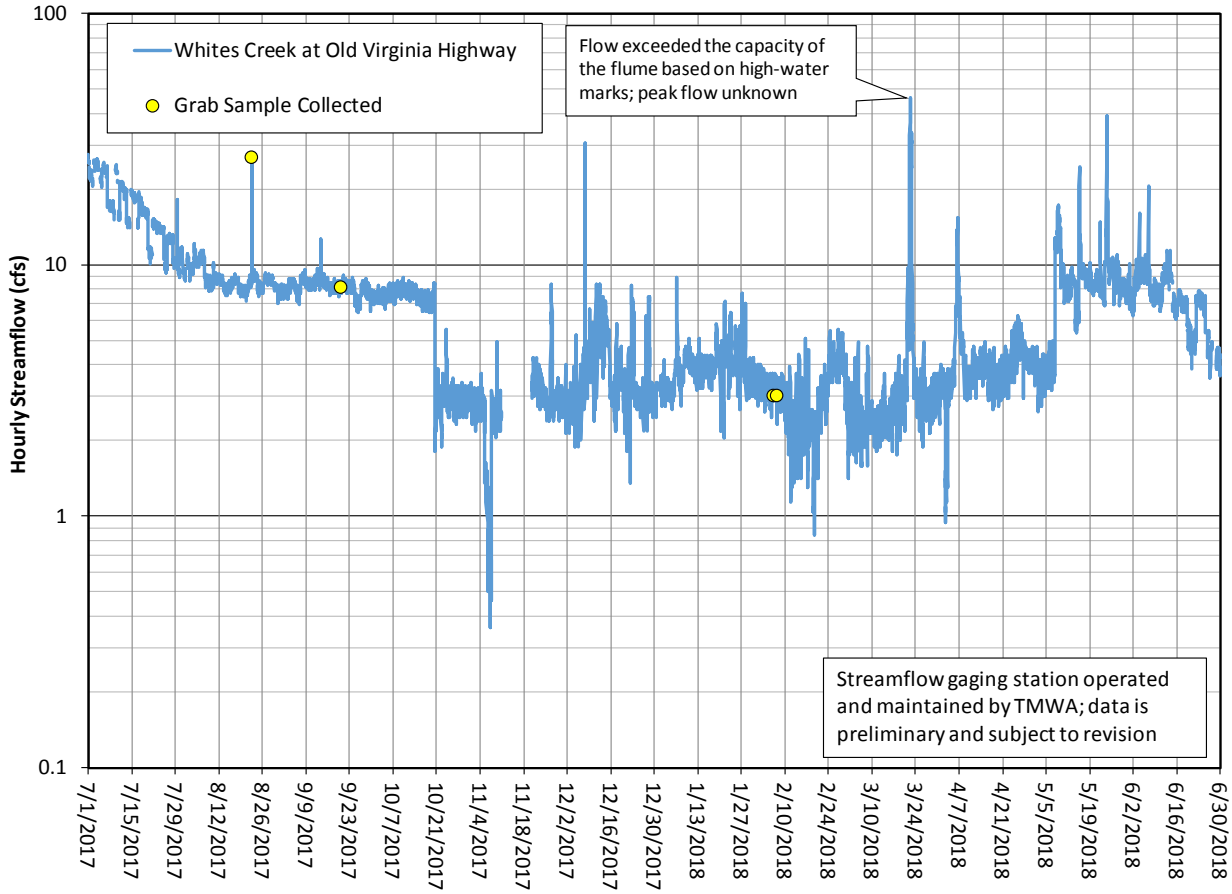


Figure 5-8 Continuous Streamflow (hourly), Whites Creek at Old Virginia Highway, FY2018. (Data provided by TMWA, preliminary and subject to revision).

5.3.8 YORI DRAIN HYDROLOGIC RESPONSE, FY2018

Figure 5-9 shows discharge events for Yori Drain, a tributary to Steamboat Creek, in FY2018. Near-continuous data is reported in 5-minute intervals due to the flashy nature of runoff in this urban channel. This is a new station in FY2018, instrumented in October

2017 with an ISCO automated sampler; therefore, we present a partial period of record in FY2018. Hydrology in Yori Drain is dependent on diversions from Pioneer Ditch (irrigation ditch), changes in streamflow may not be dependent on precipitation. As a result, flow-weighted sampling is not feasible. Instead, sampling at this station is time-weighted and near-continuous discharge is recorded.

Based on observations in previous years and on the partial period of record in FY2018, Yori Drain exhibits perennial flow. Baseflow can range between 2 cfs and 8 cfs. Peak flows may exceed 100 cfs. The outfall (and instrument) was backwatered by Steamboat Creek during flood events on November 15-17, 2017 and March 22-23, 2018, and April 6-12, 2018. During these periods, streamflow could not be accurately recorded. Equipment failure also prevent recorded streamflow from January 13, 2018 through February 1, 2018.

Stormwater sampling in Yori Drain was attempted in the November 15-17, 2017 and April 6-7, 2018 storm events. In both events, backwatering from Steamboat Creek hindered sampling of Yori Drain waters at the station. Instead, grab samples were collected in these events upstream of the influence of backwatering. Baseflow samples were collected as a grab sample on September 20, 2017 and on February 6-7, 2018 using the automated sampler. Additional efforts to collect multiple storm samples using the automated sampler were examined; however, subsequent storms did not meet the 10-day dry period requirement per the 2017 SAP.

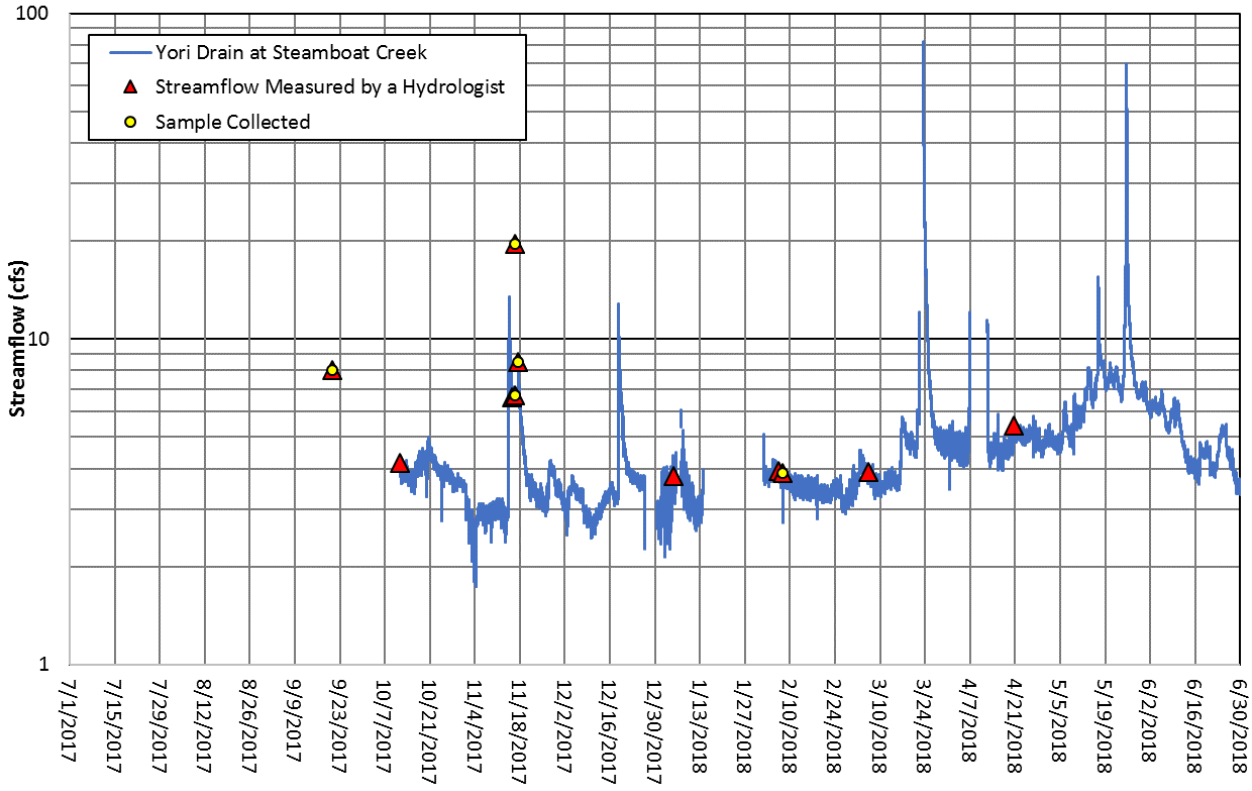


Figure 5-9 Continuous Streamflow (5-minute), Yori Drain at Steamboat Creek, FY2018

5.3.9 ARLINGTON (H-19) STORMWATER URBAN OUTFALL HYDROLOGIC RESPONSE, FY2018

Figure 5-10 shows discharge events for the stormwater urban outfall located at Arlington Street (H-19) in FY2018. Near-continuous data is reported in 5-minute intervals due to the flashy nature of runoff in this stormwater urban outfall. This station was outfitted with Campbell Scientific telemetry on December 8, 2017, which allows for remote data acquisition. This station exhibited short lived runoff during precipitation events and is dry during non-storm periods; however, we measured some runoff events during non-storm periods which may be the result of residential irrigation runoff, illegal discharges, or urban nuisance flow. Such events occurred daily through much of October 2017.

In FY2018 backwatering from the Truckee River affected the instrument at the outfall during flood events on March 22, 2018, and for the period between April 2 and April 18, 2018. As such, the April 7, 2018 storm event was not recorded and could not be sampled.

In FY2018, when the outfall was not backwatered, multiple peak flows exceeded 5 cfs, with the annual peak flow of roughly 10 cfs (February 20, 2018. An automated stormwater quality composite sample was collected on August 6, 2017 and September 6, 2017. Stormwater urban outfalls were not sampled for baseflow conditions.

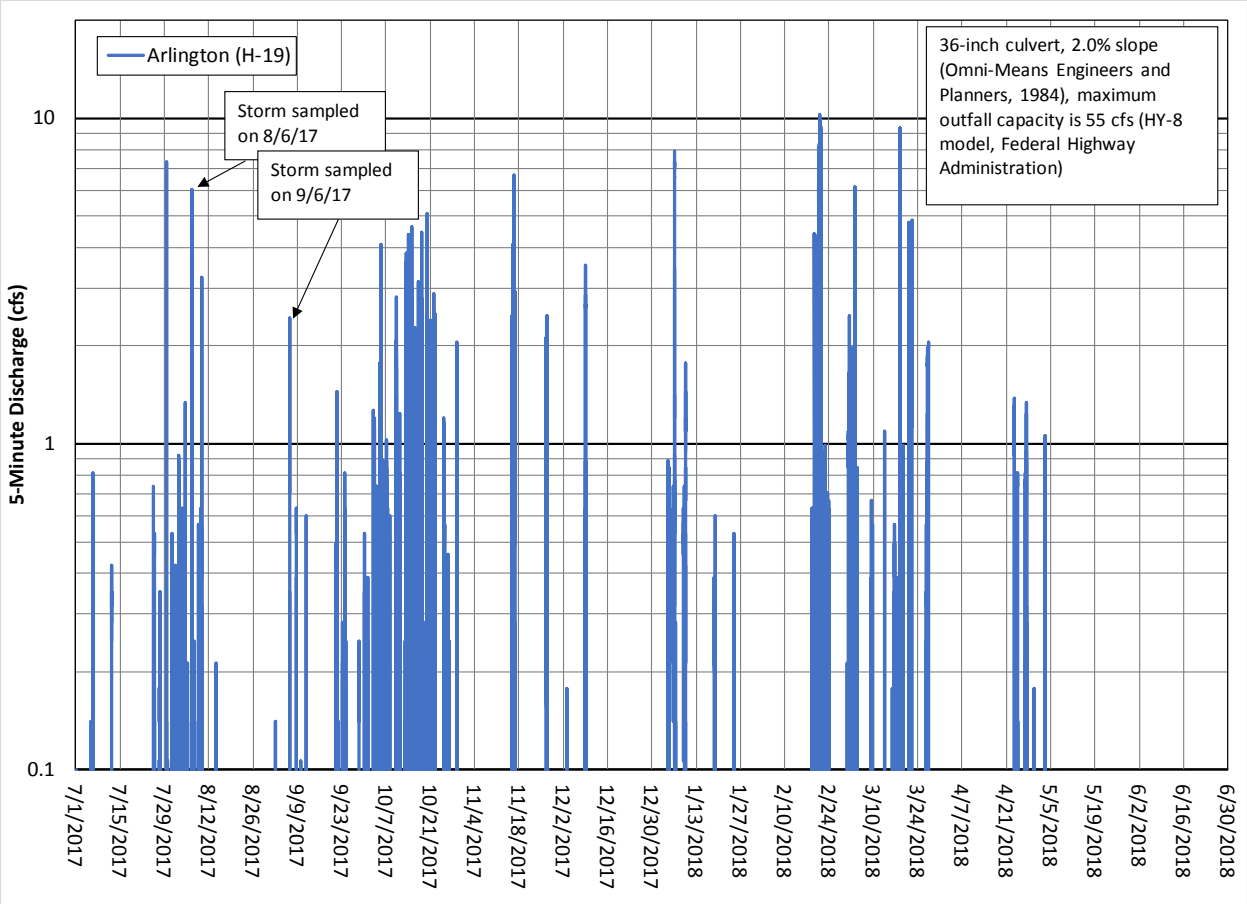


Figure 5-10 Continuous Discharge (5-minute), Arlington outfall (H-19), FY2018

5.4 Stormwater and Baseflow Constituent Concentrations and Physical Parameters

The established water quality standards (WQS) and requirements to maintain higher quality differ from one monitoring location to another, as described in Section 1.3. Below we present results for both stormwater and ambient water quality for each sample collected and each constituent analyzed in FY2018.

5.4.1 Total Nitrogen, Nitrate, Nitrite, and Total Kjeldahl Nitrogen

Total Nitrogen (Total-N) concentrations for all samples collected in FY2018 are shown in **Figure 5-11**, **Figure 5-12**, **Figure 5-13**, **Figure 5-14**, and **Figure 5-15**, grouped by their listed

water body and specific WQS or numeric criteria, if one exists. Stations that are instrumented with automated samplers may show 4 different concentrations per storm event and baseflow sampling to correspond to the composited samples across a storm hydrograph. All other stations will show a single concentration per grab sample or per storm event and baseflow sampling.

Total-N was detected in most samples collected from two tributaries and one stormwater urban outfall (Oxbow Nature Park) that discharge to the Truckee River upstream of Idlewild (**Figure 5-11**). Concentrations ranged from 0.67 mg/L to 11.0 mg/L. All samples collected in FY2018 except two (Alum Creek, baseflow sampled in September 2017 and February 2018; non-detect) exceeded the WQS for this segment of the Truckee River (≤ 0.43 mg/L). Ambient or baseflow samples collected from Chalk Creek in September 2017 and February 2018 also exceeded WQS and ranged between 2.4 mg/L and 2.8 mg/L.

Total-N was detected in all samples collected from three stormwater urban outfalls that discharge to the Truckee River between E. McCarran and Idlewild (From **Figure 5-12**). Concentrations exceeded the WQS for this segment of the Truckee River (≤ 0.43 mg/L) and ranged from 1.7 mg/L to as high as 22.0 mg/L. Stormwater urban outfalls do not exhibit baseflow and were therefore not sampled during ambient or non-storm conditions.

From **Figure 5-13**, Total-N was detected in all samples collected from North Truckee Drain, a tributary to the Truckee River upstream of Lockwood. All samples exceeded the WQS for this segment of the Truckee River (≤ 1.2 mg/L) and ranged from 1.6 mg/L to 3.7 mg/L. In one instance, ambient or baseflow concentrations exceeded stormwater concentrations in North Truckee Drain at Big Fish Drive.

From **Figure 5-14**, Total-N concentrations from samples collected in Steamboat Creek and Thomas Creek (a tributary to Steamboat Creek) ranged from 0.31 mg/L to 3.3 mg/L. The highest concentration was measured in Steamboat Creek at Clean Water Way during the November 15-17, 2017 storm event. In general, ambient or baseflow concentrations exhibited lower values when compared to stormwater concentrations with the exception of Yori Drain where concentrations were similar between baseflow and stormwater samples, and ranged between 1.7 mg/L and 2.5 mg/L. There are no Total-N WQS for Steamboat Creek.

From **Figure 5-15**, Total-N concentrations from two stormwater samples collected in Whites Creek measured 0.84 mg/L and 1.6 mg/L. Samples collected from both summer and winter baseflow were non-detect for Total-N. There are no Total-N WQS for Whites Creek.

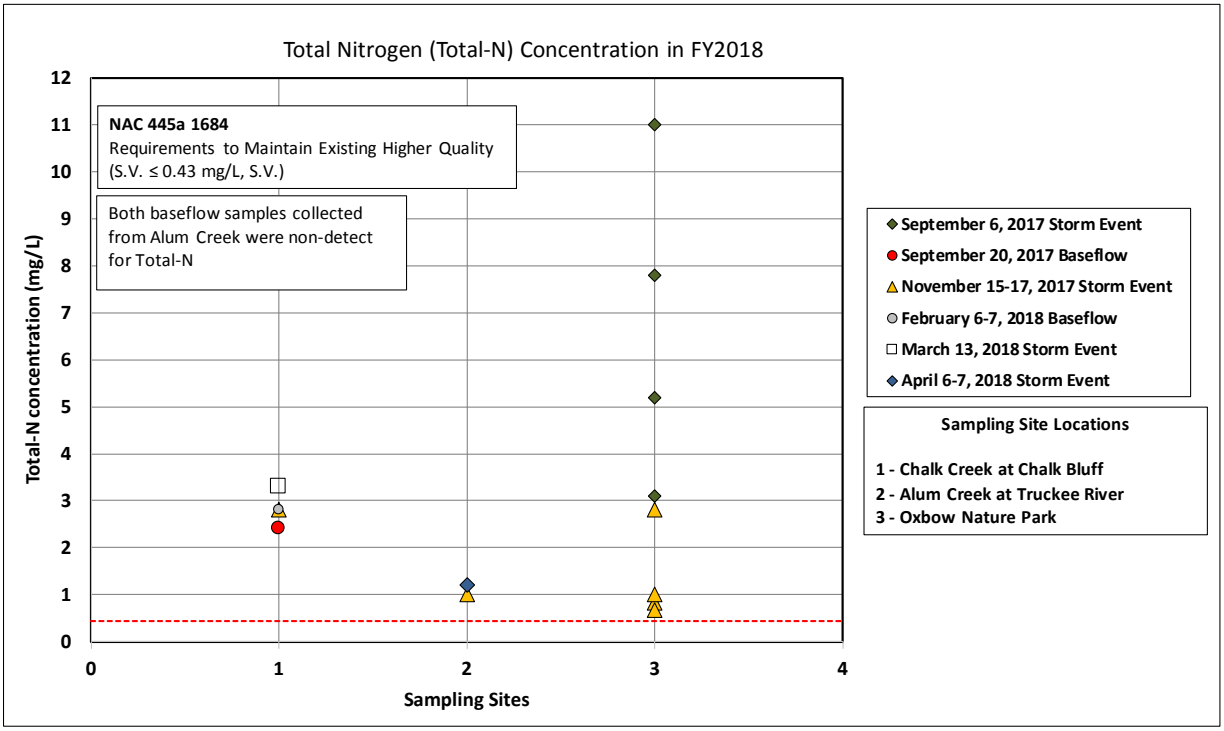


Figure 5-11 Total Nitrogen (Total-N) Concentrations for Tributaries and Stormwater Urban Outfalls to the Truckee River upstream of Idlewild, FY2018

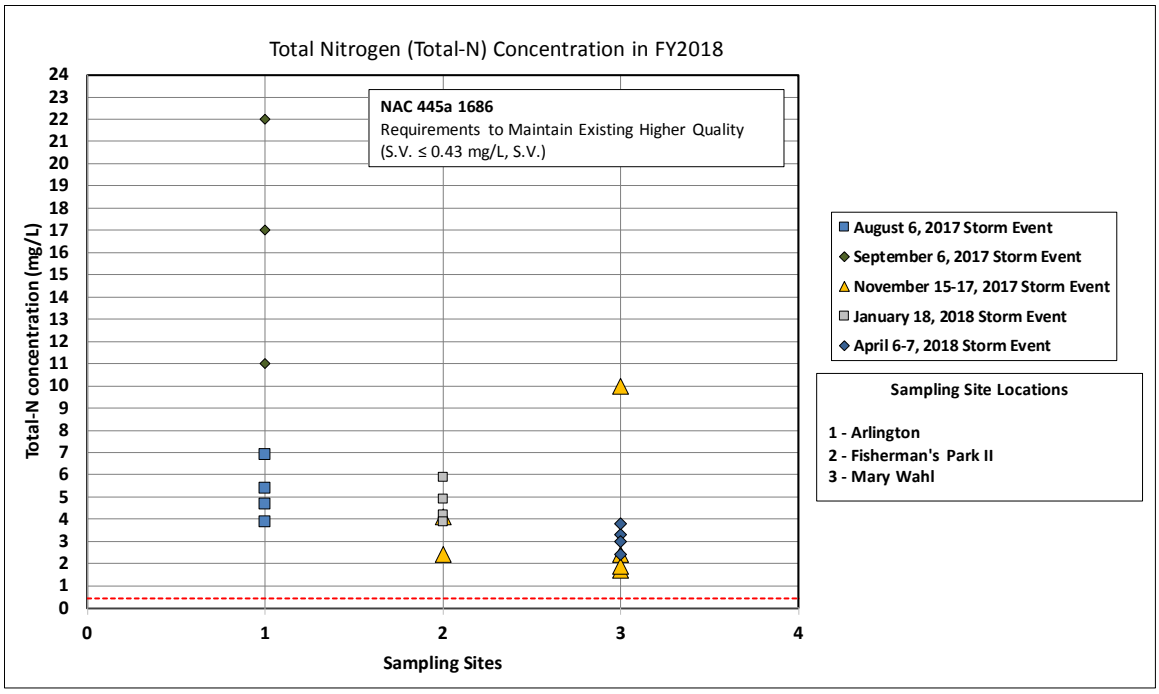


Figure 5-12 Total Nitrogen (Total-N) Concentrations for Stormwater Urban Outfalls to the Truckee River from E. McCarran upstream to Idlewild, FY2018

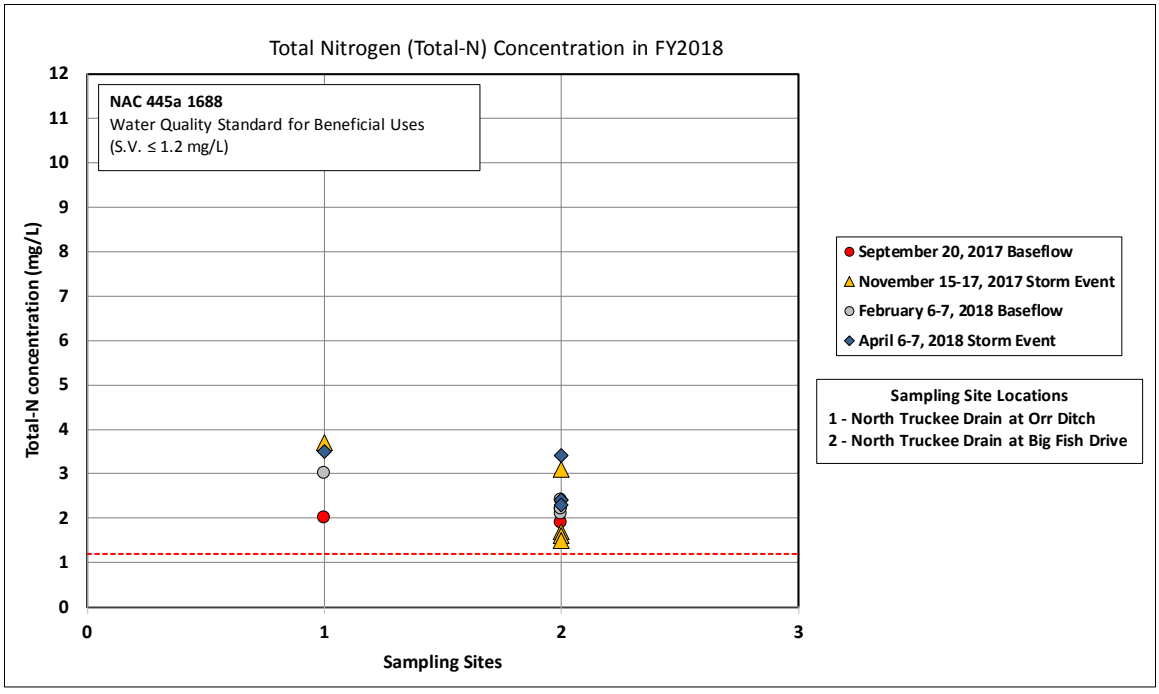


Figure 5-13 Total Nitrogen (Total-N) Concentrations for Tributaries to the Truckee River between Lockwood, upstream to E. McCarran, FY2018

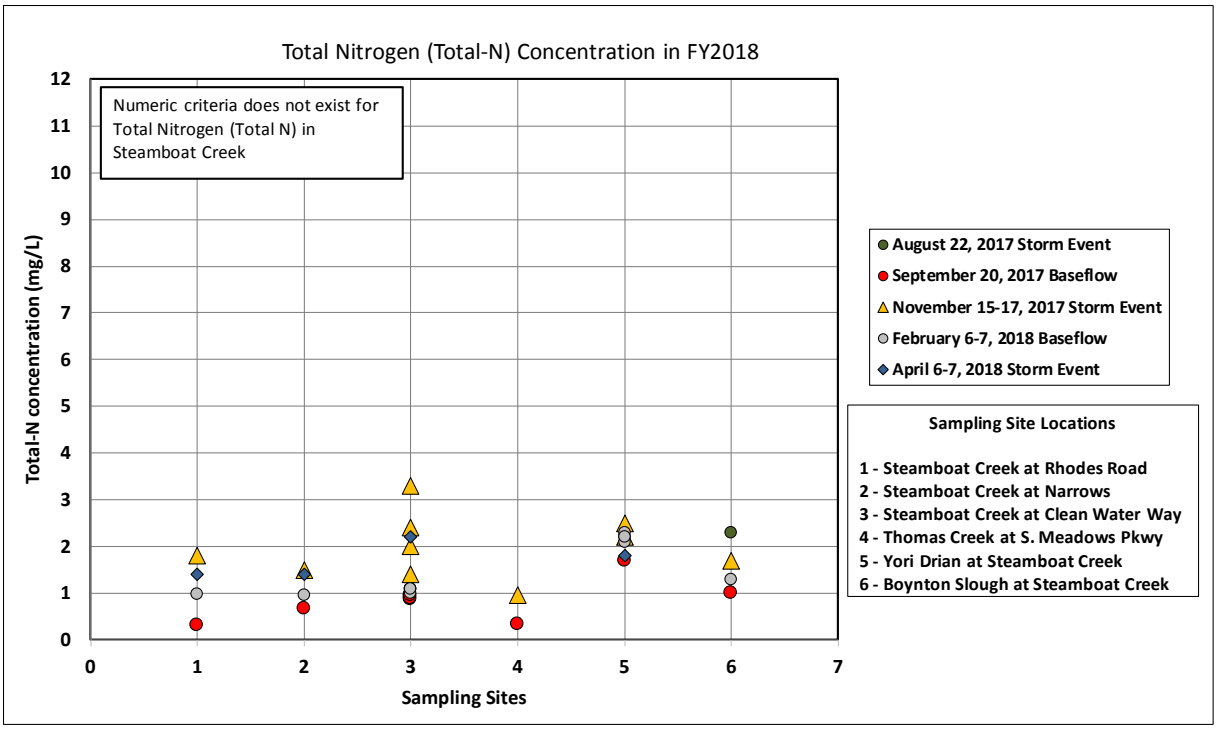


Figure 5-14 Total Nitrogen (Total-N) Concentrations for Steamboat Creek and Tributaries, FY2018

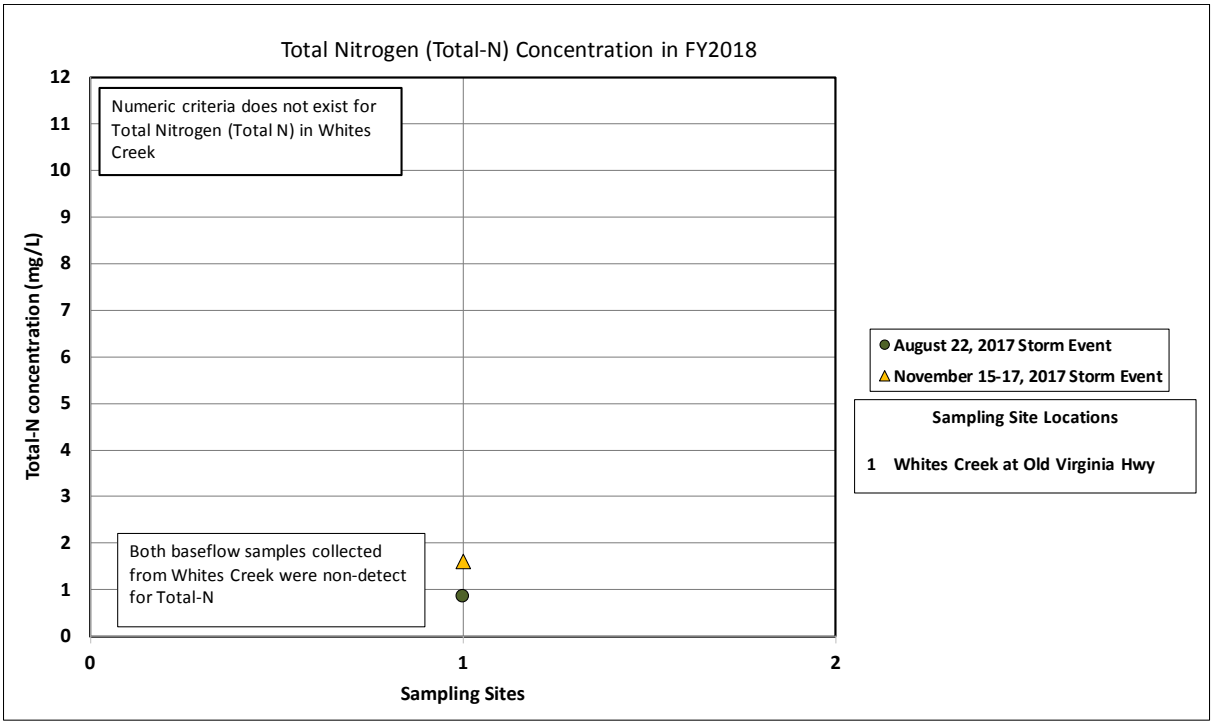


Figure 5-15 Total Nitrogen (Total-N) Concentrations for N.F. Whites Creek, WY2017

Nitrate (NO_3) is measured only from selected stations (see 2017 SAP). NO_3 concentrations for stormwater and ambient samples collected in FY2018 are shown in **Figure 5-16**, **Figure 5-17**, **Figure 5-18**, and **Figure 5-19**, grouped by their listed water body and specific numeric criteria.

From **Figure 5-16**, NO_3 measured from two tributaries and one stormwater urban outfall that discharge to the Truckee River upstream of Idlewild ranged from 0.01 mg/L to as high as 2.8 mg/L. Three out of 4 samples collected from Chalk Creek exceeded the WQS for this segment of the Truckee River (≤ 2.0 mg/L); two of these samples were collected from Chalk Creek baseflow sampling.

From **Figure 5-17**, NO_3 concentrations measured from samples collected at three stormwater urban outfallss that discharge to the Truckee River between E. McCarran and Idlewild ranged between 0.01 mg/L and 2.8 mg/L. Two separate samples exceeded the WQS established for this segment (≤ 2.0 mg/L); Arlington (2.1 mg/L) and Mary Wahl (2.8 mg/L) collected from runoff in the April 6-7, 2018 storm event. Stormwater urban outfallss do not exhibit baseflow and were therefore not sampled during ambient or non-storm conditions.

From **Figure 5-18**, NO_3 concentrations measured from samples collected in North Truckee Drain, a tributary to the Truckee River upstream of Lockwood ranged between 0.06 mg/L and 2.0 mg/L. All concentrations were below the WQS established for this segment (≤ 2.0 mg/L). In some cases, baseflow concentrations exceeded storm concentrations.

From **Figure 5-19**, NO_3 concentrations measured from samples collected at three different stations in Steamboat Creek ranged from less than 0.02 mg/L to 1.6 mg/L. The highest concentrations were measured from stormwater and baseflow in Yori Drain. Some samples collected from Thomas Creek were non-detect for NO_3. No nitrate numeric criteria exist for Steamboat Creek.

Nitrate was not detected in Whites Creek samples with the exception of a storm sample collected on November 15, 2018 and measured 0.09 mg/L.

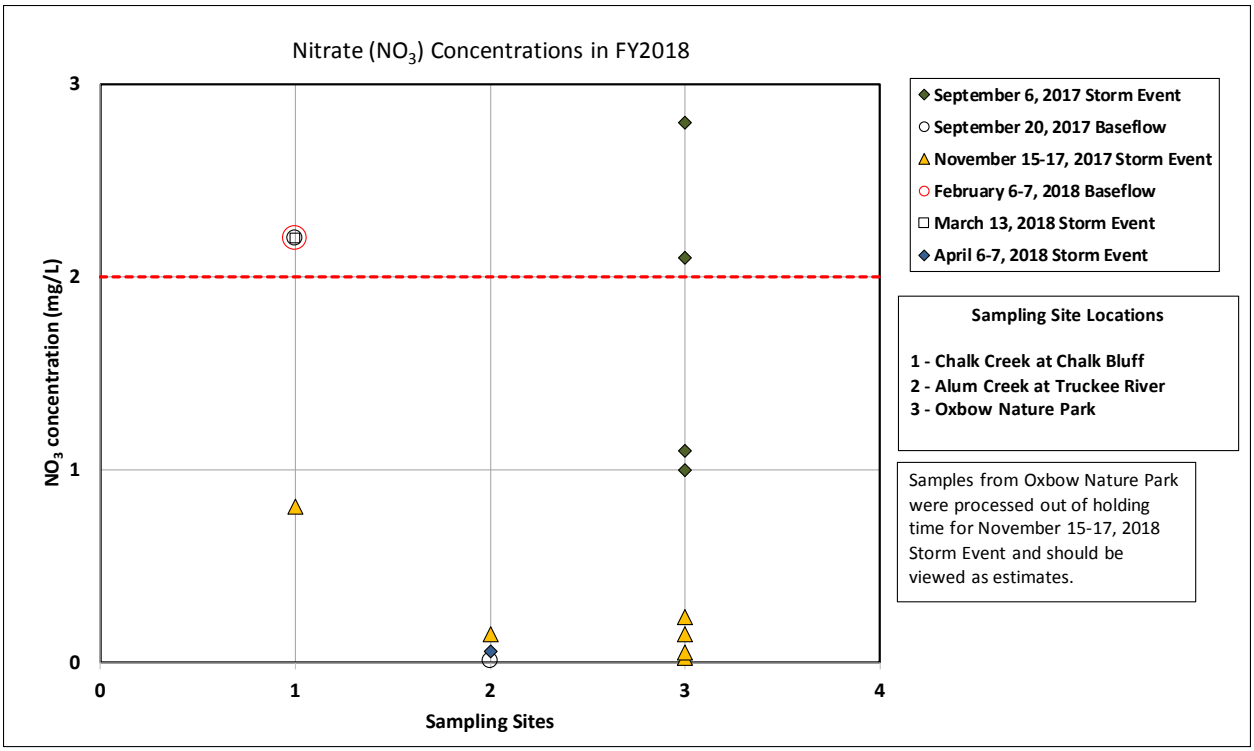


Figure 5-16 Nitrate Concentrations for Tributaries and Stormwater Urban Outfalls to the Truckee River upstream of Idlewild, FY2018

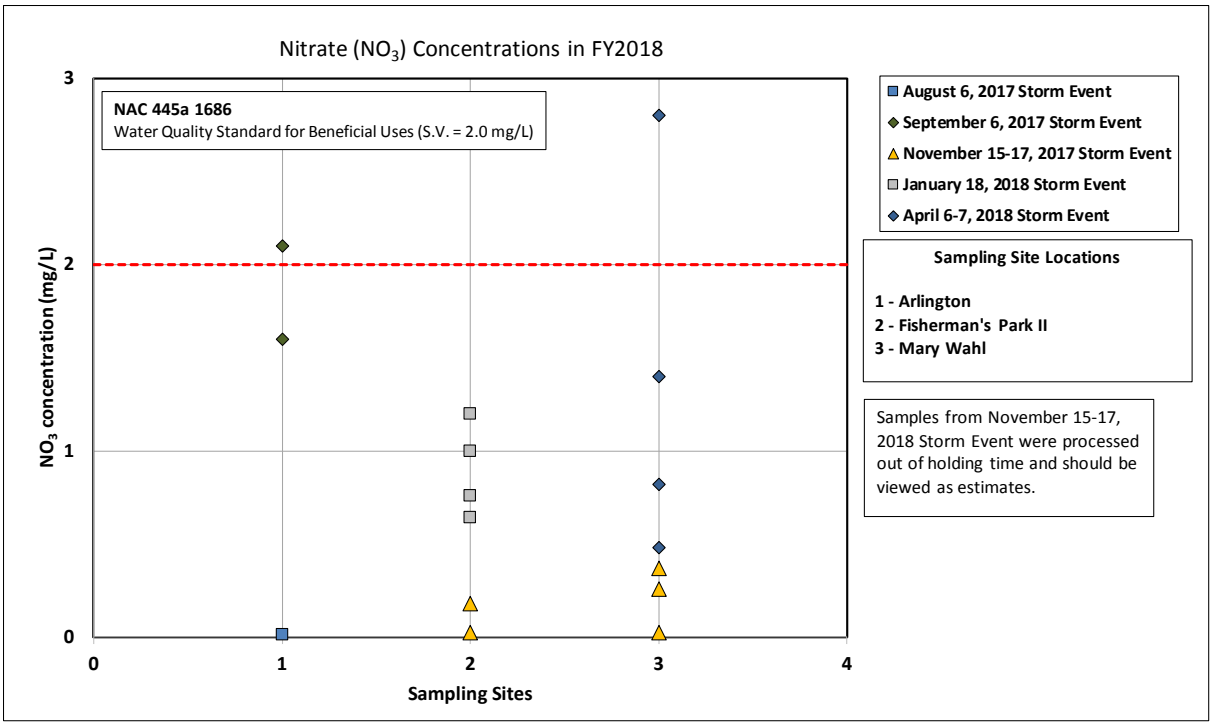


Figure 5-17 Nitrate Concentrations for Stormwater Urban Outfalls to the Truckee River from E. McCarran upstream to Idlewild, FY2018

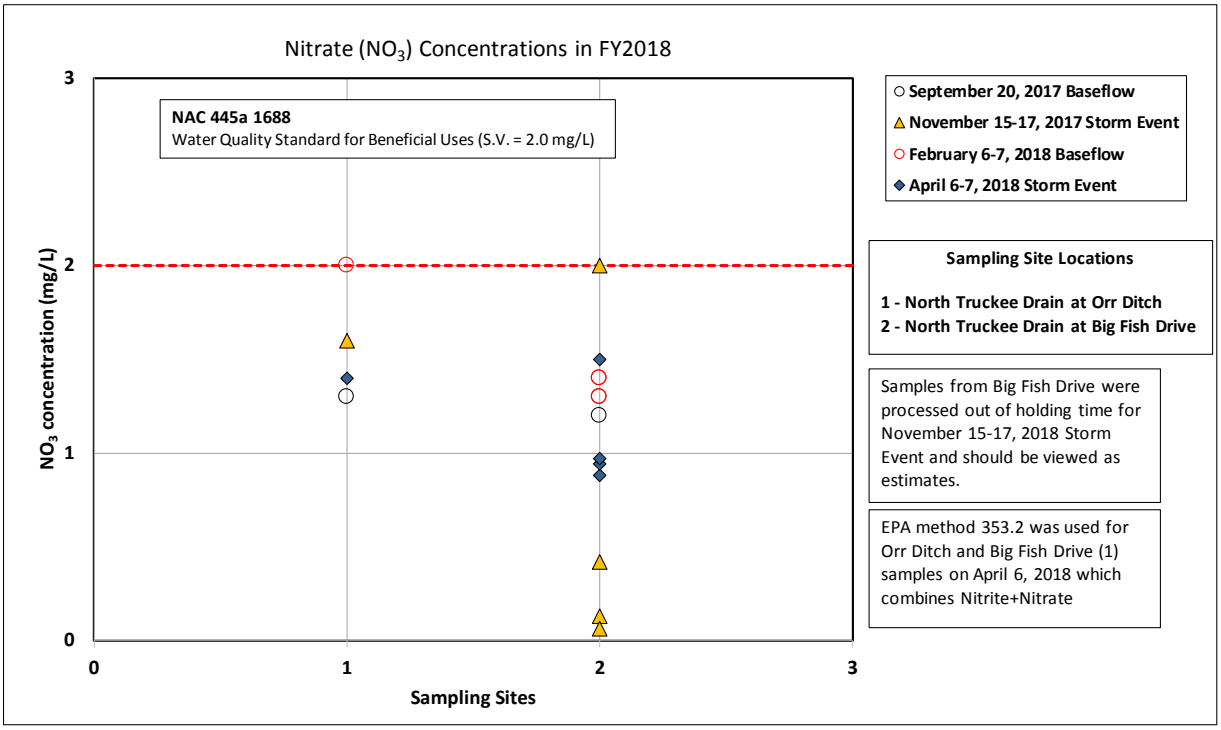


Figure 5-18 Nitrate Concentrations for Tributaries to the Truckee River between Lockwood, upstream to E. McCarran, FY2018

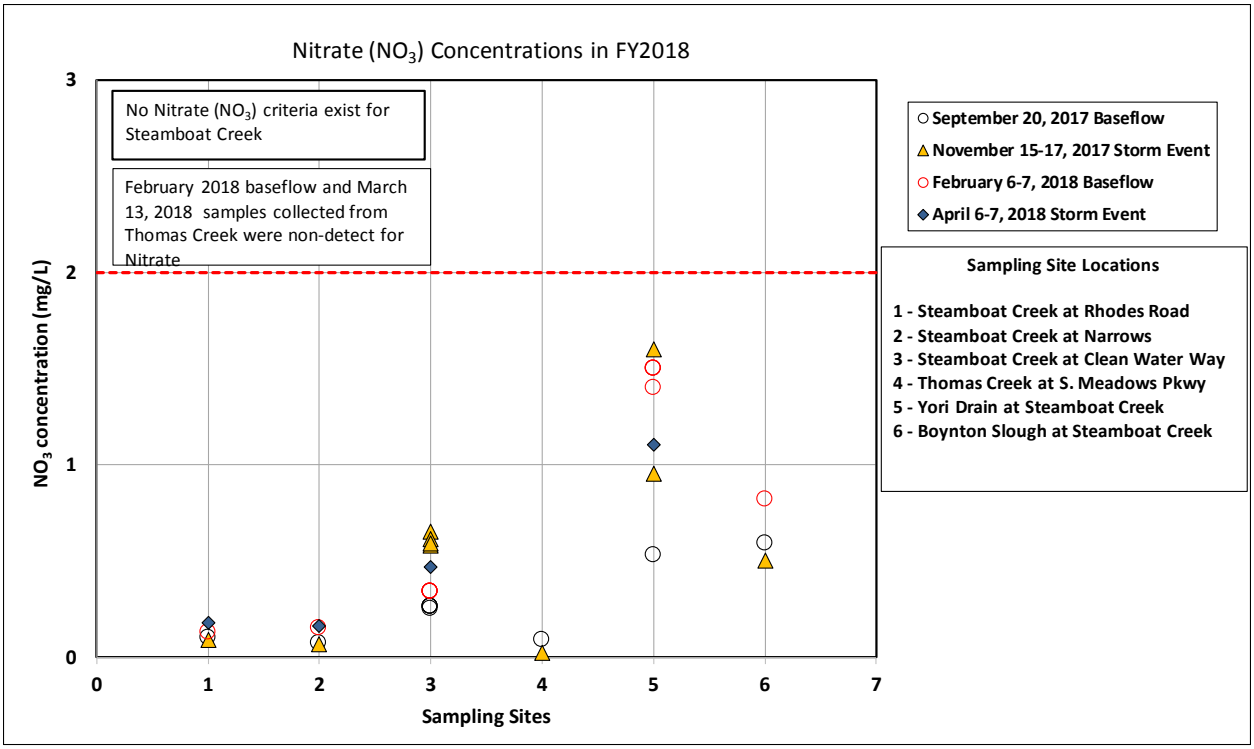


Figure 5-19 Nitrate Concentrations for Steamboat Creek, FY2018

Nitrite as nitrogen (NO_2) is typically an unstable form and readily transforms into NO_3. NO_2 was analyzed in both stormwater and baseflow samples and was detected in low concentrations (less than 0.11 mg/L). There are no water quality criteria for NO_2.

Total Kjeldahl Nitrogen (TKN) includes both organically bound nitrogen and NH_3, forms available to aquatic life. TKN concentrations for stormwater and ambient samples collected in FY2018 are shown in **Figure 5-20**, **Figure 5-21**, **Figure 5-22**, **Figure 5-23**, and **Figure 5-24**, grouped by their listed water body. Numeric criteria do not exist for TKN in the listed water bodies monitored under this program.

From **Figure 5-20**, TKN concentrations measured from two tributaries and one stormwater urban outfall that discharge to the Truckee River upstream of Idlewild ranged from 0.52 mg/L to as high as 7.8 mg/L. The highest concentrations were associated with the September 6, 2017 stormwater sample collected from Oxbow Nature Park. TKN was not measured above laboratory detection limits from baseflow sampled in September 2017.

From **Figure 5-21**, TKN concentrations measured from samples collected in three stormwater urban outfallss that discharge to the Truckee River between E. McCarran and Idlewild ranged between 0.92 mg/L and 15.0 mg/L. Highest concentrations were

associated with stormwater collected on September 6, 2017 at the Arlington stormwater urban outfall. Stormwater urban outfallss do not exhibit baseflow and were therefore not sampled during ambient or non-storm conditions.

From **Figure 5-22**, TKN concentrations measured from samples collected in North Truckee Drain, a tributary to the Truckee River upstream of Lockwood ranged between 0.75 mg/L and 2.0 mg/L. In most cases, stormwater concentrations were higher than baseflow concentrations.

From **Figure 5-23**, TKN concentrations measured from samples collected at three different stations in Steamboat Creek and tributaries below Rhodes Road ranged from 0.21 mg/L to 2.6 mg/L. The highest concentration was measured from a stormwater sample collected from Steamboat Creek at Clean Water Way.

From **Figure 5-24**, TKN concentrations measured from stormwater samples collected in Whites Creek ranged from 0.74 mg/L to 1.50 mg/L. TKN was not measured above laboratory detection limits in baseflow samples.

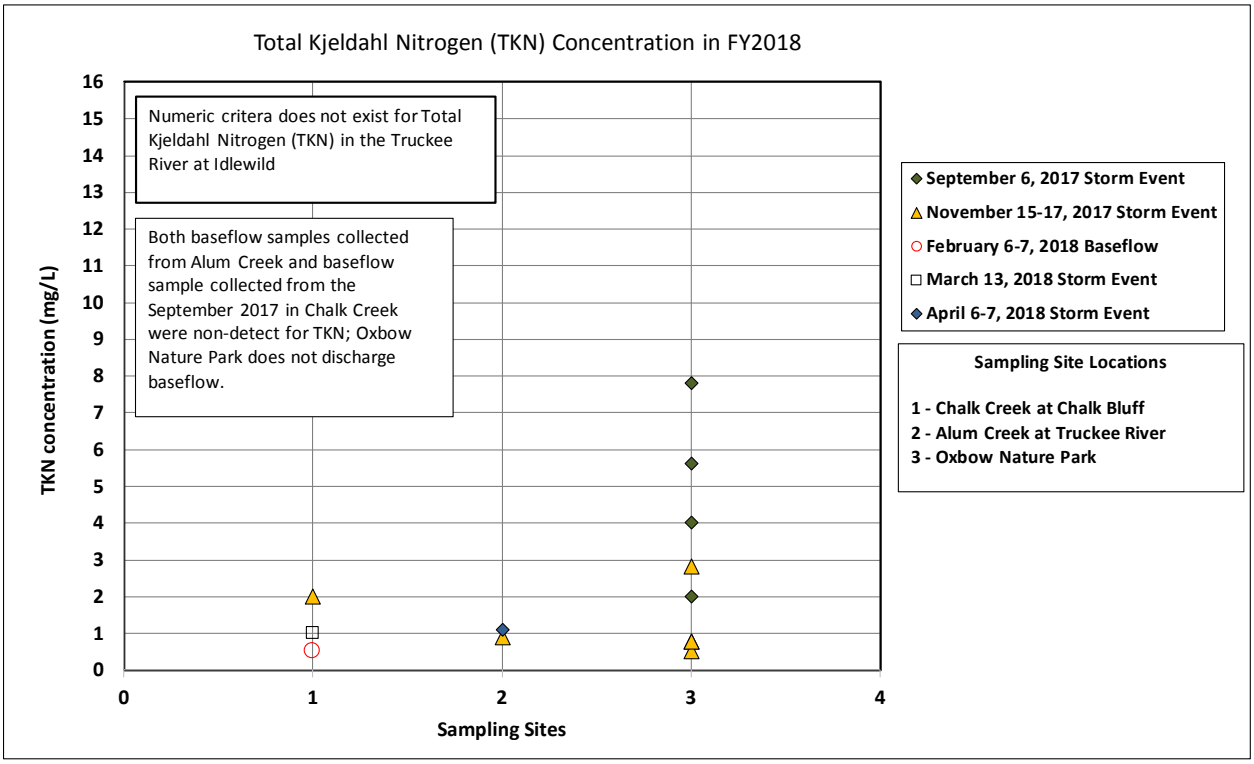


Figure 5-20 TKN Concentrations for Tributaries and Stormwater Urban Outfalls to the Truckee River upstream of Idlewild, FY2018

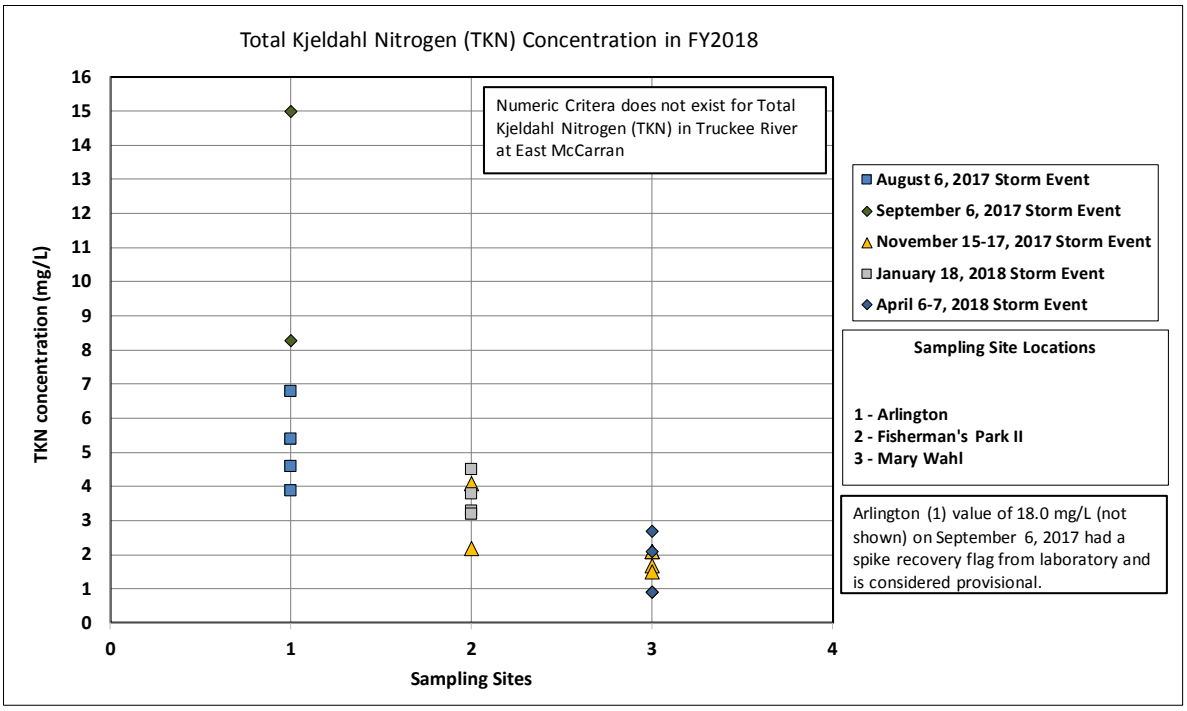


Figure 5-21 TKN Concentrations for Stormwater Urban Outfalls to the Truckee River from E. McCarran upstream to Idlewild, FY2018

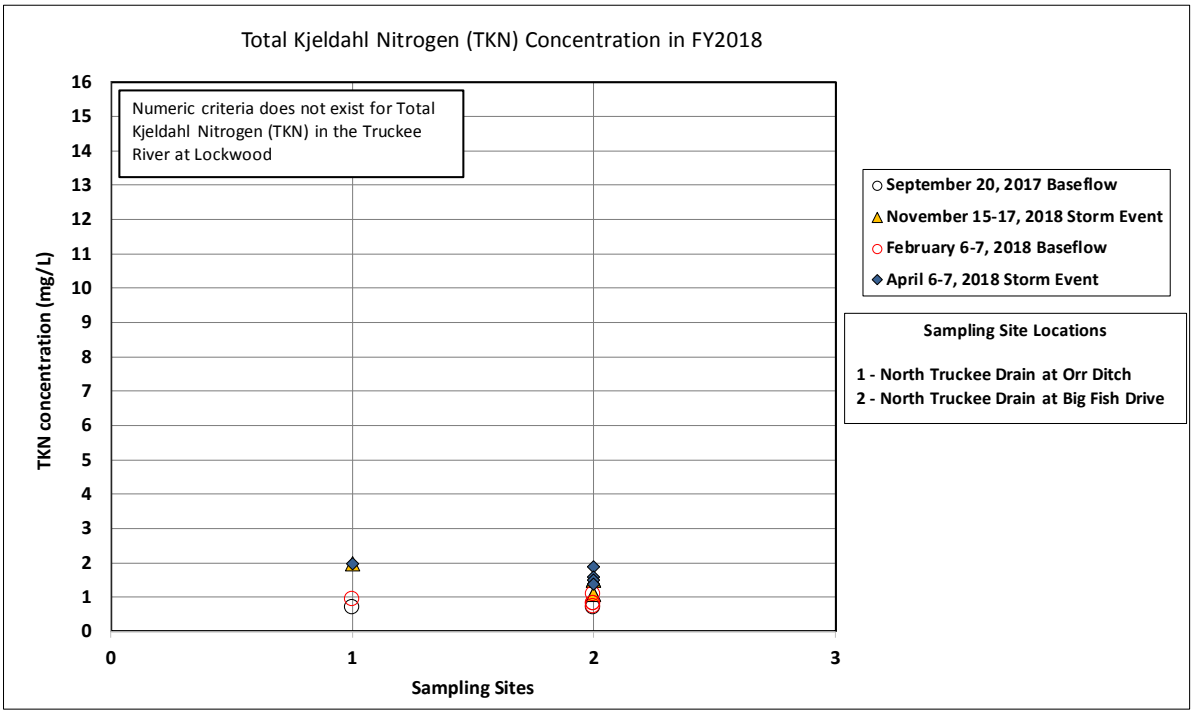


Figure 5-22 Concentrations for Tributaries to the Truckee River between Lockwood, upstream to E. McCarran, FY2018

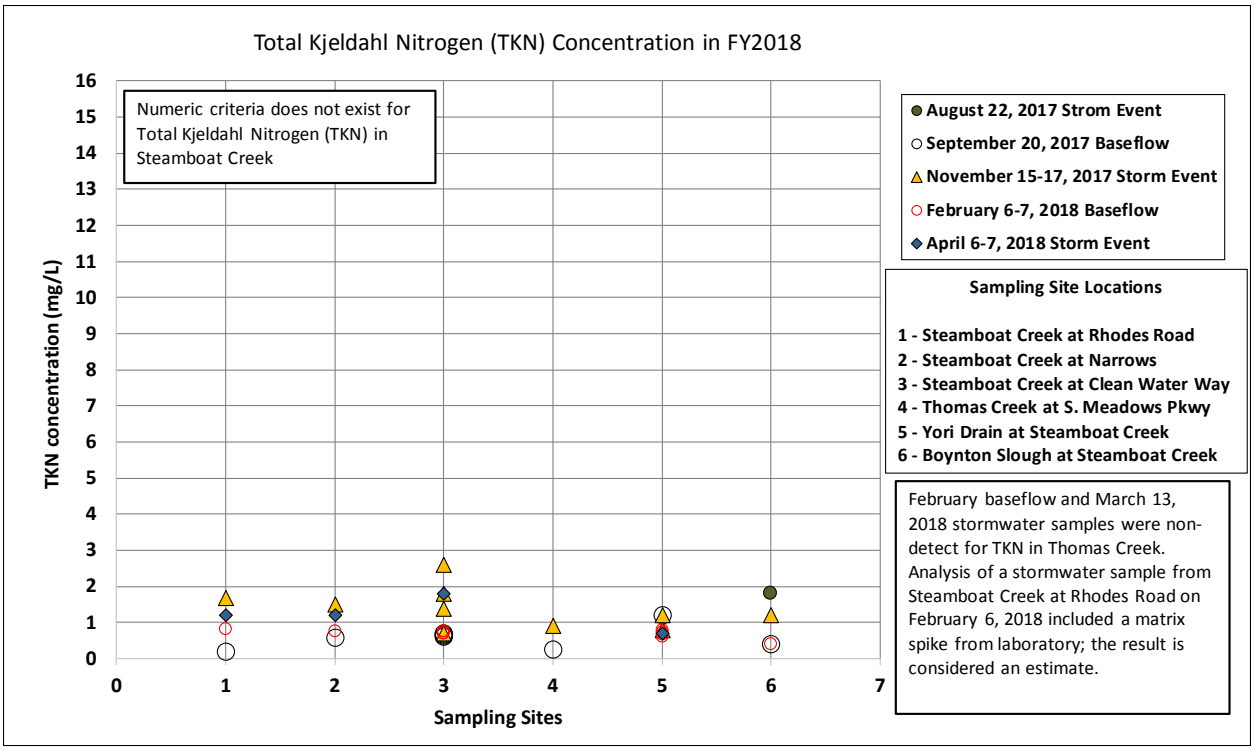


Figure 5-23 TKN Concentrations for Steamboat Creek and Tributaries, FY2018

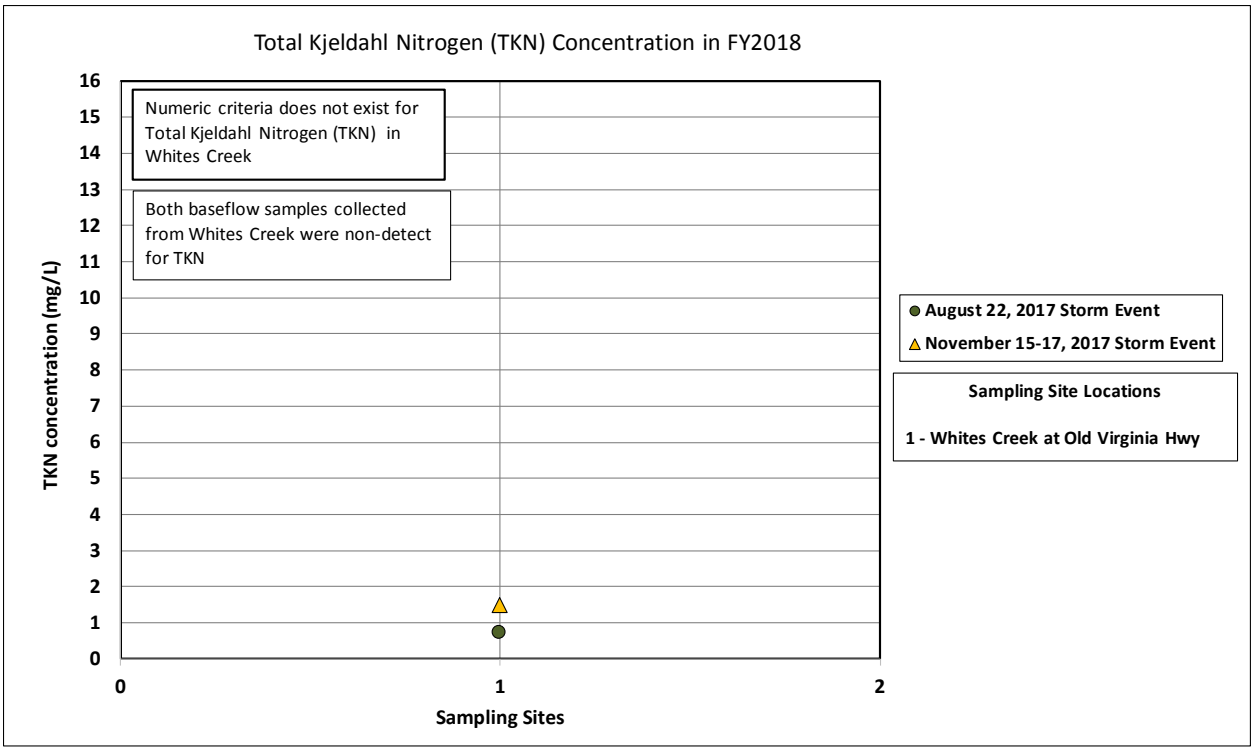


Figure 5-24 TKN Concentrations for Whites Creek, FY2018

5.4.2 Total Phosphorus and Ortho Phosphate

Total-P concentrations for stormwater and ambient samples collected in FY2018 are shown in **Figure 5-25**, **Figure 5-26**, **Figure 5-27**, **Figure 5-28**, **Figure 5-29** and **Figure 5-30**, grouped by their listed water body. Single value WQS do not exist for Total-P in most of the tributaries monitored. As such, where none exist, we compare these concentrations to annual-averages to maintain existing higher quality (≤ 0.05 mg/L) and/or to protect beneficial uses (≤ 0.10 mg/L) in this reach. While most samples exceeded these annual average standards, they are single values that may not represent long-term averages.

From **Figure 5-25**, Total-P concentrations measured from two tributaries and one stormwater urban outfall that discharge to the Truckee River upstream of Idlewild ranged from 0.03 mg/L to 0.56 mg/L. Highest concentrations were measured from stormwater samples collected Oxbow Nature Park.

From **Figure 5-26**, Total-P concentrations measured from three stormwater urban outfallss that discharge to the Truckee River between E. McCarran and Idlewild ranged from 0.12 mg/L to as high as 1.4 mg/L. Highest concentrations were measured from stormwater samples collected from Arlington stormwater urban outfall.

From **Figure 5-27**, Total-P concentrations measured from samples collected in North Truckee Drain, a tributary to the Truckee River upstream of Lockwood ranged between 0.12 mg/L and 0.28 mg/L. Stormwater concentrations were similar to baseflow concentrations.

From **Figure 5-28**, Total-P concentrations measured from samples collected in Steamboat Creek at Rhodes Road ranged from 0.14 mg/L to 0.28 mg/L from both stormwater and baseflow samples. Results meet the WQS (S.V. ≤ 0.33 mg/L) for this segment of Steamboat Creek.

From **Figure 5-29**, Total-P concentrations measured from samples collected in Steamboat Creek and tributaries below Rhodes Road ranged from 0.05 mg/L to 0.31 mg/L. Numeric criteria to protect water quality does not exist for this segment of Steamboat Creek and its tributaries.

From **Figure 5-30**, Total-P concentrations measured from samples collected in Whites Creek ranged from 0.03 mg/L to 1.0 mg/L. A stormwater sample collected in the

November 15-17 storm event exceeded WQS to protect beneficial uses (≤ 0.10 mg/L) while baseflow samples met this standard.

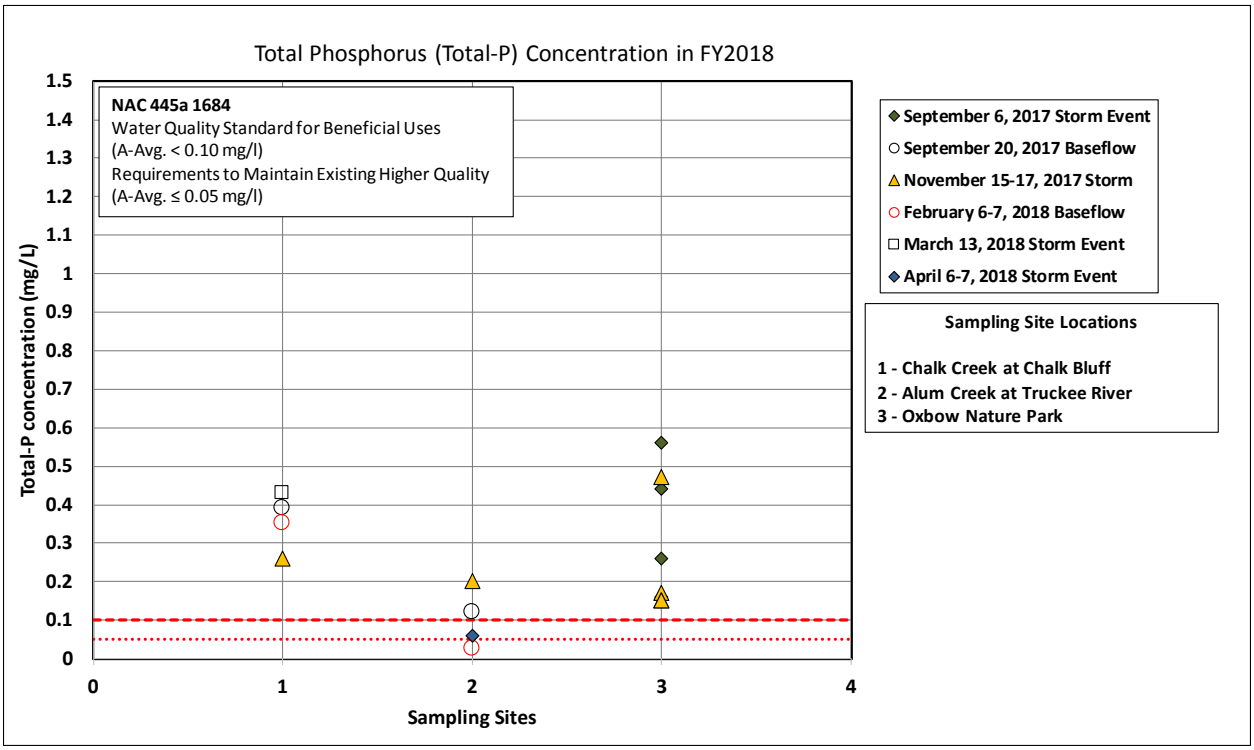


Figure 5-25 Total-P Concentrations for Tributaries and Stormwater Urban Outfalls to the Truckee River upstream of Idlewild, FY2018

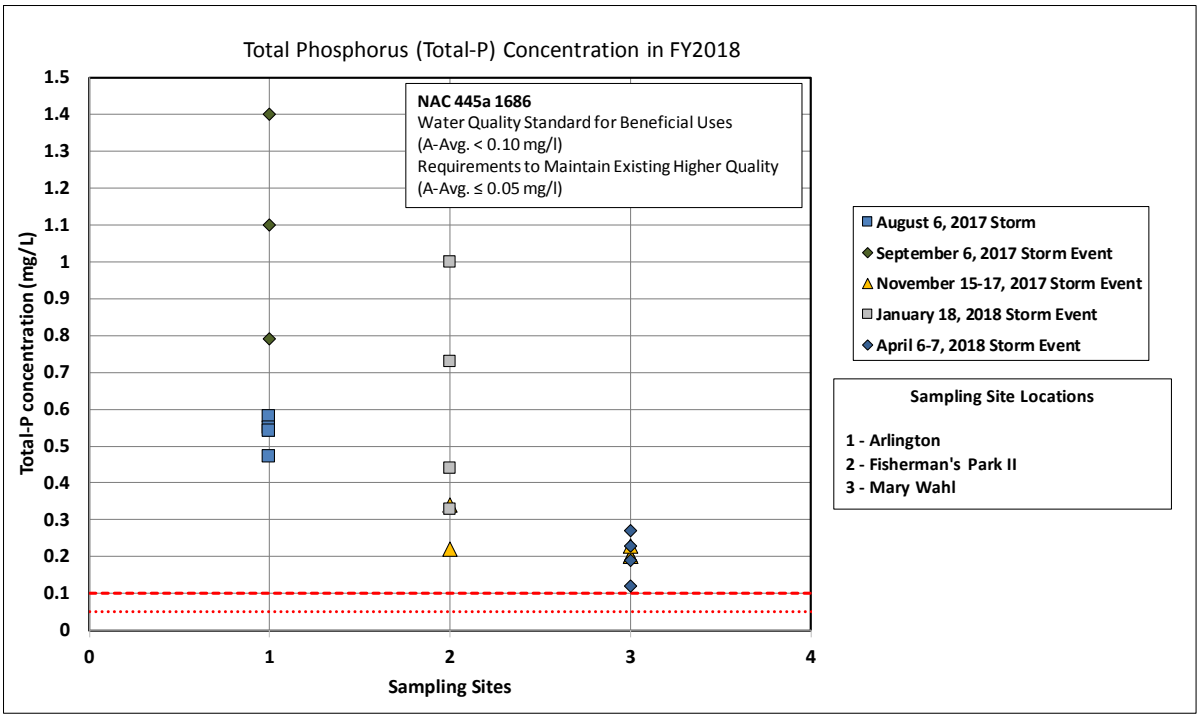


Figure 5-26 Total-P Concentrations for Stormwater Urban Outfalls to the Truckee River from E. McCarran upstream to Idlewild, FY2018

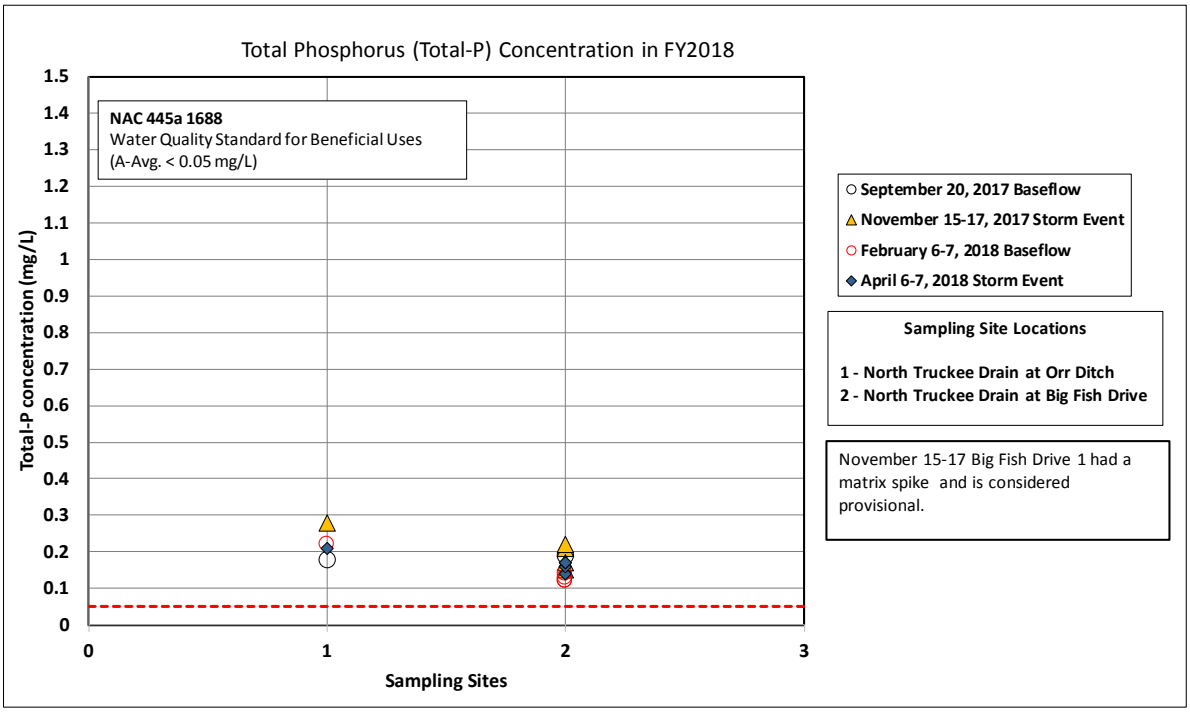


Figure 5-27 Total-P Concentrations for Tributaries to the Truckee River between Lockwood, upstream to E. McCarran, FY2018

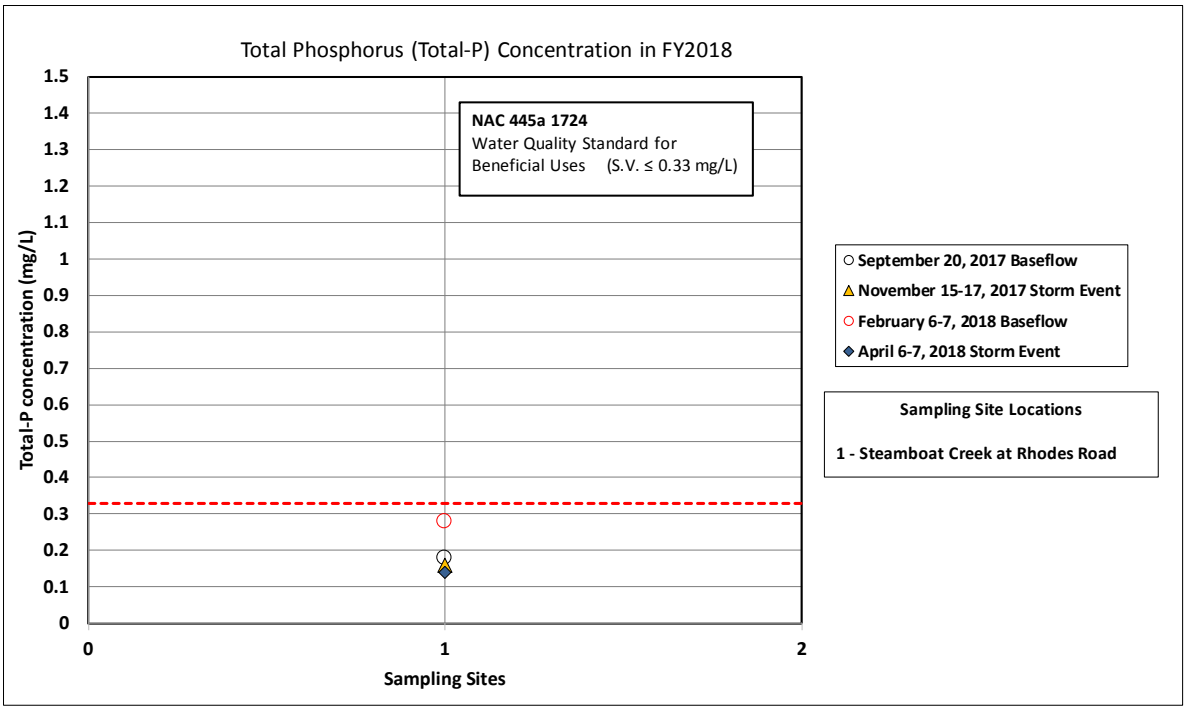


Figure 5-28 Total-P Concentrations for Steamboat Creek between Rhodes Road upstream to the outlet of Washoe Lake, FY2018

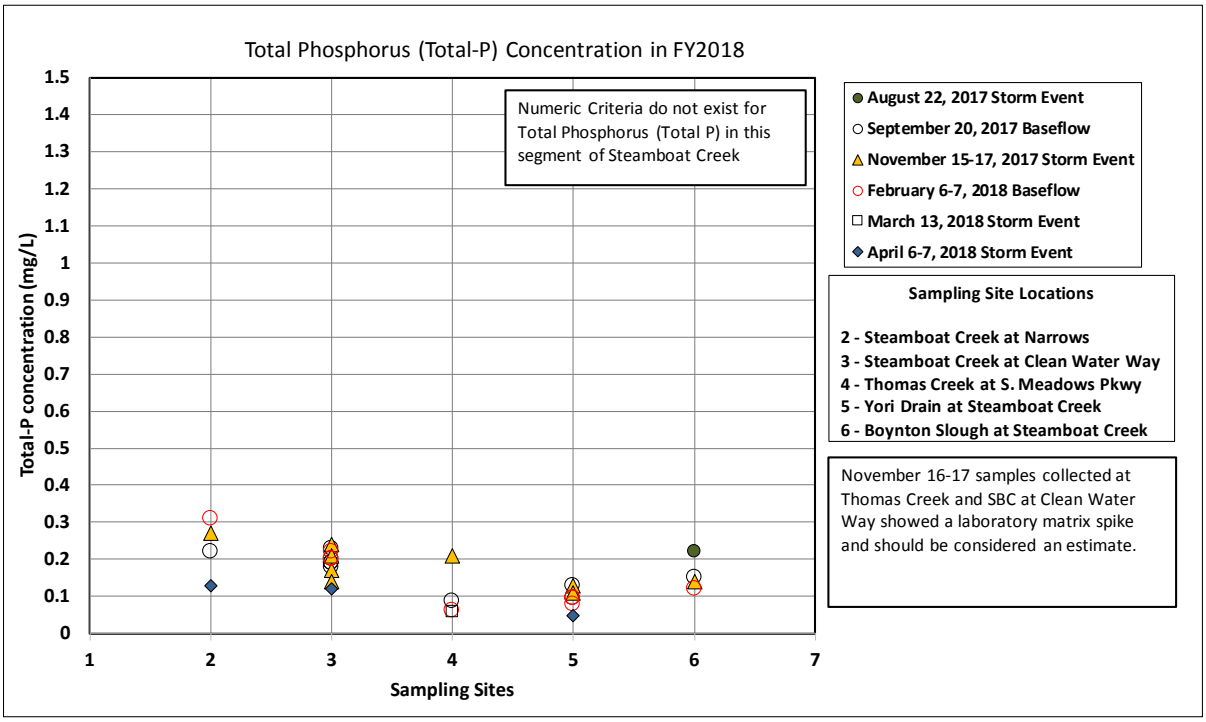


Figure 5-29 Total-P Concentrations for Steamboat Creek and Tributaries, FY2018

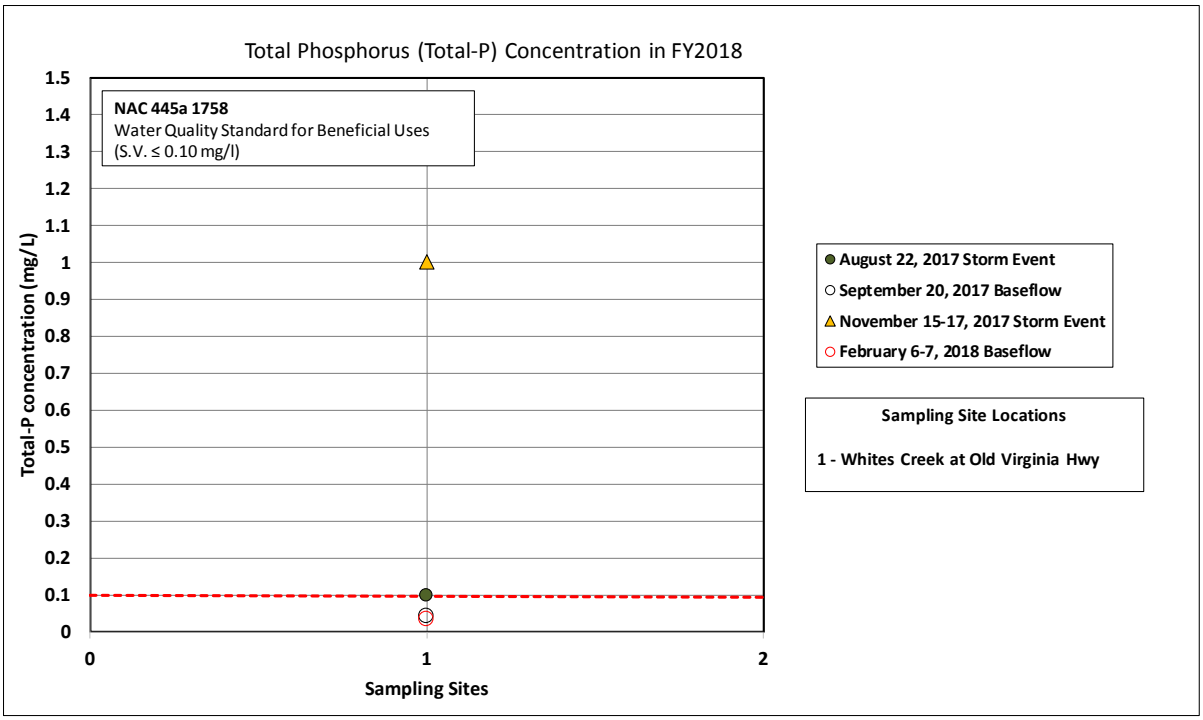


Figure 5-30 Total P Concentrations for Whites Creek, FY2018

Orthophosphate (Ortho-P) concentrations for stormwater and ambient samples collected in WY2017 are shown in **Figure 5-31**, **Figure 5-32**, **Figure 5-33, Figure 5-34, Figure 5-35, and Figure 5-36** grouped by their listed water body and specific numeric criteria (if applicable).

From **Figure 5-31**, Ortho-P concentrations measured from two tributaries and a stormwater urban outfall that discharge to the Truckee River upstream of Idlewild ranged from 0.01 mg/L to 0.39 mg/L. All concentrations exceeded WQS for beneficial uses (≤0.05 mg/L) except baseflow concentrations measured from Alum Creek. Highest concentrations were measured from both stormwater and baseflow samples collected from Chalk Creek.

From **Figure 5-32**, Ortho-P concentrations measured from three stormwater urban outfallss that discharge to the Truckee River between E. McCarran and Idlewild ranged from 0.03 mg/L to as high as 0.49 mg/L. All concentrations exceeded WQS for beneficial uses (≤0.05 mg/L) with the exception of stormwater samples collected from the Arlington outfall in the August 6, 2017 storm event. Conversely, highest concentrations were measured from stormwater sampled collected from the Arlington outfall in the April 6-7, 2018 storm event.

From **Figure 5-33**, Ortho-P concentrations measured from samples collected in North Truckee Drain, a tributary to the Truckee River upstream of Lockwood ranged between 0.07 mg/L and 0.32 mg/L. Stormwater concentrations exhibited similar ranges across stations, while stormwater concentrations exceeded baseflow concentrations.

From **Figure 5-34**, Ortho-P concentrations measured from samples collected in Steamboat Creek at Rhodes Road ranged from 0.02 mg/L to 0.18 mg/L from both stormwater and baseflow samples. Stormwater concentrations exceeded baseflow concentrations; however, numeric criteria do not exist for Ortho-P in Steamboat Creek.

From **Figure 5-35**, Ortho-P concentrations measured from samples collected in Steamboat Creek and tributaries below Rhodes Road ranged from 0.02 mg/L to 0.33 mg/L. Highest concentrations were measured from Steamboat Creek when compared to its tributaries. Numeric criteria to protect water quality does not exist for this segment of Steamboat Creek and its tributaries.

From **Figure 5-36**, Ortho-P concentrations measured from samples collected in Whites Creek ranged from 0.01 mg/L to 0.13 mg/L.

Identification of the source(s) of phosphorus (Total-P and Ortho-P) in tributaries is complicated by multiple possible sources and hydrological, geochemical, and biological processes affecting phosphorus fate and transport (Denver and others, 2010). Romeis (1999) identified multiple possible sources of excess phosphorus to Steamboat Creek that included: Livestock, fertilizers, irrigation return flows, leaking septic systems and or bank erosion. Concentrations of phosphorus (as phosphate) have been measured in geothermal wells in the Truckee Meadows region (Great Basin Groundwater Geochemical Database, 2016), while Shump (1985) and Skalbeck and others (2002) have established that some tributaries, including Steamboat Creek, are gaining streams and receive groundwater from both non-thermal and thermal waters. The link between these possible sources and transport is, however poorly understood, and additional investigations into the source(s) of elevated phosphorus (Total-P and Ortho-P) concentrations are warranted.

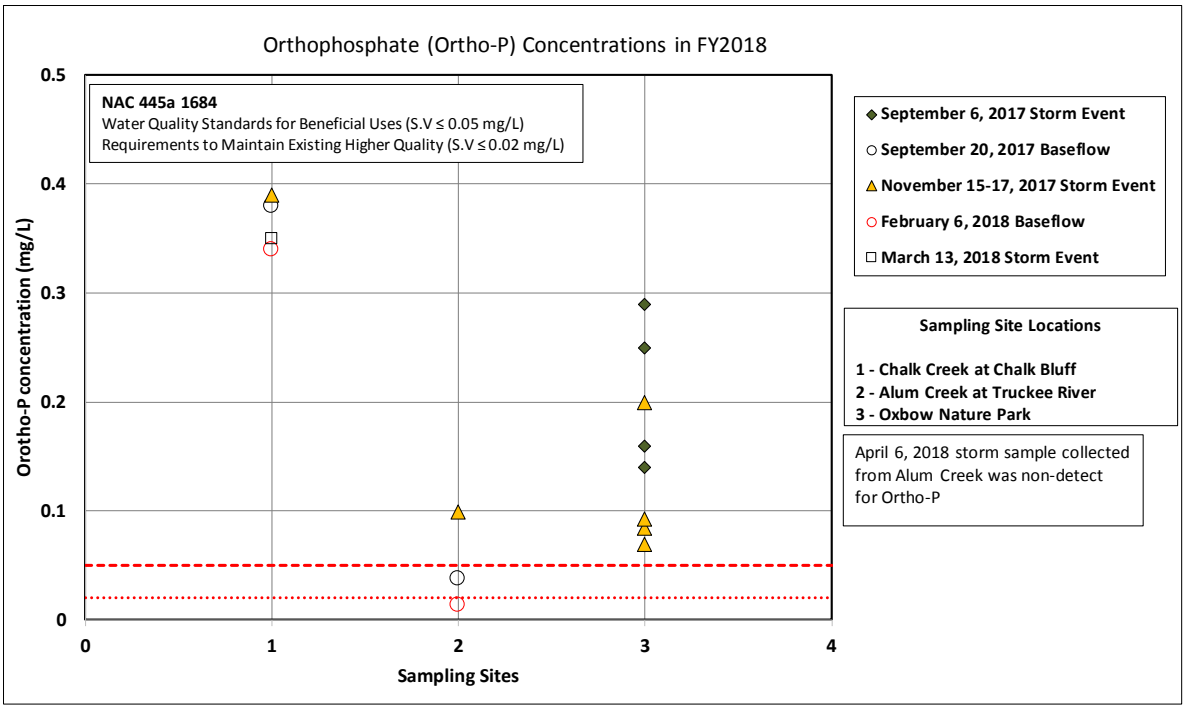


Figure 5-31 Ortho-P Concentrations for Tributaries to the Truckee River upstream of Idlewild, FY2018

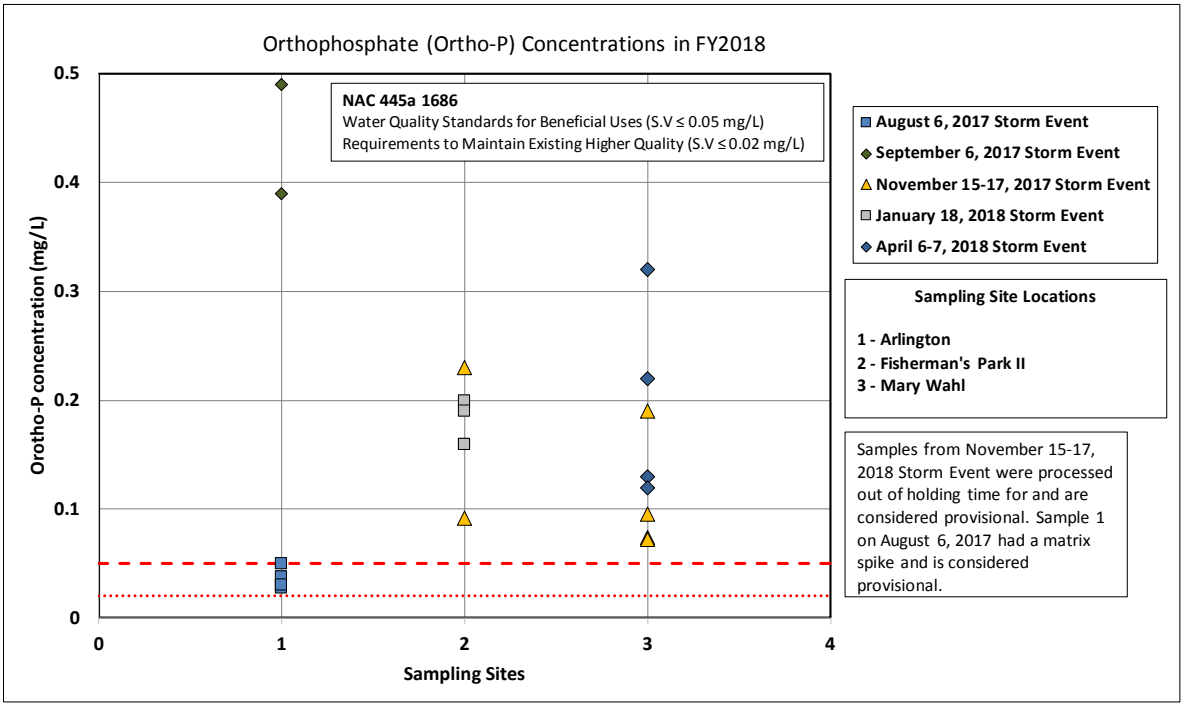


Figure 5-32 Ortho-P Concentrations for Stormwater Urban Outfalls to the Truckee River from E. McCarran upstream to Idlewild, FY2018

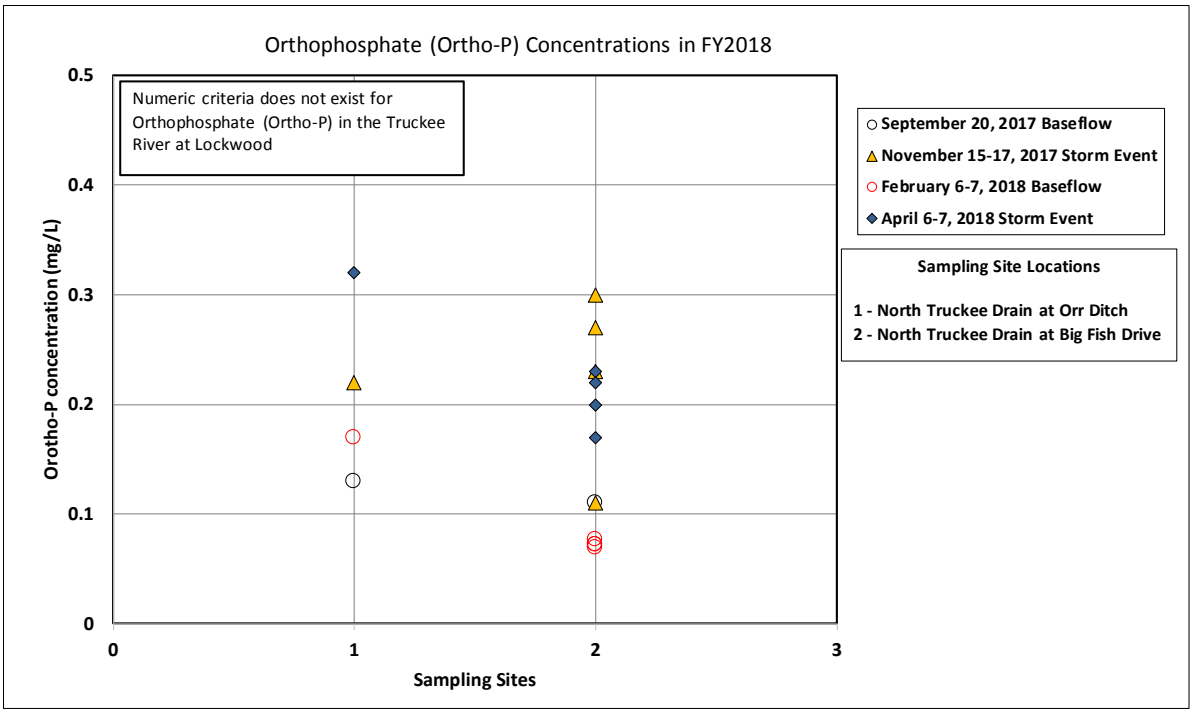


Figure 5-33 Ortho-P Concentrations for Tributaries to the Truckee River between Lockwood, upstream to E. McCarran, FY2018

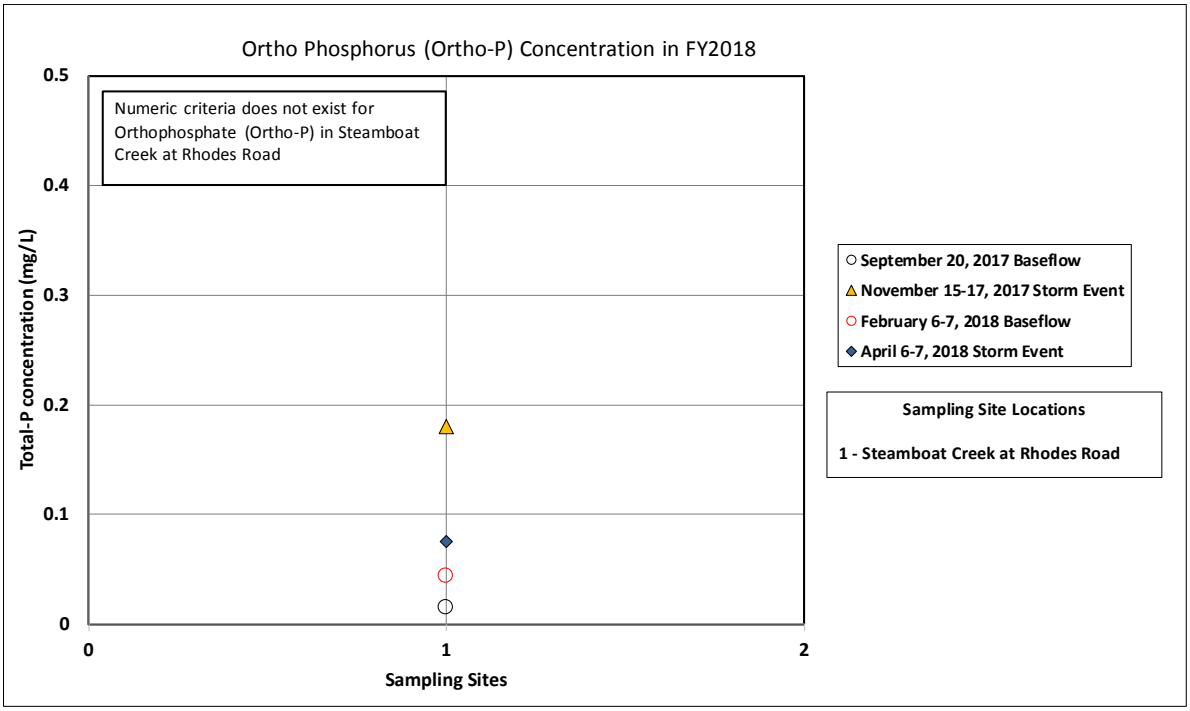


Figure 5-34 Ortho-P Concentrations for Steamboat Creek between Rhodes Road upstream to the outlet of Washoe Lake, FY2018

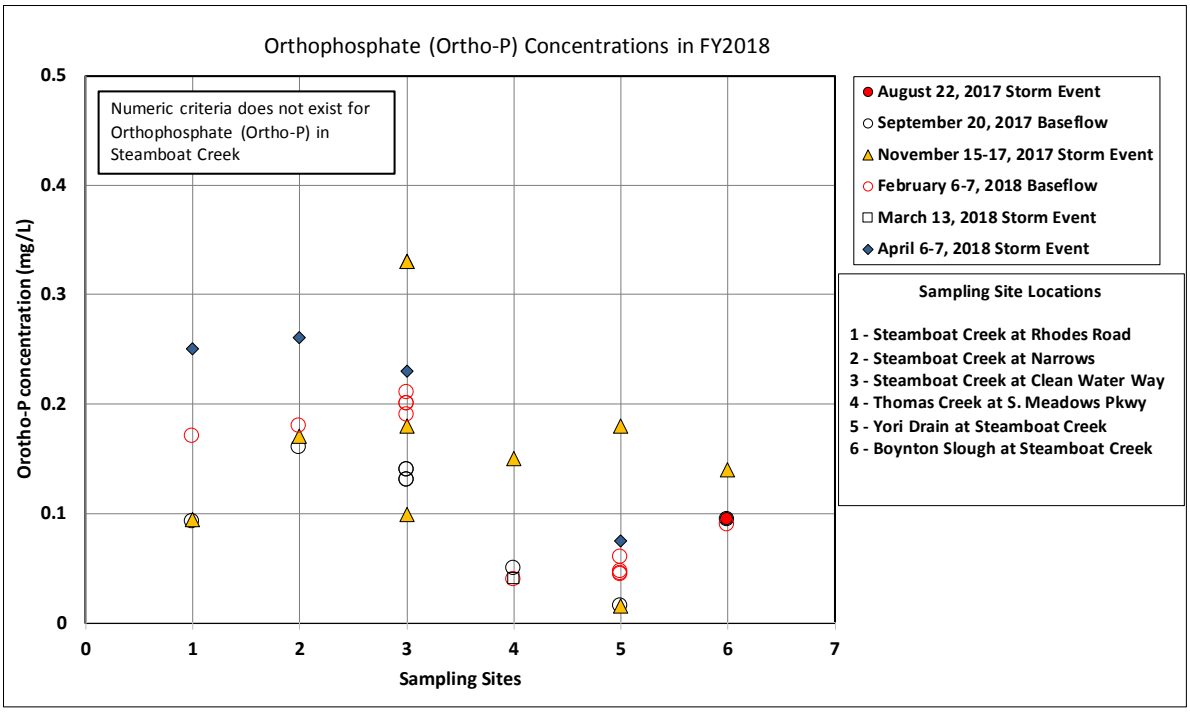


Figure 5-35 Ortho-P Concentrations for Steamboat Creek and Tributaries, FY2018

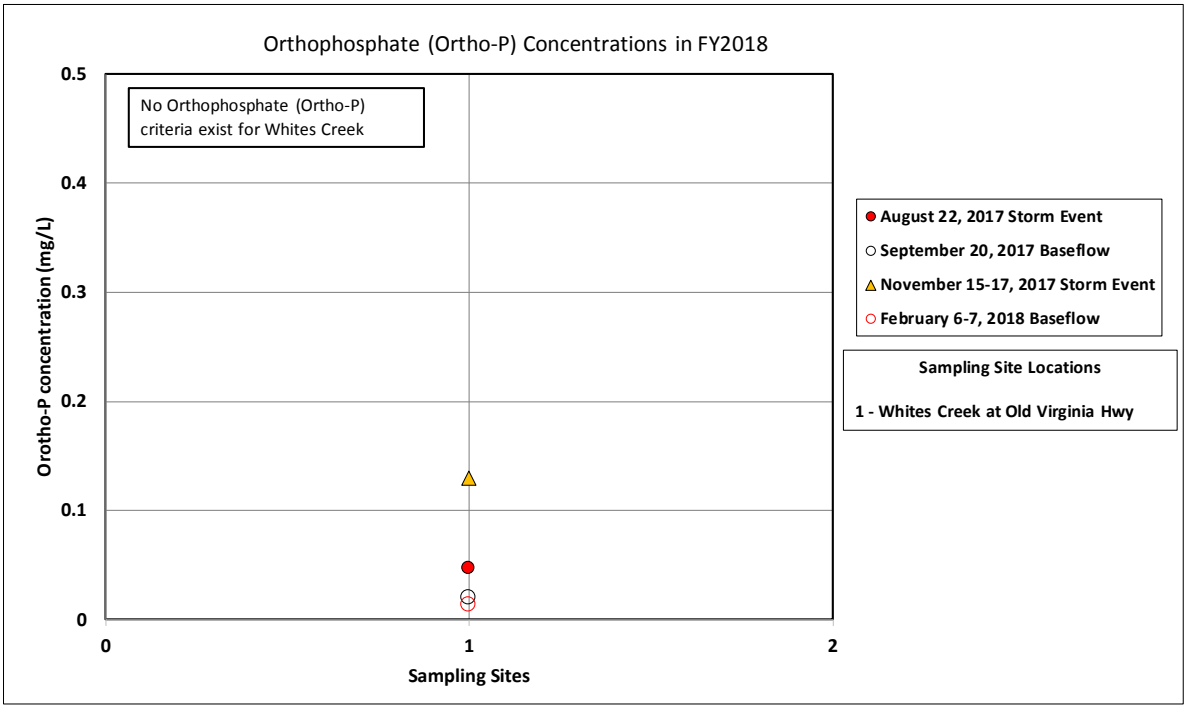


Figure 5-36 Ortho-P Concentrations for Whites Creek, FY2018

5.4.3 Total Dissolved Solids and Total Suspended Solids

TDS concentrations for stormwater and ambient samples collected in FY2018 are shown in **Figure 5-37**, **Figure 5-38**, **Figure 5-39**, **Figure 5-40**, **Figure 5-41**, and **Figure 5-42**, grouped by their listed water body and specific numeric criteria. Vertical axes in all graphs are logarithmic to show the range of values detected.

From **Figure 5-37**, TDS concentrations measured from two tributaries and one stormwater urban outfall that discharge to the Truckee River upstream of Idlewild ranged from 48 mg/L to as high as 2,400 mg/L. We compare these concentrations to single value criterion used to maintain existing higher quality (≤ 95 mg/L) for this segment; annual-average numeric criterion to protect beneficial uses is shown for reference. All baseflow and stormwater samples collected from Chalk Creek exceeded the requirement; while a single baseflow sample (February 6-7, 2018) collected from Alum Creek also exceeded this requirement. Elevated TDS concentrations in Chalk Creek have been measured consistently in both stormwater and baseflow and are likely associated with high dissolved sulfides eroded from local soils (JBR Environmental, 2010).

From **Figure 5-38**, TDS concentrations measured from three stormwater urban outfallss that discharge to the Truckee River between E. McCarran and Idlewild ranged from 48 mg/L to 660 mg/L. We compare these concentrations to requirements used to maintain existing higher quality (≤ 120 mg/L) for this segment; annual-average numeric criterion to protect beneficial uses is shown for reference. Only a single stormwater sample collected from Arlington outfall exceeded this requirement.

From **Figure 5-39**, TDS concentrations measured from samples collected in North Truckee Drain, a tributary to the Truckee River upstream of Lockwood ranged from 140 mg/L to as high as 1,300 mg/L. We compare these concentrations to requirements used to maintain existing higher quality (≤ 260 mg/L) for this segment; annual-average numeric criterion to protect beneficial uses is shown for reference. Most concentrations measured in North Truckee Drain exceeded this requirement, with the exception some stormwater samples collected from the Big Fish Drive station.

From **Figure 5-40**, TDS concentrations measured from samples collected in Steamboat Creek at Rhodes Road ranged from 140 mg/L to 220 mg/L. These values meet the WQS for TDS established for this segment of Steamboat Creek (≤500 mg/L).

From **Figure 5-41**, TDS concentrations measured from samples collected at stations in Steamboat Creek and tributaries downstream of Rhodes Road ranged from 62 mg/L to as high as 420 mg/L. TDS concentrations were measured above 250 mg/L consistently from Steamboat Creek in both stormwater and baseflow. The highest TDS concentration was measured from Yori Drain. WQS established to protect water quality in Steamboat Creek and tributaries do not exist.

From **Figure 5-42**, TDS concentrations measured from samples collected in Whites Creek ranged from 45 mg/L to 67 mg/L. Baseflow concentrations were slightly higher than stormwater concentrations. A single value WQS does not exist for Whites Creek; however, an annual-average criterion of ≤ 500 mg/L is established to protect beneficial uses. All concentrations measured from Whites Creek met this WQS.

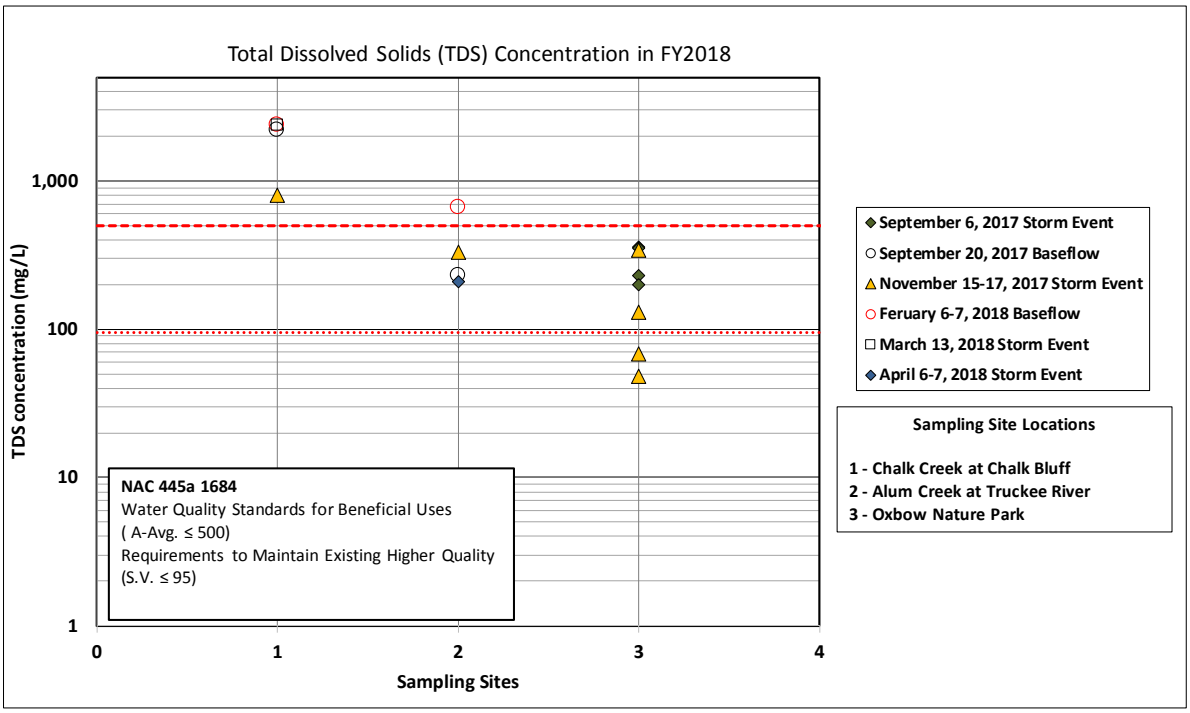


Figure 5-37 Total Dissolved Solids (TDS) Concentrations for Tributaries and Stormwater Urban Outfalls to the Truckee River upstream of Idlewild, FY2018

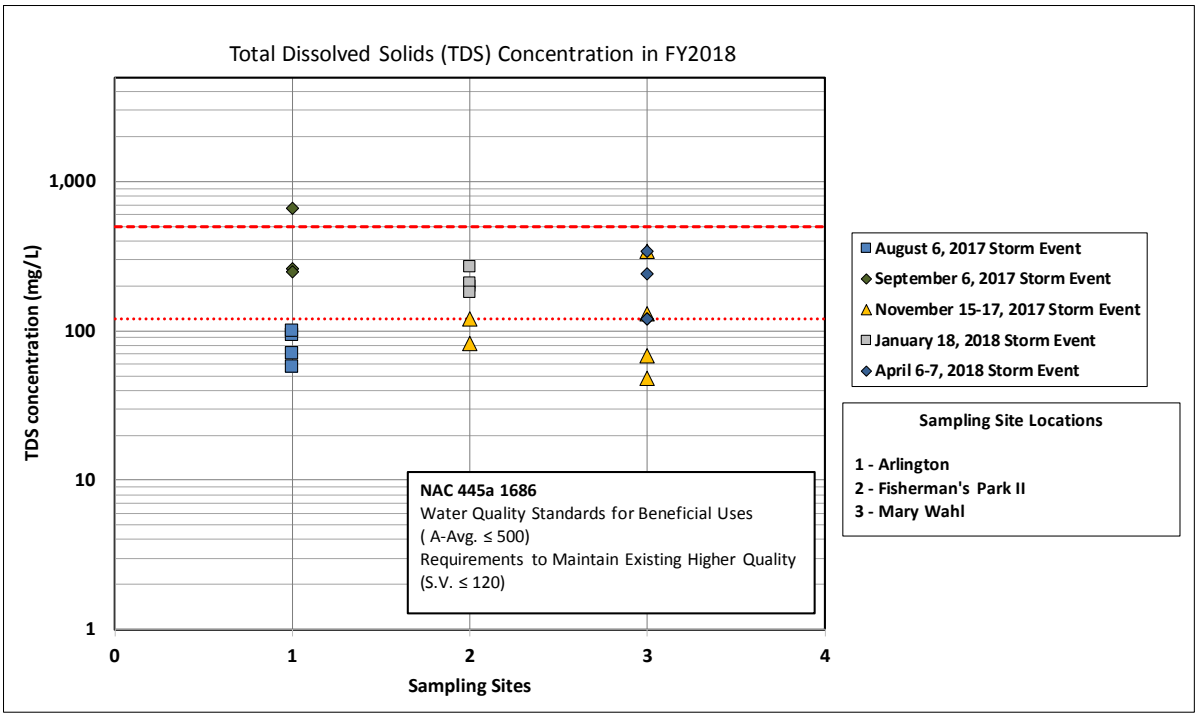


Figure 5-38 TDS Concentrations for Stormwater urban outfallss to the Truckee River from E. McCarran upstream to Idlewild, FY2018

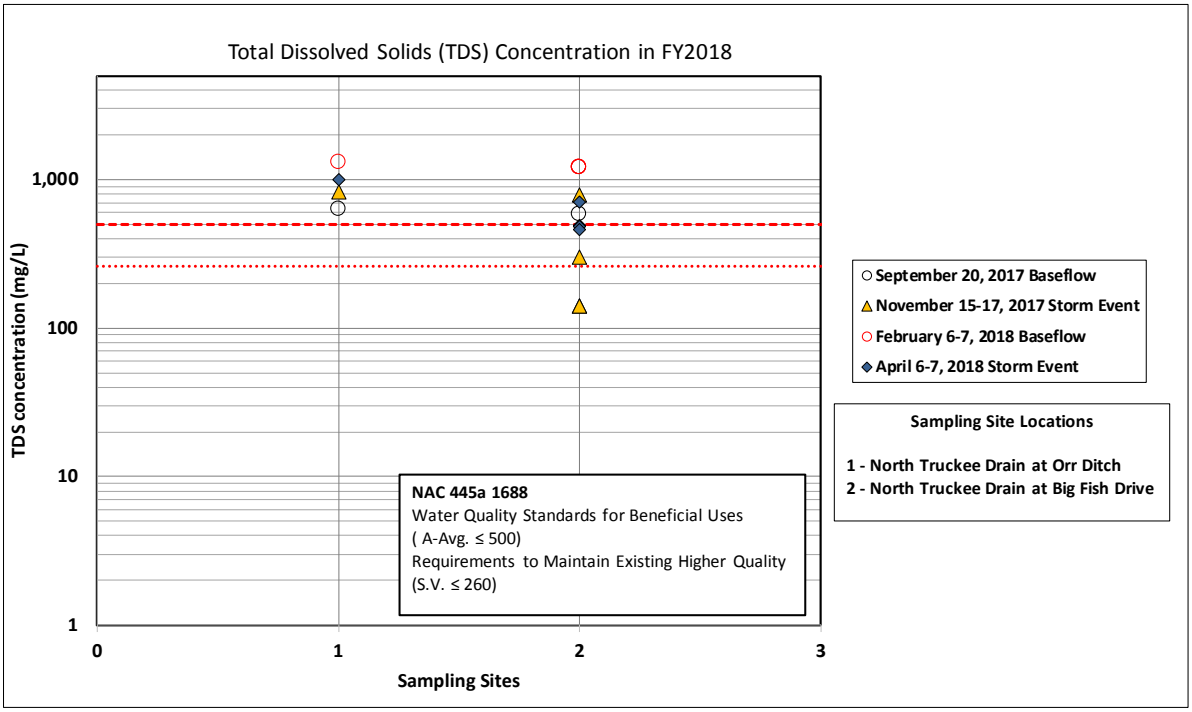


Figure 5-39 TDS Concentrations for Tributaries to the Truckee River from Lockwood, upstream to E. McCarran, FY2018

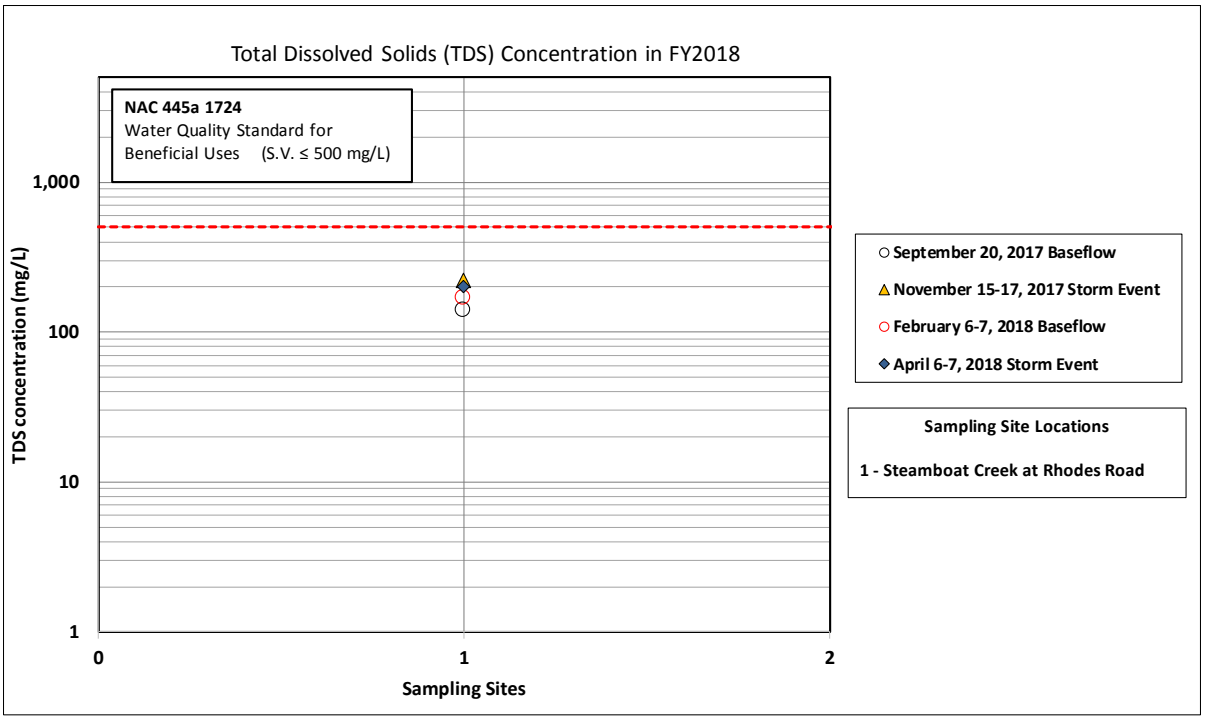


Figure 5-40 TDS Concentrations for Steamboat Creek between Rhodes Road upstream to the outlet of Washoe Lake, FY2018

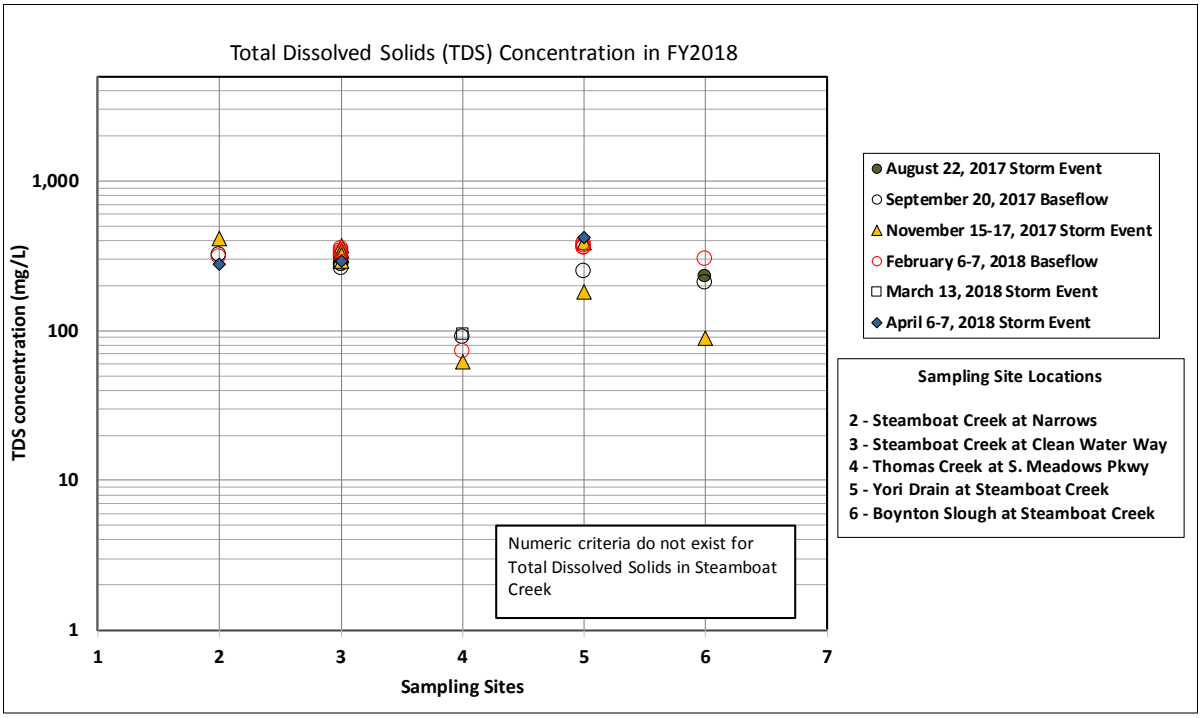


Figure 5-41 TDS Concentrations for Steamboat Creek and Tributaries, FY2018

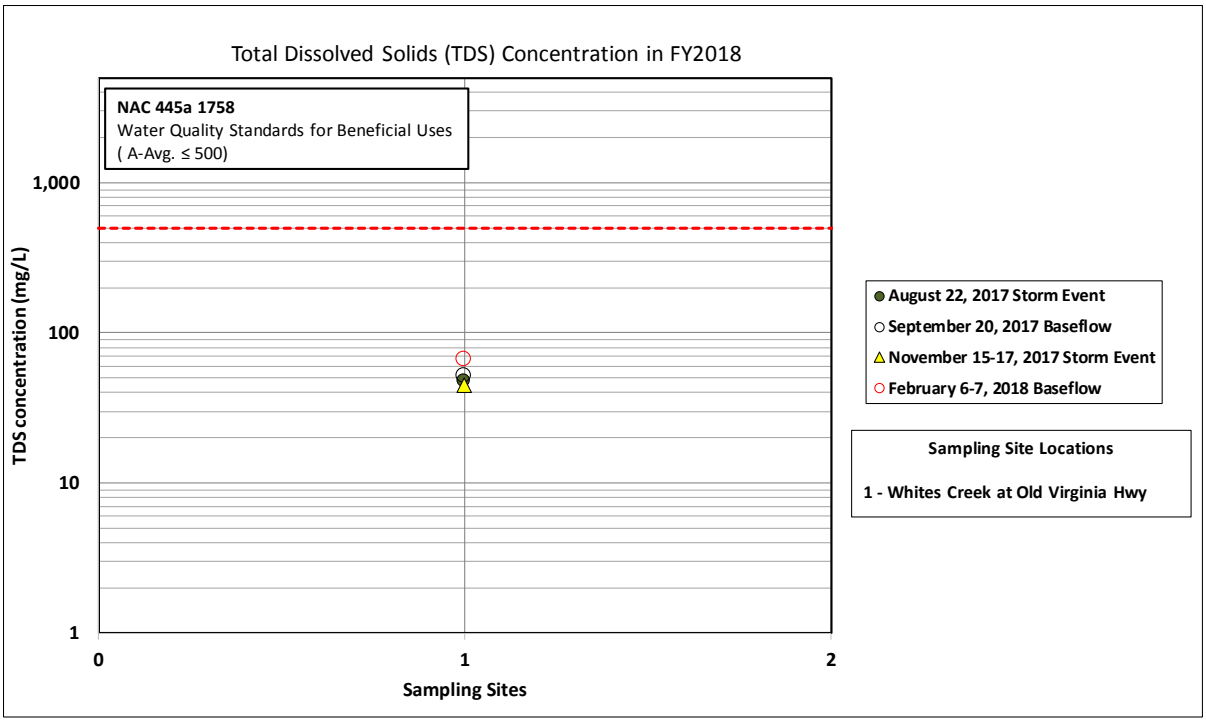


Figure 5-42 TDS Concentrations for Whites Creek, FY2018

TSS concentrations for stormwater and ambient samples collected in FY2018 are shown in **Figure 5-43**, **Figure 5-44**, **Figure 5-45**, **Figure 5-46**, and **Figure 5-47**, grouped by their listed water body and specific WQS or numeric criteria. Vertical axes in all graphs are logarithmic to better show the range in values detected.

From **Figure 5-43**, TSS concentrations measured from two tributaries and one stormwater urban outfall that discharge to the Truckee River upstream of Idlewild ranged from 1.0 mg/L to as high as 390 mg/L. We compare these concentrations to single value WQS used to protect beneficial uses (≤ 25 mg/L) for this segment; annual-average numeric criterion (≤ 15 mg/L) to maintain higher quality is shown for reference. At least a single storm sample concentration from each station exceeded the WQS; the highest concentration was measured in Alum Creek during the April 6-7, 2018 storm event. Baseflow sample concentrations for Chalk Creek and Alum Creek met the WQS.

From **Figure 5-44**, TSS concentrations measured from three stormwater urban outfallss that discharge to the Truckee River between E. McCarran and Idlewild ranged from 9.0 mg/L to as high as 1,500 mg/L. We compare these concentrations to single value WQS used to protect beneficial uses (≤ 25 mg/L) for this segment; annual-average numeric criterion (≤ 15 mg/L) to maintain higher quality is shown for reference. All stormwater samples

collected from these three stormwater urban outfallss exceeded the WQS with the exception of one sample from Mary Wahl. Stormwater from Arlington outfall exhibited the highest TSS concentrations overall.

From **Figure 5-45**, TSS concentrations measured from samples collected in North Truckee Drain ranged from 6 mg/L to as high as 84 mg/L. We compare these concentrations to single value WQS used to protect beneficial uses (≤ 50 mg/L) for this segment; annual-average numeric criterion (≤ 25 mg/L) to maintain higher quality is shown for reference. Most samples met this WQS, with the exception of samples collected from Big Fish Drive station in the November 15-17, 2017 storm event. Baseflow samples collected from both locations on North Truckee Drain also met this the WQS.

From **Figure 5-46**, TSS concentrations measured from samples collected at three different stations in Steamboat Creek and tributaries downstream from Rhodes Road ranged from 2.0 mg/L to as high as 780 mg/L. There are no numerical standards for TSS in Steamboat Creek or its tributaries. Highest TSS concentrations were measured from Steamboat Creek and Yori Drain. In general, stormwater concentrations exceeded baseflow concentrations across all stations.

From **Figure 5-47**, TSS concentrations measured from samples collected in Whites Creek ranged from 1.0 mg/L to as high as 61 mg/L. WQS do not exist for Whites Creek.

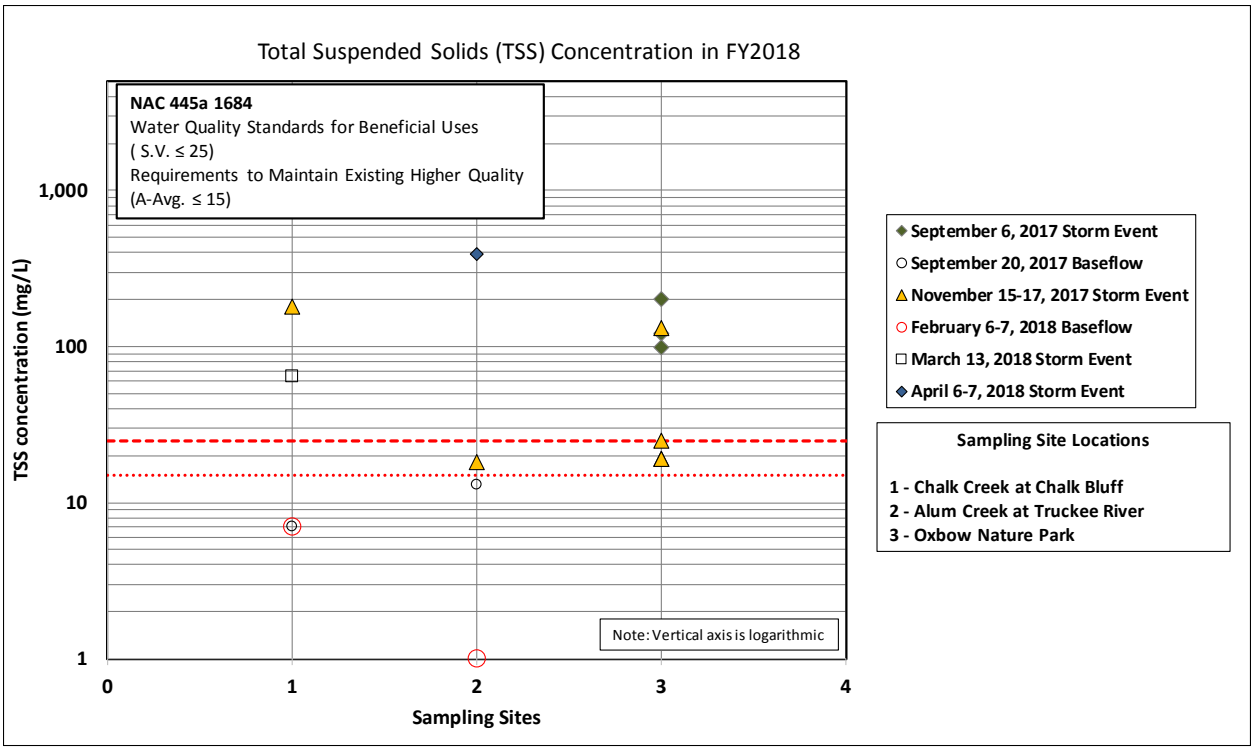


Figure 5-43 Total Suspended Solids (TSS) Concentrations for Tributaries and Stormwater Urban Outfalls to the Truckee River upstream of Idlewild, FY2018

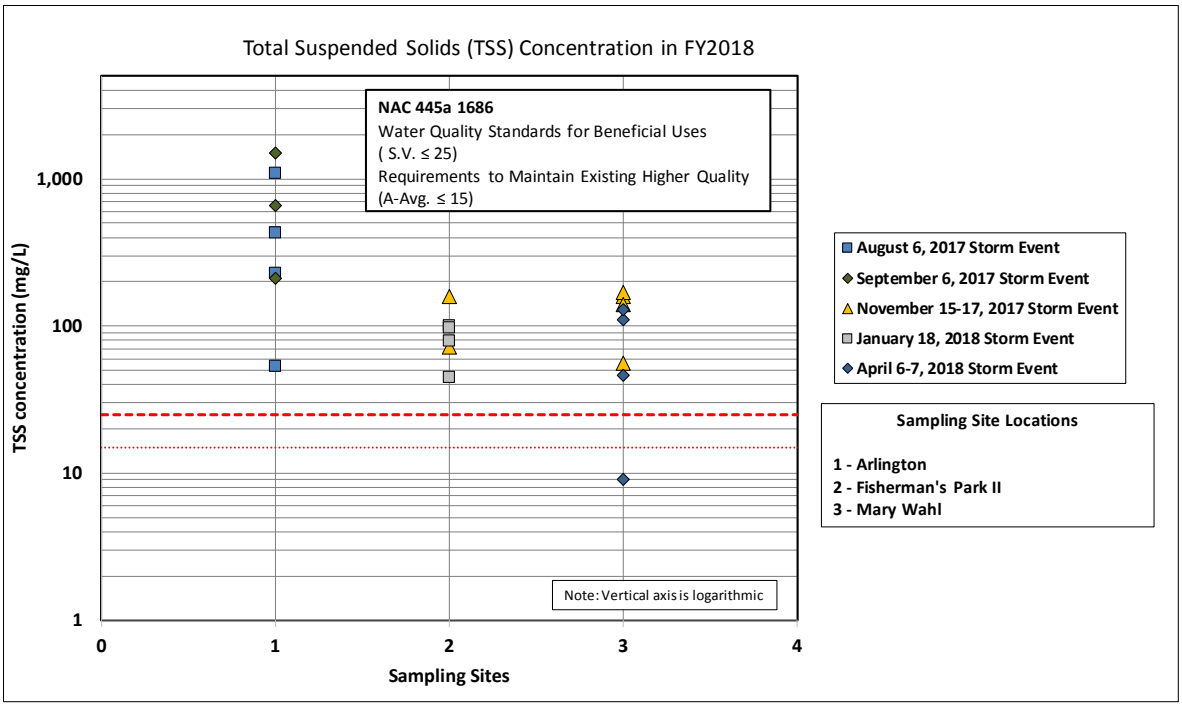


Figure 5-44 TSS Concentrations for Stormwater urban outfallss to the Truckee River from E. McCarran upstream to Idlewild, FY2018

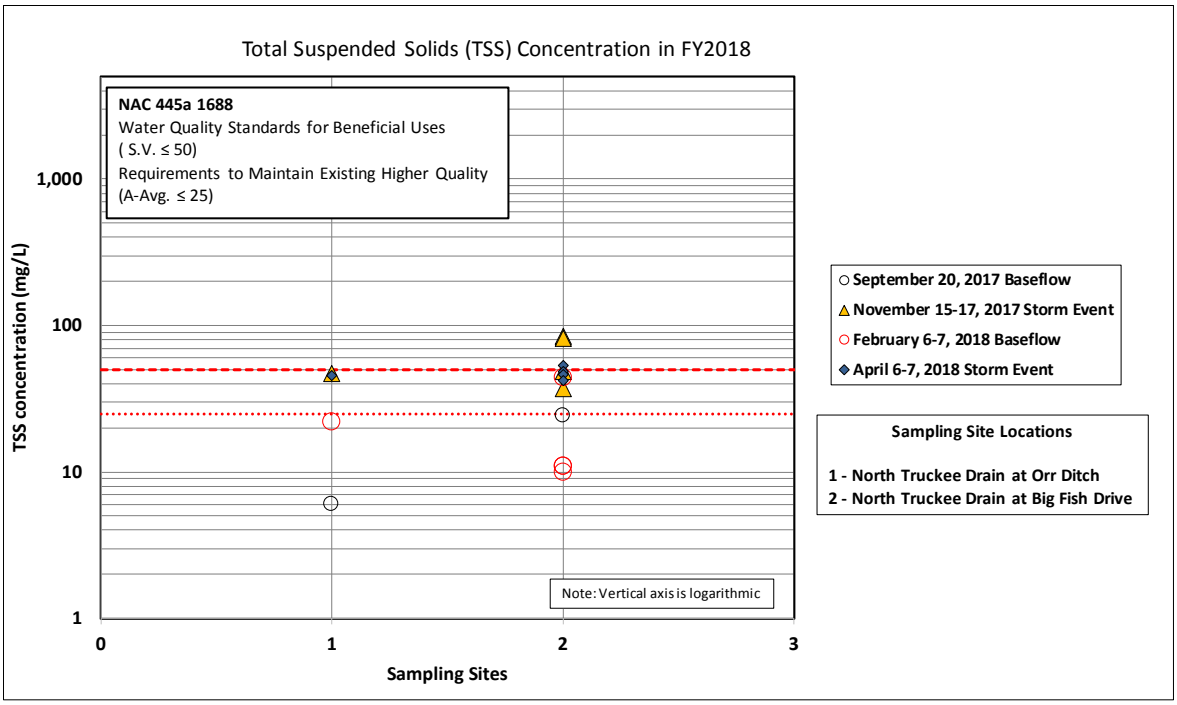


Figure 5-45 TSS Concentrations for Tributaries to the Truckee River from Lockwood, upstream to E. McCarran, FY2018

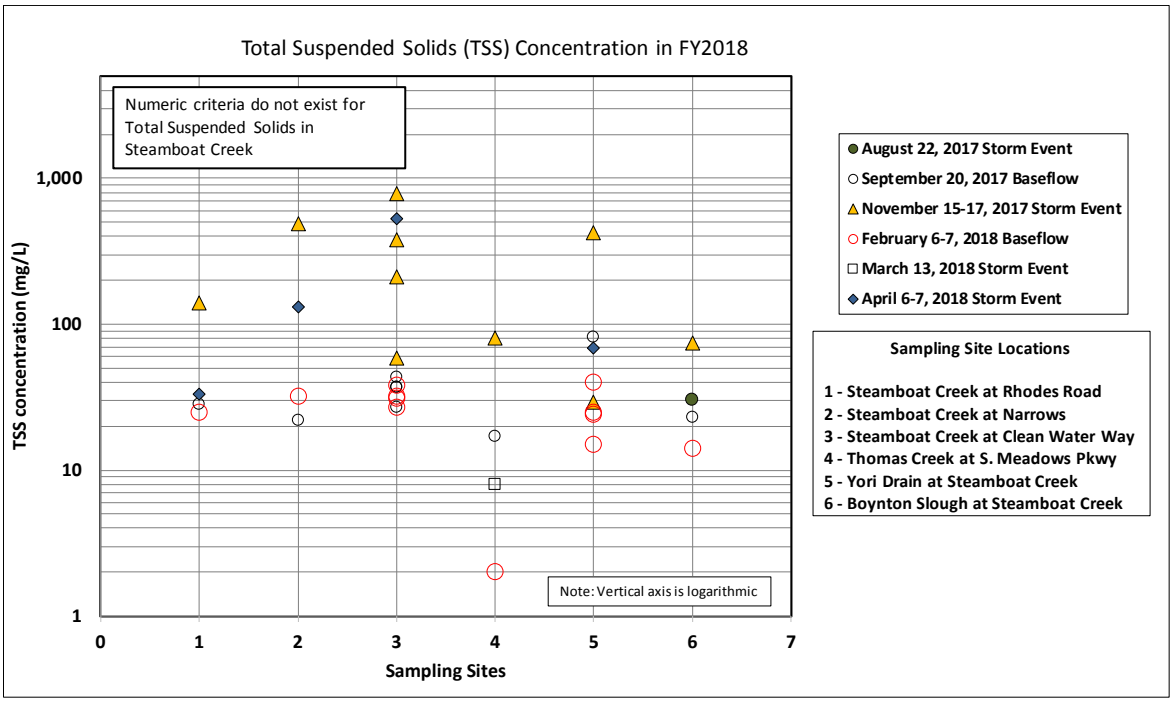


Figure 5-46 TSS Concentrations for Steamboat Creek and Tributaries, FY2018

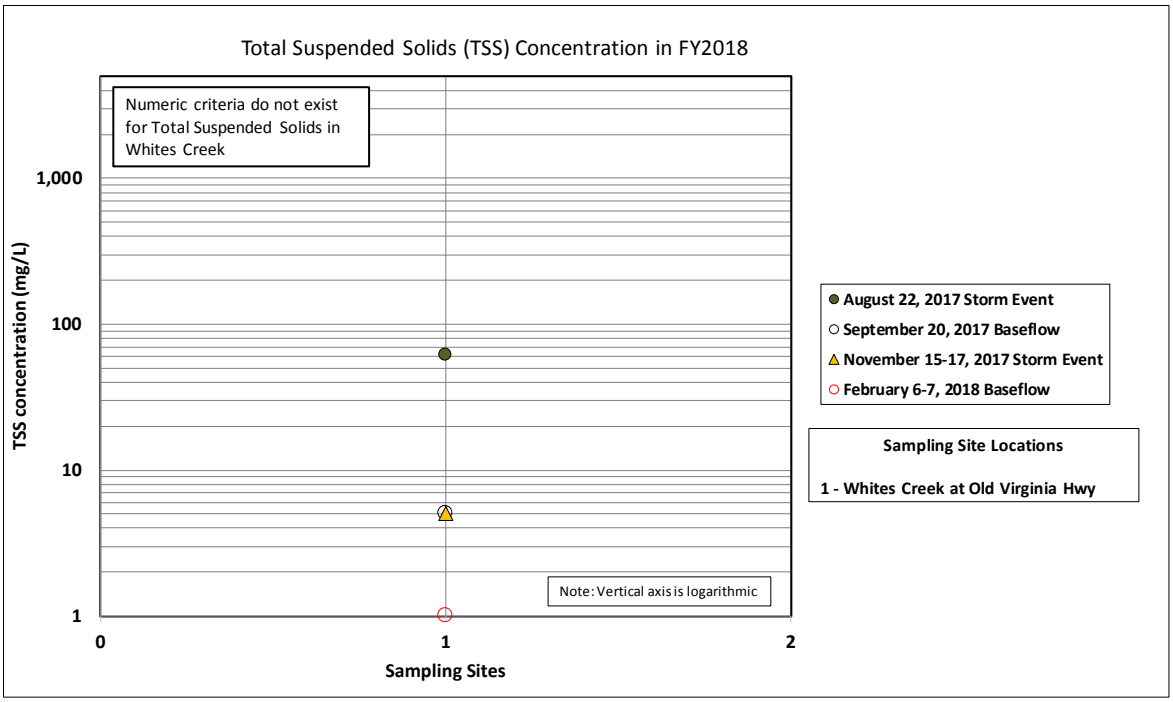


Figure 5-47 TSS Concentrations for Whites Creek, FY2018

5.4.4 Escherichia Coli Bacteria

E. coli is an indicator of potential human health impacts from exposure to surface waters that contain excessive contamination from wildlife or human excrement and treated wastewater effluent. High counts of bacteria may not necessarily confirm the presence of pathogens but provides an indicator of risk. Efforts to collect and analyze for E. coli are limited by a holding time of 8 hours for proper analysis. In FY2018, at least one sample was successfully sampled and transferred to the laboratory within the strict holding time for: (1) Whites Creek, (2) Alum Creek, and (3) Steamboat Creek at Rhodes Road. E. coli samples were also collected and analyzed during winter and summer baseflow at stations identified for E. coli sampling in the 2017 SAP (**Figure 5-48**).

E. coli counts ranged between 344 MPN/100 mL and 1,120 MPN/100 mL in stormwater. The Whites Creek and Steamboat Creek samples both exceeded their individual WQS. E. coli counts ranged between 12 MPN/100 mL and 613 MPN/100 mL in baseflow. All baseflow samples met their individual WQS except for the sample collected from Steamboat Creek on September 19, 2017.

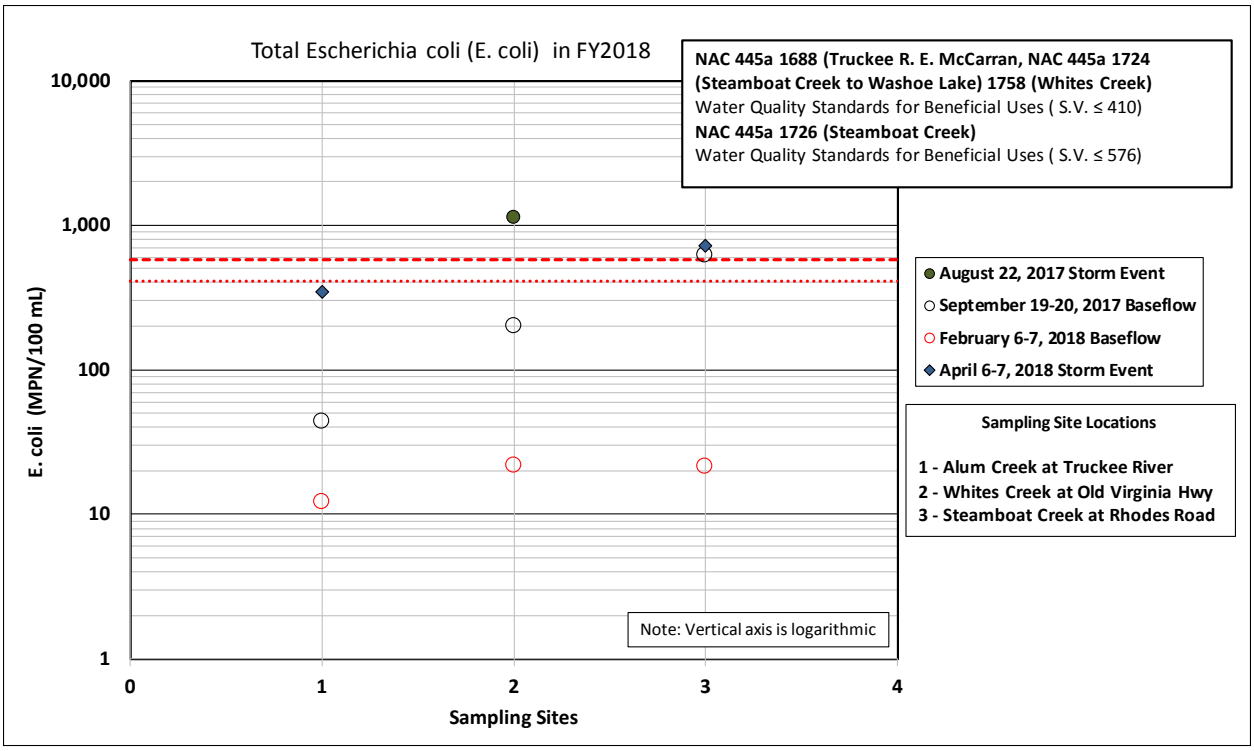


Figure 5-48 E. coli Counts for Samples Collected in Truckee Meadows, FY2018

5.4.5 Physical Parameters: Dissolved Oxygen, pH, Specific Conductance and Turbidity

Physical parameters of waters sampled are measured during each site visit (storm or non-storm conditions and when flow was present). In this section, we present physical parameters across all monitoring stations to provide greater context for water quality conditions throughout the monitoring year. NDEP (2014) recognizes that instantaneous measures of physical parameters are representative of a specific point in time and can naturally vary over a 24-hour period.

DO concentrations measured in FY2018 are shown in **Figure 5-49**, **Figure 5-50**, and **Figure 5-51**, grouped by their listed water body and specific numeric criterion for DO. In the Truckee River, WQS for DO vary depending on the time of year. In some tributaries, a fixed WQS value exists throughout the year and is shown where appropriate. DO concentrations less than 5.0 mg/L can be detrimental to aquatic life in receiving waters.

Higher DO concentrations may indicate super-saturated conditions attributed to rapid aeration and photosynthesis. During the process of photosynthesis, plants produce oxygen as a waste product. This adds to the DO concentration in the water, potentially increasing DO to values above 100 percent saturation (YSI, 2005). The actual

concentration of DO will also vary depending on water temperature and salinity. First, the solubility of oxygen decreases as temperature increases. Second, dissolved oxygen decreases exponentially as salt levels increase (Wetzel, 2001). As such, we tend to see higher DO concentrations during winter when waters are colder and fresher from snowmelt runoff. While higher concentrations may not impact receiving waters, large daily swings in DO can be devasting for aquatic life (reference?).

In general, DO concentrations can be used as a proxy for other constituents. For example, nitrate occurs readily in oxidizing conditions (higher DO concentrations), but ammonia occurs primarily in reducing conditions or the absence of DO.

From **Figure 5-49**, DO concentrations ranged from 1.96 mg/L to as high as 16.6 mg/L. DO concentrations measured across all stations discharging to the Truckee River in FY2018 met the WQS to protect beneficial uses, except Arlington outfall and the Oxbow Nature Park outfall. Temporally, higher DO concentrations were measured during the winter months; whereas the lowest DO concentrations were measured during the summer and fall months. In general, Alum Creek exhibited the highest DO concentrations from through the year. Conversely, North Truckee Drain and Arlington outfall exhibited the lowest DO concentrations through the year.

From **Figure 5-50**, DO concentrations measured in Steamboat Creek and tributaries downstream from Rhodes Road were measured across all stations between 6.9 mg/L and 15.1 mg/L, well above WQS established to protect beneficial uses (≥ 3 mg/L, below Rhodes Road to the Truckee River; ≥5 mg/L Rhodes Road upstream to the outlet of Washoe Lake). Only a single measurement of DO from Boynton Slough measured below these WQS (2.1 mg/L) in an August 23, 2017 storm event. During this sampling, we noted active construction on the floodplain absent of stormwater best management practices, immediately upstream of this sampling station. Sediment-laden runoff from a disturbed site may have affected DO concentrations immediately downstream. Thomas Creek and Yori Drain both exhibited consistently higher DO concentrations through the year, relative to the other stations compared. Supersaturated conditions in Yori Drain may be associated with outflows from the Yori mitigation wetlands located immediately upstream from the monitoring station. Conversely, Boynton Slough exhibited a trend of lower DO concentrations relative to other stations compared in the Steamboat Creek watershed.

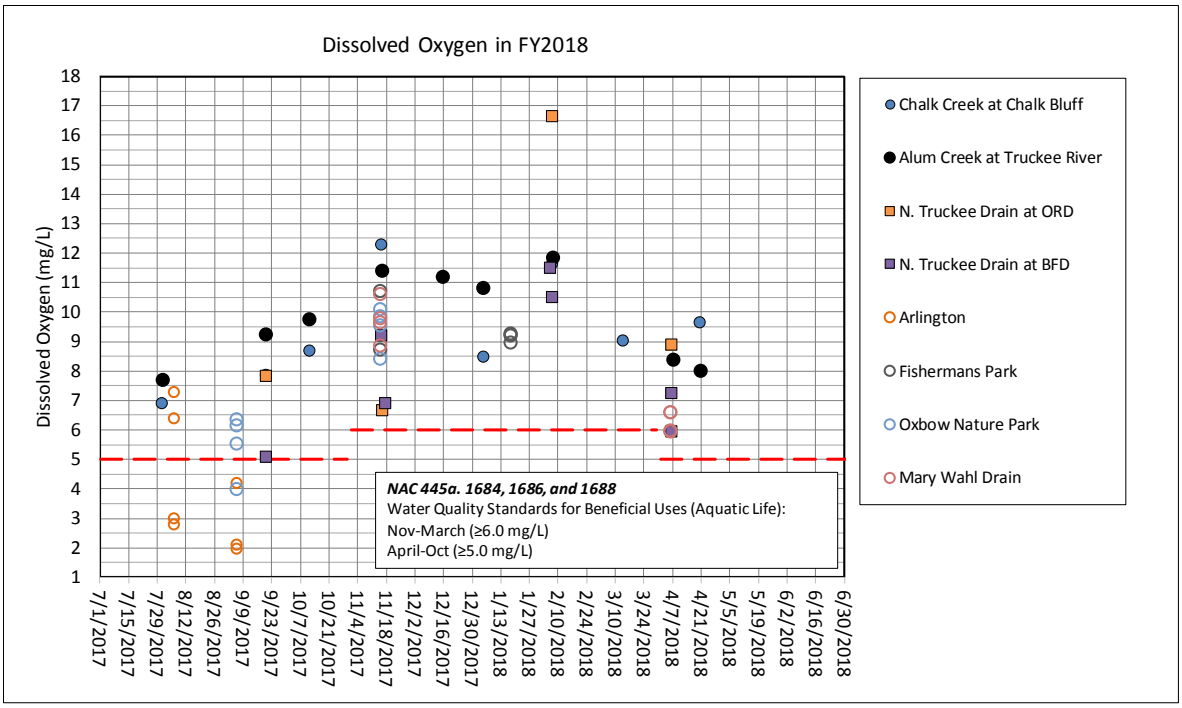


Figure 5-49 DO Concentrations for Tributaries and Stormwater urban outfallss to the Truckee River from Lockwood upstream to California/Nevada State Line, FY2018

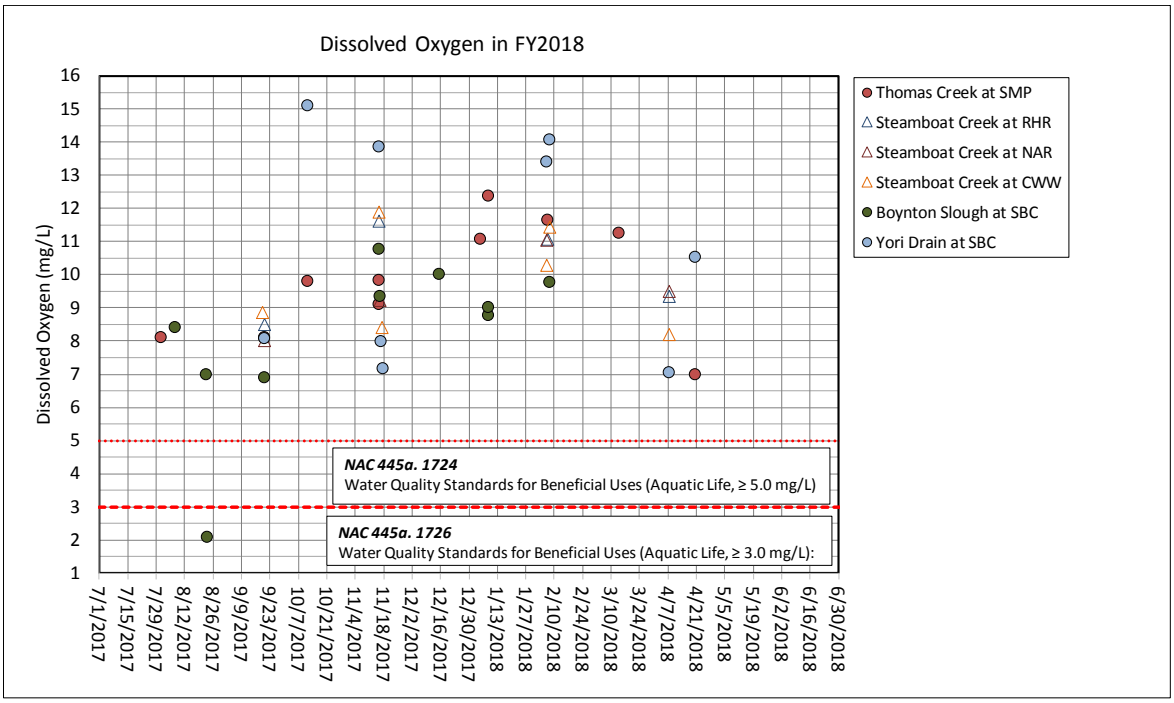


Figure 5-50 DO Concentrations for Steamboat Creek and Tributaries, FY2018

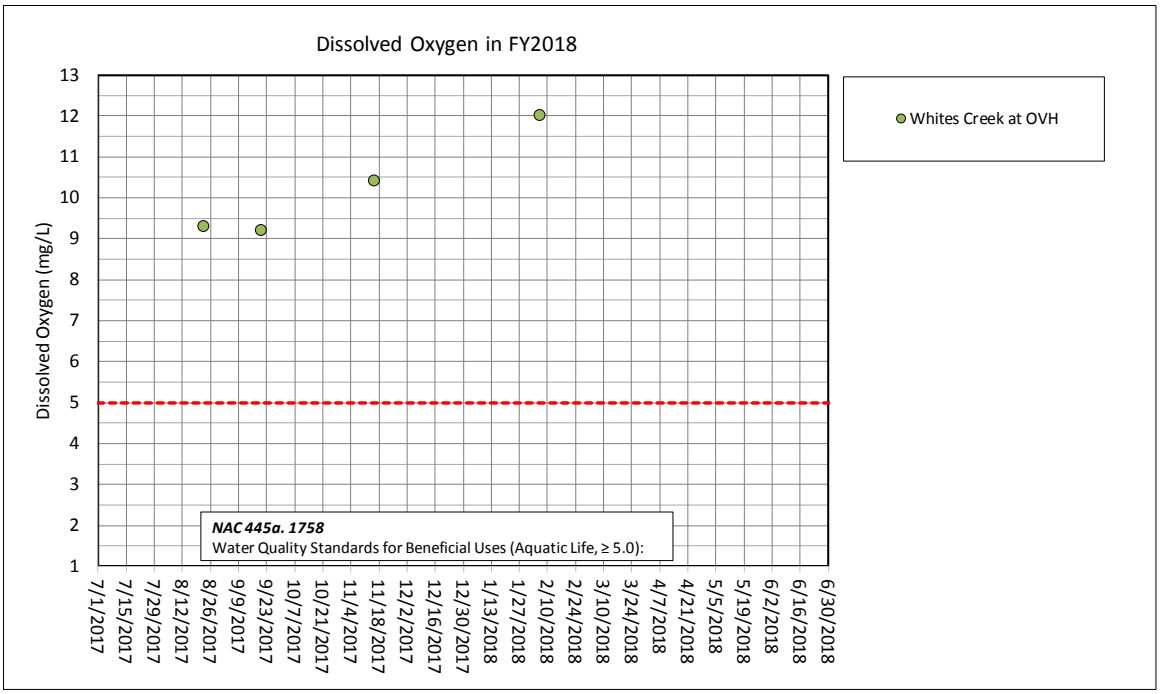


Figure 5-51 DO Concentrations for Whites Creek, FY2018

From **Figure 5-51**, DO concentrations in Whites Creek were limited to 4 measurements and ranged from 9.2 mg/L to 12.0 mg/L, well above the WQS to protect beneficial uses (≥ 5.0 mg/L).

pH values measured in FY2018 are shown in **Figure 5-52**, **Figure 5-53**, **Figure 5-54**, **Figure 5-55**, and **Figure 5-56**, grouped by their listed water body and specific numeric criterion for pH.

From **Figure 5-52**, pH ranged from 7.07 to as high as 9.00 across two tributaries and one stormwater urban outfall discharging to the Truckee River upstream of Idlewild in FY2018. All measures of pH met the WQS to protect beneficial uses, while only a few measures were slightly outside of the requirement to maintain existing higher quality.

From **Figure 5-53**, pH ranged from 5.97 to as high as 9.05 across all three stormwater urban outfallss discharging to the Truckee River between E. McCarran and Idlewild in FY2018. Because these are stormwater urban outfallss, they only discharge during a storm event; measures of pH were limited in FY2018. Most measurements of pH met the WQS to protect beneficial uses; however, many measurements from Arlington and Mary Wahl were outside this WQS and the requirement to maintain existing higher quality.

From **Figure 5-54**, pH ranged from 7.90 to as high as 8.68 from two stations on North Truckee Drain in FY2018. All measures met the WQS to protect beneficial uses and to maintain higher quality except for a single measurement in North Truckee Drain at Big Fish Drive (8.68).

From **Figure 5-55**, pH measured in Steamboat Creek and tributaries downstream of Rhodes Road ranged between 7.37 and 9.29. All measurements of pH were within WQS established to protect beneficial uses with the exception of a couple measures from Yori Drain (9.27) and one from Thomas Creek (9.29). In general, Yori Drain exhibited higher pH than others compared.

From **Figure 5-56**, pH measured in Whites Creek ranged between 7.34 and 7.82, well within WQS established to protect beneficial uses in this tributary.

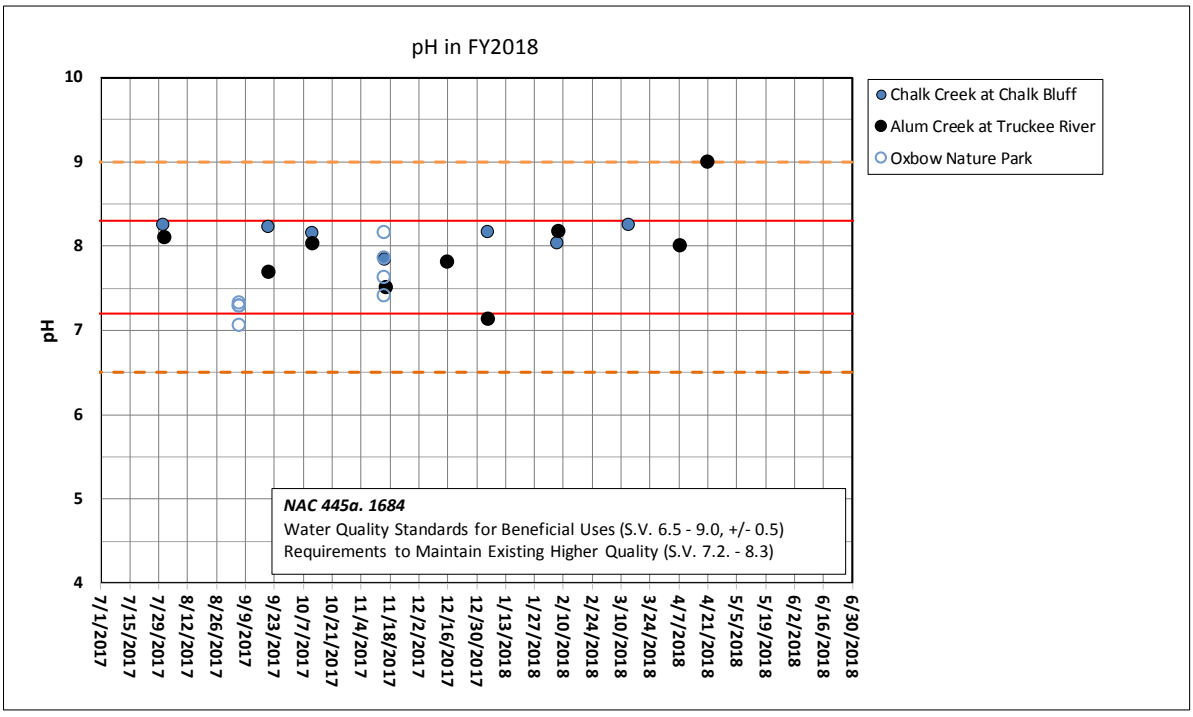


Figure 5-52 pH for Tributaries and Stormwater Urban Outfalls to the Truckee River upstream of Idlewild, FY2018

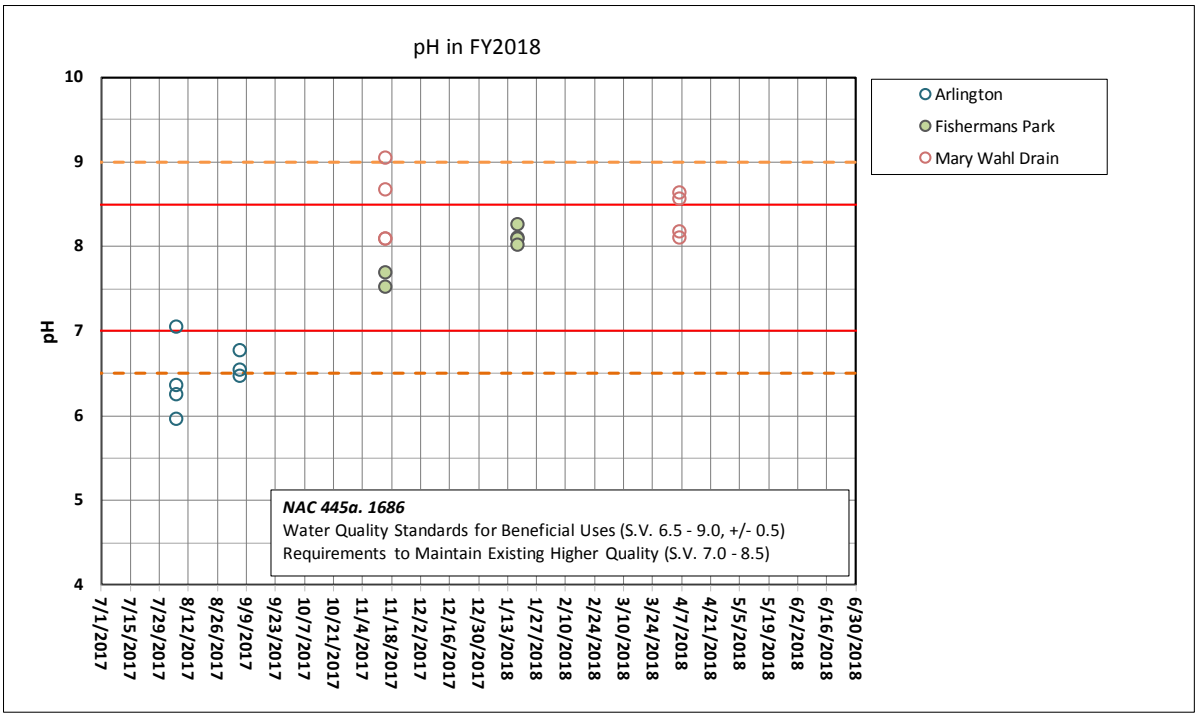


Figure 5-53 pH for Stormwater urban outfallss to the Truckee River from E. McCarran upstream to Idlewild, FY2018

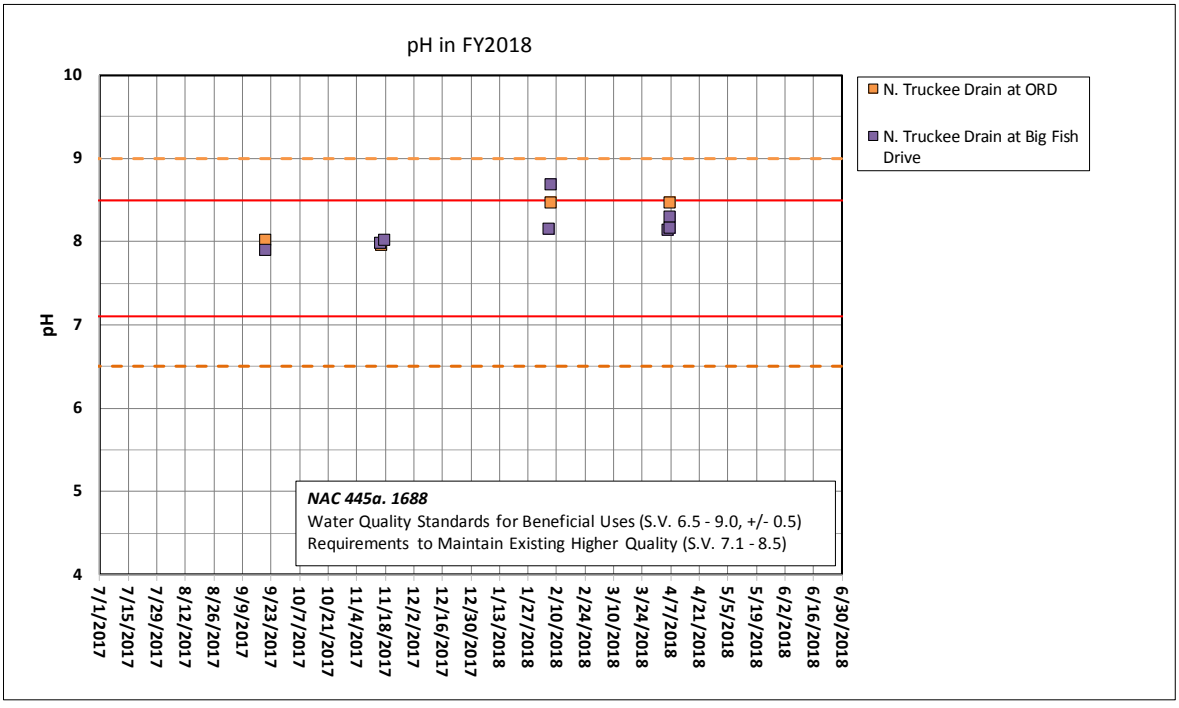


Figure 5-54 pH for Tributaries to the Truckee River from Lockwood, upstream to E. McCarran, FY2018

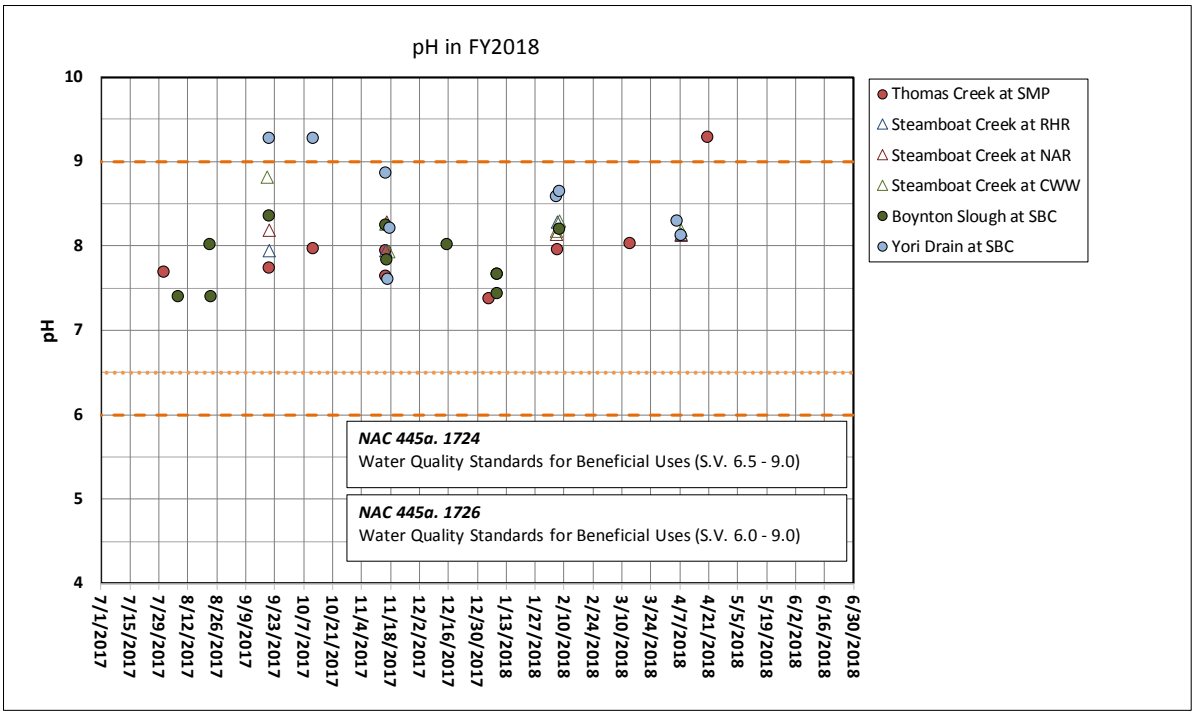


Figure 5-55 pH for Steamboat Creek and Tributaries, FY2018

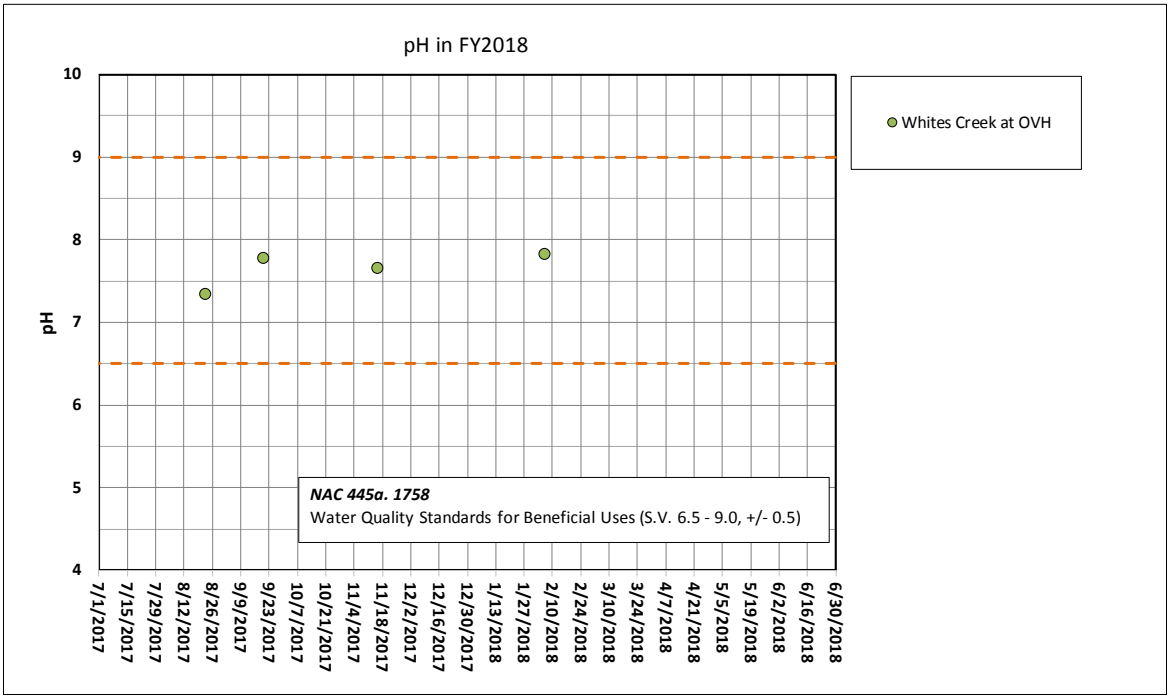


Figure 5-56 pH for Whites Creek, FY2018

Figure 5-57 compares SC, a proxy for salinity, across all monitoring stations in the Truckee Meadows in FY2018. SC ranged between 60 µS (fresh water) and 3,414 µS (brackish water). Currently there are no WQS for SC in the Truckee Meadows.

Chalk Creek exhibited the highest values of SC consistently through the monitoring year. Chalk Creek drains a watershed with geology and soils that can contribute to elevated specific conductance; therefore, elevated values are generally within the range expected for this creek. In general, groundwater also can dissolve more ions, so higher SC values in baseflow can indicate groundwater-supported baseflow. Such may be the case in Steamboat Creek where geothermal springs are present. Alternatively, irrigation return flows from the many ditches that discharge back to tributaries (i.e., North Truckee Drain, Steamboat Creek) may contain higher amounts of dissolved ions or salts and elevate SC in discharges to the Truckee River. Conversely, Whites Creek and Thomas Creek exhibit the lowest SC values. These watersheds originate in higher elevations with snowmelt hydrology. Snow melt runoff typically exhibits very low SC values.

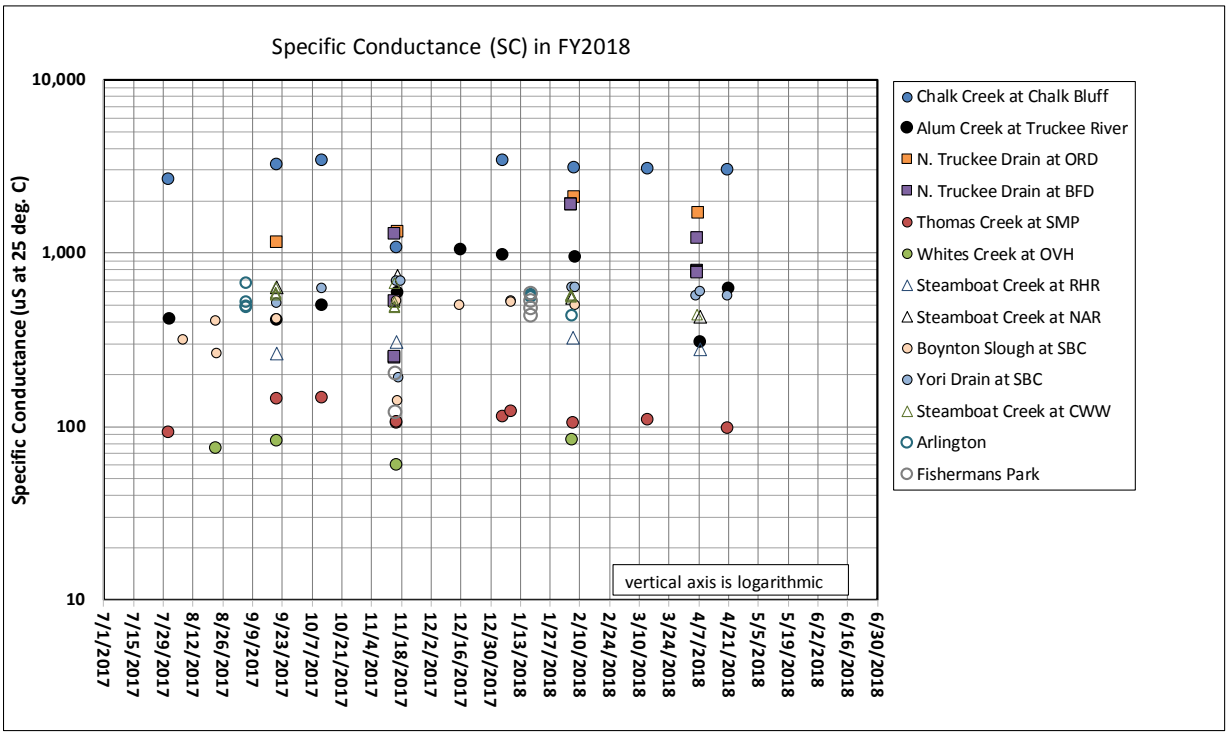


Figure 5-57 Specific Conductance (SC) Across all Stations, Truckee Meadows, FY2018

Figure 5-58 compares turbidity across all stations for samples collected in FY2018. Turbidity is a measure of water clarity and typically increases coincident with an increase

in total suspended solids or sediments. The water quality standard for beneficial uses specifies turbidity to be equal to or less than 10 NTU (S.V.), except of Steamboat Creek and Whites Creek, where no turbidity WQS exists.

In FY2018, and in general, turbidity during baseflow conditions is typically lower than during storm events. Turbidity ranged between 2.3 NTU and 40 NTU under baseflow conditions; Steamboat Creek and Yori Drain exhibited the highest values during baseflow. During storm events, runoff samples exhibited turbidity values above the WQS with a range between 10 NTU and 524 NTU. The highest stormwater turbidity values were measured in Steamboat Creek, Arlington outfall, and Alum Creek.

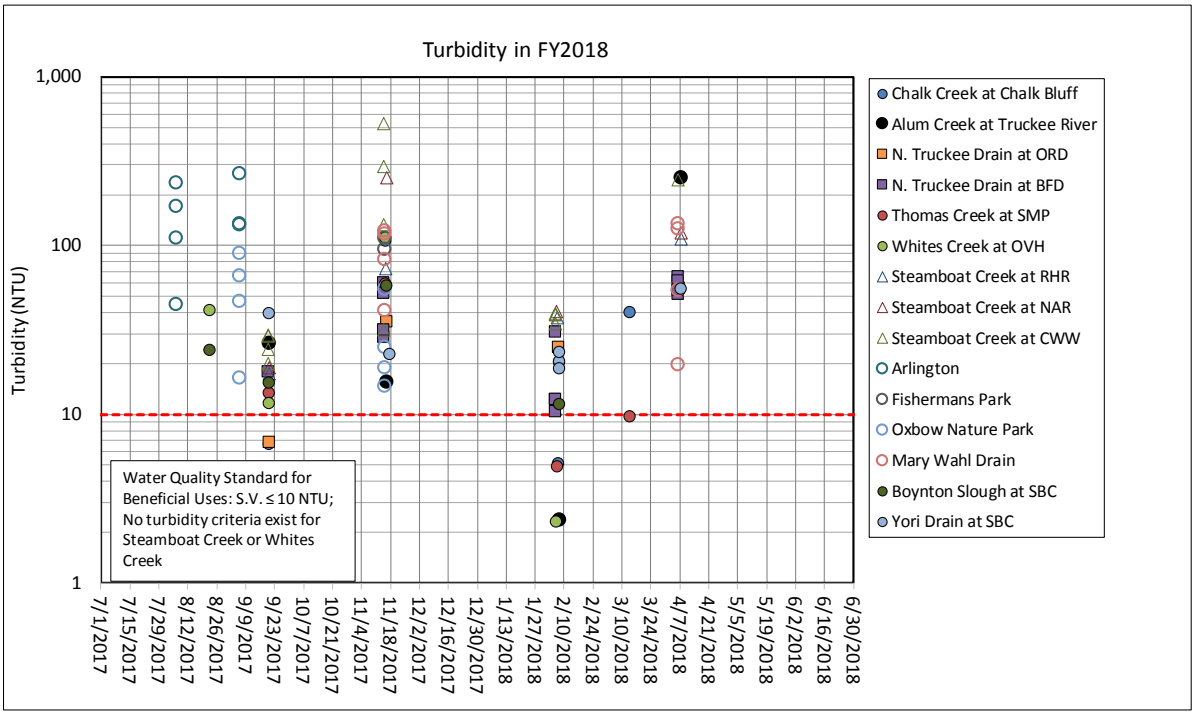


Figure 5-58 Turbidity Across all Stations, Truckee Meadows, FY2018 Stormwater and Baseflow Constituent Instantaneous Loads

Instantaneous loads can be calculated using both a measure of instantaneous flow and the constituent concentration analyzed from a grab sample. While these measures are still snapshots in time they provide additional information other than the concentration alone. For example, instantaneous loads are commonly reported in lbs./day, similar to the TMDLs such that relative comparisons can be made.

In this section, we compare instantaneous loads for a limited number of constituents (Total-N, Total-P, and TDS) across tributary sites where grab samples and instantaneous flow were measured simultaneously in both storm events and baseflow conditions. Standard reporting for instantaneous load is mass per time (e.g., lbs./day). In some cases, instantaneous loading rates for some tributary sites were not calculated because constituents were not detected above laboratory detection limits. If we suspected concentrations to be present, but below the laboratory reporting limit, we requested the measured values from the laboratory (often referred to as J-values).

Instantaneous loads for North Truckee Drain at Kleppe Lane and Steamboat Creek at Clean Water Way are not shown or discussed in this section. Automated samplers were operated during storm events and for baseflow at these tributary locations in FY2018 and total storm loads were computed and presented in subsequent sections of this report. An automated sampler was also deployed at Yori Drain in FY2018; however, due to unusually high flows in Steamboat Creek attempts to automate sample collection across different storms was hindered from backwatering in each event. As an alternative, we collected grab samples upstream of the influence of backwatering.

5.4.6 TOTAL-N INSTANTANEOUS LOADS

Figure 5-59 compares instantaneous loads for Total-N as measured in FY2018. Instantaneous loads ranged from 5.1 lbs./day to 7,938 lbs./day across all stations and across all samples collected at each station. Overall, the highest instantaneous Total-N loads were measured during the November 15-17, 2017 storm event. This event was a significant storm and likely a major 'first flush' before the wet season began. Steamboat Creek (across all three stations) exhibits the highest instantaneous Total-N loads in both storm events and baseflow conditions; for example, instantaneous loads ranged between 300 lbs./day and 7,938 lbs./day.

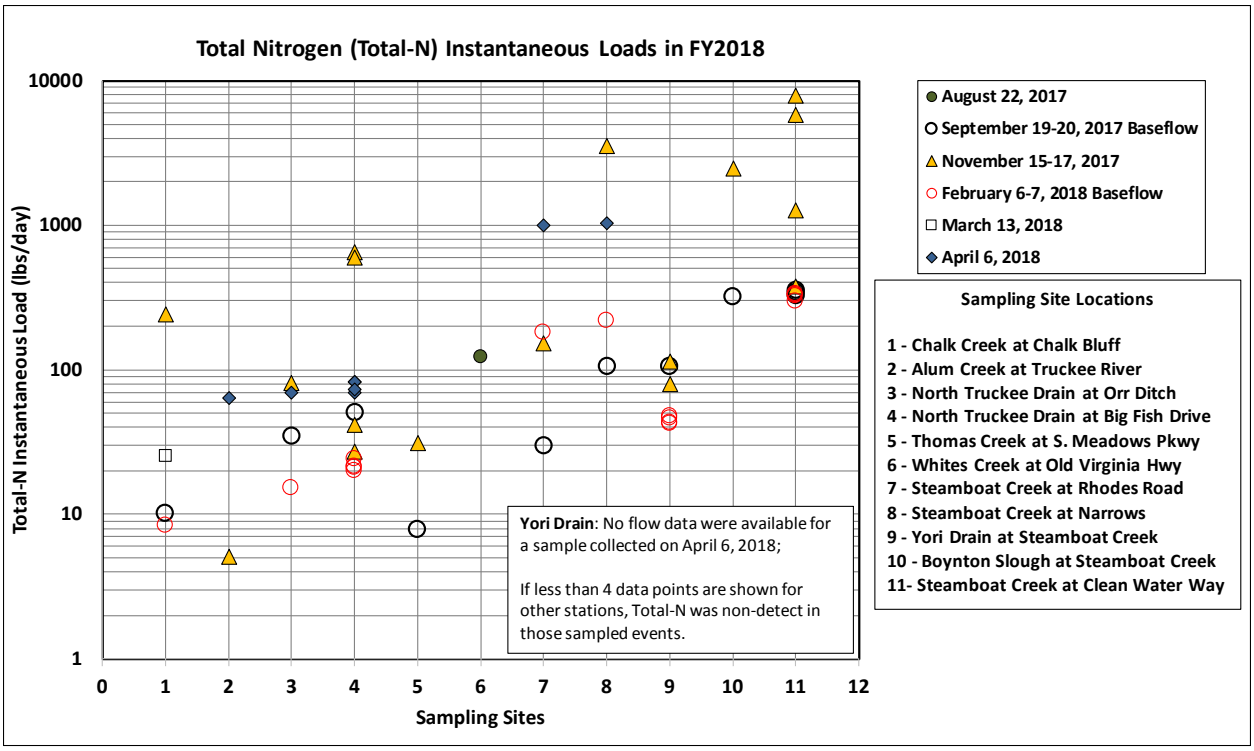


Figure 5-59 Total Nitrogen (Total-N) Instantaneous Loads Across Tributary Sites in Truckee Meadows, FY2018

5.4.7 TOTAL-P INSTANTANEOUS LOADS

Figure 5-60 compares Total-P instantaneous loads across all tributary sites where measured in FY2018. Instantaneous loads ranged from 0.02 lbs./day to 640 lbs./day across all stations and across all samples collected at each station. Similarly, the highest instantaneous Total-P loads were measured during the November 15-17, 2017 storm event. This event was a significant storm and likely a major 'first flush' before the wet season began. Steamboat Creek (across all three stations) exhibits the highest instantaneous Total-N loads in both storm events and baseflow conditions; for example, instantaneous loads ranged between 46 lbs./day and 640 lbs./day.

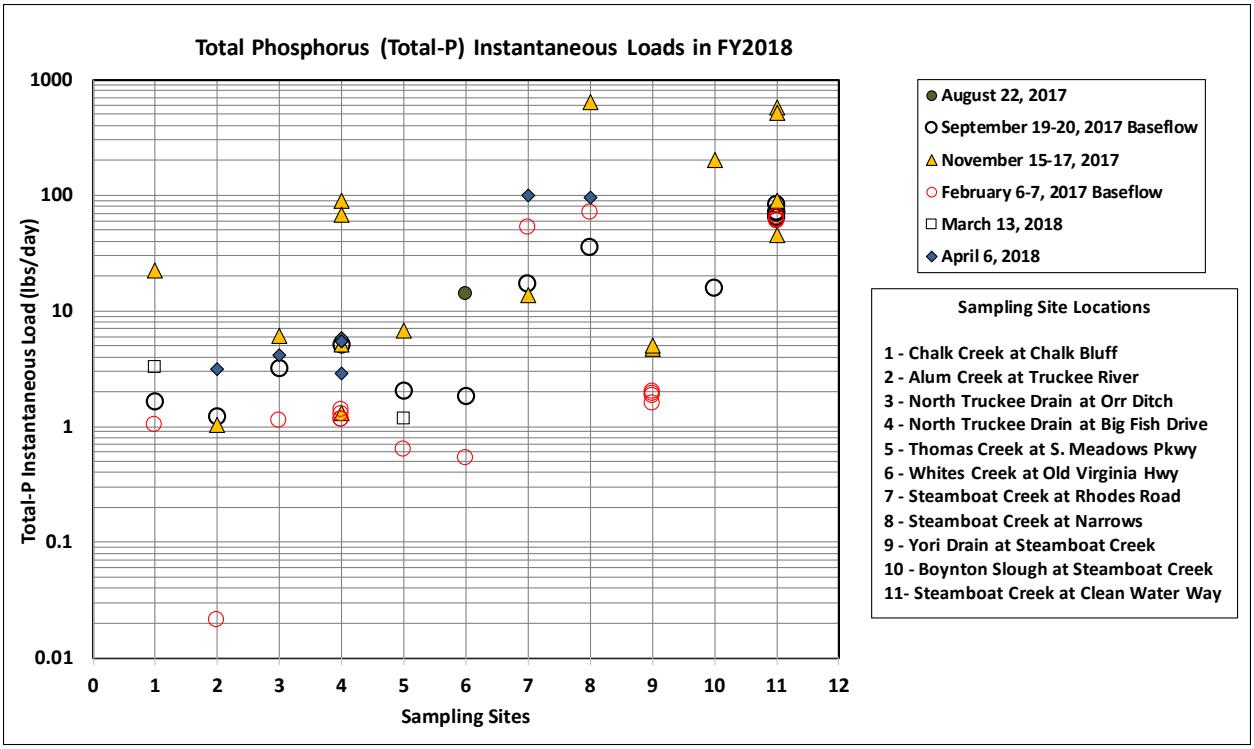


Figure 5-60 Total Phosphorus (Total-P) Instantaneous Loads Across Tributary Sites in Truckee Meadows, FY2018

5.4.8 TDS Instantaneous Loads

Figure 5-61 compares instantaneous loads for TDS across tributary sites measured in FY2018. Instantaneous loads ranged from 534 lbs./day to 970,796 lbs./day across all stations and across all samples collected at each station. Again, the highest instantaneous TDS loads were measured during the November 15-17, 2017 storm event. This event was a significant storm and likely a major 'first flush' before the wet season began. Steamboat Creek (across all three stations) exhibits the highest instantaneous TDS loads in both storm events and baseflow conditions; for example, instantaneous loads ranged between 94,750 lbs./day and 970,796 lbs./day.

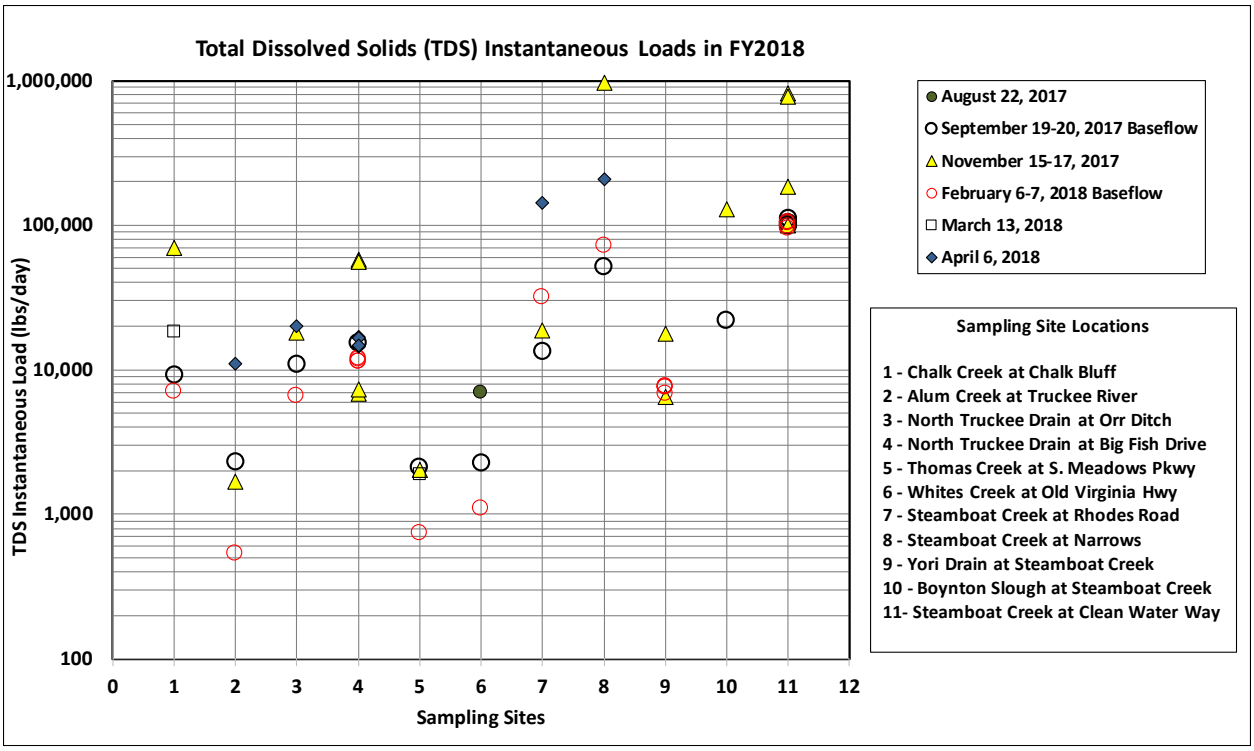


Figure 5-61 Total Dissolved Solids (TDS) Instantaneous Loads Across Tributary Sites in Truckee Meadows, FY2018

5.5 Stormwater and Baseflow Constituent Loads

Automated sampling was conducted during 2 storm events and 2, 24-hour baseflow periods. **Table 5-1** identifies dates when automated sampling was performed at stations instrumented with automated samplers and errors observed.

Stormwater and baseflow loads and yields are presented in subsequent tables. Runoff volumes and load calculations are provided for both the total storm and for distinct segments of the storm hydrograph to show variability in loads, directly related to variability in constituent concentrations and runoff volumes measured in each hydrograph segment. Yields are presented for each constituent across all stations compared and are calculated by dividing the total storm load by the station contributing area.

Table 5-1 Monitoring Stations with Automated Samplers and Dates Sampled

		Storm Date					Baseflow	
Monitoring Station	ID	August 6, 2017	September 6, 2017	November 15-17, 2017	January 18, 2018	April 6, 2018	September 20, 2017	February 6, 2018
Urban Outfalls				*Sampled*				
Oxbow Nature Park	C-24		X	X			Urban Outfalls do not exhbit baseflow	
Arlington	H-19	X	X					
Fisherman's Park II	D-16			X	X			
Mary Wahl	SDOE 008936			X		X		
Tributaries								
Steamboat Creek at Clean Water Way	SBC@CWW			X		O	X	X
North Truckee Drain at Kleppe Lane	NTD@KLP			X		X	X	X
Yori Drain at Steamboat Creek	YD@SBC			O		O		X

Notes:

Each site requires sampling of 2 storms per year

X = multiple samples were successfully collected to compute a storm load

O= attempts to collect multiple samples was hindered by backwatering events from downstream flooding.

In **Table 5-2**, total stormwater runoff, loads, and yields measured at Arlington urban outfall in the August 6, 2017 storm event are presented. This event was a minor, isolated summer thunderstorm. Total storm rainfall measured less than 0.10 inches, based on nearby rain gauges. Runoff volumes and load calculations are provided for both the total storm and for distinct segments of the hydrograph to show variability in loading during the storm. Yields are presented for each constituent across all stations and are calculated by dividing the total load by the contributing area. Both loads and yields for this event were relatively minor.

Table 5-2 Constituent Loads and Runoff Volumes for Arlington Urban Outfall, August 6, 2017 Storm Event

Arlington								
		Storm Loads						
Hydrograph	Storm Runoff Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)				*(lbs)*			
First Flush	72	0.0	0	0.0	0.00	0.00	0.3	0.2
Rising Limb	216	0.1	0	0.1	0.01	0.00	0.9	3.1
Peak	327	0.1	0	0.1	0.01	0.00	1.9	8.8
Falling Limb	5,805	1.7	0	1.7	0.17	0.01	36	399
Totals	**6,421**	**0.2**	**0**	**0.2**	**0.02**	**0.001**	**3.1**	**12.1**
	(cf/sq. mi)				*(lbs./sq. mi)*			
Yields	**20,065**	**6.0**	**0.00**	**5.9**	**0.6**	**0.00**	**123**	**1284**

Notes:
Runoff and load yields are estimates based on the known contributing areas provided by City of Reno, City of Sparks, USGS or other entity.
Nitrate was non-detect

In **Table 5-3**, total storm loads and yields measured from two urban outfalls during the September 6, 2017 storm event are compared. This event was a small summer thunderstorm with roughly 0.10 inches of rainfall measured at rain gauges near the two stations sampled. In this storm event, loads between these two urban outfalls are compared. In general, the two urban stations exhibited similar loads across most constituents; however, Oxbow Nature Park exhibited higher TDS loads (136 lbs.), while Arlington showed higher TSS loads (117 lbs.). Both stations drain similar areas, as such, yields were similar and reflect the differences in loads.

Table 5-3 Constituent Loads and Runoff Volumes at Arlington and Oxbow Nature Park, September 6, 2017

Arlington								
		Storm Loads						
Hydrograph	Storm Runoff Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)	*(lbs)*						
First Flush	93	0.1	0.02	0.1	0.01	0.01	3.8	3.8
Rising Limb	--	No Rising Limb Samples Collected						
Peak	724	0.8	0.1	0.7	0.05	0.02	12	68
Falling Limb	3,479	2.4	0.5	1.8	0.2	0.1	54	46
Totals	**4,295**	**3.3**	**0.5**	**2.6**	**0.2**	**0.1**	**70**	**117**
	(cf/sq. mi)	*(lbs./sq. mi)*						
Yields	**13,423**	**10**	**1.7**	**8.1**	**0.7**	**0.4**	**218**	**366**

Oxbow								
		Storm Loads						
Hydrograph	Storm Runoff Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)	*(lbs)*						
First Flush	3,008	2.1	0.5	1.5	0.1	0.5	68	38
Rising Limb	89	0.03	0.01	0.02	0.00	0.01	1.3	0.7
Peak	2,469	1.2	0.3	0.9	0.1	0.3	54	15
Falling Limb	1,048	0.2	0.1	0.1	0.01	0.1	13	0.00
Totals	**6,614**	**3.5**	**0.9**	**2.5**	**0.2**	**0.9**	**136**	**53**
	(cf/sq. mi)	*(lbs./sq. mi)*						
Yields	**18,373**	**10**	**2.6**	**6.9**	**0.5**	**2.6**	**378**	**148**
		(lbs)						
TOTAL LOADS	**10,910**	**6.8**	**1.5**	**5.1**	**0.4**	**1.1**	**206**	**171**

Notes:
No rising limb samples were collected at H-19 (Arlington)on September 6, 2017 due to flashy nature of thunderstorm hydrograph
Total runoff volume of storm was not affected

In **Table 5-4**, total storm loads and yields measured for a large frontal storm between November 15-17, 2017 are presented for three urban outfalls and two major tributaries to the Truckee River. Total storm rainfall across the Truckee Meadows ranged between 0.46 inches and 3.81 inches with 0.97 inches measured at the Reno-Tahoe International Airport.

We note that due to a power failure at Fisherman's Park II station, sampling was incomplete and only partial loads/yields are presented. As such, our comparisons of these metrics exclude this station.

Table 5-4 Constituent Loads and Runoff Volumes at Three Urban Outfalls and Two Tributaries, November 15-17, 2017

Oxbow Nature Park								
		Storm Loads						
Hydrograph	Storm Runoff Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)	*(lbs)*						
First Flush	17,467	3.1	0.03	3.1	0.5	0.2	95	142
Rising Limb	34,919	1.8	0.1	1.7	0.4	0.2	50	54
Peak	112,806	4.7	1.1	3.7	1.1	0.5	141	134
Falling Limb	98,786	6.2	1.5	4.8	0.9	0.6	111	117
Totals	**263,977**	**16**	**2.7**	**13**	**2.9**	**1.5**	**397**	**447**
	(cf/sq. mi)	*(lbs./sq. mi)*						
Yields	**733,270**	**44**	**7.5**	**37**	**8.0**	**4.1**	**1102**	**1242**

Fisherman's Park II								
		Storm Loads						
Hydrograph	Storm Runoff Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)	*(lbs)*						
First Flush	82,025	21	0.1	21	81	0.5	614	819
Rising Limb	186,769	No Samples Collected Due To Power Failure						
Peak	134,968							
Falling Limb	81,302	12	0.9	11	113	1.2	416	365
Totals	**485,065**	***33***	***1.0***	***32***	***194.3***	***1.6***	***1,031***	***1,185***
	(cf/sq. mi)	*(lbs./sq. mi)*						
Yields	**95,111**	***6.5***	***0.2***	***6.3***	***38.1***	***0.3***	***202***	***232***

Mary Wahl								
		Storm Loads						
Hydrograph	Storm Runoff Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)	*(lbs)*						
First Flush	34,580	22	17	4.5	0.4	0.2	734	345
Rising Limb	62,150	6.6	0.1	6.6	0.8	0.3	186	660
Peak	97,828	15	1.6	13	1.2	0.6	415	855
Falling Limb	126,934	15	2.9	12	1.8	1.5	1,030	444
Totals	**321,491**	**58**	**22**	**36**	**4.3**	**2.5**	**2,366**	**2,304**
	(cf/sq. mi)	*(lbs./sq. mi)*						
Yields	**128,596**	**23**	**8.7**	**14**	**1.7**	**1.0**	**946**	**921**
		(lbs.)						
TOTALS 3 URBAN OUTFALLS		**107**	**25**	**81**	**201**	**5.6**	**3,793**	**3,936**

Table 5-4 Constituent Loads and Runoff Volumes at Three Urban Outfalls and Two Tributaries, November 15-17, 2017 (continued)

Steamboat Creek at Clean Water Way								
		Storm Loads						
Hydrograph	Storm Runoff Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)	*(lbs)*						
First Flush	1,314,540	115	53	59	14	8.1	30,364	4,760
Rising Limb	10,073,700	1258	365	880	88	113	182,375	132,065
Peak	10,269,900	2116	391	1667	154	212	217,984	500,081
Falling Limb	50,836,230	7617	1872	5712	666	1047	1,015,553	1,205,969
Totals	**72,494,370**	**11,105**	**2,682**	**8,319**	**922**	**1,380**	**1,446,276**	**1,842,874**
	(cf/sq. mi)	*(lbs./sq. mi)*						
Yields	**297,108**	**46**	**11**	**34**	**3.8**	**5.7**	**5,927**	**7,553**

North Truckee Drain at Big Fish Drive								
		Storm Loads						
Hydrograph	Storm Runoff Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)	*(lbs)*						
First Flush	31,887	6.2	4.0	2.2	0.3	0.2	1,573	96
Rising Limb	173,646	18	1.4	16	2.3	2.9	3,252	911
Peak	691,380	69	2.7	65	9.5	13	6,043	3,539
Falling Limb	1,477,935	138	39	101	16	21	12,917	3,414
Totals	**2,374,848**	**232**	**47**	**185**	**28**	**37**	**23,784**	**7,959**
	(cf/sq. mi)	*(lbs./sq. mi)*						
Yields	**23,748**	**2.3**	**0.5**	**1.8**	**0.3**	**0.4**	**238**	**80**
TOTAL LOADS FROM 2 TRIBUTARIES		**11,337**	**2,728**	**8,504**	**950**	**1,417**	**1,470,060**	**1,850,833**
TOTAL LOADS	**75,939,750**	**11,444**	**2,754**	**8,585**	**1,152**	**1,423**	**1,473,853**	**1,854,769**

Notes:
Loads and yields reported for Fisherman's Park II are underestimates; power failure prevented sample collection during rising limb and peak flow
Yields are estimates based on the contributing areas provided by City of Reno, City of Sparks, USGS or other entity.
Watershed area North Truckee Drain at Big Fish Drive is roughly estimated due to complexity of irrigation network and urban drainage areas
Steamboat Creek may also receive irrigation return flows imported from outside the watershed.

Constituent loads from the November 15-17, 2017, storm event exhibited a wide range, depending on constituent and location. In general, larger contributing areas to an urban outfall or tributary monitoring location showed higher loads, likely the direct result of higher runoff volumes. For instance, tributary drainage areas are magnitudes larger than urban outfalls.

For comparison purposes and simplicity, we discuss yield values reported in **Figure 5-6**. Between two urban outfalls, Oxbow Nature Park exhibited higher yields across all constituents. For example, the urban outfall at Oxbow Nature Park discharged total nitrogen yields (44 lbs./sq. mile) nearly twice that of Mary Wahl Drain (23 lbs./sq. mile).

Similarly, Total-P yields (8 lbs./sq. mile) were nearly 5 times yields measured from Mary Wahl Drain (1.7 lbs./sq. mile).

Storm loads from the two large tributaries, Steamboat Creek and North Truckee Drain, were measured 1 to 3 orders of magnitude greater than the 2 urban outfalls combined. For instance, Total-N loads were measured to be 11,444 lbs. from Steamboat Creek and North Truckee Drain, while roughly 107 lbs. were measured from the 3 urban outfalls when combined. Other constituents followed similar patterns. The differences can be attributed to their respective drainage areas, with potential influences from precipitation variability.

When comparing between the two tributaries, Steamboat Creek showed the highest yields across all constituents. For example, Steamboat Creek exhibited a Total-N yield of 46 lbs./sq. mile nearly 20 times more than was measured from North Truckee Drain (2.3 lbs./sq. mile). Similarly, Steamboat Creek exhibited a Total-P yield of 3.8 lbs./square mile, nearly 13 times more than was measured from North Truckee Drain (0.3 lbs./sq. mile).

Total storm loads and yields for stormwater runoff measured at the Fisherman's Park II urban outfall are presented in **Table 5-5** for the January 18, 2018 storm event. Precipitation measured in or near the drainage area was less than 0.10 inches in this event. Loads and yields are reflective of limited runoff at this station and during this event.

Table 5-5 Constituent Loads and Runoff Volumes at Fisherman's Park II, January 18, 2018

Fisherman's Park II								
		Storm Loads						
Hydrograph	Storm Runoff Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)				*(lbs)*			
First Flush	3,044	1.1	0.2	0.9	0.2	0.03	51	19
Rising Limb	3,183	1.0	0.2	0.8	0.1	0.04	40	19
Peak	3,364	0.9	0.2	0.7	0.2	0.04	44	17
Falling Limb	1,667	0.4	0.1	0.3	0.0	0.02	19	5
Totals	**11,257**	**3.4**	**0.7**	**2.6**	**0.5**	**0.1**	**154**	**60**
	(cf/sq. mi)				*(lbs./sq. mi)*			
Yields	**2,207**	**0.7**	**0.1**	**0.5**	**0.1**	**0.02**	**30**	**12**

Total storm loads and yields for stormwater runoff measured at an urban outfall (Mary Wahl Drain) and two tributaries are presented in **Table 5-6** for the April 6-7, 2018 storm

event. Precipitation measured in this event ranged between 0.09 inches to 0.35 inches across the Truckee Meadows. We note that rainfall and runoff patterns resulted in multiple peak flows at these stations and loads are computed for the initial peak; as such the loads and yields presented in **Table 4-8** are underestimates of the total storm.

Table 5-6 Constituent Loads and Runoff Volumes for an Mary Wahl Drain (urban outfall) and North Truckee Drain at Big Fish Drive, April 6-7, 2018

Mary Wahl								
		Storm Loads						
Hydrograph	Storm Runoff Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)				*(lbs)*			
First Flush	16,514	3.4	0.5	2.8	0.3	0.3	124	113
Rising Limb	48,670	9.1	2.5	6.4	0.6	0.7	365	395
Peak	76,699	18	13	4.4	1.1	0.6	1,628	43
Falling Limb	176,964	27	15	10	1.3	1.3	2,651	508
Totals	**318,847**	**57**	**32**	**24**	**3.3**	**2.9**	**4,768**	**1,060**
	(cf/sq. mi)				*(lbs./sq. mi)*			
Yields	**127,539**	**23**	**13**	**10**	**1.3**	**1.2**	**1907**	**424**

North Truckee Drain at Big Fish Drive								
		Storm Loads						
Hydrograph	Storm Runoff Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)				*(lbs)*			
First Flush	122,256	26	11	15	1.1	1.8	5,419	405
Rising Limb	24,480	3.7	1.3	2.4	0.2	0.3	749	73
Peak	74,448	11	4.4	7.0	0.8	0.9	2,231	214
Falling Limb	252,918	36	15	22	2.7	2.7	7,263	663
Totals	**474,102**	**77**	**32**	**46**	**4.8**	**5.7**	**15,661**	**1,355**
	(cf/sq. mi)				*(lbs./sq. mi)*			
Yields	**4,741**	**0.8**	**0.3**	**0.5**	**0.05**	**0.1**	**157**	**14**

Constituent loads from the April 6-7, 2018 storm event exhibited a wide range, depending on constituent and location. In general, the monitoring station with the larger contributing area showed higher loads, likely the direct result of higher runoff volumes. However, precipitation was spatially variable over both watersheds. For instance, North Truckee Drain registered the lowest rainfall totals relative to areas the drain Mary Wahl Drain.

For comparison purposes and simplicity, we discuss yield values reported in **Figure 5-8**. Stormwater runoff from Mary Wahl Drain, an urban outfall, exhibited higher yields across

all constituents when compared to North Truckee Drain. For example, Mary Wahl Drain discharged total nitrogen yields (23 lbs./sq. mile) more than 28 times that measured in North Truckee Drain (0.8 lbs./sq. mile). Similarly, Total-P yields from Mary Wahl Drain (1.3 lbs./sq. mile) was 26 times that measured from North Truckee Drain (0.05 lbs./sq. mile). These results may be the result of heavily urbanized land-uses in Mary Wahl drainage and limited opportunities for nutrient cycling, typically provided by vegetated areas including riparian, forests and wetlands.

5.5.1 Baseflow Loads (24-Hours) from Steamboat Creek and North Truckee Drain

Baseflow or non-storm constituent loads and yields were evaluated in Steamboat Creek at Clean Water Way in the summer (September 2017) and the winter (February 2018) of FY2018. North Truckee Drain was under relocation during the summer 2017 baseflow period and was not sampled using an automated sampler. However, winter baseflow was sampled from Steamboat Creek, North Truckee Drain and Yori Drain (new station as of October 2017). Baseflow sample collection began at noon on a given day and continued hourly until noon on the following day. Samples were composited into 4 groups to represent: (1) afternoon (12:00 – 17:00); (2) evening (18:00 – 23:00); (3) early morning (0:00 – 5:00); and (4) late morning (6:00 – 11:00). Loads are calculated for each period and at each station. Yields are provided for each station across all constituents.

Summer baseflow loads and yields for Steamboat Creek at Clean Water Way are presented in **Table 5-7**. Steamboat Creek baseflow in September was higher relative to previous years and can be attributed to significant precipitation and runoff in the previous winter and spring. In fact, summer baseflow in Steamboat Creek is less than 10 cfs in a typical year. During the 24-hour baseflow period studied, Steamboat Creek flow rates ranged between 65 cfs and 70 cfs and discharged over 9 million cubic feet of water to the Truckee River. Under these summer baseflow conditions, Total-N loads from Steamboat Creek were measured to be 526 lbs.; Total-P loads were measured to be 115 lbs.; and TDS loads were measured to be 163,457 lbs.

We should also note that Steamboat Creek has also been characterized as a gaining stream (Shump, 1985), in which groundwater discharges to the stream in the reach above the monitoring station. Groundwater quality is not part of this special study or program so additional investigations to discern the influence of groundwater quality on streamflow are warranted.

Table 5-7 Summer Baseflow Volumes and Constituent Loads for Steamboat Creek, September 19-20, 2017

Steamboat Creek at Clean Water Way								
		Baseflow Loads						
Hydrograph	Flow Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)	*(lbs)*						
Afternoon	1,061,820	58	17	41	13	9.3	18,560	1,790
Evening	1,998,720	117	32	85	24	16	32,442	4,617
Early Morning	2,560,860	144	42	102	29	21	44,763	6,874
Late Morning	3,497,760	207	55	153	50	31	67,691	8,079
Totals	**9,119,160**	**526**	**146**	**381**	**115**	**77**	**163,457**	**21,360**
	(cf/sq. mi)	*(lbs./sq. mi)*						
Yields	**37,374**	**2.2**	**0.6**	**1.6**	**0.5**	**0.3**	**670**	**88**

Notes:
Steamboat Creek may receive irrigation return flows during this period, imported from outside the watershed.

Winter baseflow loads and yields for three tributaries are presented in **Table 5-8**. During the 24-hour baseflow period studied, North Truckee Drain flow rates ranged between 3.94 cfs and 3.96 cfs and discharged over 155,000 cubic feet of water to the Truckee River. Steamboat Creek flow rates ranged between 54 cfs and 56 cfs and discharged over 4.7 million cubic feet of water to the Truckee River. Flow rates in Yori Drain, a tributary to Steamboat Creek, ranged between 3.5 cfs to 4.0 cfs, and discharged over 321,000 cubic feet of water to Steamboat Creek. Inherent in these comparisons, is that the Steamboat Creek at Clean Water Way station includes the flow received from Yori Drain.

Under winter baseflow, Steamboat Creek discharges the highest constituent loads to the Truckee River, when compared to North Truckee Drain. For example, 321 lbs. Total-N was measured from Steamboat Creek compared with 22 lbs. Total-N measured from North Truckee Drain. Similarly, 61 lbs. Total-P was measured from Steamboat Creek compared with 1.2 lbs. measured from North Truckee Drain.

Steamboat Creek drains a watershed measuring 244 square miles. In FY2018, we instrumented a tributary to Steamboat Creek, Yori Drain, that measures approximately 4.2 square miles, less than 2 percent of the total Steamboat Creek watershed, but an area that includes urban concentrations of the City of Reno, including a significant portion of the Reno-Tahoe International Airport as well as agricultural areas including UNR Farms. Loads from this tributary were measurable. For example, Total-N loads measured 44 lbs., roughly 14 percent of the loads measured downstream in Steamboat Creek at Cleanwater Way. Similarly, Total-P loads measured 1.8 lbs. or roughly 3 percent of the Total-P loads measured downstream in Steamboat Creek at Cleanwater Way.

Table 5-8 Winter Baseflow Volumes and Constituent Loads for Three Tributaries to the Truckee River, February 6-7, 2018

North Truckee Drain at Big Fish Drive								
		Baseflow Loads						
Hydrograph	Flow Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)	*(lbs)*						
Afternoon	39,816	6.0	3.5	2.7	0.3	0.2	2,983	109
Evening	38,592	5.3	3.4	2.0	0.3	0.2	2,891	24
Early Morning	38,232	5.0	3.1	1.8	0.3	0.2	2,864	26
Late Morning	38,520	5.3	3.1	2.0	0.3	0.2	2,886	26
Totals	**155,160**	**22**	**13**	**8.5**	**1.2**	**0.7**	**11,624**	**186**
	(cf/sq. mi)	*(lbs./sq. mi)*						
Yields	**1,552**	**0.2**	**0.1**	**0.1**	**0.01**	**0.01**	**116**	**1.9**

Yori Drain at Steamboat Creek								
		Baseflow Loads						
Hydrograph	Flow Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)	*(lbs)*						
Afternoon	83,379	11	7.8	3.5	0.5	0.2	1,874	125
Evening	80,490	11	7.0	3.1	0.5	0.2	1,859	126
Early Morning	79,034	11	7.4	3.9	0.4	0.2	1,875	74
Late Morning	78,452	11	7.3	3.6	0.5	0.3	1,763	196
Totals	**321,354**	**44**	**30**	**14**	**1.8**	**1.0**	**7,371**	**520**
	(cf/sq. mi)	*(lbs./sq. mi)*						
Yields	**76,513**	**11**	**7.0**	**3.4**	**0.4**	**0.2**	**1755**	**124**

Steamboat Creek at Clean Water Way								
		Baseflow Loads						
Hydrograph	Flow Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)	*(lbs)*						
Afternoon	1,205,280	83	26	53	15	14	25,583	2,408
Evening	1,199,340	82	25	57	15	15	24,708	2,845
Early Morning	1,189,530	74	25	52	15	15	25,991	2,302
Late Morning	1,184,040	81	25	56	16	16	23,654	1,996
Totals	**4,778,190**	**321**	**101**	**218**	**61**	**60**	**99,935**	**9,551**
	(cf/sq. mi)	*(lbs./sq. mi)*						
Yields	**19,583**	**1.3**	**0.4**	**0.9**	**0.3**	**0.2**	**410**	**39**

Notes:
Yields are estimates based on contributing watershed areas provided by City of Reno, City of Sparks, USGS or other entity.
Steamboat Creek may receive irrigation return flows imported from outside the watershed.
Yori Drain is a tributary to Steamboat Creek.

Comparisons between summer and winter baseflow loads can only be completed for Steamboat Creek at Clean Water Way in FY2018. Summer loads were higher than winter loads but may be related to the greater flow volumes measured during summer of 2017, an historically high runoff year.

5.5.2 Stormwater Loads Compared to Total Maximum Daily Loads Established for the Truckee River at Lockwood

In this section, we compare measured loads to allocated loads under established TMDLs for 3 constituents: Total-N, Total-P, and TDS in the Truckee River (at Lockwood). Comparisons are presented by storm in the order that the storms occurred. If stormwater runoff event was measured to be less than 24 hours, we assumed the total storm load to approximate a daily load. If stormwater runoff event exceeded 24 hours, we show the highest 24-hour load based on the highest 24-hour stormwater runoff volume.

Table 5-9 shows daily loads measured in stormwater runoff on August 6, 2017, in comparison to TMDLs established for the Truckee River at Lockwood.

Table 5-9 Daily Loads Measured in Stormwater Runoff, August 6, 2017

Daily Loads: August 6, 2017 Stormwater Loads			
	Constituents		
Monitoring Station	Total-N	Total-P	TDS
Urban Outfalls		*(lbs)*	
Arlington	1.9	0.2	39
Totals	**1.9**	**0.2**	**39**
Load Allocations, TMDL Truckee River at Lockwood	*500*	*80*	*780,360*
Daily Load, Percent of Load Allocation under TMDL	**0.4%**	**0.2%**	**0.01%**

Notes:
Storm runoff duration was less than 24 hours
Load Allocation for the TMDLs represent the total expected or allowable load from non-point and background sources
TMDLs for Total-N, Total-P, and TDS established in 1994 (NDEP, 1994)

Total-N daily loads from a single urban outfall (Arlington) totaled roughly 1.9 lbs., 0.2 lbs. of Total-P, and 39 lbs. of TDS. These daily loads represent less than 1 percent of the load allocations under the Truckee River TMDL for these constituents. However, these loads only represent one point of discharge or an area equivalent to 0.32 square miles.

Table 5-10 shows daily loads measured from stormwater runoff measured from two urban outfalls during the September 6, 2017 storm event and compared to TMDLs established for the Truckee River at Lockwood.

Table 5-10 Daily Loads Measured from Stormwater Runoff, September 6, 2017

Daily Loads: September 6, 2017 Stormwater Loads			
	Constituents		
Monitoring Station	Total-N	Total-P	TDS
Urban Outfalls	*(lbs/day)*		
Arlington	3.3	0.2	70
Oxbow Nature park	3.5	0.2	136
Totals	**6.8**	**0.4**	**206**
Load Allocations, TMDL Truckee River at Lockwood	*500*	*80*	*780,360*
Daily Load, Percent of Load Allocation under TMDL	**1.4%**	**0.5%**	**0.03%**

Notes:
Storm duration was less than 24 hours
Load Allocation for the TMDLs represent the total expected or allowable load from non-point and background sources
TMDLs for Total-N, Total-P, and TDS established in 1994 (NDEP, 1994)

Total-N daily loads from both points of discharge totaled roughly 6.8 lbs. or 1.4 percent of the load allocated under the TMDL for Total-N. Total-P daily loads from both points of discharge totaled roughly 0.4 lbs. or 0.5 percent of the load allocated under the TMDL. TDS daily loads totaled 206 lbs., or roughly 0.03 percent of the load allocated under the TMDL. Of this TDS load, approximately 66 percent originated from Oxbow Nature Park urban outfall. Similar to the August 6, 2017 event, these loads only represent two points of discharge or an area equivalent to 0.68 square miles.

Table 5-11 shows daily loads measured in stormwater runoff from three urban outfalls and two major tributaries to the Truckee River during the November 15-17, 2017 storm event and compared to TMDLs established for the Truckee River at Lockwood. Daily precipitation for this event exceeded daily records with most areas in the Truckee Meadows receiving an inch or more of rainfall. Because the event duration exceeded 24 hours, maximum daily loads were evaluated using the highest period of maximum runoff volume and associated constituent concentrations.

Table 5-11 Daily Loads Measured from Stormwater Runoff, November 16-17, 2017

Daily Loads: November 16-17, 2017 Stormwater Loads			
	Constituents		
Monitoring Station	Total-N	Total-P	TDS
Urban Outfalls		*(lbs/day)*	
Oxbow Nature Park	16	2.9	396
Mary Wahl	52	4.7	2,378
Fisherman's II	*32*	*3*	*1,002*
Tributaries		*(lbs/day)*	
Steamboat Creek at Clean Water Way	5,979	479	741,823
North Truckee Drain at Big Fish Drive	204	25	19,911
Totals	***6,284***	***514***	***765,509***
Load Allocations, TMDL Truckee River at Lockwood	**500**	**80**	**780,360**
Daily Load, Percent of Load Allocation under TMDL	***1257%***	***643%***	***98%***

Notes:
Fisherman's II loads are underestimates due to power failure during sampling
Load Allocation for the TMDLs represent the total expected or allowable load from non-point and background sources
TMDLs for Total-N, Total-P, and TDS established in 1994 (NDEP, 1994)
Storm exceeded 24 hours in duration; maximum daily load computed using highest 24-hour runoff volume and associated constituent concentrations

Total-N daily loads from 5 points of discharge totaled roughly 6,284 lbs. or 1,257 percent of the load allocated under the TMDL for Total-N. Of this daily Total-N load, approximately 95 percent originated from Steamboat Creek. Total-P daily loads from all 5 points of discharge totaled roughly 514 lbs. or 643 percent of the load allocated under the TMDL. Of this daily Total-P load, approximately 93 percent originated from Steamboat Creek. TDS daily loads totaled 765,509 lbs., or roughly 98 percent of the load allocated under the TMDL. Of this daily TDS load, approximately 97 percent originated from Steamboat Creek. Peak flow measured at the USGS gage on Steamboat Creek at Clean Water Way recorded 495 cfs or a flow equivalent to a 2- or 3-year flood, based on the 23-year period of record. We also note that pre- and post-storm baseflow was elevated as a result of the wettest year on record (NWS, 2017). As such, these daily loads may be reflective of an extreme year.

Table 5-12 shows daily loads measured in stormwater runoff from a single urban outfall to the Truckee River during the January 18, 2017 storm event and compared to TMDLs established for the Truckee River at Lockwood.

Table 5-12 Daily Loads Measured from Baseflow in Steamboat Creek, January 18, 2018

Daily Loads: January 18, 2018 Stormwater Loads			
	Constituents		
Monitoring Station	Total-N	Total-P	TDS
Urban Outfalls		*(lbs/day)*	
Fisherman's Park II	3.4	0.5	154
Totals	**3.4**	**0.5**	**154**
Load Allocations, TMDL Truckee River at Lockwood	*500*	*80*	*780,360*
Daily Load, Percent of Load Allocation under TMDL	**0.7%**	**0.6%**	**0.02%**

Notes:
Storm runoff duration was roughly 5 hours
Load Allocation for the TMDLs represent the total expected or allowable load from non-point and background sources
TMDLs for Total-N, Total-P, and TDS established in 1994 (NDEP, 1994)

Total-N daily loads from a single urban outfall (Fisherman's Park II) totaled roughly 3.4 lbs., 0.5 lbs. of Total-P, and 154 lbs. of TDS. These daily loads represent less than 1 percent of the load allocations under the Truckee River TMDL for these constituents. However, these loads only represent one point of discharge or an area equivalent to 5.1 square miles.

Table 5-13 shows daily loads measured in stormwater runoff from a single urban outfall and a major tributary to the Truckee River during the April 6-7, 2018 storm event and compared to TMDLs established for the Truckee River at Lockwood. Precipitation and runoff patterns for this event resulted in multiple peak flows. Samples were only collected on the initial peak flow event. As a result, loads are likely underestimates of the total storm.

Table 5-13 Daily Loads Measured from Stormwater Runoff, April 6-7, 2018

Daily Loads: April 6-7, 2018 Stormwater Loads			
	Constituents		
Monitoring Station	Total-N	Total-P	TDS
Urban Outfalls		*(lbs/day)*	
Mary Wahl	*57*	*3.3*	*4,753*
Tributaries			
North Truckee Drain at Big Fish Drive	*77*	*4.8*	*15,661*
Totals	***134***	***8.1***	***20,414***
Load Allocations, TMDL Truckee River at Lockwood	**500**	**80**	**780,360**
Daily Load, Percent of Load Allocation under TMDL	***27%***	***10%***	***3%***

Notes:
Load Allocation for the TMDLs represent the total expected or allowable load from non-point and background sources TMDLs for Total-N, Total-P, and TDS established in 1994 (NDEP, 1994)
Loads measured in this event are underestimates; rainfall and runoff resulted in two distinct peak flows; only the first peak was sampled and loads calculated.

Total-N daily loads from a single urban outfall (Mary Wahl Drain) and a major tributary to the Truckee River (North Truckee Drain) totaled roughly 134 lbs. or roughly 27 percent of the load allocated under the TMDL for Total-N. Total-P daily loads totaled roughly 8.1 lbs. or roughly 10 percent of the load allocated under the TMDL for Total-P. TDS daily loads totaled about 20,414 lbs. or roughly 3 percent of the load allocated under the TMDL for TDS. Given that these were underestimates for the total storm, based on the storm hydrographs, we estimate that the actual loads may be twice that reported in **Table 5-13.**

5.5.3 Baseflow Loads Compared to Total Maximum Daily Loads Established for the Truckee River at Lockwood

In addition to daily stormwater loads, we also evaluated daily baseflow loads for available data on two major tributaries that discharge to the Truckee River: Steamboat Creek and North Truckee Drain, relative to the TMDLs. Baseflow sampling followed a 10-day period absent of precipitation but during a period of above average streamflow. Daily, summer baseflow load measured from Steamboat Creek for a 24-hour period sampled September 19-20, 2017 as compared with TMDLs is presented in **Table 5-14**.

Table 5-14 Daily Loads Measured from Baseflow in Steamboat Creek, September 19-20, 2017

Daily Loads: September 19-20, 2017 Baseflow Loads			
	Constituents		
Monitoring Station	Total-N	Total-P	TDS
Urban Outfalls	*(lbs/day)*		
Steamboat Creek at Clean Water Way	526	115	163,457
Load Allocations, TMDL Truckee River at Lockwood	*500*	*80*	*780,360*
Daily Load, Percent of Load Allocation under TMDL	**105%**	**144%**	**21%**

Notes:
Load Allocation for the TMDLs represent the total expected or allowable load from non-point and background sources TMDLs for Total-N, Total-P, and TDS established in 1994 (NDEP, 1994)

Total-N daily baseflow load from Steamboat Creek totaled roughly 526 lbs. or roughly 105 percent of the load allocated under the TMDL for Total-N. Total-P daily baseflow load totaled roughly 115 lbs. or roughly 144 percent of the load allocated under the TMDL for Total-P. TDS daily baseflow load totaled about 163,457 lbs. or roughly 21 percent of the load allocated under the TMDL for TDS. As noted earlier in this report, 2017 calendar and water years were the wettest on record. Baseflows in Steamboat Creek during this period were twice that of the long-term median for the same period based on a 23-year period of record. Exceedance of the TMDLs load allocations under baseflow conditions may be an infrequent occurrence, as these results may be characteristics of an extremely wet year.

Daily winter baseflow load measured from both Steamboat Creek and North Truckee Drain as compared with TMDLs is presented in **Table 5-15** for a 24-hour period sampled February 6-7, 2018.

Table 5-15 Daily Load Measured from Baseflow in Steamboat Creek and North Truckee Drain, February 6-7, 2018

Daily Loads: February 6-7, 2018 Baseflow Loads			
	Constituents		
Monitoring Station	Total-N	Total-P	TDS
Tributaries		*(lbs/day)*	
North Truckee Drain at Big Fish Drive	22	1.2	11,624
Steamboat Creek at Clean Water Way	321	61	99,935
Totals	**342**	**62**	**111,559**
Load Allocations, TMDL Truckee River at Lockwood	*500*	*80*	*780,360*
Daily Load, Percent of Load Allocation under TMDL	**68%**	**78%**	**14%**

Notes:
Load Allocation for the TMDLs represent the total expected or allowable load from non-point and background sources
TMDLs for Total-N, Total-P, and TDS established in 1994 (NDEP, 1994)

Total-N daily baseflow load from these two major tributaries totaled roughly 342 lbs. or roughly 68 percent of the load allocated under the TMDL for Total-N. Total-P daily baseflow loads totaled roughly 62 lbs. or roughly 78 percent of the load allocated under the TMDL for Total-P. TDS daily baseflow loads totaled about 111,559 lbs. or roughly 14 percent of the load allocated under the TMDL for TDS. Other non-point and background sources of loads can originate from other smaller tributaries in the Truckee Meadows and illicit discharges to the stormdrain network.

We also measured winter baseflow volume and loads from Yori Drain at Steamboat Creek, tributary to Steamboat Creek, February 6-7, 2018 (**Table 5-16**). We present these daily loads separately since they represent a portion of the Steamboat Creek daily loads presented in **Table 5-15**. Because Steamboat Creek continues to exhibit the highest loads to the Truckee River, measurement of loads from a subwatershed (i.e., Yori Drain) within the greater Steamboat Creek watershed provides insight into the possible areas or source of loads.

Table 5-16 Daily Load Measured from Baseflow in Steamboat Creek and North Truckee Drain, February 6-7, 2018

Daily Loads: February 6-7, 2018 Baseflow Loads			
	Constituents		
Monitoring Station	Total-N	Total-P	TDS
Tributaries	*(lbs/day)*		
Yori Drain at Steamboat Creek	**44**	**1.8**	**7,371**
Load Allocations, TMDL Truckee River at Lockwood	*500*	*80*	*780,360*
Daily Load, Percent of Load Allocation under TMDL	**9%**	**2%**	**1%**

Notes:

Load Allocation for the TMDLs represent the total expected or allowable load from non-point and background sources

TMDLs for Total-N, Total-P, and TDS established in 1994 (NDEP, 1994)

Yori Drain is a tributary to Steamboat Creek and measures roughly 4.2 square miles or less than 2% of the Steamboat Creek watershed

Total-N daily baseflow load from this sub-watershed of Steamboat Creek totaled roughly 44 lbs. or roughly 9 percent of the load allocated under the TMDL for Total-N. Total-P daily baseflow loads totaled roughly 1.8 lbs. or roughly 2 percent of the load allocated under the TMDL for Total-P. TDS daily baseflow loads totaled about 7,371 lbs. or roughly 1 percent of the load allocated under the TMDL for TDS. Future storm and baseflow sampling at this station and other sub-watersheds in Steamboat Creek will improve our understanding of sources and source locations of excess nutrients to the Truckee River.

6 CONCLUSIONS

This report presents results from the FY2018 monitoring year and summarizes both stormwater and baseflow (ambient) conditions for selected stations in the Truckee Meadows Permit Area. Data are representative of the storms and baseflow conditions sampled and may not be characteristic of other periods that were not sampled. Furthermore, this report does not provide an analysis of trends over time, but instead captures conditions and water quality measured in FY2018 per the requirements of the permit.

Total annual precipitation in the Truckee Meadows in FY2018, as measured at the Reno-Tahoe International Airport, was slightly above the long-term normal of 7.40 inches. Multiple storms were sampled in FY2018 to meet the required 2 samples per station. Storms were characteristic of the Truckee Meadows and included both frontal and convective storm types. Baseflow conditions were sampled in both summer and winter to characterize water quality condition in major tributaries to the Truckee River in the Truckee Meadows.

NDEP has established water quality standards (WQS) in listed waters based on concentration. We summarize only 3 constituents here (Total-N, Total-P, and TDS) for which there are TMDLs established for on the Truckee River. Across all storms sampled at all stations Total-N concentrations in stormwater exceeded WQS in all storms and at all locations where WQS are established. Total-N concentrations in tributary baseflow also exceed WQS across all locations sampled and where WQS are established. Highest stormwater concentrations were measured from urban outfalls. Whereas the highest baseflow concentrations were measured from North Truckee Drain and Yori Drain.

Total-P is a limiting nutrient in surface waters when in excess. Single value WQS do not exist for Total-P in most of the waters monitored; however, annual averages are typically provided and suggest concentrations do not exceed between 0.05 mg/L and 0.10 mg/L over the long-term. Across all storms sampled at all stations Total-P concentrations in stormwater ranged between 0.47 mg/L and 1.4 mg/L. Highest stormwater Total-P concentrations were measured from most stormwater urban outfalls. Total-P concentrations in tributary baseflow ranged between less than 0.1 mg/L to as high as 0.36 mg/L, suggesting that Total-P concentrations may exceed long-term averages if extrapolated.

TDS concentrations measured from stormwater exceeded WQS in most samples with few exceptions. Similarly, baseflow TDS concentrations exceeded WQS with few exceptions. In some cases, TDS concentrations exceeded stormwater concentrations which may suggest irrigation returns, illicit discharges, or other sources that occur during non-precipitation runoff.

Physical parameters measured from both stormwater and baseflow also suggest conditions that exceed WQS and include turbidity and pH. Temperature and dissolved oxygen were generally within an acceptable range or met WQS with few exceptions.

Stormwater and baseflow loads were quantified at stations with streamflow gage instrumentation and automated samplers—which allowed for multiple samples to be collected over a stormwater hydrograph or time. Loads measured in FY2018 suggest that both stormwater urban outfalls and tributaries can contribute significant nutrient loading to receiving waters. In fact, Steamboat Creek loads exceeded TMDLs established for the Truckee River for Total-N and Total-P in one storm event (November 2017) as well as summer baseflow (September 2017).

Loads measured suggest that both spatial and temporal scales are important. For example, tributaries draining large areas typically measure the highest loads; however, if stations are compared by yields, areas with more urban land-uses typically are responsible for higher pollutant yields. On a temporal scale, fall frontal storms generate higher loads than storms measured in other times of the year. These results may reflect the time since last rainfall-runoff event; fall frontal storms typically occur after a long dry period when pollutants accumulate over time and are flushed into local waters by the first large storm event, also informally known as the *first flush*.

7 RECOMMENDATIONS

Results continue to suggest that stormwater and baseflow pollutant (nutrients) loading are elevated from Steamboat Creek and to a lesser extent, North Truckee Drain and some of the stormwater urban outfalls draining large areas. In FY2019, we will continue to sample these tributaries using automated samplers during baseflow and major storm events to better evaluate seasonal or annual variations in nutrient loads. Additional automated sampling station has been installed on Yori Drain and Boynton Slough, tributaries to Steamboat Creek. This nesting approach to sampling will allow potential source areas of excess nutrients or other pollutants measured to be identified. If feasible, we will always attempt to quantify loadings at these nested stations with Steamboat Creek at Clean Water Way in the same event such that results can be compared.

Quantification and comparison of loads and yields can assist co-permittees in the Truckee Meadows in relating these findings to areas of concern, so that appropriate management practices to improve stormwater and baseflow quality can be developed or ordinances for new development enforced. Currently, we have observed higher nutrient loadings measured during the first flush, or during a large frontal storm that typically occur in the fall of each year. Therefore, it may be prudent to implement annual stormwater BMPs in the late summer, early fall to reduce these loads. BMPs may include street sweeping, vacuuming of storm drains, general litter pick-up, and enforcing construction BMPs.

We anticipate that a new Truckee Meadows MS4 permit and a revised Nevada 303(d) list of impaired water bodies will be issued sometime in FY2019. At that time, we recommend that a meeting is convened between Balance Hydrologics and the SWPCC to discuss changes associated with the new permit and listings of new tributaries or delisting of currently listed tributaries or water bodies and how they influence or modify this program.

Balance is currently in the process of completing a special study that evaluates water quality over the years for the water bodies monitored as part of this program. Results may also provide insight into which water bodies are improving and which ones continue to degrade. Results may also inform changes to the program including relocated monitoring stations, new constituents to be measured or monitoring to be discontinued.

Finally, bacteria (i.e., e. coli, total coliform) is identified as a constituent limiting water quality in many of the tributaries monitored. However, holding times (6 hours) required to

perform the necessary analytical methods limit when samples can be collected. In many cases, samples are collected at times that do not facilitate immediate delivery to the lab and analysis (i.e., weekends, evenings). As a result, bacteria are not often quantified. If additional data is desired on this constituent, we suggest a special study is designed and implemented to facilitate a robust data set of bacteria counts in both stormwater and baseflow. The design would target storms or times that allow for the analytical holding times to be met.

8 LIMITATIONS

This report was prepared in general accordance with the accepted standard of practice in surface-water hydrology in Nevada for projects of similar scale at the time the investigations were performed. No other warranties, expressed or implied, are made. As is customary, we note that readers should recognize that the interpretation and evaluation of factors affecting the hydrologic context of any site is a difficult and inexact art. Judgments leading to conclusions and recommendations are generally made with an incomplete knowledge of the conditions present. More extensive or extended studies can reduce the inherent uncertainties associated with such studies.

Findings, interpretations and recommendations contained in this report are intended for the exclusive use of The Truckee Meadows Stormwater Permit Coordinating Committee, NDOT, and Western Regional Water Commission, under the conditions presently prevailing except where noted otherwise. This report and its contents have been developed solely to evaluate water quality at discrete locations in the Truckee Meadows for the sole purposes and in the context described above. Data, interpretations and analyses developed for this report may not be directly applicable to other uses. Balance Hydrologics, Inc. should be consulted prior to applying the contents of this report to stormwater BMP design, drainage or flooding management or for any other purposes not specifically cited in this report.

Finally, we ask that readers who have additional pertinent information, who observed changed conditions, or who may note material errors should contact us with their findings at the earliest possible date, so that timely changes may be made.

9 REFERENCES

Boyd, C. E., 1999, Water quality: An introduction. The Netherlands: Kluwer Academic Publishers Group.

Burton, G.A., and Pitt, R.E., 2002, Stormwater effects handbook: A toolbox for watershed managers, scientists, and engineers, Lewis Publishers, Washington DC, 911 p.

Carter, R.W., and Davidian, J., 1968, Techniques of water-resources investigations of the U.S. Geological Survey: Book 3, Applications of Hydraulics, chapter A6: General procedure for gaging streams, 60 p.

City of Reno, 2015, Stormwater maps, unpublished data

City of Sparks, 2013, Sparks stormdrain system map, 1:12,500

Denver, J.M., Cravotta, C.A., Ator, S.W., and Lindsey, B.D., 2010, Contributions of phosphorus from groundwater to streams in the Piedmont, Blue Ridge, and Valley and Ridge physiographic provinces, Eastern United States, U.S. Geological Survey, Scientific Investigations Report 2010-5176, 38 p.

Edwards, T.K., and Glysson, G.D., 1999, Techniques of water-resources investigations of the U.S. Geological Survey: Book 3, Applications of Hydraulics, chapter C2, Field methods for measurement of fluvial sediment, 60 p.

Harmel, R.D., King, K.W., and Slade, R.M., 2003, Automated stormwater sampling on small watersheds, Applied Engineering in Agriculture, v. 19, no. 6, pp. 667-674.

Hem, J.D., 1985, Study and interpretation of the chemical characteristics of natural waters, third edition, U.S. Geological Survey Water-Supply Paper 2254, 264 p.

JBR Environmental, 2010, Chalk Creek watershed characterization, City of Reno, Nevada; consulting report prepared for the City of Reno Public Works Department, 100 p.

Jones, P., Hunt, W., and Smith, J., 2007, The Effect of Urban Stormwater BMPs on Runoff Temperature in Trout Sensitive Waters. Restoring Our Natural Habitat - Proceedings of the 2007 World Environmental and Water Resources Congress. v15. 1-9. 10.1061/40927(243)438.

MacDonald, L.H., Smart, A.W., and Wissmar, R.C., 1991, Monitoring guidelines to evaluate effects of forestry activities on streams in the Pacific Northwest and Alaska, EPA 910/9-91-001, 166 p.

Manhard Consulting Ltd., 2010, Planning-level regional hydrologic analysis, consulting report prepared for the City of Reno, multi-page document with appendices.

McKay, A., Heyvaert, A., Fitzgerald, B., Memmott, J., and Miller, M., 2013, Stormwater grab sampling of Truckee River outfalls and tributaries within the Truckee Meadows, Desert Research Institute, Division of Hydrologic Sciences report prepared for the Stormwater Permit Coordinating SWPCC, Cities of Reno, Sparks, and Washoe County, 71 p. + appendices.

National Weather Service (NWS), 2017, Annual climate report for December 31, 2017, https://w2.weather.gov/climate/getclimate.php?wfo=rev

Nevada Administrative Code (NAC) 445a., Water pollution controls

Nevada Department of Environmental Protection (NDEP), 2016, Nevada 2014 Water quality integrated report, Bureau of Water Quality Planning, prepared in accordance with the requirements of Sections 303(d)/305(b)/314 of the Clean Water Act, 30 p. + attachments

Nevada Department of Environmental Protection (NDEP), 2014, 2012 Water quality integrated report, prepared in accordance with the requirements of Sections 303(d)/305(b)/314 of the Clean Water Act, Statewide fecal coliform, 19 p.

Nevada Department of Environmental Protection (NDEP), 2012, Draft rationale for proposed revisions to the Nevada water quality regulations NAC 445A.1256 to NAC 445A.2214, Statewide fecal coliform, 19 p.

Nevada Department of Environmental Protection (NDEP), 2010, Permit No. NVS000001, permit for authorization to discharge from Municipal Separate Storm Sewer Systems to Waters of the United States under the NPDES, 28 p.

O'Hara, B., 2006, Climate of Reno, Nevada: NOAA Technical Memorandum NWS WR-267, 116 p.

Omni-Means, Ltd Engineers and Planners, 1984, Downtown Reno redevelopment project, phase 1, Cascade water delivery plan, Arlington Avenue, STA. 4+00 to 10+34, Sheet # RC-20.

Romeis, J.J., 1999, Evaluating non-point nutrient pollution in Steamboat Creek, Nevada: MS thesis, University of Nevada, Reno, 140 p. + appendices.

Shump, K.W., 1985, Streamflow and water quality effects of groundwater discharge to Steamboat Creek, Reno, Nevada, MS thesis, University of Nevada, Reno, 101 p.

Skalbeck, J.D., Shevenell, L., and Widmer, M.C., 2002, Mixing of thermal and non-thermal waters in the Steamboat Hills area, Nevada, Geothermics, v. 31, Issue 1, 22 p.

Stantec, 2012, Stormwater monitoring and sample analysis plan, Stantec Consulting Services, Inc. report prepared for the Truckee Meadows Stormwater Permit Coordinating SWPCC, multi-paged + appendices.

Stantec, 2011, Stormwater management program (SWMP), Stantec Consulting Services, Inc. report prepared for the Truckee Meadows Stormwater Permit Coordinating SWPCC, multi-paged + appendices.

Steeland, K., 2018, personal communication, Hydrologist, Truckee Meadows Water Authority, Reno, Nevada, (775) 834-8204

Terrene Institute, 1996, A watershed approach to urban runoff: Handbook for decision makers, Region 5, U.S. Environmental Protection Agency.

Turnipseed, D.P, and Sauer, V.B., 2010, Discharge measurements at gaging stations, Techniques and methods of the U.S. Geological Survey: Book 3: Application of Hydraulics, chapter A8, 60 p.

Trustman, B., Hastings, B., and Shaw, D., 2017, Stormwater sampling and analysis plan (SAP), Truckee Meadows regional stormwater quality management program, Balance Hydrologics report prepared for the City of Reno, in cooperation with Nevada Department of Transportation, City of Sparks, Washoe County, and Western Regional Water Commission, 51 p. + appendices.

United States Environmental Protection Agency (USEPA), 1999, Preliminary data summary of urban stormwater best management practices, EPA-821-R-99-012, U.S. Environmental Protection Agency (USEPA), Office of Water, Washington D.C., Part B, (Chapter 4).

United States Geological Survey (USGS), 1981, Guidelines for determining flood flow frequency, Bulletin #17B of the Hydrology Subcommittee, Interagency Advisory Committee on Water Data, 194 p.

Wetzel, R. G., 2001, Limnology: Lake and River Ecosystems (3rd ed.). San Diego, CA: Academic Press.

YSI. (2005). Environmental Dissolved Oxygen Values Above 100% Air Saturation. In YSI Environmental Tech Note. https://www.ysi.com/File%20Library/Documents/Technical%20Notes/T602-Environmental-Dissolved-Oxygen-Values-Above-100-percent-Air-Saturation.pdf

APPENDICES

APPENDIX A

Station Observer Logs

Preliminary and subject to revision

Station Observer Log:
Arlington Street (H-19)

Site Conditions				*Pipe or Streamflow*			*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Hydrograph	Flow	Streamflow Source	Estimated Accuracy	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)	*(R/F/S/B)*	*(cfs)*	*(M, R, E)*	*(e/g/f/p)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
8/5/2017 14:20	bt	0.03	dry	--	--	--	--	--	--	--	--	--	--	--	Loaded ISCO with ice and set for measurement of 0.2 inches of rain and start at 0.1 ft. stage; forecast is widespread showers with some convection over Reno area for evening and high probability of thunderstorms on 8/6
8/7/2017 8:30	bt	0.02	dry	--	--	--	--	--	--	--	--	--	44.96, 111.6, 170.7, 237.8	yes	Strong thunderstorm on 8/6/17 at 16:00 filled 23 bottles; Ice had melted and samples were in cool water; WQ taken back at office after samples in cooler; First Flush (H-19(1)): T 7.60°C, C 86.4, SC127.9, DO 56% 6.4mg/l, pH 7.05; Rising Limb (H-19(2)): T 4.1°C, C54, SC 89.9, DO 56% 7.3 mg/l, pH 6.37; Peak (H-19(3)): T 8.3°C, C 62.5, SC 91.9, DO 26% 3.0 mg/l, pH 5.97; Falling Limb (H-19(4)): T10.6°C, C 72.7, SC 99.8, DO 26% 2.8 mg/l, pH 6.26
9/6/2017 14:17	bt	0.03	dry	--	--	--	--	--	--	--	--	--	--	no	Culvert dry; little debris in culvert; set ISCO to sample flow based starting at >0.06 ft at 379 cf based on forecast 0.18 inches of rain; iced and added bottles
9/7/2017 11:08	bt,jj	0.02	dry	--	--	--	--	--	--	--	--	--	133.8, 266.9, 135.7, 141.9	yes	13 sample bottles filled; hydrograph and sample report showed first sample taken at beginning of flow and second sample taken at peak so no rising limb sample processed; First Flush (H-19(1)): T 15.0°C, C 366.5, SC 452, DO 49% 4.21 mg/l, pH 6.78; Peak (H-19(3)): T 14.7°C, C 147, SC 182.9, DO 24% 2.10 mg/l, pH 6.55; Falling Limb (H-19(4)): T 15.1°C, C 141.1, SC 173.9, DO 23% 1.96mg/l, pH 6.47; Duplicate sample processed using H-19(4) sample labeled Arlinton@TR 17:00

Observer Key: (bt) is Ben Trustman, (jj) is Jack Jacquet

Stage: Water level recorded on ISCO.

Hydrograph: Describes stream stage as rising (R), falling (F), steady (S), or baseflow (B)

Streamflow Source: measured by a hydrologist (M), obtained from an existing rating curve or gaging station [R], or estimated E

Specific conductance: Measured in micromhos/cm in field; then adjusted to 25degC by equation (1.8813774452 - [0.050433063928 * field temp] + [0.00058561144042 * field temp^2]) * Field specific conductance

Turbidity values are reported from the sample using a desktop turbidimeter and do not reflect laboratory analysis and results

Station Observer Log:
Mary Wahl Ditch (SDOE 008936)

Site Conditions				*Pipe or Streamflow*			*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Hydrograph	Flow	Streamflow Source	Estimated Accuracy	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)	*(R/F/S/B)*	*(cfs)*	*(M, R, E)*	*(e/g/f/p)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
8/22/2017 14:19	bt	0.65	B	3.81	R	g	--	--	--	--	--	--	--	--	Iced and prepped for flow based sampling at 6400 cf, >0.85 ft based on forecast of 0.25 inches; call to NWS Reno confirms possibility of precipitation accumulation and thunderstorms starting to form in south Reno
8/23/2017 11:28	bt	0.56	B	3.15	R	g	--	--	--	--	--	--	--	no	No samples taken; capped bottles and removed ice; extra battery in box; turned off ISCO
9/6/2017 15:11	bt	0.27	B	1.20	R	f	--	--	--	--	--	--	--	no	ISCO level fluctuating between 0.265-0.379; tested 0.35 threshold for sampling to see if it samples at the threshold immediately or after sustained time at level-sample was taken immediately after threshold met; set flow based sample >0.39ft at 4430 cf based on forecast of 0.18 inches of rain
9/7/2017 12:23	bt, jj	0.31	B	0.83	R	f	17.9	402	470	86	7.0	7.41	--	no	No samples taken; capped bottles and turned off sampler; checked culvert and tested water quality
11/15/2017 11:52	bt,jj	0.16	B	--	--	--	16.0	795	960	98	8.3	8.27	--	--	Visual flow in outfall but not reading on ISCO; slight fuel smell upon opening the manhole cover; roads wetted from rain; currently not raining; iced and set flow based sample at 30,241 cf, >0.225 depth for a forecast of 1.0 inches of rain; reset clock for DLS; calibrated DO on YSI
11/16/2017 13:52	bt, jj	0.42	F	1.49	R	f	10.9	178	247	92	8.5	8.86	--	--	8 Samples taken; added ice; slight smell of fuel; samples look dark
11/17/2017 13:50	bt,bkh	--	--	--	--	--	--	--	--	--	--	--	83.25, 122.2, 117.1, 41.71	yes	11 samples taken; opened storm drain-plastic bags and garbage wrapped up on sensor arm; odors of fuel and skunk; removed garbage from sensor arm; First Flush (SDOE (1)): T 3.5°C, C 354, SC 598, DO 94% 10.6 mg/L, pH 8.10; Rising Limb (SDOE (2)): T 3.3°C, C 43, SC 74, DO 85% 9.78 mg/L, pH 8.10; Peak (SDOE (3)): T 3.3°C, C 50, SC 86, DO 85% 9.67mg/L, pH 9.05; Falling Limb (SDOE(4)): T 4.2°C, C 104, SC 172, DO 79% 8.87mg/L, pH 8.68
4/5/2018 18:51	bt	0.07	B	--	--	--	--	--	--	--	--	--	--	--	Downloaded RTD to check for backwatering; variable hydrograph with no indication of backwater; set ISCO flow based sample every 13,913cf using a forecast of 0.5 inches of rain; set to start at >0.125 ft; iced and filled with clean bottles
4/6/2018 13:02	bt, jj	0.97	U	2.7	R	f	12.7	130	169	89	8.02	7.94	--	no	One bottle sampled at 12:56; lots of plastic bags caught on intake hose structure; removed all plastic garbage
4/6/2018 17:17	bt, jj	1.19	U	5.6	R	f	--	--	--	--	--	--	--	no	Sampler on bottle 5; re-iced for overnight sampling
4/7/2018 11:39	bt	1.09	F	0.5	R	f	--	--	--	--	--	--	135.8, 126.5, 19.69, 54.76	yes	Unable to download RTD to computer; estimated composites based on timing and duration; 15 bottles sampled; (SDOE (1)): T 8.4°C, C 124.9, SC 182.9, DO 66.3% 6.61 mg/L, pH 8.64; (SDOE (2)): T 9.1°C, C 125, SC 179.5, DO 60.4% 5.94 mg/L, pH 8.57; (SDOE (3)): T 10.7°C, C 393.3, SC 541.6, DO 63.3% 6.00 mg/L, pH 8.11; (SDOE(4)): T 12.2°C, C 300.4, SC 397.0, DO72.9% 6.60mg/L, pH 8.18

Observer Key: (bkh) is Brian Hastings, (bt) is Ben Trustman, (jj) is Jack Jacquet

Stage: Water level recorded by ISCO,

Hydrograph: Describes stream stage as rising (R), falling (F), steady (S), baseflow (B), or backwater (BW)

Streamflow Source: measured by a hydrologist (M), obtained from an existing rating curve or gaging station [R], or estimated E

Specific conductance: Measured in micromhos/cm in field; then adjusted to 25degC by equation (1.8813774452 - [0.050433063928 * field temp] + [0.00058561144042 * field temp^2]) * Field specific conductance

Turbidity values are reported from the sample using a desktop turbidimeter and do not reflect laboratory analysis and results

Preliminary and subject to revision

Station Observer Log:
Fishermans Park II (D-16)

Site Conditions				*Pipe or Streamflow*			*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Hydrograph	Flow	Streamflow Source	Estimated Accuracy	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)	*(R/F/S/B)*	*(cfs)*	*(M, R, E)*	*(e/g/f/p)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
8/22/2017 11:40	bt	--	--	--	--	--	--	--	--	--	--	--	--	no	Battery dead; water flowing in outfall est. 0.25 cfs
8/22/2017 13:46	bt	0.11	B	--	--	--	--	--	--	--	--	--	--	no	ISCO reading 0.24 ft/s but 0 cfs; iced and set for flow based sample at 6400 cf , >0.25 ft based on 0.25 inches of forecast rain from thunderstorms
8/23/2017 11:28	bt	0.09	B	--	--	--	--	--	--	--	--	--	--	no	No samples taken; water still flowing out of outfall; ISCO reading 0 cfs and -0.25 ft/s; capped bottles and emptied ice; turned off ISCO; extra battery in box
9/6/2017 14:47	bt	0.09	B	--	--	--	--	--	--	--	--	--	--	no	ISCO reading 0 cfs and -0.25 ft/s but there is visible flow est. 0.025-0.05cfs; set for flow based sample >0.13ft at 4408 cf based on 0.18 inches of rain forecast for thunderstorms; level on ISCO fluctuating while at site from 0.09 to 0.113ft.; not enough flow to measure water quality (probe could not be submerged)
9/7/2017 12:23	bt, jj	0.08	B	--	--	--	--	--	--	--	--	--	--	no	ISCO reading 0 cfs and 0.21 ft/s but there is visible flow of <0.05 cfs; no samples taken; capped bottles and cleared ice and water; shut off ISCO
11/15/2017 11:30	bt,jj	0.28	B	--	--	--	--	--	--	--	--	--	--	no	Small amount of visual flow-not enough to register on ISCO <0.01; currently cloudy with intermittent light rain; Iced and set the ISCO for flow based sample at 26841 cf, >0.13ft with forecast of 1.0 inch of rain; time is one hour ahead (not reset for DLS)
11/16/2017 14:10	bt, jj	0.40	R	--	--	--	--	--	--	--	--	--	--	no	Low battery program halted; sample report said 7 bottles sampled; actually only 3 bottles sampled due to low battery; power completely shut off at 8:26; intermittent start and stop after bottle 2; changed battery; reset program to sample every 5964 cf based on remaining forecast of 0.2 inches of rain starting immediately; moved the three samples taken to 22-24 and capped; restarted program at 14:48; clock still one hour ahead; iced samples
11/17/2017 10:13	bt, bkh	--	F	--	--	--	--	--	--	--	--	--	(1)95.22, (4)112.1	yes	Calibrated DO meter; processed samples; power failure during 11/15 missed rising limb and peak samples; First Flush (D-16 (1)): T 2.6°C, C 116.3, SC 203.1, DO 92.2% 10.7 mg/L, pH 7.69; Falling Limb (D-16(4)): T2.9°C, C 70, SC 122, DO 77% 8.73mg/L, pH 7.53
1/18/2018 17:58	bt, jj	--	--	--	--	--	--	--	--	--	--	--	--	--	No flow in outfall; filled ISCO with bottles and iced; set for flow based sample >0.15 inches and 3200 cf flow; 0.1-0.2 inches of rain forecast
1/19/2018 9:38	bt	--	--	--	--	--	--	--	--	--	--	--	--	yes	Very little flow out of outfall and ISCO reading 0 cfs; 4 samples taken- short hydrograph but samples were representative of the 4 phases for composite samples; First Flush (D-16 (1)): T 5.6°C, C 365.7, SC 583.6, DO 84% 8.97 mg/L, pH 8.27; Rising Limb (D-16(2)): T 5.2°C, C 329.5, SC 529.5, DO 86% 9.23 mg/L, pH 8.11; Peak (D-16(3)): T 5.2°C, C 300.2, SC 482.6, DO 86% 9.22 mg/L, pH 8.10; Falling Limb (D-16(4)): T 5.4°C, C 274.3, SC 438.8, DO 67% 9.28 mg/L, pH 8.02; no E.coli sample due to holding time; no Turbidity sample because used each sample bottle for a composite

Observer Key: (bkh) is Brian Hastings, (bt) is Ben Trustman, (jj) is Jack Jacquet

Stage: Water level is recorded on ISCO,

Hydrograph: Describes stream stage as rising (R), falling (F), steady (S), or baseflow (B)

Streamflow Source: measured by a hydrologist (M), obtained from an existing rating curve or gaging station [R], or estimated E

Specific conductance: Measured in micromhos/cm in field; then adjusted to 25degC by equation (1.8813774452 - [0.050433063928 * field temp] + [0.00058561144042 * field temp^2]) * Field specific conductance

Turbidity values are reported from the sample using a desktop turbidimeter and do not reflect laboratory analysis and results

Station Observer Log:
Oxbow Nature Park (C-24)

Site Conditions				*Pipe or Streamflow*			*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Hydrograph	Flow	Streamflow Source	Estimated Accuracy	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)	*(R/F/S/B)*	*(cfs)*	*(M, R, E)*	*(e/g/f/p)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
8/22/2017 11:14	bt	0.19	B	--	--	--	--	--	--	--	--	--	--	no	Set ISCO for flow based sample at 1610cf, >0.55 ft (stage readings have shifted while at site up to 0.34) based on forecast of 0.25 inches of rain from slow moving thunderstorms; ISCO reading -1.53 ft/s and 0 cfs; visual shows flow at est. 0.05; spoke to NWS Reno said convective cells could produce 0.05-1.0 inches of rain in places
8/23/2017 10:20	bt	0.20	B	--	--	--	--	--	--	--	--	--	--	no	No samples taken; no evidence of rain at site-completely dry; ISCO reading -0.28 ft/s and 0 cfs; removed ice; recapped all bottles; turned off ISCO
9/6/2017 13:50	bt	0.19	B	--	R	--	--	--	--	--	--	--	--	no	Arrived at site to set up ISCO; ISCO reading -0.28ft/s but there was visual flow est 0.05 cfs; set Isco to sample at >0.23 ft, 986 cf based on forecast of 0.18 inches of precipitation
9/7/2017 9:43	bt,jj	0.16	B	0.08	R	g	--	--	--	--	--	--	91.11, 46.83, 66.72, 16.65	yes	7 samples taken during thunderstorm with est. 0.08 inches of rain; dual peak hydrograph; used first peak as First Flush sample and used second peak as rising limb, peak and falling limb; First Flush (C-24(1)):T 12.6°C, C 230.2, SC 306, DO 44.9% 4.0 mg/l pH 7.30; Rising Limb (C-24(2)):T 13.2°C, C 165.6, SC 212.9, DO 74% 6.37 mg/l, pH 7.30; Peak (C-24(3)):T 14.9°C, C 201, SC 248.1, DO 65% 5.53mg/l, pH 7.07; Falling Limb (C-24(4)): T16.9°C, C 169.3, SC 200, DO 75% 6.14 mg/l, pH 7.33; level at 0.117 ft. and reading 0 cfs 0.41ft/s with visible flow at 10:53 when leaving site; shut down ISCO and capped unused bottles
11/15/2017 11:00	bt,jj	--	--	--	--	--	--	--	--	--	--	--	--	--	Homeless camp next to sampler; woman appears to be leaving; battery dead; moving on and plan to return
11/15/2017 13:30	bt,jj	0.10	B	--	--	--	--	--	--	--	--	--	--	--	Light rain; iced and set ISCO for flow based sample at 8633cf >0.20ft for forecast of 1.25 inches of rain; not enough water flowing to measure water quality; reset clock for DLS; homeless tent still at site with no people present
11/16/2017 15:15	bt, jj	0.37	F	4.19	R	g	--	--	--	--	--	--	55.76, 19.03, 14.85, 25.09	yes	24 samples taken; many peaks in hydrograph as rain had many pulses of intensity; First Flush (C-24 (1)): T 5.1°C, C 67.4, SC 108.9, DO 92.4% 9.87mg/L, pH 8.17; Rising Limb (C-24(2)): T4.4°C, C 22.7, SC 37.4, DO 92.7% 10.10 mg/L, pH 7.86; Peak (C-24(3)): T5.1°C, C 21.1, SC 34.1, DO 80.9% 9.56 mg/L, pH 7.64; Falling Limb (C-24(4)): T 6.2°C, C 25.8, SC 40.2, DO 80.9% 8.41 mg/L, pH 7.42; Samples processed and iced at 16:10; ISCO readings dropped when leaving site; left ISCO running to capture the rest of the storm
12/20/2017 8:30	jj	0.07	--	--	--	--	--	--	--	--	--	--	--	--	Battery dead; hooked up fresh battery and downloaded ISCO; removed both batteries and turned ISCO off

Observer Key: (bt) is Ben Trustman, (jj) is jack Jacquet

Stage: Water level is recorded on ISCO,

Hydrograph: Describes stream stage as rising (R), falling (F), steady (S), or baseflow (B)

Streamflow Source: measured by a hydrologist (M), obtained from an existing rating curve or gaging station [R], or estimated E

Specific conductance: Measured in micromhos/cm in field; then adjusted to 25degC by equation (1.8813774452 - [0.050433063928 * field temp] + [0.00058561144042 * field temp^2]) * Field specific conductance

Turbidity values are reported from the sample using a desktop turbidimeter and do not reflect laboratory analysis and results

Station Observer Log:
Thomas Creek at South Meadows Pkwy (TC@SMP)

Site Conditions					*Streamflow*					*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Stage	Hydrograph	Streamflow	Streamflow Source	Estimated Accuracy	High-water Mark	HWM date?	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)	(feet)	(R/F/S/B)	(cfs)	(M, R)	(e/g/f/p)	(feet)	(M/D/YY)	(oC)	(µmhos/cm)	(at 25 oC)	(%)	(mg/L)		(NTU)	(yes/no)	
7/31/2017 14:55	bt	0.07		B	1.9	M	g	--	--	20.3	84	92	90	8.1	7.69	--	no	Water clear; near baseflow; some mud at staff plate-cleared away to get reading
8/22/2017 15:28	bt	-0.15		B	--	--	--	--	--		--	--	--	--	--	--	--	Currently raining; runoff in gutters; not going to measure flow due to lightning; staff dry and out of water; flow is low and not increasing yet
8/22/2017 16:00	bt	-0.15		B	--	--	--	--	--		--	--	--	--	--	--	--	Rain has subsided; no change in stage or turbidity of water; not sampling
9/20/2017 11:26	bt, jj	0.35		S	4.3	M	g	--	--	12.9	112	146	91	8.1	7.74	13.37	yes	Higher flow than previous visit; water slightly murky; vegetation is drying out around stream; ambient sample collected at 12:00
10/11/2017 14:32	bt	0.08		B	2.8	M	g	--	--	10.9	107	146	104	9.8	7.97	--	no	Water clear; baseflow; all vegetation is dry; no obstructions upstream; DO seems high
11/15/2017 16:36	bt, jj	1.52		S	--	--	--	--	--	8.7	73	106	92	9.1	7.94	--	no	Installed Solinst logger because In-Situ data was questionable from last download-started at 16:45; discovered a beaver dam about 75 ft. downstream of the gage-tried to remove some debris buildup and logs at 17:05; stage was 1.47 at 17:10 and 1.39 at 17:21-most likely will continue to drop
11/15/2017 23:46	bt,jj	1.35		R	6.0	M	p	--	--	6.1	68	107	94	9.8	7.64	59.20	yes	Stage has dropped since earlier visit when we removed debris from beaver dam; higher flow and noticeably turbid water with lots of plant debris; rain has persisted steadily for last 2+ hours; sample collected at 0:05
1/4/2018 13:14	bt	0.79		B	1.20	est.	--	--	--	3.7	68	114	98	11.1	7.37	--	no	Stage higher due to downstream beaver dam; lower stage upstream at prospective gage site; downloaded water level recorders; water clear
1/8/2018 14:44	bt,jj	0.87	4.05	S	0.75	M	g/f	--	--	3.8	74	123	111	12.4	7.66	--	no	New gage installed 200 ft. upstream of old gage to avoid beaver dam effects; first flow measurement at new site; water clear
2/6/2018 13:42	bt	1.08	4.32	S	1.87	M	g/f	--	--	4.8	65	105	106	11.6	7.95	4.86	yes	Water clear; ambient sample collected at 14:20; still high water backed up from beaver dam at old gage; flow primarily out of left side culvert under driveway bridge upstream
3/12/2018 14:45	bkh	--	4.42	S	--	--	--	--	--		--	--	--	--	--	--	--	Passing by; observed stage at new station before predicted storm to help samplers identify rising stage
3/13/2018 17:58	bt		4.56	S	3.70	M	g	--	--	7.1	72	110	110	11.2	8.03	9.69	yes	Slightly turbid water; stage up 0.14 since 3/12 visit; rain stopped ≈2.5 hours ago but projected to pick up again
4/20/2018 11:30	bkh		4.30	B	3.68	M	g	6.50	3/22 or 4/7	7.1	65	98	67	7.0	9.29	--	no	Water clear; trees blooming, leafing out; beaver still active downstream-not affecting this gage; old gage still backwatered; overbank flow based on high water marks; pool grade control intact; marmots living in bank upstream of gage; pH probe is malfunctioning

Observer Key: (bkh) is Brian Hastings, (bt) is Ben Trustman, (jj) is Jack Jacquet

Stage: Water level observed on staff plate,

Hydrograph: Describes stream stage as rising (R), falling (F), steady (S), or baseflow (B)

Streamflow Source: measured by a hydrologist (M), obtained from an existing rating curve or gaging station [R]

Specific conductance: Measured in micromhos/cm in field; then adjusted to 25degC by equation (1.8813774452 - [0.050433063928 * field temp] + [0.00058561144042 * field temp^2]) * Field specific conductance

Turbidity values are reported from the sample using a desktop turbidimeter and do not reflect laboratory analysis and results

Station Observer Log:
Whites Creek at Old Virginia HWY (WC@OVH)

Site Conditions				*Streamflow*					*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Hydrograph	Streamflow	Streamflow Source	Estimated Accuracy	High-water Mark	HWM date?	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(meters)	*(R/F/S/B)*	*(cfs)*	*(M, R)*	*(e/g/f/p)*	*(feet)*	*(M/D/YY)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
8/22/2017 15:05	bt	2.64	R	26.8	R	g	--	--	15.4	61	75	95	9.3	7.34	41.1	yes	Thunderstorm activity in area starting at 14:30-strong thunderstorm activity as team approached site and continued throughout sample acquisition; stage rising during sample collection; gutters running full; YSI calibrated for DO at site; sample collected at 15:15
9/20/2017 11:08	bt, jj	1.22	R	8.2	R	g	--	--	9.1	57	83	94	9.2	7.77	11.6	yes	Ambient sample collected at 11:12; big construction site across the street from measurement site
11/15/2017 23:20	bt, jj	--	--	--	--	--	--	--	6.2	39	60	99	10.4	7.65	111	yes	Raining steady and hard for last hour; recalibrated DO prior to measurement; sample collected at 23:26; no data available from TROA
2/6/2018 12:35	bt	0.64	R	3.0	R	g	--	--	3.1	49	84	104	12.0	7.82	2	yes	Ambient sample collected at 12:50; water clear; clean channel bed; some garbage on banks
2/7/2018 10:30	bt	0.64	R	3.0	R	g	--	--		--	--	--	--	--	--	yes	Ambient E.coli sample collected at 10:32

Observer Key: (bt) is Ben Trustman, (jj) is Jack Jacquet

Stage: Water level observed on staff plate, (staff plate is metric at this location) or recorded by TMWA

Hydrograph: Describes stream stage as rising (R), falling (F), steady (S), or baseflow (B)

Streamflow Source: measured by a hydrologist (M), obtained from an existing rating curve or gaging station [R]

Specific conductance: Measured in micromhos/cm in field; then adjusted to 25degC by equation (1.8813774452 - [0.050433063928 * field temp] + [0.00058561144042 * field temp^2]) * Field specific conductance

Turbidity values are reported from the sample using a desktop turbidimeter and do not reflect laboratory analysis and results

Station Observer Log:
Alum Creek at Truckee River (AC@TR)

Site Conditions				*Streamflow*					*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Hydrograph	Streamflow	Streamflow Source	Estimated Accuracy	High-water Mark	HWM date?	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)	*(R/F/S/B)*	*(cfs)*	*(M, R)*	*(e/g/f/p)*	*(feet)*	*(M/D/YY)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
6/5/2017 16:03	bt	0.66	S	2.56	M	g/e	--	--	19.4	600	672	82	7.5	9.84	--	no	Lots of gravel at the upstream side of the gage pool; water is milky; rocks at top of gage pool creating a small riffle; turbulence not effecting gage reading; stream channel still full 35 ft. upstream but returns to incised channel as it approaches gage pool
6/22/2017 11:30	bt, bkh	0.57	S	1.85	M	g/e	--	--	22.1	374	389	94	6.9	7.86	--	no	Significant erosion through gage reach; pool and gage is now a riffle; knickpoint has migrated upstream; consider moving gage for FY2018; Downstream knickpoint moving upstream past cobbles could make it to gage with high flow or flood conditions in next year
7/31/2017 15:59	bt	0.50	B	1.46	M	g	--	--	25.5	416	420	94	7.7	8.11	--	no	Water murky; lots of fines just upstream of gaging pool where measurement was taken; gaging pool still a riffle-moved some larger cobbles
9/20/2017 8:48	bt, jj	0.55	B	1.86	M	g	--	--	12.9	317	413	104	9.2	7.70	26.53	yes	Sample collected at 8:56 for Summer ambient sampling; DO reading high-calibrated in office and again in the field-restoring factory calibration and will recalibrate at next site; baseflow conditions; gage pool is still a riffle; all flood controls upstream have been removed
10/11/2017 16:16	bt	0.29	B	0.34	M	g	--	--	10.9	369	505	104	9.8	8.03	--	no	Water clear; moved several large boulders to create a control pool at gage where riffle had formed; no change in stage at gage; lots of fines just upstream of gage pool where measurements taken; DO seems to be reading high
11/15/2017 20:54	bt,jj	0.47	R	0.95	M	f	--	--	7.6	395	594	113	11.4	7.51	15.65	yes	Rain began at 18:30; steady rain for last couple hours increasing through the night; lots of leaves and debris in channel moving downstream; sample collected at 21:20
12/15/2017 12:45	bkh,jj	0.39	B	0.22	M	g	--	--	0.8	570	1062	92	11.2	7.82	--	no	Gaging pool could be easily scoured-gravels; likely stage shifting during storm flows; channel banks continue to erode upstream of gage
1/4/2018 11:06	bt	0.41	B	0.18	M	g	--	--	3.8	584	982	97	10.8	7.14	--	no	Lots of sediment in bottom of well; removed well at 11:45-cleaned out; removed some sediment from behind staff plate where well sits; replaced well and retightened-stage 0.42; water level recorders back in well at 12:27; installed backup Solinst water level recorder-launched at 13:00
2/7/2018 9:35	bt	0.41	B	0.15	M	g/f	--	--	1.7	534	963	99	11.8	8.18	2.40	yes	Water clear; baseflow; ambient sample collected at 10:10; construction on left bank down stream of gage finished
4/7/2018 7:32	bt	1.13	R	9.77	M	f	--	--	9.5	217	309	87	8.4	8.01	254.30	yes	Water turbid and brown; stage rising during measurement; raining hard at arrival but rain subsided in 20 minutes; water is high but within channel-no overbank ponding in grassy area; lots of bed movement under and around feet
4/20/2018 12:35	bkh	0.43	B	0.65	M	g	3.80	3/22 or 4/7	12.0	477	634	87	8.0	9.00	--	no	Water is slightly cloudy; downstream erosion control was addressed using rip-rap confining channel at high flows; banks near gage upstream severely eroded; channel at gage cross section eroded; pH probe is malfunctioning

Observer Key: (bkh) is Brian Hastings, (bt) is Ben Trustman, (jj) is Jack Jacquet

Stage: Water level observed on staff plate,

Hydrograph: Describes stream stage as rising (R), falling (F), steady (S), or baseflow (B)

Streamflow Source: measured by a hydrologist (M), obtained from an existing rating curve or gaging station [R]

Specific conductance: Measured in micromhos/cm in field; then adjusted to 25degC by equation (1.8813774452 - [0.050433063928 * field temp] + [0.00058561144042 * field temp^2]) * Field specific conductance

Turbidity values are reported from the sample using a desktop turbidimeter and do not reflect laboratory analysis and results

Station Observer Log:
Chalk Creek at Chalk Bluff (CC@CB)

Site Conditions				*Streamflow*					*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Hydrograph	Streamflow	Streamflow Source	Estimated Accuracy	High-water Mark	HWM date?	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)	*(R/F/S/B)*	*(cfs)*	*(M, E)*	*(e/g/f/p)*	*(feet)*	*(M/D/YY)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
7/31/2017 16:45	bt	3.52	B	0.60	M	g	--	--	22.5	2535	2663	79	6.9	8.25	--	no	Water clear; grass very tall and thick at crossover sight that you cannot see the upstream channel; staff plate in low water with lots of sediment in pool; logger was not stuck in well
9/20/2017 10:10	bt, jj	3.62	B	0.78	M	g	--	--	12.5	2453	3223	89	7.8	8.22	6.66	yes	Grass green and overgrown in creek; willows green; removed vegetation in path so stream is more accessible; baseflows are higher than previous years; ambient sample collected at 10:15
10/11/2017 17:24	bt	3.63	B	--	--	--	--	--	11.6	2542	3414	96	8.7	8.15	--	no	Water clear; grasses next to stream are green but all other veg in area is dry; downloaded logger and baro
11/15/2017 21:49	bt,jj	4.44	R	16.01	M	p	--	--	8.1	719	1070	124	12.3	7.84	106.9	yes	Lots of foam in channel and at gage; rain increasing during visit; foam making flow measurement very difficult; stage rising rapidly; sample collected at 21:55
1/4/2018 16:37	bt	3.63	B	0.70	est.	--	--	--	8.2	2315	3410	86	8.5	8.16	--	no	Water level recorder was in some sediment when removed; evidence of overbank flow in vegetation from November storm; installed back up water level recorder (Solinst-launched at 17:30)-loggers back in well at 17:11; cleared out sediment around bottom of well at 17:15-stage remained at 3.63
2/7/2018 8:40	bt	3.59	B	0.55	M	f	--	--	3.6	1827	3084	103	11.6	8.03	5.1	yes	Water clear; ambient sample collected at 9:06; lots of algae on the rocks downstream of gage; algae build up on gage at water level
3/13/2018 16:45	bt,jj	3.72	F	1.42	M	f	--	--	12.0	2290	3043	101	9.0	8.24	40.0	yes	Turbid water; no foam; stopped raining 1.5 hrs prior; short burst of rain ≈0.1 inches; projected to continue raining; sample collected at 16:52
4/20/2018 13:45	bkh	3.58	S	0.85	M	g	--	--	15.3	2473	3036	113	9.6	--	--	no	Final FY2018 site visit; download; flow measurement; log against staff plate; removed; sunny warming period no rain in forecast.

Observer Key: (bkh) is Brian Hastings, (bt) is Ben Trustman, (jj) is Jack Jacquet

Stage: Water level observed on staff plate,

Hydrograph: Describes stream stage as rising (R), falling (F), steady (S), or baseflow (B)

Streamflow Source: measured by a hydrologist (M), obtained from an existing rating curve or weir equation [E]; V-notch weir equation used: Q = ; Rectangular weir equation = Q = 3.33LH^1.5

Specific conductance: Measured in micromhos/cm in field; then adjusted to 25degC by equation (1.8813774452 - [0.050433063928 * field temp] + [0.00058561144042 * field temp^2]) * Field specific conductance

Turbidity values are reported from the sample using a desktop turbidimeter and do not reflect laboratory analysis and results

Station Observer Log:
Steamboat Creek at the Narrows (SBC@NAR)

Site Conditions				*Streamflow*					*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Hydrograph	Streamflow	Streamflow Source	Estimated Accuracy	High-water Mark	HWM date?	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)	*(R/F/S/B)*	*(cfs)*	*(M, R)*	*(e/g/f/p)*	*(feet)*	*(M/D/YY)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
9/20/2017 12:23	bt, jj	-0.16	B	29.8	USGS	p	--	--	16.9	534	632	96	8.0	8.19	19	yes	Construction still continuing around the channel on both sides; connector bridge now built; ambient sample collected at 12:33
11/16/2017 0:24	bt,jj	0.34	R	61.4	USGS	p	--	--	8.4	504	737	94	9.2	8.28	252	yes	Sample collected at 0:36; rain steady for last 1.5-2 hours
2/6/2018 11:46	bt	0.19	B	40.9	USGS	p	--	--	6.9	362	553	105	11.0	8.14	40	yes	Ambient sampling; construction still continuing; water brown
4/7/2018 9:15	bt	1.70	R	114.0	USGS	p	--	--	11.6	318	428	103	9.5	8.13	119	yes	Water turbid and brown; rising stage; rain stopped at 7:45; sample collected at 9:25; construction still continuing at site

Observer Key: (bt) is Ben Trustman, (jj) is Jack Jacquet

Stage: Water level observed on staff plate,

Hydrograph: Describes stream stage as rising (R), falling (F), steady (S), or baseflow (B)

Streamflow Source: measured by a hydrologist (M), obtained from an existing rating curve or gaging station [R]

Specific conductance: Measured in micromhos/cm in field; then adjusted to 25degC by equation (1.8813774452 - [0.050433063928 * field temp] + [0.00058561144042 * field temp^2]) * Field specific conductance

Turbidity values are reported from the sample using a desktop turbidimeter and do not reflect laboratory analysis and results

Station Observer Log:
Steamboat Creek at Rhodes Road (SBC@RR)

Site Conditions				*Streamflow*					*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Hydrograph	Streamflow	Streamflow Source	Estimated Accuracy	High-water Mark	HWM date?	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)	*(R/F/S/B)*	*(cfs)*	*(M, R)*	*(e/g/f/p)*	*(feet)*	*(M/D/YY)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
9/20/2017 10:41	bt, jj	1.41	B	17.7	USGS	p	--	--	11.6	195	262	93	8.5	7.94	17	yes	Ambient sample collected at 10:55, vegetation is green with some leaves starting to change color
11/15/2017 22:59	bt, jj	1.48	R	15.2	USGS	p	--	--	7.0	203	310	114	11.6	7.94	73	yes	Rising limb of the hydrograph as rain has increased over the last hour; sample collected at 23:05
2/6/2018 13:09	bt	1.71	R	35.3	USGS	p	--	--	7.1	212	323	107	11.1	8.28	38	yes	Ambient sample collected at 13:22; water brown and turbid
4/7/2018 8:39	bt	2.13	R	140.0	USGS	p	--	--	9.9	199	280	98	9.4	8.14	110	yes	Water very turbid; sample collected at 8:50; rain stopped at 7:45; water is high but contained in the channel

Observer Key: (bt) is Ben Trustman, (jj) is Jack Jacquet

Stage: Water level observed on staff plate,

Hydrograph: Describes stream stage as rising (R), falling (F), steady (S), or baseflow (B)

Streamflow Source: measured by a hydrologist (M), obtained from an existing rating curve or gaging station [R]

Specific conductance: Measured in micromhos/cm in field; then adjusted to 25degC by equation (1.8813774452 - [0.050433063928 * field temp] + [0.00058561144042 * field temp^2]) * Field specific conductance

Turbidity values are reported from the sample using a desktop turbidimeter and do not reflect laboratory analysis and results

Station Observer Log:
Steamboat Creek at Clean Water Way (SBC@CWW)

Site Conditions				*Streamflow*					*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Hydrograph	Streamflow	Streamflow Source	Estimated Accuracy	High-water Mark	HWM date?	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)	*(R/F/S/B)*	*(cfs)*	*(M, R)*	*(e/g/f/p)*	*(feet)*	*(M/D/YY)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
9/19/2017 11:15	bt,jj	4.91	B	66.8	USGS	p	--	--	15.3	492	601	105	8.9	8.82		yes	Set up ISCO for ambient sampling; checked intake line and sample calibration; set to sample 400ml every hour; DO high and questionable-re-calibrate instrument
9/19/2017 15:59	bt	4.97	B	71	USGS	p	--	--		--	--	--	--	--	--	no	re-checked ISCO to make sure it was working properly-was on sample 6
9/20/2017 16:41	bt, jj	4.96	B	70.3	USGS	p	--	--		--	--	--	--	--	(1)19.93, (2) 24.32, (3) 29.67, (4) 28.90	yes	Process 24 samples for ambient sampling; SBC@CWW (1) T 6.8°C, C 413.1, SC 630.5, DO 77% 7.9 mg/l, pH 8.35, SBC@CWW (2) T 7.1°C, C 383.2, SC 581.3, DO 74.8% 7.62 mg/l, pH 8.41, SBC@CWW (3) T 8.0°C, C 387.7, SC 574.7, DO 71.2% 7.10 mg/l, pH 8.40, SBC@CWW (4) T 8.8°C C 409.4, SC 592.1, DO 67.8% 6.64 mg/l, pH 8.34
11/15/2017 14:30	bt,jj	4.69	B	51.8	USGS	p	--	--	8.4	466.5	682.6	120	11.9	8.26	--	no	DO% seems high; WQ meter was working normal at last two sites; set ISCO to sample starting every 45 minutes starting at 21:00
11/16/2017 7:55	bkh	5.85	R	146	USGS	p	--	--		--	--	--	--	--	--	yes	Moderate rain overnight; currently light rain, flow is turbid and rising. ISCO has already sampled 15 times. Initial rise in stage occurred around 2:00; preserved samples #8-15, moved to end of carousel, dumped samples #1-7 (baseflow) and replaced with clean bottles, added ice; programed to sample every 90 mins beginning at 8:30.
11/16/2017 20:30	jj	8.23	R	467	USGS	p	--	--		--	--	--	--	--	--	yes	Reprogramed ISCO to sample every 2 hours starting at 22:00; 7 bottles unfilled; rest of bottles capped; added ice; water flowing through high flow bypass
11/17/2017 11:10	bt,bkh	7.1	F	296	USGS	p	--	--	6.8	--	510	80	8.4	7.93	31.4, 133.3, 524.0, 294.8	yes	Sunny and flows receding; samples processed; First Flush (SBC@CWW (1)): T 2.4°C, C 381, SC 671, DO 86% 10. mg/L dropping, pH 8.05; Rising Limb (SBC@CWW (2)): T 2.6°C. C 280, SC 490, DO 80% 9.35 mg/L, pH 8.02; Peak (SBC@CWW (3)): T 3.3°C, C 306, SC 522, DO 77% 8.75 mg/L, pH 8.05; Falling Limb (SBC @CWW (4)): T 4.0°C, C 296, SC 494, DO 73% 8.21 mg/L, pH 8.03
1/4/2018 13:45	bt	7.09	B	291	USGS	p	--	--		--	--	--	--	--	--	no	Meeting with NDOT regarding telemetry and water quality instrumentation
1/19/2018 11:00	bt	--	--	--	--	--	--	--		--	--	--	--	--	--	no	Removed hose clamp from intake pipe that was attached to USGS crest gage at the request of Marsha G from USGS
2/6/2018 9:55	bt	5.02	B	56.5	USGS	p	--	--	6	371.6	583.9	95.8	10.3	8.17	--	no	Set ISCO to sample 400ml every hour starting at 12:00 for ambient sampling; water brown with some debris caught on bridge pillars
2/7/2018 14:40	bt	5.02	B	56.5	USGS	p	--	--	8.3	400.5	588.1	113	11.4	8.29	34.57, 39.54, 38.71, 38.94	yes	Process 24 samples for ambient sampling; SBC@CWW (1) T 5.2°C, C 354.2, SC 569.5, DO 84% 9.21 mg/l, pH 8.38, SBC@CWW (2) T 5.4°C, C 352.7, SC 564, DO 80% 8.77 mg/l, pH 8.34, SBC@CWW (3) T 6.2°C, C 361.1, SC 560.9, DO 80% 8.54 mg/l, pH 8.30, SBC@CWW (4) T 7.1°C C 379, SC 575.5, DO 84% 8.78 mg/l, pH 8.28
4/6/2018 12:30	bt	bkw	--	--	--	--	--	--		--	--	--	--	--	--	--	Site visit to remove conduit for previous sampling site under bridge; USGS reporting backwatering but visual evidence suggests opposite; overflow channel is not active
4/7/2018 9:48	bt	bkw	--	--	--	--	--	--	12.2	330.1	439.8	89.4	8.2	8.19	244.7	yes	Grab sample taken 75 feet downstream of Yori Drain monitoring site; collected grab sample due to USGS reporting backwater and thus could not composite bottles in autosampler based on hydrograph

Observer Key: (bkh) is Brian Hastings, (bt) is Ben Trustman, (jj) is Jack Jacquet

Stage: Water level observed on staff plate,

Hydrograph: Describes stream stage as rising (R), falling (F), steady (S), or baseflow (B)

Streamflow Source: measured by a hydrologist (M), obtained from an existing rating curve or gaging station [R]

Specific conductance: Measured in micromhos/cm in field; then adjusted to 25degC by equation (1.8813774452 - [0.050433063928 * field temp] + [0.00058561144042 * field temp^2]) * Field specific conductance

Turbidity values are reported from the sample using a desktop turbidimeter and do not reflect laboratory analysis and results

Preliminary and subject to revision

Station Observer Log:
North Truckee Drain at Big Fish Dr (NTD@BFD)

Site Conditions				*Streamflow*					*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Hydrograph	Streamflow	Streamflow Source	Estimated Accuracy	High-water Mark	HWM date?	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)	*(R/F/S/B)*	*(cfs)*	*(M, R)*	*(e/g/f/p)*	*(feet)*	*(M/D/YY)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
9/20/2017 13:17	bt, jj	4.05	B	4.90	USGS	p	--	--	15.3	874	1074	61	5.1	7.90	17.87		Dirty water with some visible trash including a stroller; ambient water sample collected at 13:25
10/11/2017 11:40	bt	4.01	B	1.91	USGS	p	--	--		--	--	--	--	--	--	--	Installed ISCO 3700 into new job box; calibrated the ISCO estimated 25 feet of hose and 10 feet of head using fill volume of 750ml filled bottle 7/10 full; tightened and reset delivery arm on ISCO; ISCO has 24 capped bottles and battery at 12.5V in box
11/15/2017 12:50	bt,jj	3.95	S	1.53	USGS	p	--	--	7.6	1074	1607	90	9.2	7.98	--	no	Called NWS to check on timing of forecasted rain; set ISCO time based sampling to start at 20:00 and sample every 30 minutes
11/16/2017 6:55	bkh	4.50	R	5.00	USGS	p	--	--		--	--	--	--	--	--	yes	Moderate rain, water turbid and rising; ISCO already sampled 22 times; actual rise in stage occurred at 3:00; preserved samples #15-22, moved to back of carousel; replaced #1-16 with clean bottles, reprogrammed to sample every 45 minutes beginning at 7:45, added ice. USGS stage: 4.73 ft at 7:25.
11/16/2017 19:50	jj	5.79	F	24.20	USGS	p	--	--		--	--	--	--	--	--	--	Samples capped and ISCO stopped at 20:00; added ice to ISCO until samples composited
11/17/2017 14:45	bt, bkh	4.33	F	3.62	USGS	p	--	--	8.5	1000	1472	69	6.9	8.02	28.81, 60.27, 51.99, 31.69	yes	First Flush (NTD@BFD(1)): T 4.1°C, C 773, SC 1285, DO 80% 8.96 mg/L , pH 8.19; Rising Limb (NTD@BFD (2)): T 4.3°C, C 318, SC 526, DO 84% 9.33 mg/L, pH 8.07; Peak (NTD@BFD (3)): T 4.8°C, C 154, SC 250, DO 82% 9.10 mg/L, pH 8.03; Falling Limb (NTD@BFD(4)): T 4.7°C, C 154, SC 252, DO 78% 8.63 mg/L, pH 7.92
2/6/2018 9:27	bt	3.94	B	1.74	USGS	p	--	--	5.1	1212	1956	105	11.5	8.15	--	no	Set ISCO to sample 400ml every hour starting at 12:00 for ambient samples; water turbid and brown; some algae on surface
2/7/2018 12:00	bt	3.94	B	1.74	USGS	p	--	--	5.9	1230	1937	98	10.5	8.68	30.79,12.24,10.44,12.19	yes	Ambient samples collected every hour for 24 hours (NTD@BFD(1)): T 4.2°C, C 1164, SC 1905, DO 93% 10.29 mg/L , pH 8.50; (NTD@BFD (2)): T 6.0°C, C 1211, SC 1899, DO 96% 10.26 mg/L, pH 8.54; (NTD@BFD (3)): T 7.2°C, C 1262, SC 1907, DO 93% 9.56 mg/L, pH 8.56; (NTD@BFD(4)): T 8.9°C, C 1326, SC 1911, DO 89% 10.51 mg/L, pH 8.68
4/5/2018 19:45	bt	3.67	B	3.27	USGS	p	--	--	13.6	1249	1597	--	--	8.14	--	no	Set up ISCO for sampling every 30 minutes starting 4/6/18 at 13:00; did not calibrate DO due to time constraints
4/6/2018 11:24	bt, jj	3.77	R	3.97	USGS	p	--	--	11.0	1079	1474	63	5.9	8.30	--	no	Reset ISCO to start sampling at 11:30 as flow and stage are rising; rain has increased and is steady
4/6/2018 15:50	bt, jj	4.05	R	6.15	USGS	p	--	--	9.6	857	1216	75	7.2	8.16	51.51	yes	Processed first 9 sample bottles as first flush(Water Quality from the composite); rain has subsided but is forecast to increase again overnight with light to moderate rain until then; replaced bottles in sampler and reset to sample every 45 minutes starting at 17:00
4/7/2018 10:43	bt	4.34	R	9.12	USGS	p	--	--		--	--	--	--	--	65.58, 61.51, 54.57	yes	Processed 17 sample bottles (bottles 18-24 were from a second storm pulse and new hydrograph); composited into 3 samples as first flush was processed the prior day; (NTD@BFD (2)): T 8.6°C, C 550, SC 797, DO 57.1% 5.58 mg/L, pH 8.24; (NTD@BFD (3)): T 9.5°C, C 548, SC 778, DO 57.6% 5.52 mg/L, pH 8.35; (NTD@BFD(4)): T 11.2°C, C 564, SC 766, DO 55.8% 5.18 mg/L, pH 8.68

Observer Key: (bkh) is Brian Hastings, (bt) is Ben Trustman, (jj) is Jack jacquet

Stage: Water level observed on staff plate,
Hydrograph: Describes stream stage as rising (R), falling (F), steady (S), or baseflow (B)

Streamflow Source: measured by a hydrologist (M), obtained from an existing rating curve or gaging station [R]

Specific conductance: Measured in micromhos/cm in field; then adjusted to 25degC by equation (1.8813774452 - [0.050433063928 * field temp] + [0.00058561144042 * field temp^2]) * Field specific conductance

Station Observer Log:
North Truckee Drain at Orr Ditch (NTD@ORD); USGS 10348245

Site Conditions					*Streamflow*					*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Hydrograph	Rainall	Streamflow	Streamflow Source	Estimated Accuracy	High-water Mark	HWM date?	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)	*(R/F/S/B)*	*(in.)*	*(cfs)*	*(M, R)*	*(e/g/f/p)*	*(feet)*	*(M/D/YY)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
9/20/2017 13:51	bt, jj	1.74	B	--	3.2	USGS	p	--	--	16.9	976	1153	96	7.8	8.02	7	yes	Water clear; visible trash and algal growth in the stream; ambient water sample collected at 14:00
11/16/2017 0:58	bt, jj	1.81	R	--	4.4	USGS	p	--	--	9.6	934	1323	70	6.7	7.95	36	yes	Streamflow rising; sample collected at 1:10; water slightly turbid
2/7/2018 10:57	bt	1.54	R	--	0.8	USGS	p	--	--	5.6	1326	2109	153	16.6	8.46	25	yes	Ambient sample collected at 11:10; duplicate sample from this site labeled NTD@NEP; a brown/green film is on the top surface of stream upstream of gage where stream widens; film is held by cattails growing in channel; water murky and brown
4/6/2018 12:00	bt, jj	1.78	R	--	3.9	USGS	p	--	--	10.9	1246	1713	95	8.9	8.46	56	yes	Water turbid; hydrograph is rising increasing 2+ cfs in last hour

Observer Key: (bt) is Ben Trustman, (jj) is Jack Jacquet

Stage: Water level observed on staff plate,

Hydrograph: Describes stream stage as rising (R), falling (F), steady (S), or baseflow (B)

Streamflow Source: measured by a hydrologist (M), obtained from an existing rating curve or gaging station [R]

Specific conductance: Measured in micromhos/cm in field; then adjusted to 25degC by equation (1.8813774452 - [0.050433063928 * field temp] + [0.00058561144042 * field temp^2]) * Field specific conductance

Turbidity values are reported from the sample using a desktop turbidimeter and do not reflect laboratory analysis and results

Station Observer Log:
Boynton Slough at Steamboat Creek (BS@SBC)

Site Conditions					*Streamflow*					*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Stage	Hydrograph	Streamflow	Streamflow Source	Estimated Accuracy	High-water Mark	HWM date?	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)	*(feet)*	*(R/F/S/B)*	*(cfs)*	*(M, R)*	*(e/g/f/p)*	*(feet)*	*(M/D/YY)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
8/7/2017 10:30	bt	4.94		S	--	--	--	--	--		217	317	74	8.4	7.40	--	no	Installed temporary staff plate at old golf course bridge; fence at old golf course clubhouse open for Granite vehicles; WQ taken at office with sample from cooler; water brown and low velocity; construction barriers still up after the bridge
8/22/2017 16:20	bt	4.59		R	--	--	--	--	--	23.7	398	409	84	7.0	8.01	24	yes	Rain increased while at site; sample collected at 16:35; construction diversion has been removed downstream of bridge; several thunderstorm cells have released precipitation in the surrounding watershed over the last hour; raining steadily while at site and staff gage increased to 4.60; Water quality from sample
8/23/2017 11:48	bt	4.72		U	--	--	--	--	--	21.2	245	262	24	2.1	7.40	--	no	Construction on wetland just upstream of bridge site; construction at culvert below; asked civil engineer at site who said temporary culverts being removed; calibrated DO at site
9/20/2017 15:16	bt, jj	3.83		B	19.52	M	g/e	--	--	15.6	342	418	82	6.9	8.36	15	yes	Water level down about 1 foot since last visit; construction on wetland upstream continuing; no construction controls in stream; water slightly turbid; was able to measure streamflow 20 feet downstream of walking bridge; wadable up to waist; ambient sample collected at 16:05
11/15/2017 16:08	bt, jj	3.70		B	--	--	--	--	--	10.0	380	532	113	10.8	8.24	--	no	DO still reading high;
11/16/2017 11:18	bt,jj	5.22		R	269.91	M	f/p	--	--	8.0	95	142	94	9.4	7.84	58	yes	Stage was 3.7 yesterday at 16:00; water turbid with lots of debris floating downstream; intermittant rain while at site; rained overnight with up to 1.0 inches in region; flow measured from bridge with extended pole and Marsh McBurney; sample collected at 12:03; stage rising during site visit; second flow measurement measured 268.55 cfs
12/15/2017 10:45	bkh,jj	3.90		B	13.13	M	e	--	--	3.9	300	504	89	10.0	8.02	--	no	Non-storm winter baseflow measurement; no rain in last three weeks; water is slightly murky-cannot see bottom at 2 foot depth
1/4/2018 14:30	bt	--		--	--	--	--	--	--		--	--	--	--	--	--	no	Meeting with NDOT regarding installation of auto-sampler and water quality measurements
1/8/2018 12:00	bt,jj	3.96	4.10 (new)	S	--	--	--	--	--	7.1	347	526	86	8.8	7.43	--	no	Installed new staff plate on second pillar on Southeast connector bridge
1/8/2018 15:47	bt, jj	3.97	4.10	S	13.00	M	f	--	--	7.2	344	521	88	9.0	7.67	--	no	Water murky; 0.3 of rain in last two days; debris from higher flows on left bank under golf cart bridge; debris racked up on right side pillar on southeast connector bridge
2/7/2018 13:15	bt	3.90	4.03	B	--	--	--	--	--	9.0	347	500	98	9.8	8.20	11.41	yes	Ambient sample collected at 13:24; low flow; some debris in water

Observer Key: (bkh) is Brian Hastings, (bt) is Ben Trustman, (jj) is Jack Jacquet

Stage: Water level observed on staff plate,

Hydrograph: Describes stream stage as rising (R), falling (F), steady (S), or baseflow (B)

Streamflow Source: measured by a hydrologist (M), obtained from an existing rating curve or gaging station [R]

Specific conductance: Measured in micromhos/cm in field; then adjusted to 25degC by equation (1.8813774452 - [0.050433063928 * field temp] + [0.00058561144042 * field temp^2]) * Field specific conductance

Turbidity values are reported from the sample using a desktop turbidimeter and do not reflect laboratory analysis and results

Station Observer Log:
Yori Drain at Steamboat Creek (YD@SBC), FY2018

Site Conditions				*Streamflow*					*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	ISCO depth	Hydrograph	Streamflow	Streamflow Source	Estimated Accuracy	High-water Mark	HWM date?	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)	*(R/F/S/B)*	*(cfs)*	*(M, R)*	*(e/g/f/p)*	*(feet)*	*(M/D/YY)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
9/20/2017 14:36	bt, jj	--	B	8.00	M	f	--	--	15.5	422	516	95	8.1	9.27	39.55	yes	Measured flow at culvert; 6 foot round pipe, depth 2.30 ft velocity 0.81 ft/s; DO was reading 122% in stream but 94.7 in sample bucket
10/11/2017 12:50	bt	0.37	B	4.2	R	f	--	--	13.6	491	628	n/a	15.1	9.27	--	--	Installed ISCO 5712 in new job box; measured and set depth at 0.37 ft; Measured velocity with MMB reading 5.74 ft/s compared to ISCO measuring 5.84 ft/s; Set ISCO for 19 feet of tubing and automatic head; tested sample at 900ml and only 2/3 full bottle; reset to 1000ml and filled 7/10 of bottle; DO reading high and recalibrated but still read high
11/15/2017 15:17	bt, jj	0.48	B	6.6	R	g	--	--	8.5	472	688	140	13.9	8.86	--	no	Flow check 6 ft culvert depth 0.5 ft velocity 6.44 ft/s; ISCO reading was 0.48ft and 6.21ft/s; set ISCO to sample every 30 minutes at >0.52ft; DO is measuring high-DO has consistently measured high at this location-second measurement 30 ft upstream is the same
11/16/2017 8:40	bkh	0.47	R	6.7	R	g	--	--		--	--	--	--	--	--	yes	Moderate rain; no samples collected by ISCO yet: Airport reporting only 0.3 inches of rain; but 0.15" recorded in last hour. Water is turbid. Collected sample with ISCO (#1) and moved bottle to #24 in carousel; reprogrammed for 30 minute samples beginning 8:50. SBC flow level is <1.0 foot below outfall (wse), possible that this site backwaters when flow in SBC is > 300 cfs.
11/16/2017 12:41	bt, jj	1.17	R	19.6	R	g	--	--	9.6	135	192	83	8.0	7.61	--	yes	8 bottles sampled; checked ISCO; measured water quality
11/17/2017 13:05	bt, bkh	0.55	F	8.5	R	f	--	--	8.4	468	685	93	7.2	8.21	22.54	yes	Steamboat Creek level slightly below outfall; high water mark suggests backwatering; program kept sampling after 24 bottles recontaminating samples; sample 1 was capped and used as first flush sample; dumped all other samples; collected grab samples for falling limb; YD@SBC (1): T 9.2°C, C 196.0, SC 280.3, DO 72.5% 7.16 mg/L, pH 8.21; WQ for falling limb indicated in obs log (left)
1/4/2018 15:01	bt	0.41	B	3.8	R	g	--	--		--	--	--	--	--	--	no	Meeting with NDOT regarding installation for BS@SBC and SBC@CWW; showing the JobBox install
2/6/2018 11:00	bt	0.36	B	3.9	R	g	--	--	8.4	436	638	132	13.4	8.58	--	no	Set ISCO to sample 500 mL every hour starting at 12:00 for ambient sampling
2/7/2018 13:50	bt	0.35	B	3.9	R	g	--	--	10.0	452	633	144	14.1	8.65	20.30, 20.66, 18.73, 23.21	yes	Ambient samples collected every hour for 24 hours (YD@SBC(1)): T 5.8°C, C 410.4, SC 648.4, DO 99% 10.72 mg/L , pH 8.62; (YD@SBC (2)): T 7.5°C, C 424.6, SC 635.4, DO 96% 9.93 mg/L, pH 8.58; (YD@SBC (3)): T 8.7°C, C 439.2, SC 635.4, DO 91% 9.10mg/L, pH 8.54; (YD@SBC(4)): T 10.4°C, C 458.6, SC 636.6, DO 97% 9.42 mg/L, pH 8.53
3/6/2018 12:00	bkh	0.35	B	3.9	R	g	--	--		--	--	--	--	--	--	no	Equipment inspection; download; sunny, 45°F, some snow on ground; HWM suggests recent rain/snow did not backwater instrument; instruments are clear of debris and recording steady stage, velocity and flow.
4/5/2018 19:21	bt	--	B	--	--	--	--	--	14.3	453	570	--	--	8.29	--	no	Steamboat Creek at high stage and ≈6 inches or less below the culvert outlet- anticipation of backwatering; did not calibrate DO due to time constraints
4/7/2018 9:48	bt	--	BKW	--	--	--	--	--	13.5	468	600	80	7.1	8.12	54.9	yes	Culvert is backwatered with Steamboat Creek ≈5-6 inches above bottom of culvert; grab sample collected 25 feet upstream from road
4/20/2018 10:30	bkh	0.40	B	5.4	--	--	--	--	10.3	408	567	108	10.5	--	--	no	Dry period; algae growing in culvert and on instruments; removed with brush; measured flow manually for calibration; ISCO reads 4.47 cfs; wetland upstream is full; current flow conditions are from upstream sources and wetland treated flows; HWMs in SBC suggest backwatering 2-3 deep on 3/22/18; this flow may be common based on water line and algae growth lines. Replace desiccant soon.

Observer Key: (bkh) is Brian Hastings, (bt) is Ben Trustman, (jj) is Jack Jacquet

Stage: Water level observed on staff plate,

Hydrograph: Describes stream stage as rising (R), falling (F), steady (S), or baseflow (B)

Streamflow Source: measured by a hydrologist (M), obtained from an existing rating curve or gaging station [R]

Specific conductance: Measured in micromhos/cm in field; then adjusted to 25degC by equation (1.8813774452 - [0.050433063928 * field temp] + [0.00058561144042 * field temp^2]) * Field specific conductance

Turbidity values are reported from the sample using a desktop turbidimeter and do not reflect laboratory analysis and results

APPENDIX B

Equipment Calibration Logs

CALIBRATION SHEET

DATE/TIME 4/1/2018

NAME Ben Trustman

SERIAL NUMBER 1692

	Buffer Standard Used	Pre-Calibration	Post-Calibration	Cell Constant	Notes	Pass?
SPECIFIC CONDUCTANCE (µs/cm)	100 (µs/cm)				Acceptable cell const. 4.0-6.0	
	500 (µs/cm)	506	500	4.94	Acceptable cell const. 4.0-6.0	y
	1000 (µs/cm)	948	1000	5.21	Acceptable cell const. 4.0-6.0	y

	circle one			mV Value	Slope	
pH Point #1	4.00	7.00	10.00	7.1	7.01	-5.7	58.14
pH Point #2	4.00	7.00	10.00	4.07	4	177.6	
pH Point #3	4.00	7.00	10.00	10	10	-169.9	

pH 7 mV value = 0 +/- 50
pH 4 mV value = +165 to +180 from 7 buffer mV value
pH 10 mV value = -165 to -180 from 7 buffer mV value
Ideal slope is between 55 and 60

1.25 mil yellow membrane
Acceptable: 4.31 to 8.00 uA

DISSOLVED OXYGEN (% sat)	n/a	99.3	100	4.56
DISSOLVED OXYGEN (% sat)	n/a			

Comments or Notes

CALIBRATION SHEET

DATE/TIME 7/23/2018

NAME Ben Trustman

SERIAL NUMBER 1692

	Buffer Standard Used	Pre-Calibration	Post-Calibration	Cell Constant	Notes	Pass?
SPECIFIC CONDUCTANCE (µs/cm)	100 (µs/cm)				Acceptable cell const. 4.0-6.0	
	500 (µs/cm)	569	500	4.57	Acceptable cell const. 4.0-6.0	y
	1000 (µs/cm)	923	1000	4.96	Acceptable cell const. 4.0-6.0	y

	circle one			mV Value		Slope		
pH Point #1	4.00	7.00	10.00	7.06	7	-10.6	58.27	pH 7 mV value = 0 +/- 50
								pH 4 mV value = +165 to +180 from 7 buffer mV value
pH Point #2	4.00	7.00	10.00	4.01	4	176.7		pH 10 mV value = -165 to -180 from 7 buffer mV value
pH Point #3	4.00	7.00	10.00	10.03	10.01	-172.2		Ideal slope is between 55 and 60

1.25 mil yellow membrane

Acceptable: 4.31 to 8.00 uA

DISSOLVED OXYGEN (% sat)	n/a	95.5	100	4.74
DISSOLVED OXYGEN (% sat)	n/a			

Comments or Notes

CALIBRATION SHEET

DATE/TIME 8/8/2018

NAME Ben Trustman

SERIAL NUMBER 1692

	Buffer Standard Used	Pre-Calibration	Post-Calibration	Cell Constant	Notes	Pass?
SPECIFIC CONDUCTANCE (µs/cm)	100 (µs/cm)				Acceptable cell const. 4.0-6.0	
	500 (µs/cm)	575	500	4.31	Acceptable cell const. 4.0-6.0	y
	1000 (µs/cm)	893	1000	4.83	Acceptable cell const. 4.0-6.0	y

	circle one			mV Value		Slope		
pH Point #1	4.00	7.00	10.00	7.12	7	-15.9	58.82	pH 7 mV value = 0 +/- 50
pH Point #2	4.00	7.00	10.00	4.1	4	175.6		pH 4 mV value = +165 to +180 from 7 buffer mV value pH 10 mV value = -165 to -180 from 7 buffer mV value
pH Point #3	4.00	7.00	10.00	10.16	10.01	-176.6		Ideal slope is between 55 and 60

1.25 mil yellow membrane
Acceptable: 4.31 to 8.00 uA

DISSOLVED OXYGEN (% sat)	n/a			
DISSOLVED OXYGEN (% sat)	n/a			

Comments or Notes

CALIBRATION SHEET

DATE/TIME 1/19/2018

NAME Ben Trustman

SERIAL NUMBER 1693

	Buffer Standard Used	Pre-Calibration	Post-Calibration	Cell Constant	Notes	Pass?
SPECIFIC CONDUCTANCE (µs/cm)	100 (µs/cm)				Acceptable cell const. 4.0-6.0	
	500 (µs/cm)	530	500	5.4	Acceptable cell const. 4.0-6.0	y
	1000 (µs/cm)	989	1000	5.5	Acceptable cell const. 4.0-6.0	y

	circle one					mV Value	Slope	
pH Point #1	4.00	7.00	10.00	7.05	7.02	-20.05	57.7	pH 7 mV value = 0 +/- 50
								pH 4 mV value = +165 to +180 from 7 buffer mV value
	circle one							
pH Point #2	4.00	7.00	10.00	4.01	4	171.9		pH 10 mV value = -165 to -180 from 7 buffer mV value
								Ideal slope is between 55 and 60
pH Point #3	4.00	7.00	10.00	10.07	10.04	-172.3		

1.25 mil yellow membrane

Acceptable: 4.31 to 8.00 uA

DISSOLVED OXYGEN (% sat)		100	3.34	

Comments or Notes

DO out of range

-170.5

CALIBRATION SHEET

DATE/TIME 1/22/2018

NAME Ben Trustman

SERIAL NUMBER 1693

	Buffer Standard Used	Pre-Calibration	Post-Calibration	Cell Constant	Notes	Pass?
SPECIFIC CONDUCTANCE (µs/cm)	100 (µs/cm)				Acceptable cell const. 4.0-6.0	
	500 (µs/cm)	577	500	4.79	Acceptable cell const. 4.0-6.0	y
	1000 (µs/cm)	967	1000	4.95	Acceptable cell const. 4.0-6.0	y

	circle one					mV Value	Slope	
pH Point #1	4.00	7.00	10.00	7.05	7.02	-22	56.6	pH 7 mV value = 0 +/- 50
								pH 4 mV value = +165 to +180 from 7 buffer mV value
	circle one							
pH Point #2	4.00	7.00	10.00	4.26	4	167.1		pH 10 mV value = -165 to -180 from 7 buffer mV value
								Ideal slope is between 55 and 60
pH Point #3	4.00	7.00	10.00	10.05	10.05	-170.1		

1.25 mil yellow membrane

Acceptable: 4.31 to 8.00 uA

DISSOLVED OXYGEN (% sat)	90	100	3.31	

Comments or Notes

DO out of range

-168.3

CALIBRATION SHEET

DATE/TIME 3/13/2018

NAME Ben Trustman

SERIAL NUMBER 1693

	Buffer Standard Used	Pre-Calibration	Post-Calibration	Cell Constant	Notes	Pass?
SPECIFIC CONDUCTANCE (µs/cm)	100 (µs/cm)				Acceptable cell const. 4.0-6.0	
	500 (µs/cm)	507	500	4.88	Acceptable cell const. 4.0-6.0	y
	1000 (µs/cm)	1000	1000	4.95	Acceptable cell const. 4.0-6.0	y

	circle one					mV Value	Slope	
pH Point #1	4.00	7.00	10.00	7.05	7.02	-24.1	56.55	pH 7 mV value = 0 +/- 50
								pH 4 mV value = +165 to +180 from 7 buffer mV value
	circle one							
pH Point #2	4.00	7.00	10.00	3.95	4	173.4		pH 10 mV value = -165 to -180 from 7 buffer mV value
								Ideal slope is between 55 and 60
pH Point #3	4.00	7.00	10.00	9.98	10.04	-164.2		

1.25 mil yellow membrane

Acceptable: 4.31 to 8.00 uA

DISSOLVED OXYGEN (% sat)	98.7	100	3.78	

Comments or Notes

PH 10 slightly out of range but slope ok; DO uA out of range-re-calibrated in field on March 29 uA 4.52 and acceptable

-162.4

CALIBRATION SHEET

DATE/TIME 4/2/2018

NAME Ben Trustman

SERIAL NUMBER 1693

	Buffer Standard Used	Pre-Calibration	Post-Calibration	Cell Constant	Notes	Pass?
SPECIFIC CONDUCTANCE (µs/cm)	100 (µs/cm)				Acceptable cell const. 4.0-6.0	
	500 (µs/cm)	507	500	4.73	Acceptable cell const. 4.0-6.0	y
	1000 (µs/cm)	1016	1000	4.8	Acceptable cell const. 4.0-6.0	y

	circle one					mV Value	Slope	
pH Point #1	4.00	7.00	10.00	7.19	7.02	-30.6	55.57	pH 7 mV value = 0 +/- 50
								pH 4 mV value = +165 to +180 from 7 buffer mV value
	circle one							
pH Point #2	4.00	7.00	10.00	4.17	4	168		pH 10 mV value = -165 to -180 from 7 buffer mV value
								Ideal slope is between 55 and 60
pH Point #3	4.00	7.00	10.00	10.1	10.06	-162.9		

1.25 mil yellow membrane

Acceptable: 4.31 to 8.00 uA

DISSOLVED OXYGEN (% sat)	102	100	4.31		

Comments or Notes

PH 10 slightly out of range but slope ok

-161.1

CALIBRATION SHEET

DATE/TIME 4/25/2018

NAME Ben Trustman

SERIAL NUMBER 1693

	Buffer Standard Used	Pre-Calibration	Post-Calibration	Cell Constant	Notes	Pass?
SPECIFIC CONDUCTANCE (µs/cm)	100 (µs/cm)				Acceptable cell const. 4.0-6.0	
	500 (µs/cm)				Acceptable cell const. 4.0-6.0	y
	1000 (µs/cm)				Acceptable cell const. 4.0-6.0	y

	circle one					mV Value	Slope	
pH Point #1	4.00	7.00	10.00		7.02	-15.5	55.5	pH 7 mV value = 0 +/- 50
								pH 4 mV value = +165 to +180 from 7 buffer mV value
	circle one							
pH Point #2	4.00	7.00	10.00		4	161		pH 10 mV value = -165 to -180 from 7 buffer mV value
								Ideal slope is between 55 and 60
pH Point #3	4.00	7.00	10.00		10.02	-170.8		

1.25 mil yellow membrane

Acceptable: 4.31 to 8.00 uA

DISSOLVED OXYGEN (% sat)

Comments or Notes

PH 4 slightly out of range but slope ok

CALIBRATION SHEET

DATE/TIME 5/1/2018

NAME Ben Trustman

SERIAL NUMBER 1693

	Buffer Standard Used	Pre-Calibration	Post-Calibration	Cell Constant	Notes	Pass?
SPECIFIC CONDUCTANCE (µs/cm)	100 (µs/cm)				Acceptable cell const. 4.0-6.0	
	500 (µs/cm)				Acceptable cell const. 4.0-6.0	y
	1000 (µs/cm)				Acceptable cell const. 4.0-6.0	y

	circle one					mV Value	Slope	
pH Point #1	4.00	7.00	10.00	7.1	7.02	-23.8	54.95	pH 7 mV value = 0 +/- 50
								pH 4 mV value = +165 to +180 from 7 buffer mV value
	circle one							
pH Point #2	4.00	7.00	10.00	4.11	4	163.8		pH 10 mV value = -165 to -180 from 7 buffer mV value
								Ideal slope is between 55 and 60
pH Point #3	4.00	7.00	10.00	10.1	10.05	-163.9		

1.25 mil yellow membrane

Acceptable: 4.31 to 8.00 uA

DISSOLVED OXYGEN (% sat)

Comments or Notes

PH 10 and 4 slightly out of range but slope ok

-162.1

APPENDIX C

Constituent Concentrations

Total N																														
Site Name	Sample ID	August 6, 2017			August 22, 2017			September 6, 2017			September 20, 2017 Baseflow			November 16, 2017			January 18, 2018			2018-02-06 Baseflow			March 13, 2018			April 6, 2018		
		concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)
Chalk Creek @ Chalk Bluff	CC@CB										2.40	0.78	10.09684	2.80	16.01	241.785				2.80	0.55	8.306	3.30	1.42	25.27447			
Alum Creek @ Truckee River	AC@TR											1.9		1.00	1.0	5.12393					0.2					1.20	9.8	63.234719
North Truckee Drain @ Orr Ditch	NTD@ORD										2.00	3.24	34.95061	3.70	4.06	81.0229				3.00	0.94	15.21				3.50	3.69	69.658512
North Truckee Drain at Big Fish Drive	NTD@BFD (1)										1.90	4.90	50.21454	3.10	1.61	26.9195				2.40	1.85	23.95				3.40	3.79	69.502097
North Truckee Drain at Big Fish Drive	NTD@BFD(2)													1.70	4.50	41.2611				2.20	1.81	21.48				2.40	6.39	82.716449
North Truckee Drain at Big Fish Drive	NTD@BFD(3)													1.60	76.00	655.863				2.10	1.77	20.05				2.40	6.38	82.587002
North Truckee Drain at Big Fish Drive	NTD@BFD(4)													1.50	73.40	593.837				2.20	1.77	21				2.30	5.94	73.687541
Thomas Creek @ S. Meadows Pkwy	TC@SMP										0.34	4.30	7.885462	0.95	6.04	30.9332					1.87							
Whites Creek @ Old Virginia Hwy	WC@OVH				0.84	26.76	121.2398					8.15		1.60	--	--					3.02							
Steamboat Creek @ Rhodes Road	SBC@RHR										0.31	17.70	29.59475	1.8	15.70	152.424				0.97	34.60	181				1.40	132.00	996.73969
Steamboat Creek @ Narrows	SBC@NAR										0.66	29.80	106.0816	1.50	439.00	3551.69				0.95	42.80	219.3				1.40	137.00	1034.495
Yori drain @ Steamboat Creek	YD@SBC(1)										1.70			2.20	6.70	79.5019				2.20	3.99	47.35				1.80	N/A	N/A
Yori drain @ Steamboat Creek	YD@SBC(2)																			2.10	3.79	42.88						
Yori drain @ Steamboat Creek	YD@SBC(3)																			2.30	3.72	46.09						
Yori drain @ Steamboat Creek	YD@SBC(4)													2.50	8.49	114.479				2.20	3.54	42.04						
Boynton Slough @ Steamboat Creek	BS@SBC				2.30	--	--				1.00	19.52	105.2833	1.70	269.91	2474.84				1.30	--	--						
Steamboat Creek @ Clean Water Way	SBC@CWW(1)										0.87	68.80	322.8401	1.40	49.70	375.288				1.10	56.00	332.2				2.20	N/A	N/A
Steamboat Creek @ Clean Water Way	SBC@CWW(2)										0.94	70.20	355.9137	2.00	118.00	1272.89				1.10	55.40	328.7						
Steamboat Creek @ Clean Water Way	SBC@CWW(3)										0.90	66.70	323.7786	3.30	446.00	7938.32				1.00	55.40	298.8						
Steamboat Creek @ Clean Water Way	SBC@CWW(4)										0.95	66.70	341.7663	2.40	451.00	5838.05				1.10	54.90	325.7						
Arlington (south)	H-19 (1)	3.90	6.014	126.505				22.00	0.309	36.66578																		
Arlington (south)	H-19 (2)	5.40	5.313	154.7438																								
Arlington (south)	H-19 (3)	6.90	5.313	197.7282				17.00	2.412	221.1597																		
Arlington (south)	H-19 (4)	4.70	4.103	104.011				11.00	2.349	139.3656																		
Fisherman's Park II	D-16 (1)													4.1	1.204	26.625	5.90	1.059	33.6998									
Fisherman's Park II	D-16 (2)																4.90	1.631	43.1052									
Fisherman's Park II	D-16 (3)																4.20	1.603	36.313									
Fisherman's Park II	D-16 (4)													2.40	2.703	34.9894	3.90	0.66	13.8832									
Oxbow Nature Park	C-24 (1)							11.00	0.497	29.48688				2.80	0.754	11.387												
Oxbow Nature Park	C-24 (2)							5.20	0.687	19.26814				0.82	3.307	14.6261												
Oxbow Nature Park	C-24 (3)							7.80	1.076	45.26752				0.67	2.987	10.7942												
Oxbow Nature Park	C-24 (4)							3.10	0.121	2.023144				1.00	3.859	20.814												
Mary Wahl Ditch	SDOE-008936 (1)													10.00	0.06	3.23617										3.30	2.866	51.011713
Mary Wahl Ditch	SDOE-008936 (2)													1.70	7.004	64.2207										3.00	1.392	22.523728
Mary Wahl Ditch	SDOE-008936 (3)													2.40	7.433	96.2177										3.80	7.507	153.86144
Mary Wahl Ditch	SDOE-008936 (4)													1.90	4.837	49.5689										2.40	7.437	96.26952

Nitrite as N

Site Name	Sample ID	August 6, 2017			August 22, 2017			September 6, 2017			November 16, 2017			January 18, 2018			2018-02-06 Baseflow			March 13, 2018			April 6, 2018		
		concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)
Chalk Creek @ Chalk Bluff	CC@CB																								
Alum Creek @ Truckee River	AC@TR																						0.01		
North Truckee Drain @ Orr Ditch	NTD@ORD																								
North Truckee Drain at Big Fish Drive	NTD@BFD (1)										0.05														
North Truckee Drain at Big Fish Drive	NTD@BFD(2)										0.11														
North Truckee Drain at Big Fish Drive	NTD@BFD(3)										0.02														
North Truckee Drain at Big Fish Drive	NTD@BFD(4)										0.01														
Thomas Creek @ S. Meadows Pkwy	TC@SMP																								
Whites Creek @ Old Virginia Hwy	WC@OVH										0.01														
Steamboat Creek @ Rhodes Road	SBC@RHR																0.03								
Steamboat Creek @ Narrows	SBC@NAR																0.02								
Yori drain @ Steamboat Creek	YD@SBC(1)										0.02	6.70	0.6505				0.04						0.05	N/A	N/A
Yori drain @ Steamboat Creek	YD@SBC(2)																0.04								
Yori drain @ Steamboat Creek	YD@SBC(3)																0.04								
Yori drain @ Steamboat Creek	YD@SBC(4)										0.08	8.49	3.8007				0.04						0.04		
Boynton Slough @ Steamboat Creek	BS@SBC										0.02						0.02								
Steamboat Creek @ Clean Water Way	SBC@CWW(1)																0.01								
Steamboat Creek @ Clean Water Way	SBC@CWW(2)																0.01								
Steamboat Creek @ Clean Water Way	SBC@CWW(3)										0.02						0.01								
Steamboat Creek @ Clean Water Way	SBC@CWW(4)										0.02						0.01								
Arlington (south)	H-19 (1)							0.31																	
Arlington (south)	H-19 (2)	0.01																							
Arlington (south)	H-19 (3)	0.01						0.29																	
Arlington (south)	H-19 (4)	0.01						0.13																	
Fisherman's Park II	D-16 (1)													0.17											
Fisherman's Park II	D-16 (2)													0.11											
Fisherman's Park II	D-16 (3)													0.12											
Fisherman's Park II	D-16 (4)										0.05			0.10											
Oxbow Nature Park	C-24 (1)							0.03			0.01														
Oxbow Nature Park	C-24 (2)							0.06																	
Oxbow Nature Park	C-24 (3)							0.10																	
Oxbow Nature Park	C-24 (4)							0.08			0.01														
Mary Wahl Ditch	SDOE-008936 (1)																						0.08		
Mary Wahl Ditch	SDOE-008936 (2)										0.01												0.06		
Mary Wahl Ditch	SDOE-008936 (3)										0.02												0.07		
Mary Wahl Ditch	SDOE-008936 (4)										0.02												0.03		

Nitrate as N																										
Site Name	Sample ID	August 6, 2017			August 22, 2017			September 6, 2017			September 20, 2017 Baseflow			November 16, 2017			January 18, 2018			2018-02-06 Baseflow			March 13, 2018			April 6, 2018		
		concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)
Chalk Creek @ Chalk Bluff	CC@CB										2.20			0.81						2.20			2.20					
Alum Creek @ Truckee River	AC@TR										0.01			0.15												0.06		
North Truckee Drain @ Orr Ditch	NTD@ORD										1.30	3.24	22.72	1.60						2.00						1.40		
North Truckee Drain at Big Fish Drive	NTD@BFD (1)										1.20	4.90	31.71	2.00						1.40						1.50		
North Truckee Drain at Big Fish Drive	NTD@BFD(2)													0.13						1.40						0.88		
North Truckee Drain at Big Fish Drive	NTD@BFD(3)													0.06						1.30						0.94		
North Truckee Drain at Big Fish Drive	NTD@BFD(4)													0.42						1.30						0.97		
Thomas Creek @ S. Meadows Pkwy	TC@SMP										0.09			0.02														
Whites Creek @ Old Virginia Hwy	WC@OVH											8.15		0.09														
Steamboat Creek @ Rhodes Road	SBC@RHR										0.10	17.70	9.356	0.09						0.13						0.18		
Steamboat Creek @ Narrows	SBC@NAR										0.07	29.80	11.25	0.06						0.15						0.16		
Yori drain @ Steamboat Creek	YD@SBC(1)										0.53			0.95	6.70	34.33035				1.50						1.10	N/A	N/A
Yori drain @ Steamboat Creek	YD@SBC(2)																			1.40								
Yori drain @ Steamboat Creek	YD@SBC(3)																			1.50								
Yori drain @ Steamboat Creek	YD@SBC(4)													1.60	8.49	73.26684				1.50								
Boynton Slough @ Steamboat Creek	BS@SBC				0.50						0.59			0.50						0.82								
Steamboat Creek @ Clean Water Way	SBC@CWW(1)										0.26	68.80	96.48	0.65						0.34						0.47		
Steamboat Creek @ Clean Water Way	SBC@CWW(2)										0.26	70.20	98.44	0.58						0.34								
Steamboat Creek @ Clean Water Way	SBC@CWW(3)										0.26	66.70	93.54	0.61						0.34								
Steamboat Creek @ Clean Water Way	SBC@CWW(4)										0.25	66.70	89.94	0.59						0.34								
Arlington (south)	H-19 (1)	0.01						3.30																				
Arlington (south)	H-19 (2)																											
Arlington (south)	H-19 (3)							1.60																				
Arlington (south)	H-19 (4)							2.10																				
Fisherman's Park II	D-16 (1)													0.02			1.20											
Fisherman's Park II	D-16 (2)																1.00											
Fisherman's Park II	D-16 (3)																0.76											
Fisherman's Park II	D-16 (4)													0.18			0.64											
Oxbow Nature Park	C-24 (1)							2.80						0.03														
Oxbow Nature Park	C-24 (2)							1.10						0.06														
Oxbow Nature Park	C-24 (3)							2.10						0.15														
Oxbow Nature Park	C-24 (4)							1.00						0.24														
Mary Wahl Ditch	SDOE-008936 (1)													7.90												0.48		
Mary Wahl Ditch	SDOE-008936 (2)													0.02												0.82		
Mary Wahl Ditch	SDOE-008936 (3)													0.26												2.80		
Mary Wahl Ditch	SDOE-008936 (4)													0.37												1.40		

TKN																														
Site Name	Sample ID	August 6, 2017			August 22, 2017			September 6, 2017			September 20, 2017 Baseflow			November 16, 2017			January 18, 2018			2018-02-06 Baseflow			March 13, 2018			April 6, 2018		
		concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load
Chalk Creek @ Chalk Bluff	CC@CB												0	2.00						0.52			1.00					
Alum Creek @ Truckee River	AC@TR												0	0.88												1.10		
North Truckee Drain @ Orr Ditch	NTD@ORD										0.72	3.24	12.58222	2.00						0.96						2.00		
North Truckee Drain at Big Fish Drive	NTD@BFD (1)										0.71	4.90	18.76438	1.10						1.10						1.90		
North Truckee Drain at Big Fish Drive	NTD@BFD(2)													1.50						0.82						1.60		
North Truckee Drain at Big Fish Drive	NTD@BFD(3)													1.50						0.75						1.50		
North Truckee Drain at Big Fish Drive	NTD@BFD(4)													1.10						0.82						1.40		
Thomas Creek @ S. Meadows Pkwy	TC@SMP										0.25		0	0.92														
Whites Creek @ Old Virginia Hwy	WC@OVH				0.74							8.15	0	1.50														
Steamboat Creek @ Rhodes Road	SBC@RHR										0.21	17.70	9.231169	1.70						0.82						1.20		
Steamboat Creek @ Narrows	SBC@NAR										0.60	29.80	57.28017	1.50						0.77						1.20		
Yori drain @ Steamboat Creek	YD@SBC(1)										1.20			1.20	6.70	43.3646				0.68						0.70	N/A	N/A
Yori drain @ Steamboat Creek	YD@SBC(2)																			0.62								
Yori drain @ Steamboat Creek	YD@SBC(3)																			0.79								
Yori drain @ Steamboat Creek	YD@SBC(4)													0.80	8.49	36.6334				0.74								
Boynton Slough @ Steamboat Creek	BS@SBC				1.80						0.42			1.20						0.42								
Steamboat Creek @ Clean Water Way	SBC@CWW(1)										0.62	68.80	99.65239	0.72						0.70						1.80		
Steamboat Creek @ Clean Water Way	SBC@CWW(2)										0.68	70.20	252.3348	1.40						0.76								
Steamboat Creek @ Clean Water Way	SBC@CWW(3)										0.64	66.70	242.3242	2.60						0.70								
Steamboat Creek @ Clean Water Way	SBC@CWW(4)										0.70	66.70	251.8278	1.80						0.76								
Arlington (south)	H-19 (1)	3.90						18.00					0															
Arlington (south)	H-19 (2)	5.40																										
Arlington (south)	H-19 (3)	6.80						15.00																				
Arlington (south)	H-19 (4)	4.60						8.30					0															
Fisherman's Park II	D-16 (1)												0	4.10			4.50											
Fisherman's Park II	D-16 (2)												0				3.80											
Fisherman's Park II	D-16 (3)												0				3.30											
Fisherman's Park II	D-16 (4)												0	2.20			3.20											
Oxbow Nature Park	C-24 (1)							7.80					0	2.80														
Oxbow Nature Park	C-24 (2)							4.00					0	0.76														
Oxbow Nature Park	C-24 (3)							5.60					0	0.52														
Oxbow Nature Park	C-24 (4)							2.00					0	0.78														
Mary Wahl Ditch	SDOE-008936 (1)												0	2.10												2.70		
Mary Wahl Ditch	SDOE-008936 (2)												0	1.70												2.10		
Mary Wahl Ditch	SDOE-008936 (3)												0	2.10												0.92		
Mary Wahl Ditch	SDOE-008936 (4)												0	1.50												0.93		

Total P																														
Site Name	Sample ID	August 6, 2017			August 22, 2017			September 6, 2017			September 20, 2017 Baseflow			November 16, 2017			January 18, 2018			2018-02-06 Baseflow			March 13, 2018			April 6, 2018		
		concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)
Chalk Creek @ Chalk Bluff	CC@CB										0.39	0.78	1.640737	0.26	16.01	22.45145				0.35	0.55	1.038271	0.43	1.42	3.29334			
Alum Creek @ Truckee River	AC@TR										0.12	1.9	1.203854	0.20	1.0	1.024786				0.03	0.2	0.021035				0.06	9.8	3.10904
North Truckee Drain @ Orr Ditch	NTD@ORD										0.18	3.24	3.145555	0.28	4.06	6.131459				0.22	0.94	1.115399				0.21	3.69	4.17951
North Truckee Drain at Big Fish Drive	NTD@BFD(1)										0.19	4.90	5.021454	0.15	1.61	1.302558				0.14	1.85	1.396946				0.14	3.79	2.86185
North Truckee Drain at Big Fish Drive	NTD@BFD(2)													0.21	4.50	5.096964				0.13	1.81	1.269117				0.16	6.39	5.51443
North Truckee Drain at Big Fish Drive	NTD@BFD(3)													0.22	76.00	90.18121				0.12	1.77	1.145603				0.17	6.38	5.84991
North Truckee Drain at Big Fish Drive	NTD@BFD(4)													0.17	73.40	67.3015				0.12	1.77	1.145603				0.17	5.94	5.44647
Thomas Creek @ S. Meadows Pkwy	TC@SMP										0.09	4.30	2.040943	0.21	6.04	6.837861				0.06	1.87	0.635422	0.06	3.70	1.177426			
Whites Creek @ Old Virginia Hwy	WC@OVH				0.10	26.76	13.85598				0.04	8.15	1.802276	0.13	--					0.03	3.02	0.537527						
Steamboat Creek @ Rhodes Road	SBC@RHR										0.18	17.70	17.18405	0.16	15.70	13.54876				0.28	34.60	52.25332				0.14	132.00	99.674
Steamboat Creek @ Narrows	SBC@NAR										0.22	29.80	35.36053	0.27	439.00	639.305				0.31	42.80	71.56246				0.13	137.00	96.0602
Yori drain @ Steamboat Creek	YD@SBC(1)										0.13			0.13	6.70	4.697837				0.09	3.99	2.022928				0.05	N/A	N/A
Yori drain @ Steamboat Creek	YD@SBC(2)																			0.09	3.79	1.919501						
Yori drain @ Steamboat Creek	YD@SBC(3)																			0.08	3.72	1.582945						
Yori drain @ Steamboat Creek	YD@SBC(4)													0.11	8.49	5.037095				0.10	3.54	1.834519						
Boynton Slough @ Steamboat Creek	BS@SBC				0.22						0.15	19.52	15.7925	0.14	269.91	203.8106				0.12	--							
Steamboat Creek @ Clean Water Way	SBC@CWW(1)										0.19	68.80	70.50531	0.17	49.70	45.57064				0.20	56.00	60.40847				0.12	N/A	
Steamboat Creek @ Clean Water Way	SBC@CWW(2)										0.19	70.20	71.94001	0.14	118.00	89.10249				0.20	55.40	59.76123						
Steamboat Creek @ Clean Water Way	SBC@CWW(3)										0.18	66.70	64.75572	0.24	446.00	577.3323				0.20	55.40	59.76123						
Steamboat Creek @ Clean Water Way	SBC@CWW(4)										0.23	66.70	82.74342	0.21	451.00	510.8291				0.22	54.90	65.14406						
Arlington (south)	H-19 (1)	0.58	6.014	18.81357				1.40	0.309	2.333277																			
Arlington (south)	H-19 (2)	0.55	5.313	15.76095																									
Arlington (south)	H-19 (3)	0.54	5.313	15.47438				1.10	2.412	14.31033																			
Arlington (south)	H-19 (4)	0.47	4.103	10.4011				0.79	2.349	10.00898																			
Fisherman's Park II	D-16 (1)													0.34	1.204	2.207929	1.00	1.059	5.711836										
Fisherman's Park II	D-16 (2)																0.33	1.631	2.903004										
Fisherman's Park II	D-16 (3)																0.73	1.603	6.311552										
Fisherman's Park II	D-16 (4)													0.22	2.703	3.207366	0.44	0.66	1.566305										
Oxbow Nature Park	C-24 (1)							0.56	0.497	1.50115				0.47	0.754	1.911389													
Oxbow Nature Park	C-24 (2)							0.26	0.687	0.963407				0.17	3.307	3.032235													
Oxbow Nature Park	C-24 (3)							0.44	1.076	2.553552				0.15	2.987	2.416608													
Oxbow Nature Park	C-24 (4)							0.16	0.121	0.10442				0.15	3.859	3.122093													
Mary Wahl Ditch	SDOE-008936 (1)													0.20	0.06	0.064723										0.27	2.866	4.17369
Mary Wahl Ditch	SDOE-008936 (2)													0.20	7.004	7.555373										0.19	1.392	1.4265
Mary Wahl Ditch	SDOE-008936 (3)													0.20	7.433	8.018145										0.23	7.507	9.31267
Mary Wahl Ditch	SDOE-008936 (4)													0.23	4.837	6.000448										0.12	7.437	4.81348

Ortho P																														
Site Name	Sample ID	August 6, 2017			August 22, 2017			September 6, 2017			September 20, 2017 Baseflow			November 16, 2017			January 18, 2018			2018-02-06 Baseflow			March 13, 2018			April 6, 2018		
		concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)
Chalk Creek @ Chalk Bluff	CC@CB										0.38		0	0.39						0.34			0.35					
Alum Creek @ Truckee River	AC@TR										0.04		0	0.10						0.01								
North Truckee Drain @ Orr Ditch	NTD@ORD										0.13	3.24	2.27179	0.22						0.17						0.32		
North Truckee Drain at Big Fish Drive	NTD@BFD (1)										0.11	4.90	2.907157	0.11						0.07						0.23		
North Truckee Drain at Big Fish Drive	NTD@BFD(2)													0.27						0.07						0.22		
North Truckee Drain at Big Fish Drive	NTD@BFD(3)													0.30						0.08						0.20		
North Truckee Drain at Big Fish Drive	NTD@BFD(4)													0.23						0.07						0.17		
Thomas Creek @ S. Meadows Pkwy	TC@SMP										0.05		0	0.15						0.04			0.04					
Whites Creek @ Old Virginia Hwy	WC@OVH				0.05						0.02	8.15	0.879159	0.13						0.01								
Yori drain @ Steamboat Creek	YD@SBC(1)										0.02			0.18	6.70	6.504697				0.04						0.08	N/A	N/A
Yori drain @ Steamboat Creek	YD@SBC(2)																			0.05								
Yori drain @ Steamboat Creek	YD@SBC(3)																			0.05								
Yori drain @ Steamboat Creek	YD@SBC(4)													0.02	8.49	0.686877				0.06								
Boynton Slough @ Steamboat Creek	BS@SBC				0.09						0.09			0.14						0.09								
Steamboat Creek @ Rhodes Road	SBC@RHR										0.09	17.70	4.044131	0.09						0.17						0.25		
Steamboat Creek @ Narrows	SBC@NAR										0.16	29.80	15.27471	0.17						0.18						0.26		
Steamboat Creek @ Clean Water Way	SBC@CWW(1)										0.14	68.80	22.50215	0.10						0.19						0.23		
Steamboat Creek @ Clean Water Way	SBC@CWW(2)										0.13	70.20	48.24047	0.18						0.20								
Steamboat Creek @ Clean Water Way	SBC@CWW(3)										0.13	66.70	49.22211	0.33						0.20								
Steamboat Creek @ Clean Water Way	SBC@CWW(4)										0.14	66.70	50.36556	0.33						0.21								
Arlington (south)	H-19 (1)	0.05						1.50					0															
Arlington (south)	H-19 (2)	0.04																										
Arlington (south)	H-19 (3)	0.03						0.39																				
Arlington (south)	H-19 (4)	0.03						0.49					0															
Fisherman's Park II	D-16 (1)												0	0.09			0.16											
Fisherman's Park II	D-16 (2)												0				0.20											
Fisherman's Park II	D-16 (3)												0				0.19											
Fisherman's Park II	D-16 (4)												0	0.23			0.16											
Oxbow Nature Park	C-24 (1)							0.29					0	0.2														
Oxbow Nature Park	C-24 (2)							0.16					0	0.084														
Oxbow Nature Park	C-24 (3)							0.25					0	0.07														
Oxbow Nature Park	C-24 (4)							0.14					0	0.093														
Mary Wahl Ditch	SDOE-008936 (1)												0	0.074												0.32		
Mary Wahl Ditch	SDOE-008936 (2)												0	0.072												0.22		
Mary Wahl Ditch	SDOE-008936 (3)												0	0.096												0.13		
Mary Wahl Ditch	SDOE-008936 (4)												0	0.19												0.12		

Total Dissolved Solids																												
Site Name	Sample ID	August 6, 2017			August 22, 2017			September 6, 2017			September 20, 2017 Baseflow			November 16, 2017			January 18, 2018			2018-02-06 Baseflow			March 13, 2018			April 6, 2018		
		concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)
Chalk Creek @ Chalk Bluff	CC@CB										2200.00	0.78	9255.44	800.00	16.01	69081				2400.00	0.55	7119.57	2400.00	1.42	18381.4			
Alum Creek @ Truckee River	AC@TR										230.00	1.9	2307.388	330.00	1.0	1690.9				660.00	0.2	533.968				210.00	9.8	11066.08
North Truckee Drain @ Orr Ditch	NTD@ORD										630.00	3.24	11009.44	830.00	4.06	18175				1300.00	0.94	6591				1000.00	3.69	19902.43
North Truckee Drain at Big Fish Drive	NTD@BFD(1)										580.00	4.90	15328.65	790.00	1.61	6860.1				1200.00	1.85	11973.8				710.00	3.79	14513.67
North Truckee Drain at Big Fish Drive	NTD@BFD(2)													300.00	4.50	7281.4				1200.00	1.81	11714.9				490.00	6.39	16887.94
North Truckee Drain at Big Fish Drive	NTD@BFD(3)													140.00	76.00	57388				1200.00	1.77	11456				480.00	6.38	16517.4
North Truckee Drain at Big Fish Drive	NTD@BFD(4)													140.00	73.40	55425				1200.00	1.77	11456				460.00	5.94	14737.51
Thomas Creek @ S. Meadows Pkwy	TC@SMP										91.00	4.30	2110.521	62.00	6.04	2018.8				73.00	1.87	736.282	95.00	3.70	1895.85			
Whites Creek @ Old Virginia Hwy	WC@OVH				48.00	26.76	6927.988				52.00	8.15	2285.813	45.00	--					67.00	3.02	1091.34						
Steamboat Creek @ Rhodes Road	SBC@RHR										140.00	17.70	13365.37	220	15.70	18630				170.00	34.60	31725.2				200.00	132.00	142391.4
Steamboat Creek @ Narrows	SBC@NAR										320.00	29.80	51433.49	410.00	439.00	970796				310.00	42.80	71562.5				280.00	137.00	206899
Yori drain @ Steamboat Creek	YD@SBC(1)										250.00			180.00	6.70	6504.7				360.00	3.99	7747.39				420.00	N/A	N/A
Yori drain @ Steamboat Creek	YD@SBC(2)																			370.00	3.79	7555.48						
Yori drain @ Steamboat Creek	YD@SBC(3)																			380.00	3.72	7614.16						
Yori drain @ Steamboat Creek	YD@SBC(4)													390.00	8.49	17859				360.00	3.54	6879.45						
Boynton Slough @ Steamboat Creek	BS@SBC				230.00						210.00	19.52	22109.5	89.00	269.91	129565				300.00	--							
Steamboat Creek @ Clean Water Way	SBC@CWW(1)										280.00	68.80	103902.6	370.00	49.70	99183				340.00	56.00	102694				290.00	N/A	
Steamboat Creek @ Clean Water Way	SBC@CWW(2)										260.00	70.20	98444.22	290.00	118.00	184569				330.00	55.40	98606						
Steamboat Creek @ Clean Water Way	SBC@CWW(3)										280.00	66.70	100731.1	340.00	446.00	817887				350.00	55.40	104582						
Steamboat Creek @ Clean Water Way	SBC@CWW(4)										310.00	66.70	111523.7	320.00	451.00	778406				320.00	54.90	94755						
Arlington (south)	H-19 (1)	57.00	6.014	1848.92				660.00	0.309	1099.973																		
Arlington (south)	H-19 (2)	70.00	5.313	2005.939																								
Arlington (south)	H-19 (3)	94.00	5.313	2693.689				260.00	2.412	3382.443																		
Arlington (south)	H-19 (4)	100.00	4.103	2212.999				250.00	2.349	3167.399																		
Fisherman's Park II	D-16 (1)													120.00	1.204	779.27	270.00	1.059										
Fisherman's Park II	D-16 (2)																200.00	1.631										
Fisherman's Park II	D-16 (3)																210.00	1.603										
Fisherman's Park II	D-16 (4)													82.00	2.703	1195.5	180.00	0.66										
Oxbow Nature Park	C-24 (1)							360.00	0.497	965.0252				87.00	0.754	353.81												
Oxbow Nature Park	C-24 (2)							230.00	0.687	852.2448				23.00	3.307	410.24												
Oxbow Nature Park	C-24 (3)							350.00	1.076	2031.235				20.00	2.987	322.21												
Oxbow Nature Park	C-24 (4)							200.00	0.121	130.5254				18.00	3.859	374.65												
Mary Wahl Ditch	SDOE-008936 (1)													340.00	0.06	110.03										120.00	2.866	1854.971
Mary Wahl Ditch	SDOE-008936 (2)													48.00	7.004	1813.3										120.00	1.392	900.9491
Mary Wahl Ditch	SDOE-008936 (3)													68.00	7.433	2726.2										340.00	7.507	13766.55
Mary Wahl Ditch	SDOE-008936 (4)													130.00	4.837	3391.6										240.00	7.437	9626.952

		TSS																														
		Site Name	Sample ID	August 6, 2017			August 22, 2017			September 6, 2017			September 20, 2017 Baseflow			November 16, 2017			January 18, 2018			2018-02-06 Baseflow			March 13, 2018			April 6, 2018		
				concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)
1	1	Chalk Creek @ Chalk Bluff	CC@CB										7.00			180.00						7.00			64.00					
2	2	Alum Creek @ Truckee River	AC@TR										13.00			18.00						1.00						390.00		
1	3	North Truckee Drain @ Orr Ditch	NTD@ORD										6.00	3.24	104.8518	47.00						22.00						45.00		
2	4	North Truckee Drain at Big Fish Drive	NTD@BFD(1)										24.00	4.90	634.2889	48.00						44.00						53.00		
2	4	North Truckee Drain at Big Fish Drive	NTD@BFD(2)													84.00						10.00						48.00		
2	4	North Truckee Drain at Big Fish Drive	NTD@BFD(3)													82.00						11.00						46.00		
2	4	North Truckee Drain at Big Fish Drive	NTD@BFD(4)													37.00						11.00						42.00		
4	5	Thomas Creek @ S. Meadows Pkwy	TC@SMP										17.00			80.00						2.00			8.00					
1	6	Whites Creek @ Old Virginia Hwy	WC@OVH				61.00						5.00	8.15		260.00						1.00								
1	7	Steamboat Creek @ Rhodes Road	SBC@RHR										28.00	17.70	1230.822	140						25.00						33.00		
2	8	Steamboat Creek @ Narrows	SBC@NAR										22.00	29.80	2100.273	490.00						32.00						130.00		
5	9	Yori drain @ Steamboat Creek	YD@SBC(1)										81.00			420.00	6.70	15178				24.00						68.00	N/A	N/A
5	9	Yori drain @ Steamboat Creek	YD@SBC(2)																			25.00								
5	9	Yori drain @ Steamboat Creek	YD@SBC(3)																			15.00								
5	9	Yori drain @ Steamboat Creek	YD@SBC(4)													29.00	8.49	1328				40.00								
6	10.00	Boynton Slough @ Steamboat Creek	BS@SBC				30.00						23.00			74.00						14.00								
3	11	Steamboat Creek @ Clean Water Way	SBC@CWW(1)										27.00	68.80	4339.701	58.00						32.00						530.00		
3	11	Steamboat Creek @ Clean Water Way	SBC@CWW(2)										37.00	70.20	13729.98	210.00						38.00								
3	11	Steamboat Creek @ Clean Water Way	SBC@CWW(3)										43.00	66.70	16281.16	780.00						31.00								
3	11	Steamboat Creek @ Clean Water Way	SBC@CWW(4)										37.00	66.70	13310.9	380.00						27.00								
1	12	Arlington (south)	H-19 (1)	53.00						660.00																				
1	12	Arlington (south)	H-19 (2)	230.00																										
1	12	Arlington (south)	H-19 (3)	430.00						1500.00																				
1	12	Arlington (south)	H-19 (4)	1100.00						210.00																				
2	13	Fisherman's Park II	D-16 (1)													160.00			100.00											
2	13	Fisherman's Park II	D-16 (2)																98.00											
2	13	Fisherman's Park II	D-16 (3)																79.00											
2	13	Fisherman's Park II	D-16 (4)													72.00			45.00											
3	14	Oxbow Nature Park	C-24 (1)							200.00						130.00														
3	14	Oxbow Nature Park	C-24 (2)							120.00						25.00														
3	14	Oxbow Nature Park	C-24 (3)							98.00						19.00														
3	14	Oxbow Nature Park	C-24 (4)													19.00														
3	15	Mary Wahl Ditch	SDOE-008936 (1)													160.00												110.00		
3	15	Mary Wahl Ditch	SDOE-008936 (2)													170.00												130.00		
3	15	Mary Wahl Ditch	SDOE-008936 (3)													140.00												9.00		
3	15	Mary Wahl Ditch	SDOE-008936 (4)													56.00												46.00		

Site Name	Sample ID				Results (/100 mL)															
		10/1/2015			12/10/2015			DUP?	March 5-6, 2016			dup?	blank?	4/9/2016			4/27/16 BASEFLOW	6/16/16 BASEFLOW	3/16/17 Baseflow	9/20/17 BASEFLOW
		concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)	concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)		concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)			concentration (mg/L)	Flow (cfs)	Instantaneous Load (lbs)				
Chalk Creek @ Chalk Bluff	CC@CB			0			0				0					0				
Alum Creek @ Truckee River	AC@TR			0			0				0					0	36		3.1	43.5
North Truckee Drain @ Orr Ditch	NTD@ORD			0			0				0					0				
North Truckee Drain @ Kleppe Ln	NTD@KLP (1)			0			0				0					0				
North Truckee Drain @ Kleppe Ln	NTD@KLP (2)			0			0				0					0				
North Truckee Drain @ Kleppe Ln	NTD@KLP (3)			0			0				0					0				
North Truckee Drain @ Kleppe Ln	NTD@KLP (4)			0			0				0					0		727		
Thomas Creek @ S. Meadows Pkwy	TC@SMP			0			0				0					0				
Whites Creek @ Old Virginia Hwy	WC@OVH	3244.0		0			0				0					0	45		23.50	201
Steamboat Creek @ Rhodes Road	SBC@RHR			0			0				0					0			6.3	613.1
Steamboat Creek @ Narrows	SBC@NAR			0			0				0					0				
Steamboat Creek @ Clean Water Way	SBC@CWW(1)			0			0				0					0				
Steamboat Creek @ Clean Water Way	SBC@CWW(2)			0			0				0					0				
Steamboat Creek @ Clean Water Way	SBC@CWW(3)			0			0				0					0				
Steamboat Creek @ Clean Water Way	SBC@CWW(4)			0			0				0					0		402		
Arlington (south)	H-19 (1)			0			0				0					0				
Arlington (south)	H-19 (2)			0			0				0					0				
Arlington (south)	H-19 (3)			0			0				0					0				
Arlington (south)	H-19 (4)			0			0				0					0				
Fisherman's Park II	D-16 (1)	4840		0			0				0					0				
Fisherman's Park II	D-16 (2)			0			0				0					0				
Fisherman's Park II	D-16 (3)			0			0				0					0				
Fisherman's Park II	D-16 (4)			0																
Oxbow Nature Park	C-24 (1)			0																
Oxbow Nature Park	C-24 (2)			0																
Oxbow Nature Park	C-24 (3)																			
Oxbow Nature Park	C-24 (4)																			
Mary Wahl Ditch	SDOE-008936 (1)	4840																		
Mary Wahl Ditch	SDOE-008936 (2)																			
Mary Wahl Ditch	SDOE-008936 (3)																			
Mary Wahl Ditch	SDOE-008936 (4)																			

Site Name	Sample ID	August 6, 2017			August 22, 2017			September 6, 2017			September 20, 2017 Baseflow			November 16, 2017			January 18, 2018			2018-02-06 Baseflow			March 13, 2018			April 6, 2018		
		MPN/100ml	Flow (cfs)	Instantaneous Load (lbs)	MPN/100ml	Flow (cfs)	Instantaneous Load (lbs)	MPN/100ml	Flow (cfs)	Instantaneous Load (lbs)	MPN/100ml	Flow (cfs)	Instantaneous Load (lbs)	MPN/100ml	Flow (cfs)	Instantaneous Load (lbs)	MPN/100ml	Flow (cfs)	Instantaneous Load (lbs)	MPN/100ml	Flow (cfs)	Instantaneous Load (lbs)	MPN/100ml	Flow (cfs)	Instantaneous Load (lbs)	MPN/100ml	Flow (cfs)	Instantaneous Load (lbs)
Chalk Creek @ Chalk Bluff	CC@CB																											
Alum Creek @ Truckee River	AC@TR										43.5									12.20						344.10		
North Truckee Drain @ Orr Ditch	NTD@ORD																											
North Truckee Drain @ Kleppe Ln	NTD@KLP (1)																											
North Truckee Drain @ Kleppe Ln	NTD@KLP (2)																											
North Truckee Drain @ Kleppe Ln	NTD@KLP (3)																											
North Truckee Drain @ Kleppe Ln	NTD@KLP (4)																											
Thomas Creek @ S. Meadows Pkwy	TC@SMP																											
Whites Creek @ Old Virginia Hwy	WC@OVH				1119.90						201									21.80								
Steamboat Creek @ Rhodes Road	SBC@RHR										613.1									21.30						721.50		
Steamboat Creek @ Narrows	SBC@NAR																											
Steamboat Creek @ Clean Water Way	SBC@CWW(1)																											
Steamboat Creek @ Clean Water Way	SBC@CWW(2)																											
Steamboat Creek @ Clean Water Way	SBC@CWW(3)																											
Steamboat Creek @ Clean Water Way	SBC@CWW(4)																											
Arlington (south)	H-19 (1)																											
Arlington (south)	H-19 (2)																											
Arlington (south)	H-19 (3)																											
Arlington (south)	H-19 (4)																											
Fisherman's Park II	D-16 (1)																											
Fisherman's Park II	D-16 (2)																											
Fisherman's Park II	D-16 (3)																											
Fisherman's Park II	D-16 (4)																											
Oxbow Nature Park	C-24 (1)																											
Oxbow Nature Park	C-24 (2)																											
Oxbow Nature Park	C-24 (3)																											
Oxbow Nature Park	C-24 (4)																											
Mary Wahl Ditch	SDOE-008936 (1)																											
Mary Wahl Ditch	SDOE-008936 (2)																											
Mary Wahl Ditch	SDOE-008936 (3)																											
Mary Wahl Ditch	SDOE-008936 (4)																											

APPENDIX D

Laboratory Reports

8/19/2017

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Brian Hastings

OrderID: *1708186*

Dear: Brian Hastings

This is to transmit the attached analytical report. The analytical data and information contained therein was generated using specified or selected methods contained in references, such as Standard Methods for the Examination of Water and Wastewater, online edition, Methods for Determination of Organic Compounds in Drinking Water, EPA-600/4-79-020, and Test Methods for Evaluation of Solid Waste, Physical/Chemical Methods (SW846) Third Edition.

The samples were received by WETLAB-Western Environmental Testing Laboratory in good condition on 8/7/2017. Additional comments are located on page 2 of this report.

If you should have any questions or comments regarding this report, please do not hesitate to call.

Sincerely,

Andy Smith
QA Manager

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fax (702) 622-2868
EPA LAB ID: NV00932

Western Environmental Testing Laboratory
Report Comments

Balance Hydrologics - 1708186

Specific Report Comments

None

Report Legend

B	--	Blank contamination; Analyte detected above the method reporting limit in an associated blank
D	--	Due to the sample matrix dilution was required in order to properly detect and report the analyte. The reporting limit has been adjusted accordingly.
HT	--	Sample analyzed beyond the accepted holding time
J	--	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
M	--	The matrix spike/matrix spike duplicate (MS/MSD) values for the analysis of this parameter were outside acceptance criteria due to probable matrix interference. The reported result should be considered an estimate.
N	--	There was insufficient sample available to perform a spike and/or duplicate on this analytical batch.
NC	--	Not calculated due to matrix interference
QD	--	The sample duplicate or matrix spike duplicate analysis demonstrated sample imprecision. The reported result should be considered an estimate.
QL	--	The result for the laboratory control sample (LCS) was outside WETLAB acceptance criteria and reanalysis was not possible. The reported data should be considered an estimate.
S	--	Surrogate recovery was outside of laboratory acceptance limits due to matrix interference. The associated blank and LCS surrogate recovery was within acceptance limits
SC	--	Spike recovery not calculated. Sample concentration >4X the spike amount; therefore, the spike could not be adequately recovered
U	--	The analyte was analyzed for, but was not detected above the level of the reported sample reporting/quantitation limit

General Lab Comments

Per method recommendation (section 4.4), Samples analyzed by methods EPA 300.0 and EPA 300.1 have been filtered prior to analysis.

The following is an interpretation of the results from EPA method 9223B:
A result of zero (0) indicates absence for both coliform and Escherichia coli meaning the water meets the microbiological requirements of the U.S. EPA Safe Drinking Water Act (SDWA). A result of one (1) for either test indicates presence and the water does not meet the SDWA requirements. Waters with positive tests should be disinfected by a certified water treatment operator and retested.

Per federal regulation the holding time for the following parameters in aqueous/water samples is 15 minutes: Residual Chlorine, pH, Dissolved Oxygen, Sulfite.

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Western Environmental Testing Laboratory
Analytical Report

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Brian Hastings
Phone: (510-704-1000 **Fax:**

Date Printed: 8/19/2017
OrderID: *1708186*

PO\Project: *City of Reno/213136*

Customer Sample ID: H-19 (1) **Collect Date/Time:** 8/6/2017 16:09
WETLAB Sample ID: 1708186-001 **Receive Date:** 8/7/2017 09:55

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.050 M	mg/L	1	0.010	8/7/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.58	mg/L	1	0.010	8/9/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	53	mg/L	1	1.0	8/9/2017	NV00925
Total Nitrogen	Calc.	3.9	mg/L	1	0.22	8/14/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	57	mg/L	1	10	8/10/2017	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.011	mg/L	1	0.010	8/7/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.010	8/7/2017	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	3.9	mg/L	0.5	0.20	8/14/2017	NV00925

Customer Sample ID: H-19 (2) **Collect Date/Time:** 8/6/2017 16:11
WETLAB Sample ID: 1708186-002 **Receive Date:** 8/7/2017 09:55

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.038	mg/L	1	0.010	8/7/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.55	mg/L	1	0.010	8/9/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	230	mg/L	1	1.0	8/9/2017	NV00925
Total Nitrogen	Calc.	5.4	mg/L	1	0.42	8/14/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	70	mg/L	1	10	8/10/2017	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	ND	mg/L	1	0.010	8/7/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.011	mg/L	1	0.010	8/7/2017	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	5.4	mg/L	1	0.40	8/14/2017	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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EPA LAB ID: NV00932

Customer Sample ID: H-19 (3) **Collect Date/Time:** 8/6/2017 16:14

WETLAB Sample ID: 1708186-003 **Receive Date:** 8/7/2017 09:55

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.028	mg/L	1	0.010	8/7/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.54	mg/L	1	0.010	8/9/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	430	mg/L	1	1.0	8/9/2017	NV00925
Total Nitrogen	Calc.	6.9	mg/L	1	0.42	8/14/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	94	mg/L	1	10	8/10/2017	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	ND	mg/L	1	0.010	8/7/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.013	mg/L	1	0.010	8/7/2017	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	6.8	mg/L	1	0.40	8/14/2017	NV00925

Customer Sample ID: H-19 (4) **Collect Date/Time:** 8/6/2017 16:19

WETLAB Sample ID: 1708186-004 **Receive Date:** 8/7/2017 09:55

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.031	mg/L	1	0.010	8/7/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.47	mg/L	1	0.010	8/9/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	1100	mg/L	1	1.0	8/9/2017	NV00925
Total Nitrogen	Calc.	4.7	mg/L	1	1.0	8/14/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	100	mg/L	1	10	8/10/2017	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	ND	mg/L	1	0.010	8/7/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.011 M	mg/L	1	0.010	8/7/2017	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	4.6	mg/L	2.5	1.0	8/14/2017	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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Western Environmental Testing Laboratory
QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC17080267	Blank 1	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC17080289	Blank 1	Nitrate Nitrogen	EPA 300.0	ND			mg/L
		Nitrite Nitrogen	EPA 300.0	ND			mg/L
QC17080366	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC17080520	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC17080522	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC17080527	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC17080267	LCS 1	Orthophosphate, as P	SM 4500-P E	0.238	0.250	95	mg/L
QC17080289	LCS 1	Nitrate Nitrogen	EPA 300.0	0.482	0.500	96	mg/L
		Nitrite Nitrogen	EPA 300.0	0.498	0.500	100	mg/L
QC17080366	LCS 1	Total Phosphorous as P	SM 4500-P E	0.255	0.250	102	mg/L
QC17080520	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	141	150	94	mg/L
QC17080520	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	140	150	93	mg/L
QC17080522	LCS 1	Total Suspended Solids (TSS)	SM 2540D	199	200	99	mg/L
QC17080522	LCS 2	Total Suspended Solids (TSS)	SM 2540D	199	200	99	mg/L
QC17080527	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	1.03	1.00	103	mg/L

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC17080520	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	1708191-001	325	321	mg/L	1 %
QC17080520	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	1708191-003	502	498	mg/L	1 %
QC17080522	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	1708244-001	58.0	59.0	mg/L	2 %
QC17080522	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	1708337-001	2.33	2.33	mg/L	<1%

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result		MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC17080267	MS 1	Orthophosphate, as P	SM 4500-P E	1708186-001	0.050	M	0.249	0.264	0.25	mg/L	NC	NC	NC
QC17080289	MS 1	Nitrate Nitrogen	EPA 300.0	1708186-004	ND		0.488	0.488	0.5	mg/L	97	97	<1
		Nitrite Nitrogen	EPA 300.0	1708186-004	0.011	M	0.081	0.084	0.125	mg/L	NC	NC	NC
QC17080289	MS 2	Nitrate Nitrogen	EPA 300.0	1708188-007	ND	HT	0.471	0.485	0.5	mg/L	93	96	3
		Nitrite Nitrogen	EPA 300.0	1708188-007	ND	M,	0.034	0.034	0.125	mg/L	NC	NC	NC
QC17080366	MS 1	Total Phosphorous as P	SM 4500-P E	1708140-005	ND		0.245	0.265	0.25	mg/L	96	104	8
QC17080366	MS 2	Total Phosphorous as P	SM 4500-P E	1708188-003	0.017		0.256	0.269	0.25	mg/L	96	101	5
QC17080527	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	1708111-001	ND	M	0.560	0.510	0.5	mg/L	NC	NC	NC
QC17080527	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	1708188-006	ND	M,	0.560	0.555	0.5	mg/L	NC	NC	NC

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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1708186

WETLAB
WESTERN ENVIRONMENTAL TESTING LABORATORY
Specializing in Soil, Hazardous Waste and Water Analysis.

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Lab Number ~~1708148~~
Report Due Date 8/21/17
Page 1 of 1

Turnaround Time Requirements
Standard X
5-Day* ____ 3-Day* ____
48 Hour* ____ 24 Hour* ____
*Surcharges Will Apply

Samples Collected From Which State?
NV X CA ____ Other ____

Compliance Monitoring?
Yes (No)

Report to Regulatory Agency?
Yes (No)

Report Results Via
Fax Mail Only
(PDF) EDD
Other: ____

Standard QC Required?
(Yes) No

Client Balance Hydrologics
Address 12020 Donner Pass Rd Suite B1
City, State & Zip Truckee CA 96161
Contact Brian Hastings
Phone 530.550.9776
Fax —
P.O. Number
Collector's Name BT
PWS/Project Name City of Reno
PWS/Project Number 21336
Email bhastings@balancehydro.com

Billing Address (if different than Client Address)
Company Balance Hydrologics
Address 800 Bancroft Way #101
City, State & Zip Berkeley CA 94710
Contact Rachel Boitano
Phone 510-704-1000
Fax ____
Email rboitano@balancehydro.com

SAMPLE ID/LOCATION	DATE	TIME	SAMPLE TYPE	NO. OF CONTAINERS	Total N	Total P	Ortho P	TSS	TDS	NO3	Spl. No.
H-19 (1)	8/6/17	16:09	aq	2	X	X	X	X	X	X	1
H-19 (2)	↓	16:11	↓	2	X	X	X	X	X	X	2
H-19 (3)		16:14		2	X	X	X	X	X	X	3
H-19 (4)	↓	16:19	↓	2	X	X	X	X	X	X	4

1708 2
186 4

Instructions/Comments/Special Requirements:

Sample Matrix/ Type Key** DW = Drinking Water WW = Wastewater SW = Surface Water MW = Monitoring Well SD = Solid/Sludge SO = Soil HW = Hazardous Waste OTHER: ____

SAMPLE RECEIPT	DATE	TIME	Samples Relinquished By	Samples Received By
Temperature 18.7 °C	8/7/17	0955		
Custody Seals Intact? Y N (None)				
Number of Containers 8				

WETLAB'S Standard Terms and Conditions apply unless written agreements specify otherwise. Payment terms are Net 30.

Client/Collector attests to the validity and authenticity of this (these) sample(s) and, is (are) aware that tampering with or intentionally mislabeling the sample(s) location, date or time of collection may be considered fraud and subject to legal action (NAC445.0636).

To the maximum extent permitted by law, the Client agrees to limit the liability of WETLAB for the Client's damages to the total compensation received, unless other agreements are made in writing. This limitation shall apply regardless of the cause of action or legal theory pled or asserted.

301.2E

9/1/2017

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Brian Hastings

OrderID: *1708687*

Dear: Brian Hastings

This is to transmit the attached analytical report. The analytical data and information contained therein was generated using specified or selected methods contained in references, such as Standard Methods for the Examination of Water and Wastewater, online edition, Methods for Determination of Organic Compounds in Drinking Water, EPA-600/4-79-020, and Test Methods for Evaluation of Solid Waste, Physical/Chemical Methods (SW846) Third Edition.

The samples were received by WETLAB-Western Environmental Testing Laboratory in good condition on 8/22/2017. Additional comments are located on page 2 of this report.

If you should have any questions or comments regarding this report, please do not hesitate to call.

Sincerely,

Andy Smith
QA Manager

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Western Environmental Testing Laboratory
Report Comments

Balance Hydrologics - 1708687

Specific Report Comments

The results for Total Coliform (MPN) and Escherichia Coli (MPN) should be considered an estimate. The analysis was performed on an aliquot of sample removed from the non-sterile unpreserved container. This was due to a laboratory error. We apologize for any inconvenience this may have caused.

Report Legend

B	--	Blank contamination; Analyte detected above the method reporting limit in an associated blank
D	--	Due to the sample matrix dilution was required in order to properly detect and report the analyte. The reporting limit has been adjusted accordingly.
HT	--	Sample analyzed beyond the accepted holding time
J	--	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
M	--	The matrix spike/matrix spike duplicate (MS/MSD) values for the analysis of this parameter were outside acceptance criteria due to probable matrix interference. The reported result should be considered an estimate.
N	--	There was insufficient sample available to perform a spike and/or duplicate on this analytical batch.
NC	--	Not calculated due to matrix interference
QD	--	The sample duplicate or matrix spike duplicate analysis demonstrated sample imprecision. The reported result should be considered an estimate.
QL	--	The result for the laboratory control sample (LCS) was outside WETLAB acceptance criteria and reanalysis was not possible. The reported data should be considered an estimate.
S	--	Surrogate recovery was outside of laboratory acceptance limits due to matrix interference. The associated blank and LCS surrogate recovery was within acceptance limits
SC	--	Spike recovery not calculated. Sample concentration >4X the spike amount; therefore, the spike could not be adequately recovered
U	--	The analyte was analyzed for, but was not detected above the level of the reported sample reporting/quantitation limit

General Lab Comments

Per method recommendation (section 4.4), Samples analyzed by methods EPA 300.0 and EPA 300.1 have been filtered prior to analysis.

The following is an interpretation of the results from EPA method 9223B:
A result of zero (0) indicates absence for both coliform and Escherichia coli meaning the water meets the microbiological requirements of the U.S. EPA Safe Drinking Water Act (SDWA). A result of one (1) for either test indicates presence and the water does not meet the SDWA requirements. Waters with positive tests should be disinfected by a certified water treatment operator and retested.

Per federal regulation the holding time for the following parameters in aqueous/water samples is 15 minutes: Residual Chlorine, pH, Dissolved Oxygen, Sulfite.

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Western Environmental Testing Laboratory
Analytical Report

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Brian Hastings
Phone: (510-704-1000 **Fax:**

Date Printed: 9/1/2017
OrderID: *1708687*
PO\Project: *213136*

Customer Sample ID: WC @ OVW
WETLAB Sample ID: 1708687-001
Collect Date/Time: 8/22/2017 15:15
Receive Date: 8/22/2017 17:05

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.047	mg/L	1	0.010	8/23/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.096	mg/L	1	0.010	8/23/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	61	mg/L	1	1.0	8/24/2017	NV00925
Total Nitrogen	Calc.	0.84	mg/L	1	0.55	8/29/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	48	mg/L	1	10	8/25/2017	NV00925
Microbiological Analyses							
Total Coliform (MPN)	SM 9223B (Quantitray)	>2419.6	MPN/100ml	1	1.0	8/23/2017	NV00925
Escherichia Coli (MPN)	SM 9223B (Quantitray)	1119.9	MPN/100ml	1	1.0	8/23/2017	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	ND	mg/L	1	0.10	8/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.050	8/23/2017	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	0.74	mg/L	1	0.40	8/29/2017	NV00925

Customer Sample ID: BS @SBC
WETLAB Sample ID: 1708687-002
Collect Date/Time: 8/22/2017 16:35
Receive Date: 8/22/2017 17:05

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.094	mg/L	1	0.010	8/23/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.22	mg/L	1	0.010	8/23/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	30	mg/L	1	1.0	8/24/2017	NV00925
Total Nitrogen	Calc.	2.3	mg/L	1	0.55	8/29/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	230	mg/L	1	10	8/25/2017	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.50	mg/L	1	0.10	8/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.050	8/23/2017	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	1.8	mg/L	1	0.40	8/29/2017	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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tel (702) 475-8899
fax (702) 622-2868
EPA LAB ID: NV00932

Western Environmental Testing Laboratory
QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC17080955	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC17080996	Blank 1	Nitrate Nitrogen	EPA 300.0	ND			mg/L
		Nitrite Nitrogen	EPA 300.0	ND			mg/L
QC17081046	Blank 1	Total Coliform (MPN)	SM 9223B (Qu	ND			MPN/100ml
		Escherichia Coli (MPN)	SM 9223B (Qu	ND			MPN/100ml
QC17081066	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC17081119	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC17081183	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC17080955	LCS 1	Total Phosphorous as P	SM 4500-P E	0.250	0.250	100	mg/L
QC17080996	LCS 1	Nitrate Nitrogen	EPA 300.0	2.00	2.00	100	mg/L
		Nitrite Nitrogen	EPA 300.0	0.512	0.500	102	mg/L
QC17081066	LCS 1	Total Suspended Solids (TSS)	SM 2540D	198	200	99	mg/L
QC17081066	LCS 2	Total Suspended Solids (TSS)	SM 2540D	198	200	99	mg/L
QC17081119	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	152	150	101	mg/L
QC17081119	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	140	150	93	mg/L
QC17081183	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	1.02	1.00	102	mg/L

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC17081066	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	1708687-002	29.5	29.0	mg/L	2 %
QC17081119	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	1708692-001	599	584	mg/L	3 %
QC17081119	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	1708695-001	11160	11200	mg/L	<1%

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result		MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC17080955	MS 1	Total Phosphorous as P	SM 4500-P E	1708651-002	0.063		0.315	0.304	0.25	mg/L	101	96	4
QC17080955	MS 2	Total Phosphorous as P	SM 4500-P E	1708687-002	0.223		0.500	0.502	0.25	mg/L	111	112	<1
QC17080996	MS 1	Nitrate Nitrogen	EPA 300.0	1708653-001	ND		2.18	2.16	2	mg/L	108	106	<1
		Nitrite Nitrogen	EPA 300.0	1708653-001	ND		0.490	0.491	0.5	mg/L	94	95	<1
QC17081183	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	1708726-001	ND		1.06	1.07	1	mg/L	103	104	<1
QC17081183	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	1708726-009	ND	M	1.56	1.16	1	mg/L	NC	NC	NC

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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WESTERN ENVIRONMENTAL TESTING LABORATORY
Specializing in Soil, Hazardous Waste and Water Analysis.

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WETLAB Order ID. 1708687
Sparks Control # _____
Elko Control # _____
LV Control # _____
Report Due Date 9/6/17
Page 1 of 1

Client Balance Hydrologics
Address 12020 Donner Pass Rd B1
City, State & Zip Truckee CA 96161
Contact Brian Hastings
Phone 530.550.9776 | Collector's Name BT
Fax | PWS/Project Name
P.O. Number | PWS/Project Number 213136
Email bhastings@balancehydro.com

Billing Address (if different than Client Address)
Company Balance Hydrologics
Address 600 Bancroft Ave, suite 101
City, State & Zip Berkeley CA 94710
Contact Rachel Boitano
Phone 510-704-1000 Fax _____
Email rboitano@balancehydro.com

Turnaround Time Requirements
Standard _____
5 Day* (25%) _____ 72 Hour* (50%) _____
48 Hour* (100%) _____ 24 Hour* (200%) _____
*Surcharges Will Apply

Samples Collected From Which State? NV____ CA____ Other____
Compliance Monitoring? Yes No
Report to Regulatory Agency? Yes No
Report Results Via PDF EDD Other _____
Standard QC Required? Yes No

SAMPLE ID/LOCATION	DATE	TIME	PRES TYPE *	SAMPLE TYPE **	NO. OF CONTAINERS	Total N	Total P	Ortho P	TSS	TDS	E coli (Mpn)	Spl. No.
WC @ OVW	8/22/17	15:15		GG	3	X	X	X	X	X	X	1
BS @ SBL	8/22/17	16:35		GG	2	X	X	X	X	X		2

1708 2
687 2

Instructions/Comments/Special Requirements:

Sample Matrix Key** DW = Drinking Water WW = Wastewater SW = Surface Water MW = Monitoring Well SD = Solid/Sludge SO = Soil HW = Hazardous Waste OTHER:_____

***SAMPLE PRESERVATIVES:** 1=Unpreserved 2=H2SO4 3=NaOH 4=HCl 5=HNO3 6=Na2S2O3 7=ZnOAc+NaOH 8=HCl/VOA Vial

Temp	Custody Seal	# of Containers	DATE	TIME	Samples Relinquished By	Samples Received By
13.3 °C	Y N (None)	5	8/22/17	17:05		
°C	Y N None					
°C	Y N None					
°C	Y N None					

WETLAB'S Standard Terms and Conditions apply unless written agreements specify otherwise. Payment terms are Net 30.

Client/Collector attests to the validity and authenticity of this (these) sample(s) and, is (are) aware that tampering with or intentionally mislabeling the sample(s) location, date or time of collection may be considered fraud and subject to legal action (NAC445.0636). ~~BT~~ initial

To the maximum extent permitted by law, the Client agrees to limit the liability of WETLAB for the Client's damages to the total compensation received, unless other agreements are made in writing. This limitation shall apply regardless of the cause of action or legal theory pled or asserted. ~~BT~~ initial

WETLAB will dispose of samples 90 days from sample receipt. Client may request a longer sample storage time for an additional fee. Please contact your Project Manager for details. ~~BT~~ initial

301.2E

9/20/2017

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Brian Hastings

OrderID: *1709151*

Dear: Brian Hastings

This is to transmit the attached analytical report. The analytical data and information contained therein was generated using specified or selected methods contained in references, such as Standard Methods for the Examination of Water and Wastewater, online edition, Methods for Determination of Organic Compounds in Drinking Water, EPA-600/4-79-020, and Test Methods for Evaluation of Solid Waste, Physical/Chemical Methods (SW846) Third Edition.

The samples were received by WETLAB-Western Environmental Testing Laboratory in good condition on 9/7/2017. Additional comments are located on page 2 of this report.

If you should have any questions or comments regarding this report, please do not hesitate to call.

Sincerely,

Andy Smith
QA Manager

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Western Environmental Testing Laboratory
Report Comments

Balance Hydrologics - 1709151

Specific Report Comments

None

Report Legend

B	--	Blank contamination; Analyte detected above the method reporting limit in an associated blank
D	--	Due to the sample matrix dilution was required in order to properly detect and report the analyte. The reporting limit has been adjusted accordingly.
HT	--	Sample analyzed beyond the accepted holding time
J	--	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
M	--	The matrix spike/matrix spike duplicate (MS/MSD) values for the analysis of this parameter were outside acceptance criteria due to probable matrix interference. The reported result should be considered an estimate.
N	--	There was insufficient sample available to perform a spike and/or duplicate on this analytical batch.
NC	--	Not calculated due to matrix interference
QD	--	The sample duplicate or matrix spike duplicate analysis demonstrated sample imprecision. The reported result should be considered an estimate.
QL	--	The result for the laboratory control sample (LCS) was outside WETLAB acceptance criteria and reanalysis was not possible. The reported data should be considered an estimate.
S	--	Surrogate recovery was outside of laboratory acceptance limits due to matrix interference. The associated blank and LCS surrogate recovery was within acceptance limits
SC	--	Spike recovery not calculated. Sample concentration >4X the spike amount; therefore, the spike could not be adequately recovered
U	--	The analyte was analyzed for, but was not detected above the level of the reported sample reporting/quantitation limit

General Lab Comments

Per method recommendation (section 4.4), Samples analyzed by methods EPA 300.0 and EPA 300.1 have been filtered prior to analysis.

The following is an interpretation of the results from EPA method 9223B:
A result of zero (0) indicates absence for both coliform and Escherichia coli meaning the water meets the microbiological requirements of the U.S. EPA Safe Drinking Water Act (SDWA). A result of one (1) for either test indicates presence and the water does not meet the SDWA requirements. Waters with positive tests should be disinfected by a certified water treatment operator and retested.

Per federal regulation the holding time for the following parameters in aqueous/water samples is 15 minutes: Residual Chlorine, pH, Dissolved Oxygen, Sulfite.

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Western Environmental Testing Laboratory
Analytical Report

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Brian Hastings
Phone: (510-704-1000 **Fax:**

Date Printed: 9/20/2017
OrderID: *1709151*
PO\Project: *213136 / City of Reno*

Customer Sample ID: C-24 (1) **Collect Date/Time:** 9/6/2017 16:11
WETLAB Sample ID: 1709151-001 **Receive Date:** 9/7/2017 13:17

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.29	mg/L	1	0.010	9/7/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.56	mg/L	1	0.010	9/12/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	200	mg/L	1	1.0	9/8/2017	NV00925
Total Nitrogen	Calc.	11	mg/L	1	0.42	9/15/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	360	mg/L	1	10	9/8/2017	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	2.8	mg/L	1	0.010	9/7/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.028	mg/L	1	0.010	9/7/2017	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	7.8	mg/L	1	0.40	9/15/2017	NV00925

Customer Sample ID: C-24 (2) **Collect Date/Time:** 9/6/2017 21:05
WETLAB Sample ID: 1709151-002 **Receive Date:** 9/7/2017 13:17

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.16	mg/L	1	0.010	9/7/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.26	mg/L	1	0.010	9/12/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	120	mg/L	1	1.0	9/8/2017	NV00925
Total Nitrogen	Calc.	5.2	mg/L	1	0.22	9/15/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	230	mg/L	1	10	9/8/2017	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	1.1	mg/L	1	0.010	9/7/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.060	mg/L	1	0.010	9/7/2017	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	4.0	mg/L	0.5	0.20	9/15/2017	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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Customer Sample ID: C-24 (3) **Collect Date/Time:** 9/6/2017 21:21

WETLAB Sample ID: 1709151-003 **Receive Date:** 9/7/2017 13:17

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.25	mg/L	1	0.010	9/7/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.44	mg/L	1	0.010	9/12/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	98	mg/L	1	1.0	9/8/2017	NV00925
Total Nitrogen	Calc.	7.8	mg/L	1	0.42	9/15/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	350	mg/L	1	10	9/8/2017	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	2.1	mg/L	1	0.010	9/7/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.095	mg/L	1	0.010	9/7/2017	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	5.6	mg/L	1	0.40	9/15/2017	NV00925

Customer Sample ID: C-24 (4) **Collect Date/Time:** 9/6/2017 22:55

WETLAB Sample ID: 1709151-004 **Receive Date:** 9/7/2017 13:17

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.14	mg/L	1	0.010	9/7/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.16	mg/L	1	0.010	9/12/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	ND	mg/L	1	10	9/8/2017	NV00925
Total Nitrogen	Calc.	3.1	mg/L	1	0.22	9/15/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	200	mg/L	1	10	9/8/2017	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	1.0	mg/L	1	0.010	9/7/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.075	mg/L	1	0.010	9/7/2017	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	2.0	mg/L	0.5	0.20	9/15/2017	NV00925

Customer Sample ID: H-19 (1) **Collect Date/Time:** 9/6/2017 16:02

WETLAB Sample ID: 1709151-005 **Receive Date:** 9/7/2017 13:17

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	1.5		mg/L	5	0.050	9/7/2017	NV00925
Total Phosphorous as P	SM 4500-P E	1.4		mg/L	5	0.050	9/12/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	660		mg/L	1	1.0	9/8/2017	NV00925
Total Nitrogen	Calc.	22		mg/L	1	2.0	9/15/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	660		mg/L	1	10	9/8/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	3.3		mg/L	1	0.010	9/7/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.31		mg/L	1	0.010	9/7/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	18	SC	mg/L	5	2.0	9/15/2017	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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Customer Sample ID: H-19 (3) **Collect Date/Time:** 9/6/2017 16:10

WETLAB Sample ID: 1709151-006 **Receive Date:** 9/7/2017 13:17

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.39	mg/L	1	0.010	9/7/2017	NV00925
Total Phosphorous as P	SM 4500-P E	1.1	mg/L	5	0.050	9/12/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	1500	mg/L	1	1.0	9/8/2017	NV00925
Total Nitrogen	Calc.	17	mg/L	1	1.0	9/15/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	260	mg/L	1	10	9/8/2017	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	1.6	mg/L	1	0.010	9/7/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.29	mg/L	1	0.010	9/7/2017	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	15	mg/L	2.5	1.0	9/15/2017	NV00925

Customer Sample ID: H-19 (4) **Collect Date/Time:** 9/6/2017 16:17

WETLAB Sample ID: 1709151-007 **Receive Date:** 9/7/2017 13:17

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.49	mg/L	1	0.010	9/7/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.79	mg/L	1	0.010	9/12/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	210	mg/L	1	1.0	9/8/2017	NV00925
Total Nitrogen	Calc.	11	mg/L	1	0.42	9/15/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	250	mg/L	1	10	9/8/2017	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	2.1	mg/L	1	0.010	9/7/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.13	mg/L	1	0.010	9/7/2017	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	8.3	mg/L	1	0.40	9/15/2017	NV00925

Customer Sample ID: Arlington@TR **Collect Date/Time:** 9/6/2017 17:00

WETLAB Sample ID: 1709151-008 **Receive Date:** 9/7/2017 13:17

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.50	mg/L	1	0.010	9/7/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.64	mg/L	1	0.010	9/12/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	460	mg/L	1	1.0	9/8/2017	NV00925
Total Nitrogen	Calc.	9.2	mg/L	1	0.42	9/15/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	250	mg/L	1	10	9/8/2017	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	2.1	mg/L	1	0.010	9/7/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.010	9/7/2017	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	7.2	mg/L	1	0.40	9/15/2017	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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Customer Sample ID: Blank **Collect Date/Time:** 9/6/2017

WETLAB Sample ID: 1709151-009 **Receive Date:** 9/7/2017 13:17

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	ND	mg/L	1	0.010	9/7/2017	NV00925
Total Phosphorous as P	SM 4500-P E	ND	mg/L	1	0.010	9/12/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	ND	mg/L	1	1	9/8/2017	NV00925
Total Nitrogen	Calc.	ND	mg/L	1	0.22	9/15/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	ND	mg/L	1	10	9/8/2017	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	ND	mg/L	1	0.010	9/7/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.010	9/7/2017	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	ND	mg/L	0.5	0.20	9/15/2017	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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Western Environmental Testing Laboratory
QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC17090226	Blank 1	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC17090241	Blank 1	Nitrate Nitrogen	EPA 300.0	ND			mg/L
		Nitrite Nitrogen	EPA 300.0	ND			mg/L
QC17090324	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC17090326	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC17090328	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC17090397	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC17090578	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC17090226	LCS 1	Orthophosphate, as P	SM 4500-P E	0.236	0.250	94	mg/L
QC17090241	LCS 1	Nitrate Nitrogen	EPA 300.0	0.490	0.500	98	mg/L
		Nitrite Nitrogen	EPA 300.0	0.514	0.500	103	mg/L
QC17090324	LCS 1	Total Suspended Solids (TSS)	SM 2540D	199	200	99	mg/L
QC17090324	LCS 2	Total Suspended Solids (TSS)	SM 2540D	198	200	99	mg/L
QC17090326	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	161	150	107	mg/L
QC17090326	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	145	150	97	mg/L
QC17090328	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	156	150	104	mg/L
QC17090328	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	145	150	97	mg/L
QC17090397	LCS 1	Total Phosphorous as P	SM 4500-P E	0.250	0.250	100	mg/L
QC17090578	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	1.00	1.00		mg/L

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC17090324	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	1709143-001	4.00	4.00	mg/L	<1%
QC17090324	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	1709151-006	1457	1440	mg/L	1 %
QC17090326	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	1709089-001	299	304	mg/L	2 %
QC17090326	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	1709128-001	655	653	mg/L	<1%
QC17090328	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	1709128-002	634	645	mg/L	2 %
QC17090328	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	1709133-003	527	516	mg/L	2 %

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result		MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC17090226	MS 1	Orthophosphate, as P	SM 4500-P E	1709151-001	0.288		0.510	0.511	0.25	mg/L	89	89	<1
QC17090241	MS 1	Nitrate Nitrogen	EPA 300.0	1709119-001	0.170		2.80	2.83	0.5	mg/L	105	106	1
		Nitrite Nitrogen	EPA 300.0	1709119-001	ND	D	0.518	0.530	0.125	mg/L	82	84	2
QC17090241	MS 2	Nitrate Nitrogen	EPA 300.0	1709151-009	ND		0.532	0.537	0.5	mg/L	106	107	<1
		Nitrite Nitrogen	EPA 300.0	1709151-009	ND		0.127	0.129	0.125	mg/L	102	103	2
QC17090397	MS 1	Total Phosphorous as P	SM 4500-P E	1709143-001	ND		0.250	0.258	0.25	mg/L	103	106	3
QC17090397	MS 2	Total Phosphorous as P	SM 4500-P E	1709151-009	ND		0.257	0.266	0.25	mg/L	108	112	3
QC17090578	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	1709143-001	0.078	J	0.615	0.585	0.5	mg/L	107	101	5
QC17090578	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	1709151-005	18.2	SC	17.4	16.1	0.5	mg/L	NC	NC	NC

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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WETLAB
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Specializing in Soil, Hazardous Waste and Water Analysis.

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Lab Number 1709151
Report Due Date
Page _____ of _____

Turnaround Time Requirements
Standard ✓
5-Day* _____ 3-Day* _____
48 Hour* _____ 24 Hour* _____
*Surcharges Will Apply

Client	Balance Hydrologics
Address	12020 Donner Pass Rd
City, State & Zip	Truckee CA 96161
Contact	Brian Hastings
Phone	530.550.9776
Collector's Name	DT
Fax	
PWS/Project Name	City of Reno
P.O. Number	
PWS/Project Number	213136
Email	bhastings@balancehydro.com

Samples Collected From Which State? NV X CA ____ Other ____
Compliance Monitoring? (Yes) No
Report to Regulatory Agency? Yes (No)
Report Results Via Fax Mail Only (PDF) EDD Other: _____
Standard QC Required? (Yes) No

Billing Address (if different than Client Address)
Company Balance Hydrologics
Address 900 Bancroft Way suite 101
City, State & Zip Berkeley CA 94710
Contact Rachel Boitano
Phone 510.704.1000
Fax
Email rboitano@balancehydro.com

SAMPLE ID/LOCATION	DATE	TIME	SAMPLE TYPE	NO. OF CONTAINERS	Analyses Requested: Total N	Total P	NO3	Ortho P	TSS	TDS	Spl. No.
C-24 (1)	9/6/17	16:11	Aq	2	X	X	X	X	X	X	1
C-24 (2)		21:05	Aq	2	X	X	X	X	X	X	2
C-24 (3)		21:21	Aq	2	X	X	X	X	X	X	3
C-24 (4)		22:55		2	X	X	X	X	X	X	4
H-19 (1)		16:02		2	X	X	X	X	X	X	5
H-19 (3)		16:10		2	X	X	X	X	X	X	6
H-19 (4)		16:17		2	X	X	X	X	X	X	7
Arlington@TR	9/6/17	17:00		2	X	X	X	X	X	X	8
BLANK				2	X	X	X	X	X	X	9

1709 2
151 9

Instructions/Comments/Special Requirements:

Sample Matrix/ Type Key** DW = Drinking Water WW = Wastewater SW = Surface Water MW = Monitoring Well SD = Solid/Sludge SO = Soil HW = Hazardous Waste OTHER: _____

SAMPLE RECEIPT	DATE	TIME	Samples Relinquished By	Samples Received By
Temperature 12.3 °C	9.7.17	13:17		
Custody Seals Intact? Y N None				
Number of Containers _____				

WETLAB'S Standard Terms and Conditions apply unless written agreements specify otherwise. Payment terms are Net 30.

Client/Collector attests to the validity and authenticity of this (these) sample(s) and, is (are) aware that tampering with or intentionally mislabeling the sample(s) location, date or time of collection may be considered fraud and subject to legal action (NAC445.0636).

To the maximum extent permitted by law, the Client agrees to limit the liability of WETLAB for the Client's damages to the total compensation received, unless other agreements are made in writing. This limitation shall apply regardless of the cause of action or legal theory pled or asserted.

301.2E

10/3/2017

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Brian Hastings

OrderID: *1709600*

Dear: Brian Hastings

This is to transmit the attached analytical report. The analytical data and information contained therein was generated using specified or selected methods contained in references, such as Standard Methods for the Examination of Water and Wastewater, online edition, Methods for Determination of Organic Compounds in Drinking Water, EPA-600/4-79-020, and Test Methods for Evaluation of Solid Waste, Physical/Chemical Methods (SW846) Third Edition.

The samples were received by WETLAB-Western Environmental Testing Laboratory in good condition on 9/20/2017. Additional comments are located on page 2 of this report.

If you should have any questions or comments regarding this report, please do not hesitate to call.

Sincerely,

Andy Smith
QA Manager

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Western Environmental Testing Laboratory
Report Comments

Balance Hydrologics - 1709600

Specific Report Comments

None

Report Legend

B	--	Blank contamination; Analyte detected above the method reporting limit in an associated blank
D	--	Due to the sample matrix dilution was required in order to properly detect and report the analyte. The reporting limit has been adjusted accordingly.
HT	--	Sample analyzed beyond the accepted holding time
J	--	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
M	--	The matrix spike/matrix spike duplicate (MS/MSD) values for the analysis of this parameter were outside acceptance criteria due to probable matrix interference. The reported result should be considered an estimate.
N	--	There was insufficient sample available to perform a spike and/or duplicate on this analytical batch.
NC	--	Not calculated due to matrix interference
QD	--	The sample duplicate or matrix spike duplicate analysis demonstrated sample imprecision. The reported result should be considered an estimate.
QL	--	The result for the laboratory control sample (LCS) was outside WETLAB acceptance criteria and reanalysis was not possible. The reported data should be considered an estimate.
S	--	Surrogate recovery was outside of laboratory acceptance limits due to matrix interference. The associated blank and LCS surrogate recovery was within acceptance limits
SC	--	Spike recovery not calculated. Sample concentration >4X the spike amount; therefore, the spike could not be adequately recovered
U	--	The analyte was analyzed for, but was not detected above the level of the reported sample reporting/quantitation limit

General Lab Comments

Per method recommendation (section 4.4), Samples analyzed by methods EPA 300.0 and EPA 300.1 have been filtered prior to analysis.

The following is an interpretation of the results from EPA method 9223B:
A result of zero (0) indicates absence for both coliform and Escherichia coli meaning the water meets the microbiological requirements of the U.S. EPA Safe Drinking Water Act (SDWA). A result of one (1) for either test indicates presence and the water does not meet the SDWA requirements. Waters with positive tests should be disinfected by a certified water treatment operator and retested.

Per federal regulation the holding time for the following parameters in aqueous/water samples is 15 minutes: Residual Chlorine, pH, Dissolved Oxygen, Sulfite.

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Western Environmental Testing Laboratory
Analytical Report

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Brian Hastings
Phone: (510-704-1000 **Fax:**

Date Printed: 10/3/2017
OrderID: *1709600*
PO\Project: *213136*

Customer Sample ID: AC @ TR
WETLAB Sample ID: 1709600-001
Collect Date/Time: 9/20/2017 08:56
Receive Date: 9/20/2017 17:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.038	mg/L	1	0.010	9/21/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.12	mg/L	1	0.010	9/22/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	13	mg/L	1	1.0	9/21/2017	NV00925
Total Nitrogen	Calc.	ND	mg/L	1	0.22	9/25/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	230	mg/L	1	10	9/26/2017	NV00925
Microbiological Analyses							
Total Coliform (MPN)	SM 9223B (Quantitray)	>2419.6	MPN/100ml	1	1.0	9/21/2017	NV00925
Escherichia Coli (MPN)	SM 9223B (Quantitray)	43.5	MPN/100ml	1	1.0	9/21/2017	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.012	mg/L	1	0.010	9/21/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.010	9/21/2017	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	ND	mg/L	0.5	0.20	9/25/2017	NV00925

Customer Sample ID: CC @ CB
WETLAB Sample ID: 1709600-002
Collect Date/Time: 9/20/2017 10:15
Receive Date: 9/20/2017 17:30

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.38		mg/L	1	0.010	9/21/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.39		mg/L	1	0.010	9/25/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	7		mg/L	1	1	9/21/2017	NV00925
Total Nitrogen	Calc.	2.4		mg/L	1	0.30	9/25/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	2200		mg/L	1	10	9/26/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	2.2		mg/L	5	0.050	9/21/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	D	mg/L	5	0.050	9/21/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	ND		mg/L	0.5	0.20	9/25/2017	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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EPA LAB ID: NV00932

Customer Sample ID: SBC @ RHR **Collect Date/Time:** 9/20/2017 10:55

WETLAB Sample ID: 1709600-003 **Receive Date:** 9/20/2017 17:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.092	mg/L	1	0.010	9/21/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.18	mg/L	1	0.010	9/25/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	28	mg/L	1	1.0	9/21/2017	NV00925
Total Nitrogen	Calc.	0.31	mg/L	1	0.22	9/25/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	140	mg/L	1	10	9/26/2017	NV00925
Microbiological Analyses							
Total Coliform (MPN)	SM 9223B (Quantitray)	>2419.6	MPN/100ml	1	1.0	9/20/2017	NV00925
Escherichia Coli (MPN)	SM 9223B (Quantitray)	613.1	MPN/100ml	1	1.0	9/20/2017	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.098	mg/L	1	0.010	9/21/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.010	9/21/2017	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	0.21	mg/L	0.5	0.20	9/25/2017	NV00925

Customer Sample ID: WC @ OVW **Collect Date/Time:** 9/20/2017 11:12

WETLAB Sample ID: 1709600-004 **Receive Date:** 9/20/2017 17:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.020	mg/L	1	0.010	9/21/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.041	mg/L	1	0.010	9/25/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	5	mg/L	1	1	9/21/2017	NV00925
Total Nitrogen	Calc.	ND	mg/L	1	0.22	9/25/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	52	mg/L	1	10	9/26/2017	NV00925
Microbiological Analyses							
Total Coliform (MPN)	SM 9223B (Quantitray)	>2419.6	MPN/100ml	1	1.0	9/20/2017	NV00925
Escherichia Coli (MPN)	SM 9223B (Quantitray)	201.4	MPN/100ml	1	1.0	9/20/2017	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	ND	mg/L	1	0.010	9/21/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.010	9/21/2017	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	ND	mg/L	0.5	0.20	9/25/2017	NV00925

Customer Sample ID: TC @ SMP **Collect Date/Time:** 9/20/2017 12:00

WETLAB Sample ID: 1709600-005 **Receive Date:** 9/20/2017 17:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.050	mg/L	1	0.010	9/21/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.088	mg/L	1	0.010	9/25/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	17	mg/L	1	1.0	9/21/2017	NV00925
Total Nitrogen	Calc.	0.34	mg/L	1	0.22	9/25/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	91	mg/L	1	10	9/26/2017	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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Customer Sample ID: TC @ SMP **Collect Date/Time:** 9/20/2017 12:00

WETLAB Sample ID: 1709600-005 **Receive Date:** 9/20/2017 17:30

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.088		mg/L	1	0.010	9/21/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND		mg/L	1	0.010	9/21/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.25		mg/L	0.5	0.20	9/25/2017	NV00925

Customer Sample ID: SBC @ NAR **Collect Date/Time:** 9/20/2017 12:33

WETLAB Sample ID: 1709600-006 **Receive Date:** 9/20/2017 17:30

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.16		mg/L	1	0.010	9/21/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.22		mg/L	1	0.010	9/25/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	22		mg/L	1	1.0	9/21/2017	NV00925
Total Nitrogen	Calc.	0.66		mg/L	1	0.22	9/25/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	320		mg/L	1	10	9/26/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.070		mg/L	1	0.010	9/21/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND		mg/L	1	0.010	9/21/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.60		mg/L	0.5	0.20	9/25/2017	NV00925

Customer Sample ID: NTD @ BFD **Collect Date/Time:** 9/20/2017 13:25

WETLAB Sample ID: 1709600-007 **Receive Date:** 9/20/2017 17:30

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.11		mg/L	1	0.010	9/21/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.19		mg/L	1	0.010	9/25/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	24		mg/L	1	1.0	9/26/2017	NV00925
Total Nitrogen	Calc.	1.9		mg/L	1	0.30	9/25/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	580		mg/L	1	10	9/26/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	1.2		mg/L	5	0.050	9/21/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	D	mg/L	5	0.050	9/21/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.71		mg/L	0.5	0.20	9/25/2017	NV00925

Customer Sample ID: NTD @ ORD **Collect Date/Time:** 9/20/2017 14:00

WETLAB Sample ID: 1709600-008 **Receive Date:** 9/20/2017 17:30

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.13		mg/L	1	0.010	9/21/2017	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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Customer Sample ID: NTD @ ORD **Collect Date/Time:** 9/20/2017 14:00

WETLAB Sample ID: 1709600-008 **Receive Date:** 9/20/2017 17:30

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
Total Phosphorous as P	SM 4500-P E	0.18		mg/L	1	0.010	9/25/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	6		mg/L	1	1	9/26/2017	NV00925
Total Nitrogen	Calc.	2.0		mg/L	1	0.30	9/25/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	630		mg/L	1	10	9/26/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	1.3		mg/L	5	0.050	9/21/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	D	mg/L	5	0.050	9/21/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.72		mg/L	0.5	0.20	9/25/2017	NV00925

Customer Sample ID: YD @ SBC **Collect Date/Time:** 9/20/2017 14:45

WETLAB Sample ID: 1709600-009 **Receive Date:** 9/20/2017 17:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.015	mg/L	1	0.010	9/21/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.13	mg/L	1	0.010	9/25/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	81	mg/L	1	1.0	9/26/2017	NV00925
Total Nitrogen	Calc.	1.7	mg/L	1	0.22	9/25/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	250	mg/L	1	10	9/26/2017	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.53	mg/L	1	0.010	9/21/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.010	9/21/2017	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	1.2	mg/L	0.5	0.20	9/25/2017	NV00925

Customer Sample ID: BS @ SBC **Collect Date/Time:** 9/20/2017 16:05

WETLAB Sample ID: 1709600-010 **Receive Date:** 9/20/2017 17:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.094	mg/L	1	0.010	9/21/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.15	mg/L	1	0.010	9/25/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	23	mg/L	1	1.0	9/26/2017	NV00925
Total Nitrogen	Calc.	1.0	mg/L	1	0.22	9/25/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	210	mg/L	1	10	9/26/2017	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.59	mg/L	1	0.010	9/21/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.010	9/21/2017	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	0.42	mg/L	0.5	0.20	9/25/2017	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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fax (702) 622-2868
EPA LAB ID: NV00932

Customer Sample ID: SBC @ CWW (1) **Collect Date/Time:** 9/19/2017 12:00

WETLAB Sample ID: 1709600-011 **Receive Date:** 9/20/2017 17:30

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.14		mg/L	1	0.010	9/21/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.19		mg/L	1	0.010	9/25/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	27		mg/L	1	1.0	9/26/2017	NV00925
Total Nitrogen	Calc.	0.87		mg/L	1	0.22	9/25/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	280		mg/L	1	10	9/26/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.26		mg/L	1	0.010	9/21/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND		mg/L	1	0.010	9/21/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.62		mg/L	0.5	0.20	9/25/2017	NV00925

Customer Sample ID: SBC @ CWW(2) **Collect Date/Time:** 9/19/2017 18:00

WETLAB Sample ID: 1709600-012 **Receive Date:** 9/20/2017 17:30

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.13		mg/L	1	0.010	9/21/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.19		mg/L	1	0.010	9/26/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	37		mg/L	1	1.0	9/26/2017	NV00925
Total Nitrogen	Calc.	0.94		mg/L	1	0.22	9/25/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	260		mg/L	1	10	9/26/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.26		mg/L	1	0.010	9/21/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND		mg/L	1	0.010	9/21/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.68		mg/L	0.5	0.20	9/25/2017	NV00925

Customer Sample ID: SBC @ CWW(3) **Collect Date/Time:** 9/20/2017 00:00

WETLAB Sample ID: 1709600-013 **Receive Date:** 9/20/2017 17:30

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.13		mg/L	1	0.010	9/21/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.18		mg/L	1	0.010	9/26/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	43		mg/L	1	1.0	9/26/2017	NV00925
Total Nitrogen	Calc.	0.90		mg/L	1	0.22	9/29/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	280		mg/L	1	10	9/26/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.26		mg/L	1	0.010	9/21/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND		mg/L	1	0.010	9/21/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.64	M	mg/L	0.5	0.20	9/29/2017	NV00925

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Customer Sample ID: SBC @ CWW(4) **Collect Date/Time:** 9/20/2017 06:00

WETLAB Sample ID: 1709600-014 **Receive Date:** 9/20/2017 17:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.14	mg/L	1	0.010	9/21/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.23	mg/L	1	0.010	9/26/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	37	mg/L	1	1.0	9/26/2017	NV00925
Total Nitrogen	Calc.	0.95	mg/L	1	0.22	9/29/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	310	mg/L	1	10	9/26/2017	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.25	mg/L	1	0.010	9/21/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.010	9/21/2017	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	0.70	mg/L	0.5	0.20	9/29/2017	NV00925

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Western Environmental Testing Laboratory
QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC17090800	Blank 1	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC17090826	Blank 1	Total Coliform (MPN)	SM 9223B (Qu	ND			MPN/100ml
		Escherichia Coli (MPN)	SM 9223B (Qu	ND			MPN/100ml
QC17090841	Blank 1	Total Coliform (MPN)	SM 9223B (Qu	ND			MPN/100ml
		Escherichia Coli (MPN)	SM 9223B (Qu	ND			MPN/100ml
QC17090854	Blank 1	Nitrate Nitrogen	EPA 300.0	ND			mg/L
		Nitrite Nitrogen	EPA 300.0	ND			mg/L
QC17090856	Blank 1	Nitrate Nitrogen	EPA 300.0	ND			mg/L
		Nitrite Nitrogen	EPA 300.0	ND			mg/L
QC17090864	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC17090920	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC17090927	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC17090935	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L
QC17090990	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC17091061	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC17091116	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC17091117	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC17091198	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC17090800	LCS 1	Orthophosphate, as P	SM 4500-P E	0.256	0.250	102	mg/L
QC17090854	LCS 1	Nitrate Nitrogen	EPA 300.0	0.485	0.500	97	mg/L
		Nitrite Nitrogen	EPA 300.0	0.482	0.500	96	mg/L
QC17090856	LCS 1	Nitrate Nitrogen	EPA 300.0	0.485	0.500	97	mg/L
		Nitrite Nitrogen	EPA 300.0	0.482	0.500	96	mg/L
QC17090864	LCS 1	Total Phosphorous as P	SM 4500-P E	0.270	0.250	108	mg/L
QC17090920	LCS 1	Total Phosphorous as P	SM 4500-P E	0.256	0.250	102	mg/L
QC17090927	LCS 1	Total Suspended Solids (TSS)	SM 2540D	200	200	100	mg/L
QC17090927	LCS 2	Total Suspended Solids (TSS)	SM 2540D	200	200	100	mg/L
QC17090935	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	0.975	1.00		mg/L
QC17090990	LCS 1	Total Phosphorous as P	SM 4500-P E	0.242	0.250	97	mg/L
QC17091061	LCS 1	Total Suspended Solids (TSS)	SM 2540D	198	200	99	mg/L
QC17091061	LCS 2	Total Suspended Solids (TSS)	SM 2540D	199	200	99	mg/L
QC17091116	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	139	150	93	mg/L
QC17091116	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	145	150	97	mg/L
QC17091117	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	139	150	93	mg/L
QC17091117	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	145	150	97	mg/L
QC17091198	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	0.970	1.00	97	mg/L

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC17090927	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	1709488-024	46.0	46.5	mg/L	1 %
QC17090927	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	1709507-007	2.00	2.67	mg/L	29 %
QC17091061	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	1709635-004	ND	ND	mg/L	<1%
QC17091061	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	1709600-014	37.0	36.5	mg/L	1 %
QC17091116	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	1709685-002	289	286	mg/L	1 %
QC17091116	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	1709622-001	754	769	mg/L	2 %

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QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC17091117	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	1709623-001	692	689	mg/L	<1%
QC17091117	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	1709678-001	274	277	mg/L	1 %

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result		MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC17090800	MS 1	Orthophosphate, as P	SM 4500-P E	1709600-001	0.038		0.273	0.288	0.25	mg/L	94	100	5
QC17090800	MS 2	Orthophosphate, as P	SM 4500-P E	1709600-011	0.138		0.376	0.386	0.25	mg/L	95	99	3
QC17090854	MS 1	Nitrate Nitrogen	EPA 300.0	1709594-003	0.833		1.39	1.40	0.5	mg/L	112	113	<1
		Nitrite Nitrogen	EPA 300.0	1709594-003	ND		0.134	0.133	0.125	mg/L	105	103	<1
QC17090854	MS 2	Nitrate Nitrogen	EPA 300.0	1709600-005	0.088		0.627	0.645	0.5	mg/L	108	111	3
		Nitrite Nitrogen	EPA 300.0	1709600-005	ND		0.118	0.120	0.125	mg/L	94	96	2
QC17090856	MS 1	Nitrate Nitrogen	EPA 300.0	1709601-001	0.321		0.877	0.891	0.5	mg/L	111	114	2
		Nitrite Nitrogen	EPA 300.0	1709601-001	ND		0.112	0.116	0.125	mg/L	90	92	4
QC17090856	MS 2	Nitrate Nitrogen	EPA 300.0	1709601-010	0.051		2.67	2.67	0.5	mg/L	105	105	<1
		Nitrite Nitrogen	EPA 300.0	1709601-010	ND	D	0.560	0.556	0.125	mg/L	90	89	<1
QC17090864	MS 1	Total Phosphorous as P	SM 4500-P E	1709543-001	1.99	SC	1.77	1.75	0.25	mg/L	NC	NC	NC
QC17090864	MS 2	Total Phosphorous as P	SM 4500-P E	1709595-004	0.096		0.369	0.355	0.25	mg/L	109	104	4
QC17090920	MS 1	Total Phosphorous as P	SM 4500-P E	1709600-002	0.387		0.662	0.665	0.25	mg/L	110	111	<1
QC17090920	MS 2	Total Phosphorous as P	SM 4500-P E	1709600-011	0.193		0.417	0.436	0.25	mg/L	90	97	4
QC17090935	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	1709539-011	0.204	M	0.635	0.625	0.5	mg/L	NC	NC	NC
QC17090935	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	1709600-009	1.21		1.68	1.80	0.5	mg/L	94	119	7
QC17090990	MS 1	Total Phosphorous as P	SM 4500-P E	1709600-012	0.190		0.400	0.416	0.25	mg/L	84	91	4
QC17090990	MS 2	Total Phosphorous as P	SM 4500-P E	1709617-003	0.138		0.364	0.364	0.25	mg/L	90	90	<1
QC17091198	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	1709600-013	0.640	M	1.26	1.22	0.5	mg/L	NC	NC	NC
QC17091198	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	1709601-009	0.895		1.38	1.34	0.5	mg/L	98	88	3

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Lab Number 1709600
Report Due Date 10/4/17
Page 1 of 2

Turnaround Time Requirements
Standard
5-Day* 3-Day*
48 Hour* 24 Hour*
*Surcharges Will Apply

Client Balance Hydrologics
Address 12020 Donner Pass Rd Suite B1
City, State & Zip Truckee, CA 96161
Contact Brian Hastings
Phone 530.550.9776 Collector's Name BT
Fax PWS/Project Name City of Reno
P.O. Number PWS/Project Number 213136

Samples Collected From Which State? NV CA Other
Compliance Monitoring? Yes No
Report to Regulatory Agency? Yes No
Report Results Via Fax Mail Only PDF EDD Other:
Standard QC Required? Yes No

Email bhastings@balancehydro.com

Billing Address (If different than Client Address)
Company Balance Hydrologics
Address 800 Bancroft Way Suite 101
City, State & Zip Berkeley CA 94710
Contact Rachel Boitano
Phone 510.704.1000
Fax
Email rboitano@balancehydro.com

SAMPLE ID/LOCATION	DATE	TIME	SAMPLE TYPE	NO. OF CONTAINERS	Total N	Total P	Ortho P	NO3	TSS	TDS	Ecoli				Spl. No.
AC @ TR	9/20/17	9:56	SW	3	X	X	X	X	X	X	X				1
CC @ CB	9/20/17	10:15		2	X	X	X	X	X	X					2
SBC @ RHR	9/20/17	10:55		3	X	X	X		X	X	X				3
WC @ OUW	9/20/17	11:12		3	X	X	X		X	X	X				4
TC @ SMP	9/20/17	12:00		2	X	X	X		X	X					5
SBC @ NAR	9/20/17	12:33		2	X	X	X		X	X					6
NTD @ BFD	9/20/17	13:25		2	X	X	X		X	X					7
NTD @ ORD	9/20/17	14:00		2	X	X	X		X	X					8
YD @ SBC	9/20/17	14:45		2	X	X	X		X	X		1709 - 6			9
BS @ SBC	9/20/17	16:05		2	X	X	X		X	X		600 14			10

Instructions/Comments/Special Requirements:

Sample Matrix/ Type Key** DW = Drinking Water WW = Wastewater SW = Surface Water MW = Monitoring Well SD = Solid/Sludge SO = Soil HW = Hazardous Waste OTHER:

SAMPLE RECEIPT	DATE	TIME	Samples Relinquished By	Samples Received By
Temperature 6.6 °C	9.20	5:30		
Custody Seals Intact? Y N None				
Number of Containers				

WETLAB'S Standard Terms and Conditions apply unless written agreements specify otherwise. Payment terms are Net 30.

Client/Collector attests to the validity and authenticity of this (these) sample(s) and, is (are) aware that tampering with or intentionally mislabeling the sample(s) location, date or time of collection may be considered fraud and subject to legal action (NAC445.0636).

To the maximum extent permitted by law, the Client agrees to limit the liability of WETLAB for the Client's damages to the total compensation received, unless other agreements are made in writing. This limitation shall apply regardless of the cause of action or legal theory pled or asserted.

301.2E

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Lab Number 1709600
Report Due Date
Page 2 of 2

Turnaround Time Requirements
Standard
5-Day* 3-Day*
48 Hour* 24 Hour*
*Surcharges Will Apply

Client
Address
City, State & Zip
Contact
Phone | Collector's Name
Fax | PWS/Project Name
P.O. Number | PWS/Project Number
Email

Samples Collected From Which State? NV CA Other
Compliance Monitoring? Yes No
Report to Regulatory Agency? Yes No
Report Results Via Fax Mail Only PDF EDD Other:
Standard QC Required? Yes No

Billing Address (if different than Client Address)
Company
Address
City, State & Zip
Contact
Phone
Fax
Email

SAMPLE ID/LOCATION	DATE	TIME	SAMPLE TYPE	NO. OF CONTAINERS	Analyses Requested: Total N	Total P	Ortho P	TSS	TDS	Spl. No.
SBC @ CWW (1)	9/19/17	12:00	SW	2	X	X	X	X	X	11
SBC @ CWW (2)	9/19/17	18:00	"	"	X	X	X	X	X	12
SBC @ CWW (3)	9/20/17	0:00	"	"	X	X	X	X	X	13
SBC @ CWW (4)	9/20/17	6:00	"	"	X	X	X	X	X	14

1709600 14

Instructions/Comments/Special Requirements:

Sample Matrix/ Type Key** DW = Drinking Water WW = Wastewater SW = Surface Water MW = Monitoring Well SD = Solid/Sludge SO = Soil HW = Hazardous Waste OTHER:

SAMPLE RECEIPT	DATE	TIME	Samples Relinquished By	Samples Received By
Temperature ____°C				
Custody Seals Intact? Y N None				
Number of Containers				

WETLAB'S Standard Terms and Conditions apply unless written agreements specify otherwise. Payment terms are Net 30.

Client/Collector attests to the validity and authenticity of this (these) sample(s) and, is (are) aware that tampering with or intentionally mislabeling the sample(s) location, date or time of collection may be considered fraud and subject to legal action (NAC445.0636).

To the maximum extent permitted by law, the Client agrees to limit the liability of WETLAB for the Client's damages to the total compensation received, unless other agreements are made in writing. This limitation shall apply regardless of the cause of action or legal theory pled or asserted.

301.2E

12/1/2017

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Brian Hastings

OrderID: *1711571*

Dear: Brian Hastings

This is to transmit the attached analytical report. The analytical data and information contained therein was generated using specified or selected methods contained in references, such as Standard Methods for the Examination of Water and Wastewater, online edition, Methods for Determination of Organic Compounds in Drinking Water, EPA-600/4-79-020, and Test Methods for Evaluation of Solid Waste, Physical/Chemical Methods (SW846) Third Edition.

The samples were received by WETLAB-Western Environmental Testing Laboratory in good condition on 11/16/2017. Additional comments are located on page 2 of this report.

If you should have any questions or comments regarding this report, please do not hesitate to call.

Sincerely,

Jennifer Delaney
QA Specialist

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Western Environmental Testing Laboratory
Report Comments

Balance Hydrologics - 1711571

Specific Report Comments

The result for Orthophosphate on sample 1711571-004 is higher than expected, especially when compared to the result for Total Phosphorus. It is thought that particulate matter contained in the sample interfered with the Orthophosphate result. The particulate matter interferes by deflecting the light used in the spectrophotometric method. The particulate matter did not interfere with the Total Phosphorus analysis since that procedure includes an acid digestion process.

Report Legend

B	--	Blank contamination; Analyte detected above the method reporting limit in an associated blank
D	--	Due to the sample matrix dilution was required in order to properly detect and report the analyte. The reporting limit has been adjusted accordingly.
HT	--	Sample analyzed beyond the accepted holding time
J	--	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
M	--	The matrix spike/matrix spike duplicate (MS/MSD) values for the analysis of this parameter were outside acceptance criteria due to probable matrix interference. The reported result should be considered an estimate.
N	--	There was insufficient sample available to perform a spike and/or duplicate on this analytical batch.
NC	--	Not calculated due to matrix interference
QD	--	The sample duplicate or matrix spike duplicate analysis demonstrated sample imprecision. The reported result should be considered an estimate.
QL	--	The result for the laboratory control sample (LCS) was outside WETLAB acceptance criteria and reanalysis was not possible. The reported data should be considered an estimate.
S	--	Surrogate recovery was outside of laboratory acceptance limits due to matrix interference. The associated blank and LCS surrogate recovery was within acceptance limits
SC	--	Spike recovery not calculated. Sample concentration >4X the spike amount; therefore, the spike could not be adequately recovered
U	--	The analyte was analyzed for, but was not detected above the level of the reported sample reporting/quantitation limit

General Lab Comments

Per method recommendation (section 4.4), Samples analyzed by methods EPA 300.0 and EPA 300.1 have been filtered prior to analysis.

The following is an interpretation of the results from EPA method 9223B:
A result of zero (0) indicates absence for both coliform and Escherichia coli meaning the water meets the microbiological requirements of the U.S. EPA Safe Drinking Water Act (SDWA). A result of one (1) for either test indicates presence and the water does not meet the SDWA requirements. Waters with positive tests should be disinfected by a certified water treatment operator and retested.

Per federal regulation the holding time for the following parameters in aqueous/water samples is 15 minutes: Residual Chlorine, pH, Dissolved Oxygen, Sulfite.

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Western Environmental Testing Laboratory
Analytical Report

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Brian Hastings
Phone: (510-704-1000 **Fax:**

PO\Project: *City or Reno / 213136*

Date Printed: 12/1/2017
OrderID: *1711571*

Customer Sample ID: TC @ SMP
WETLAB Sample ID: 1711571-001

Collect Date/Time: 11/16/2017 00:05
Receive Date: 11/16/2017 13:25

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.15		mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.21	M	mg/L	1	0.010	11/17/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	80		mg/L	1	1.0	11/21/2017	NV00925
Total Nitrogen	Calc.	0.95		mg/L	1	0.22	11/28/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	62		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.023		mg/L	1	0.010	11/16/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND		mg/L	1	0.010	11/16/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.92		mg/L	0.5	0.20	11/28/2017	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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Customer Sample ID: WC @ OVW **Collect Date/Time:** 11/15/2017 23:26
WETLAB Sample ID: 1711571-002 **Receive Date:** 11/16/2017 13:25

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.13	mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.13	mg/L	1	0.010	11/17/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	260	mg/L	1	1.0	11/17/2017	NV00925
Total Nitrogen	Calc.	1.6	mg/L	1	0.22	11/28/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	45	mg/L	1	10	11/17/2017	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.094	mg/L	1	0.010	11/16/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.011	mg/L	1	0.010	11/16/2017	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	1.5	mg/L	0.5	0.20	11/28/2017	NV00925

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Customer Sample ID: AC @ TR **Collect Date/Time:** 11/15/2017 21:20
WETLAB Sample ID: 1711571-003 **Receive Date:** 11/16/2017 13:25

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.099	mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.20	mg/L	1	0.010	11/17/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	18	mg/L	1	1.0	11/17/2017	NV00925
Total Nitrogen	Calc.	1.0	mg/L	1	0.22	11/28/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	330	mg/L	1	10	11/17/2017	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.15	mg/L	1	0.010	11/16/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.010	11/16/2017	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	0.88	mg/L	0.5	0.20	11/28/2017	NV00925

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Customer Sample ID: CC @ CB **Collect Date/Time:** 11/15/2017 21:55
WETLAB Sample ID: 1711571-004 **Receive Date:** 11/16/2017 13:25

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.39		mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.26		mg/L	1	0.010	11/17/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	180		mg/L	1	1.0	11/17/2017	NV00925
Total Nitrogen	Calc.	2.8		mg/L	1	0.30	11/28/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	800		mg/L	1	10	11/17/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.81		mg/L	5	0.050	11/16/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	D	mg/L	5	0.050	11/16/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	2.0		mg/L	0.5	0.20	11/28/2017	NV00925

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Customer Sample ID: SBC @ RHR **Collect Date/Time:** 11/15/2017 23:05
WETLAB Sample ID: 1711571-005 **Receive Date:** 11/16/2017 13:25

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.094	mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.16	mg/L	1	0.010	11/21/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	140	mg/L	1	1.0	11/17/2017	NV00925
Total Nitrogen	Calc.	1.8	mg/L	1	0.22	11/28/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	220	mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.087	mg/L	1	0.010	11/16/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.010	11/16/2017	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	1.7	mg/L	0.5	0.20	11/28/2017	NV00925

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Customer Sample ID: SBC @ NAR **Collect Date/Time:** 11/16/2017 00:36
WETLAB Sample ID: 1711571-006 **Receive Date:** 11/16/2017 13:25

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.17		mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.27		mg/L	1	0.010	11/21/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	490		mg/L	1	1.0	11/21/2017	NV00925
Total Nitrogen	Calc.	1.5		mg/L	1	0.30	11/28/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	410		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.064		mg/L	5	0.050	11/16/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	D	mg/L	5	0.050	11/16/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	1.5		mg/L	0.5	0.20	11/28/2017	NV00925

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Customer Sample ID: NTD @ ORD **Collect Date/Time:** 11/16/2017 01:10
WETLAB Sample ID: 1711571-007 **Receive Date:** 11/16/2017 13:25

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.22		mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.28		mg/L	1	0.010	11/21/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	47		mg/L	1	1.0	11/21/2017	NV00925
Total Nitrogen	Calc.	3.7		mg/L	1	0.30	11/28/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	830		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	1.6		mg/L	5	0.050	11/16/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	D	mg/L	5	0.050	11/16/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	2.0		mg/L	0.5	0.20	11/28/2017	NV00925

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Customer Sample ID: BS @ SBC **Collect Date/Time:** 11/16/2017 12:03
WETLAB Sample ID: 1711571-008 **Receive Date:** 11/16/2017 13:25

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.14	mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.14	mg/L	1	0.010	11/21/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	74	mg/L	1	1.0	11/21/2017	NV00925
Total Nitrogen	Calc.	1.7	mg/L	1	0.22	11/28/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	89	mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.50	mg/L	1	0.010	11/16/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.022	mg/L	1	0.010	11/16/2017	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	1.2	mg/L	0.5	0.20	11/28/2017	NV00925

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Western Environmental Testing Laboratory
QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC17110726	Blank 1	Nitrate Nitrogen	EPA 300.0	ND			mg/L
		Nitrite Nitrogen	EPA 300.0	ND			mg/L
QC17110738	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC17110744	Blank 1	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC17110744	Blank 2	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC17110772	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC17110774	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC17110823	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC17110889	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC17110966	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC17111018	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC17111028	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC17110726	LCS 1	Nitrate Nitrogen	EPA 300.0	0.478	0.500	96	mg/L
		Nitrite Nitrogen	EPA 300.0	0.456	0.500	91	mg/L
QC17110738	LCS 1	Total Phosphorous as P	SM 4500-P E	0.228	0.250	91	mg/L
QC17110744	LCS 1	Orthophosphate, as P	SM 4500-P E	0.244	0.250	97	mg/L
QC17110744	LCS 2	Orthophosphate, as P	SM 4500-P E	0.244	0.250	97	mg/L
QC17110772	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	161	150	107	mg/L
QC17110772	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	159	150	106	mg/L
QC17110774	LCS 1	Total Suspended Solids (TSS)	SM 2540D	199	200	99	mg/L
QC17110774	LCS 2	Total Suspended Solids (TSS)	SM 2540D	199	200	99	mg/L
QC17110823	LCS 1	Total Phosphorous as P	SM 4500-P E	0.241	0.250	96	mg/L
QC17110889	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	152	150	101	mg/L
QC17110889	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	153	150	102	mg/L
QC17110966	LCS 1	Total Suspended Solids (TSS)	SM 2540D	198	200	99	mg/L
QC17110966	LCS 2	Total Suspended Solids (TSS)	SM 2540D	199	200	99	mg/L
QC17111018	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	139	150	93	mg/L
QC17111018	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	142	150	95	mg/L
QC17111028	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	1.02	1.00	102	mg/L

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC17110772	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	1711517-013	520	522	mg/L	<1%
QC17110772	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	1711530-001	363	356	mg/L	2 %
QC17110774	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	1711458-001	106	108	mg/L	2 %
QC17110774	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	1711530-003	5.00	4.67	mg/L	7 %
QC17110889	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	1711673-001	366	375	mg/L	2 %
QC17110966	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	1711571-001	80.0	78.0	mg/L	3 %
QC17110966	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	1711588-001	1.67	1.67	mg/L	<1%
QC17111018	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	1711572-003	175	180	mg/L	3 %
QC17111018	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	1711592-001	362	369	mg/L	2 %

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result	MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %

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QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result		MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC17110726	MS 1	Nitrate Nitrogen	EPA 300.0	1711496-004	ND		0.476	0.494	0.5	mg/L	94	97	4
		Nitrite Nitrogen	EPA 300.0	1711496-004	ND		0.115	0.119	0.125	mg/L	92	95	3
QC17110726	MS 2	Nitrate Nitrogen	EPA 300.0	1711571-008	0.496		1.06	1.08	0.5	mg/L	113	117	2
		Nitrite Nitrogen	EPA 300.0	1711571-008	0.022		0.136	0.143	0.125	mg/L	92	97	5
QC17110738	MS 1	Total Phosphorous as P	SM 4500-P E	1711527-001	0.478		0.699	0.598	0.25	mg/L	88	48	16
QC17110738	MS 2	Total Phosphorous as P	SM 4500-P E	1711571-001	0.208	M	0.318	0.266	0.25	mg/L	NC	NC	NC
QC17110744	MS 1	Orthophosphate, as P	SM 4500-P E	1711571-001	0.150		0.387	0.390	0.25	mg/L	95	96	<1
QC17110744	MS 2	Orthophosphate, as P	SM 4500-P E	1711622-002	ND		0.235	0.239	0.25	mg/L	90	92	2
QC17110744	MS 3	Orthophosphate, as P	SM 4500-P E	1711622-005	0.041		0.273	0.274	0.25	mg/L	93	93	<1
QC17110823	MS 1	Total Phosphorous as P	SM 4500-P E	1711586-001	0.021		0.256	0.249	0.25	mg/L	94	91	3
QC17110823	MS 2	Total Phosphorous as P	SM 4500-P E	1711586-003	0.048		0.281	0.276	0.25	mg/L	93	91	2
QC17111028	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	1711622-001	ND		0.675	0.595	0.5	mg/L	104	88	13
QC17111028	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	1711571-006	1.48		1.98	1.92	0.5	mg/L	99	89	3

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WETLAB
WESTERN ENVIRONMENTAL TESTING LABORATORY
Specializing in Soil, Hazardous Waste and Water Analysis.

475 E. Greg Street #119 | Sparks, Nevada 89431 | www.WETLaboratory.com
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WETLAB Order ID. 1711571
Sparks Control #
Elko Control #
LV Control #
Report Due Date
Page ____ of ____

Client: Balance Hydrologics
Address: 12020 Donner Pass Rd
City, State & Zip: Truckee CA 96162
Contact: Brian Hastings
Phone: 530.550.9776 | Collector's Name: BT
Fax | PWS/Project Name: Truckee City of Reno
P.O. Number | PWS/Project Number: 213136
Email: bhastings@balancehydro.com

Billing Address (if different than Client Address)
Company: Balance Hydrologics
Address: 800 Bancroft Way #101
City, State & Zip: Berkeley CA 94710
Contact: Rachel Boitano
Phone: 510-704-1008 | Fax:
Email: rboitano@balancehydro.com

Turnaround Time Requirements
Standard
5 Day* (25%) | 72 Hour* (50%)
48 Hour* (100%) | 24 Hour* (200%)
*Surcharges Will Apply

Samples Collected From Which State? NV ____ CA ____ Other ____
Compliance Monitoring? Yes No
Report to Regulatory Agency? Yes No

Report Results Via PDF EDD Other ____
Standard QC Required? Yes No

SAMPLE ID/LOCATION	DATE	TIME	PRES TYPE *	SAMPLE TYPE **	NO. OF CONTAINERS	Total N	Total P	Ortho P	NO3	TSS	TDS	Spl. No.
TC @ SMP	11/16/17	00:05	1,2	gg	2	X	X	X		X	X	1
WC @ OVW	11/15/17	23:26				X	X	X		X	X	2
AC @ TR	11/15/17	21:20				X	X	X	X	X	X	3
CC @ CB	11/15/17	21:55				X	X	X	X	X	X	4
SBC @ RHR	11/15/17	23:05				X	X	X		X	X	5
SBC @ NAR	11/16/17	00:36				X	X	X		X	X	6
NTD @ ORD	11/16/17	01:10				X	X	X		X	X	7
BS @ SBC	11/16/17	12:03				X	X	X		X	X	8

Instructions/Comments/Special Requirements:

1711 2 571 8

Sample Matrix Key:** DW = Drinking Water WW = Wastewater SW = Surface Water MW = Monitoring Well SD = Solid/Sludge SO = Soil HW = Hazardous W

***SAMPLE PRESERVATIVES:** 1=Unpreserved 2=H2SO4 3=NaOH 4=HCl 5=HNO3 6=Na2S2O3 7=ZnOAc+NaOH 8=HCl/VOA Vial

Temp	Custody Seal	# of Containers	DATE	TIME	Samples Relinquished By	Samples Received By
4.5 °C	Y N None	16	11/16/17	13:25		
°C	Y N None					
°C	Y N None					
°C	Y N None					

WETLAB'S Standard Terms and Conditions apply unless written agreements specify otherwise. Payment terms are Net 30.

Client/Collector attests to the validity and authenticity of this (these) sample(s) and, is (are) aware that tampering with or intentionally mislabeling the sample(s) location, date or time of collection may be considered fraud and subject to legal action (NAC445.0636). ____ initial

To the maximum extent permitted by law, the Client agrees to limit the liability of WETLAB for the Client's damages to the total compensation received, unless other agreements are made in writing. This limitation shall apply regardless of the cause of action or legal theory pled or asserted. ____ initial

WETLAB will dispose of samples 90 days from sample receipt. Client may request a longer sample storage time for an additional fee. Please contact your Project Manager for details. ____ initial

301.2E

12/4/2017

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Brian Hastings

OrderID: *1711632*

Dear: Brian Hastings

This is to transmit the attached analytical report. The analytical data and information contained therein was generated using specified or selected methods contained in references, such as Standard Methods for the Examination of Water and Wastewater, online edition, Methods for Determination of Organic Compounds in Drinking Water, EPA-600/4-79-020, and Test Methods for Evaluation of Solid Waste, Physical/Chemical Methods (SW846) Third Edition.

The samples were received by WETLAB-Western Environmental Testing Laboratory in good condition on 11/17/2017. Additional comments are located on page 2 of this report.

If you should have any questions or comments regarding this report, please do not hesitate to call.

Sincerely,

Andy Smith
QA Manager

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Western Environmental Testing Laboratory
Report Comments

Balance Hydrologics - 1711632

Specific Report Comments

Due to a laboratory reanalysis requirement the analysis for Nitrate Nitrogen and Nitrite Nitrogen on the submitted samples was performed past the EPA recommended holding time. We apologize for any inconvenience this may have caused.

Report Legend

B	--	Blank contamination; Analyte detected above the method reporting limit in an associated blank
D	--	Due to the sample matrix dilution was required in order to properly detect and report the analyte. The reporting limit has been adjusted accordingly.
HT	--	Sample analyzed beyond the accepted holding time
J	--	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
M	--	The matrix spike/matrix spike duplicate (MS/MSD) values for the analysis of this parameter were outside acceptance criteria due to probable matrix interference. The reported result should be considered an estimate.
N	--	There was insufficient sample available to perform a spike and/or duplicate on this analytical batch.
NC	--	Not calculated due to matrix interference
QD	--	The sample duplicate or matrix spike duplicate analysis demonstrated sample imprecision. The reported result should be considered an estimate.
QL	--	The result for the laboratory control sample (LCS) was outside WETLAB acceptance criteria and reanalysis was not possible. The reported data should be considered an estimate.
S	--	Surrogate recovery was outside of laboratory acceptance limits due to matrix interference. The associated blank and LCS surrogate recovery was within acceptance limits
SC	--	Spike recovery not calculated. Sample concentration >4X the spike amount; therefore, the spike could not be adequately recovered
U	--	The analyte was analyzed for, but was not detected above the level of the reported sample reporting/quantitation limit

General Lab Comments

Per method recommendation (section 4.4), Samples analyzed by methods EPA 300.0 and EPA 300.1 have been filtered prior to analysis.

The following is an interpretation of the results from EPA method 9223B:
A result of zero (0) indicates absence for both coliform and Escherichia coli meaning the water meets the microbiological requirements of the U.S. EPA Safe Drinking Water Act (SDWA). A result of one (1) for either test indicates presence and the water does not meet the SDWA requirements. Waters with positive tests should be disinfected by a certified water treatment operator and retested.

Per federal regulation the holding time for the following parameters in aqueous/water samples is 15 minutes: Residual Chlorine, pH, Dissolved Oxygen, Sulfite.

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Western Environmental Testing Laboratory
Analytical Report

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Brian Hastings
Phone: (510-704-1000 **Fax:**

Date Printed: 12/4/2017
OrderID: *1711632*

PO\Project: *Truckee Meadows / 213136*

Customer Sample ID: SDOE 008936 (1) **Collect Date/Time:** 11/15/2017 21:36
WETLAB Sample ID: 1711632-001 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Total Phosphorous as P	SM 4500-P E	0.20	M	mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	160		mg/L	1	1.0	11/21/2017	NV00925
Total Nitrogen	Calc.	10		mg/L	1	0.26	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	340		mg/L	1	10	11/20/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	7.9	HT	mg/L	5	0.050	11/27/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	2.1		mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: SDOE 008936 (2) **Collect Date/Time:** 11/16/2017 06:48
WETLAB Sample ID: 1711632-002 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Total Phosphorous as P	SM 4500-P E	0.20		mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	170		mg/L	1	1.0	11/21/2017	NV00925
Total Nitrogen	Calc.	1.7		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	48		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.023	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.012	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	1.7		mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: SDOE 008936 (3) **Collect Date/Time:** 11/16/2017 08:47
WETLAB Sample ID: 1711632-003 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Total Phosphorous as P	SM 4500-P E	0.20		mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	140		mg/L	1	1.0	11/21/2017	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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Customer Sample ID: SDOE 008936 (3) **Collect Date/Time:** 11/16/2017 08:47

WETLAB Sample ID: 1711632-003 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
Total Nitrogen	Calc.	2.4		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	68		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.26	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.021	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	2.1		mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: SDOE 008936 (4) **Collect Date/Time:** 11/16/2017 12:25

WETLAB Sample ID: 1711632-004 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Total Phosphorous as P	SM 4500-P E	0.23		mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	56		mg/L	1	1.0	11/21/2017	NV00925
Total Nitrogen	Calc.	1.9		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	130		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.37	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.016	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	1.5		mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: D-16 (1) **Collect Date/Time:** 11/16/2017 00:19

WETLAB Sample ID: 1711632-005 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Total Phosphorous as P	SM 4500-P E	0.34		mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	160		mg/L	1	1.0	11/21/2017	NV00925
Total Nitrogen	Calc.	4.1		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	120		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.023	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	4.1	SC	mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: D-16 (4) **Collect Date/Time:** 11/16/2017 14:47

WETLAB Sample ID: 1711632-006 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Total Phosphorous as P	SM 4500-P E	0.22		mg/L	1	0.010	11/29/2017	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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Customer Sample ID: D-16 (4) **Collect Date/Time:** 11/16/2017 14:47

WETLAB Sample ID: 1711632-006 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
Total Suspended Solids (TSS)	SM 2540D	72		mg/L	1	1.0	11/21/2017	NV00925
Total Nitrogen	Calc.	2.4		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	82		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.18	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.054	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	2.2		mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: C-24 (1) **Collect Date/Time:** 11/15/2017 19:46

WETLAB Sample ID: 1711632-007 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Total Phosphorous as P	SM 4500-P E	0.47		mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	130		mg/L	1	1.0	11/21/2017	NV00925
Total Nitrogen	Calc.	2.8		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	87		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.027	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.014	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	2.8		mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: C-24 (2) **Collect Date/Time:** 11/15/2017 22:30

WETLAB Sample ID: 1711632-008 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Total Phosphorous as P	SM 4500-P E	0.17		mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	25		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	0.82		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	23		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.056	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.76		mg/L	0.5	0.20	11/30/2017	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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Customer Sample ID: C-24 (3) **Collect Date/Time:** 11/16/2017 01:10

WETLAB Sample ID: 1711632-009 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Total Phosphorous as P	SM 4500-P E	0.15		mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	19		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	0.67		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	20		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.15	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.52		mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: C-24 (4) **Collect Date/Time:** 11/16/2017 09:01

WETLAB Sample ID: 1711632-010 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Total Phosphorous as P	SM 4500-P E	0.15		mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	19		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	1.0		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	18		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.24	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.011	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.78		mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: SBC@CWW (1) **Collect Date/Time:** 11/16/2017 02:15

WETLAB Sample ID: 1711632-011 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.099		mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.17	M	mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	58		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	1.4		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	370		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.65	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.72		mg/L	0.5	0.20	11/30/2017	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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Customer Sample ID: SBC@CWW (2) **Collect Date/Time:** 11/16/2017 06:45

WETLAB Sample ID: 1711632-012 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.18		mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.14		mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	210		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	2.0		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	290		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.58	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	1.4		mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: SBC@CWW (3) **Collect Date/Time:** 11/16/2017 17:30

WETLAB Sample ID: 1711632-013 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.33		mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.24		mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	780		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	3.3		mg/L	1	0.24	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	340		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.61	HT	mg/L	2	0.020	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.020	HT	mg/L	2	0.020	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	2.6		mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: SBC@CWW (4) **Collect Date/Time:** 11/17/2017 02:00

WETLAB Sample ID: 1711632-014 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.33		mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.21		mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	380		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	2.4		mg/L	1	0.24	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	320		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.59	HT	mg/L	2	0.020	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.023	HT	mg/L	2	0.020	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	1.8		mg/L	0.5	0.20	11/30/2017	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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Customer Sample ID: NTD@BFD (1) **Collect Date/Time:** 11/16/2017 03:00

WETLAB Sample ID: 1711632-015 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.11		mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.15	M	mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	48		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	3.1		mg/L	1	0.24	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	790		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	2.0	HT	mg/L	2	0.020	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.045	HT	mg/L	2	0.020	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	1.1	M	mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: NTD@BFD (2) **Collect Date/Time:** 11/16/2017 06:30

WETLAB Sample ID: 1711632-016 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.27		mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.21		mg/L	1	0.010	11/30/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	84		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	1.7		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	300		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.13	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.11	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	1.5		mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: NTD@BFD (3) **Collect Date/Time:** 11/16/2017 10:00

WETLAB Sample ID: 1711632-017 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.30		mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.22		mg/L	1	0.010	11/30/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	82		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	1.6		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	140		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.062	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.020	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	1.5		mg/L	0.5	0.20	11/30/2017	NV00925

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Customer Sample ID: NTD@BFD (4) **Collect Date/Time:** 11/16/2017 14:30

WETLAB Sample ID: 1711632-018 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.23		mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.17		mg/L	1	0.010	11/30/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	37		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	1.5		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	140		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.42	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.014	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	1.1		mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: WI@NTD **Collect Date/Time:** 11/16/2017 08:30

WETLAB Sample ID: 1711632-019 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.27		mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.21		mg/L	1	0.010	11/30/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	110		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	1.9		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	290		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.25	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.12	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	1.6		mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: YD@SBC (1) **Collect Date/Time:** 11/16/2017 08:50

WETLAB Sample ID: 1711632-020 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.18		mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.13		mg/L	1	0.010	11/30/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	420		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	2.2		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	180		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.95	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.018	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	1.2		mg/L	0.5	0.20	11/30/2017	NV00925

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Customer Sample ID: YD@SBC(4) **Collect Date/Time:** 11/17/2017 13:20

WETLAB Sample ID: 1711632-021 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.015		mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.11		mg/L	1	0.010	11/30/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	29		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	2.5		mg/L	1	0.24	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	390		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	1.6	HT	mg/L	2	0.020	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.083	HT	mg/L	2	0.020	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.80		mg/L	0.5	0.20	11/30/2017	NV00925

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Western Environmental Testing Laboratory
QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC17110744	Blank 1	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC17110744	Blank 2	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC17110886	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC17110957	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC17110960	Blank 1	Nitrate Nitrogen	EPA 300.0	ND			mg/L
		Nitrite Nitrogen	EPA 300.0	ND			mg/L
QC17110964	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC17110967	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC17110968	Blank 1	Nitrate Nitrogen	EPA 300.0	ND			mg/L
		Nitrite Nitrogen	EPA 300.0	ND			mg/L
QC17111019	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC17111039	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC17111041	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC17111097	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L
QC17111099	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L
QC17120003	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC17110744	LCS 1	Orthophosphate, as P	SM 4500-P E	0.244	0.250	97	mg/L
QC17110744	LCS 2	Orthophosphate, as P	SM 4500-P E	0.244	0.250	97	mg/L
QC17110886	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	138	150	92	mg/L
QC17110886	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	159	150	106	mg/L
QC17110957	LCS 1	Total Suspended Solids (TSS)	SM 2540D	199	200	99	mg/L
QC17110957	LCS 2	Total Suspended Solids (TSS)	SM 2540D	199	200	99	mg/L
QC17110960	LCS 1	Nitrate Nitrogen	EPA 300.0	0.477	0.500	95	mg/L
		Nitrite Nitrogen	EPA 300.0	0.465	0.500	93	mg/L
QC17110964	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	143	150	95	mg/L
QC17110964	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	142	150	95	mg/L
QC17110967	LCS 1	Total Suspended Solids (TSS)	SM 2540D	200	200	100	mg/L
QC17110967	LCS 2	Total Suspended Solids (TSS)	SM 2540D	198	200	99	mg/L
QC17110968	LCS 1	Nitrate Nitrogen	EPA 300.0	0.470	0.500	94	mg/L
		Nitrite Nitrogen	EPA 300.0	0.457	0.500	91	mg/L
QC17111019	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	137	150	91	mg/L
QC17111019	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	142	150	95	mg/L
QC17111039	LCS 1	Total Phosphorous as P	SM 4500-P E	0.236	0.250	94	mg/L
QC17111041	LCS 1	Total Phosphorous as P	SM 4500-P E	0.257	0.250	103	mg/L
QC17111097	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	1.07	1.00	107	mg/L
QC17111099	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	0.960	1.00	96	mg/L
QC17120003	LCS 1	Total Phosphorous as P	SM 4500-P E	0.224	0.250	90	mg/L

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC17110886	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	1711565-002	2856	2900	mg/L	2 %
QC17110886	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	1711634-002	334	342	mg/L	2 %
QC17110957	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	1711617-006	65.6	66.8	mg/L	2 %
QC17110957	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	1711632-005	156	152	mg/L	3 %
QC17110964	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	1711639-002	236	241	mg/L	2 %

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QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC17110964	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	1711639-003	245	237	mg/L	3 %
QC17110967	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	1711632-008	24.7	26.3	mg/L	7 %
QC17110967	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	1711632-018	37.0	37.0	mg/L	<1%
QC17111019	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	1711632-011	366	357	mg/L	2 %
QC17111019	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	1711632-021	390	383	mg/L	2 %

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result		MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC17110744	MS 1	Orthophosphate, as P	SM 4500-P E	1711571-001	0.150		0.387	0.390	0.25	mg/L	95	96	<1
QC17110744	MS 2	Orthophosphate, as P	SM 4500-P E	1711622-002	ND		0.235	0.239	0.25	mg/L	90	92	2
QC17110744	MS 3	Orthophosphate, as P	SM 4500-P E	1711622-005	0.041		0.273	0.274	0.25	mg/L	93	93	<1
QC17110960	MS 1	Nitrate Nitrogen	EPA 300.0	1711617-001	0.079	HT	0.618	0.603	0.5	mg/L	108	105	2
		Nitrite Nitrogen	EPA 300.0	1711617-001	ND	HT	0.127	0.129	0.125	mg/L	99	101	2
QC17110960	MS 2	Nitrate Nitrogen	EPA 300.0	1711632-009	0.149	HT	0.666	0.668	0.5	mg/L	103	104	<1
		Nitrite Nitrogen	EPA 300.0	1711632-009	ND	HT	0.127	0.128	0.125	mg/L	97	98	<1
QC17110968	MS 1	Nitrate Nitrogen	EPA 300.0	1711632-015	2.00	HT	3.05	3.03	0.5	mg/L	106	103	<1
		Nitrite Nitrogen	EPA 300.0	1711632-015	0.045	HT	0.257	0.256	0.125	mg/L	85	84	<1
QC17110968	MS 2	Nitrate Nitrogen	EPA 300.0	1711632-021	1.61	HT	2.64	2.62	0.5	mg/L	103	101	<1
		Nitrite Nitrogen	EPA 300.0	1711632-021	0.083	HT	0.314	0.309	0.125	mg/L	93	91	2
QC17111039	MS 1	Total Phosphorous as P	SM 4500-P E	1711632-001	0.201	M	0.302	0.327	0.25	mg/L	NC	NC	NC
QC17111039	MS 2	Total Phosphorous as P	SM 4500-P E	1711632-010	0.147		0.372	0.356	0.25	mg/L	90	84	4
QC17111041	MS 1	Total Phosphorous as P	SM 4500-P E	1711632-011	0.166	M	0.344	0.400	0.25	mg/L	NC	NC	NC
QC17111041	MS 2	Total Phosphorous as P	SM 4500-P E	1711632-015	0.154	M	0.290	0.355	0.25	mg/L	NC	NC	NC
QC17111097	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	1711624-007	0.342		0.860	0.810	0.5	mg/L	104	94	6
QC17111097	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	1711632-005	4.08	SC	4.86	5.10	0.5	mg/L	NC	NC	NC
QC17111099	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	1711632-015	1.10	M	1.50	1.54	0.5	mg/L	NC	NC	NC
QC17111099	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	1711694-004	ND	M	0.448	0.460	0.5	mg/L	NC	NC	NC
QC17120003	MS 1	Total Phosphorous as P	SM 4500-P E	1711694-001	0.017		0.241	0.241	0.25	mg/L	90	90	<1
QC17120003	MS 2	Total Phosphorous as P	SM 4500-P E	1711694-006	0.021		0.240	0.250	0.25	mg/L	88	92	4

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Lab Number 1711632
Report Due Date
Page 1 of 2

Turnaround Time Requirements
Standard X
5-Day* ____ 3-Day* ____
48 Hour* ____ 24 Hour* ____
*Surcharges Will Apply

Client: Balance Hydrologics, Inc
Address: 800 Bancroft Way Suite 101
City, State & Zip: Berkeley, CA 94710
Contact: Brian Hastings
Phone: (530) 550-9716
Collector's Name: Brian Hastings
Fax:
PWS/Project Name: Truckee Meadows
P.O. Number:
PWS/Project Number: 213136
Email: bhastings@balancehydro.com

Samples Collected From Which State? NV X CA ____ Other ____
Compliance Monitoring? Yes / No (No)
Report to Regulatory Agency? Yes / No (No)
Report Results Via Fax / Mail Only / PDF (PDF) / EDD / Other: ____
Standard QC Required? Yes (Yes) / No

Billing Address (if different than Client Address)
Company ____
Address ____
City, State & Zip ____
Contact ____
Phone ____
Fax ____
Email ____

SAMPLE ID/LOCATION	DATE	TIME	SAMPLE TYPE	NO. OF CONTAINERS	Total Nitrogen	Nitrate (NO3)	Total Phosphorus	TSS	TDS	Spl. No.
SDOE 008936 (1)	11/15	21:36	SW	2	X	X	X	X	X	1
SDOE 008936 (2)	11/16	6:48	SW	2	X	X	X	X	X	2
SDOE 008936 (3)	11/16	9:47	SW	2	X	X	X	X	X	3
SDOE 008936 (4)	11/16	12:25	SW	2	X	X	X	X	X	4
D-16 (1)	11/16	00:19	SW	2	X	X	X	X	X	5
~~D-16 (1) BKW~~			S							~~6~~
~~D-16 (1) BKW~~										~~7~~
D-16 (4)	11/16	1447	SW	2	X	X	X	X	X	8
C-24 (1)	11/15	1946	SW	2	X	X	X	X	X	9
C-24 (2)	11/15	2230	SW	2	X	X	X	X	X	10
C-24 (3)	11/16	1:10	SW	2	X	X	X	X	X	11
C-24 (4)	11/16	9:01	SW	2	X	X	X	X	X	12

1711 2 8 6 9 7
632 21 10 11 12

Instructions/Comments/Special Requirements:

Sample Matrix/Type Key** DW = Drinking Water WW = Wastewater SW = Surface Water MW = Monitoring Well SD = Solid/Sludge SO = Soil HW = Hazardous Waste OTHER: ____

SAMPLE RECEIPT	DATE	TIME	Samples Relinquished By	Samples Received By
Temperature 1.5 °C	11/17	1545	[signature]	[signature]
Custody Seals Intact? Y N None				
Number of Containers ____				

WETLAB'S Standard Terms and Conditions apply unless written agreements specify otherwise. Payment terms are Net 30.

Client/Collector attests to the validity and authenticity of this (these) sample(s) and, is (are) aware that tampering with or intentionally mislabeling the sample(s) location, date or time of collection may be considered fraud and subject to legal action (NAC445.0636).

To the maximum extent permitted by law, the Client agrees to limit the liability of WETLAB for the Client's damages to the total compensation received, unless other agreements are made in writing. This limitation shall apply regardless of the cause of action or legal theory pled or asserted.

301.2E

WETLAB
WESTERN ENVIRONMENTAL TESTING LABORATORY
Specializing in Soil, Hazardous Waste and Water Analysis.

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Lab Number 1711632
Report Due Date
Page 1 of 2

Client: Balance Hydrologics, Inc.
Address: 800 Bancroft Way Suite 101
City, State & Zip: Berkeley, CA 94710
Contact: Brian Hastings
Phone: (530) 550-9776
Collector's Name: Brian Hastings
Fax:
PWS/Project Name: Truckee Meadows
P.O. Number:
PWS/Project Number: 43136
Email: bhastings@balancehyd.com

Turnaround Time Requirements
Standard X
5-Day* ____ 3-Day* ____
48 Hour* ____ 24 Hour* ____
*Surcharges Will Apply

Samples Collected From Which State? NV X CA ____ Other ____
Compliance Monitoring? Yes No
Report to Regulatory Agency? Yes No

Report Results Via Fax - Mail Only; PDF EDD; Other: ____
Standard QC Required? Yes No

Billing Address (if different than Client Address)
Company ____
Address ____
City, State & Zip ____
Contact ____
Phone ____
Fax ____
Email ____

SAMPLE ID/LOCATION	DATE	TIME	SAMPLE TYPE	NO. OF CONTAINERS	Total Nitrogen	Total Phosphorus	Ortho-P	TSS	TDS	Spl. No.
SBC@CWW (1)	11/16	2:15	SW	2	X	X	X	X	X	11
SBC@CWW (2)	11/16	6:45	SW	2	X	X	X	X	X	12
SBC@CWW (3)	11/16	17:30	SW	2	X	X	X	X	X	13
SBC@CWW (4)	11/17	02:00	SW	2	X	X	X	X	X	14
NTD@BFD (1)	11/16	300	SW	2	X	X	X	X	X	15
NTD@BFD (2)	11/16	630	SW	2	X	X	X	X	X	16
NTD@BFD (3)	11/16	1000	SW	2	X	X	X	X	X	17
NTD@BFD (4)	11/16	1430	SW	2	X	X	X	X	X	18
WI@NTD	11/16	1630	SW	2	X	X	X	X	X	19
YD@SBC (1)	11/16	8:50	SW	1	X	X	X	X	X	20
YD@SBC (4)	11/17	13:20	SW	2	X	X	X	X	X	21

1711 632

Instructions/Comments/Special Requirements:

Sample Matrix/Type Key** DW = Drinking Water WW = Wastewater SW = Surface Water MW = Monitoring Well SD = Solid/Sludge SO = Soil HW = Hazardous Waste OTHER: ____

SAMPLE RECEIPT	DATE	TIME	Samples Relinquished By	Samples Received By
Temperature 7.0 °C	11/17	1545		
Custody Seals Intact? Y N None				
Number of Containers ____				

WETLAB'S Standard Terms and Conditions apply unless written agreements specify otherwise. Payment terms are Net 30.

Client/Collector attests to the validity and authenticity of this (these) sample(s) and, is (are) aware that tampering with or intentionally mislabeling the sample(s) location, date or time of collection may be considered fraud and subject to legal action (NAC445.0636).

To the maximum extent permitted by law, the Client agrees to limit the liability of WETLAB for the Client's damages to the total compensation received, unless other agreements are made in writing. This limitation shall apply regardless of the cause of action or legal theory pled or asserted.

301.2E

12/11/2017

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Brian Hastings

OrderID: *1711632*
Amended

Dear: Brian Hastings

This is to transmit the attached analytical report. The analytical data and information contained therein was generated using specified or selected methods contained in references, such as Standard Methods for the Examination of Water and Wastewater, online edition, Methods for Determination of Organic Compounds in Drinking Water, EPA-600/4-79-020, and Test Methods for Evaluation of Solid Waste, Physical/Chemical Methods (SW846) Third Edition.

The samples were received by WETLAB-Western Environmental Testing Laboratory in good condition on 11/17/2017. Additional comments are located on page 2 of this report.

This is an amended report that includes results for Orthophosphate per client request. If you should have any questions or comments regarding this report, please do not hesitate to call.

Sincerely,

Andy Smith
QA Manager

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Western Environmental Testing Laboratory
Report Comments

Balance Hydrologics - 1711632 Amended

Specific Report Comments

Due to a laboratory reanalysis requirement the analysis for Nitrate Nitrogen and Nitrite Nitrogen on the submitted samples was performed past the EPA recommended holding time. We apologize for any inconvenience this may have caused.

Report Legend

B	--	Blank contamination; Analyte detected above the method reporting limit in an associated blank
D	--	Due to the sample matrix dilution was required in order to properly detect and report the analyte. The reporting limit has been adjusted accordingly.
HT	--	Sample analyzed beyond the accepted holding time
J	--	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
M	--	The matrix spike/matrix spike duplicate (MS/MSD) values for the analysis of this parameter were outside acceptance criteria due to probable matrix interference. The reported result should be considered an estimate.
N	--	There was insufficient sample available to perform a spike and/or duplicate on this analytical batch.
NC	--	Not calculated due to matrix interference
QD	--	The sample duplicate or matrix spike duplicate analysis demonstrated sample imprecision. The reported result should be considered an estimate.
QL	--	The result for the laboratory control sample (LCS) was outside WETLAB acceptance criteria and reanalysis was not possible. The reported data should be considered an estimate.
S	--	Surrogate recovery was outside of laboratory acceptance limits due to matrix interference. The associated blank and LCS surrogate recovery was within acceptance limits
SC	--	Spike recovery not calculated. Sample concentration >4X the spike amount; therefore, the spike could not be adequately recovered
U	--	The analyte was analyzed for, but was not detected above the level of the reported sample reporting/quantitation limit

General Lab Comments

Per method recommendation (section 4.4), Samples analyzed by methods EPA 300.0 and EPA 300.1 have been filtered prior to analysis.

The following is an interpretation of the results from EPA method 9223B:
A result of zero (0) indicates absence for both coliform and Escherichia coli meaning the water meets the microbiological requirements of the U.S. EPA Safe Drinking Water Act (SDWA). A result of one (1) for either test indicates presence and the water does not meet the SDWA requirements. Waters with positive tests should be disinfected by a certified water treatment operator and retested.

Per federal regulation the holding time for the following parameters in aqueous/water samples is 15 minutes: Residual Chlorine, pH, Dissolved Oxygen, Sulfite.

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Western Environmental Testing Laboratory
Analytical Report

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Brian Hastings
Phone: (510-704-1000 **Fax:**

Date Printed: 12/11/2017
OrderID: *1711632*
Amended

PO\Project: *Truckee Meadows / 213136*

Customer Sample ID: SDOE 008936 (1) **Collect Date/Time:** 11/15/2017 21:36
WETLAB Sample ID: 1711632-001 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.074	HT	mg/L	1	0.010	12/7/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.20	M	mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	160		mg/L	1	1.0	11/21/2017	NV00925
Total Nitrogen	Calc.	10		mg/L	1	0.26	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	340		mg/L	1	10	11/20/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	7.9	HT	mg/L	5	0.050	11/27/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	2.1		mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: SDOE 008936 (2) **Collect Date/Time:** 11/16/2017 06:48
WETLAB Sample ID: 1711632-002 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.072	HT	mg/L	1	0.010	12/7/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.20		mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	170		mg/L	1	1.0	11/21/2017	NV00925
Total Nitrogen	Calc.	1.7		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	48		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.023	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.012	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	1.7		mg/L	0.5	0.20	11/30/2017	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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Customer Sample ID: SDOE 008936 (3) **Collect Date/Time:** 11/16/2017 08:47

WETLAB Sample ID: 1711632-003 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.096	HT	mg/L	1	0.010	12/7/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.20		mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	140		mg/L	1	1.0	11/21/2017	NV00925
Total Nitrogen	Calc.	2.4		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	68		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.26	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.021	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	2.1		mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: SDOE 008936 (4) **Collect Date/Time:** 11/16/2017 12:25

WETLAB Sample ID: 1711632-004 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.19	HT	mg/L	1	0.010	12/7/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.23		mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	56		mg/L	1	1.0	11/21/2017	NV00925
Total Nitrogen	Calc.	1.9		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	130		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.37	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.016	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	1.5		mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: D-16 (1) **Collect Date/Time:** 11/16/2017 00:19

WETLAB Sample ID: 1711632-005 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.092	HT	mg/L	1	0.010	12/7/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.34		mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	160		mg/L	1	1.0	11/21/2017	NV00925
Total Nitrogen	Calc.	4.1		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	120		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.023	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	4.1	SC	mg/L	0.5	0.20	11/30/2017	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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Customer Sample ID: D-16 (4) **Collect Date/Time:** 11/16/2017 14:47

WETLAB Sample ID: 1711632-006 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.23	HT	mg/L	1	0.010	12/7/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.22		mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	72		mg/L	1	1.0	11/21/2017	NV00925
Total Nitrogen	Calc.	2.4		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	82		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.18	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.054	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	2.2		mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: C-24 (1) **Collect Date/Time:** 11/15/2017 19:46

WETLAB Sample ID: 1711632-007 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.20	HT	mg/L	1	0.010	12/7/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.47		mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	130		mg/L	1	1.0	11/21/2017	NV00925
Total Nitrogen	Calc.	2.8		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	87		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.027	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.014	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	2.8		mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: C-24 (2) **Collect Date/Time:** 11/15/2017 22:30

WETLAB Sample ID: 1711632-008 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.084	HT	mg/L	1	0.010	12/7/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.17		mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	25		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	0.82		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	23		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.056	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.76		mg/L	0.5	0.20	11/30/2017	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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Customer Sample ID: C-24 (3) **Collect Date/Time:** 11/16/2017 01:10

WETLAB Sample ID: 1711632-009 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.070	HT	mg/L	1	0.010	12/7/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.15		mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	19		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	0.67		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	20		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.15	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.52		mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: C-24 (4) **Collect Date/Time:** 11/16/2017 09:01

WETLAB Sample ID: 1711632-010 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.093	HT	mg/L	1	0.010	12/7/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.15		mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	19		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	1.0		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	18		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.24	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.011	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.78		mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: SBC@CWW (1) **Collect Date/Time:** 11/16/2017 02:15

WETLAB Sample ID: 1711632-011 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.099		mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.17	M	mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	58		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	1.4		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	370		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.65	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.72		mg/L	0.5	0.20	11/30/2017	NV00925

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EPA LAB ID: NV00932

Customer Sample ID: SBC@CWW (2) **Collect Date/Time:** 11/16/2017 06:45

WETLAB Sample ID: 1711632-012 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.18		mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.14		mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	210		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	2.0		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	290		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.58	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	ND	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	1.4		mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: SBC@CWW (3) **Collect Date/Time:** 11/16/2017 17:30

WETLAB Sample ID: 1711632-013 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.33		mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.24		mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	780		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	3.3		mg/L	1	0.24	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	340		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.61	HT	mg/L	2	0.020	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.020	HT	mg/L	2	0.020	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	2.6		mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: SBC@CWW (4) **Collect Date/Time:** 11/17/2017 02:00

WETLAB Sample ID: 1711632-014 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.33		mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.21		mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	380		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	2.4		mg/L	1	0.24	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	320		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.59	HT	mg/L	2	0.020	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.023	HT	mg/L	2	0.020	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	1.8		mg/L	0.5	0.20	11/30/2017	NV00925

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Customer Sample ID: NTD@BFD (1) **Collect Date/Time:** 11/16/2017 03:00

WETLAB Sample ID: 1711632-015 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.11		mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.15	M	mg/L	1	0.010	11/29/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	48		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	3.1		mg/L	1	0.24	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	790		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	2.0	HT	mg/L	2	0.020	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.045	HT	mg/L	2	0.020	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	1.1	M	mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: NTD@BFD (2) **Collect Date/Time:** 11/16/2017 06:30

WETLAB Sample ID: 1711632-016 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.27		mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.21		mg/L	1	0.010	11/30/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	84		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	1.7		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	300		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.13	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.11	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	1.5		mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: NTD@BFD (3) **Collect Date/Time:** 11/16/2017 10:00

WETLAB Sample ID: 1711632-017 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.30		mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.22		mg/L	1	0.010	11/30/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	82		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	1.6		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	140		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.062	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.020	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	1.5		mg/L	0.5	0.20	11/30/2017	NV00925

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Customer Sample ID: NTD@BFD (4) **Collect Date/Time:** 11/16/2017 14:30

WETLAB Sample ID: 1711632-018 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.23		mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.17		mg/L	1	0.010	11/30/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	37		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	1.5		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	140		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.42	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.014	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	1.1		mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: WI@NTD **Collect Date/Time:** 11/16/2017 08:30

WETLAB Sample ID: 1711632-019 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.27		mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.21		mg/L	1	0.010	11/30/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	110		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	1.9		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	290		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.25	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.12	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	1.6		mg/L	0.5	0.20	11/30/2017	NV00925

Customer Sample ID: YD@SBC (1) **Collect Date/Time:** 11/16/2017 08:50

WETLAB Sample ID: 1711632-020 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.18		mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.13		mg/L	1	0.010	11/30/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	420		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	2.2		mg/L	1	0.22	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	180		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.95	HT	mg/L	1	0.010	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.018	HT	mg/L	1	0.010	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	1.2		mg/L	0.5	0.20	11/30/2017	NV00925

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Customer Sample ID: YD@SBC(4) **Collect Date/Time:** 11/17/2017 13:20

WETLAB Sample ID: 1711632-021 **Receive Date:** 11/17/2017 15:45

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.015		mg/L	1	0.010	11/17/2017	NV00925
Total Phosphorous as P	SM 4500-P E	0.11		mg/L	1	0.010	11/30/2017	NV00925
Total Suspended Solids (TSS)	SM 2540D	29		mg/L	1	1.0	11/22/2017	NV00925
Total Nitrogen	Calc.	2.5		mg/L	1	0.24	11/30/2017	NV00925
Total Dissolved Solids (TDS)	SM 2540C	390		mg/L	1	10	11/21/2017	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	1.6	HT	mg/L	2	0.020	11/23/2017	NV00925
Nitrite Nitrogen	EPA 300.0	0.083	HT	mg/L	2	0.020	11/23/2017	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.80		mg/L	0.5	0.20	11/30/2017	NV00925

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Western Environmental Testing Laboratory
QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC17110744	Blank 1	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC17110744	Blank 2	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC17110886	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC17110957	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC17110960	Blank 1	Nitrate Nitrogen	EPA 300.0	ND			mg/L
		Nitrite Nitrogen	EPA 300.0	ND			mg/L
QC17110964	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC17110967	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC17110968	Blank 1	Nitrate Nitrogen	EPA 300.0	ND			mg/L
		Nitrite Nitrogen	EPA 300.0	ND			mg/L
QC17111019	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC17111039	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC17111041	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC17111097	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L
QC17111099	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L
QC17120003	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC17120263	Blank 1	Orthophosphate, as P	SM 4500-P E	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC17110744	LCS 1	Orthophosphate, as P	SM 4500-P E	0.244	0.250	97	mg/L
QC17110744	LCS 2	Orthophosphate, as P	SM 4500-P E	0.244	0.250	97	mg/L
QC17110886	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	138	150	92	mg/L
QC17110886	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	159	150	106	mg/L
QC17110957	LCS 1	Total Suspended Solids (TSS)	SM 2540D	199	200	99	mg/L
QC17110957	LCS 2	Total Suspended Solids (TSS)	SM 2540D	199	200	99	mg/L
QC17110960	LCS 1	Nitrate Nitrogen	EPA 300.0	0.477	0.500	95	mg/L
		Nitrite Nitrogen	EPA 300.0	0.465	0.500	93	mg/L
QC17110964	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	143	150	95	mg/L
QC17110964	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	142	150	95	mg/L
QC17110967	LCS 1	Total Suspended Solids (TSS)	SM 2540D	200	200	100	mg/L
QC17110967	LCS 2	Total Suspended Solids (TSS)	SM 2540D	198	200	99	mg/L
QC17110968	LCS 1	Nitrate Nitrogen	EPA 300.0	0.470	0.500	94	mg/L
		Nitrite Nitrogen	EPA 300.0	0.457	0.500	91	mg/L
QC17111019	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	137	150	91	mg/L
QC17111019	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	142	150	95	mg/L
QC17111039	LCS 1	Total Phosphorous as P	SM 4500-P E	0.236	0.250	94	mg/L
QC17111041	LCS 1	Total Phosphorous as P	SM 4500-P E	0.257	0.250	103	mg/L
QC17111097	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	1.07	1.00	107	mg/L
QC17111099	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	0.960	1.00	96	mg/L
QC17120003	LCS 1	Total Phosphorous as P	SM 4500-P E	0.224	0.250	90	mg/L
QC17120263	LCS 1	Orthophosphate, as P	SM 4500-P E	0.253	0.250	101	mg/L

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC17110886	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	1711565-002	2856	2900	mg/L	2 %
QC17110886	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	1711634-002	334	342	mg/L	2 %
QC17110957	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	1711617-006	65.6	66.8	mg/L	2 %
QC17110957	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	1711632-005	156	152	mg/L	3 %

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QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC17110964	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	1711639-002	236	241	mg/L	2 %
QC17110964	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	1711639-003	245	237	mg/L	3 %
QC17110967	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	1711632-008	24.7	26.3	mg/L	7 %
QC17110967	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	1711632-018	37.0	37.0	mg/L	<1%
QC17111019	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	1711632-011	366	357	mg/L	2 %
QC17111019	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	1711632-021	390	383	mg/L	2 %

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result		MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC17110744	MS 1	Orthophosphate, as P	SM 4500-P E	1711571-001	0.150		0.387	0.390	0.25	mg/L	95	96	<1
QC17110744	MS 2	Orthophosphate, as P	SM 4500-P E	1711622-002	ND		0.235	0.239	0.25	mg/L	90	92	2
QC17110744	MS 3	Orthophosphate, as P	SM 4500-P E	1711622-005	0.041		0.273	0.274	0.25	mg/L	93	93	<1
QC17110960	MS 1	Nitrate Nitrogen	EPA 300.0	1711617-001	0.079	HT	0.618	0.603	0.5	mg/L	108	105	2
		Nitrite Nitrogen	EPA 300.0	1711617-001	ND	HT	0.127	0.129	0.125	mg/L	99	101	2
QC17110960	MS 2	Nitrate Nitrogen	EPA 300.0	1711632-009	0.149	HT	0.666	0.668	0.5	mg/L	103	104	<1
		Nitrite Nitrogen	EPA 300.0	1711632-009	ND	HT	0.127	0.128	0.125	mg/L	97	98	<1
QC17110968	MS 1	Nitrate Nitrogen	EPA 300.0	1711632-015	2.00	HT	3.05	3.03	0.5	mg/L	106	103	<1
		Nitrite Nitrogen	EPA 300.0	1711632-015	0.045	HT	0.257	0.256	0.125	mg/L	85	84	<1
QC17110968	MS 2	Nitrate Nitrogen	EPA 300.0	1711632-021	1.61	HT	2.64	2.62	0.5	mg/L	103	101	<1
		Nitrite Nitrogen	EPA 300.0	1711632-021	0.083	HT	0.314	0.309	0.125	mg/L	93	91	2
QC17111039	MS 1	Total Phosphorous as P	SM 4500-P E	1711632-001	0.201	M	0.302	0.327	0.25	mg/L	NC	NC	NC
QC17111039	MS 2	Total Phosphorous as P	SM 4500-P E	1711632-010	0.147		0.372	0.356	0.25	mg/L	90	84	4
QC17111041	MS 1	Total Phosphorous as P	SM 4500-P E	1711632-011	0.166	M	0.344	0.400	0.25	mg/L	NC	NC	NC
QC17111041	MS 2	Total Phosphorous as P	SM 4500-P E	1711632-015	0.154	M	0.290	0.355	0.25	mg/L	NC	NC	NC
QC17111097	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	1711624-007	0.342		0.860	0.810	0.5	mg/L	104	94	6
QC17111097	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	1711632-005	4.08	SC	4.86	5.10	0.5	mg/L	NC	NC	NC
QC17111099	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	1711632-015	1.10	M	1.50	1.54	0.5	mg/L	NC	NC	NC
QC17111099	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	1711694-004	ND	M,	0.448	0.460	0.5	mg/L	NC	NC	NC
QC17120003	MS 1	Total Phosphorous as P	SM 4500-P E	1711694-001	0.017		0.241	0.241	0.25	mg/L	90	90	<1
QC17120003	MS 2	Total Phosphorous as P	SM 4500-P E	1711694-006	0.021		0.240	0.250	0.25	mg/L	88	92	4
QC17120263	MS 1	Orthophosphate, as P	SM 4500-P E	1711632-001	0.074	HT	0.296	0.299	0.25	mg/L	89	90	1

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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Lab Number 1711632
Report Due Date
Page 1 of 2

Turnaround Time Requirements
Standard X
5-Day* ____ 3-Day* ____
48 Hour* ____ 24 Hour* ____
*Surcharges Will Apply

Client: Balance Hydrologics, Inc
Address: 800 Bancroft Way Suite 101
City, State & Zip: Berkeley, CA 94710
Contact: Brian Hastings
Phone: (530) 550-9716
Collector's Name: Brian Hastings
Fax:
PWS/Project Name: Truckee Meadows
P.O. Number:
PWS/Project Number: 213136
Email: bhastings@balancehydro.com

Samples Collected From Which State? NV X CA ____ Other ____
Compliance Monitoring? Yes / No (No)
Report to Regulatory Agency? Yes / No (No)
Report Results Via Fax / Mail Only / PDF (PDF) / EDD / Other: ____
Standard QC Required? Yes (Yes) / No

Billing Address (if different than Client Address)
Company ____
Address ____
City, State & Zip ____
Contact ____
Phone ____
Fax ____
Email ____

SAMPLE ID/LOCATION	DATE	TIME	SAMPLE TYPE	NO. OF CONTAINERS	Total Nitrogen	Nitrate (NO3)	Total Phosphorus	TSS	TDS	Spl. No.
SDOE 008936 (1)	11/15	21:36	SW	2	X	X	X	X	X	1
SDOE 008936 (2)	11/16	6:48	SW	2	X	X	X	X	X	2
SDOE 008936 (3)	11/16	9:47	SW	2	X	X	X	X	X	3
SDOE 008936 (4)	11/16	12:25	SW	2	X	X	X	X	X	4
D-16 (1)	11/16	00:19	SW	2	X	X	X	X	X	5
~~D-16 (1) BKW~~			S							~~6~~
~~D-16 (1) BKW~~										~~7~~
D-16 (4)	11/16	1447	SW	2	X	X	X	X	X	8
C-24 (1)	11/15	1946	SW	2	X	X	X	X	X	9
C-24 (2)	11/15	2230	SW	2	X	X	X	X	X	10
C-24 (3)	11/16	1:10	SW	2	X	X	X	X	X	11
C-24 (4)	11/16	9:01	SW	2	X	X	X	X	X	12

1711 2 8 6 9 7
632 21 10 11 12

Instructions/Comments/Special Requirements:

Sample Matrix/Type Key** DW = Drinking Water WW = Wastewater SW = Surface Water MW = Monitoring Well SD = Solid/Sludge SO = Soil HW = Hazardous Waste OTHER: ____

SAMPLE RECEIPT	DATE	TIME	Samples Relinquished By	Samples Received By
Temperature 1.5 °C	11/17	1545	[signature]	[signature]
Custody Seals Intact? Y N None				
Number of Containers ____				

WETLAB'S Standard Terms and Conditions apply unless written agreements specify otherwise. Payment terms are Net 30.

Client/Collector attests to the validity and authenticity of this (these) sample(s) and, is (are) aware that tampering with or intentionally mislabeling the sample(s) location, date or time of collection may be considered fraud and subject to legal action (NAC445.0636).

To the maximum extent permitted by law, the Client agrees to limit the liability of WETLAB for the Client's damages to the total compensation received, unless other agreements are made in writing. This limitation shall apply regardless of the cause of action or legal theory pled or asserted.

301.2E

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Lab Number 1711632
Report Due Date
Page 1 of 2

Client: Balance Hydrologics, Inc.
Address: 800 Bancroft Way Suite 101
City, State & Zip: Berkeley, CA 94710
Contact: Brian Hastings
Phone: (530) 550-9776
Collector's Name: Brian Hastings
Fax:
PWS/Project Name: Truckee Meadows
P.O. Number:
PWS/Project Number: 43136
Email: bhastings@balancehyd.com

Turnaround Time Requirements
Standard X
5-Day* ____ 3-Day* ____
48 Hour* ____ 24 Hour* ____
*Surcharges Will Apply

Samples Collected From Which State? NV X CA ____ Other ____
Compliance Monitoring? Yes No
Report to Regulatory Agency? Yes No

Report Results Via Fax - Mail Only; PDF EDD; Other: ____
Standard QC Required? Yes No

Billing Address (if different than Client Address)
Company ____
Address ____
City, State & Zip ____
Contact ____
Phone ____
Fax ____
Email ____

SAMPLE ID/LOCATION	DATE	TIME	SAMPLE TYPE	NO. OF CONTAINERS	Total Nitrogen	Total Phosphorus	Ortho-P	TSS	TDS	Spl. No.
SBC@CWW (1)	11/16	2:15	SW	2	X	X	X	X	X	11
SBC@CWW (2)	11/16	6:45	SW	2	X	X	X	X	X	12
SBC@CWW (3)	11/16	17:30	SW	2	X	X	X	X	X	13
SBC@CWW (4)	11/17	02:00	SW	2	X	X	X	X	X	14
NTD@BFD (1)	11/16	300	SW	2	X	X	X	X	X	15
NTD@BFD (2)	11/16	630	SW	2	X	X	X	X	X	16
NTD@BFD (3)	11/16	1000	SW	2	X	X	X	X	X	17
NTD@BFD (4)	11/16	1430	SW	2	X	X	X	X	X	18
WI@NTD	11/16	1630	SW	2	X	X	X	X	X	19
YD@SBC (1)	11/16	8:50	SW	1	X	X	X	X	X	20
YD@SBC (4)	11/17	13:20	SW	2	X	X	X	X	X	21

1711 632

Instructions/Comments/Special Requirements:

Sample Matrix/Type Key** DW = Drinking Water WW = Wastewater SW = Surface Water MW = Monitoring Well SD = Solid/Sludge SO = Soil HW = Hazardous Waste OTHER: ____

SAMPLE RECEIPT	DATE	TIME	Samples Relinquished By	Samples Received By
Temperature 7.0 °C	11/17	1545		
Custody Seals Intact? Y N None				
Number of Containers ____				

WETLAB'S Standard Terms and Conditions apply unless written agreements specify otherwise. Payment terms are Net 30.

Client/Collector attests to the validity and authenticity of this (these) sample(s) and, is (are) aware that tampering with or intentionally mislabeling the sample(s) location, date or time of collection may be considered fraud and subject to legal action (NAC445.0636).

To the maximum extent permitted by law, the Client agrees to limit the liability of WETLAB for the Client's damages to the total compensation received, unless other agreements are made in writing. This limitation shall apply regardless of the cause of action or legal theory pled or asserted.

301.2E

WETLAB
WESTERN ENVIRONMENTAL TESTING LABORATORY

Sample Receiving Checklist

Customer: Balance Hydrologics
Contact: Brian Hastings
OrderID: 1801598
PO: 213136
ProjectID:

Date Received: 1/19/2018
Time Received: 10:50
Order Due Date: 2/2/2018
Temperature Upon Receipt: 6.1C Cooler + wet ice

WETLab SampleNumber: 1801598-001 ***Customer SampleNumber: D-16 (1)*** ***Sample Date/Time: 1/18/2018 9:36:00 PM***

[TDS with Prep]

Method: SM 2540C

Total Dissolved Solids (TDS)

[Additional Parameters]

Method: Calc.

Total Nitrogen

Method: EPA 300.0

Nitrate Nitrogen, Nitrite Nitrogen

Method: EPA 351.2

Total Kjeldahl Nitrogen

Method: SM 2540D

Total Suspended Solids (TSS)

Method: SM 4500-P E

Orthophosphate, as P

Total Phosphorous as P

WETLab SampleNumber: 1801598-002 ***Customer SampleNumber: D-16(2)*** ***Sample Date/Time: 1/18/2018 ##########***

[TDS with Prep]

Method: SM 2540C

Total Dissolved Solids (TDS)

[Additional Parameters]

Method: Calc.

Total Nitrogen

Method: EPA 300.0

Nitrate Nitrogen, Nitrite Nitrogen

Method: EPA 351.2

Total Kjeldahl Nitrogen

Method: SM 2540D

Total Suspended Solids (TSS)

Method: SM 4500-P E

Orthophosphate, as P

Total Phosphorous as P

WETLab SampleNumber: 1801598-003 ***Customer SampleNumber: D-16(3)*** ***Sample Date/Time: 1/18/2018 ##########***

[TDS with Prep]

Method: SM 2540C

Total Dissolved Solids (TDS)

[Additional Parameters]

Method: Calc.

Total Nitrogen

Method: EPA 300.0

Nitrate Nitrogen, Nitrite Nitrogen

Method: EPA 351.2

Total Kjeldahl Nitrogen

Method: SM 2540D

Total Suspended Solids (TSS)

Method: SM 4500-P E

Orthophosphate, as P

Total Phosphorous as P

WETLab SampleNumber: 1801598-004 ***Customer SampleNumber: D-16(4)*** ***Sample Date/Time: 1/18/2018 ###########***

[TDS with Prep]

Method: SM 2540C

Total Dissolved Solids (TDS)

[Additional Parameters]

Method: Calc.

Total Nitrogen

Method: EPA 300.0

Nitrate Nitrogen, Nitrite Nitrogen

Method: EPA 351.2

Total Kjeldahl Nitrogen

Method: SM 2540D

Total Suspended Solids (TSS)

Method: SM 4500-P E

Orthophosphate, as P

Total Phosphorous as P

2/8/2018

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Brian Hastings

OrderID: *1801598*

Dear: Brian Hastings

This is to transmit the attached analytical report. The analytical data and information contained therein was generated using specified or selected methods contained in references, such as Standard Methods for the Examination of Water and Wastewater, online edition, Methods for Determination of Organic Compounds in Drinking Water, EPA-600/4-79-020, and Test Methods for Evaluation of Solid Waste, Physical/Chemical Methods (SW846) Third Edition.

The samples were received by WETLAB-Western Environmental Testing Laboratory in good condition on 1/19/2018. Additional comments are located on page 2 of this report.

If you should have any questions or comments regarding this report, please do not hesitate to call.

Sincerely,

Jennifer Delaney
QA Specialist

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Western Environmental Testing Laboratory
Report Comments

Balance Hydrologics - 1801598

Specific Report Comments

None

Report Legend

B	--	Blank contamination; Analyte detected above the method reporting limit in an associated blank
D	--	Due to the sample matrix dilution was required in order to properly detect and report the analyte. The reporting limit has been adjusted accordingly.
HT	--	Sample analyzed beyond the accepted holding time
J	--	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
M	--	The matrix spike/matrix spike duplicate (MS/MSD) values for the analysis of this parameter were outside acceptance criteria due to probable matrix interference. The reported result should be considered an estimate.
N	--	There was insufficient sample available to perform a spike and/or duplicate on this analytical batch.
NC	--	Not calculated due to matrix interference
QD	--	The sample duplicate or matrix spike duplicate analysis demonstrated sample imprecision. The reported result should be considered an estimate.
QL	--	The result for the laboratory control sample (LCS) was outside WETLAB acceptance criteria and reanalysis was not possible. The reported data should be considered an estimate.
S	--	Surrogate recovery was outside of laboratory acceptance limits due to matrix interference. The associated blank and LCS surrogate recovery was within acceptance limits
SC	--	Spike recovery not calculated. Sample concentration >4X the spike amount; therefore, the spike could not be adequately recovered
U	--	The analyte was analyzed for, but was not detected above the level of the reported sample reporting/quantitation limit

General Lab Comments

Per method recommendation (section 4.4), Samples analyzed by methods EPA 300.0 and EPA 300.1 have been filtered prior to analysis.

The following is an interpretation of the results from EPA method 9223B:
A result of zero (0) indicates absence for both coliform and Escherichia coli meaning the water meets the microbiological requirements of the U.S. EPA Safe Drinking Water Act (SDWA). A result of one (1) for either test indicates presence and the water does not meet the SDWA requirements. Waters with positive tests should be disinfected by a certified water treatment operator and retested.

Per federal regulation the holding time for the following parameters in aqueous/water samples is 15 minutes: Residual Chlorine, pH, Dissolved Oxygen, Sulfite.

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Western Environmental Testing Laboratory
Analytical Report

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Brian Hastings
Phone: (510-704-1000 **Fax:**

Date Printed: 2/8/2018
OrderID: *1801598*

PO\Project: *213136*

Customer Sample ID: D-16 (1) **Collect Date/Time:** 1/18/2018 21:36
WETLAB Sample ID: 1801598-001 **Receive Date:** 1/19/2018 10:50

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.16		mg/L	1	0.010	1/19/2018	NV00925
Total Phosphorous as P	SM 4500-P E	1.0		mg/L	5	0.050	2/5/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	100		mg/L	1	1.0	1/22/2018	NV00925
Total Nitrogen	Calc.	5.9		mg/L	1	0.22	1/24/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	270		mg/L	1	10	1/23/2018	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	1.2		mg/L	1	0.010	1/19/2018	NV00925
Nitrite Nitrogen	EPA 300.0	0.17	M	mg/L	1	0.010	1/19/2018	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	4.5		mg/L	0.5	0.20	1/24/2018	NV00925

Customer Sample ID: D-16 (2) **Collect Date/Time:** 1/18/2018 22:17
WETLAB Sample ID: 1801598-002 **Receive Date:** 1/19/2018 10:50

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.20	mg/L	1	0.010	1/19/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.33	mg/L	5	0.050	2/5/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	98	mg/L	1	1.0	1/22/2018	NV00925
Total Nitrogen	Calc.	4.9	mg/L	1	0.22	1/24/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	200	mg/L	1	10	1/23/2018	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	1.0	mg/L	1	0.010	1/19/2018	NV00925
Nitrite Nitrogen	EPA 300.0	0.11	mg/L	1	0.010	1/19/2018	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	3.8	mg/L	0.5	0.20	1/24/2018	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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EPA LAB ID: NV00932

Customer Sample ID: D-16 (3) **Collect Date/Time:** 1/18/2018 22:48

WETLAB Sample ID: 1801598-003 **Receive Date:** 1/19/2018 10:50

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.19	mg/L	1	0.010	1/19/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.73	mg/L	5	0.050	2/5/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	79	mg/L	1	1.0	1/22/2018	NV00925
Total Nitrogen	Calc.	4.2	mg/L	1	0.22	1/24/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	210	mg/L	1	10	1/23/2018	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.76	mg/L	1	0.010	1/19/2018	NV00925
Nitrite Nitrogen	EPA 300.0	0.12	mg/L	1	0.010	1/19/2018	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	3.3	mg/L	0.5	0.20	1/24/2018	NV00925

Customer Sample ID: D-16 (4) **Collect Date/Time:** 1/18/2018 23:42

WETLAB Sample ID: 1801598-004 **Receive Date:** 1/19/2018 10:50

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.16	mg/L	1	0.010	1/19/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.44	mg/L	5	0.050	2/8/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	45	mg/L	1	1.0	1/22/2018	NV00925
Total Nitrogen	Calc.	3.9	mg/L	1	0.22	1/24/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	180	mg/L	1	10	1/23/2018	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.64	mg/L	1	0.010	1/19/2018	NV00925
Nitrite Nitrogen	EPA 300.0	0.10	mg/L	1	0.010	1/19/2018	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	3.2	mg/L	0.5	0.20	1/24/2018	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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Western Environmental Testing Laboratory
QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC18010673	Blank 1	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC18010695	Blank 1	Nitrate Nitrogen	EPA 300.0	ND			mg/L
		Nitrite Nitrogen	EPA 300.0	ND			mg/L
QC18010763	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC18010800	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC18010806	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L
QC18010817	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC18010861	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC18010673	LCS 1	Orthophosphate, as P	SM 4500-P E	0.232	0.250	93	mg/L
QC18010695	LCS 1	Nitrate Nitrogen	EPA 300.0	0.486	0.500	97	mg/L
		Nitrite Nitrogen	EPA 300.0	0.498	0.500	100	mg/L
QC18010763	LCS 1	Total Suspended Solids (TSS)	SM 2540D	200	200	100	mg/L
QC18010763	LCS 2	Total Suspended Solids (TSS)	SM 2540D	200	200	100	mg/L
QC18010800	LCS 1	Total Phosphorous as P	SM 4500-P E	0.218	0.250	87	mg/L
QC18010806	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	0.945	1.00	94	mg/L
QC18010817	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	143	150	95	mg/L
QC18010817	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	138	150	92	mg/L
QC18010861	LCS 1	Total Phosphorous as P	SM 4500-P E	0.270	0.250	108	mg/L

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC18010763	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	1801587-001	4.33	4.00	mg/L	8 %
QC18010763	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	1801622-001	ND	ND	mg/L	<1%
QC18010817	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	1801593-011	292	298	mg/L	2 %
QC18010817	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	1801640-001	826	850	mg/L	3 %

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result		MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC18010673	MS 1	Orthophosphate, as P	SM 4500-P E	1801599-001	0.233		0.459	0.451	0.25	mg/L	90	87	2
QC18010695	MS 1	Nitrate Nitrogen	EPA 300.0	1801598-001	1.16		1.67	1.66	0.5	mg/L	102	100	<1
		Nitrite Nitrogen	EPA 300.0	1801598-001	0.166	M	0.248	0.242	0.125	mg/L	NC	NC	NC
QC18010800	MS 1	Total Phosphorous as P	SM 4500-P E	1801415-005	ND	M	0.150	0.133	0.25	mg/L	NC	NC	NC
QC18010800	MS 2	Total Phosphorous as P	SM 4500-P E	1801587-001	0.045		0.255	0.264	0.25	mg/L	84	87	4
QC18010806	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	1801421-012	0.392	M	0.995	0.950	0.5	mg/L	NC	NC	NC
QC18010806	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	1801421-011	ND	M	0.605	0.850	0.5	mg/L	NC	NC	NC
QC18010861	MS 1	Total Phosphorous as P	SM 4500-P E	1801652-001	0.332		0.546	0.541	0.25	mg/L	85	83	<1
QC18010861	MS 2	Total Phosphorous as P	SM 4500-P E	1801653-001	0.495		0.726	0.626	0.25	mg/L	93	53	15

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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EPA LAB ID: NV00932

WETLAB
WESTERN ENVIRONMENTAL TESTING LABORATORY
Specializing in Soil, Hazardous Waste and Water Analysis.

475 E. Greg Street #119 | Sparks, Nevada 89431
tel (775) 355-0202 | fax (775) 355-0817
1084 Lamoille Hwy | Elko, Nevada 89801
tel (775) 777-9933 | fax (775) 777-9933 | www.WETLaboratory.com

Lab Number 1801598
Report Due Date
Page _____ of _____

Turnaround Time Requirements
Standard_____
5-Day*_____ 3-Day*_____
48 Hour*_____ 24 Hour*_____
*Surcharges Will Apply

Samples Collected From Which State?
NV_____ CA_____
Other_____

Compliance Monitoring?
Yes No

Report to Regulatory Agency?
Yes No

Report Results Via
Fax Mail Only
PDF EDD
Other:_____

Standard QC Required?
Yes No

Client Balance Hydrologics
Address 12020 Donner Pass Rd
City, State & Zip Truckee CA 96161
Contact Brian Hastings
Phone 530-550-9776 Collector's Name BT
Fax PWS/Project Name 21336
P.O. Number PWS/Project Number

Email bhastings@balancehydro.com

Billing Address (If different than Client Address)
Company Balance Hydrologics
Address 900 Bancroft Way ste 101
City, State & Zip Berkeley CA 94710
Contact Rachel Boitano
Phone 510-704-1000
Fax
Email rboitano@balancehydro.com

SAMPLE ID/LOCATION	DATE	TIME	SAMPLE TYPE	NO. OF CONTAINERS	Analyses Requested: Total N	Nitrate NO3	Total P	Ortho P	TDS	TSS	Spl. No.
D-16 (1)	1/18/18	21:36	Aq	1	X	X	X	X	X	X	1
D-16 (2)		22:17			X	X	X	X	X	X	2
D-16 (3)		22:48			X	X	X	X	X	X	3
D-16 (4)		23:42			X	X	X	X	X	X	4

1801 1
598 4

Instructions/Comments/Special Requirements:

Sample Matrix/ Type Key**: DW = Drinking Water WW = Wastewater SW = Surface Water MW = Monitoring Well SD = Solid/Sludge SO = Soil HW = Hazardous Waste OTHER:_____

SAMPLE RECEIPT	DATE	TIME	Samples Relinquished By	Samples Received By
Temperature 6.1 °C	1/19/18	10:50		
Custody Seals Intact? Y N (None)				
Number of Containers 4				

WETLAB'S Standard Terms and Conditions apply unless written agreements specify otherwise. Payment terms are Net 30.

Client/Collector attests to the validity and authenticity of this (these) sample(s) and, is (are) aware that tampering with or intentionally mislabeling the sample(s) location, date or time of collection may be considered fraud and subject to legal action (NAC445.0636).

To the maximum extent permitted by law, the Client agrees to limit the liability of WETLAB for the Client's damages to the total compensation received, unless other agreements are made in writing. This limitation shall apply regardless of the cause of action or legal theory pled or asserted.

301.2E

2/17/2018

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Brian Hastings

OrderID: *1802191*

Dear: Brian Hastings

This is to transmit the attached analytical report. The analytical data and information contained therein was generated using specified or selected methods contained in references, such as Standard Methods for the Examination of Water and Wastewater, online edition, Methods for Determination of Organic Compounds in Drinking Water, EPA-600/4-79-020, and Test Methods for Evaluation of Solid Waste, Physical/Chemical Methods (SW846) Third Edition.

The samples were received by WETLAB-Western Environmental Testing Laboratory in good condition on 2/6/2018. Additional comments are located on page 2 of this report.

If you should have any questions or comments regarding this report, please do not hesitate to call.

Sincerely,

Andy Smith
QA Manager

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Las Vegas, Nevada 89102
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fax (702) 622-2868
EPA LAB ID: NV00932

Western Environmental Testing Laboratory
Report Comments

Balance Hydrologics - 1802191

Specific Report Comments

None

Report Legend

B	--	Blank contamination; Analyte detected above the method reporting limit in an associated blank
D	--	Due to the sample matrix dilution was required in order to properly detect and report the analyte. The reporting limit has been adjusted accordingly.
HT	--	Sample analyzed beyond the accepted holding time
J	--	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
M	--	The matrix spike/matrix spike duplicate (MS/MSD) values for the analysis of this parameter were outside acceptance criteria due to probable matrix interference. The reported result should be considered an estimate.
N	--	There was insufficient sample available to perform a spike and/or duplicate on this analytical batch.
NC	--	Not calculated due to matrix interference
QD	--	The sample duplicate or matrix spike duplicate analysis demonstrated sample imprecision. The reported result should be considered an estimate.
QL	--	The result for the laboratory control sample (LCS) was outside WETLAB acceptance criteria and reanalysis was not possible. The reported data should be considered an estimate.
S	--	Surrogate recovery was outside of laboratory acceptance limits due to matrix interference. The associated blank and LCS surrogate recovery was within acceptance limits
SC	--	Spike recovery not calculated. Sample concentration >4X the spike amount; therefore, the spike could not be adequately recovered
U	--	The analyte was analyzed for, but was not detected above the level of the reported sample reporting/quantitation limit

General Lab Comments

Per method recommendation (section 4.4), Samples analyzed by methods EPA 300.0 and EPA 300.1 have been filtered prior to analysis.

The following is an interpretation of the results from EPA method 9223B:
A result of zero (0) indicates absence for both coliform and Escherichia coli meaning the water meets the microbiological requirements of the U.S. EPA Safe Drinking Water Act (SDWA). A result of one (1) for either test indicates presence and the water does not meet the SDWA requirements. Waters with positive tests should be disinfected by a certified water treatment operator and retested.

Per federal regulation the holding time for the following parameters in aqueous/water samples is 15 minutes: Residual Chlorine, pH, Dissolved Oxygen, Sulfite.

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Western Environmental Testing Laboratory
Analytical Report

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Brian Hastings
Phone: (510-704-1000 **Fax:**

Date Printed: 2/17/2018
OrderID: *1802191*
PO\Project: *213136*

Customer Sample ID: SBC @ NAR **Collect Date/Time:** 2/6/2018 11:15
WETLAB Sample ID: 1802191-001 **Receive Date:** 2/6/2018 14:55

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.18		mg/L	1	0.010	2/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.31		mg/L	1	0.010	2/9/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	32		mg/L	1	1.0	2/12/2018	NV00925
Total Nitrogen	Calc.	0.95		mg/L	1	0.22	2/12/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	310		mg/L	1	10	2/12/2018	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.15		mg/L	1	0.010	2/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	0.023		mg/L	1	0.010	2/7/2018	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.77		mg/L	0.5	0.20	2/12/2018	NV00925

Customer Sample ID: SBC @ RHR **Collect Date/Time:** 2/6/2018 13:22
WETLAB Sample ID: 1802191-002 **Receive Date:** 2/6/2018 14:55

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.17		mg/L	1	0.010	2/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.28		mg/L	1	0.010	2/9/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	25		mg/L	1	1.0	2/12/2018	NV00925
Total Nitrogen	Calc.	0.97		mg/L	1	0.22	2/12/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	170		mg/L	1	10	2/12/2018	NV00925
Microbiological Analyses								
Total Coliform (MPN)	SM 9223B (Quantitray)	328.2		MPN/100ml	1	1.0	2/6/2018	NV00925
Escherichia Coli (MPN)	SM 9223B (Quantitray)	21.3		MPN/100ml	1	1.0	2/6/2018	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.13		mg/L	1	0.010	2/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	0.027		mg/L	1	0.010	2/7/2018	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.82	M	mg/L	0.5	0.20	2/12/2018	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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EPA LAB ID: NV00932

Customer Sample ID: TC @ SMP **Collect Date/Time:** 2/6/2018 14:10

WETLAB Sample ID: 1802191-003 **Receive Date:** 2/6/2018 14:55

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.039		mg/L	1	0.010	2/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.063		mg/L	1	0.010	2/9/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	2		mg/L	1	1	2/12/2018	NV00925
Total Nitrogen	Calc.	ND		mg/L	1	0.22	2/12/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	73		mg/L	1	10	2/13/2018	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	ND		mg/L	1	0.010	2/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	ND		mg/L	1	0.010	2/7/2018	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	ND		mg/L	0.5	0.20	2/12/2018	NV00925

Customer Sample ID: WC @ OUH **Collect Date/Time:** 2/6/2018 12:50

WETLAB Sample ID: 1802191-004 **Receive Date:** 2/6/2018 14:55

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.014		mg/L	1	0.010	2/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.033		mg/L	1	0.010	2/9/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	1		mg/L	1	1	2/12/2018	NV00925
Total Nitrogen	Calc.	ND		mg/L	1	0.22	2/12/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	67		mg/L	1	10	2/13/2018	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	ND		mg/L	1	0.010	2/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	ND	M	mg/L	1	0.010	2/7/2018	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	ND		mg/L	0.5	0.20	2/12/2018	NV00925

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Western Environmental Testing Laboratory
QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC18020207	Blank 1	Nitrate Nitrogen	EPA 300.0	ND			mg/L
		Nitrite Nitrogen	EPA 300.0	ND			mg/L
QC18020209	Blank 1	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC18020209	Blank 2	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC18020227	Blank 1	Total Coliform (MPN)	SM 9223B (Qu	ND			MPN/100ml
		Escherichia Coli (MPN)	SM 9223B (Qu	ND			MPN/100ml
QC18020297	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC18020347	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L
QC18020423	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC18020424	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC18020456	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC18020207	LCS 1	Nitrate Nitrogen	EPA 300.0	0.472	0.500	94	mg/L
		Nitrite Nitrogen	EPA 300.0	0.477	0.500	95	mg/L
QC18020209	LCS 1	Orthophosphate, as P	SM 4500-P E	0.272	0.250	109	mg/L
QC18020209	LCS 2	Orthophosphate, as P	SM 4500-P E	0.267	0.250	107	mg/L
QC18020297	LCS 1	Total Phosphorous as P	SM 4500-P E	0.273	0.250	109	mg/L
QC18020347	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	1.10	1.00	110	mg/L
QC18020423	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	146	150	97	mg/L
QC18020423	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	146	150	97	mg/L
QC18020424	LCS 1	Total Suspended Solids (TSS)	SM 2540D	199	200	99	mg/L
QC18020424	LCS 2	Total Suspended Solids (TSS)	SM 2540D	199	200	100	mg/L
QC18020456	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	149	150	99	mg/L
QC18020456	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	142	150	95	mg/L

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC18020423	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	1802145-003	455	451	mg/L	1 %
QC18020423	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	1802327-005	1050	1066	mg/L	2 %
QC18020424	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	1802143-001	944	952	mg/L	1 %
QC18020424	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	1802191-004	1.00	1.00	mg/L	<1%
QC18020456	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	1802250-001	1200	1194	mg/L	1 %
QC18020456	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	1802250-002	1168	1144	mg/L	2 %

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result		MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC18020207	MS 1	Nitrate Nitrogen	EPA 300.0	1802191-004	ND		0.449	0.460	0.5	mg/L	90	92	2
		Nitrite Nitrogen	EPA 300.0	1802191-004	ND	M	0.089	0.089	0.125	mg/L	NC	NC	NC
QC18020209	MS 1	Orthophosphate, as P	SM 4500-P E	1802191-004	0.014		0.274	0.278	0.25	mg/L	104	106	1
QC18020209	MS 2	Orthophosphate, as P	SM 4500-P E	1802250-006	0.173		0.435	0.435	0.25	mg/L	105	105	<1
QC18020209	MS 3	Orthophosphate, as P	SM 4500-P E	1802250-016	0.203		0.449	0.464	0.25	mg/L	99	105	3
QC18020297	MS 1	Total Phosphorous as P	SM 4500-P E	1802180-001	0.071		0.318	0.334	0.25	mg/L	99	106	5
QC18020297	MS 2	Total Phosphorous as P	SM 4500-P E	1802298-001	0.206		0.499	0.466	0.25	mg/L	117	104	7
QC18020347	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	1801859-001	0.300		0.790	0.785	0.5	mg/L	98	97	<1
QC18020347	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	1802191-002	0.820	M	1.38	1.44	0.5	mg/L	NC	NC	NC

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Lab Number 1802191
Report Due Date
Page 1 of 1

Turnaround Time Requirements
Standard Y
5-Day* ____ 3-Day* ____
48 Hour* ____ 24 Hour* ____
*Surcharges Will Apply

Samples Collected From Which State? NV Z CA ____ Other ____
Compliance Monitoring? Yes (No)
Report to Regulatory Agency? Yes (No)
Report Results Via Fax Mail Only (PDF) EDD Other: ____
Standard QC Required? (Yes) No

Client Balance Hydrologics
Address 12020 Donner Pass Rd
City, State & Zip Truckee CA 96161
Contact Brian Hastings
Phone 530.550.9776 Collector's Name BT
Fax — PWS/Project Name
P.O. Number — PWS/Project Number Z13136
Email bhastings@balancehydro.com

Billing Address (if different than Client Address)
Company Balance Hydrologics
Address 500 Bancroft Way St 101
City, State & Zip Berkeley CA 94710
Contact Rachel Boitano
Phone 510-704-1000
Fax ____
Email rboitano@balancehydro.com

SAMPLE ID/LOCATION	DATE	TIME	SAMPLE TYPE	NO. OF CONTAINERS	Analyses Requested: Total N	Total P	Ortho P	TSS	TDS	E.coli	Spl. No.
SBC@NAR	2/6/10	11:15	Ag	2	x	x	x	x	x	x	
SBC@RHR		13:22		3	x	x	x	x	x	x	
TC@SMP		14:10		2	x	x	x	x	x		
WC@OUT	V	12:50		2	x	x	x	x	x		

1802 2
191 4

Instructions/Comments/Special Requirements:

Sample Matrix/ Type Key** DW = Drinking Water WW = Wastewater SW = Surface Water MW = Monitoring Well SD = Solid/Sludge SO = Soil HW = Hazardous Waste OTHER: ____

SAMPLE RECEIPT	DATE	TIME	Samples Relinquished By	Samples Received By
Temperature 7.2 °C	2/6/10	1455		
Custody Seals Intact? Y N (None)				
Number of Containers 9				

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Client/Collector attests to the validity and authenticity of this (these) sample(s) and, is (are) aware that tampering with or intentionally mislabeling the sample(s) location, date or time of collection may be considered fraud and subject to legal action (NAC445.0636).

To the maximum extent permitted by law, the Client agrees to limit the liability of WETLAB for the Client's damages to the total compensation received, unless other agreements are made in writing. This limitation shall apply regardless of the cause of action or legal theory pled or asserted.

301.2E

2/19/2018

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Brian Hastings

OrderID: *1802250*

Dear: Brian Hastings

This is to transmit the attached analytical report. The analytical data and information contained therein was generated using specified or selected methods contained in references, such as Standard Methods for the Examination of Water and Wastewater, online edition, Methods for Determination of Organic Compounds in Drinking Water, EPA-600/4-79-020, and Test Methods for Evaluation of Solid Waste, Physical/Chemical Methods (SW846) Third Edition.

The samples were received by WETLAB-Western Environmental Testing Laboratory in good condition on 2/7/2018. Additional comments are located on page 2 of this report.

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Sincerely,

Andy Smith
QA Manager

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EPA LAB ID: NV00932

Western Environmental Testing Laboratory
Report Comments

Balance Hydrologics - 1802250

Specific Report Comments

None

Report Legend

B	--	Blank contamination; Analyte detected above the method reporting limit in an associated blank
D	--	Due to the sample matrix dilution was required in order to properly detect and report the analyte. The reporting limit has been adjusted accordingly.
HT	--	Sample analyzed beyond the accepted holding time
J	--	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
M	--	The matrix spike/matrix spike duplicate (MS/MSD) values for the analysis of this parameter were outside acceptance criteria due to probable matrix interference. The reported result should be considered an estimate.
N	--	There was insufficient sample available to perform a spike and/or duplicate on this analytical batch.
NC	--	Not calculated due to matrix interference
QD	--	The sample duplicate or matrix spike duplicate analysis demonstrated sample imprecision. The reported result should be considered an estimate.
QL	--	The result for the laboratory control sample (LCS) was outside WETLAB acceptance criteria and reanalysis was not possible. The reported data should be considered an estimate.
S	--	Surrogate recovery was outside of laboratory acceptance limits due to matrix interference. The associated blank and LCS surrogate recovery was within acceptance limits
SC	--	Spike recovery not calculated. Sample concentration >4X the spike amount; therefore, the spike could not be adequately recovered
U	--	The analyte was analyzed for, but was not detected above the level of the reported sample reporting/quantitation limit

General Lab Comments

Per method recommendation (section 4.4), Samples analyzed by methods EPA 300.0 and EPA 300.1 have been filtered prior to analysis.

The following is an interpretation of the results from EPA method 9223B:
A result of zero (0) indicates absence for both coliform and Escherichia coli meaning the water meets the microbiological requirements of the U.S. EPA Safe Drinking Water Act (SDWA). A result of one (1) for either test indicates presence and the water does not meet the SDWA requirements. Waters with positive tests should be disinfected by a certified water treatment operator and retested.

Per federal regulation the holding time for the following parameters in aqueous/water samples is 15 minutes: Residual Chlorine, pH, Dissolved Oxygen, Sulfite.

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Western Environmental Testing Laboratory
Analytical Report

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Brian Hastings
Phone: (510-704-1000 **Fax:**

Date Printed: 2/19/2018
OrderID: *1802250*
PO\Project: *213136*

Customer Sample ID: NTD@BFD (1) **Collect Date/Time:** 2/6/2018 12:00
WETLAB Sample ID: 1802250-001 **Receive Date:** 2/7/2018 16:01

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.072		mg/L	1	0.010	2/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.14	M	mg/L	1	0.010	2/13/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	44		mg/L	1	1.0	2/12/2018	NV00925
Total Nitrogen	Calc.	2.4		mg/L	1	0.30	2/16/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	1200		mg/L	1	10	2/13/2018	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	1.4		mg/L	5	0.050	2/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	ND	D	mg/L	5	0.050	2/7/2018	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	1.1		mg/L	0.5	0.20	2/16/2018	NV00925

Customer Sample ID: NTD@BFD (2) **Collect Date/Time:** 2/6/2018 18:00
WETLAB Sample ID: 1802250-002 **Receive Date:** 2/7/2018 16:01

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.072		mg/L	1	0.010	2/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.13		mg/L	1	0.010	2/13/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	10		mg/L	1	1.0	2/12/2018	NV00925
Total Nitrogen	Calc.	2.2		mg/L	1	0.30	2/16/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	1200		mg/L	1	10	2/13/2018	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	1.4		mg/L	5	0.050	2/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	ND	D	mg/L	5	0.050	2/7/2018	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.82		mg/L	0.5	0.20	2/16/2018	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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Customer Sample ID: NTD@BFD (3) **Collect Date/Time:** 2/7/2018 00:00

WETLAB Sample ID: 1802250-003 **Receive Date:** 2/7/2018 16:01

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.077		mg/L	1	0.010	2/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.12		mg/L	1	0.010	2/13/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	11		mg/L	1	1.0	2/12/2018	NV00925
Total Nitrogen	Calc.	2.1		mg/L	1	0.30	2/16/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	1200		mg/L	1	10	2/13/2018	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	1.3		mg/L	5	0.050	2/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	ND	D	mg/L	5	0.050	2/7/2018	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.75		mg/L	0.5	0.20	2/16/2018	NV00925

Customer Sample ID: NTD@BFD (4) **Collect Date/Time:** 2/7/2018 06:00

WETLAB Sample ID: 1802250-004 **Receive Date:** 2/7/2018 16:01

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.070		mg/L	1	0.010	2/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.12		mg/L	1	0.010	2/13/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	11		mg/L	1	1.0	2/13/2018	NV00925
Total Nitrogen	Calc.	2.2		mg/L	1	0.30	2/16/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	1200		mg/L	1	10	2/13/2018	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	1.3		mg/L	5	0.050	2/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	ND	D	mg/L	5	0.050	2/7/2018	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.82		mg/L	0.5	0.20	2/16/2018	NV00925

Customer Sample ID: NTD@ORD **Collect Date/Time:** 2/7/2018 11:10

WETLAB Sample ID: 1802250-005 **Receive Date:** 2/7/2018 16:01

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.17		mg/L	1	0.010	2/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.22		mg/L	1	0.010	2/13/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	22		mg/L	1	1.0	2/13/2018	NV00925
Total Nitrogen	Calc.	3.0		mg/L	1	0.30	2/16/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	1300		mg/L	1	10	2/13/2018	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	2.0		mg/L	5	0.050	2/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	ND	D	mg/L	5	0.050	2/7/2018	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.96		mg/L	0.5	0.20	2/16/2018	NV00925

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Customer Sample ID: NTD@NEP **Collect Date/Time:** 2/7/2018 11:00

WETLAB Sample ID: 1802250-006 **Receive Date:** 2/7/2018 16:01

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.17		mg/L	1	0.010	2/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.22		mg/L	1	0.010	2/13/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	22		mg/L	1	1.0	2/13/2018	NV00925
Total Nitrogen	Calc.	3.0		mg/L	1	0.30	2/16/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	1100		mg/L	1	10	2/13/2018	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	2.0		mg/L	5	0.050	2/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	ND	D	mg/L	5	0.050	2/7/2018	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.91		mg/L	0.5	0.20	2/16/2018	NV00925

Customer Sample ID: AC@TR **Collect Date/Time:** 2/7/2018 10:10

WETLAB Sample ID: 1802250-007 **Receive Date:** 2/7/2018 16:01

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.014	mg/L	1	0.010	2/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.026	mg/L	1	0.010	2/13/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	1	mg/L	1	1	2/12/2018	NV00925
Total Nitrogen	Calc.	ND	mg/L	1	0.22	2/16/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	660	mg/L	1	10	2/13/2018	NV00925
Microbiological Analyses							
Total Coliform (MPN)	SM 9223B (Quantitray)	127.4	MPN/100ml	1	1.0	2/7/2018	NV00925
Escherichia Coli (MPN)	SM 9223B (Quantitray)	12.2	MPN/100ml	1	1.0	2/7/2018	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	ND	mg/L	1	0.010	2/8/2018	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.010	2/8/2018	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	ND	mg/L	0.5	0.20	2/16/2018	NV00925

Customer Sample ID: CC@CB **Collect Date/Time:** 2/7/2018 09:06

WETLAB Sample ID: 1802250-008 **Receive Date:** 2/7/2018 16:01

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.34		mg/L	1	0.010	2/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.35		mg/L	1	0.010	2/13/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	7		mg/L	1	1	2/13/2018	NV00925
Total Nitrogen	Calc.	2.8		mg/L	1	0.30	2/16/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	2400		mg/L	1	10	2/13/2018	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	2.2		mg/L	5	0.050	2/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	ND	D	mg/L	5	0.050	2/7/2018	NV00925

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Customer Sample ID: CC@CB **Collect Date/Time:** 2/7/2018 09:06

WETLAB Sample ID: 1802250-008 **Receive Date:** 2/7/2018 16:01

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	0.52	mg/L	0.5	0.20	2/16/2018	NV00925

Customer Sample ID: BS@SBC **Collect Date/Time:** 2/7/2018 13:24

WETLAB Sample ID: 1802250-009 **Receive Date:** 2/7/2018 16:01

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.090	mg/L	1	0.010	2/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.12	mg/L	1	0.010	2/13/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	14	mg/L	1	1.0	2/12/2018	NV00925
Total Nitrogen	Calc.	1.3	mg/L	1	0.22	2/16/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	300	mg/L	1	10	2/13/2018	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.82	mg/L	1	0.010	2/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	0.016	mg/L	1	0.010	2/7/2018	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	0.42	mg/L	0.5	0.20	2/16/2018	NV00925

Customer Sample ID: YD@SBC(1) **Collect Date/Time:** 2/6/2018 12:00

WETLAB Sample ID: 1802250-010 **Receive Date:** 2/7/2018 16:01

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.044	mg/L	1	0.010	2/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.094	mg/L	1	0.010	2/13/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	24	mg/L	1	1.0	2/12/2018	NV00925
Total Nitrogen	Calc.	2.2	mg/L	1	0.22	2/16/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	360	mg/L	1	10	2/13/2018	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	1.5	mg/L	1	0.010	2/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	0.041	mg/L	1	0.010	2/7/2018	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	0.68	mg/L	0.5	0.20	2/16/2018	NV00925

Customer Sample ID: YD@SBC(2) **Collect Date/Time:** 2/6/2018 18:00

WETLAB Sample ID: 1802250-011 **Receive Date:** 2/7/2018 16:01

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.045	mg/L	1	0.010	2/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.094	mg/L	1	0.010	2/15/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	25	mg/L	1	1.0	2/12/2018	NV00925
Total Nitrogen	Calc.	2.1	mg/L	1	0.22	2/16/2018	NV00925

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Customer Sample ID: YD@SBC(2) **Collect Date/Time:** 2/6/2018 18:00

WETLAB Sample ID: 1802250-011 **Receive Date:** 2/7/2018 16:01

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
Total Dissolved Solids (TDS)	SM 2540C	370		mg/L	1	10	2/13/2018	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	1.4		mg/L	1	0.010	2/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	0.039		mg/L	1	0.010	2/7/2018	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.62	M	mg/L	0.5	0.20	2/16/2018	NV00925

Customer Sample ID: YD@SBC(3) **Collect Date/Time:** 2/7/2018 00:00

WETLAB Sample ID: 1802250-012 **Receive Date:** 2/7/2018 16:01

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.047	mg/L	1	0.010	2/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.079	mg/L	1	0.010	2/15/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	15	mg/L	1	1.0	2/12/2018	NV00925
Total Nitrogen	Calc.	2.3	mg/L	1	0.22	2/16/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	380	mg/L	1	10	2/13/2018	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	1.5	mg/L	1	0.010	2/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	0.043	mg/L	1	0.010	2/7/2018	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	0.79	mg/L	0.5	0.20	2/16/2018	NV00925

Customer Sample ID: YD@SBC(4) **Collect Date/Time:** 2/7/2018 06:00

WETLAB Sample ID: 1802250-013 **Receive Date:** 2/7/2018 16:01

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.060	mg/L	1	0.010	2/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.096	mg/L	1	0.010	2/15/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	40	mg/L	1	1.0	2/13/2018	NV00925
Total Nitrogen	Calc.	2.2	mg/L	1	0.22	2/16/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	360	mg/L	1	10	2/13/2018	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	1.5	mg/L	1	0.010	2/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	0.042	mg/L	1	0.010	2/7/2018	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	0.74	mg/L	0.5	0.20	2/16/2018	NV00925

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Customer Sample ID: SBC@CWW(1) **Collect Date/Time:** 2/6/2018 12:00

WETLAB Sample ID: 1802250-014 **Receive Date:** 2/7/2018 16:01

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.19	mg/L	1	0.010	2/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.20	mg/L	1	0.010	2/15/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	32	mg/L	1	1.0	2/12/2018	NV00925
Total Nitrogen	Calc.	1.1	mg/L	1	0.22	2/16/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	340	mg/L	1	10	2/13/2018	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.34	mg/L	1	0.010	2/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	0.012	mg/L	1	0.010	2/7/2018	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	0.70	mg/L	0.5	0.20	2/16/2018	NV00925

Customer Sample ID: SBC@CWW(2) **Collect Date/Time:** 2/6/2018 18:00

WETLAB Sample ID: 1802250-015 **Receive Date:** 2/7/2018 16:01

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.20	mg/L	1	0.010	2/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.20	mg/L	1	0.010	2/15/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	38	mg/L	1	1.0	2/12/2018	NV00925
Total Nitrogen	Calc.	1.1	mg/L	1	0.22	2/16/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	330	mg/L	1	10	2/13/2018	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.34	mg/L	1	0.010	2/8/2018	NV00925
Nitrite Nitrogen	EPA 300.0	0.012	mg/L	1	0.010	2/8/2018	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	0.76	mg/L	0.5	0.20	2/16/2018	NV00925

Customer Sample ID: SBC@CWW(3) **Collect Date/Time:** 2/7/2018 00:00

WETLAB Sample ID: 1802250-016 **Receive Date:** 2/7/2018 16:01

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.20	mg/L	1	0.010	2/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.20	mg/L	1	0.010	2/15/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	31	mg/L	1	1.0	2/12/2018	NV00925
Total Nitrogen	Calc.	1.0	mg/L	1	0.22	2/16/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	350	mg/L	1	10	2/14/2018	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.34	mg/L	1	0.010	2/8/2018	NV00925
Nitrite Nitrogen	EPA 300.0	0.012	mg/L	1	0.010	2/8/2018	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	0.70	mg/L	0.5	0.20	2/16/2018	NV00925

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Customer Sample ID: SBC@CWW(4) **Collect Date/Time:** 2/7/2018 06:00

WETLAB Sample ID: 1802250-017 **Receive Date:** 2/7/2018 16:01

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.21	mg/L	1	0.010	2/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.22	mg/L	1	0.010	2/15/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	27	mg/L	1	1.0	2/13/2018	NV00925
Total Nitrogen	Calc.	1.1	mg/L	1	0.22	2/16/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	320	mg/L	1	10	2/14/2018	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.34	mg/L	1	0.010	2/8/2018	NV00925
Nitrite Nitrogen	EPA 300.0	0.012	mg/L	1	0.010	2/8/2018	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	0.76	mg/L	0.5	0.20	2/16/2018	NV00925

Customer Sample ID: Blank **Collect Date/Time:** 2/6/2018 08:40

WETLAB Sample ID: 1802250-018 **Receive Date:** 2/7/2018 16:01

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	ND	mg/L	1	0.010	2/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.020	mg/L	1	0.010	2/15/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	ND	mg/L	1	1	2/12/2018	NV00925
Total Nitrogen	Calc.	ND	mg/L	1	0.22	2/16/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	ND	mg/L	1	10	2/13/2018	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	ND	mg/L	1	0.010	2/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.010	2/7/2018	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	ND	mg/L	0.5	0.20	2/16/2018	NV00925

Customer Sample ID: WC@OVH **Collect Date/Time:** 2/7/2018 10:32

WETLAB Sample ID: 1802250-019 **Receive Date:** 2/7/2018 16:01

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
Microbiological Analyses							
Total Coliform (MPN)	SM 9223B (Quantitray)	>2419.6	MPN/100ml	1	1.0	2/7/2018	NV00925
Escherichia Coli (MPN)	SM 9223B (Quantitray)	21.8	MPN/100ml	1	1.0	2/7/2018	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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Western Environmental Testing Laboratory
QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC18020208	Blank 1	Nitrate Nitrogen	EPA 300.0	ND			mg/L
		Nitrite Nitrogen	EPA 300.0	ND			mg/L
QC18020209	Blank 1	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC18020209	Blank 2	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC18020260	Blank 1	Total Coliform (MPN)	SM 9223B (Qu	ND			MPN/100ml
		Escherichia Coli (MPN)	SM 9223B (Qu	ND			MPN/100ml
QC18020404	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC18020424	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC18020425	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC18020456	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC18020461	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC18020463	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC18020465	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC18020474	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC18020547	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L
QC18020564	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC18020208	LCS 1	Nitrate Nitrogen	EPA 300.0	0.472	0.500	94	mg/L
		Nitrite Nitrogen	EPA 300.0	0.477	0.500	95	mg/L
QC18020209	LCS 1	Orthophosphate, as P	SM 4500-P E	0.272	0.250	109	mg/L
QC18020209	LCS 2	Orthophosphate, as P	SM 4500-P E	0.267	0.250	107	mg/L
QC18020404	LCS 1	Total Phosphorous as P	SM 4500-P E	0.268	0.250	107	mg/L
QC18020424	LCS 1	Total Suspended Solids (TSS)	SM 2540D	199	200	99	mg/L
QC18020424	LCS 2	Total Suspended Solids (TSS)	SM 2540D	199	200	100	mg/L
QC18020425	LCS 1	Total Suspended Solids (TSS)	SM 2540D	200	200	100	mg/L
QC18020425	LCS 2	Total Suspended Solids (TSS)	SM 2540D	199	200	100	mg/L
QC18020456	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	149	150	99	mg/L
QC18020456	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	142	150	95	mg/L
QC18020461	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	151	150	101	mg/L
QC18020461	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	142	150	95	mg/L
QC18020463	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	138	150	92	mg/L
QC18020463	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	142	150	95	mg/L
QC18020465	LCS 1	Total Suspended Solids (TSS)	SM 2540D	196	200	98	mg/L
QC18020465	LCS 2	Total Suspended Solids (TSS)	SM 2540D	199	200	99	mg/L
QC18020474	LCS 1	Total Phosphorous as P	SM 4500-P E	0.279	0.250	112	mg/L
QC18020547	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	1.02	1.00	102	mg/L
QC18020564	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	164	150	109	mg/L
QC18020564	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	137	150	91	mg/L

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC18020424	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	1802143-001	944	952	mg/L	1 %
QC18020424	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	1802191-004	1.00	1.00	mg/L	<1%
QC18020425	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	1802250-015	38.4	38.0	mg/L	1 %
QC18020425	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	1802213-002	1.67	1.33	mg/L	22 %
QC18020456	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	1802250-001	1200	1194	mg/L	1 %

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QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result		Units	RPD
QC18020456	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	1802250-002	1168	1144		mg/L	2 %
QC18020461	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	1802250-012	380	374		mg/L	2 %
QC18020461	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	1802250-015	334	335		mg/L	<1%
QC18020463	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	1802250-013	362	372		mg/L	3 %
QC18020465	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	1802213-001	340	290	QD	mg/L	16 %
QC18020465	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	1802284-002	94.0	94.0		mg/L	<1%
QC18020564	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	1802284-003	423	439		mg/L	4 %
QC18020564	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	1802308-001	602	638		mg/L	6 %

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result		MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC18020208	MS 1	Nitrate Nitrogen	EPA 300.0	1802250-009	0.821		1.36	1.36	0.5	mg/L	107	108	<1
		Nitrite Nitrogen	EPA 300.0	1802250-009	0.016		0.135	0.135	0.125	mg/L	96	96	<1
QC18020208	MS 2	Nitrate Nitrogen	EPA 300.0	1802250-014	0.342		0.873	0.879	0.5	mg/L	106	107	<1
		Nitrite Nitrogen	EPA 300.0	1802250-014	0.012		0.128	0.129	0.125	mg/L	93	94	<1
QC18020209	MS 1	Orthophosphate, as P	SM 4500-P E	1802191-004	0.014		0.274	0.278	0.25	mg/L	104	106	1
QC18020209	MS 2	Orthophosphate, as P	SM 4500-P E	1802250-006	0.173		0.435	0.435	0.25	mg/L	105	105	<1
QC18020209	MS 3	Orthophosphate, as P	SM 4500-P E	1802250-016	0.203		0.449	0.464	0.25	mg/L	99	105	3
QC18020404	MS 1	Total Phosphorous as P	SM 4500-P E	1802250-001	0.141	M	0.321	0.306	0.25	mg/L	NC	NC	NC
QC18020404	MS 2	Total Phosphorous as P	SM 4500-P E	1802366-001	0.032		0.284	0.284	0.25	mg/L	101	101	<1
QC18020474	MS 1	Total Phosphorous as P	SM 4500-P E	1802250-011	0.094		0.334	0.355	0.25	mg/L	96	104	6
QC18020474	MS 2	Total Phosphorous as P	SM 4500-P E	1802250-012	0.079		0.315	0.322	0.25	mg/L	94	97	2
QC18020547	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	1802250-001	1.07		1.52	1.59	0.5	mg/L	91	104	4
QC18020547	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	1802250-011	0.620	M	1.19	1.22	0.5	mg/L	NC	NC	NC

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WETLAB Order ID. 1802250
Sparks Control #
Elko Control #
LV Control #
Report Due Date
Page 1 of 3

Client Balance Hydrologics
Address 12020 Donner Pass Rd ste B1
City, State & Zip Truckee CA 96161
Contact Brian Hastings
Phone 530-550-9776 | Collector's Name BT
Fax | PWS/Project Name
P.O. Number | PWS/Project Number 213136
Email bhastings@balancehydro.com

Billing Address (if different than Client Address)
Company Balance Hydrologics
Address 800 Bancroft Way ste 101
City, State & Zip Berkeley CA 94710
Contact Rachel Boitano
Phone 510-704-1000 Fax
Email rboitano@balancehydro.com

Turnaround Time Requirements
Standard
5 Day* (25%) 72 Hour* (50%)
48 Hour* (100%) 24 Hour* (200%)
*Surcharges Will Apply

Samples Collected From Which State? NV CA Other
Compliance Monitoring? Yes No
Report to Regulatory Agency? Yes No
Report Results Via PDF EDD Other
Standard QC Required? Yes No

Analyses Requested

SAMPLE ID/LOCATION	DATE	TIME	PRES TYPE *	SAMPLE TYPE **	NO. OF CONTAINERS	Total P	Total Ortho P	TSS	FDS	Algae	E.coli					Spl. No.
NTD@BFD (1)	2/6/18	12:00		Aq	2	X	X	X	X	X						1
NTD@BFD (2)	2/6/18	18:00		Aq	2	X	X	X	X	X						2
NTD@BFD (3)	2/7/18	0:00		Aq	2	X	X	X	X	X						3
NTD@BFD (4)	2/7/18	6:00		Aq	2	X	X	X	X	X						4
NTD@ORD	2/7/18	11:10		Aq	2	X	X	X	X	X						5
NTD@NEP	2/7/18	11:00		Aq	2	X	X	X	X	X						6
AC@TR	2/7/18	10:10		Aq	3	X	X	X	X	X		X				7
CC@CB	2/7/18	9:06		Aq	2	X	X	X	X	X	X					8
BS@SBC	2/7/18	13:24		Aq	2	X	X	X	X	X						9

1802 6
250 1

Instructions/Comments/Special Requirements:

Sample Matrix Key** DW = Drinking Water WW = Wastewater SW = Surface Water MW = Monitoring Well SD = Solid/Sludge SO = Soil HW = Hazardous Waste OTHER:

***SAMPLE PRESERVATIVES:** 1=Unpreserved 2=H2SO4 3=NaOH 4=HCl 5=HNO3 6=Na2S2O3 7=ZnOAc+NaOH 8=HCl/VOA Vial

Temp	Custody Seal	# of Containers	DATE	TIME	Samples Relinquished By	Samples Received By
4.8°C	Y N (None)	19	2/7/18	4:01		
°C	Y N None					
°C	Y N None					
°C	Y N None					

WETLAB'S Standard Terms and Conditions apply unless written agreements specify otherwise. Payment terms are Net 30.

Client/Collector attests to the validity and authenticity of this (these) sample(s) and, is (are) aware that tampering with or intentionally mislabeling the sample(s) location, date or time of collection may be considered fraud and subject to legal action (NAC445.0636). BT initial

To the maximum extent permitted by law, the Client agrees to limit the liability of WETLAB for the Client's damages to the total compensation received, unless other agreements are made in writing. This limitation shall apply regardless of the cause of action or legal theory pled or asserted. BT initial

WETLAB will dispose of samples 90 days from sample receipt. Client may request a longer sample storage time for an additional fee. Please contact your Project Manager for details. BT initial

301.2E

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WETLAB Order ID. 1802250
Sparks Control # _____
Elko Control # _____
LV Control # _____
Report Due Date

Client
Address
City, State & Zip
Contact
Phone | Collector's Name
Fax | PWS/Project Name
P.O. Number | PWS/Project Number
Email

Billing Address (if different than Client Address)
Company _____
Address _____
City, State & Zip _____
Contact _____
Phone _____ Fax _____
Email _____

Turnaround Time Requirements
Standard _____
5 Day* (25%) _____ 72 Hour* (50%) _____
48 Hour* (100%) _____ 24 Hour* (200%) _____
*Surcharges Will Apply

Samples Collected From Which State? NV___ CA___ Other___

Compliance Monitoring? Yes No

Report to Regulatory Agency? Yes No

Report Results Via PDF EDD Other _____

Standard QC Required? Yes No

Analyses Requested

1802 6 7
250 19

SAMPLE ID/LOCATION	DATE	TIME	PRES TYPE *	SAMPLE TYPE **	NO. OF CONTAINERS	Total N	Total P	Ortho P	TSS	TDS					Spl. No.
YD@SBC (1)	2/6/18	12:00		Aq	2	X	X	X	X	X					10
YD@SBC (2)	2/6/18	18:00		Aq	2	X	X	X	X	X					11
YD@SBC (3)	2/7/18	0:00			2	X	X	X	X	X					12
YD@SBC (4)	2/7/18	6:00			2	X	X	X	X	X					13
SBC@CWW (1)	2/6/18	12:00			2	X	X	X	X	X					14
SBC@CWW (2)	2/6/18	18:00			2	X	X	X	X	X					15
SBC@CWW (3)	2/7/18	0:00			2	X	X	X	X	X					16
SBC@CWW (4)	2/7/18	6:00			2	X	X	X	X	X					17
Blank	2/6/18	5:40			2	X	X	X	X	X					18

Instructions/Comments/Special Requirements:

Sample Matrix Key** DW = Drinking Water WW = Wastewater SW = Surface Water MW = Monitoring Well SD = Solid/Sludge SO = Soil HW = Hazardous Waste OTHER:_____

***SAMPLE PRESERVATIVES:** 1=Unpreserved 2=H2SO4 3=NaOH 4=HCl 5=HNO3 6=Na2S2O3 7=ZnOAc+NaOH 8=HCl/VOA Vial

Temp	Custody Seal	# of Containers	DATE	TIME	Samples Relinquished By	Samples Received By
4.8°C	Y N (None)	18	2/7/18	4:01		
°C	Y N None					
°C	Y N None					
°C	Y N None					

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WETLAB will dispose of samples 90 days from sample receipt. Client may request a longer sample storage time for an additional fee. Please contact your Project Manager for details. ___ initial

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WETLAB Order ID. 1802250
Sparks Control #
Elko Control #
LV Control #
Report Due Date
Page 3 of 3

Client
Address
City, State & Zip
Contact
Phone | Collector's Name
Fax | PWS/Project Name
P.O. Number | PWS/Project Number
Email

Turnaround Time Requirements
Standard
5 Day* (25%) | 72 Hour* (50%)
48 Hour* (100%) | 24 Hour* (200%)
*Surcharges Will Apply

Samples Collected From Which State? NV CA Other
Compliance Monitoring? Yes No
Report to Regulatory Agency? Yes No
Report Results Via PDF EDD Other
Standard QC Required? Yes No

Billing Address (If different than Client Address)
Company
Address
City, State & Zip
Contact
Phone | Fax
Email

Analyses Requested

SAMPLE ID/LOCATION	DATE	TIME	PRES TYPE *	SAMPLE TYPE **	NO. OF CONTAINERS		Spl. No.
WC @ OVH	2/7/18	10:32		Aq	1	E coli	19

1802 6
250 19

Instructions/Comments/Special Requirements:

Sample Matrix Key** DW = Drinking Water WW = Wastewater SW = Surface Water MW = Monitoring Well SD = Solid/Sludge SO = Soil HW = Hazardous Waste OTHER:

***SAMPLE PRESERVATIVES:** 1=Unpreserved 2=H2SO4 3=NaOH 4=HCl 5=HNO3 6=Na2S2O3 7=ZnOAc+NaOH 8=HCl/VOA Vial

Temp	Custody Seal	# of Containers	DATE	TIME	Samples Relinquished By	Samples Received By
4.8°C	Y N (None)	1	2/7/18	4:01		
°C	Y N None					
°C	Y N None					
°C	Y N None					

WETLAB'S Standard Terms and Conditions apply unless written agreements specify otherwise. Payment terms are Net 30.

Client/Collector attests to the validity and authenticity of this (these) sample(s) and, is (are) aware that tampering with or intentionally mislabeling the sample(s) location, date or time of collection may be considered fraud and subject to legal action (NAC445.0636). BX initial

To the maximum extent permitted by law, the Client agrees to limit the liability of WETLAB for the Client's damages to the total compensation received, unless other agreements are made in writing. This limitation shall apply regardless of the cause of action or legal theory pled or asserted. BX initial

WETLAB will dispose of samples 90 days from sample receipt. Client may request a longer sample storage time for an additional fee. Please contact your Project Manager for details. BX initial

301.2E

3/28/2018

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Brian Hastings

OrderID: *1803429*

Dear: Brian Hastings

This is to transmit the attached analytical report. The analytical data and information contained therein was generated using specified or selected methods contained in references, such as Standard Methods for the Examination of Water and Wastewater, online edition, Methods for Determination of Organic Compounds in Drinking Water, EPA-600/4-79-020, and Test Methods for Evaluation of Solid Waste, Physical/Chemical Methods (SW846) Third Edition.

The samples were received by WETLAB-Western Environmental Testing Laboratory in good condition on 3/14/2018. Additional comments are located on page 2 of this report.

If you should have any questions or comments regarding this report, please do not hesitate to call.

Sincerely,

Jennifer Delaney
QA Specialist

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Western Environmental Testing Laboratory
Report Comments

Balance Hydrologics - 1803429

Specific Report Comments

None

Report Legend

B	--	Blank contamination; Analyte detected above the method reporting limit in an associated blank
D	--	Due to the sample matrix dilution was required in order to properly detect and report the analyte. The reporting limit has been adjusted accordingly.
HT	--	Sample analyzed beyond the accepted holding time
J	--	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
M	--	The matrix spike/matrix spike duplicate (MS/MSD) values for the analysis of this parameter were outside acceptance criteria due to probable matrix interference. The reported result should be considered an estimate.
N	--	There was insufficient sample available to perform a spike and/or duplicate on this analytical batch.
NC	--	Not calculated due to matrix interference
QD	--	The sample duplicate or matrix spike duplicate analysis demonstrated sample imprecision. The reported result should be considered an estimate.
QL	--	The result for the laboratory control sample (LCS) was outside WETLAB acceptance criteria and reanalysis was not possible. The reported data should be considered an estimate.
S	--	Surrogate recovery was outside of laboratory acceptance limits due to matrix interference. The associated blank and LCS surrogate recovery was within acceptance limits
SC	--	Spike recovery not calculated. Sample concentration >4X the spike amount; therefore, the spike could not be adequately recovered
U	--	The analyte was analyzed for, but was not detected above the level of the reported sample reporting/quantitation limit

General Lab Comments

Per method recommendation (section 4.4), Samples analyzed by methods EPA 300.0 and EPA 300.1 have been filtered prior to analysis.

The following is an interpretation of the results from EPA method 9223B:
A result of zero (0) indicates absence for both coliform and Escherichia coli meaning the water meets the microbiological requirements of the U.S. EPA Safe Drinking Water Act (SDWA). A result of one (1) for either test indicates presence and the water does not meet the SDWA requirements. Waters with positive tests should be disinfected by a certified water treatment operator and retested.

Per federal regulation the holding time for the following parameters in aqueous/water samples is 15 minutes: Residual Chlorine, pH, Dissolved Oxygen, Sulfite.

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Western Environmental Testing Laboratory
Analytical Report

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Brian Hastings
Phone: (510-704-1000 **Fax:**

Date Printed: 3/28/2018
OrderID: *1803429*
PO\Project: *213136*

Customer Sample ID: CC@CB
WETLAB Sample ID: 1803429-001
Collect Date/Time: 3/13/2018 16:52
Receive Date: 3/14/2018 08:29

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.35		mg/L	1	0.010	3/14/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.43		mg/L	1	0.010	3/19/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	64		mg/L	1	1.0	3/15/2018	NV00925
Total Nitrogen	Calc.	3.3		mg/L	1	0.30	3/21/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	2400		mg/L	1	10	3/20/2018	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	2.2		mg/L	5	0.050	3/14/2018	NV00925
Nitrite Nitrogen	EPA 300.0	ND	D	mg/L	5	0.050	3/14/2018	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	1.0	M	mg/L	0.5	0.20	3/21/2018	NV00925

Customer Sample ID: TC@SMP
WETLAB Sample ID: 1803429-002
Collect Date/Time: 3/13/2018 18:00
Receive Date: 3/14/2018 08:29

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.040	mg/L	1	0.010	3/14/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.059	mg/L	1	0.010	3/19/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	8	mg/L	1	1	3/15/2018	NV00925
Total Nitrogen	Calc.	ND	mg/L	1	0.22	3/21/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	95	mg/L	1	10	3/20/2018	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	ND	mg/L	1	0.010	3/14/2018	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.010	3/14/2018	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	ND	mg/L	0.5	0.20	3/21/2018	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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EPA LAB ID: NV00932

Western Environmental Testing Laboratory
QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC18030512	Blank 1	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC18030525	Blank 1	Nitrate Nitrogen	EPA 300.0	ND			mg/L
		Nitrite Nitrogen	EPA 300.0	ND			mg/L
QC18030614	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC18030652	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC18030749	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L
QC18030766	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC18030512	LCS 1	Orthophosphate, as P	SM 4500-P E	0.270	0.250	108	mg/L
QC18030525	LCS 1	Nitrate Nitrogen	EPA 300.0	0.495	0.500	99	mg/L
		Nitrite Nitrogen	EPA 300.0	0.482	0.500	96	mg/L
QC18030614	LCS 1	Total Suspended Solids (TSS)	SM 2540D	198	200	99	mg/L
QC18030614	LCS 2	Total Suspended Solids (TSS)	SM 2540D	198	200	99	mg/L
QC18030652	LCS 1	Total Phosphorous as P	SM 4500-P E	0.247	0.250	99	mg/L
QC18030749	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	1.00	1.00	100	mg/L
QC18030766	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	162	150	108	mg/L
QC18030766	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	162	150	108	mg/L

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC18030614	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	1803372-001	176	182	mg/L	3 %
QC18030766	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	1803397-001	208	205	mg/L	1 %
QC18030766	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	1803431-007	13180	13390	mg/L	2 %

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result		MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC18030512	MS 1	Orthophosphate, as P	SM 4500-P E	1803429-001	0.354		0.588	0.573	0.25	mg/L	94	88	3
QC18030525	MS 1	Nitrate Nitrogen	EPA 300.0	1803429-002	ND		0.493	0.484	0.5	mg/L	99	97	2
		Nitrite Nitrogen	EPA 300.0	1803429-002	ND		0.109	0.106	0.125	mg/L	87	85	3
QC18030525	MS 2	Nitrate Nitrogen	EPA 300.0	1803435-005	ND		0.497	0.504	0.5	mg/L	98	100	1
		Nitrite Nitrogen	EPA 300.0	1803435-005	ND		0.110	0.110	0.125	mg/L	88	88	<1
QC18030652	MS 1	Total Phosphorous as P	SM 4500-P E	1803397-001	0.652		0.870	0.866	0.25	mg/L	87	86	<1
QC18030652	MS 2	Total Phosphorous as P	SM 4500-P E	1803435-003	0.035		0.284	0.287	0.25	mg/L	100	101	1
QC18030749	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	1803429-001	1.03	M	1.42	1.32	0.5	mg/L	NC	NC	NC
QC18030749	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	1803623-001	ND		0.570	0.525	0.5	mg/L	100	91	8

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WETLAB
WESTERN ENVIRONMENTAL TESTING LABORATORY
Specializing in Soil, Hazardous Waste and Water Analysis.

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Lab Number 1803429
Report Due Date
Page 1 of 1

Turnaround Time Requirements
Standard
5-Day* 3-Day*
48 Hour* 24 Hour*
*Surcharges Will Apply

Client Balance Hydrologics
Address 12020 Donner Pass Rd Suite B1
City, State & Zip Truckee, CA 96161
Contact Brian Hastings
Phone 530-550-9776 Collector's Name BT
Fax PWS/Project Name
P.O. Number PWS/Project Number 213136
Email bhastings@balancehydro.com

Samples Collected From Which State? NV CA Other

Compliance Monitoring? Yes No

Report to Regulatory Agency? Yes No

Report Results Via Fax Mail Only PDF EDD Other:

Standard QC Required? Yes No

Billing Address (If different than Client Address)
Company Balance Hydrologics
Address 800 Bancroft Way suite 101
City, State & Zip Berkeley CA 94710
Contact Rachel Boitano
Phone 510-704-1000
Fax
Email rboitano@balancehydro.com

SAMPLE ID/LOCATION	DATE	TIME	SAMPLE TYPE	NO. OF CONTAINERS	Analyses Requested: Total N	Total P	Ortho P	TSS	TDS	Nitrate NO3	Spl. No.
CC@CB	3/13/18	16:52	Aq	2	X	X	X	X	X	X	
TC@SMP	3/13/18	19:00	Aq	2	X	X	X	X	X		

1803 2
429 2

Instructions/Comments/Special Requirements:

Sample Matrix/ Type Key** DW = Drinking Water WW = Wastewater SW = Surface Water MW = Monitoring Well SD = Solid/Sludge SO = Soil HW = Hazardous Waste OTHER:

SAMPLE RECEIPT	DATE	TIME	Samples Relinquished By	Samples Received By
Temperature °C	3/14/18	0829		
Custody Seals Intact? Y N None				
Number of Containers				

WETLAB'S Standard Terms and Conditions apply unless written agreements specify otherwise. Payment terms are Net 30.

Client/Collector attests to the validity and authenticity of this (these) sample(s) and, is (are) aware that tampering with or intentionally mislabeling the sample(s) location, date or time of collection may be considered fraud and subject to legal action (NAC445.0636).

To the maximum extent permitted by law, the Client agrees to limit the liability of WETLAB for the Client's damages to the total compensation received, unless other agreements are made in writing. This limitation shall apply regardless of the cause of action or legal theory pled or asserted.

301.2E

4/19/2018

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Brian Hastings

OrderID: *1804282*

Dear: Brian Hastings

This is to transmit the attached analytical report. The analytical data and information contained therein was generated using specified or selected methods contained in references, such as Standard Methods for the Examination of Water and Wastewater, online edition, Methods for Determination of Organic Compounds in Drinking Water, EPA-600/4-79-020, and Test Methods for Evaluation of Solid Waste, Physical/Chemical Methods (SW846) Third Edition.

The samples were received by WETLAB-Western Environmental Testing Laboratory in good condition on 4/6/2018. Additional comments are located on page 2 of this report.

If you should have any questions or comments regarding this report, please do not hesitate to call.

Sincerely,

Jennifer Delaney
QA Specialist

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Western Environmental Testing Laboratory
Report Comments

Balance Hydrologics - 1804282

Specific Report Comments

The results for Orthophosphate on samples 1804282-001 and 002 are higher than expected, especially when compared to Total Phosphorus results. It is thought that particulate matter contained in the samples interfered with the Orthophosphate analysis. Particulate matter interferes by deflecting the light used in the spectrophotometric method. The particulate matter did not interfere with the Total Phosphorus analysis since that procedure includes an acid digestion process.

Report Legend

B	--	Blank contamination; Analyte detected above the method reporting limit in an associated blank
D	--	Due to the sample matrix dilution was required in order to properly detect and report the analyte. The reporting limit has been adjusted accordingly.
HT	--	Sample analyzed beyond the accepted holding time
J	--	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
M	--	The matrix spike/matrix spike duplicate (MS/MSD) values for the analysis of this parameter were outside acceptance criteria due to probable matrix interference. The reported result should be considered an estimate.
N	--	There was insufficient sample available to perform a spike and/or duplicate on this analytical batch.
NC	--	Not calculated due to matrix interference
QD	--	The sample duplicate or matrix spike duplicate analysis demonstrated sample imprecision. The reported result should be considered an estimate.
QL	--	The result for the laboratory control sample (LCS) was outside WETLAB acceptance criteria and reanalysis was not possible. The reported data should be considered an estimate.
S	--	Surrogate recovery was outside of laboratory acceptance limits due to matrix interference. The associated blank and LCS surrogate recovery was within acceptance limits
SC	--	Spike recovery not calculated. Sample concentration >4X the spike amount; therefore, the spike could not be adequately recovered
U	--	The analyte was analyzed for, but was not detected above the level of the reported sample reporting/quantitation limit

General Lab Comments

Per method recommendation (section 4.4), Samples analyzed by methods EPA 300.0 and EPA 300.1 have been filtered prior to analysis.

The following is an interpretation of the results from EPA method 9223B:
A result of zero (0) indicates absence for both coliform and Escherichia coli meaning the water meets the microbiological requirements of the U.S. EPA Safe Drinking Water Act (SDWA). A result of one (1) for either test indicates presence and the water does not meet the SDWA requirements. Waters with positive tests should be disinfected by a certified water treatment operator and retested.

Per federal regulation the holding time for the following parameters in aqueous/water samples is 15 minutes: Residual Chlorine, pH, Dissolved Oxygen, Sulfite.

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Western Environmental Testing Laboratory
Analytical Report

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Brian Hastings
Phone: (510-704-1000 **Fax:**

Date Printed: 4/19/2018
OrderID: *1804282*

PO\Project: *213136*

Customer Sample ID: NTD@ORD
WETLAB Sample ID: 1804282-001

Collect Date/Time: 4/6/2018 12:00
Receive Date: 4/6/2018 16:25

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.32	mg/L	1	0.010	4/6/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.21	mg/L	1	0.010	4/12/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	45	mg/L	1	1.0	4/9/2018	NV00925
Total Nitrogen	Calc.	3.5	mg/L	1	0.22	4/12/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	1000	mg/L	1	10	4/9/2018	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	1.4	mg/L	1	0.020	4/11/2018	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	2.0	mg/L	0.5	0.20	4/12/2018	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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Customer Sample ID: NTD@BFD (1) **Collect Date/Time:** 4/6/2018 11:30
WETLAB Sample ID: 1804282-002 **Receive Date:** 4/6/2018 16:25

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.23	mg/L	1	0.010	4/6/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.14	mg/L	1	0.010	4/12/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	53	mg/L	1	1.0	4/9/2018	NV00925
Total Nitrogen	Calc.	3.4	mg/L	1	0.22	4/12/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	710	mg/L	1	10	4/9/2018	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	1.5	mg/L	1	0.020	4/11/2018	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	1.9	mg/L	0.5	0.20	4/12/2018	NV00925

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Western Environmental Testing Laboratory
QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC18040298	Blank 1	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC18040399	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC18040448	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC18040501	Blank 1	Nitrate + Nitrite Nitrogen	EPA 353.2	ND			mg/L
QC18040524	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC18040551	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC18040298	LCS 1	Orthophosphate, as P	SM 4500-P E	0.252	0.250	101	mg/L
QC18040399	LCS 1	Total Suspended Solids (TSS)	SM 2540D	200	200	100	mg/L
QC18040399	LCS 2	Total Suspended Solids (TSS)	SM 2540D	199	200	100	mg/L
QC18040448	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	144	150	96	mg/L
QC18040448	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	143	150	95	mg/L
QC18040501	LCS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	0.774	0.800	97	mg/L
QC18040524	LCS 1	Total Phosphorous as P	SM 4500-P E	0.263	0.250	105	mg/L
QC18040551	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	1.00	1.00	100	mg/L

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC18040399	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	1804180-001	265	275	mg/L	4 %
QC18040399	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	1804284-001	144	141	mg/L	2 %
QC18040448	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	1804256-001	287	282	mg/L	2 %
QC18040448	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	1804310-001	411	417	mg/L	1 %

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result		MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC18040298	MS 1	Orthophosphate, as P	SM 4500-P E	1804282-001	0.319		0.534	0.550	0.25	mg/L	86	92	3
QC18040501	MS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	1804230-005	ND		5.38	5.56	1	mg/L	108	111	3
QC18040501	MS 2	Nitrate + Nitrite Nitrogen	EPA 353.2	1804279-002	0.068	M	1.17	1.18	1	mg/L	NC	NC	NC
QC18040524	MS 1	Total Phosphorous as P	SM 4500-P E	1804280-001	0.069		0.338	0.344	0.25	mg/L	108	110	2
QC18040524	MS 2	Total Phosphorous as P	SM 4500-P E	1804283-002	0.066	M	0.175	0.155	0.25	mg/L	NC	NC	NC
QC18040551	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	1804280-001	0.118	J	0.585	0.580	0.5	mg/L	93	92	<1
QC18040551	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	1804284-002	0.433		0.935	0.905	0.5	mg/L	100	94	3

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WETLAB Order ID. 1804282
Sparks Control #
Elko Control #
LV Control #
Report Due Date
Page ____ of ____

Client Balance Hydrologics
Address 12020 Donner Pass Rd Suite B1
City, State & Zip Truckee CA 96161
Contact Brian Hastings
Phone 530.550.9776 Collector's Name BT
Fax PWS/Project Name
P.O. Number PWS/Project Number 213136
Email bhastings@balancehydro.com

Billing Address (if different than Client Address)
Company Balance Hydrologics
Address 900 Bancroft Way suite 101
City, State & Zip Berkeley CA 94710
Contact Rachel Boitano
Phone 510-704-1000 Fax
Email rboitano@balancehydro.com

Turnaround Time Requirements
Standard X
5 Day* (25%) ____ 72 Hour* (50%) ____
48 Hour* (100%) ____ 24 Hour* (200%) ____
*Surcharges Will Apply

Samples Collected From Which State? NV ____ CA ____ Other ____

Compliance Monitoring? Yes No

Report to Regulatory Agency? Yes No

Report Results Via PDF EDD Other ____

Standard QC Required? Yes No

SAMPLE ID/LOCATION	DATE	TIME	PRES TYPE*	SAMPLE TYPE**	NO. OF CONTAINERS	Analyses Requested: Total N	Total P	TDS	TSS	Other ?	Spl. No.
NTD@ ORD	4/6/18	12:00		Aq	2	X	X	X	X	X	1
NTD @ BFD (1)	4/6/18	11:30		Aq	2	X	X	X	X	X	2

Instructions/Comments/Special Requirements:

Sample Matrix Key** DW = Drinking Water WW = Wastewater SW = Surface Water MW = Monitoring Well SD = Solid/Sludge SO = Soil HW = Hazardous Waste OTHER: ____

***SAMPLE PRESERVATIVES:** 1=Unpreserved 2=H2SO4 3=NaOH 4=HCl 5=HNO3 6=Na2S2O3 7=ZnOAc+NaOH 8=HCl/VOA Vial

Temp	Custody Seal	# of Containers	DATE	TIME	Samples Relinquished By	Samples Received By
10.4°C	Y N (None)	4	4/6/18	4:25		
°C	Y N None					
°C	Y N None					
°C	Y N None					

WETLAB'S Standard Terms and Conditions apply unless written agreements specify otherwise. Payment terms are Net 30.

Client/Collector attests to the validity and authenticity of this (these) sample(s) and, is (are) aware that tampering with or intentionally mislabeling the sample(s) location, date or time of collection may be considered fraud and subject to legal action (NAC445.0636). ____ initial

To the maximum extent permitted by law, the Client agrees to limit the liability of WETLAB for the Client's damages to the total compensation received, unless other agreements are made in writing. This limitation shall apply regardless of the cause of action or legal theory pled or asserted. ____ initial

WETLAB will dispose of samples 90 days from sample receipt. Client may request a longer sample storage time for an additional fee. Please contact your Project Manager for details. ____ initial

301.2E

4/19/2018

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Brian Hastings

OrderID: *1804287*

Dear: Brian Hastings

This is to transmit the attached analytical report. The analytical data and information contained therein was generated using specified or selected methods contained in references, such as Standard Methods for the Examination of Water and Wastewater, online edition, Methods for Determination of Organic Compounds in Drinking Water, EPA-600/4-79-020, and Test Methods for Evaluation of Solid Waste, Physical/Chemical Methods (SW846) Third Edition.

The samples were received by WETLAB-Western Environmental Testing Laboratory in good condition on 4/7/2018. Additional comments are located on page 2 of this report.

If you should have any questions or comments regarding this report, please do not hesitate to call.

Sincerely,

Andy Smith
QA Manager

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Western Environmental Testing Laboratory
Report Comments

Balance Hydrologics - 1804287

Specific Report Comments

The results for Orthophosphate on samples 1804287-003, 004, 005, 006, 008, 009, 011, and 012 are higher than expected, especially when compared to Total Phosphorus results. It is thought that particulate matter contained in the samples interfered with the Orthophosphate analysis. Particulate matter interferes by deflecting the light used in the spectrophotometric method. The particulate matter did not interfere with the Total Phosphorus analysis since that procedure includes an acid digestion process.

Report Legend

B	--	Blank contamination; Analyte detected above the method reporting limit in an associated blank
D	--	Due to the sample matrix dilution was required in order to properly detect and report the analyte. The reporting limit has been adjusted accordingly.
HT	--	Sample analyzed beyond the accepted holding time
J	--	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
M	--	The matrix spike/matrix spike duplicate (MS/MSD) values for the analysis of this parameter were outside acceptance criteria due to probable matrix interference. The reported result should be considered an estimate.
N	--	There was insufficient sample available to perform a spike and/or duplicate on this analytical batch.
NC	--	Not calculated due to matrix interference
QD	--	The sample duplicate or matrix spike duplicate analysis demonstrated sample imprecision. The reported result should be considered an estimate.
QL	--	The result for the laboratory control sample (LCS) was outside WETLAB acceptance criteria and reanalysis was not possible. The reported data should be considered an estimate.
S	--	Surrogate recovery was outside of laboratory acceptance limits due to matrix interference. The associated blank and LCS surrogate recovery was within acceptance limits
SC	--	Spike recovery not calculated. Sample concentration >4X the spike amount; therefore, the spike could not be adequately recovered
U	--	The analyte was analyzed for, but was not detected above the level of the reported sample reporting/quantitation limit

General Lab Comments

Per method recommendation (section 4.4), Samples analyzed by methods EPA 300.0 and EPA 300.1 have been filtered prior to analysis.

The following is an interpretation of the results from EPA method 9223B:
A result of zero (0) indicates absence for both coliform and Escherichia coli meaning the water meets the microbiological requirements of the U.S. EPA Safe Drinking Water Act (SDWA). A result of one (1) for either test indicates presence and the water does not meet the SDWA requirements. Waters with positive tests should be disinfected by a certified water treatment operator and retested.

Per federal regulation the holding time for the following parameters in aqueous/water samples is 15 minutes: Residual Chlorine, pH, Dissolved Oxygen, Sulfite.

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Western Environmental Testing Laboratory
Analytical Report

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Brian Hastings
Phone: (510-704-1000 **Fax:**

Date Printed: 4/19/2018
OrderID: *1804287*
PO\Project: *213136*

Customer Sample ID: AC@TR **Collect Date/Time:** 4/7/2018 07:59
WETLAB Sample ID: 1804287-001 **Receive Date:** 4/7/2018 12:35

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	ND	mg/L	1	0.010	4/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.059	mg/L	1	0.010	4/12/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	390	mg/L	1	1.0	4/10/2018	NV00925
Total Nitrogen	Calc.	1.2	mg/L	1	0.22	4/12/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	210	mg/L	1	10	4/11/2018	NV00925
Microbiological Analyses							
Total Coliform (MPN)	SM 9223B (Quantitray)	1011.2	MPN/100ml	1	1.0	4/7/2018	NV00925
Escherichia Coli (MPN)	SM 9223B (Quantitray)	344.1	MPN/100ml	1	1.0	4/7/2018	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.062	mg/L	1	0.010	4/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	0.013	mg/L	1	0.010	4/7/2018	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	1.1	mg/L	0.5	0.20	4/12/2018	NV00925

Customer Sample ID: AC@MCC **Collect Date/Time:** 4/7/2018 08:30
WETLAB Sample ID: 1804287-002 **Receive Date:** 4/7/2018 12:35

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	ND	mg/L	1	0.010	4/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.083	mg/L	1	0.010	4/12/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	370	mg/L	1	1.0	4/10/2018	NV00925
Total Nitrogen	Calc.	1.8	mg/L	1	0.22	4/12/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	200	mg/L	1	10	4/11/2018	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.068	mg/L	1	0.010	4/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	0.017	mg/L	1	0.010	4/7/2018	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	1.7	mg/L	0.5	0.20	4/12/2018	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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Customer Sample ID: YD@SBC(1) **Collect Date/Time:** 4/7/2018 10:00

WETLAB Sample ID: 1804287-003 **Receive Date:** 4/7/2018 12:35

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.075	mg/L	1	0.010	4/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.047	mg/L	1	0.010	4/12/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	68	mg/L	1	1.0	4/10/2018	NV00925
Total Nitrogen	Calc.	1.8	mg/L	1	0.22	4/12/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	420	mg/L	1	10	4/11/2018	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	1.1	mg/L	1	0.010	4/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	0.054	mg/L	1	0.010	4/7/2018	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	0.70	mg/L	0.5	0.20	4/12/2018	NV00925

Customer Sample ID: SBC@CWW(1) **Collect Date/Time:** 4/7/2018 10:15

WETLAB Sample ID: 1804287-004 **Receive Date:** 4/7/2018 12:35

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.23	mg/L	1	0.010	4/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.12	mg/L	1	0.010	4/12/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	530	mg/L	1	1.0	4/10/2018	NV00925
Total Nitrogen	Calc.	2.2	mg/L	1	0.22	4/12/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	290	mg/L	1	10	4/11/2018	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.47	mg/L	1	0.010	4/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.010	4/7/2018	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	1.8	mg/L	0.5	0.20	4/12/2018	NV00925

Customer Sample ID: SBC@NAR **Collect Date/Time:** 4/7/2018 09:25

WETLAB Sample ID: 1804287-005 **Receive Date:** 4/7/2018 12:35

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.26	mg/L	1	0.010	4/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.13	mg/L	1	0.010	4/12/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	130	mg/L	1	1.0	4/10/2018	NV00925
Total Nitrogen	Calc.	1.4	mg/L	1	0.22	4/12/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	280	mg/L	1	10	4/11/2018	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.16	mg/L	1	0.010	4/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.010	4/7/2018	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	1.2	mg/L	0.5	0.20	4/12/2018	NV00925

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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Customer Sample ID: SBC@RHR **Collect Date/Time:** 4/7/2018 08:50

WETLAB Sample ID: 1804287-006 **Receive Date:** 4/7/2018 12:35

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.25	mg/L	1	0.010	4/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.14	mg/L	1	0.010	4/12/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	33	mg/L	1	1.0	4/10/2018	NV00925
Total Nitrogen	Calc.	1.4	mg/L	1	0.22	4/12/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	200	mg/L	1	10	4/11/2018	NV00925
Microbiological Analyses							
Total Coliform (MPN)	SM 9223B (Quantitray)	1011.2	MPN/100ml	1	1.0	4/7/2018	NV00925
Escherichia Coli (MPN)	SM 9223B (Quantitray)	721.5	MPN/100ml	1	1.0	4/7/2018	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.18	mg/L	1	0.010	4/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.010	4/7/2018	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	1.2	mg/L	0.5	0.20	4/12/2018	NV00925

Customer Sample ID: BLANK **Collect Date/Time:** 4/6/2018 09:30

WETLAB Sample ID: 1804287-007 **Receive Date:** 4/7/2018 12:35

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	ND	mg/L	1	0.010	4/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	ND	mg/L	1	0.010	4/12/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	ND	mg/L	1	1	4/10/2018	NV00925
Total Nitrogen	Calc.	ND	mg/L	1	0.22	4/12/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	ND	mg/L	1	10	4/11/2018	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	ND	mg/L	1	0.010	4/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.010	4/7/2018	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	ND	mg/L	0.5	0.20	4/12/2018	NV00925

Customer Sample ID: NTD@BFD(2) **Collect Date/Time:** 4/6/2018 17:00

WETLAB Sample ID: 1804287-008 **Receive Date:** 4/7/2018 12:35

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.22	mg/L	1	0.010	4/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.16	mg/L	1	0.010	4/12/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	48	mg/L	1	1.0	4/10/2018	NV00925
Total Nitrogen	Calc.	2.4	mg/L	1	0.22	4/12/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	490	mg/L	1	10	4/11/2018	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.88	mg/L	1	0.010	4/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.010	4/7/2018	NV00925

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Customer Sample ID: NTD@BFD(2) **Collect Date/Time:** 4/6/2018 17:00

WETLAB Sample ID: 1804287-008 **Receive Date:** 4/7/2018 12:35

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	1.6	M	mg/L	0.5	0.20	4/12/2018	NV00925

Customer Sample ID: NTD@BFD(3) **Collect Date/Time:** 4/6/2018 18:30

WETLAB Sample ID: 1804287-009 **Receive Date:** 4/7/2018 12:35

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.20		mg/L	1	0.010	4/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.17	M	mg/L	1	0.010	4/13/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	46		mg/L	1	1.0	4/10/2018	NV00925
Total Nitrogen	Calc.	2.4		mg/L	1	0.22	4/12/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	480		mg/L	1	10	4/11/2018	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.94		mg/L	1	0.010	4/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	ND		mg/L	1	0.010	4/7/2018	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	1.5		mg/L	0.5	0.20	4/12/2018	NV00925

Customer Sample ID: NTD@BFD(4) **Collect Date/Time:** 4/6/2018 21:30

WETLAB Sample ID: 1804287-010 **Receive Date:** 4/7/2018 12:35

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.17	mg/L	1	0.010	4/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.17	mg/L	1	0.010	4/13/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	42	mg/L	1	1.0	4/10/2018	NV00925
Total Nitrogen	Calc.	2.3	mg/L	1	0.22	4/12/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	460	mg/L	1	10	4/11/2018	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.97	mg/L	1	0.010	4/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.010	4/7/2018	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	1.4	mg/L	0.5	0.20	4/12/2018	NV00925

Customer Sample ID: SDOE 008936 (1) **Collect Date/Time:** 4/6/2018 12:56

WETLAB Sample ID: 1804287-011 **Receive Date:** 4/7/2018 12:35

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.32	mg/L	1	0.010	4/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.27	mg/L	1	0.010	4/13/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	110	mg/L	1	1.0	4/10/2018	NV00925
Total Nitrogen	Calc.	3.3	mg/L	1	0.22	4/12/2018	NV00925

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Customer Sample ID: SDOE 008936 (1) **Collect Date/Time:** 4/6/2018 12:56

WETLAB Sample ID: 1804287-011 **Receive Date:** 4/7/2018 12:35

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
Total Dissolved Solids (TDS)	SM 2540C	120	mg/L	1	10	4/11/2018	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.48	mg/L	1	0.010	4/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	0.075	mg/L	1	0.010	4/7/2018	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	2.7	mg/L	0.5	0.20	4/12/2018	NV00925

Customer Sample ID: SDOE 008936 (2) **Collect Date/Time:** 4/6/2018 15:09

WETLAB Sample ID: 1804287-012 **Receive Date:** 4/7/2018 12:35

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.22	mg/L	1	0.010	4/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.19	mg/L	1	0.010	4/13/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	130	mg/L	1	1.0	4/10/2018	NV00925
Total Nitrogen	Calc.	3.0	mg/L	1	0.22	4/12/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	120	mg/L	1	10	4/11/2018	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.82	mg/L	1	0.010	4/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	0.058	mg/L	1	0.010	4/7/2018	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	2.1	mg/L	0.5	0.20	4/12/2018	NV00925

Customer Sample ID: SDOE 008936 (3) **Collect Date/Time:** 4/6/2018 21:34

WETLAB Sample ID: 1804287-013 **Receive Date:** 4/7/2018 12:35

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.13	mg/L	1	0.010	4/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.23	mg/L	1	0.010	4/13/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	9	mg/L	1	1	4/10/2018	NV00925
Total Nitrogen	Calc.	3.8	mg/L	1	0.22	4/12/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	340	mg/L	1	10	4/11/2018	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	2.8	mg/L	1	0.010	4/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	0.067	mg/L	1	0.010	4/7/2018	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	0.92	mg/L	0.5	0.20	4/12/2018	NV00925

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Customer Sample ID: SDOE 008936 (4) **Collect Date/Time:** 4/7/2018 02:33

WETLAB Sample ID: 1804287-014 **Receive Date:** 4/7/2018 12:35

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.12		mg/L	1	0.010	4/7/2018	NV00925
Total Phosphorous as P	SM 4500-P E	0.12		mg/L	1	0.010	4/13/2018	NV00925
Total Suspended Solids (TSS)	SM 2540D	46		mg/L	1	1.0	4/10/2018	NV00925
Total Nitrogen	Calc.	2.4		mg/L	1	0.22	4/13/2018	NV00925
Total Dissolved Solids (TDS)	SM 2540C	240		mg/L	1	10	4/11/2018	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	1.4		mg/L	1	0.010	4/7/2018	NV00925
Nitrite Nitrogen	EPA 300.0	0.032		mg/L	1	0.010	4/7/2018	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.93	M	mg/L	0.5	0.20	4/13/2018	NV00925

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EPA LAB ID: NV00925 - ELAP No: 2523

ELKO
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LAS VEGAS
3230 Polaris Ave. Suite 4
Las Vegas, Nevada 89102
tel (702) 475-8899
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EPA LAB ID: NV00932

Western Environmental Testing Laboratory
QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC18040306	Blank 1	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC18040338	Blank 1	Nitrate Nitrogen	EPA 300.0	ND			mg/L
		Nitrite Nitrogen	EPA 300.0	ND			mg/L
QC18040364	Blank 1	Total Coliform (MPN)	SM 9223B (Qu	ND			MPN/100ml
		Escherichia Coli (MPN)	SM 9223B (Qu	ND			MPN/100ml
QC18040523	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC18040537	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC18040551	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L
QC18040552	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L
QC18040578	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC18040589	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC18040603	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC18040306	LCS 1	Orthophosphate, as P	SM 4500-P E	0.248	0.250	99	mg/L
QC18040338	LCS 1	Nitrate Nitrogen	EPA 300.0	0.491	0.500	98	mg/L
		Nitrite Nitrogen	EPA 300.0	0.500	0.500	100	mg/L
QC18040523	LCS 1	Total Suspended Solids (TSS)	SM 2540D	198	200	99	mg/L
QC18040523	LCS 2	Total Suspended Solids (TSS)	SM 2540D	198	200	99	mg/L
QC18040537	LCS 1	Total Phosphorous as P	SM 4500-P E	0.258	0.250	103	mg/L
QC18040551	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	1.00	1.00	100	mg/L
QC18040552	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	0.990	1.00	99	mg/L
QC18040578	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	143	150	95	mg/L
QC18040578	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	139	150	93	mg/L
QC18040589	LCS 1	Total Phosphorous as P	SM 4500-P E	0.279	0.250	112	mg/L
QC18040603	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	0.970	1.00	97	mg/L

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC18040523	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	1804287-001	392	392	mg/L	<1%
QC18040523	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	1804287-011	112	114	mg/L	2 %
QC18040578	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	1804287-001	207	206	mg/L	<1%
QC18040578	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	1804287-010	460	471	mg/L	2 %

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result		MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC18040306	MS 1	Orthophosphate, as P	SM 4500-P E	1804287-001	ND		0.259	0.259	0.25	mg/L	100	100	<1
QC18040306	MS 2	Orthophosphate, as P	SM 4500-P E	1804287-011	0.318		0.553	0.560	0.25	mg/L	94	97	1
QC18040338	MS 1	Nitrate Nitrogen	EPA 300.0	1804287-003	1.05		1.59	1.60	0.5	mg/L	107	108	<1
		Nitrite Nitrogen	EPA 300.0	1804287-003	0.054		0.175	0.177	0.125	mg/L	97	99	1
QC18040338	MS 2	Nitrate Nitrogen	EPA 300.0	1804287-013	2.78		3.31	3.31	0.5	mg/L	107	106	<1
		Nitrite Nitrogen	EPA 300.0	1804287-013	0.067		0.173	0.171	0.125	mg/L	85	83	1
QC18040537	MS 1	Total Phosphorous as P	SM 4500-P E	1804283-003	0.062	M	0.144	0.140	0.25	mg/L	NC	NC	NC
QC18040537	MS 2	Total Phosphorous as P	SM 4500-P E	1804285-004	0.064	M	0.204	0.172	0.25	mg/L	NC	NC	NC
QC18040551	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	1804280-001	0.118	J	0.585	0.580	0.5	mg/L	93	92	<1
QC18040551	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	1804284-002	0.433		0.935	0.905	0.5	mg/L	100	94	3
QC18040552	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	1804279-001	0.200	M	0.625	0.630	0.5	mg/L	NC	NC	NC
QC18040552	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	1804287-008	1.55	M	2.20	2.09	0.5	mg/L	NC	NC	NC

DF=Dilution Factor, RL=Reporting Limit, ND=Not Detected or <RL

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QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result		MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC18040589	MS 1	Total Phosphorous as P	SM 4500-P E	1804287-009	0.175	M	0.289	0.327	0.25	mg/L	NC	NC	NC
QC18040589	MS 2	Total Phosphorous as P	SM 4500-P E	1804288-005	0.066	M	0.249	0.188	0.25	mg/L	NC	NC	NC
QC18040603	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	1804287-014	0.930	M	1.34	1.42	0.5	mg/L	NC	NC	NC
QC18040603	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	1804300-001	ND		0.545	0.520	0.5	mg/L	95	90	5

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WETLAB
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tel (702) 475-8899 | fax (702) 776-6152

WETLAB Order ID. 1804287
Sparks Control # _____
Elko Control # _____
LV Control # _____
Report Due Date

Client: Balance Hydrologics
Address: 12020 Donner Pass Rd Suite B1
City, State & Zip: Truckee CA 96161
Contact: Brian Hastings
Phone: 530.550.9776 | Collector's Name:
Fax: | PWS/Project Name:
P.O. Number: | PWS/Project Number: 213136
Email: bhastings@balancehydro.com

Billing Address (if different than Client Address)
Company: Balance Hydrologics
Address: 900 Bancroft Way suite 101
City, State & Zip: Berkeley CA 94710
Contact: Rachel Boitano
Phone: 510-704-1000 Fax:
Email: rboitano@balancehydro.com

Turnaround Time Requirements
Standard
5 Day* (25%) 72 Hour* (50%)
48 Hour* (100%) 24 Hour* (200%)
*Surcharges Will Apply

Samples Collected From Which State?
NV CA
Other

Compliance Monitoring?
Yes No

Report to Regulatory Agency?
Yes No

Report Results Via
PDF EDD
Other

Standard QC Required?
Yes No

SAMPLE ID/LOCATION	DATE	TIME	PRES TYPE*	SAMPLE TYPE**	NO. OF CONTAINERS	Total U	Total P	NO3	Ortho P	TDS	TSS	E.coli				Spl. No.
AC@TR	4/7/18	7:59		Aq	2	X	X	X	X	X	X	X				1
AC@MCC	4/7/18	9:30			2	X	X	X	X	X	X					2
YD@SBC(1)	4/7/18	10:00			2	X	X		X	X	X					3
SBC@CWW(1)	4/7/18	10:15			2	X	X		X	X	X					4
SBC@NAR	4/7/18	9:25			2	X	X		X	X	X					5
SBC@RHR	4/7/18	9:50			2	X	X		X	X	X	X				6
Blank	4/6/18	9:30			2											7

Instructions/Comments/Special Requirements:

Sample Matrix Key:** DW = Drinking Water WW = Wastewater SW = Surface Water MW = Monitoring Well SD = Solid/Sludge SO = Soil HW = Hazardous Waste OTHER:

***SAMPLE PRESERVATIVES:** 1=Unpreserved 2=H2SO4 3=NaOH 4=HCl 5=HNO3 6=Na2S2O3 7=ZnOAc+NaOH 8=HCl/VOA Vial

Temp	Custody Seal	# of Containers	DATE	TIME	Samples Relinquished By	Samples Received By
12.6°C	Y N None		4/7/18	12:35		Michelle Nelda
°C	Y N None					
°C	Y N None					
°C	Y N None					

WETLAB'S Standard Terms and Conditions apply unless written agreements specify otherwise. Payment terms are Net 30.

Client/Collector attests to the validity and authenticity of this (these) sample(s) and, is (are) aware that tampering with or intentionally mislabeling the sample(s) location, date or time of collection may be considered fraud and subject to legal action (NAC445.0636). EDT initial

To the maximum extent permitted by law, the Client agrees to limit the liability of WETLAB for the Client's damages to the total compensation received, unless other agreements are made in writing. This limitation shall apply regardless of the cause of action or legal theory pled or asserted. EDT initial

WETLAB will dispose of samples 90 days from sample receipt. Client may request a longer sample storage time for an additional fee. Please contact your Project Manager for details. EDT initial

301.2E

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WETLAB Order ID. 1804287
Sparks Control #
Elko Control #
LV Control #
Report Due Date
Page 2 of 2

Client
Address
City, State & Zip
Contact
Phone | Collector's Name
Fax | PWS/Project Name
P.O. Number | PWS/Project Number
Email

Turnaround Time Requirements
Standard
5 Day* (25%) | 72 Hour* (50%)
48 Hour* (100%) | 24 Hour* (200%)
*Surcharges Will Apply

Samples Collected From Which State? NV CA Other
Compliance Monitoring? Yes No
Report to Regulatory Agency? Yes No
Report Results Via PDF EDD Other
Standard QC Required? Yes No

Billing Address (if different than Client Address)
Company
Address
City, State & Zip
Contact
Phone Fax
Email

SAMPLE ID/LOCATION	DATE	TIME	PRES TYPE*	SAMPLE TYPE**	NO. OF CONTAINERS	Analyses Requested: Total 2A, Total, Ortho, TSS, NO3	Spl. No.
NTD @ BFD (2)	4/6/18	17:00		AW	2	X X X X X	8
NTD @ BFD (3)	4/6/18	18:30			2	X X X X X	9
NTD @ BFD (4)	4/6/18	21:30			2	X X X X X	10
SDOE 004936 (1)	4/6/18	12:56			2	X X X X X X	11
SDOE 004936 (2)	4/6/18	15:09			2	X X X X X X	12
SDOE 004936 (3)	4/6/18	21:34			2	X X X X X X	13
SDOE 004936 (4)	4/7/18	2:33			2	X X X X X X	14

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Temp	Custody Seal	# of Containers	DATE	TIME	Samples Relinquished By	Samples Received By
12.4 °C	Y N None		4/7/18	12:35		Michelle Nelson
°C	Y N None					
°C	Y N None					
°C	Y N None					

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WETLAB will dispose of samples 90 days from sample receipt. Client may request a longer sample storage time for an additional fee. Please contact your Project Manager for details. initial

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