MEETING NOTICE
Truckee Meadows Stormwater Permit Coordinating Committee

DATE: December 16, 2021
TIME: 9:15 am
PLACE: City of Reno, City Hall
7th Floor Conference Room
One East 1st Street (There is parking available in
Reno, NV 89501 Parking Garage above the First Floor)

Members
Kevin Porter, Chair

Theresa Jones
Cody McDougall
James Pehrson
Jennifer Heeran
Walter West

Public Notice

This agenda has been physically posted in compliance with NRS 241.020(3)(notice of meetings) at Reno City Hall – 1 East First Street, Washoe County Administration Building – 1001 East 9th Street and Sparks City Hall – 431 Prater Way. In addition, this agenda has been electronically posted in compliance with NRS 241.020(3) at http://www.reno.gov, and NRS 232.2175 at https://notice.nv.gov/. To obtain further documentation regarding posting, please contact Tara Aufiero at aufierot@reno.gov.

Accommodations

Reasonable efforts will be made to assist and accommodate individuals with disabilities attending the meeting. Please contact Tara Aufiero at (775) 333-7751 at least 48 hours in advance so that arrangements can be made.

Supporting Materials

Staff reports and supporting material for the meeting are available by contacting Tara Aufiero at (775) 333-7751 or aufierot@reno.gov and on the City's website at Reno.Gov. Pursuant to NRS 241.020(9), supporting material is made available to the general public at the same time it is provided to the public body.

Order of Business

The presiding officer shall determine the order of the agenda and all questions of parliamentary procedure at the meeting. Items on the agenda may be taken out of order. The public body may combine two or more agenda items for consideration; remove an item from the agenda; or delay discussion relating to an item on the agenda at any time. See, NRS 241.020(2)(c)(6). Items scheduled to be heard at a specific time will be heard no earlier than the stated time, but may be heard later.

Public Comment

Public comment, whether on items listed on the agenda or general public comment, is limited to three (3) minutes per person. Unused time may not be reserved by the speaker, nor allocated to another speaker. No action may be taken on a matter raised under general public comment until the matter is included on an agenda as an item on which action may be taken. The presiding officer may prohibit comment if the content of comments is a topic that is not relevant to, or within the authority of, the public body, or if the content is willfully disruptive of the meeting by being irrelevant, repetitious, slanderous, offensive, inflammatory, irrational or amounting to personal attacks or interfering with the rights of other speakers. Any person making willfully disruptive remarks while addressing the public body or while attending the meeting may be removed from the room by the presiding officer, See, NRS 241.030(4)(a), and the person may be barred from further audience before the public body during that session. See, Nevada Attorney General Opinion No. 00-047 (April 27, 2001); *Nevada Open Meeting Law Manual*, § 8.05. Examples of disruptive conduct include, without limitation, yelling, stamping of feet, whistles, applause, heckling, name calling, use of profanity, personal attacks, physical intimidation, threatening use of physical force, assault, battery, or any other acts intended to impede the meeting or infringe on the rights of the public body or meeting participants.

A. Introductory Items

A.1 **Call To Order/Roll Call**

A.2 **Public Comment** – This item is for either public comment on any action item or for any general public comment and is limited to no more than three (3) minutes for each commentator.

A.3 **Approval of The Agenda (For Possible Action)** – December 16, 2021

A.4 **Approval Of The Minutes (For Possible Action)** – November 18, 2021

B. Business Items

B.1 Presentation of Trends Analysis, review, discussion of substantive comments and report, and possible approval of the Stormwater Monitoring Program Annual Water Quality Monitoring Report for FY20-21. (For Possible Action)

B.2 Review, discussion and possible approval of the Stormwater Management Plan Effectiveness Evaluation for FY20-21 MS4 Annual Report. (For Possible Action)

B.3 Review, discussion and possible acceptance of the FY20-21 MS4 Annual Report (For Possible Action).

C. Standing Agenda Items (Not For Action)

C.1 Stormwater Management Program activities including but not limited to Construction, Industrial, Monitoring, Public Outreach, Maintenance, IDDE, and Post Construction elements in support of the Truckee Meadows Storm Water Program.

(a) BMP Training for City of Reno Staff, Early 2022

C.2 Update on Nevada Division of Environmental Protection’s activities regarding federal, state, and local matters.

C.3 Update on Nevada Department of Transportation activities regarding MS4 activities.

C.4 Updates on grants and funding opportunities and projects, public presentations, volunteer opportunities and events, trainings, workshops, and conferences.

D. Discussion and possible direction on setting the next regular meeting for January 27, 2022 in the in 6th Floor Conference Room at 9:15 a.m. (For Possible Action).

E. **Public Comment** - This is for general public comment limited to items that do not appear on the agenda and is limited to no more than three (3) minutes for each commentator.

F. **Adjournment** (For Possible Action)

MEETING MINUTES
TRUCKEE MEADOWS STORMWATER PERMIT COORDINATING COMMITTEE

Thursday, November 18, 2021

The regular meeting of the Truckee Meadows Stormwater Permit Coordinating Committee (SWPCC) was held at the City Hall 6th Floor Conference Room, One East 1st Street, Reno, Nevada and conducted the following business:

A. Introductory Items

A.1 Call to Order/Roll Call

The meeting was called to order by Chair Porter at 9:15 a.m. and a quorum was present.

Members Present: Jennifer Heeran; Theresa Jones, SWPCC Coordinator; Cody McDougall; James Pehrson; Kevin Porter, Chair; Walter West

Members Absent: None

Staff and Guests Present: Susan Ball Rothe, Legal Counsel; Daniel Moss, City of Reno Project Coordinator; Ben Trustman, Balance Hydrologics; Brian Hastings, Balance Hydrologics; Iris Jehle Peppard, One Truckee River; Kristie Black, Nevada Division of Environmental Protection (NDEP); Andrew Dixon, NDEP; Mitch Cowles, NDEP; Nick Brothers, City of Reno

A.2 Public Comment

None

A.3 Approval of Agenda (For Possible Action) - November 18, 2021

MEMBER HEERAN MADE A MOTION TO APPROVE THE AGENDA, SECONDED BY COORDINATOR JONES. THE MOTION CARRIED UNANIMOUSLY WITH SIX (6) MEMBERS PRESENT.

A.4 Approval of the Minutes (For Possible Action) - October 28, 2021

MEMBER WEST MADE A MOTION TO APPROVE THE MEETING MINUTES, SECONDED BY MEMBER HEERAN. THE MOTION CARRIED UNANIMOUSLY WITH SIX (6) MEMBERS PRESENT.

B. Business Items

B.1 Review and possible approval for payment of below invoice. The City will pay the invoice and seek 75% reimbursement from the Water Management Fund from the Western Regional Water Commission and 25% reimbursement from the Nevada Department of Transportation per the Interlocal Agreements. (For Possible Action)

i) Balance Invoice #213136-1021, dated October 16, 2021, in the amount of $20,349.95 related to Stormwater Monitoring for FY21/22

COORDINATOR JONES MADE A MOTION TO APPROVE, SECONDED BY CHAIR PORTER. THE MOTION CARRIED UNANIMOUSLY WITH SIX (6) MEMBERS PRESENT.

B.2 Review, discussion and possible acceptance of the Stormwater Monitoring Program Annual Water Quality Monitoring Report for FY20/21. (For Possible Action)

Ben Trustman, Balance Hydrologics, gave a presentation reviewing the annual report. He also discussed the need to audit current equipment and instrumentation for potential upgrades and repairs.

Brian Hastings, Balance Hydrologics, reported that at the next SWPCC meeting they will provide a trends analysis using data from the last six years. He provided examples of what the trends analysis will look like and stated it will allow us to look at whether or not water quality is improving or degrading over time at specific locations.

Coordinator Jones asked for an estimate on cost and how long the equipment audit might take.

Mr. Trustman stated the equipment audit would not take very long and could be ready before the end of the year. The price could vary quite a bit. The low end would probably be below $10,000 and the high end that could include added telemetry would probably be around $20,000.

Coordinator Jones noted we should have a pretty good idea of what is left in our budget by April.

Mr. Trustman confirmed he will have an equipment audit ready well before April.

Mr. Trustman confirmed they will have the trends analysis ready for the December SWPCC meeting. He will provide it for review a week before the meeting.

Mr. Hastings discussed efforts they are making to reduce the bulk of this report. They are coming up with ways to make it more digestible while still meeting the objective of the Stormwater Monitoring Program.

No action was taken.

C. Standing Agenda Items (Not For Action)

C.1 Update on Water Quality Offset Program.

Nick Brothers, City of Reno, discussed the program and reported that the funding has been approved by the Northern Nevada Water Planning Commission (NNWPC) and the Western Regional Water Commission (WRWC). Reno City Council approved it in August and we are at the point where we can start planning our kickoff for the program.

C.2 Stormwater Management Program activities including but not limited to Construction, Industrial, Monitoring, Public Outreach, Maintenance, IDDE, and Post Construction elements in support of the Truckee Meadows Stormwater Program.

(i) FY20/21 MS4 Annual Report is being compiled

Daniel Moss, City of Reno Project Coordinator, reported on the status of the MS4 Annual Report. He will be compiling all of the data shortly.

Coordinator Jones reported that the annual assessment will be pre-filled out again this year and distributed to the SWPCC members for review in the next week or so. We can discuss anything that might need to be changed at the December SWPCC meeting.

C.3 Update on Nevada Division of Environmental Protection's (NDEP) activities regarding federal, state, and local matters.

Andrew Dixon, NDEP, reported that Peter Lassaline left the state and he introduced Mitch Cowles as the new permit writer. He also stated they have a construction permit out for draft comment.

Coordinator Jones asked if that draft was sent to just Reno or to Sparks and Washoe County as well.

Ms. Black stated she sent it to any entity that made comments. She confirmed that she will send it to each of the entities.

Comments on the draft are due back to NDEP by November 30.

C.4 Update on Nevada Department of Transportation (NDOT) activities regarding MS4 activities.

None

C.5 Updates on grants and funding opportunities and projects, public presentations, volunteer opportunities and events, trainings, workshops, and conferences.

Mr. Moss reported that the City of Reno is planning on doing a BMP training for internal employees in the next couple of months.

Coordinator Jones reported that NDOT is hosting a Stormwater Construction BMP training on December 14.

D. Discussion and possible direction on setting the next regular meeting for December 16, 2021 in the 6th Floor Conference Room at 9:15 a.m. (For Possible Action)

The next regular meeting date will be December 16, 2021 at 9:15 a.m.

E. Public Comment

None

F. Adjournment (For Possible Action)

The meeting was adjourned at 10:35 a.m.

Respectfully submitted by,
Christine Birmingham, Recording Secretary

Truckee Meadows Storm Water Monitoring Annual Report
Fiscal Year 2021

Prepared for:

CITY OF RENO

Prepared by:

Balance Hydrologics

In Cooperation with:

City of Sparks

Washoe County, Nevada 1861

Western Regional Water Commission

Nevada DOT Safe and Connected

November 2021

November 15, 2021

A DRAFT REPORT PREPARED FOR:

CITY OF RENO

Environmental Engineering Team
Public Works
1 East First Street, 7th floor
Reno, Nevada 89501
(775) 334-2350
stormwater@reno.gov

In Cooperation with:

City of Sparks

Washoe County, Nevada 1861

Western Regional Water Commission

Nevada DOT Safe and Connected

The Truckee Meadows Stormwater Permit Coordinating Committee

(NPDES MS4 Discharge Permit No. NVS000001)

by

DRAFT

Benjamin Trustman
Hydrologist

DRAFT

Brian Hastings, P.G.
Hydrologist/Geomorphologist

Reviewed By:

DRAFT

David Shaw, P.G.
Principal in Charge

Balance Hydrologics

Project Assignment: 213136

12020 Donner Pass Road, Unit B1 ~ Truckee, California 96161 ~ (530) 550-9776 ~ office@balancehydro.com

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EXECUTIVE SUMMARY

The Truckee River through the Truckee Meadows has impaired water quality related to elevated water temperature, excessive nutrients, and increased total dissolved solids (TDS). Water quality is of particular concern because the Truckee River and its tributaries have several beneficial uses, including aquatic habitat, recreation, and domestic and irrigation water. To attain nutrient-related water quality objectives in the Truckee River, the Nevada Division of Environmental Protection (NDEP) has developed a Total Maximum Daily Load (TMDL) for total-nitrogen (Total-N), total-phosphorus (Total-P), and TDS. Furthermore, NDEP re-evaluates data every 2 years under the Clean Water Act, Section 303(d) to update or establish Water Quality Standards (WQS) and Requirements to Maintain Higher Water Quality for impaired tributaries, reaches or river segments.

In 1990, the NDEP issued a Municipal Separate Storm Sewer System (MS4) permit to the Truckee Meadows Region, including the City of Reno, 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. A stormwater monitoring program to collect and analyze stormwater and baseflow samples across Truckee River tributaries and some urban outfalls has been part of the SWMP since 2003 and is currently carried out according to the 2020 Sampling and Analysis Plan (SAP), as updated by Balance Hydrologics (Trustman, 2020).

This annual stormwater monitoring report is required under the Truckee Meadows MS4 permit to report stormwater and non-stormwater quality measured in the previous fiscal year. This information supports the permit holder in developing a robust data set of water quality in the Truckee Meadows. In addition, this data set is used to identify water quality or environmental degradation trends in the Truckee Meadows.

Balance Hydrologics evaluated water quality in stormwater and baseflow at 16 monitoring stations as part of the Truckee Meadows Regional Storm Water Quality Management Program in Fiscal Year 2021 (FY2021)[1]. Grab samples are collected, manual measurements of instantaneous streamflow are made, and instantaneous loads are quantified for 8 stations. Additionally, automated samplers and near-continuous streamflow gages at 4 urban outfalls and 4 tributary stations are used to collect flow-

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[1] Fiscal Year 2021 began July 1, 2020 and ended June 30, 2021.

weighted samples and calculate the stormwater constituent loads during selected storm events and two 24-hour baseflow periods.

Total annual precipitation in the Truckee Meadows in FY2021, as measured at the Reno-Tahoe International Airport (RNO), was 2.99 inches, well below the long-term annual average of 7.40 inches. A majority of the annual precipitation was recorded during storms in November and late January. February, typically the wettest month of the year, was unseasonably dry in 2021 with only 0.12 inches of recorded precipitation. Some summer convective storms were observed in May and June, but they were isolated with limited measurable precipitation and runoff.

As a result of the well-below average precipitation and limited rainfall-runoff events, Balance staff delivered 22 out of a targeted 32 samples to WetLAB for characterization of stormwater runoff from 16 stations in FY2021. As in past years, Balance also collected samples to characterize water quality during baseflow conditions at 12 tributary monitoring stations. Summer baseflow sampling occurred on September 3 and 4, 2020 and winter baseflow sampling occurred on March 29 and 30, 2021.

Total-N concentrations in stormwater runoff exceeded water quality standards (WQS) where WQS have been established. In addition, six of seven Total-N concentrations in tributary baseflow exceeded WQS at locations sampled and where WQS exist. The highest measured stormwater runoff concentrations were from the Arlington urban stormwater outfall (25 mg/L). The highest measured baseflow concentrations were measured in Boynton Slough (3.2 mg/L), a large, urban tributary to Steamboat Creek.

In this program two tributaries are analyzed for nitrate concentrations in stormwater runoff and baseflow (Chalk Creek and Alum Creek). Both tributaries feed the Truckee River above Idlewild Park. Samples collected from both Alum Creek and Chalk Creek were measured below the established water quality standards (WQS) for the Truckee River (S.V. ≤ 2.0 mg/L). The concentrations ranged from not detected above the laboratory reporting limits to 1.4 mg/L.

TKN is a measure of the total concentration of organic nitrogen and ammonia. Although we do not directly analyze for TKN in the Sample Analysis Plan (SAP), the results are reported from laboratory samples in order to calculate Total-N. We include the TKN results in this report and results ranged from 0.91 mg/L to 25 mg/L. Baseflow results from the tributary stations ranged from not detected above the laboratory reporting limits to 1.70 mg/L.

Total-P concentrations ranged between 0.13 mg/L and 2.0 mg/L. The highest measured Total-P concentrations in stormwater runoff were from the Arlington Street urban stormwater outfall. Total-P concentrations in baseflow ranged between 0.05 mg/L to 0.42mg/L. Currently, WQS for Total-P for waters monitored under this program are expressed as annual-averages. Results presented in this report are single values and comparisons should be used with caution.

Ortho-P concentrations in stormwater runoff and baseflow in the tributaries and urban stormwater outfalls that feed the Truckee River above East McCarran exceeded established water quality standards (WQS) established for the Truckee River (S.V. ≤ 0.05 mg/L). The concentrations ranged from 0.075 mg/L to 1.6 mg/L. There are no other WQS established for Ortho-P on any of the other water bodies monitored for this program.

Measured TDS concentrations in stormwater runoff exceeded single value requirements to maintain existing higher water quality set by the NDEP in 16 of 22 of the samples collected in FY2021. TDS concentrations in baseflow exceeded the same requirement in samples from North Truckee Drain, Chalk Creek, Alum Creek, Yori Drain, and all three stations on Steamboat Creek. Additional water quality standards for TDS are measured in annual average and presented for reference only. In some cases, TDS concentrations in baseflow exceeded the single value requirement concentrations in stormwater runoff, suggesting water quality impairment may originate from irrigation returns, illicit discharges, or other sources that occur during non-precipitation runoff.

Limited storm event water samples were collected and analyzed for *E.coli* in FY2021 due to sampling holding time constraints and the limited runoff events, but water samples were collected at nearly all stations during baseflow conditions. Stormwater runoff samples were successfully collected and analyzed from only Alum Creek and Steamboat Creek at Rhodes Road, and counts from both samples exceeded established WQS. All baseflow water samples collected in FY2021 met WQS for E. coli.

Turbidity, Dissolved Oxygen (DO) and pH exceeded established WQS in some instances. All DO measurements were within an acceptable range or met WQS except those in summer baseflow measured in North Truckee Drain at Big Fish Drive. Only two pH measurements were below the WQS range: one from North Truckee Drain at Big Fish Drive and one from the Mary Wahl Drain urban stormwater outfall. All stormwater samples and most (except for 5) baseflow samples exceeded the WQS for turbidity (S.V. ≤ 10 NTU).

Storm loads were generally small from the urban stormwater outfall samples collected in FY2021. This is due both to the smaller storms that were sampled, as well as the relatively small contributing watershed areas. For example, storm loads from the November 18, 2020 sampled at Arlington and Mary Wahl compared to the Truckee River TMDL were 7% of the Total-N TMDL, 5% of the Total-P TMDL, and 0.2% of the TDS TMDL. This storm did not last for 24 hours and the storm load is not an estimate of daily load. Loadings from urban stormwater outfalls during the December 2020 and January 2021 storms were even smaller than the November 2020 storm.

Constituent ‘yields’ are normalized based on watershed area and provide an indication of constituent production and delivery rates from a given area. Yields are calculated and reported in terms of pounds per square mile of watershed area (lbs./sq. mile). For example, although total loads were higher at Mary Wahl Drain during the November storm, Arlington had higher yields, indicating that the contributing watershed area to the Arlington stormwater outfall is producing more nutrients, fine sediment, and dissolved solids relative to other portions of the watershed. In both the December 2020 and January 2021 storms, Fisherman’s Park delivered the highest constituent loads, yet the Oxbow Park contributing watershed areas delivered the highest yields when normalized for watershed areas.

Nested baseflow sampling in the Steamboat Creek watershed showed that the Yori Drain sub-watershed delivered higher nutrient and TDS yields than either Boynton Slough or the rest of the upper Steamboat Creek watershed.

1 INTRODUCTION AND PROJECT PURPOSE

1.1 Introduction

The Truckee Meadows Storm Water Permit Coordinating Committee (SWPCC) is composed of representatives from the City of Reno, City of Sparks and Washoe County. The committee is responsible for developing, administering, and implementing the Stormwater Management Program (SWMP) for the Truckee Meadows (Figure 1-1). The SWPCC is required by its MS4 permit to conduct this program to monitor and implement source controls to reduce and prevent pollutants from entering local water bodies. This program must follow a Sampling and Analysis Plan (SAP) that describes the monitoring protocols and procedures. Under the SWMP, sampling has been conducted since 2003 at multiple established monitoring stations across the Truckee Meadows, with results reported to the Nevada Department of Environmental Protection (NDEP). In fiscal year[2] 2021 (FY2021), the SWPCC contracted Balance Hydrologics (Balance) to continue implementing and improving the stormwater monitoring program, as according to the 2020 SAP (Trustman, 2020).

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, the program's effectiveness can be assessed and can identify opportunities for new or revised stormwater Best Management Practices (BMPs). In support of this overall program goal, there are four monitoring objectives:

1. Characterize stormwater runoff 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 water quality in selected tributaries with varying land-use types within the study area; and

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[2] 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 understand stormwater issues in the area.

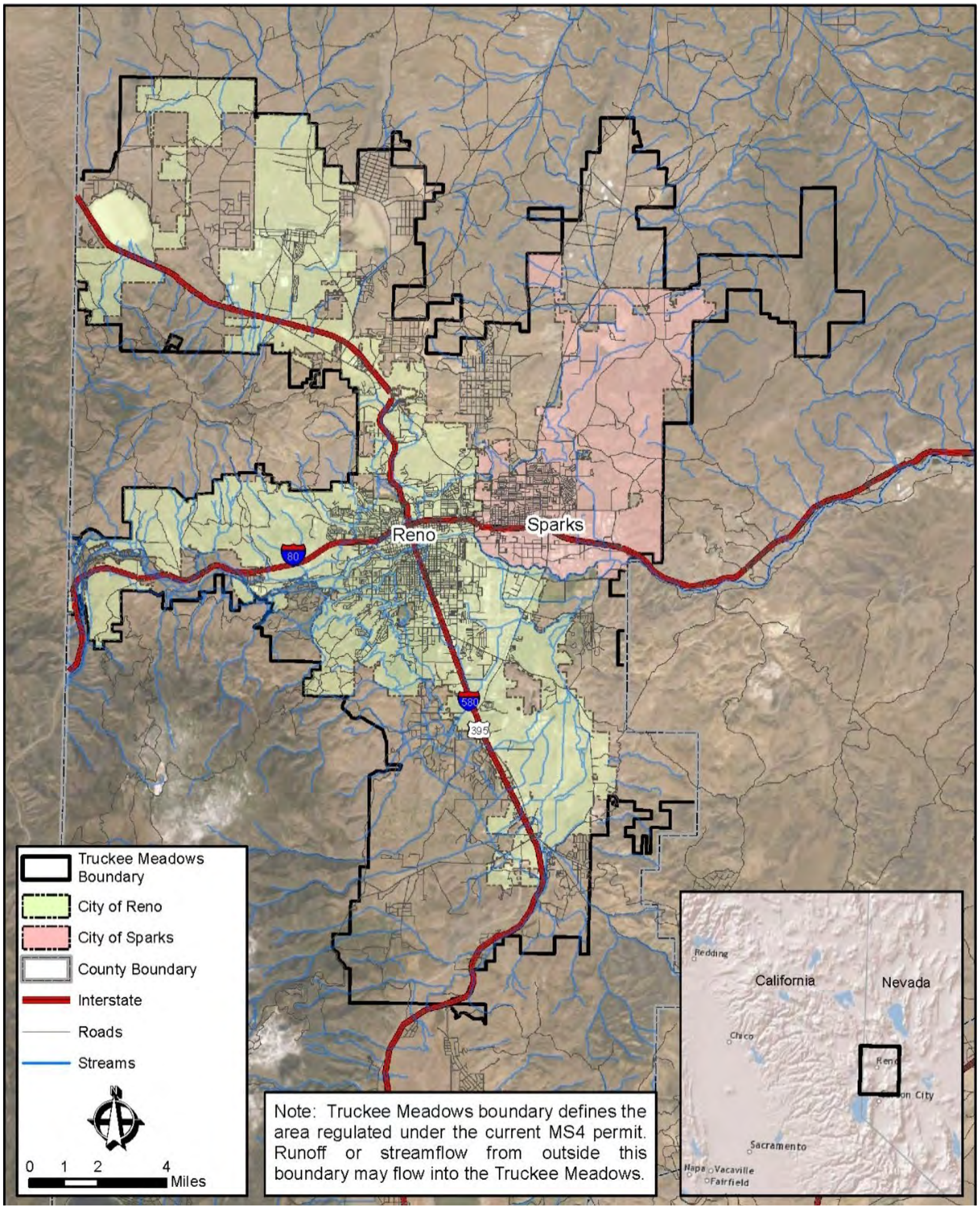


Figure 1-1 Location Map of Truckee Meadows, including City of Reno, City of Sparks and parts of Washoe County, Nevada

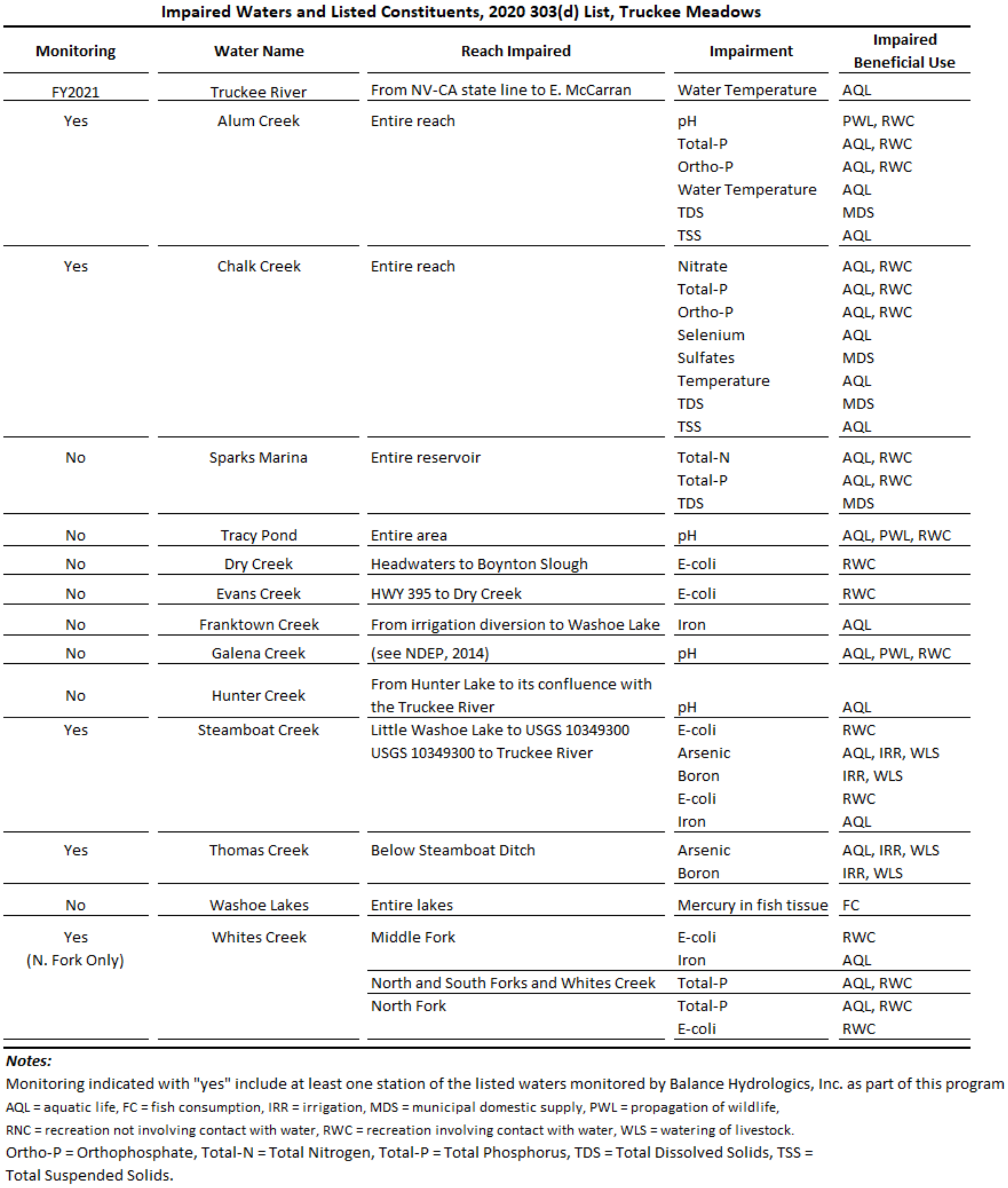
1.3 Regulatory Background

The discharge of municipal stormwater runoff within the Truckee Meadows is regulated under a single Municipal Separate Storm Sewer System (MS4) permit. The MS4 permit is jointly issued to the City of Reno, City of Sparks, and Washoe County. It 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 represents 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 develop 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 2020 SAP used for the monitoring program in this report is based on the 303(d) list from the Nevada Water Quality Integrated Report published in 2020. Impairment differs between listed water bodies, as shown in Table 1-1.

Table 1-1 2016-2018 Impaired Waters and Listed Constituents 303(d) List, Truckee Meadows, Nevada (NDEP, 2020)



Impaired Waters and Listed Constituents, 2020 303(d) List, Truckee Meadows

Monitoring	Water Name	Reach Impaired	Impairment	Impaired Beneficial Use
FY2021	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:

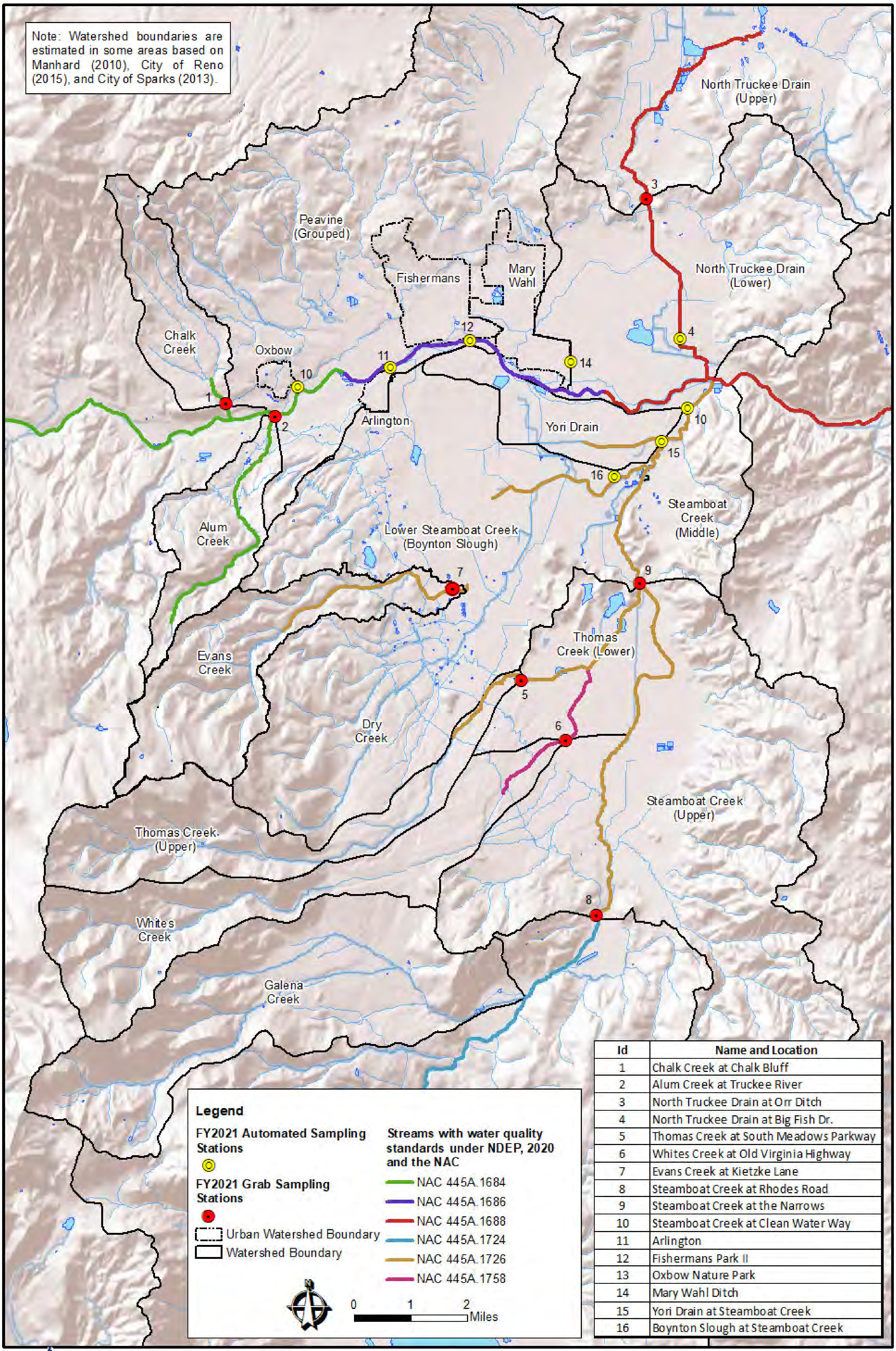
Monitoring indicated with "yes" include at least one station of the listed waters monitored by Balance Hydrologics, Inc. as part of this program

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.

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. In addition, some listed waters have two or more segments, with each segment having different beneficial uses and numeric criteria.

Specific water-quality numeric criteria for this stormwater monitoring program were identified for each tributary or segment according to current NAC and control points. The Tributary Rule (NAC 445A.1239) states that all water quality standards (WQS) established for Designated Waters shall apply to all tributaries that are non-designated waters. Figure 1-2 shows watershed boundaries for monitoring stations under this program along with and the tributary stream segments that have specific beneficial uses and numeric criteria. Designated waters non-designated tributaries are listed in Table 1-2. Specific water quality parameters, beneficial uses, and water quality standards for each of the six NAC-listed streams or river segments can be found in Appendix E. Some numeric criteria include single value (S.V.) measures and/or annual averages (A- Avg.). Samples collected as part of this program are considered S.V. measures and compared to S.V. standards when they exist. When S.V. standards do not exist for a given parameter, "A-Avg." values are presented for reference but are not necessarily comparable to the single targeted samples that are obtained under this program.



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 Highway
7	Evans Creek at Kietzke Lane
8	Steamboat Creek at Rhodes Road
9	Steamboat Creek at the Narrows
10	Steamboat Creek at Clean Water Way
11	Arlington
12	Fishermans Park II
13	Oxbow Nature Park
14	Mary Wahl Ditch
15	Yori Drain at Steamboat Creek
16	Boynton Slough at Steamboat Creek

Balance Hydrologics, Inc.

Basemap Source: ESRI ArcGIS Online and data partners

Y:\GIS\Projects\213136 City of Reno\mxd\213136 Figure 1_2 FY2021 Watershed and Water Quality Map.mxd

Figure 1-2 Monitoring Station Map showing 303(d) Designated Waters with Water Quality Standards and Non-Designated Waters with Tributary Rule applied, Truckee Meadows Stormwater Program, FY2021

Table 1-2 Designated Waters under Nevada Administrative Code (NAC) and Monitoring Stations where Water Quality Standards were applied using the Tributary Rule, Truckee Meadows Stormwater Program, FY2021

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. McCarran Boulevard Bridge*			
		Urban Outfall	Arlington	H-19
		Urban Outfall	Fisherman's Park II	D-16
		Urban Outfall	Mary Wahl Drain	SDOE 008936
NAC 445a. 1688	*Truckee River from E. McCarran 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
		Evans Creek	at Kietzke Lane	EC@KL
		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

Note: Detailed water quality standards are provided in Appendix E

For water bodies listed as impaired, states must assess the amount of pollution a water body can receive without violating water quality standards. This amount of pollution is called a Total Maximum Daily Load (TMDL). In 1994, the NDEP established TMDLs for the Truckee River for three different constituents: total nitrogen (Total-N), total phosphorus (Total-P), and total dissolved solids (TDS) (Table 1-3). The control point for these constituents is the Truckee River at Lockwood. Monitoring of waters in the Truckee River at Lockwood is not a component of this monitoring program. Instead, the Truckee Meadows Water Reclamation Facility (TMWRF) collects samples under a separate NPDES permit, and results are available on the Truckee River Information Gateway (TRIG; http://truckeeriverinfo.org/). The Truckee Meadows MS4 permit states that the permit holder must evaluate stormwater contributing to the 303(d) list or TMDL (Section II A. I). Therefore, the 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. According to the NDEP 2020 Integrated report, the TMDLs for Total-N and Total-P were not met in 2016-2018 for the first time since the TMDL was instituted in 1994 (NDEP 2020), while the TMDL for TDS was met.

Table 1-3 Total Maximum Daily Load (TMDLs), Truckee River at Lockwood

	Total-N (lbs/day)	Total-P (lbs/day)	TDS (lbs/day)
TMDL	1000	214	900,528

2 SAMPLING AND ANALYSIS PLAN (2020) AND ADDENDUMS

Balance issued a revised FY2020 SAP in September 2020 (Trustman, 2020) that reflected several changes to the monitoring program over the previous three years. These changes include the addition of the South Evans Creek monitoring location in lieu of the Chalk Creek station, and the addition of Boynton Slough and Yori Drain monitoring locations.

2.1 Sampling and Analysis Plan

In FY2021, Balance conducted the monitoring program based on the 2020 SAP, which describes two different sampling activities: (1) scheduled, non-rain event, tributary baseflow sampling, and (2) unscheduled stormwater runoff sampling. The 2020 SAP identifies 16 monitoring stations, including 12 stations on nine tributaries requiring both baseflow sampling and unscheduled stormwater runoff sampling, and four urban outfall monitoring stations requiring only unscheduled stormwater runoff sampling. All four urban outfalls utilize near-continuous streamflow gages and/or automated samplers to collect multiple samples during a given storm runoff event to characterize constituent loading to the Truckee River. All samples that were not detected above the laboratory reporting limits were left out of the concentration results and no loads were calculated for these samples. We do recognize that although the results were not detectable according to the laboratory reporting limits, there can be some concentrations present.

Balance continued to operate streamflow gaging stations on five tributaries to the Truckee River (Alum Creek, South Evans Creek, Thomas Creek, Boynton Slough, and Yori Drain) as part of this program. The Chalk Creek gaging station was decommissioned in FY2020 due to ongoing disruptions from beaver activity. In the lieu of a continuous flow record, instantaneous flow measurements are collected during sampling events. In addition, Truckee Meadows Water Authority (TMWA) operates and maintains a streamflow gaging station on Whites Creek, which is used in this program to document streamflow and compute instantaneous loads. Streamflow data are used to quantify storm event runoff volumes and calculate instantaneous or total storm loading rates at these stations.

2.2 Constituents of Concern

The 2020 SAP identifies the following constituents and physical and chemical parameters 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 and chemical parameters including, turbidity, pH, dissolved oxygen (DO), and specific conductance (SC).

Below, we define and briefly discuss the importance of these constituents/parameters related to stormwater in the Truckee Meadows.

2.2.1 NITROGEN AND PHOSPHORUS

Nitrogen and phosphorus are typical constituents of concern in urban stormwater. The primary sources of these nutrients in urban stormwater are urban landscape runoff, atmospheric deposition, animal waste, improperly functioning septic systems, and 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 adverse effects of decomposing algae, which depletes dissolved oxygen concentrations necessary to support other aquatic life (USEPA, 1999).

Total-N includes four different 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 more stable and readily transported in water. NO_3 is highly toxic to humans and fish at high concentrations and long-term exposure. NH_3 is more volatile and converts to NO_2 and NO_3 through oxidation and is the most harmful to aquatic life. NH_3 typically reacts or dissolves in water to form NH_4 at neutral pH levels (i.e., near 7). NH_4 is adsorbed on mineral surfaces or soil particles and is transported by sediment in the water (Hem, 1985). TKN is a measure of the total concentration of organic nitrogen and ammonia.

Nitrogen sources include residential and agricultural fertilizers, septic tanks, leaking sewer lines, and leach fields in surface waters. In addition, unsanitary disposal of human and pet excrement is common in urban areas and occurs 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 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 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 or drained wetlands, decomposition of organic matter, and commercial cleaning products.

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). For example, Romeis (1999) identified multiple possible sources of excess phosphorus to Steamboat Creek: Livestock, fertilizers, irrigation return flows, leaking septic systems and bank erosion. In addition, high phosphorus concentrations (as phosphate) can be present in geothermal wells in the Truckee Meadows region (Great Basin Groundwater Geochemical Database, 2016). Finally, Shump (1985) and Skalbeck and others (2002) have established that some tributaries, including Steamboat Creek, are gaining streams and receiving groundwater from non-thermal and thermal waters. However, the link between these possible sources and transport is poorly understood, and additional investigations into the source(s) of elevated phosphorus (Total-P and Ortho-P) concentrations are warranted.

2.2.2 TOTAL SUSPENDED AND DISSOLVED SOLIDS

TSS is a measure of both organic and inorganic solids suspended in the water column. In contrast, TDS measures all inorganic and organic substances dissolved in the water column (Hem, 1985). Waters that receive urban stormwater can see increases in both TSS and TDS. 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. In addition, TSS can settle in backwater areas or the main channel during periods of low flow and can alter or impair aquatic habitat and aquatic life. TSS can provide a medium for accumulating, transporting, and storing other pollutants, including nutrients and metals (USEPA, 1999).

Although TSS and TDS are not typically associated with human health effects, they are aesthetic and aggregate indicators of the presence of chemical contaminants. Elevated concentrations of TDS and TSS can be from natural erosion of geologic sources. Increases over background TSS and TDS may originate from agricultural and residential runoff and 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, including 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, runoff to recreational waters such as the Truckee River poses a potential public health risk. Runoff can contain many pathogens that cannot be measured directly; therefore, indicator organisms like *E.coli* can predict health risks (NDEP, 2020). High counts of bacteria may not necessarily confirm the presence of pathogens but provide an indicator for risk. In this report, *E.coli* results are in the Most Probable Number (MPN) units per 100 mL of water.

2.2.4 OTHER PHYSICAL AND CHEMICAL PARAMETERS

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

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 DO levels but DO increases when diluted 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 byproduct 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.

In general, DO concentrations can be 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.

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

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 number of dissolved ions in the water and can be a proxy for salinity. While there are no recommended water quality criteria for conductivity, it can indicate TDS and other dissolved ions. SC can exhibit a wide range if waters move through areas of differing geology. For example, waters that drain granitic or volcanic rocks have a very low SC (< 400 µS (micro Siemens). Alternatively, waters that drain marine sedimentary rocks (e.g., Chalk Creek) or geothermal areas (e.g., Steamboat Creek) will typically have a much higher SC (>2,000 µS). The acceptable range for freshwater fish is between 100 and 2,000 µS (MacDonald and others, 1991).

3 STORM MONITORING STATIONS

The FY2021 stormwater monitoring program includes 16 monitoring stations: 12 tributary stations and four urban stormwater outfalls. Locations of monitoring stations, rain gages, and streamflow gages used for this monitoring program are in Figure 3-1. Table 3-1 describes the characteristics of the stations and their drainage areas, including land-uses, constituents of concern, instrumentation, comments, and known existing studies. Drainage areas for each monitoring station were established using recent watershed assessments, special studies, zoning maps, stormwater system maps, aerial imagery available on Google Earth®, and field observations.

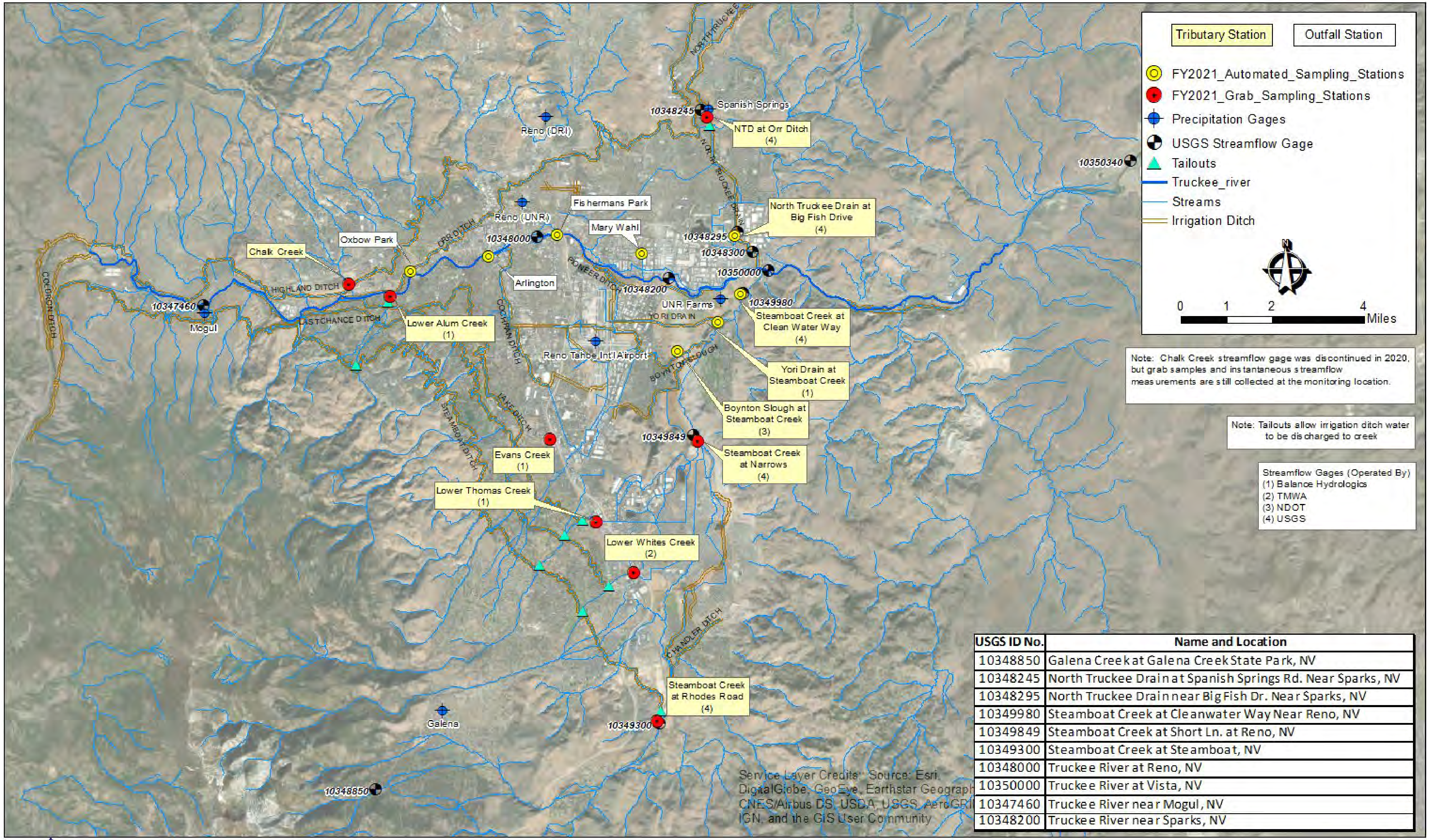
3.1 Tributary Stations

The 2020 SAP establishes 12 monitoring stations across eight tributaries. Two of the largest tributaries, Steamboat Creek and North Truckee Drain, have more than one monitoring station along the mainstem of each stream, allowing for evaluation of possible water-quality degradation from specific sub-watersheds. Furthermore, four tributary stations flow to Steamboat Creek: Yori Drain, Boynton Slough (including S. Evans Creek), Thomas Creek, and Whites Creek.

Delineation of drainage areas for tributary monitoring stations is confounded by irrigation ditches that divert waters from the Truckee River upstream of the Truckee Meadows. These irrigation ditches 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. However, water quality investigations in tailwaters are not part of this study. Table 3-2 lists the locations where tailouts exist or where irrigation ditches can discharge to tributaries. These locations are also in Figure 3-1.

3.2 Urban Stormwater Outfall Stations

The 2020 SAP identifies four urban stormwater outfalls as monitoring stations (See Figure 3-1). These outfalls typically discharge only during storm events; however, they can discharge non-stormwater related to illicit discharges. Discharge quality at these outfalls can affect receiving waters of the Truckee River and their designated beneficial uses. Under this program, we evaluate stormwater discharge only.



Note: Chalk Creek streamflow gage was discontinued in 2020, but grab samples and instantaneous streamflow measurements are still collected at the monitoring location.

Note: Tailouts allow irrigation ditch water to be discharged to creek

Streamflow Gages (Operated By)
(1) Balance Hydrologics
(2) TMWA
(3) NDOT
(4) USGS

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

Balance Hydrologics, Inc.

Figure 3-1. Truckee Meadows Stormwater Monitoring Locations, Washoe County, Nevada

Basemap Source: ESRI ArcGIS Online and data partners

Y:\GIS\Projects\213136 City of Reno\mxd\213136 Figure 3_1 Stormwater Monitoring FY2021.mxd

Figure 3-1 Truckee Meadows Stormwater Monitoring Stations, Streamflow Gaging Stations, Rain Gages, and Station Equipment, FY2021

Table 3-1 Monitoring Locations and Characteristics, Truckee Meadows Stormwater Monitoring Program, FY2021

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	Grab sample and flow measurement only	Watershed includes geology of the Hunter Creek Formation: diatomaceous fine sandstone or "chalk" and lacustrine deposits which bear high concentrations of sulfates; streamflow gage was discontinued in 2020 due to beaver activity that compromised the gaging location.	JBR Environmental, 2010; Hastings and Trustman, 2019
Lower Alum Creek at Truckee River	AC@TR	Tributary to Truckee River	4.9	Residential, commercial, open space	Balance sampling station	Watershed geology includes Hunter Creek Formation, hydrous aluminum sulfates; artifical irrigation ponds provide some flood detention; Steamboat Ditch discharges to creek at times.	Fennema, 2013; Jesch, 2008 and 2011; Hastings and Trustman, 2019
Lower Alum Creek at Mayberry Dr.	AC@MAB	Tributary to Truckee River	4.9	Residential, commercial, open space	Balance gaging station	Gaging station upstream of AC@TR to record streamflow. Gage was relocated from AC@TR site in FY2019 due to stream changes. All water quality samples are still collected at AC@TR station and instantaneous flow is measured with all sample collection for load calculation	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; Hastings and Trustman, 2019
North Truckee Drain at Big Fish Drive	NTD@BFD	Tributary to Truckee River	NA	agriculture, residential, and commercial, industrial	USGS gaging station 10348295 and ISCO automated sampler	Relocated in 2017 from a location downstream of I-80 and UPRR (Kleppe Lane) to a new location upstream of I-80 and UPRR.	Jesch, 2005; Hastings and Trustman, 2019
Evans Creek at Kietzke Lane	EC@KL	Tributary to Steamboat Creek	9.6	agriculture, residential, and commercial	Balance gaging station	Located downstream of Anderson Park just upstream of I580. Gaging location represents mostly residential use.	Jesch, 2011
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; Hastings and Trustman 2019
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; Hastings and Trustman, 2019
Steamboat Creek at Rhodes Road	SBC@RHR	Tributary to Truckee River	123	Rural residential; major roads, historic gold and silver mining	USGS gaging station 10349300	Washoe Lake located short distance upstream	Parametrix and Wenk Associates, 2007; Codega, 1998; Hastings and Trustman , 2019
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, 1998; Hastings and Trustman , 2019
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 /NDOT gaging station and ISCO automated sampler	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. Watershed area is estimated using multiple sources.	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. Watershed area is estimated using multiple sources.	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 and ISCO automated sampler	Southeast Connector construction completed spring 2018	RTCWC, 2013; Parametrix and Wenk Associates, 2007; Codega, 2000; Hastings and Trustman, 2019
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

Note: Watershed areas in italics are estimated

Table 3-2 Tributary Monitoring Stations 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 Water
	Evans Creek at Kietzke Lane
Last Chance Ditch	Alum Creek at Truckee River
	Thomas Creek at S. Meadows Parkway
	Whites Creek at Old Virginia Highway
	Evans Creek at Kietzke Lane
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 Big Fish Drive
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.

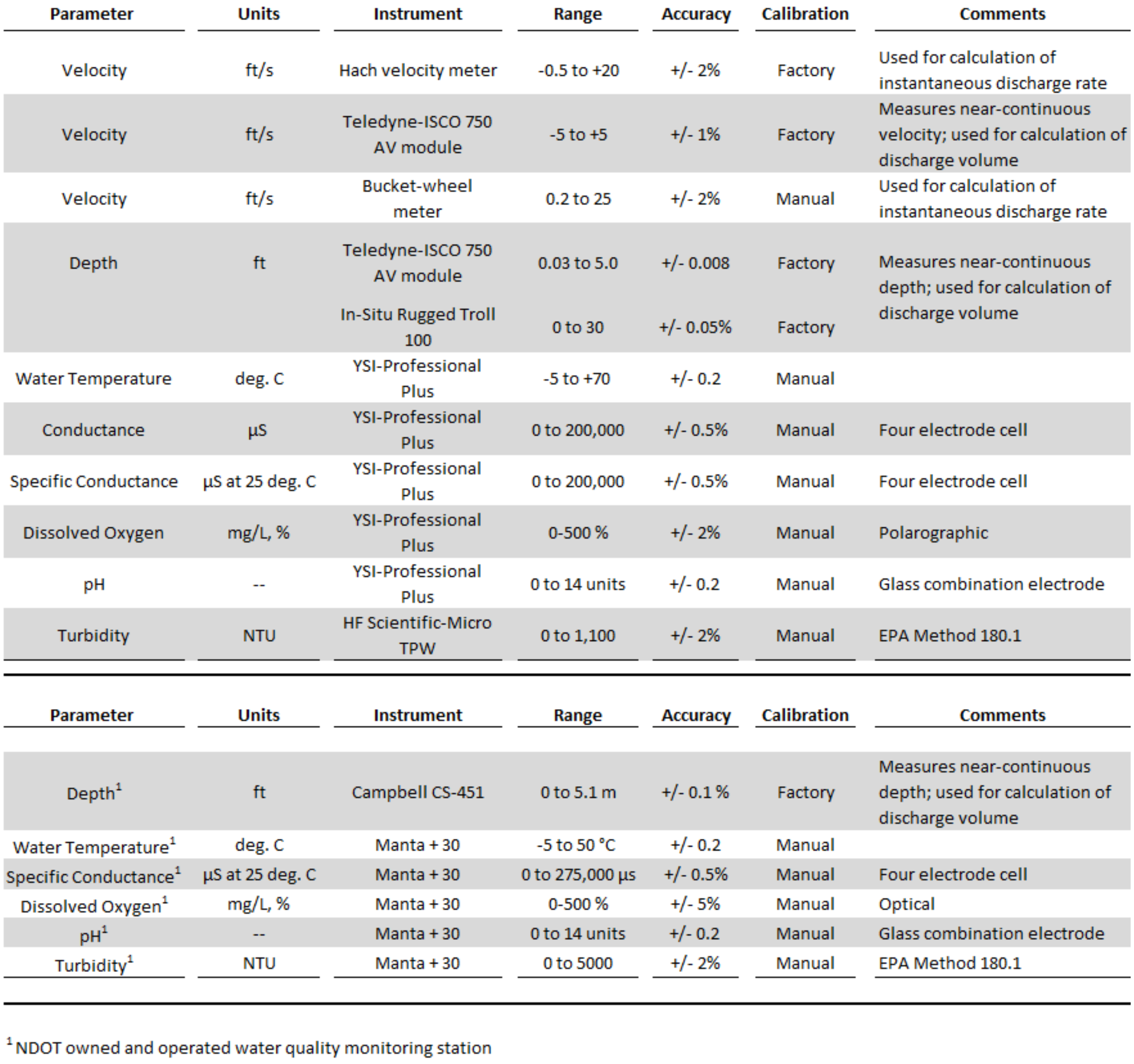
4 STORM MONITORING PROGRAM METHODS

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 device.

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
		In-Situ Rugged Troll 100	0 to 30	+/- 0.05%	Factory	
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

Parameter	Units	Instrument	Range	Accuracy	Calibration	Comments
Depth[1]	ft	Campbell CS-451	0 to 5.1 m	+/- 0.1 %	Factory	Measures near-continuous depth; used for calculation of discharge volume
Water Temperature[1]	deg. C	Manta + 30	-5 to 50 °C	+/- 0.2	Manual	
Specific Conductance[1]	µS at 25 deg. C	Manta + 30	0 to 275,000 µs	+/- 0.5%	Manual	Four electrode cell
Dissolved Oxygen[1]	mg/L, %	Manta + 30	0-500 %	+/- 5%	Manual	Optical
pH[1]	--	Manta + 30	0 to 14 units	+/- 0.2	Manual	Glass combination electrode
Turbidity[1]	NTU	Manta + 30	0 to 5000	+/- 2%	Manual	EPA Method 180.1

[1] NDOT owned and operated water quality monitoring station

4.2 Sampling Procedures

Stormwater runoff samples are collected using various methods depending on the site and instrumentation. For example, samples collected at automated sampling stations used either time-interval or flow-interval techniques to fill discrete sample bottles automatically throughout the storm hydrograph, while other stations require grab samples. Unless otherwise noted, grab samples are collected using a clean, triple-rinsed container and were collected, composited, and mixed to fill laboratory-required volumes and laboratory-supplied bottles.

All storm and baseflow samples are delivered to Western Environmental Testing Laboratory (WETLAB) in Sparks, Nevada, under Chain-of-Custody (COC) procedures. Sample processing and procedures were completed as outlined in the 2020 SAP.

4.3 Streamflow/Discharge Gaging

Under this program, Balance operates and maintains four streamflow gaging stations and works with NDOT to operate a fifth station at Boynton Slough using standard hydrologic practices. The primary purpose of the gaging stations is to record near-continuous streamflow and quantify constituent loading across each storm event sampled. Four stations have Type C staff plates indicating water stage, and In-Situ® or Campbell Scientific® pressure transducers record water pressure depth. 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 the 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.

The Yori Drain gaging station is located within a culvert or pipe and equipped with an 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).

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

- Site visits may be limited due to access and sample timing. They may not document some changes in conditions that affect flow (e.g., channel erosion, sediment or garbage accumulation in a culvert, vandalism, lower stream depths than instrument sensor, etc.);

- Some gaging stations are near confluences with larger tributaries or the Truckee River, so backwatering can occur in extreme events. Identified periods of backwatering and erroneous data are replaced with estimated streamflow or discharge when feasible; and

- The gaging program is not intended to quantify flood magnitude, frequency, or recurrence intervals. Moreover, while stormwater can cause flooding, not all flood events qualify as targeted stormwater sampling events, so site visits might not occur during flooding conditions.

4.4 Manual Streamflow/Discharge Measurements

Balance utilizes standard streamflow equipment and practices appropriate for the conditions encountered in the field (Carter and Davidian, 1968). Discharge is measured or estimated during stormwater sample collection. A digital velocity meter measures velocity and allows for computation of instantaneous stormwater discharge in closed stormwater systems (i.e., pipes) accessed by a manhole. Discharge in open channels is calculated using a pygmy, standard Price AA (bucket-wheel) meter, or a digital velocity meter. 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 are used (Turnipseed and Sauer, 2010). A minimum of two verticals to measure velocity in a pipe and a minimum of four verticals are used to measure channel depth and velocity in open channels. The total number of verticals is established based on how quickly water depth changes. Each open channel monitoring station includes a staff plate, which allows for consistent stage readings. The cross-sectional area of the pipe or open channel is multiplied by the velocity measured at the cross-section to compute an instantaneous discharge. Streamflow estimates are completed using measured flow widths (ft) and depths (ft) and measurements of surface velocity using a float’s movement across a known distance with a stopwatch (ft/sec).

4.5 Near-Continuous Streamflow Gaging Stations

Streamflow gaging provides an opportunity to compute constituent load for comparisons to established TMDLs. Streamflow gaging also provides a near-continuous flow record to understand better the influence of stormwater runoff, snowmelt runoff, or irrigation returns on natural streamflow. In FY2021, Balance operated and maintained four near-continuous streamflow gaging stations on monitored tributaries: (1) South Evans Creek at Kietzke Lane (EC@KL); (2) Alum Creek at Mayberry Drive (AC@MAB); (3) Thomas Creek at South Meadows Parkway (TC@SMP); and (4) Yori Drain at Steamboat Creek (YD@SBC).

The Alum Creek at Truckee River stream gage was relocated to Alum Creek at Mayberry Drive (AC@MAB) due to active channel erosion and instability in 2018. Still, all stormwater samples have been collected approximately 2,000 feet downstream at the Alum Creek at Truckee River (AC@TR) station for consistency with previous years. Manual flow measurements are conducted at the time of sampling at the Truckee River station for calculating instantaneous load. Annual streamflow records are from the Mayberry gaging location. At times very low flow at the Mayberry station is observed (<0.01 cfs) and the lower station is dry with no flow, possibly due to infiltration downstream of the gaging station.

NDOT operates and maintains a near-continuous stage gage on Boynton Slough at Steamboat Creek (BS@SBC). Balance uses discharge measurements and the data provided by NDOT to develop a stage to discharge relationship and compute a flow record.

All stations are calibrated using manual observations and stage shifts are applied as appropriate to produce an annual streamflow hydrograph at each station. Near-continuous streamflow gaging stations operated and maintained by the US Geological Survey (USGS) or Truckee Meadows Water Authority (TMWA) provide annual hydrographs from other monitored tributary stations. Streamflow volumes calculated at all stations are combined with sampled constituent concentrations to calculate instantaneous, daily, and total storm loads for selected constituents (see Section 4.7).

4.6 Automated Sampling and Discharge Computation

In FY2021, Balance operated and maintained Teledyne-ISCO® automated samplers at 8 Stations (4 stormwater urban outfall stations and 4 tributaries):

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

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

Rainfall depth-runoff volume rating curves are established at each urban stormwater outfall to use flow-weighted sampling techniques to collect samples at intervals of equal runoff volume. Harmel and others (2003) note that flow-weighted sampling best represents storm load because more samples are collected at higher flow rates.

The Yori Drain station (YD@SBC) can receive a significant discharge volume from the Truckee River via the Pioneer Ditch. These discharges are not based on precipitation but controlled by diversion operations. As such, it is not possible to develop rainfall-runoff rating curves to conduct flow-weighted sampling, so time-weighted sampling is used instead at this station.

The Boynton Slough station (BS@SBC) is instrumented with Campbell Scientific pressure transducers owned, operated, and maintained by NDOT. A stage to discharge relationship, as described above, is used to create a record of flow. FY2019 was the first year this monitoring station was operating and the development of the stage to discharge relationship is ongoing. As such, the automated sampler is programmed for time-weighted sampling when used.

Steamboat Creek at Clean Water Way (SBC@CWW) and North Truckee Drain at Big Fish Drive (NTD@BFD) have automated samplers co-located with USGS stream gages. During sampling events, the automated sampler is programmed for time-weighted sampling. Sampling time intervals ranged between 30 minutes and 2 hours; sometimes, sampling intervals are changed during a sampling event to be more or less frequent to accommodate event intensity or timing changes.

Following each sampling event, the storm hydrograph and timing of discrete samples are examined at all automated sampling stations to evaluate which samples best capture different portions of the storm hydrograph. Discrete samples are divided into four composite samples, each representing a component of the hydrograph: 1) first flush, 2) rising limb, 3) peak discharge, and 4) falling limb. Physical water quality parameters are measured directly[3] from the source upon readying the sampler and upon retrieving samples.

4.7 Calculation of Constituent Load 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 at a given time. We know that grab sample concentrations over an entire hydrograph for a single event can range from one to three orders of magnitude, depending on the constituent. Ultimately, the grab sample or ‘snapshot’ approach leaves many gaps in the characterization of the system (McKay and others, 2013).

Calculation of constituent load for a given period is an objective for many non-point source monitoring projects and is usually a more meaningful indicator than constituent concentration. Constituent load is a measure of mass transported over time. It can only be calculated when both the constituent concentration (mass/volume of water) and discharge (volume of water/time) are known:

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[3] Efforts are made to measure physical and chemical 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; Some data including temperature and dissolved oxygen may therefore not be representative of the runoff source due to the residence time of samples in the sampler.

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

Constituent loads measured during baseflow or during a storm event can be compared to TMDLs established for the Truckee River. Furthermore, the loads can also be normalized by watershed areas to compute yields, which allows for comparison of loading rates per square mile of watershed area, referred to as “yield” and expressed as lbs./sq. mile.

4.8 Quality Assurance and Quality Control

The 2020 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) training both members of the sampling team in stormwater sampling procedures and streamflow measurements; b) assigning a minimum of one senior- level staff person to each field team; c) adherence to USGS and EPA 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.

All site visits, staff present, and observations are documented in observer logs and provided in Appendix A. All field equipment and instrument calibrations completed in FY2021 are in Appendix B.

Separately, Balance staff member who was not involved with the field activities reviewed all the collected data, calculations, and laboratory results, per the Quality Assurance and Quality Control (QA/QC) procedures in the 2020 SAP.

4.9 Deviations from the Sampling and Analysis Plan

Weather conditions, hydrologic response, time of day, or need for expediency occasionally required deviations from procedures outlined in the 2020 SAP. The following are deviations from the 2020 SAP during the FY2021 monitoring year:

- Stormwater sampling excluded analysis for *E.coli* during some events because the laboratory hold times could not be met when storm sampling was conducted after hours and on weekends.
- In some cases, with automated samplers, sample collection was unsuccessful during one or more segments of the storm hydrograph (i.e., rising limb, peak

flow, etc.) due to instrument malfunction, power loss, or insufficient sample volume. These include:

  - Grab samples were collected at North Truckee Drain at Big Fish Drive in lieu of automated samples during March 29, 2021 baseflow due to low stream stage which resulted in the automated sampler intake being above the water surface.
  - Grab samples were collected at North Truckee Drain at Big Fish Drive in lieu of automated samples on June 3, 2021 and June 24, 2021due to the variable nature of thunderstorm location and intensity making time based sampling of the storm hydrograph unusable.
  - Only 8 of 24 samples were collected by the automated sampler at Yori Drain for the March 29-30, 2021 winter baseflow. Six bottles were composited into one laboratory bottle as per baseflow sampling procedures and the remaining two bottles were discarded due to lack of sample volume for another composite sample.
  - No rising limb sample was composited for the samples collected at the Arlington urban stormwater outfall from the January 4, 2021 storm due to the flashy nature of the hydrograph and quick response to peak flow during the small storm. There were no automated samples collected during the rising limb phase of the hydrograph.
  - No rising limb sample was composited for the samples collected at the Fisherman's Park II urban stormwater outfall from the January 4, 2021 storm due to the flashy nature of the hydrograph and quick response to peak flow during the small storm. There were no automated samples collected during the rising limb phase of the hydrograph.
  - No rising limb sample was composited for the samples collected at the Mary Wahl Drain urban stormwater outfall from the December 14, 2020 storm due to the flashy nature of the hydrograph and quick response to peak flow during the small storm. There were no automated samples collected during the rising limb phase of the hydrograph.

- Stormwater samples were not collected at several stations due to insufficient precipitation and runoff. These include:

- No stormwater samples were collected at the following stations due to a lack of hydrologic response from precipitation:
    - Steamboat Creek at Clean Water Way
    - Yori Drain at Steamboat Creek
    - Boynton Slough at Steamboat Creek
- One stormwater grab sample was collected at the following stations due to due to a lack of hydrologic response from precipitation:
    - Whites Creek at Old Virginia Highway
    - Thomas Creek at South Meadows Parkway
    - Evans Creek at Kietzke Lane
    - Steamboat Creek at Rhodes Road
    - Steamboat Creek at The Narrows

5 MONITORING RESULTS FY2021

Below, we describe total annual precipitation for FY2021, 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 load. The tabular results and laboratory reports are provided in Appendix C and Appendix D, respectively.

5.1 Precipitation Summary FY2021

Cumulative total annual precipitation from six stations across the Truckee Meadows is compared in Figure 5-1 and highlights the spatial variability of precipitation for FY2021. FY2021 was a dry year across the Truckee Meadows, with total annual precipitation ranging from 2.14 inches in North Truckee Drain at Orr Ditch (North Sparks) to 7.05 inches in Mogul (West of Reno). Cumulative daily precipitation at the Reno Tahoe Airport (RNO) of 2.99 inches for FY2021 was the third driest year on record and less than 0.2 inches more than the driest year on record (2001) The long-term climate normal precipitation is 7.40 inches (1981-2010)[4] for this station.

A summary of precipitation amounts during sampled storms is in Table 5-1. The maximum precipitation during a sampled storm was 1.19 inches at Mogul on November 18, 2020. In that same storm 0.16 inches of precipitation were measured at the Reno-Tahoe International Airport (RNO), an example of the rain shadow effect the Carson Range imposes on the Truckee Meadows. The samples collected in July 2020, May 2021 and June 2021 were a result of thunderstorms in the Truckee Meadows and have a wide range of variability with some stations not registering any measurable precipitation, while other areas received intense precipitation and associated runoff.

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[4] The long-term climate normal precipitation for the Reno-Tahoe International Airport is based on the water year and not the fiscal year. We use this as a reference for total precipitation in general for the Truckee Meadows. The fiscal year used for this report and the annual precipitation values presented above are consistent with the meteorological year, from July 1 to June 30. a

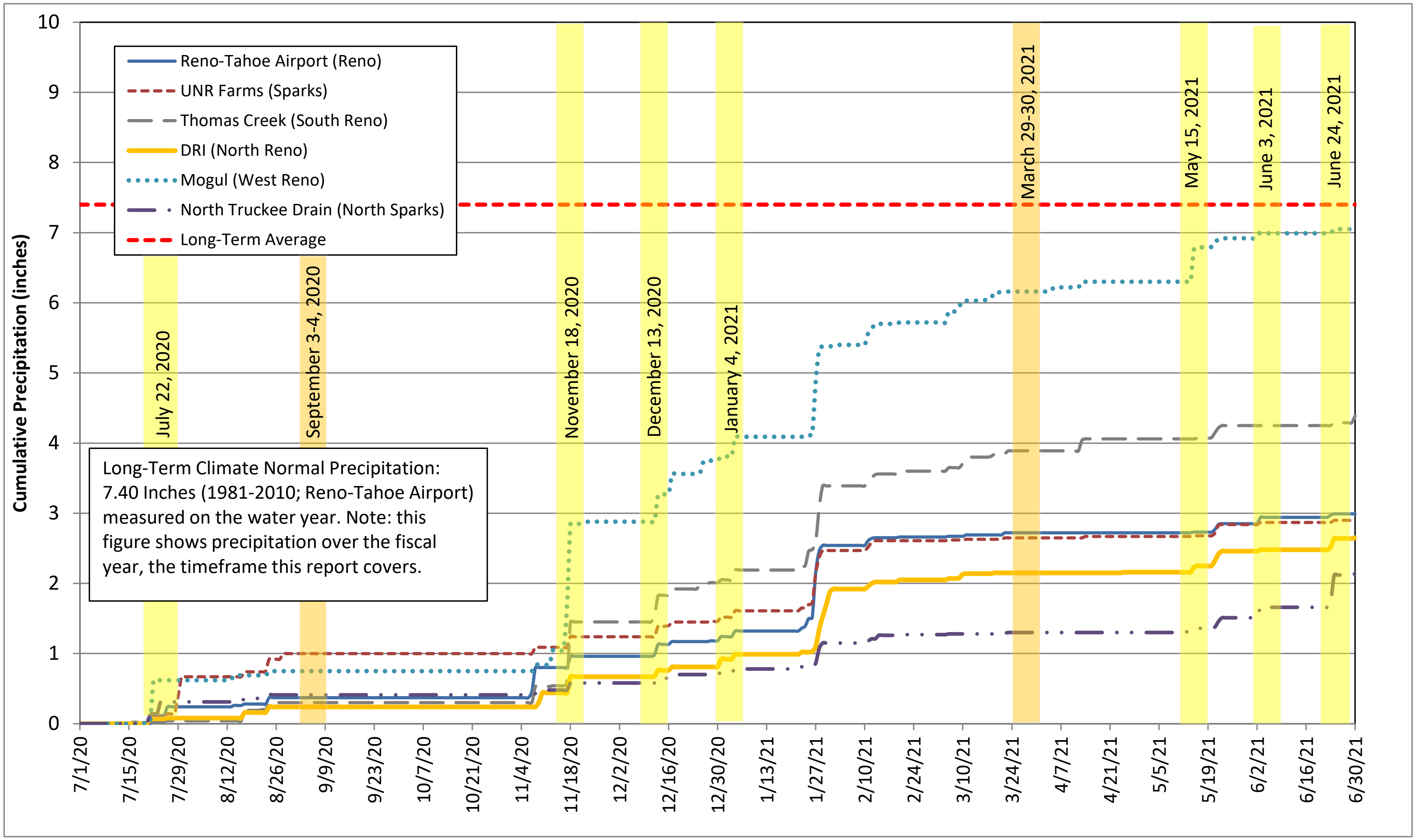


Figure 5-1 Cumulative Precipitation at 6 Different Rain Gages, Truckee Meadows, Nevada, FY2021. Precipitation occurrence, depths, and durations varied widely across the area. Sample events are yellow, and non-storm samples are orange.

Table 5-1 Summary of Precipitation during Sampled Storm Events, Truckee Meadows, FY2021

		Storm Events Sampled						
Rainfall gage	**Location**	***July 22, 2020***	***November 18, 2020***	***December 13, 2020***	***January 4, 2021***	***May 15, 2021***	***June 3, 2021***	***June 24, 2021***
		(inches)						
Reno-Tahoe Airport	Reno	0.11	0.16	0.15	0.08	0.01	0.09	0.02
UNR-Farms	Sparks	0.08	0.15	0.15	0.09	0.01	0.03	0.03
DRI	North Reno	0.00	0.23	0.08	0.07	0.07	0.02	0.12
Thomas Creek	South Reno	0.01	0.88	0.28	0.14	0.00	0.00	0.04
USGS-Mogul	West Reno (Mogul)	0.59	1.19	0.38	0.28	0.47	0.00	0.06
USGS-N. Truckee Drain	North Sparks	0.02	0.10	0.07	0.05	0.04	0.15	0.39
	Min	0.00	0.10	0.07	0.05	0.00	0.00	0.02
	Max	0.59	1.19	0.38	0.28	0.47	0.15	0.39

5.2 Work Conducted in FY2021

Balance delivered 22 of 32 planned stormwater samples to the laboratory in FY2021 due to well below-average annual precipitation and limited runoff-generating storms in the Truckee Meadows. (Table 5-2). Separately, baseflow samples were collected at all the tributary stations on September 3 and 4, 2020, to characterize summer baseflow. Winter baseflow samples were collected at all tributary stations, with the exception of Alum Creek which was dry, on March 29 and 30, 2021. Summer baseflow coincides with the irrigation season (April to October). Baseflow conditions were defined as a non-storm period with a minimum of 10 consecutive days without precipitation preceding the day of sampling.

Table 5-2 Storm Events and Baseflow Sampled in FY2021 and Stations Sampled in Each Event

Fiscal Year 2021 **(July 1, 2020 - June 30, 2021)**		***September 3-4, 2020***	***March 29-30,2021***	***July 22, 2020***	***November 18, 2020***	***December 13, 2020***	***January 4, 2021***	***May 15, 2021***	***June 3, 2021***	***June 24, 2021***	Storm Sample Count
Station	*Station ID*	*Summer*	*Winter*								
Tributaries											
Steamboat Cr at Rhodes Rd	SBC@RR	X	X		X						1
Steamboat Cr at Narrows	SBC@NAR	X	X		X						1
Steamboat Cr at Clean Water Way	SBC@CWW	X	X								
Whites Cr at Old Virginia Hwy	WC@OVH	X	X		X						1
Thomas Cr at S. Meadows Pkwy	TC@SMP	X	X		X						1
Evans Creek at Kietzke Ln.	EC@KL	X	X					X			1
North Truckee Drain at Orr Ditch	NTD@ORD	X	X		X			X			2
North Truckee Drain at Big Fish Dr.	NTD@BFD	X	X						X	X	2
Chalk Cr at Chalk Bluff	CC@CB	X	X		X		X				2
Alum Creek at Truckee River	AC@TR	X	Dry		X		X				2
Yori Drain at Steamboat Creek	YD@SBC	X	X								
Boynton Slough at Steamboat Creek	BS@SBC	X	X								
Urban Outfalls											
Oxbow Nature Park	C-24	NA	NA			X	X				2
Arlington	H-19	NA	NA	X	X		X				3
Fisherman's Park II	D-16	NA	NA			X	X				2
Mary Wahl Ditch	SDOE008936	NA	NA		X	X					2

Notes:
X =Denotes that samples were collected at this station during the identified storm event
NA =Not applicable; stormwater urban outfalls do not exhibit baseflow
Only one grab sample collected during July 22, 2020 storm at Arlington
Only one grab sample collected during March 2021 non-storm sampling at NTD@BFD due to low water level
Grab sample collected for thunderstorms at NTD@BFD during June 2021

5.3 FY2021 Hydrologic Response

Annual streamflow hydrographs for eight tributaries to the Truckee River monitored in FY2021 are presented and described in this section. For context, we also show daily mean streamflow for the Truckee River during the monitoring period.

5.3.1 TRUCKEE RIVER HYDROLOGIC RESPONSE, FY2021

Figure 5-2 shows FY2021 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. These gaging stations bracket the upstream and downstream extents of the Truckee Meadows where tributaries and urban stormwater outfalls sampled under this program discharge to the Truckee River.

Streamflow in the Truckee River through Truckee Meadows is affected precipitation and snowmelt in the upper watershed, regulated flows from 6 upstream dams, and multiple diversions. At the beginning of the fiscal year (July 1, 2021), daily streamflow was 565 cfs (at Mogul), 557 cfs (in Reno), and 599 cfs (at Vista). Annual low flows were recorded on the Truckee River in early November 2021 when daily streamflow was 135 cfs (Mogul), 190 cfs (Reno), and 246 cfs (Vista).

The November 18, 2020 storm resulted in streamflow increases over 100 cfs from baseflow conditions in the Truckee River. Storm events on December 13, 2020 and January 4, 2021 had less influence on the overall daily streamflow in the Truckee River than the November storm. In late February, streamflow in the Truckee River began to increase from upstream snowmelt resulting in annual peak flows in mid-May. Storm samples collected in May and June 2021 were in response to isolated thunderstorm activity which did not increase flow in the Truckee River. By the end of FY2021, Truckee River streamflow receded to well below that recorded at the beginning of the water year and near values not observed since 2015 (USGS 10348000).

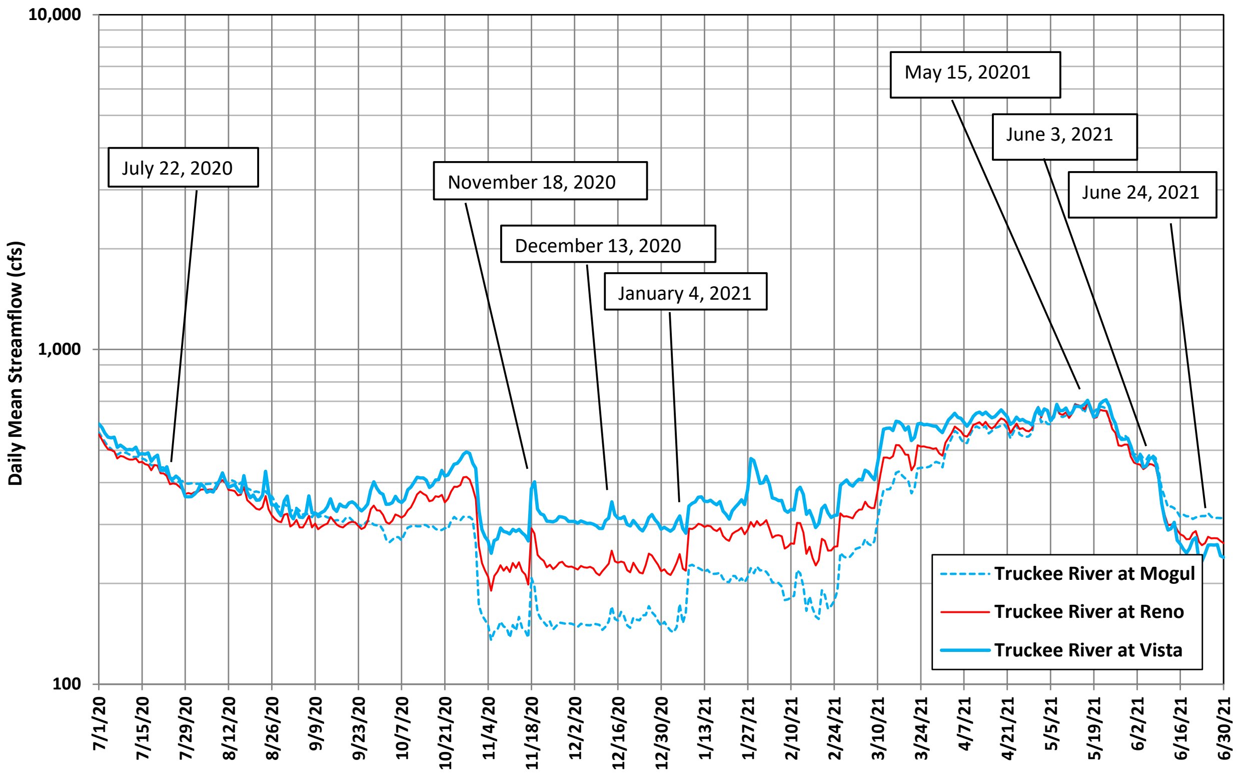


Figure 5-2 Truckee River streamflow during FY2021 showing dates of stormwater sampling, Truckee River at Three Stations (USGS Stations 10347460, 10348000 and 10350000), Truckee Meadows, Nevada, FY2021 As the Truckee River flows through the Cities of Reno and Sparks. It receives contributing flows from North Truckee Drain, Steamboat Creek, several other smaller tributaries, and urban stormwater outfalls.

5.3.2 NORTH TRUCKEE DRAIN HYDROLOGIC RESPONSE, FY2021

Figure 5-3 displays a record of daily streamflow in the North Truckee Drain (NTD) at two monitoring stations, Orr Ditch (NTD@ORD) and Big Fish Drive (NTD@BFD) and shows the dates when water quality samples were collected in FY2021. North Truckee Drain drains a large watershed with relatively low elevations and arid conditions and active urban growth. Streamflow is supported by springs, urban runoff, and irrigation return flows from Orr Ditch.

Overall, streamflow records at both stations exhibited rapid rise and fall during storm events, characteristic of an urbanized watershed. In the beginning of FY2021 baseflow in the North Truckee Drain was recorded at 1.7 cfs at NTD@ORD and 2.9 cfs downstream at NTD@BFD. Streamflow recession into October 2020 was recorded as the irrigation season ended. Streamflow remained relatively steady, near 1 cfs through the winter months with the exception of short-lived increases from precipitation events. On January 27, 2021, flows increased due to snowmelt after a large, cold frontal storm affected the region. Summer thunderstorms resulted in additional streamflow rises. The annual peak flow of 23 cfs was recorded at NTD@BFD on June 3, 2021, while the annual peak flow of 40 cfs was recorded at NTD@ORD on June 24, 2021, both the result of isolated thunderstorms.

Stormwater samples were collected at NTD@ORD on November 18, 2020 during a frontal storm. Stormwater grab samples were collected at NTD@ORD on May 15, 2021 and at NTD@BFD on June 3, 2021 and June 24, 2021 from flows resulting from convective thunderstorms. Summer baseflow samples were collected at both stations on September 3 and 4, 2020, and winter baseflow samples were collected on March 29, 2021.

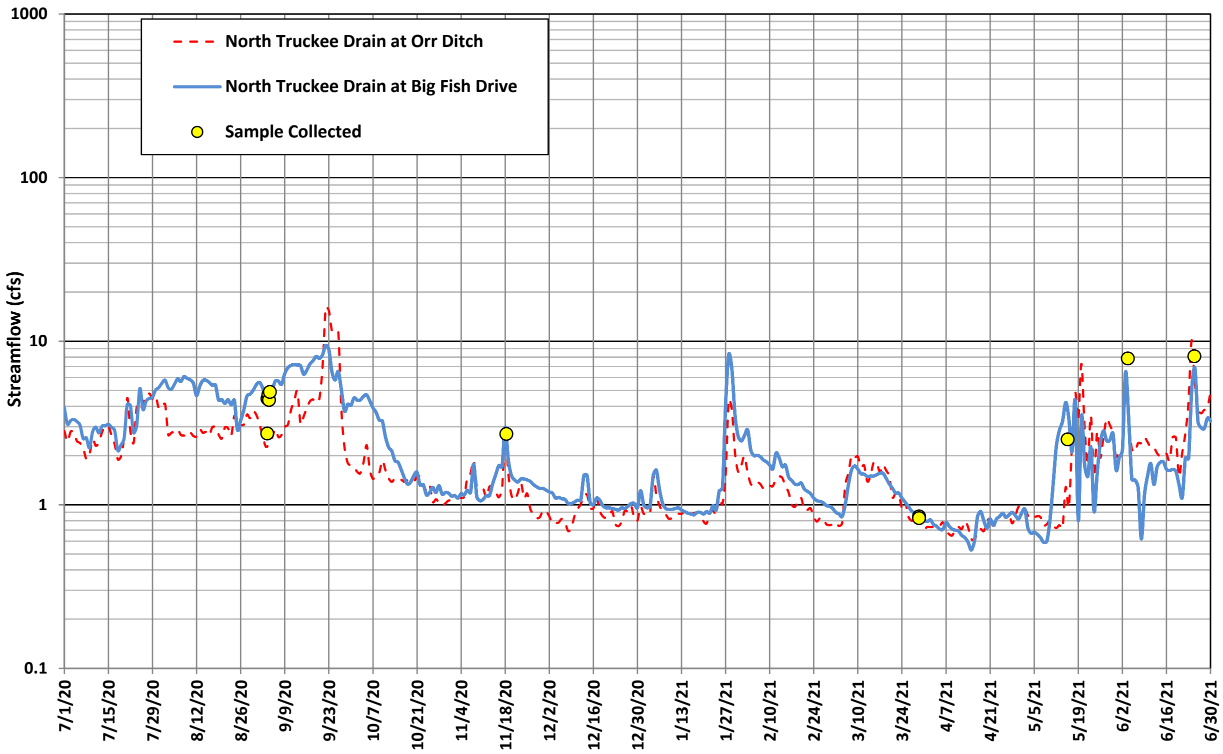


Figure 5-3 Daily Streamflow, North Truckee Drain at Orr Ditch (USGS 10348245) and Big Fish Drive (USGS 10348295), Sparks, Nevada, FY2021

5.3.3 STEAMBOAT CREEK HYDROLOGIC RESPONSE, FY2021

Streamflow hydrographs for Steamboat Creek at Rhodes Road (SBC@RR), the Narrows (SBC@NAR), and Clean Water Way (SBC@CWW) are shown in Figure 5-4. Collection dates for water quality samples are also provided. Steamboat Creek at its confluence with Truckee River drains a 123 square mile watershed. The watershed originates in the Washoe Valley and tributaries draining the east side of the Carson Range with elevations above 10,000 feet. Streamflow is supported by snowmelt, urban runoff, irrigation returns, but can be regulated by Washoe Lake and many upstream diversions.

In the absence of measurable precipitation and snowmelt runoff, streamflow in Steamboat Creek remained relatively stable at the Narrows and Clean Water Way. Streamflow at Rhodes Road receded to very low-flow conditions in September 2020. The annual peak flow of 114 cfs at Clean Water Way was recorded on January 28, 2021, as the result of snowmelt. This peak flow rate is estimated to be approximately equal to the 1-year flow, as based on the 27-year period of record at this station (USGS 10349980).

Flows at the end of the fiscal year were approximately within the range as those recorded at the beginning of the fiscal year.

The only stormwater samples collected at Rhodes Road and the Narrows were on November 18, 2020 moderate frontal storm system. Balance sampled summer and winter baseflow from all three stations on September 3 and 4, 2020, and March 29 and 30, 2021, respectively.

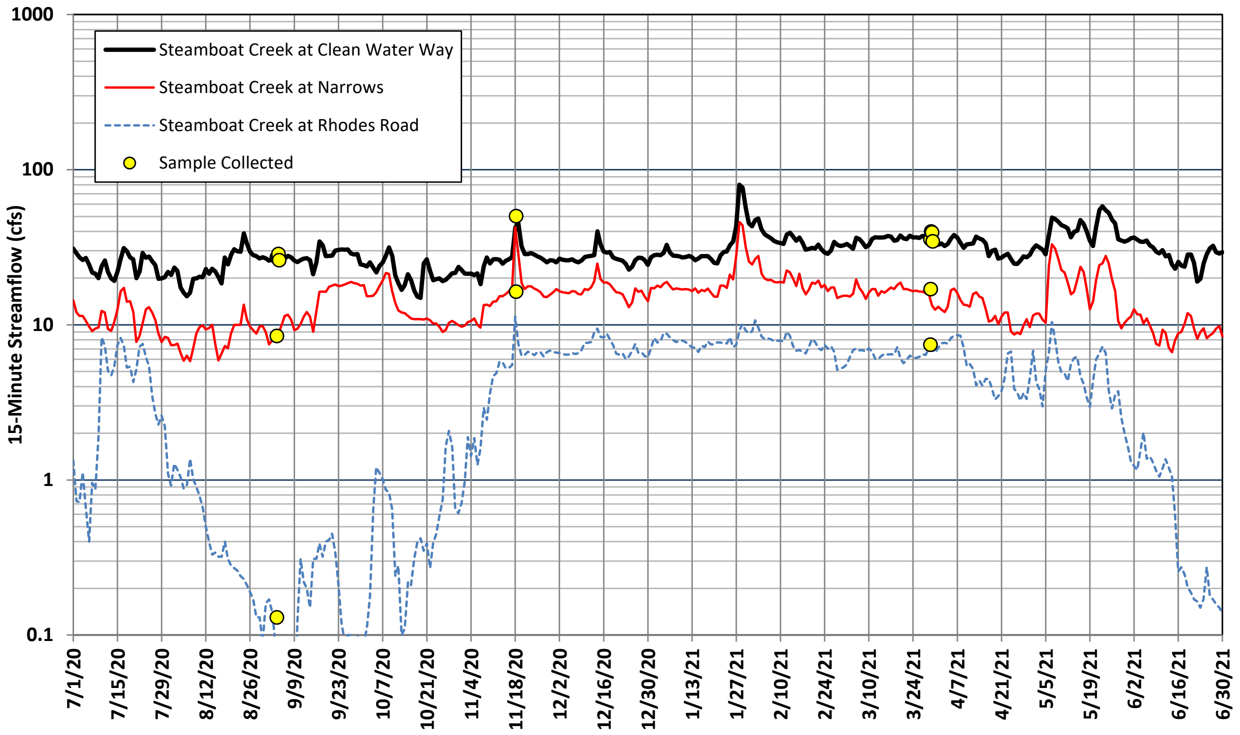


Figure 5-4 Daily Streamflow, Steamboat Creek at Three Stations, Truckee Meadows, Nevada, FY2021 (USGS Stations 10349300, 10349849 and 10349980)

5.3.4 ALUM CREEK HYDROLOGIC RESPONSE, FY2021

Figure 5-5 shows the daily streamflow record for Alum Creek at Mayberry Drive in FY2021. Collection dates of water quality samples (collected at Alum Creek at Truckee River downstream of the gaging station) are also shown.

Streamflow in Alum Creek can be affected by irrigation ditch releases from Steamboat Ditch and Lake Ditch. Streamflow on Alum Creek at the beginning of FY2021 was over 2 cfs. Streamflow receded in early October 2020 and rose in early May 2021, likely in response to irrigation operations at the golf course upstream of the gaging location. Stormwater samples were collected on November 18, 2020, and January 4, 2021. The annual peak flow of 5 cfs also occurred on November 18, 2020.

A summer baseflow water quality sample was collected on September 4, 2020. The creek was dry at the sample collection site in late March 2021 during winter baseflow sampling, and therefore was not sampled.

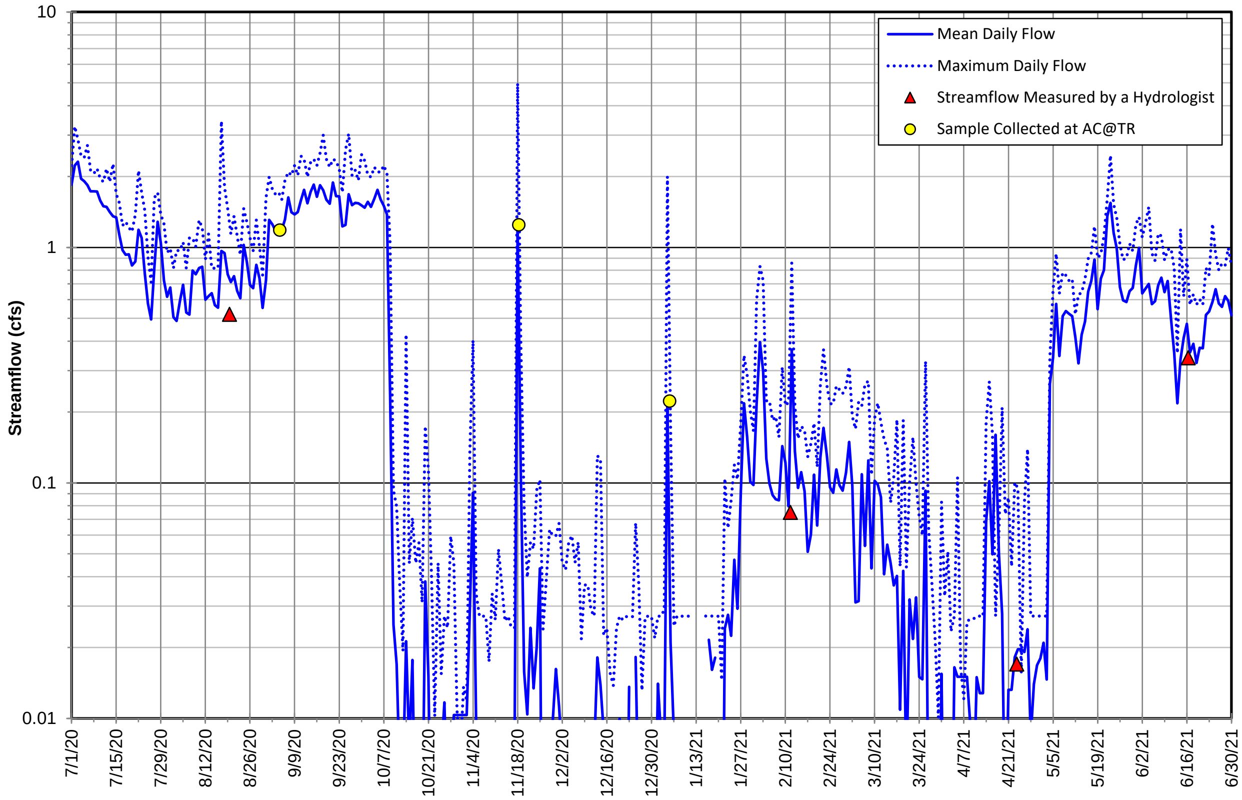


Figure 5-5 Daily Streamflow, Alum Creek at Mayberry Drive, FY2021

5.3.5 SOUTH EVANS CREEK HYDROLOGIC RESPONSE, FY2021

Figure 5-6 shows a daily flow record for South Evans Creek at Kietzke Lane (EC@KL) and collection dates for samples in FY2021. South Evans Creek includes a watershed with elevations above 8,000 feet. Streamflow is supported by snowmelt runoff in the upper watershed, urban runoff in the lower watershed, and irrigation returns from Steamboat Ditch and Last Chance Ditch. South Evans Creek is a tributary to Dry Creek, tributary to Boynton Slough, tributary to Steamboat Creek.

Streamflow in the beginning of the fiscal year was steady, around 2 cfs. The sudden decrease in streamflow to near 0.1 cfs in October was the result of the end of annual ditch operations. Streamflow gradually increased above 1 cfs in November before gradually receding to near 0.1 cfs again by April 2021 in the absence of snowmelt. Increases in flows to near 2 cfs again during summer months is likely associated with irrigation returns. Annual peak streamflow of 4.01 cfs was recorded on September 28, 2020.

One stormwater sample was collected at EC@KL on May 15, 2021, after isolated thunderstorms. Baseflow samples to measure ambient water quality were collected on September 4, 2020, and March 29, 2021.

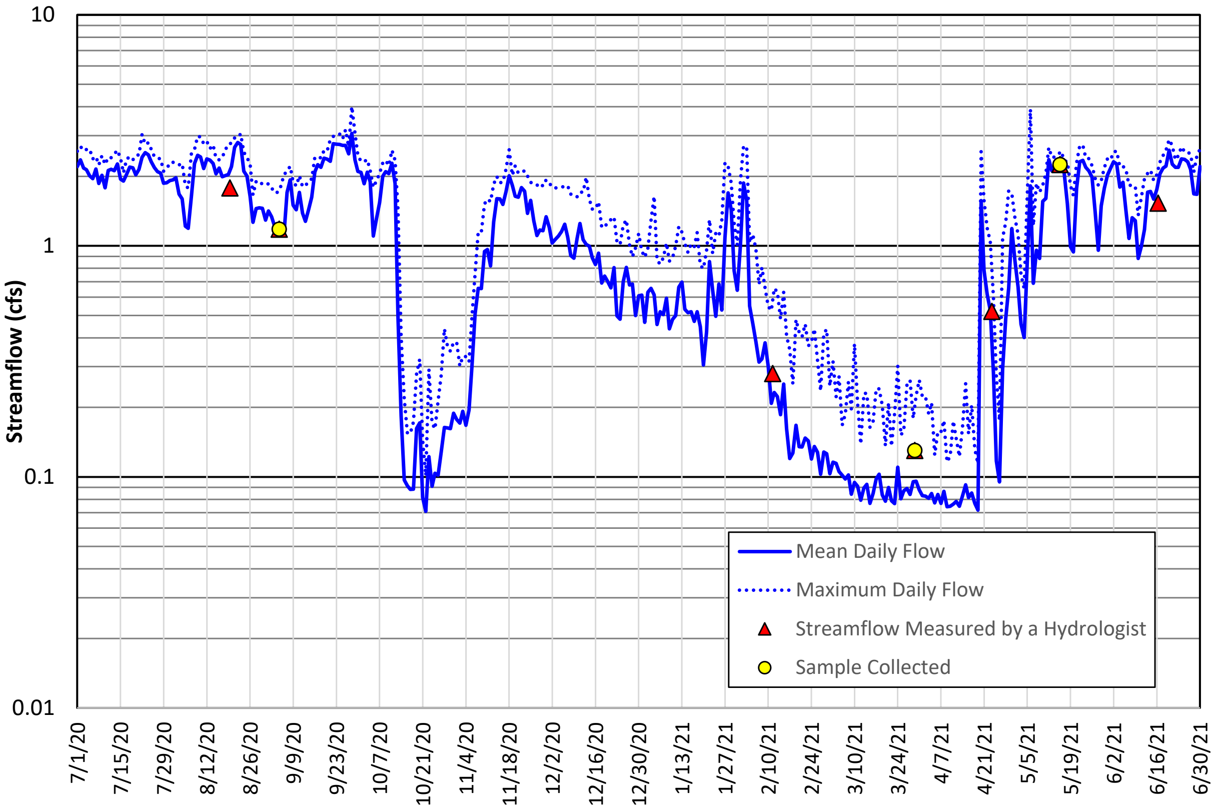


Figure 5-6 Daily Streamflow, South Evans Creek at Kietzke Lane, FY2021

5.3.6 THOMAS CREEK HYDROLOGIC RESPONSE, FY2021

Figure 5-7 shows daily streamflow, manual streamflow measurements, and the collection dates for water quality samples for Thomas Creek at South Meadows Parkway (TC@SMP) in FY2021. Thomas Creek includes a watershed with elevations above 8,000 feet. Streamflow is supported by snowmelt runoff from Snowflower Mountain (10,243 feet), multiple springs in the upper watershed, urban runoff from the lower watershed, and irrigation return flows from Steamboat Ditch, Last Chance Ditch, and Lake Ditch. Streamflow measured around 1 cfs at the beginning of FY2021.

Streamflow ranged between 0.2 cfs and 3.0 cfs until a moderate frontal storm on November 18, 2021 increased flows to 4.70 cfs. The annual peak flow of 7.9 cfs was recorded on February 15, 2021. Streamflow remained above approximately 1.0 cfs through late spring until June when flows receded to the annual low of 0.08 cfs on June 29, 2021.

A single stormwater sample was collected during the November 18, 2020 storm. No other stormwater samples were collected at this station in FY2021 due to a lack of measurable precipitation and runoff response. Baseflow water quality samples were collected on September 4, 2020, and March 29, 2021.

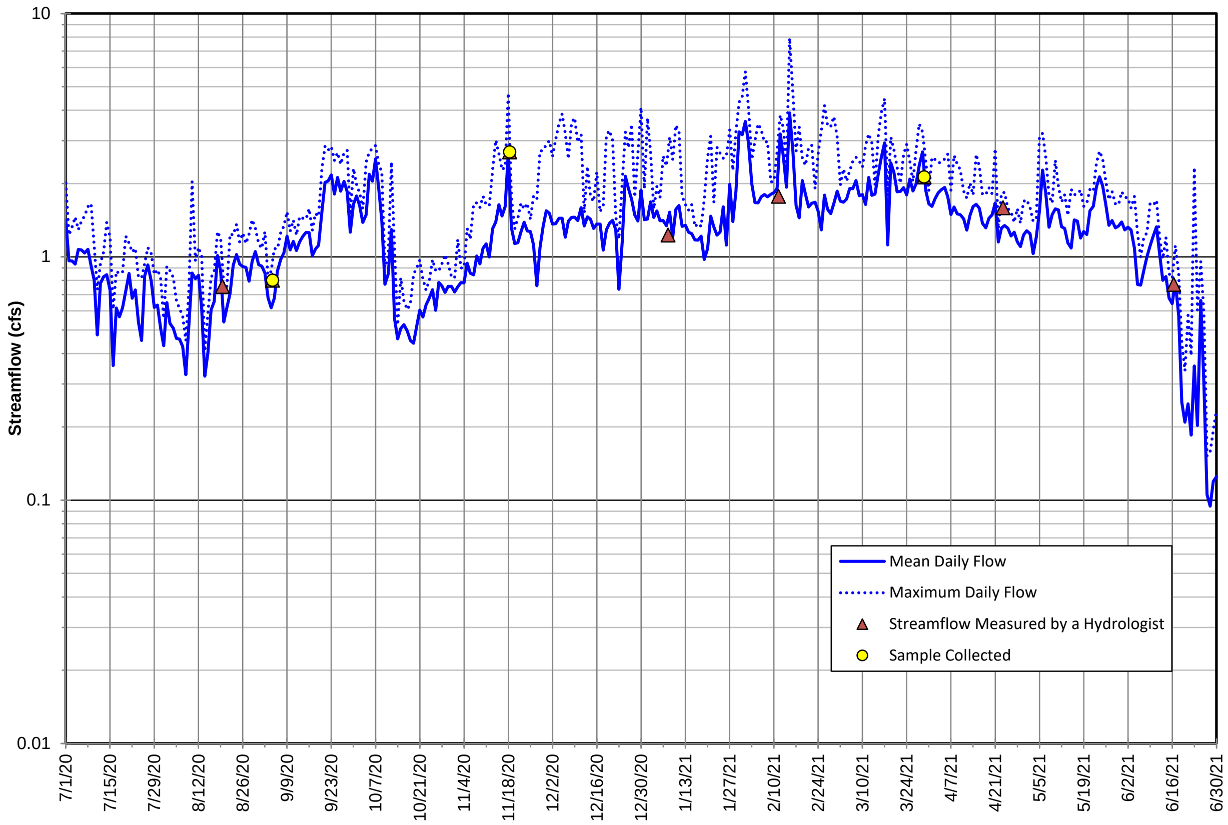


Figure 5-7 Daily Streamflow, Thomas Creek at S. Meadows Parkway, FY2021

5.3.7 WHITES CREEK HYDROLOGIC RESPONSE, FY2021

Figure 5-8 shows daily streamflow on Whites Creek at Old Virginia Highway (WC@OVH) and collection dates for water quality samples. This gaging station is operated and maintained by Truckee Meadows Water Authority (TMWA). Whites Creek includes a watershed with elevations above 8,000 feet. Streamflow is supported by snowmelt from Snowflower Peak (10,243 feet) and Mount Rose (10,776 feet), urban runoff in the lower watershed, and irrigation returns from Steamboat Ditch and Last Chance Ditch.

Streamflow at the beginning of the fiscal year was reported between 2 and 3 cfs and remained relatively stable throughout the year. Annual peak flow was 11 cfs and recorded on May 7, 2021Streamflow was recorded between 0.8 and 2 cfs at the end of the fiscal year.

A stormwater sample was collected on November 18, 2020 during a moderate frontal storm. Baseflow water quality samples were collected on September 3, 2020, and March 29, 2021, and at nearly similar streamflow.

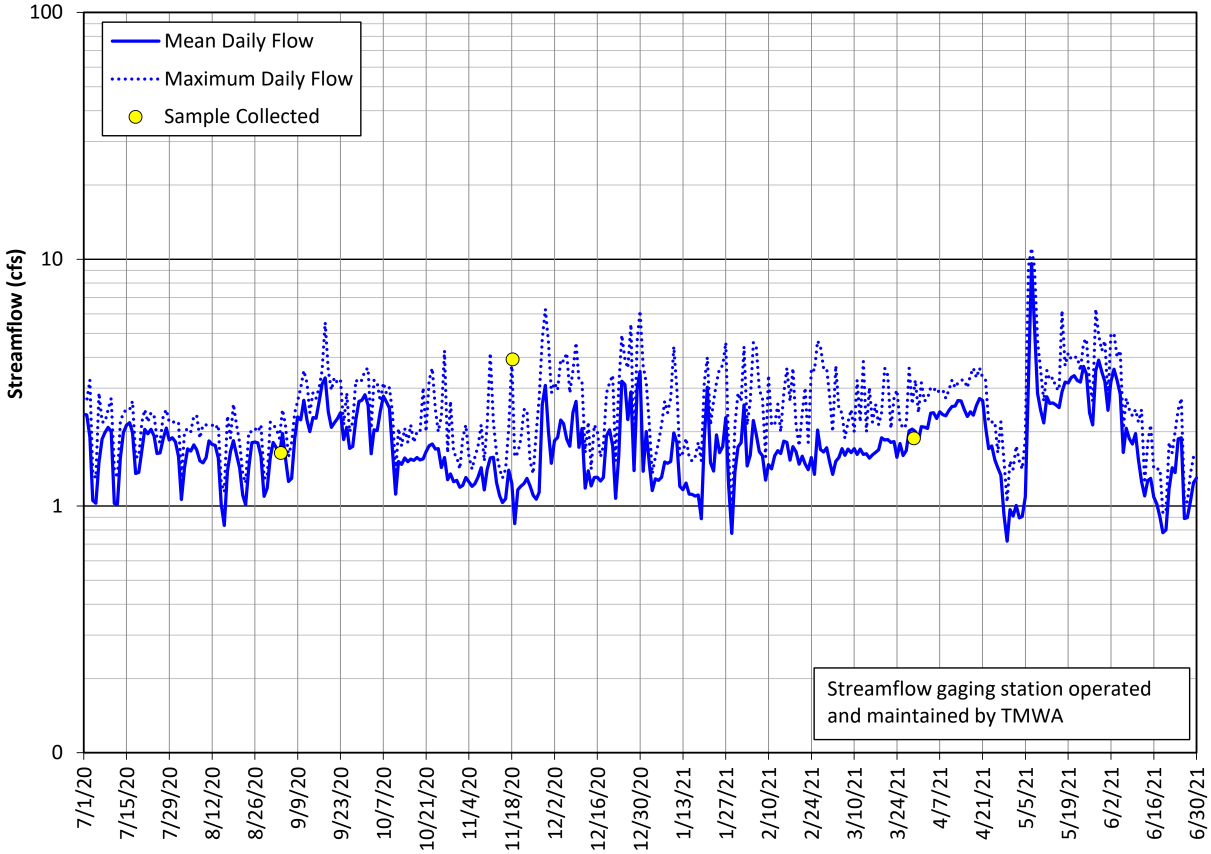


Figure 5-8 Daily Streamflow, Whites Creek at Old Virginia Highway, FY2021.

5.3.8 YORI DRAIN HYDROLOGIC RESPONSE, FY2021

Figure 5-9 shows daily discharge for Yori Drain at Steamboat Creek (YD@SBC) and collection dates for water quality samples during FY2021. Streamflow in Yori Drain can be influenced by irrigation returns from Pioneer Ditch. Streamflow ranged between 4 and 5 cfs at the beginning of FY2021 and remained relatively steady through the fiscal year, but the year ended with flows between 7 and 8 cfs. Annual peak flow of 22 cfs was recorded on October 20, 2020. The area velocity probe at the station has experienced intermittent data malfunctions. Data from October through January was not verified due to inaccessibility to the gage. Upstream debris was cleared from the channel during that time and piled at the outlet of the culvert possibly affecting the discharge measurement. The debris was cleared in February 2021 when access was restored to the site.

Summer baseflow samples were collected on September 3 and 4, 2020 and winter baseflow samples were collected on March 29, 2021.

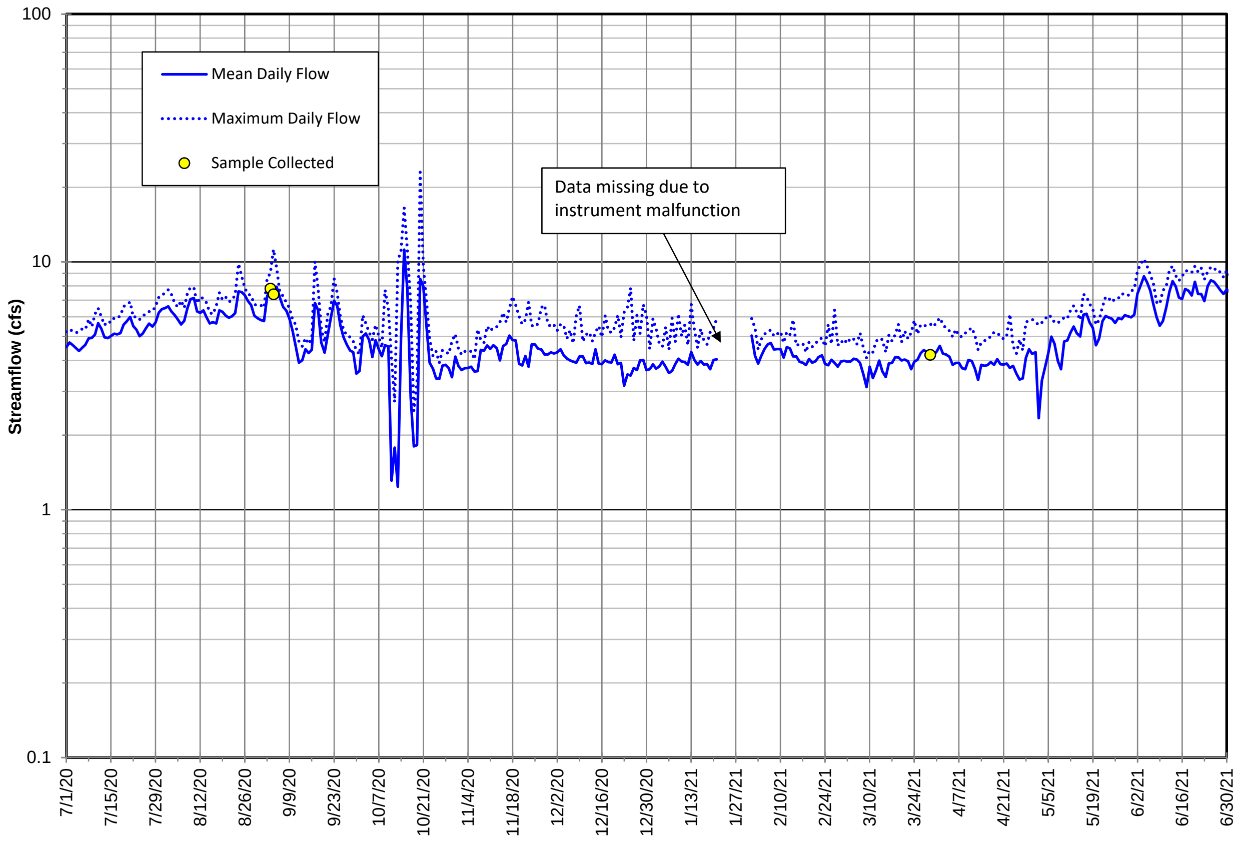


Figure 5-9 Daily streamflow, Yori Drain at Steamboat Creek, FY2021

5.3.9 BOYNTON SLOUGH HYDROLOGIC RESPONSE, FY2021

Figure 5-10 shows daily streamflow, manual streamflow measurements, and the collection dates for water quality samples for Boynton Slough at Steamboat Creek (BS@SBC) in FY2021. Boynton Slough drains a 52 square mile watershed consisting of open space in the upper watershed and mixed residential and commercial use in the lower watershed. Streamflow is supported by snowmelt runoff, urban runoff, irrigation returns from Cochran Ditch, and discharge from Virginia Lake. The watershed includes South Evans Creek, discussed above.

Streamflow at the beginning of the fiscal year was between 8 and 12 cfs. Baseflow at Boynton Slough was recorded at 2 cfs, and the annual peak flow of 61 cfs was recorded on January 28, 2021, as a result of snowmelt runoff. Streamflow was recorded between 10 and 20 cfs at the end of the fiscal year, likely from irrigation returns on Cochran Ditch.

The peak flow on January 28 was the result of snowmelt and was not sampled. Baseflow samples were collected on September 3 and 4, 2020, and on March 29 and 30, 2021.

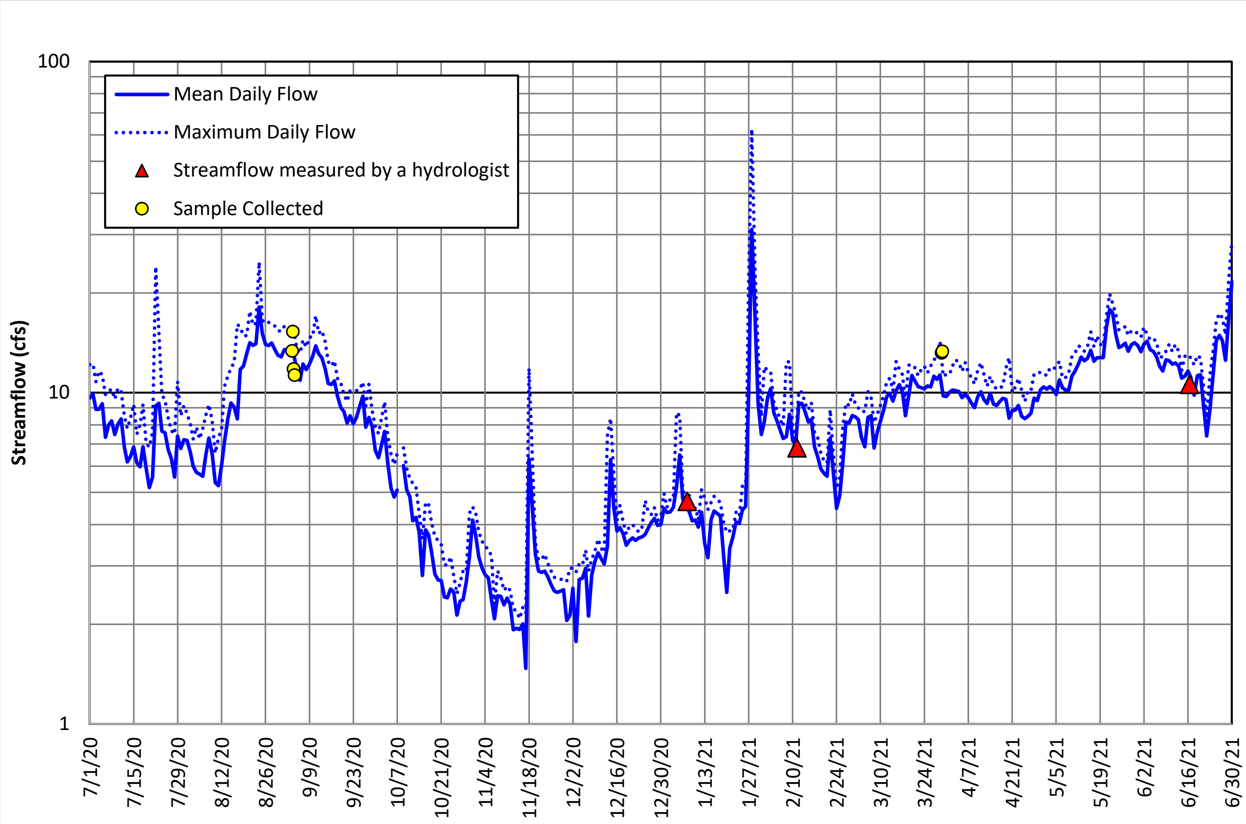


Figure 5-10 Daily streamflow Boynton Slough (BS@SBC), FY2021

5.3.10 ARLINGTON (H-19) STORMWATER URBAN OUTFALL HYDROLOGIC RESPONSE, FY2021

The Arlington Station is the only one of four urban outfalls that is instrumented to record discharge year-round. The Arlington station is also equipped with telemetry to provide discharge data in real-time and serves as a tool to expedite urban outfall sampling. Figure 5-11 shows discharge events for the urban outfall at Arlington Street (H-19) and dates of collected samples in FY2021. Arlington Street station drains a 0.32 square-mile urban watershed with both residential and commercial land-uses. Discharge is typically recorded during rainfall-runoff events but has also been recorded during non-storm events. Non-storm discharges may be illicit or the result of runoff from lawn and landscape irrigation.

Near-continuous data is reported in 5-minute intervals to capture the flashy nature of runoff from this small urban watershed. In FY2021, this station exhibited multiple short-lived rainfall-runoff events and non-precipitation events. Flows associated with these events ranged between 0.1 and 7.8 cfs.

In FY2021, the annual peak flow was roughly 7.8 cfs and occurred on January 25, 2021 as the result of a rainfall-runoff event. Stormwater runoff samples were collected on July 22, 2020 during a thunderstorm, November 18, 2020 during a moderate frontal storm and on January 4, 2021 during a small frontal storm.

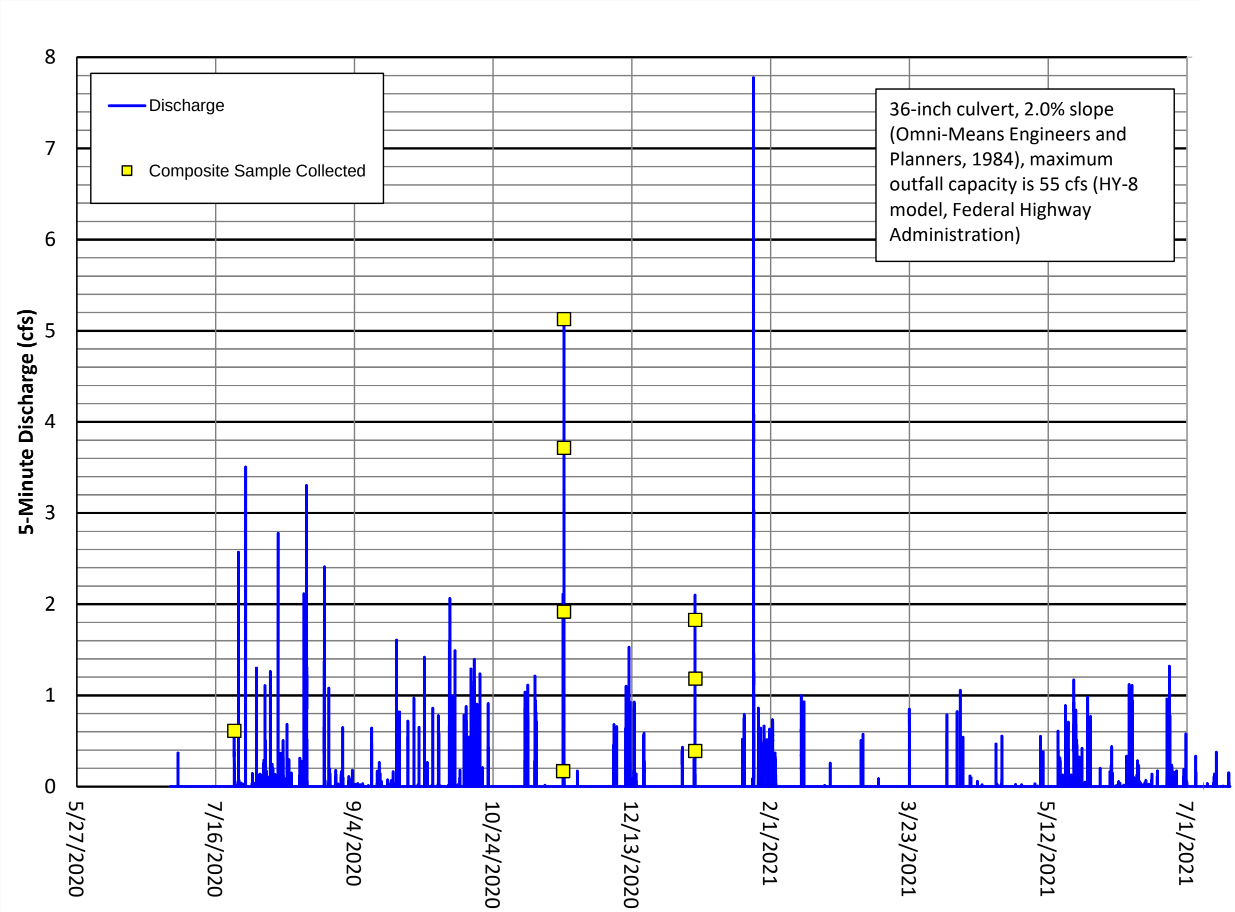


Figure 5-11 Continuous Discharge (5-minute), Arlington Urban Stormwater Outfall (H-19), FY2021

5.4 Stormwater and Baseflow Constituent Concentrations and Physical Parameters

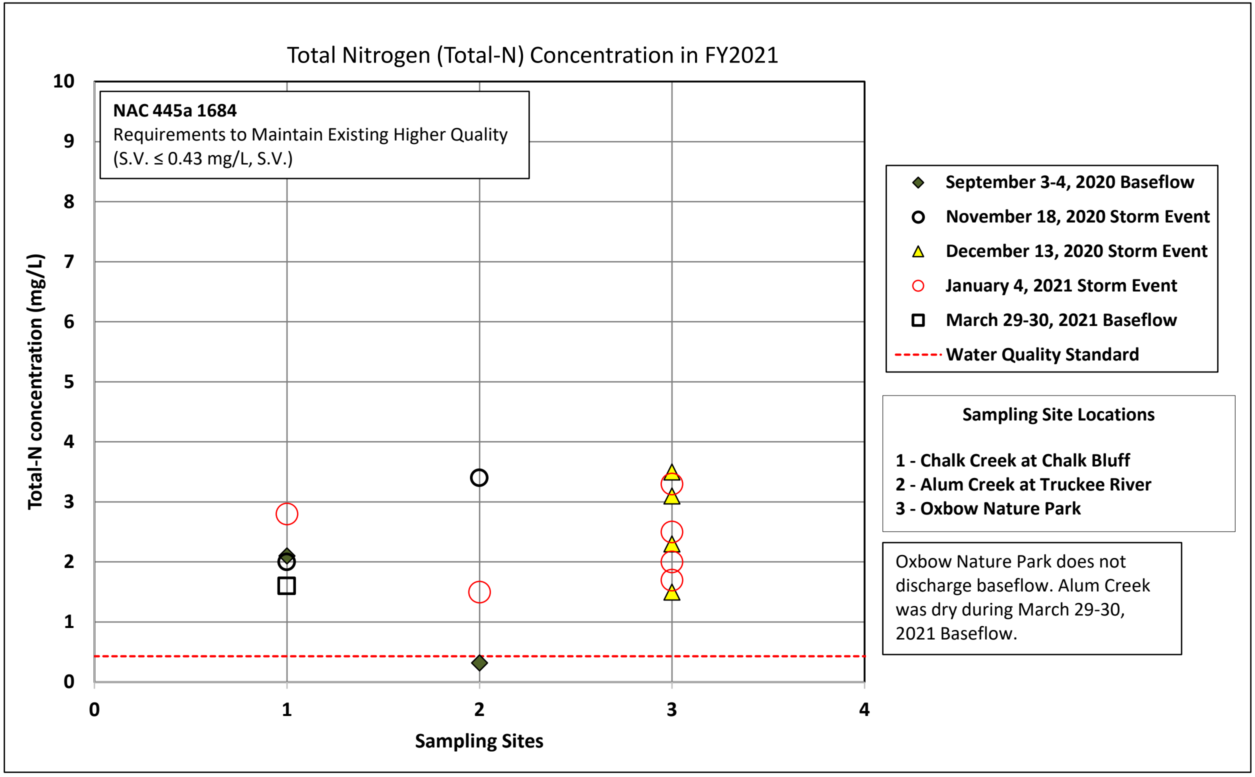
The established WQS and requirements to maintain higher quality differ from one monitoring location to another, as described in Section 1.3. Below we present results for both stormwater and baseflow samples collected and for each constituent analyzed in FY2021. In some cases, no WQS are established for a particular waterway location. Although there are no WQS for some sections, the water quality of the reach in question can be protective of downstream receiving waters per the Tributary Rule (NAC 445A.1239). In some cases where no WQS are established, we provide downstream water quality references for context; however, samples exceeding these downstream references do NOT imply violations of a regulatory water quality standard.

Any samples that the laboratory reported as ‘not detected’ are not shown in graphs. The vertical axis (concentration, mg/L) is fixed across all graphs for a particular constituent such that the reader can easily compare the same constituent across all locations.

5.4.1 TOTAL NITROGEN, NITRATE, NITRITE, AND TOTAL KJELDAHL NITROGEN

Total-N concentrations for all samples collected in FY2021 are shown in Figure 5-12, Figure 5-13, Figure 5-14, Figure 5-15, and Figure 5-16, grouped by their listed water body and specific WQS or numeric criteria if one exists. Stations instrumented with automated samplers may show concentrations measured in 4 different samples per sampling event which correspond to the composited samples across a storm hydrograph. All other stations will show a single concentration per grab sample or sampling event.

Total-N results from baseflow and stormwater samples collected at Chalk Creek, Alum Creek, and Oxbow Nature Park (an urban outfall) during FY2021 are shown in Figure 5-12. These stations discharge to the Truckee River upstream of Idlewild. Total-N concentrations ranged from not detectable to 3.4 mg/L. All but three samples exceeded established WQS for Total-N for this segment of the Truckee River above Idlewild Park (≤ 0.43 mg/L, NAC 445a. 1684). The November 18, 2020 stormwater sample collected at Alum Creek was the highest measured in this segment (3.4 mg/L). Alum Creek was dry during winter baseflow sampling.



Oxbow Nature Park does not discharge baseflow. Alum Creek was dry during March 29-30, 2021 Baseflow.

Figure 5-12 Total-N Concentrations in Tributaries and an Urban Stormwater Outfall to the Truckee River upstream of Idlewild, FY2021

In FY2021 Total-N was detected in all storm event samples collected from three urban stormwater outfalls that discharge to the Truckee River between East McCarran Boulevard and Idlewild (see Figure 5-13). All sample concentrations exceeded WQS (≤ 0.43 mg/L) in this segment of the Truckee River and ranged from 2.8 mg/L to as high as 25 mg/L. The highest concentration (25 mg/L) was collected in a single grab sample during a July 22, 2020, thunderstorm from the Arlington station. Urban outfalls do not discharge baseflow and were therefore not sampled for baseflow conditions.

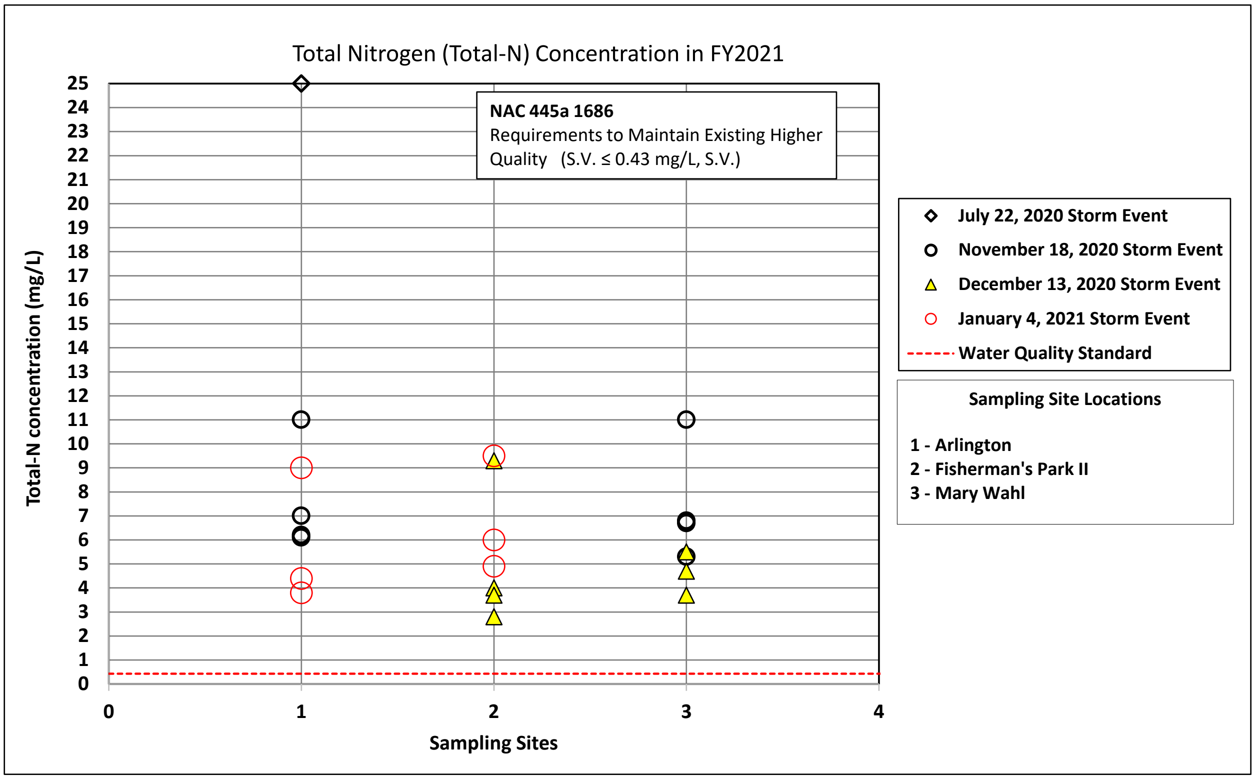


Figure 5-13 Total-N Concentrations in Urban Stormwater Outfalls to the Truckee River from E. McCarran upstream to Idlewild, FY2021

In FY2021 Total-N was detected in all stormwater and baseflow samples collected from the North Truckee Drain, a tributary to the Truckee River upstream of Lockwood, as shown in Figure 5-14. All samples exceeded WQS for this segment of the Truckee River (≤ 1.2 mg/L) and ranged from 1.8 mg/L to 7.2 mg/L.

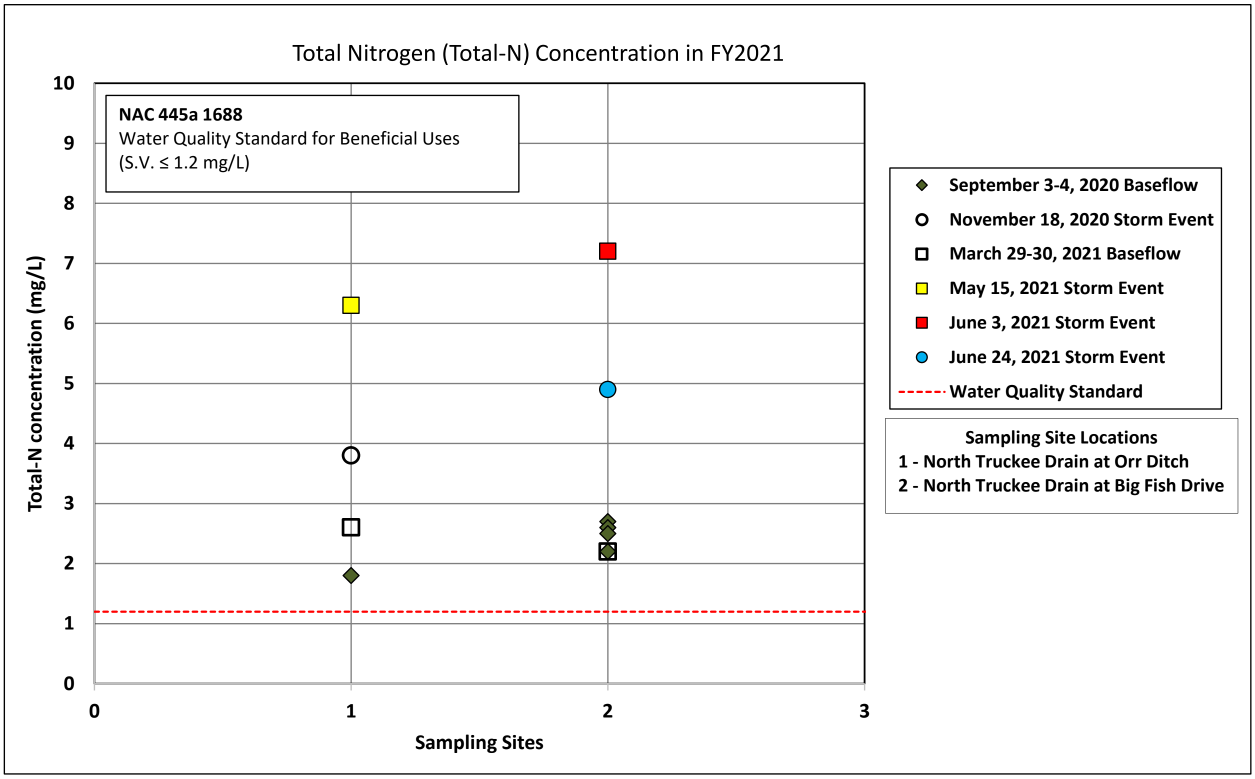


Figure 5-14 Total-N Concentrations in the North Truckee Drain, FY2021

In FY2021 Total-N concentrations from stormwater and baseflow samples collected in Steamboat Creek and its tributaries ranged from 0.37 mg/L to 3.2 mg/L, as shown in Figure 5-15. There are no Total-N WQS for Steamboat Creek. The highest concentration (3.2 mg/L) was measured at Boynton Slough during winter baseflow and was higher than stormwater samples collected at Rhodes Road, the Narrows, and Thomas Creek.

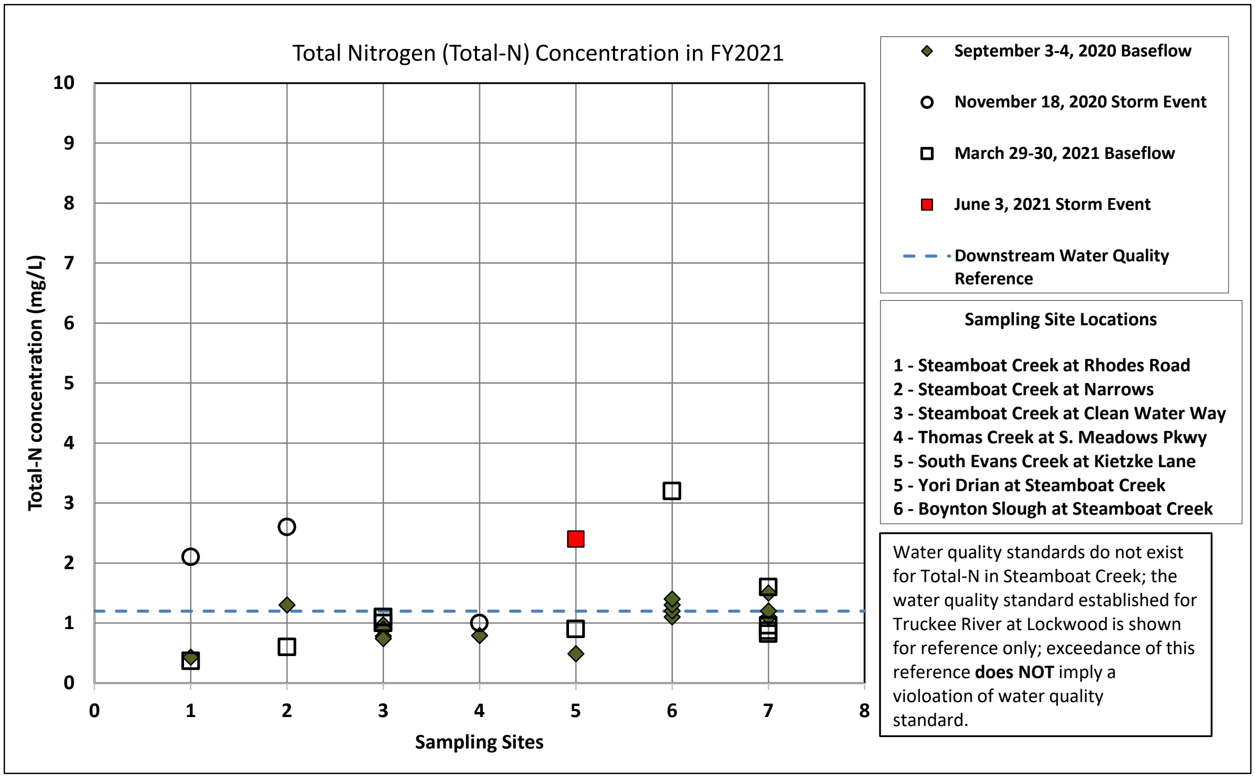


Figure 5-15 Total-N Concentrations in Steamboat Creek and Tributaries, FY2021

Only one stormwater sample was collected at Whites Creek in FY2021 with a concentration of 3.0 mg/L (Figure 5-16). Total-N was not detected in baseflow samples collected in both September 2020 and March 2021. There is no Total-N WQS for Whites Creek.

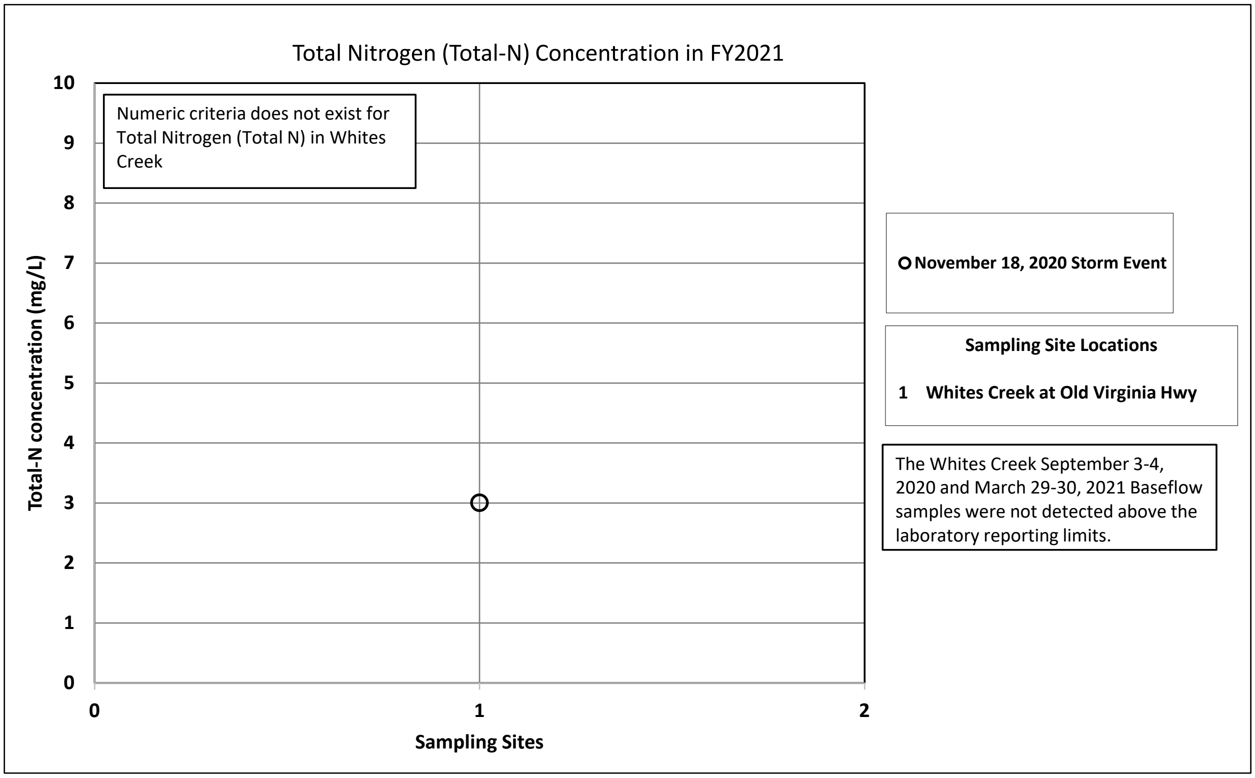


Figure 5-16 Total-N Concentrations in Whites Creek, FY2021

Analysis for nitrate (NO_3) is required only at selected stations (as per the 2020 SAP); however, laboratory analysis of NO_3 on all samples is used to calculate Total-N. We therefore present NO_3 results from all stations/samples in Figure 5-17, Figure 5-18, Figure 5-19, Figure 5-20, and Figure 5-21, grouped by their listed water body and specific numeric criteria.

FY2021 NO_3 met the WQS (S.V. = 2.0 mg/L) in all samples from sampling locations that discharge to the Truckee River upstream of Idlewild. Concentrations ranged from 0.18 mg/L to 1.4 mg/L (Figure 5-17). NO_3 was not detected in summer baseflow at Alum Creek. Alum Creek was dry during the winter baseflow sampling period.

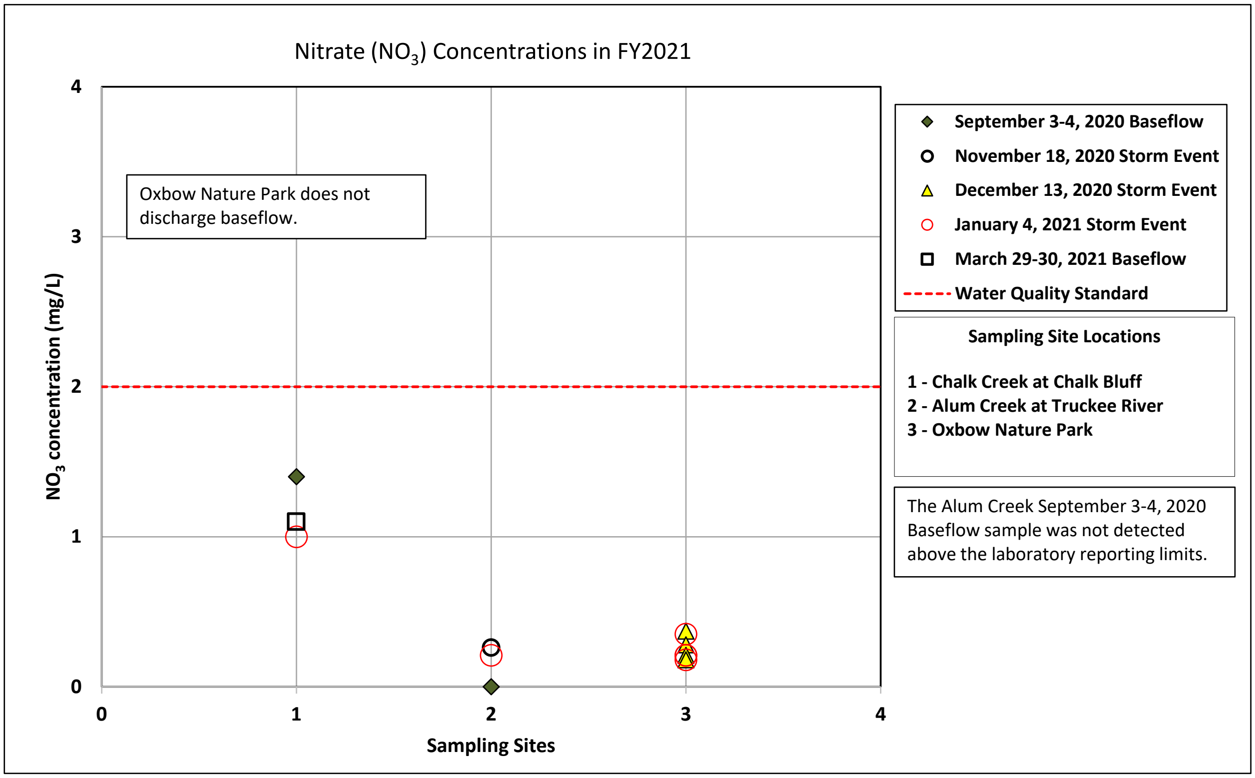


Figure 5-17 Nitrate Concentrations in Tributaries and an Urban Stormwater Outfall to the Truckee River Upstream of Idlewild, FY2021

In FY2021 NO_3 concentrations measured in stormwater samples from urban stormwater outfalls between E. McCarran and Idlewild ranged between 0.32 mg/L and 3.9 mg/L (Figure 5-18). One sample exceeded the WQS established for this segment (S.V. = 2.0 mg/L).

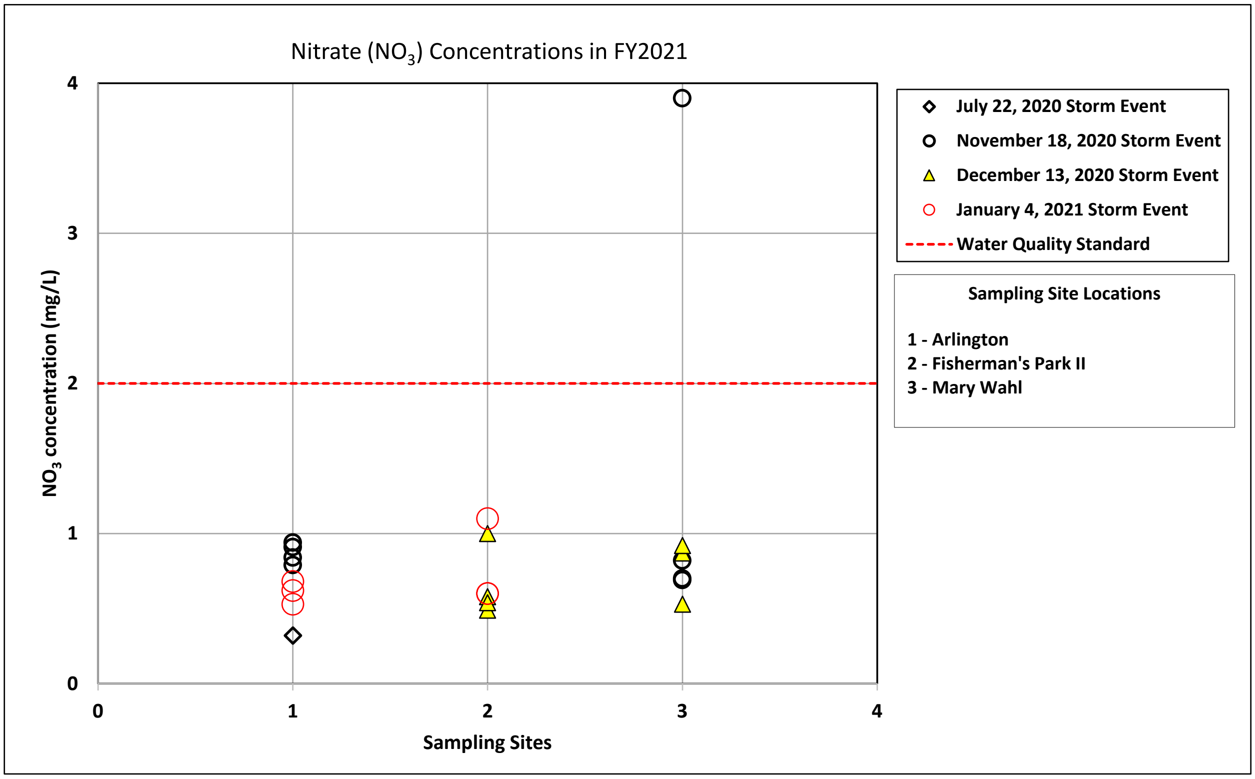


Figure 5-18 Nitrate Concentrations in Urban Stormwater Outfalls to the Truckee River from Idlewild downstream to E. McCarran, FY2021

In FY2021 NO_3 concentrations measured from stormwater and baseflow samples collected in North Truckee Drain, a tributary to the Truckee River upstream of Lockwood, ranged between 0.58 mg/L and 1.9 mg/L and all samples met the WQS established for this tributary (Figure 5-19).

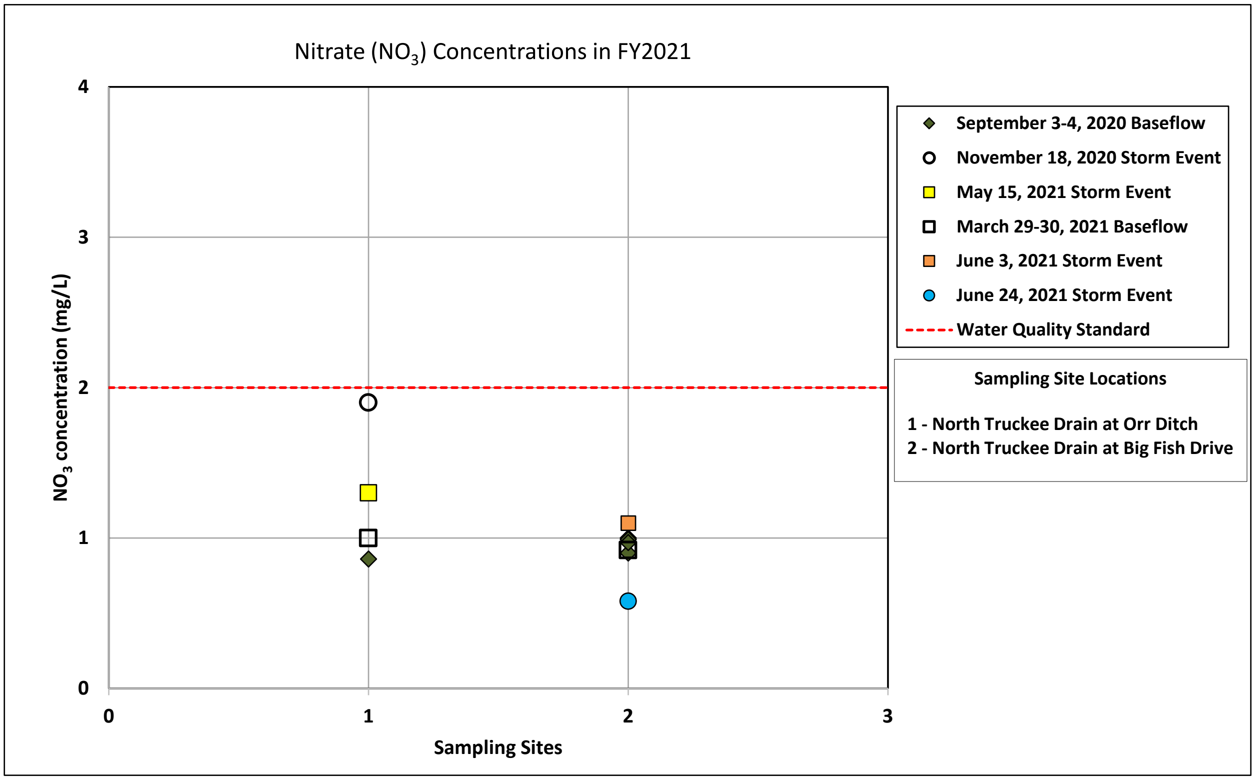


Figure 5-19 Nitrate Concentrations in the North Truckee Drain, FY2021

FY2021 NO_3 concentrations measured in samples collected at three different stations in Steamboat Creek and four tributaries to Steamboat Creek ranged from 0.03 mg/L to 2.2 mg/L. (Figure 5-20). The highest NO_3 concentrations were measured in Yori Drain during winter baseflow.

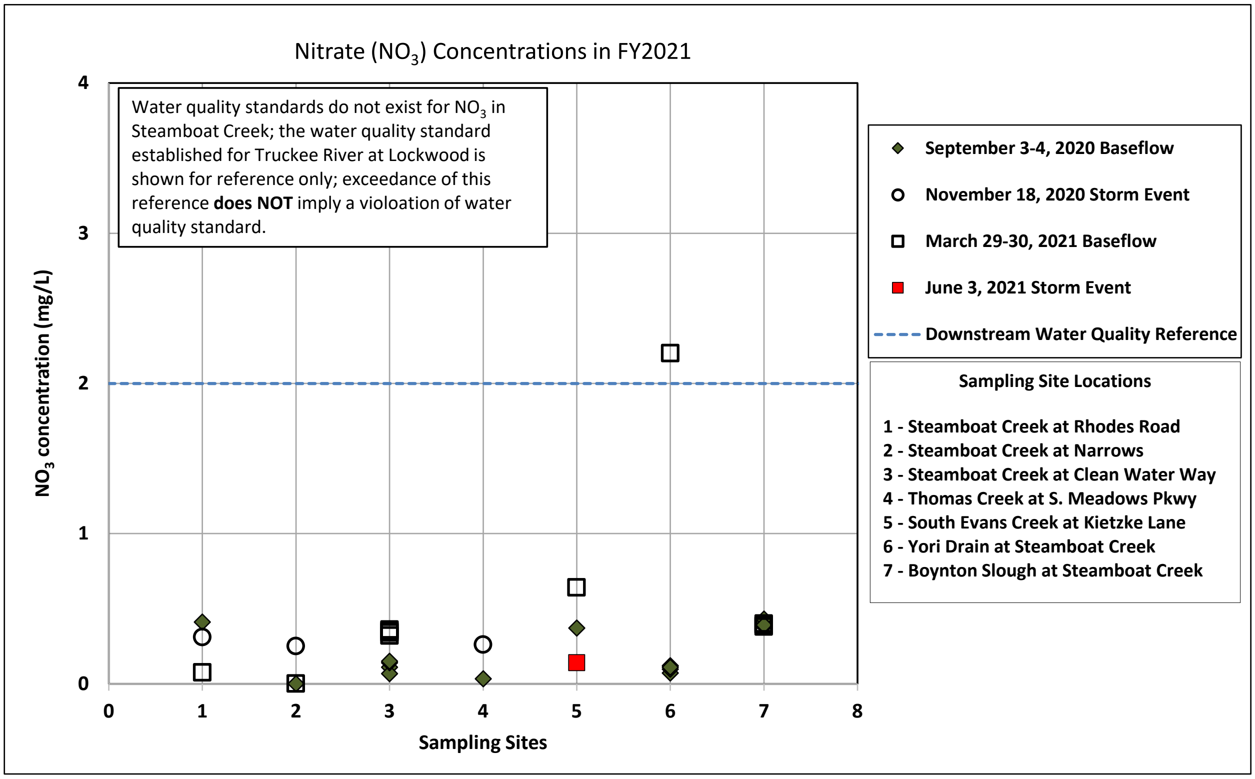


Figure 5-20 Nitrate Concentrations in Steamboat Creek, FY2021

One stormwater sample was collected at Whites Creek at Old Virginia Highway during FY2021 (Figure 5-21). The concentration was 0.34 mg/L. There are no WQS for NO_3 on this tributary section. NO_3 was not detected in summer or winter baseflow samples.

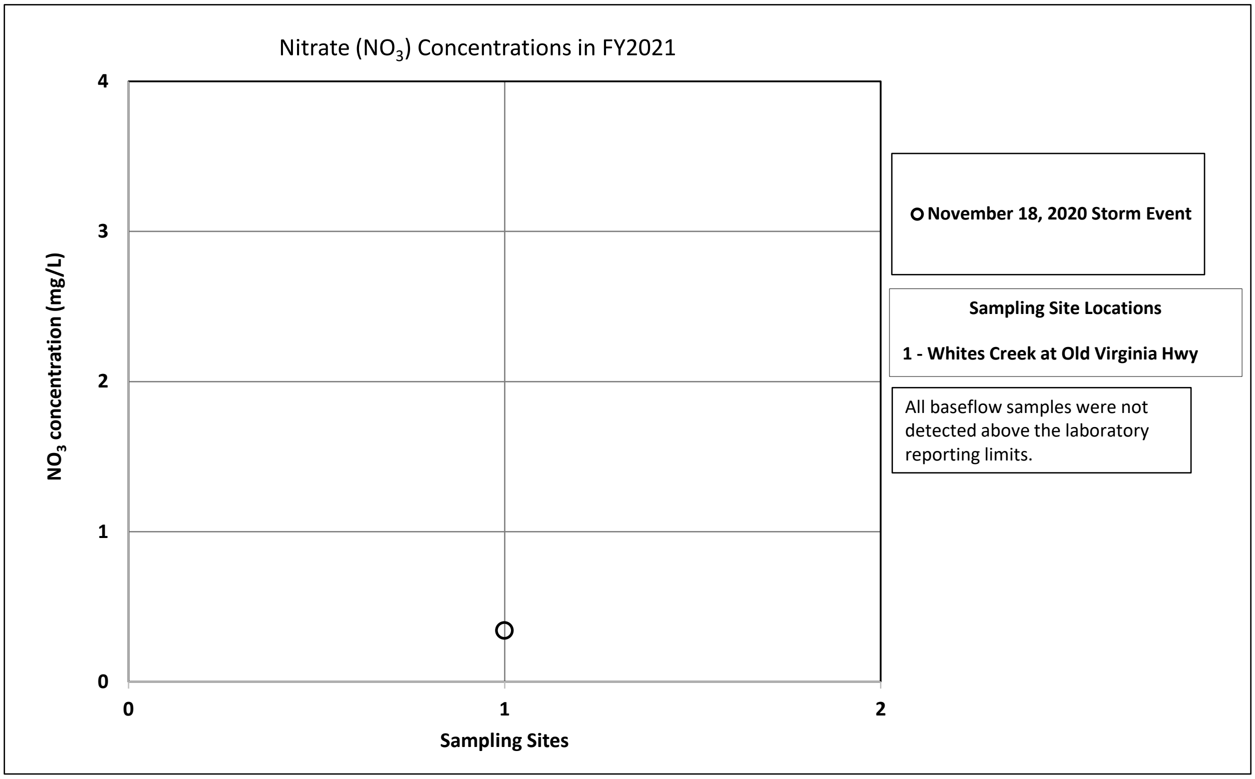
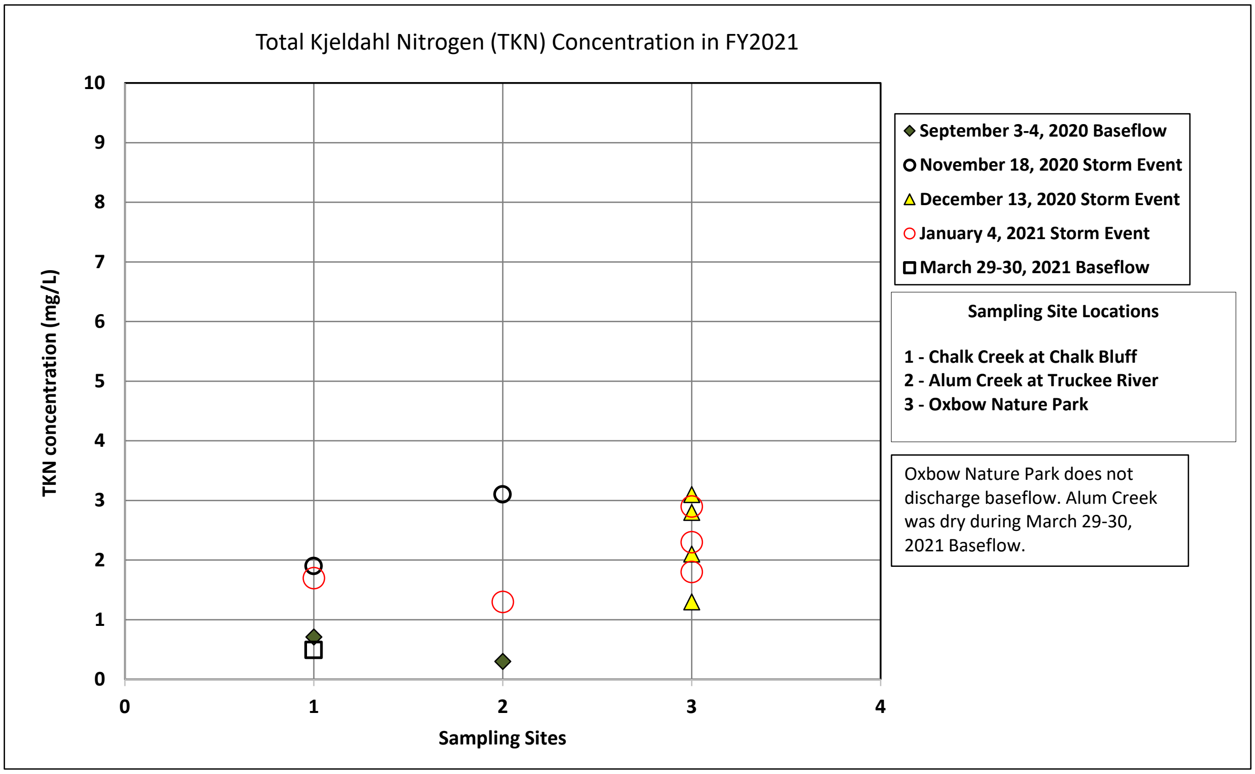


Figure 5-21 Nitrate Concentrations in Whites Creek, FY2021

Total Kjeldahl Nitrogen (TKN) concentrations in stormwater and baseflow samples collected in FY2021 are shown in Figure 5-22, Figure 5-23, Figure 5-24, Figure 5-25, and Figure 5-26, grouped by their listed water body. Numeric criteria do not exist for TKN in the listed water bodies monitored under this program or in the Truckee River.

In FY2021 TKN concentrations measured in two tributaries and one urban stormwater outfall which discharge to the Truckee River upstream of Idlewild ranged from 0.3 mg/L to 3.1 mg/L (Figure 5-22). The highest concentrations were detected in stormwater from Alum Creek at Truckee River (3.1mg/L) during the November 18, 2020 storm event and Oxbow Nature Park (2.9 mg/L) during the January 4, 2021 storm event.



Oxbow Nature Park does not discharge baseflow. Alum Creek was dry during March 29-30, 2021 Baseflow.

Figure 5-22 TKN Concentrations in Tributaries and an Urban Stormwater Outfall to the Truckee River upstream of Idlewild, FY2021

In FY2021 TKN concentrations measured from samples collected in three urban outfalls that discharge to the Truckee River between E. McCarran and Idlewild ranged between 2.2 mg/L and 25 mg/L (Figure 5-23). The highest concentration (25 mg/L) was associated with a single grab sample collected on July 22, 2020, at the Arlington outfall.

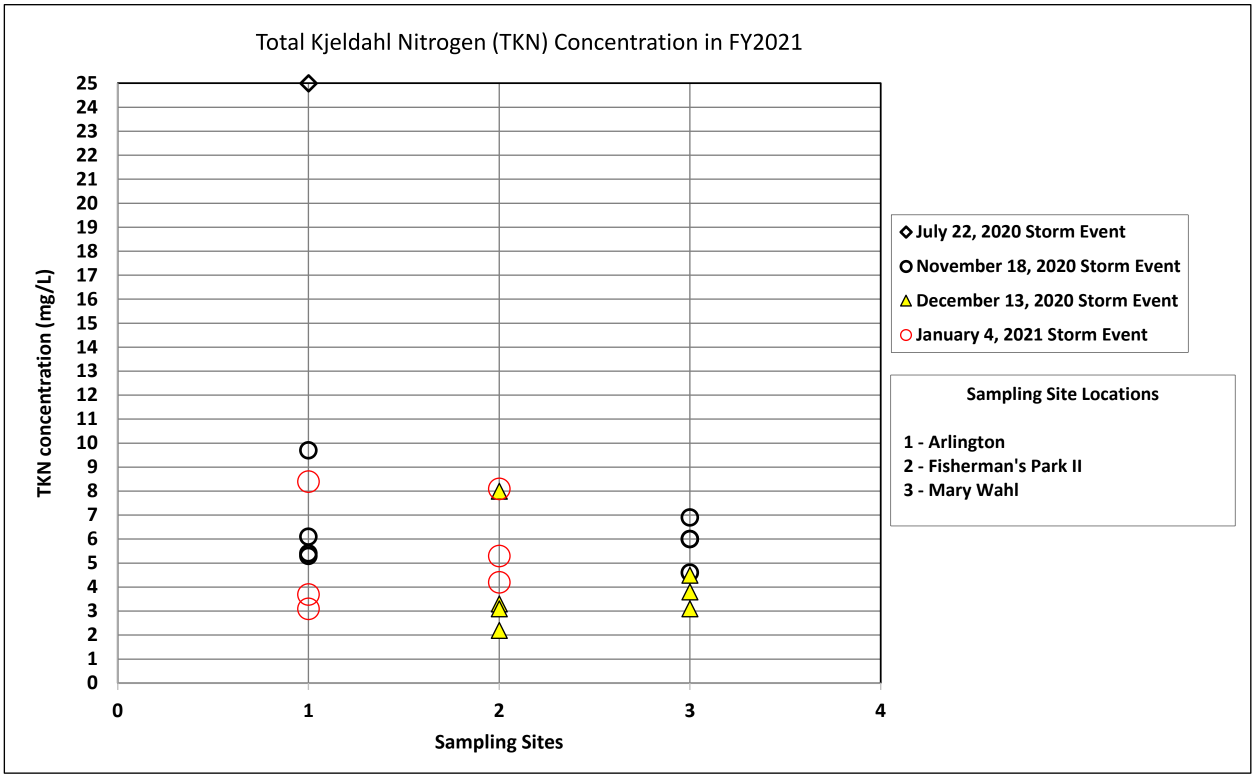


Figure 5-23 TKN Concentrations for Urban Stormwater Outfalls to the Truckee River from Idlewild downstream to E. McCarran, FY2021

FY2021 TKN concentrations measured from samples collected in the North Truckee Drain ranged between 0.9 mg/L and 6.2 mg/L (Figure 5-24). The highest concentrations (4.2 mg/L to 6.2 mg/L) were from grab samples collected during spring and early summer thunderstorms.

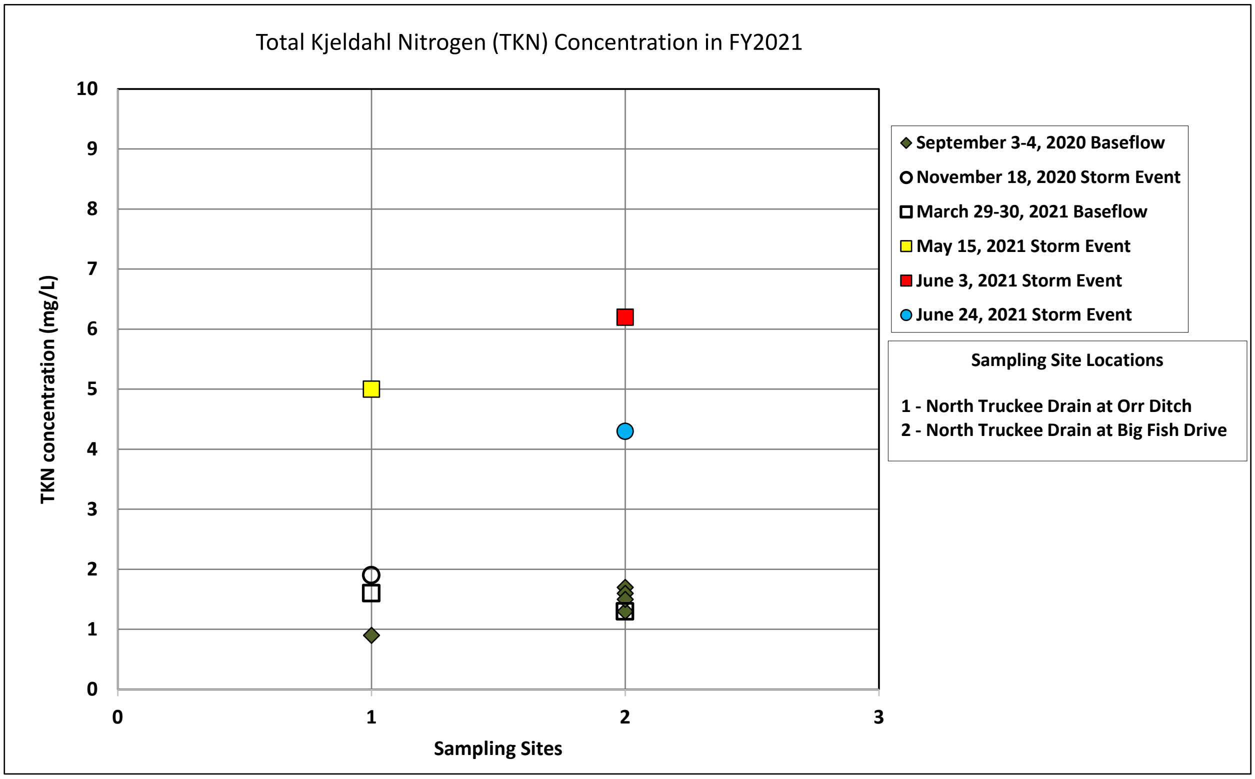


Figure 5-24 TKN Concentrations in the North Truckee Drain, FY2021

In FY2021 TKN concentrations measured from samples collected at three different stations in Steamboat Creek and four tributaries ranged from 0.20 mg/L to 2.3 mg/L (Figure 5-25). The highest concentration (2.3 mg/L) was measured in samples taken from S. Evans Creek during a June 3, 2021 storm event.

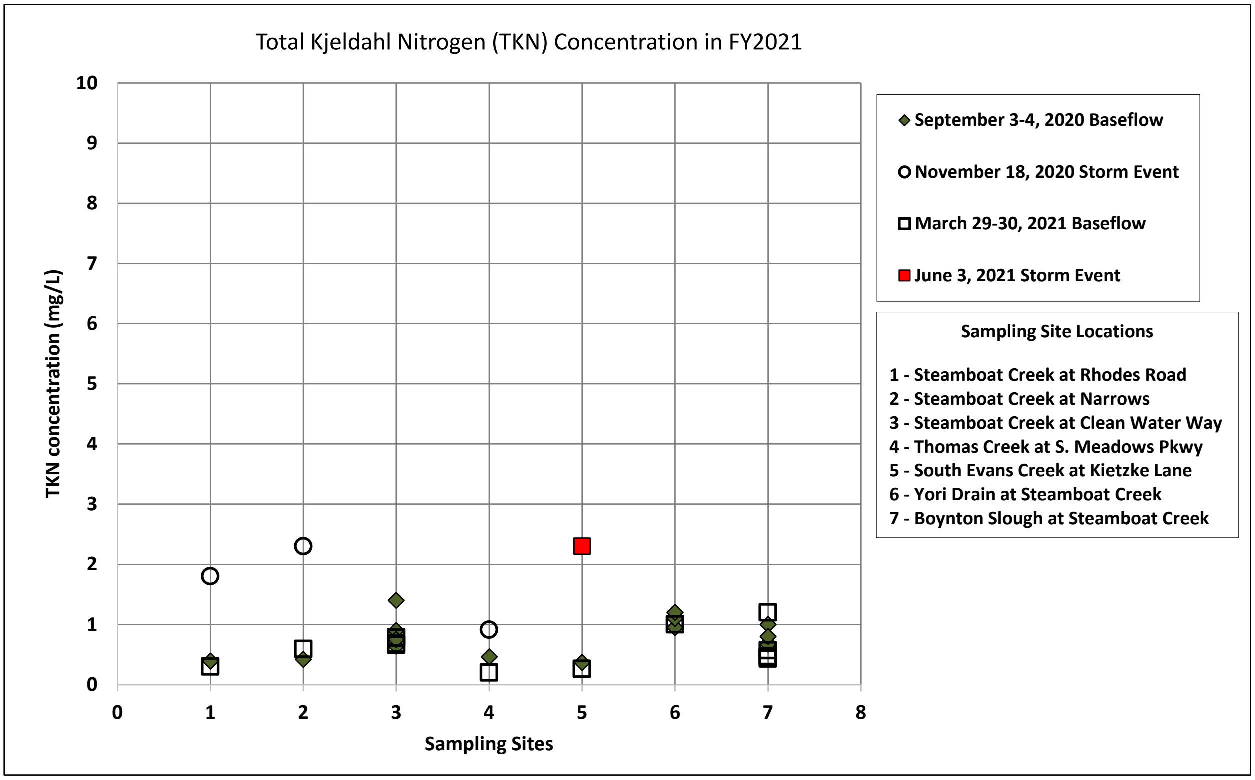
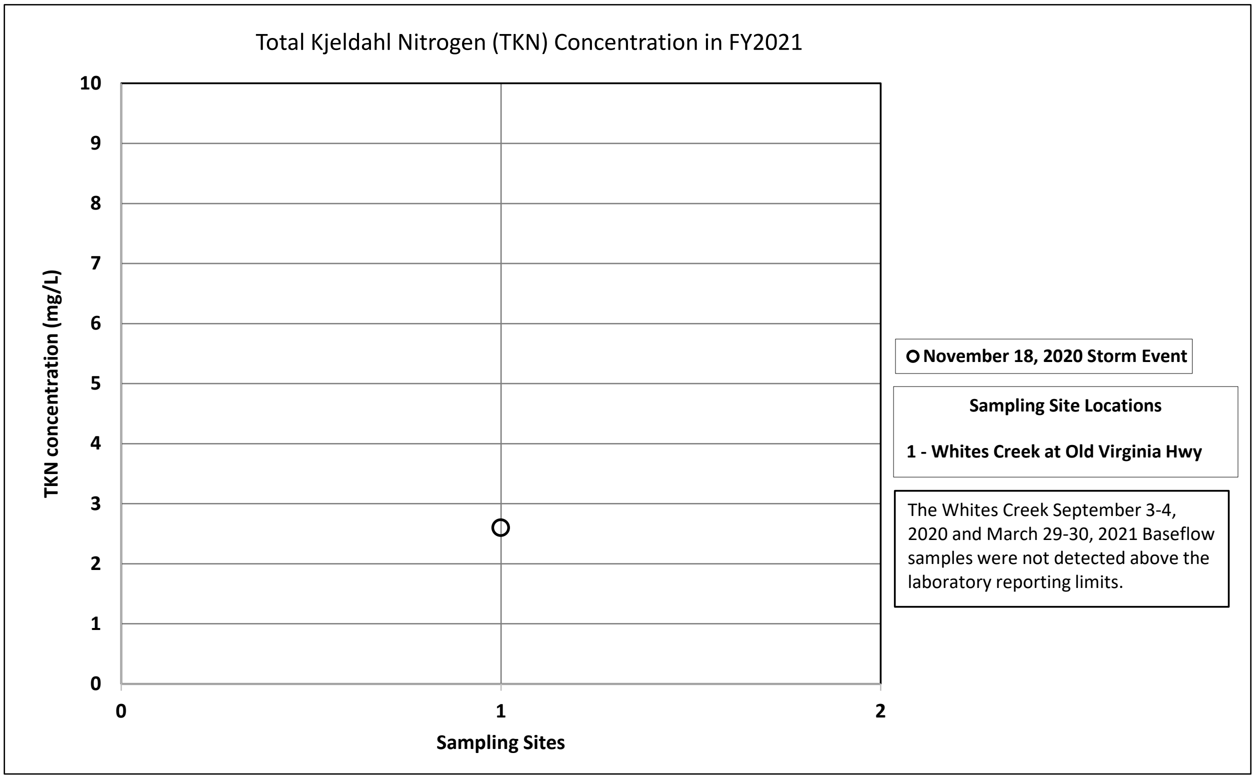


Figure 5-25 TKN Concentrations in Steamboat Creek and Tributaries, FY2021

FY2021 TKN concentration measured from a single stormwater sample collected in Whites Creek was 2.6 mg/L (Figure 5-26). TKN was not detected above laboratory detection limits in baseflow samples.



The Whites Creek September 3-4, 2020 and March 29-30, 2021 Baseflow samples were not detected above the laboratory reporting limits.

Figure 5-26 TKN Concentrations in Whites Creek, FY2021

5.4.2 TOTAL PHOSPHORUS AND ORTHO PHOSPHATE

Total-P concentrations for stormwater runoff and baseflow samples collected in FY2021 are shown in Figure 5-27, Figure 5-28, Figure 5-29, Figure 5-30, Figure 5-31, and Figure 5-32, grouped by their listed water body. Single value (S.V.) WQS do not exist for Total-P in most of the tributaries monitored. Where no S.V. WQS exist, we compare concentrations to Annual-Average WQS to Maintain Existing Higher Quality (≤ 0.05 mg/L, NAC 445a. 1684, 1686, 1688, 1724, 1726, and 1758) and to protect beneficial uses (≤ 0.10 mg/L). However, since results are single values representing conditions during active runoff, they are not directly comparable to annual average values.

In FY2021 Total-P concentrations measured from both stormwater and baseflow samples collected from two tributaries and one urban outfall discharged to the Truckee River upstream of Idlewild ranged from 0.94 mg/L to 1.0 mg/L (Figure 5-27). The highest concentrations measured (1.0 mg/L) was in the stormwater sample collected at Alum Creek on November 18, 2020.

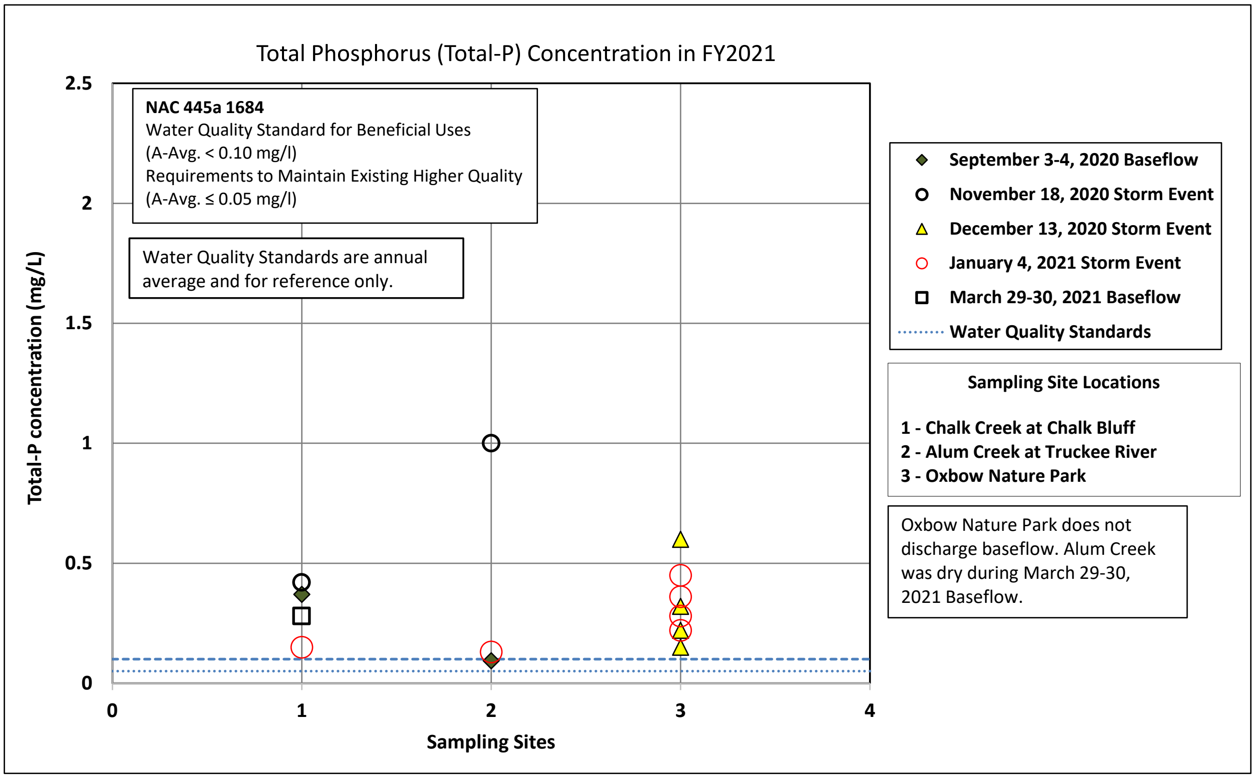


Figure 5-27 Total-P Concentrations in Tributaries and an Urban Stormwater Outfall to the Truckee River upstream of Idlewild, FY2021

In FY2021 Total-P concentrations measured in stormwater samples from three urban outfalls that discharge to the Truckee River between E. McCarran and Idlewild ranged from 0.24 mg/L to as high as 2.0 mg/L (Figure 5-28). The highest concentrations measured (1.3 to 2.0 mg/L) were from Arlington outfall during the July 2020 and November 2020 storm events.

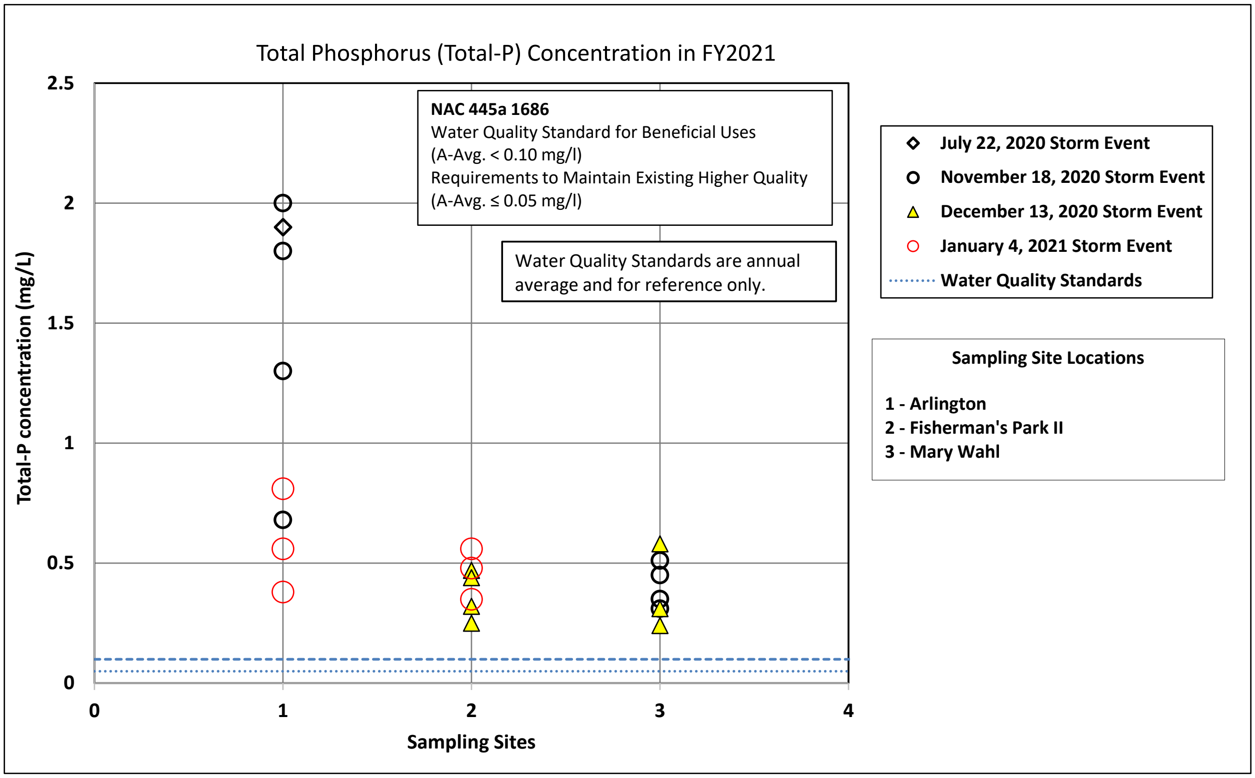


Figure 5-28 Total-P Concentrations in Urban Stormwater Outfalls to the Truckee River from Idlewild downstream to E. McCarran, FY2021

FY2021 Total-P concentrations measured in stormwater and baseflow samples collected from North Truckee Drain ranged between 0.12 mg/L and 0.57 mg/L (Figure 5-29). The highest concentrations measured (0.48 mg/L to 0.57 mg/L) were from May 2021 and June 2021 stormwater samples at both stations.

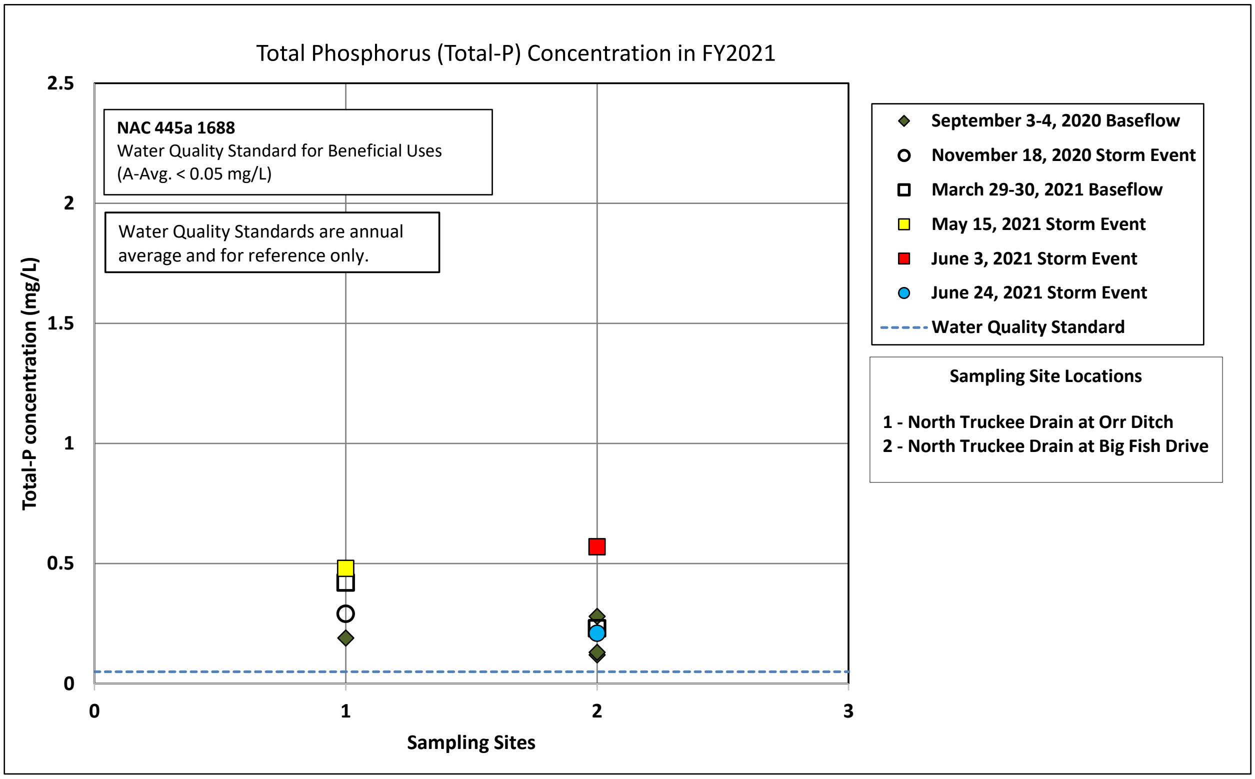


Figure 5-29 Total-P Concentrations in the North Truckee Drain, FY2021

FY2021 Total-P concentrations measured in samples collected from Steamboat Creek at Rhodes Road ranged from 0.09 mg/L to 0.25 mg/L (Figure 5-30). Results from all samples met the WQS established for this segment of Steamboat Creek (S.V. ≤ 0.33 mg/L).

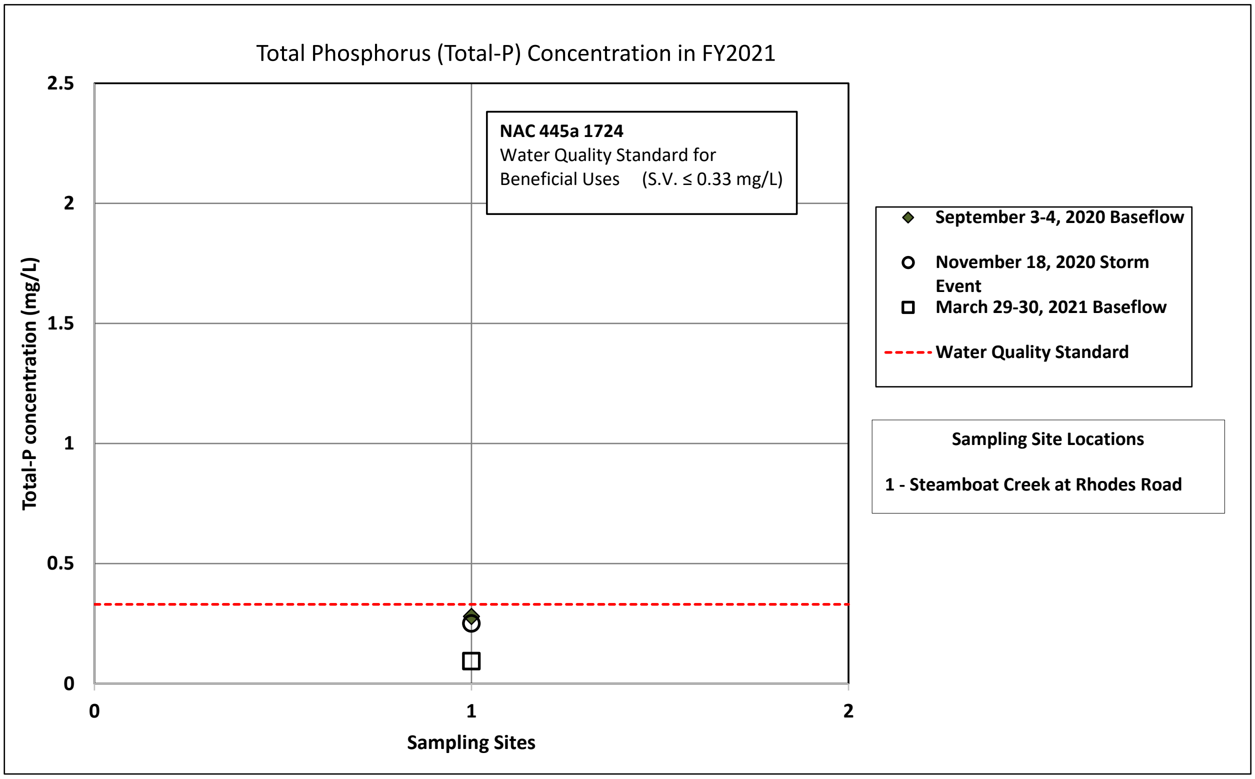


Figure 5-30 Total-P Concentrations in Steamboat Creek at Rhodes Road, FY2021

In FY2021 Total-P concentrations measured from stormwater and baseflow samples collected in Steamboat Creek and four tributaries below Rhodes Road ranged from 0.08 mg/L to 0.42 mg/L (Figure 5-31). The highest concentration (0.42 mg/L) was measured in stormwater from Thomas Creek. Numeric criteria to protect water quality do not exist for this segment of Steamboat Creek.

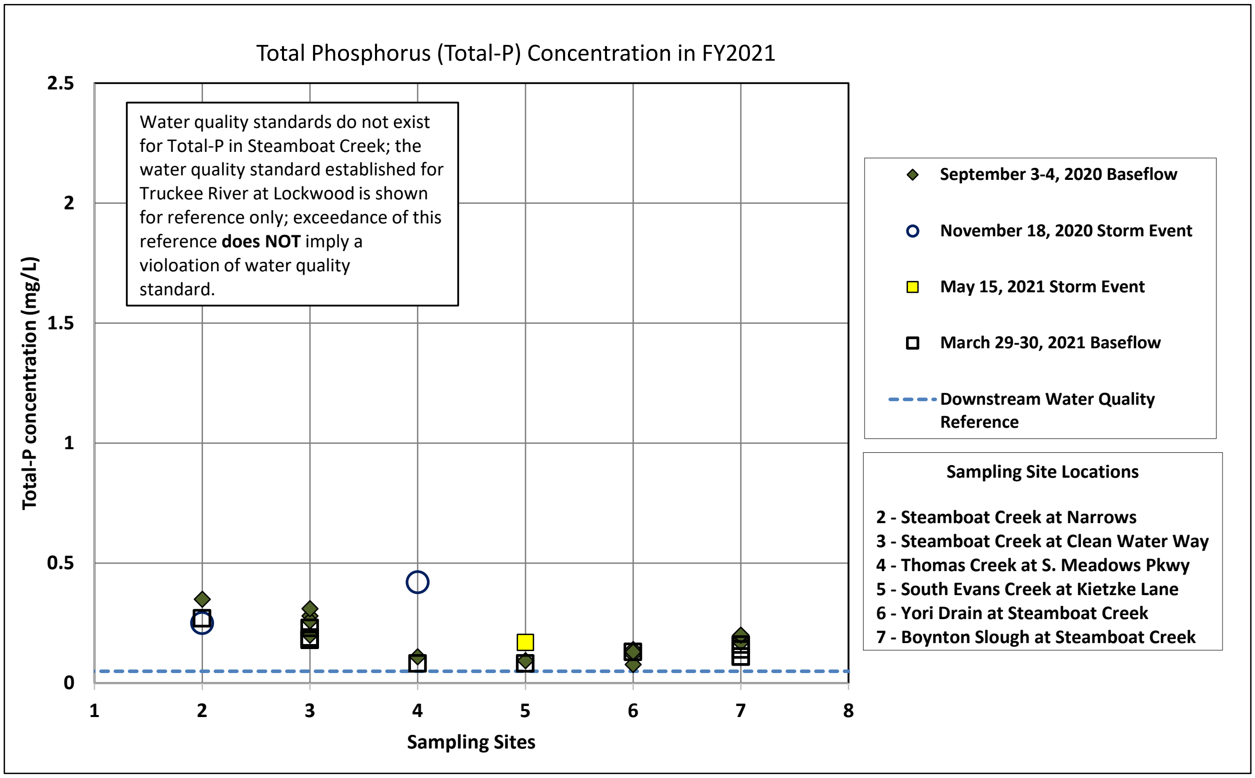


Figure 5-31 Total-P Concentrations in Steamboat Creek and Tributaries, FY2021

Total-P concentrations during FY2021 in Whites Creek were measured to be 0.14 mg/L. from a single stormwater sample and 0.05 mg/L from a single summer baseflow sample (Figure 5-32). The November 18, 2020 stormwater sample exceeded the WQS established for Whites Creek (S.V. ≤ 0.10 mg/L, NAC 445a. 1758). Total-P was not detected in the winter baseflow sample from Whites Creek.

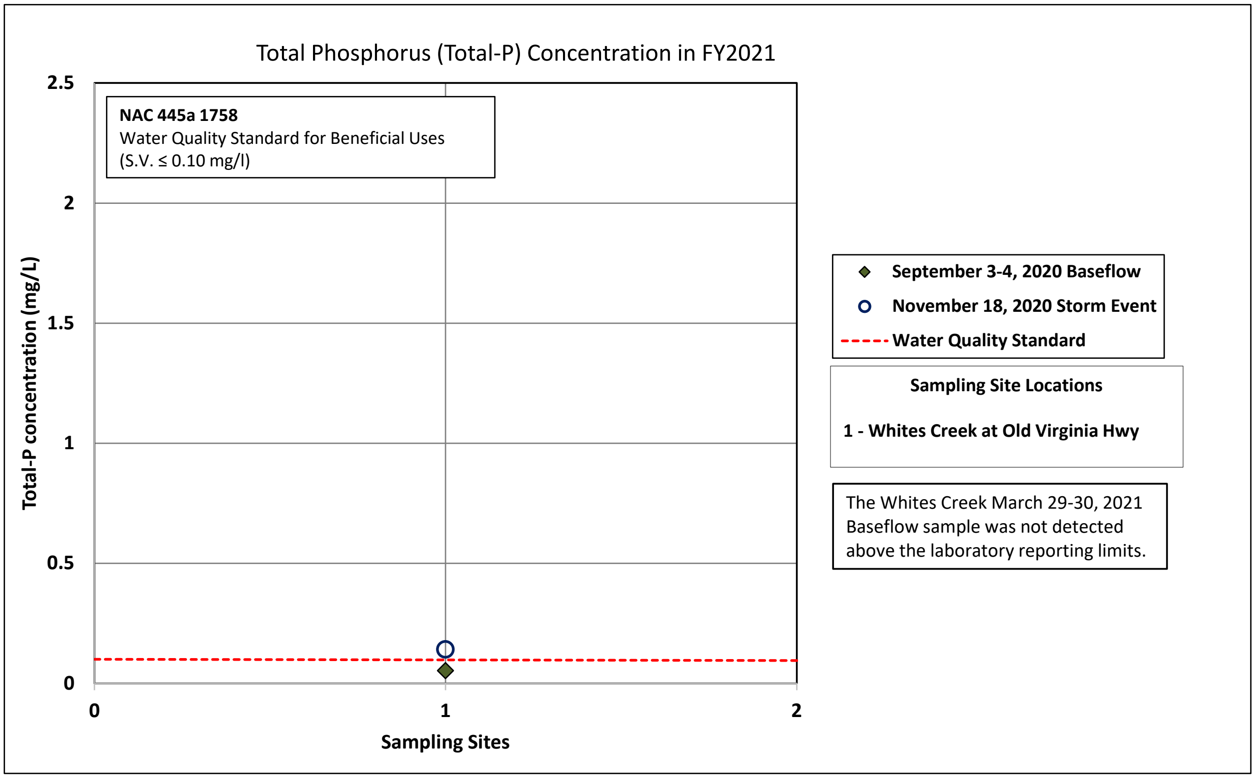


Figure 5-32 Total-P Concentrations in Whites Creek, FY2021

Orthophosphate (Ortho-P) concentrations for stormwater and baseflow samples collected in FY2021 are shown in Figure 5-33, Figure 5-34, Figure 5-35, Figure 5-36, Figure 5-37, and Figure 5-38, grouped by their listed water body and specific numeric criteria (if applicable-red dashed line).

In FY2021 Ortho-P concentrations measured in samples from two tributaries and an urban outfall which discharge to the Truckee River upstream of Idlewild ranged from 0.07 mg/L to 0.87mg/L (Figure 5-33). The highest concentrations measured were from Chalk Creek (0.70 mg/L) and Alum Creek (0.87 mg/L) samples during the November 18, 2020 storm event. All samples exceeded the established WQS (≤0.05 mg/L, NAC 445a. 1684) and requirements to maintain existing higher quality (≤0.02 mg/L, NAC 445a. 1684). Dry conditions in Alum Creek prevented winter baseflow sampling.

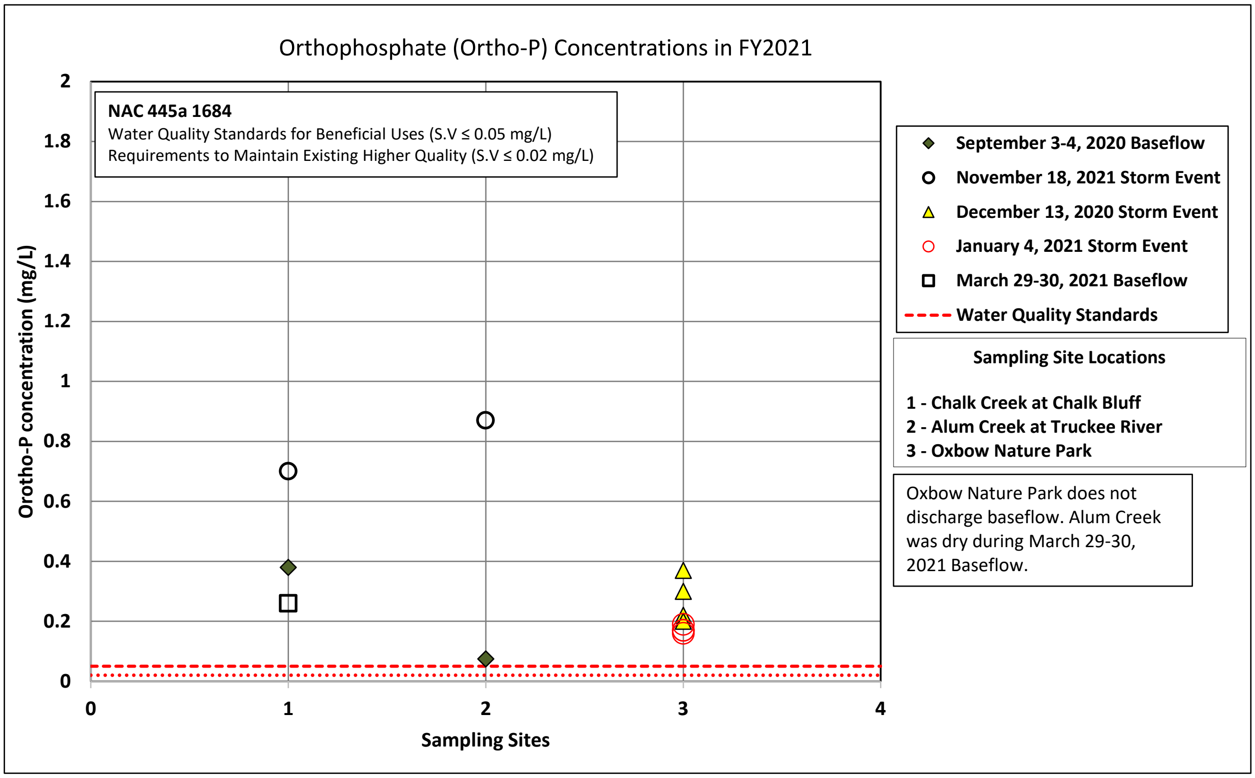


Figure 5-33 Ortho-P Concentrations in Tributaries and an Urban Stormwater Outfall to the Truckee River upstream of Idlewild, FY2021

FY2021 Ortho-P concentrations measured from stormwater samples collected from three urban stormwater outfalls discharged to the Truckee River between E. McCarran and Idlewild ranged from 0.16 mg/L to 1.6 mg/L (Figure 5-34). All samples exceeded established WQS (≤0.05 mg/L) and requirements to maintain existing higher quality (≤0.02 mg/L). The highest concentrations (1.4 to 1.6 mg/L) were measured from the Arlington urban outfall during the November 2020 storm event.

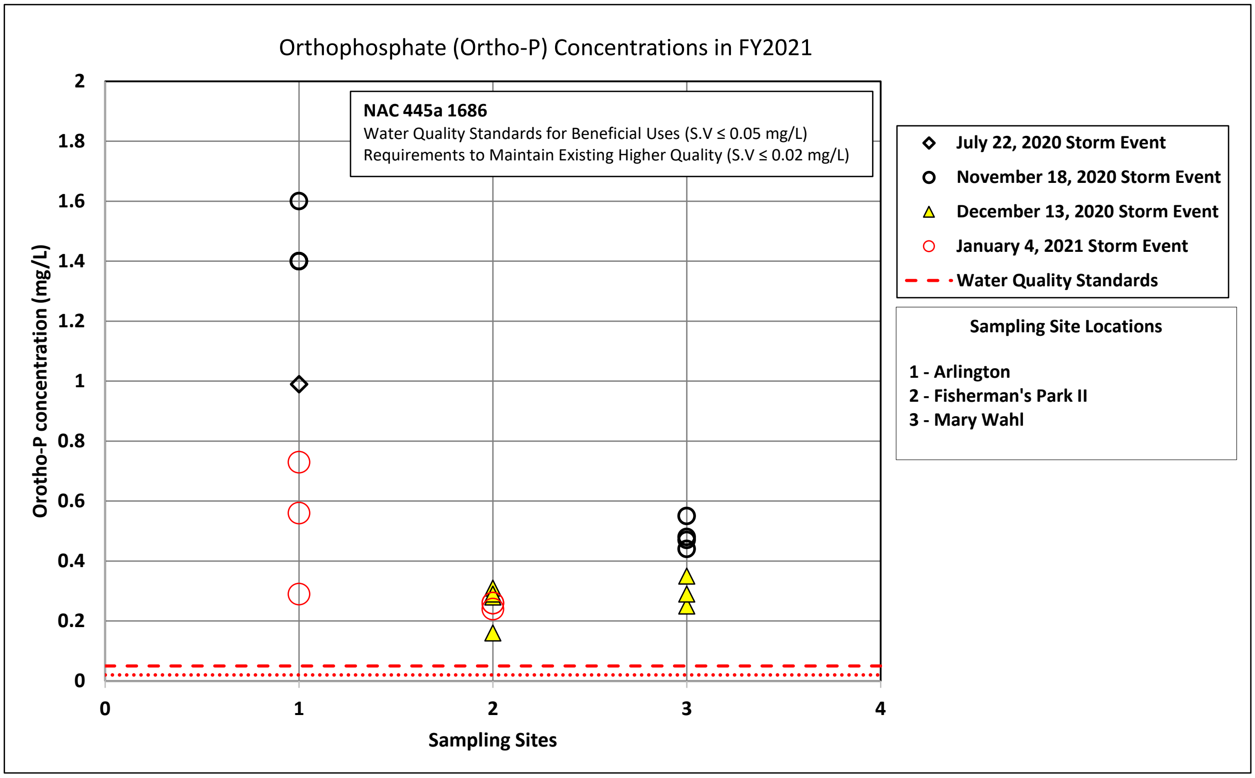


Figure 5-34 Ortho-P Concentrations in Urban Stormwater Outfalls to the Truckee River from Idlewild downstream to E. McCarran, FY2021

In FY2021 Ortho-P concentrations measured in stormwater and baseflow samples collected from the North Truckee Drain ranged between 0.12 mg/L and 0.33 mg/L (Figure 5-35). There are no established WQS for Ortho-P in the North Truckee Drain or the Truckee River at Lockwood.

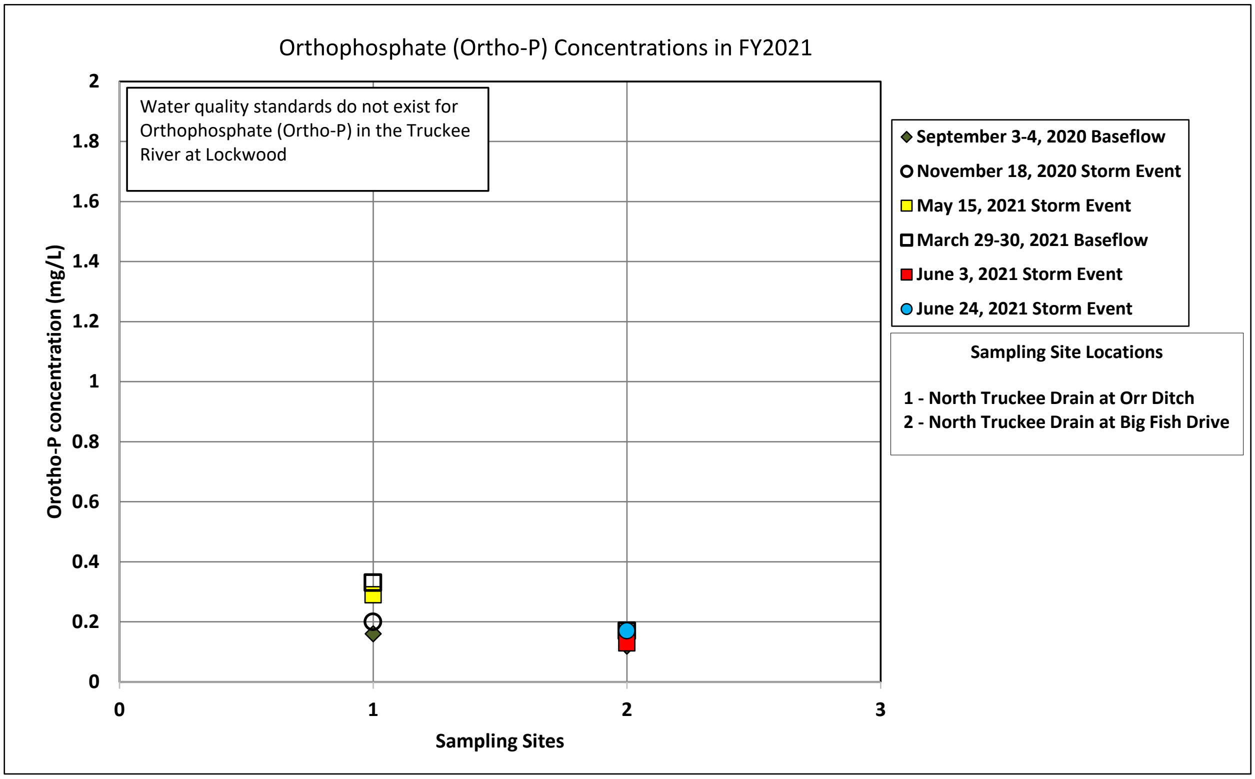


Figure 5-35 Ortho-P Concentrations in the North Truckee Drain, FY2021

FY2021 Ortho-P concentrations measured in stormwater and baseflow samples collected from Steamboat Creek at Rhodes Road ranged from 0.08 mg/L to 0.26 mg/L (Figure 5-36). There are no established WQS for Ortho-P in Steamboat Creek.

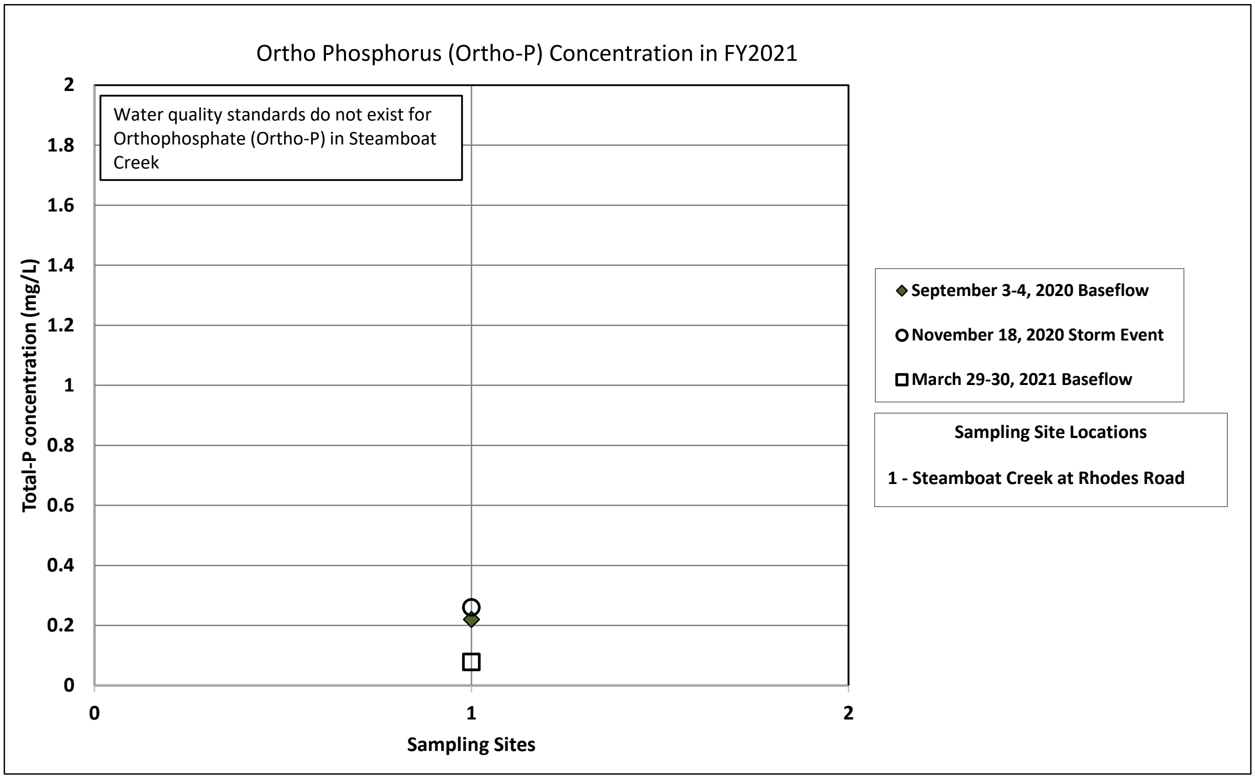


Figure 5-36 Ortho-P Concentrations in Steamboat Creek at Rhodes Road, FY2021

In FY2021 Ortho-P concentrations measured in stormwater and baseflow samples collected from Steamboat Creek and four tributaries below Rhodes Road ranged from 0.05 mg/L to 0.41 mg/L (Figure 5-37). The highest concentration measured (0.34 mg/L) was from summer baseflow in Steamboat Creek at Narrows.

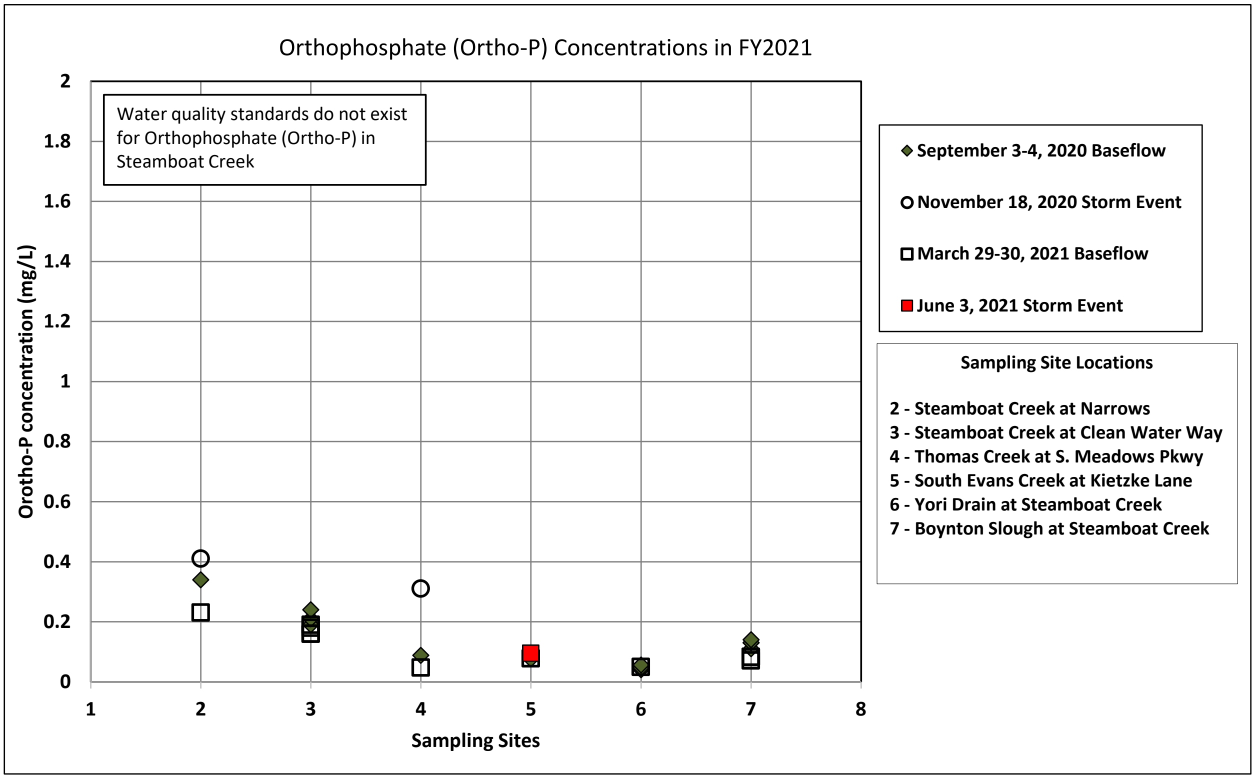


Figure 5-37 Ortho-P Concentrations in Steamboat Creek and Tributaries, FY2021

Ortho-P concentrations were measured to be 0.26 mg/L in a stormwater sample and 0.03 mg/L in a baseflow sample taken during FY2021(Figure 5-38). Ortho-P concentration from the winter baseflow sample was below laboratory detection limits. There are not established WQS for Ortho-P in Whites Creek.

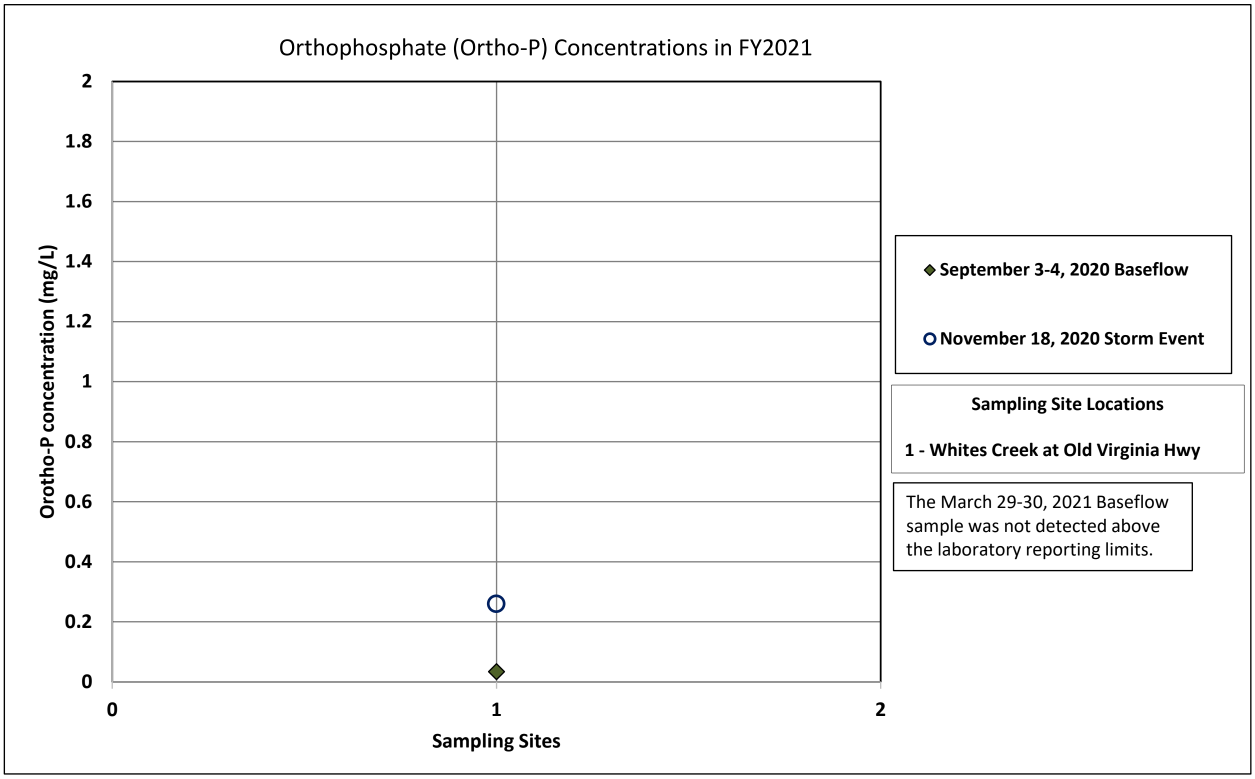


Figure 5-38 Ortho-P Concentrations in Whites Creek, FY2021

5.4.3 TOTAL DISSOLVED SOLIDS

TDS concentrations for stormwater and baseflow samples collected in FY2021 are shown in Figure 5-39, Figure 5-40, Figure 5-41, Figure 5-42, Figure 5-43, and Figure 5-44, grouped by their listed water body-specific numeric criteria. Vertical axes in all graphs are logarithmic to show the wide range of values detected.

In FY2021 TDS concentrations measured in samples from two tributaries and one urban outfall discharged to the Truckee River upstream of Idlewild ranged from 87 mg/L to 2,100 mg/L (Figure 5-39), with Chalk Creek exhibiting much higher TDS concentrations than other tributaries. We compare these concentrations to the single value Requirement to Maintain Existing Higher Quality (≤ 95 mg/L) in the Truckee River. Annual average WQS for Beneficial Uses (≤ 500 mg/L) for this segment of Truckee River is shown for reference only. All samples collected from Alum Creek and Chalk Creek exceeded the S.V. water quality requirement, and 6 out of 8 stormwater samples collected from Oxbow Nature Park urban stormwater outfall also exceeded this requirement.

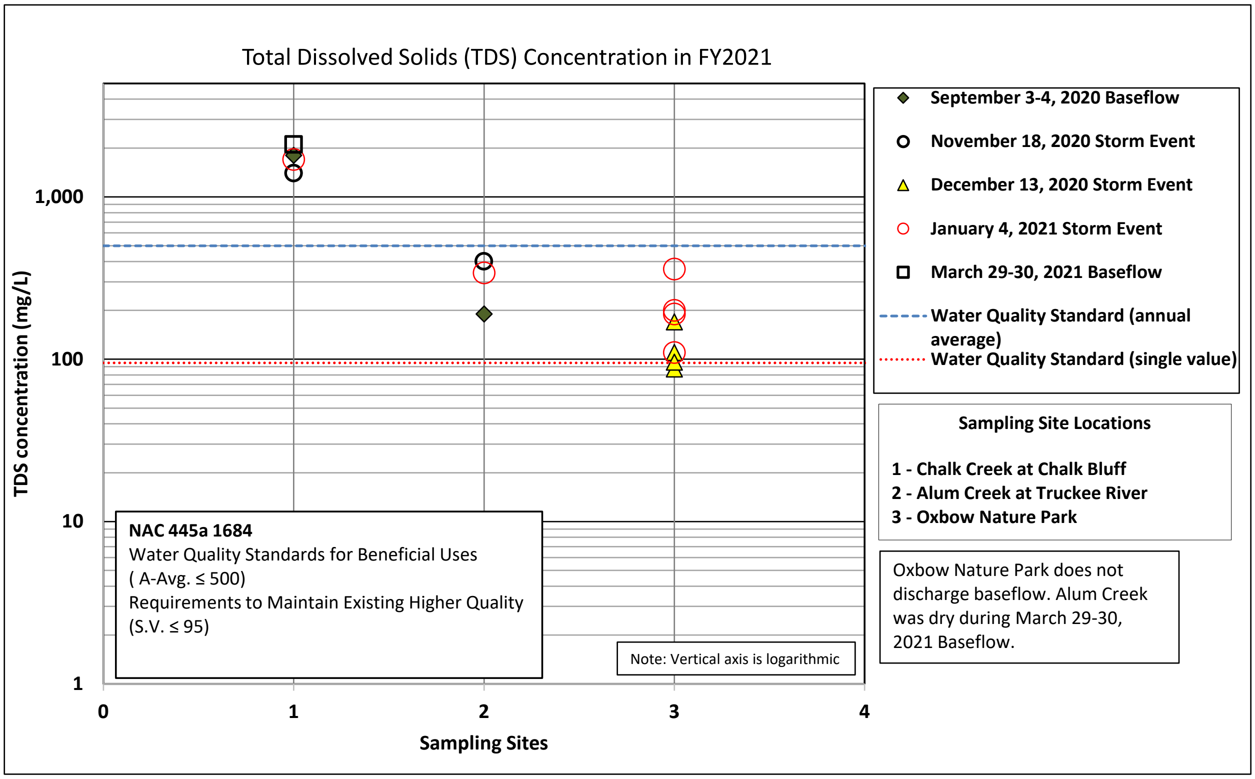


Figure 5-39 TDS Concentrations in Tributaries and an Urban Stormwater Outfall to the Truckee River upstream of Idlewild, FY2021

TDS concentrations measured in FY2021 from stormwater samples in three urban stormwater outfalls that discharge to the Truckee River between E. McCarran and Idlewild ranged from 130 mg/L to 830 mg/L (Figure 5-40). All stormwater samples exceeded the Single Value Requirements used to Maintain Existing Higher Quality (S.V. ≤ 120 mg/L). The annual average WQS for Beneficial Uses (A-Avg. ≤ 500 mg/L) for this segment of Truckee River is shown for reference only.

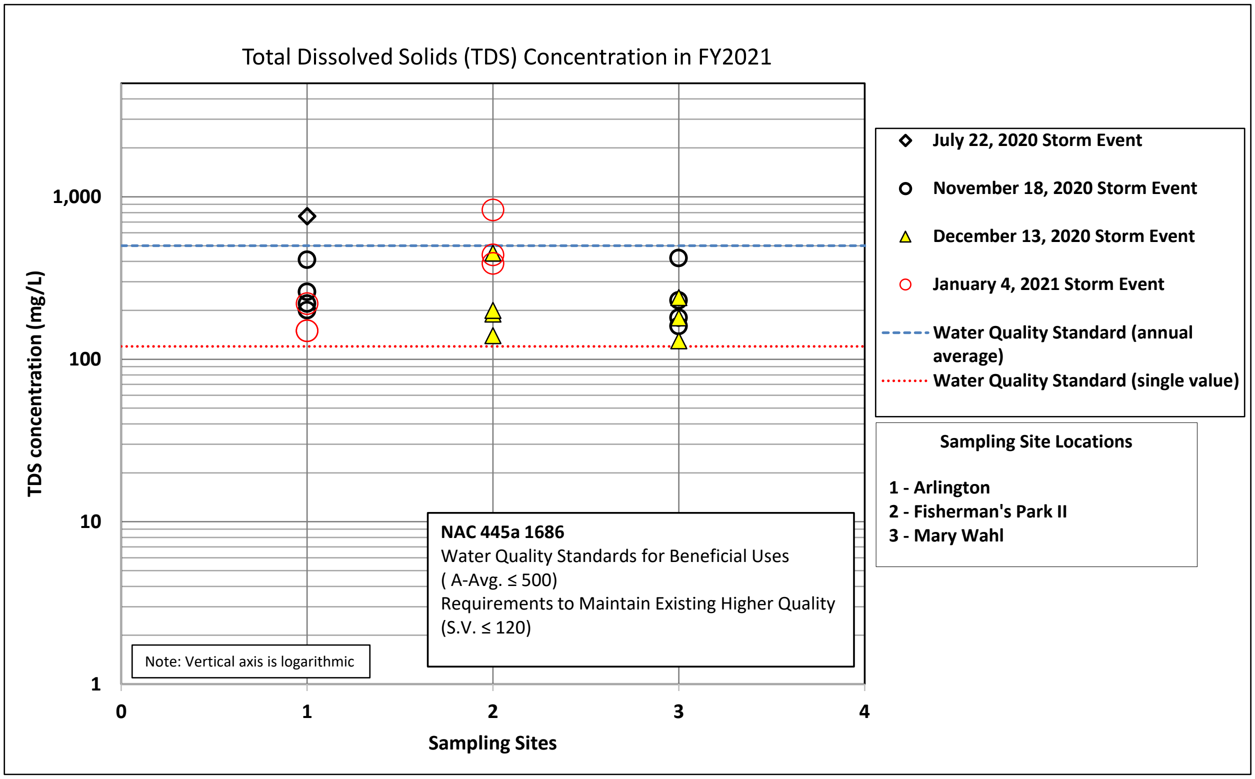


Figure 5-40 TDS Concentrations in Urban Stormwater Outfalls to the Truckee River from Idlewild downstream to E. McCarran, FY2021

In FY2021 TDS concentrations measured in stormwater and baseflow samples collected from the North Truckee Drain, a tributary to the Truckee River upstream of Lockwood, ranged from 210 mg/L to 1,100 mg/L (Figure 5-41). All but one sample from the June 24, 2021 thunderstorm event measured in North Truckee Drain exceeded the Single Value Requirement used to Maintain Existing Higher Quality (S.V. ≤ 260 mg/L) for this segment of Truckee River. The annual-average WQS is shown for reference only.

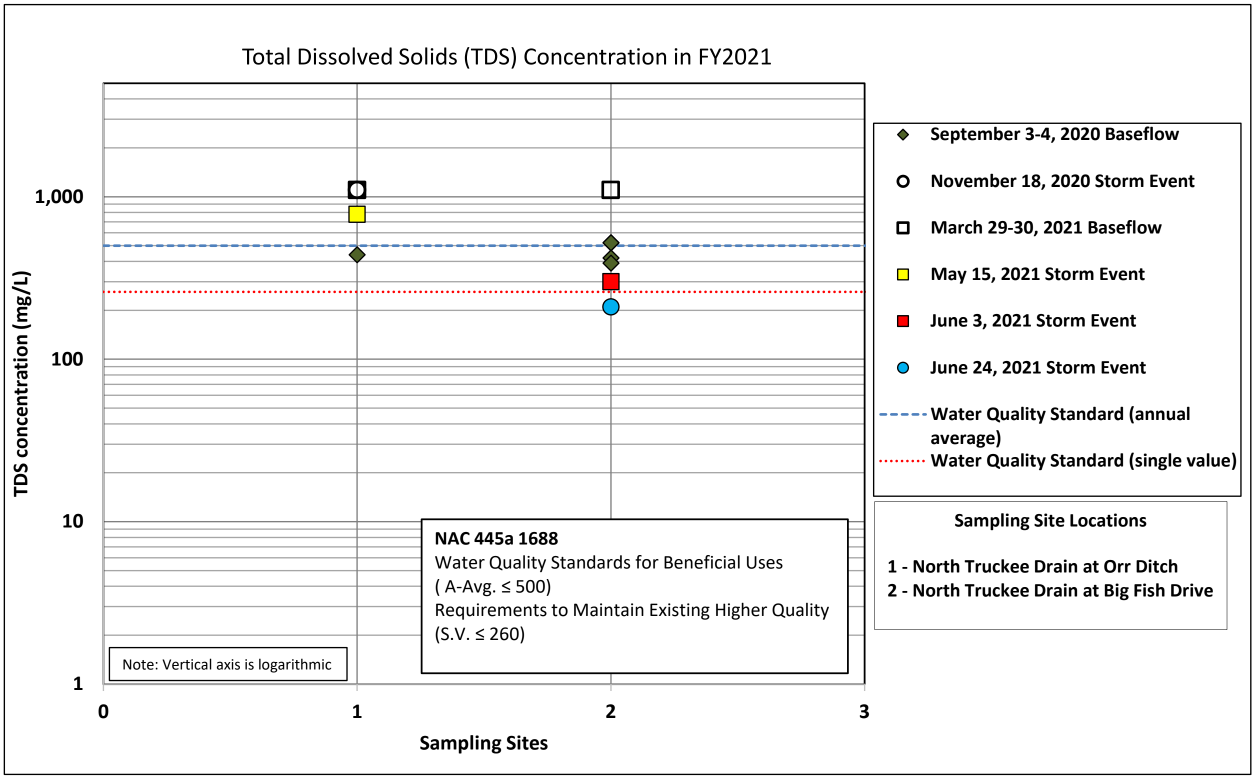


Figure 5-41 TDS Concentrations in the North Truckee Drain, FY2021

FY2021 TDS concentrations in Steamboat Creek at Rhodes Road ranged from 160 mg/L to 270 mg/L (Figure 5-42). These values met the WQS for TDS established for this segment of Steamboat Creek (≤500 mg/L).

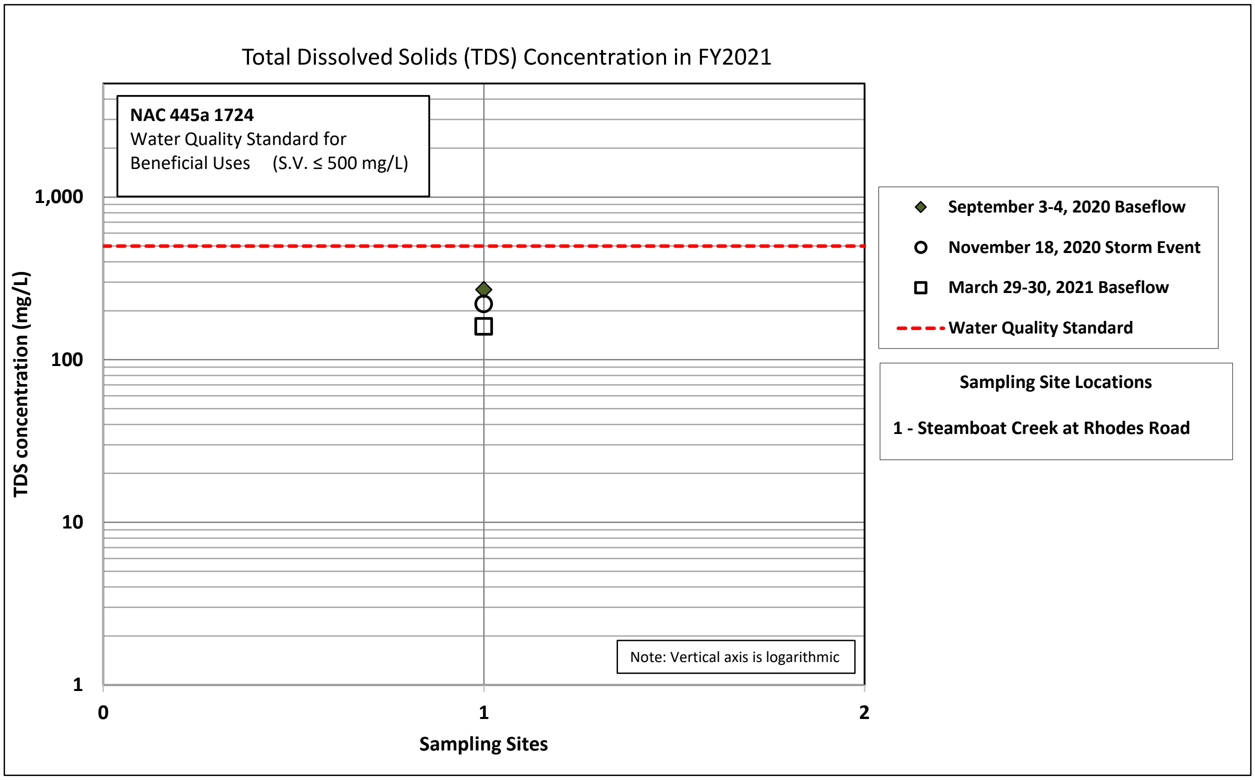


Figure 5-42 TDS Concentrations in Steamboat Creek at Rhodes Road, FY2021

In FY2021 TDS concentrations measured in stormwater and baseflow samples collected at two stations in Steamboat Creek and four tributaries downstream of Rhodes Road ranged from 42 mg/L to 690 mg/L (Figure 5-43). Single value WQS to protect water quality in Steamboat Creek and four tributaries do not exist for TDS, we show a maximum annual-average water quality standard for the Truckee River (<215 mg/L) for reference only. Highest concentrations were measured in both winter and summer baseflow from Steamboat Creek at Narrows. TDS were not detected in summer baseflow samples collected from Thomas Creek.

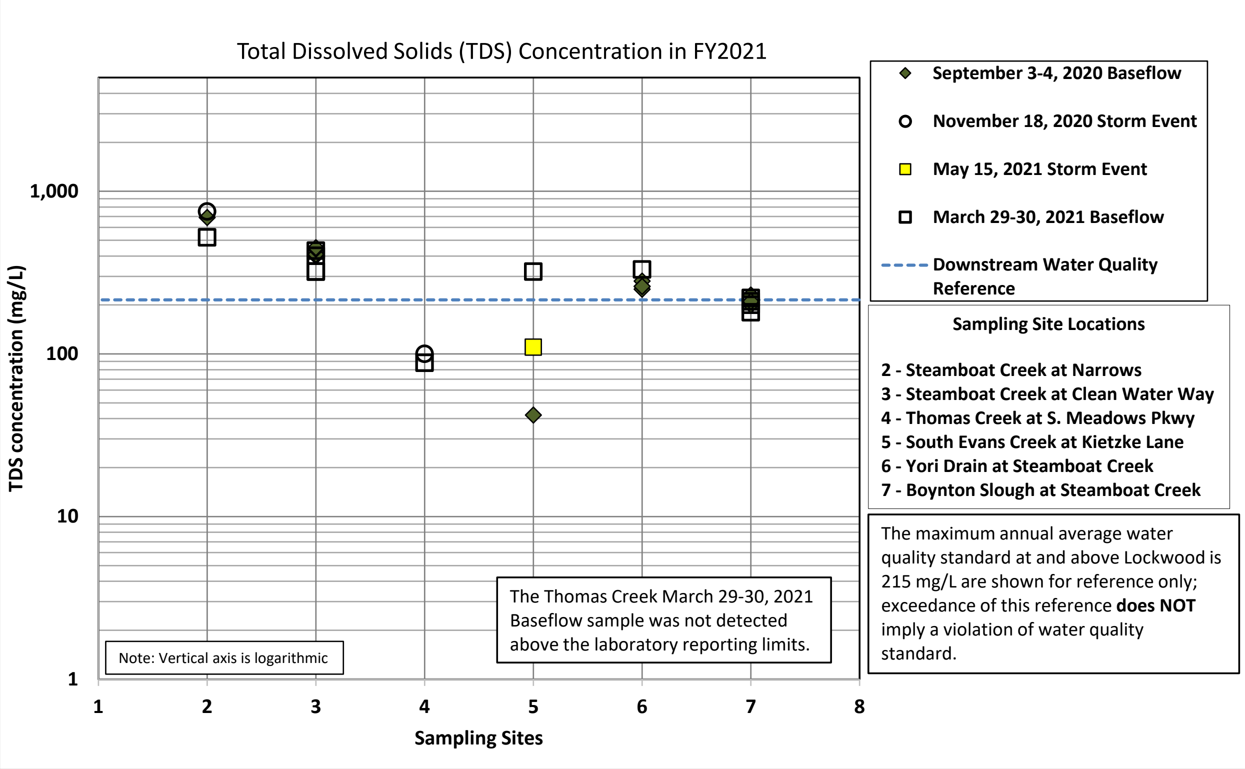


Figure 5-43 TDS Concentrations in Steamboat Creek and Tributaries, FY2021

TDS concentrations measured in stormwater and baseflow samples collected from Whites Creek during FY2021 ranged from 57 mg/L to 100 mg/L (Figure 5-44). A single value WQS does not exist for Whites Creek; however, an annual-average criterion of ≤ 500 mg/L to protect beneficial uses is shown for reference only.

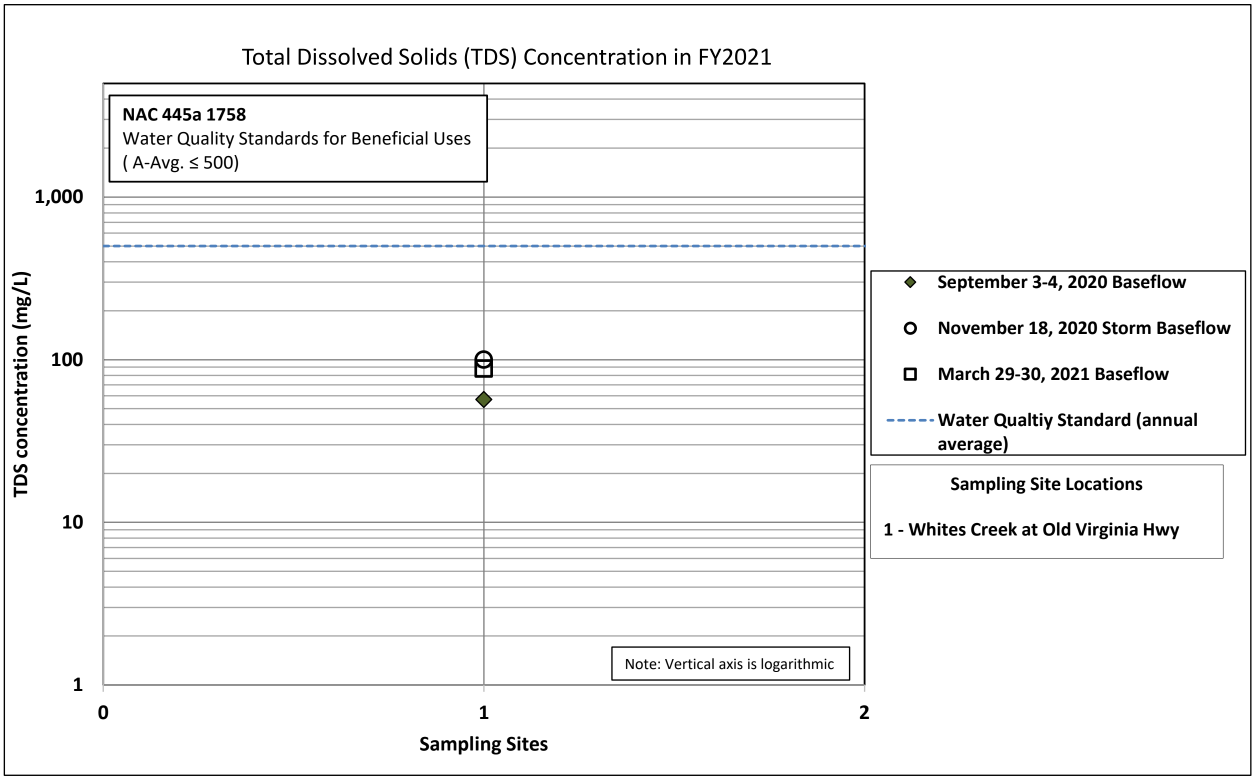
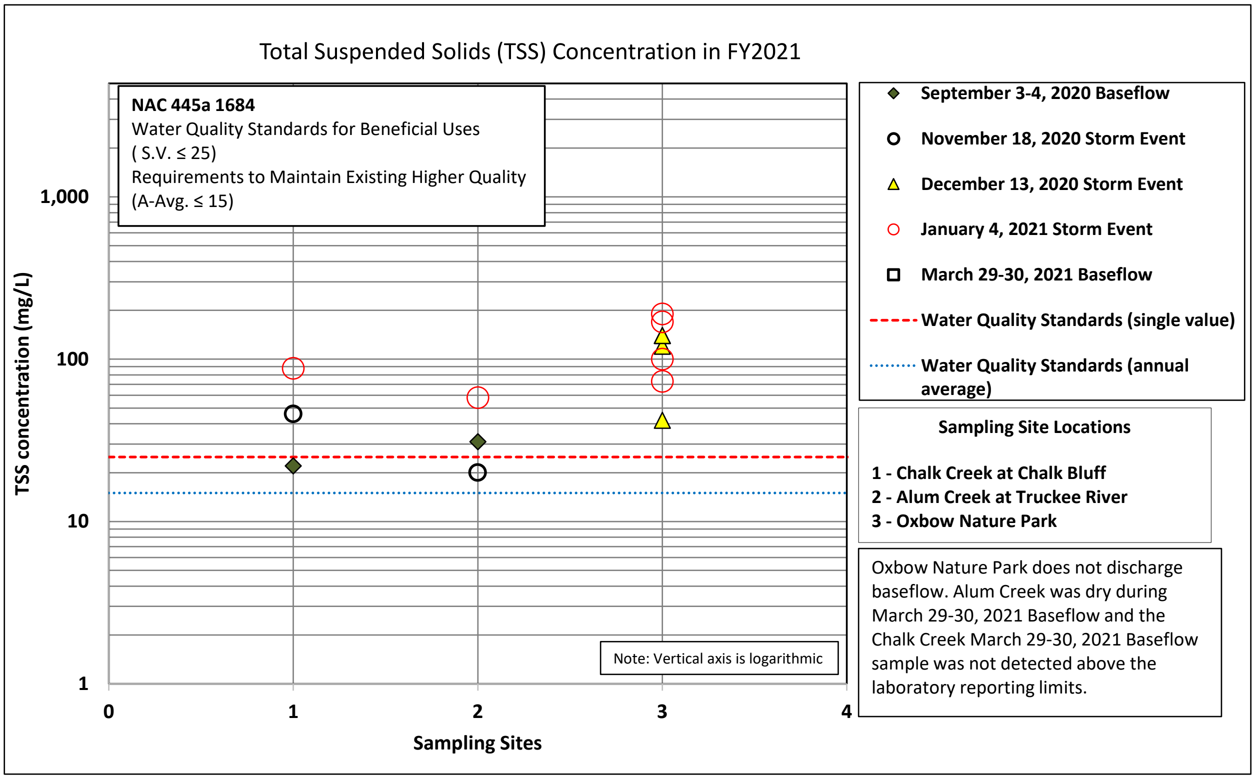


Figure 5-44 TDS Concentrations in Whites Creek, FY2021

5.4.4 TOTAL DISSOLVED SOLIDS

TSS concentrations for stormwater and baseflow samples collected in FY2021 are shown in Figure 5-45, Figure 5-46, Figure 5-47, Figure 5-48, and Figure 5-49, grouped by their listed water body and specific WQS or numeric criteria. Vertical axes in all graphs are logarithmic to show the range in values detected.

In FY2021 TSS concentrations from two tributaries and one urban stormwater outfall discharged to the Truckee River upstream of Idlewild ranged from not detected to 190 mg/L (Figure 5-45). We compare these concentrations to. All stormwater samples collected at Oxbow Nature Park urban outfall exceeded the single value WQS established to protect beneficial uses (≤ 25 mg/L) for this segment of the Truckee River. Both stormwater samples collected at Alum Creek, and one collected at Chalk Creek exceeded the WQS. The summer baseflow sample at Alum Creek and stormwater sample at Chalk Creek from November 18, 2020, met the WQS. The annual average numeric criterion (≤ 15 mg/L) to maintain higher quality is shown for reference only. Dry conditions in Alum Creek prevented winter baseflow sampling.



NAC 445a 1684
Water Quality Standards for Beneficial Uses
(S.V. ≤ 25)
Requirements to Maintain Existing Higher Quality
(A-Avg. ≤ 15)

Sampling Site Locations

1 - Chalk Creek at Chalk Bluff
2 - Alum Creek at Truckee River
3 - Oxbow Nature Park

Oxbow Nature Park does not discharge baseflow. Alum Creek was dry during March 29-30, 2021 Baseflow and the Chalk Creek March 29-30, 2021 Baseflow sample was not detected above the laboratory reporting limits.

Figure 5-45 TSS Concentrations in Tributaries and an Urban Stormwater Outfall to the Truckee River upstream of Idlewild, FY2021

TSS concentrations measured in stormwater from three urban outfalls that discharge to the Truckee River between E. McCarran and Idlewild ranged from 37 mg/L to 1000 mg/L during FY2021 (Figure 5-46). All stormwater samples collected from these three stormwater urban outfalls exceeded single value WQS established to protect beneficial uses (≤ 25 mg/L) and for this segment of the Truckee River. The annual average numeric criterion (≤ 15 mg/L) to maintain higher quality is shown for reference only. WQS.

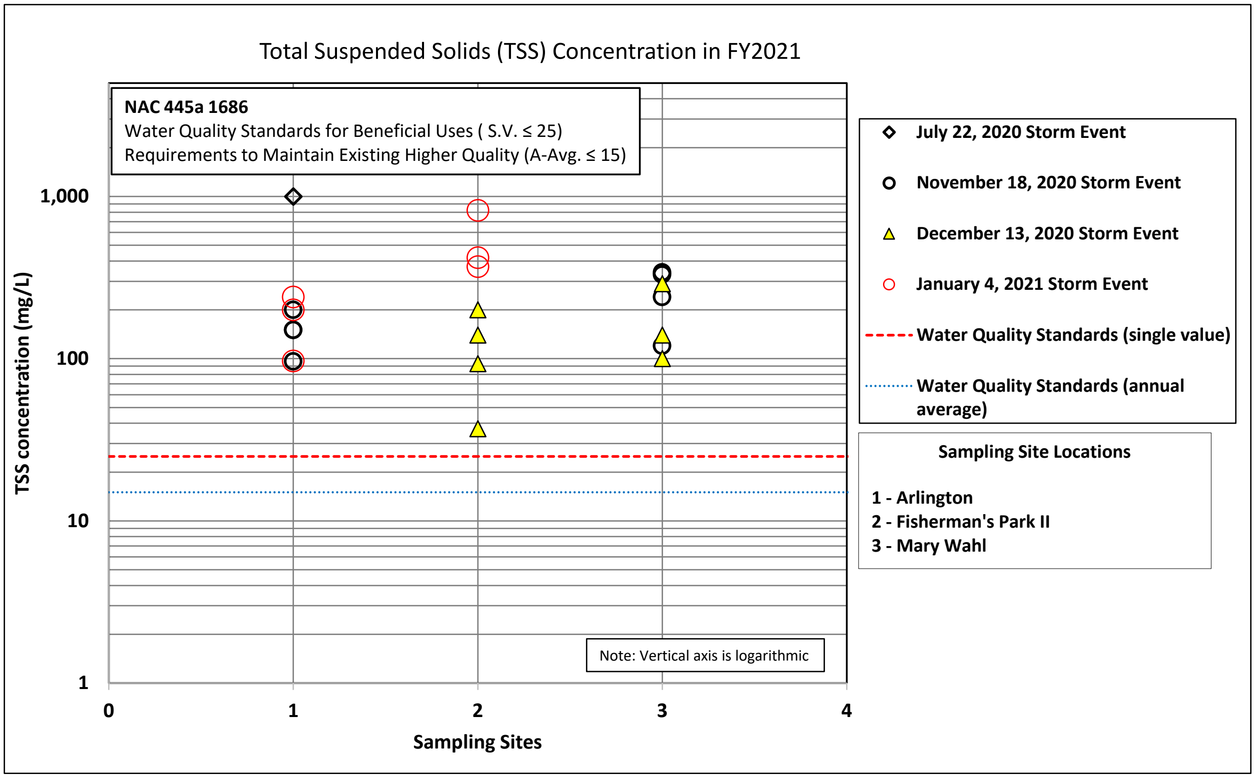
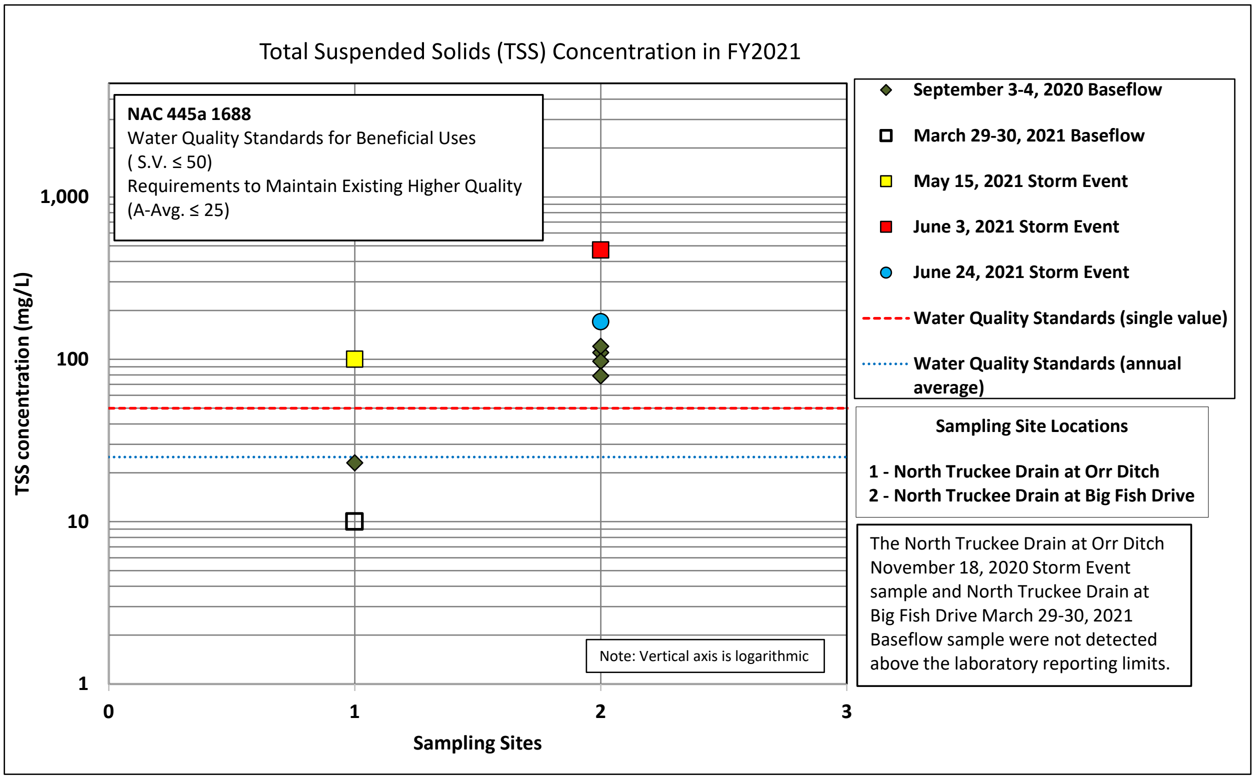


Figure 5-46 TSS Concentrations in Urban Stormwater Outfalls to the Truckee River from Idlewild downstream to E. McCarran, FY2021

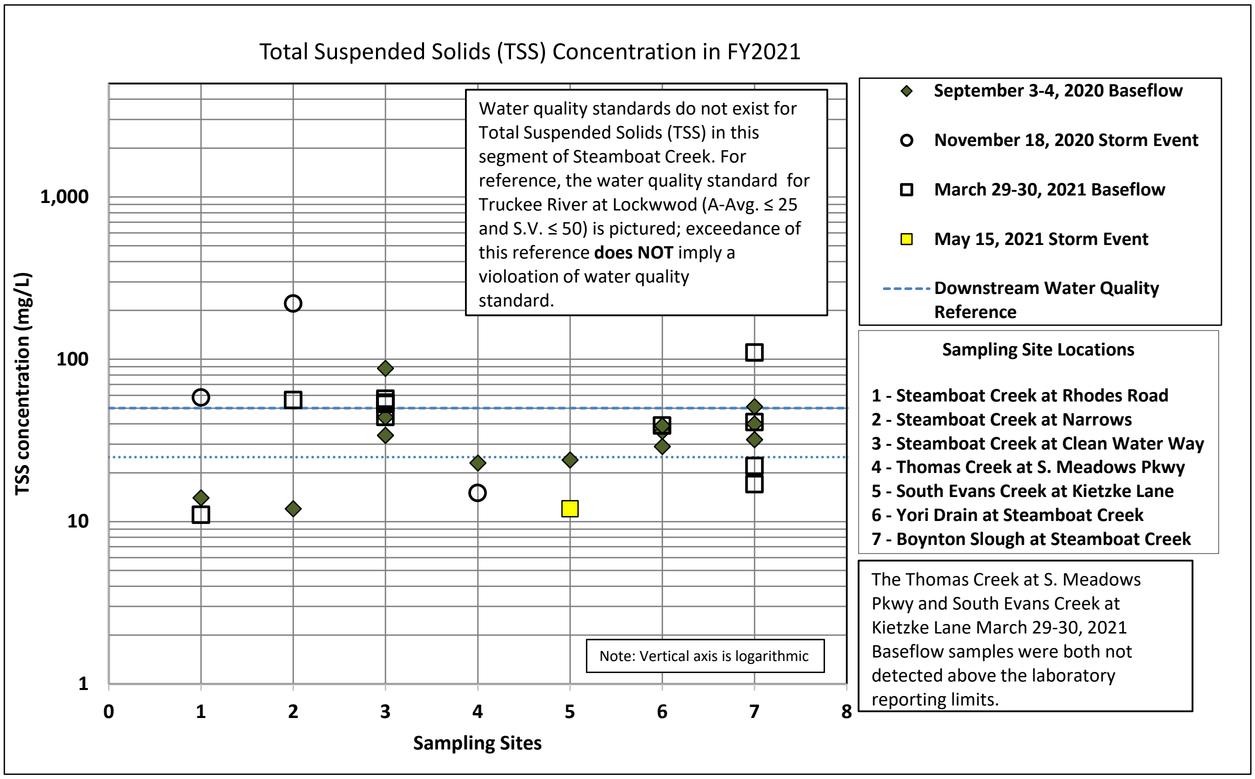
TSS concentrations measured from stormwater and baseflow samples collected from two stations along the North Truckee Drain ranged from not detected to 470 mg/L (Figure 5-47). All stormwater and baseflow samples collected from North Truckee Drain at Big Fish Drive exceeded the single value WQS established to protect beneficial uses (≤ 50 mg/L) for this segment of the Truckee River, except for the winter baseflow grab sample that was not detected. A stormwater sample collected from North Truckee Drain at Orr Ditch November 18, 2020 was not detected and a storm sample collected on May 15, 2021 exceeded the WQS; however, both summer and winter baseflow samples at North Truckee Drain at Orr Ditch met the WQS.



The North Truckee Drain at Orr Ditch November 18, 2020 Storm Event sample and North Truckee Drain at Big Fish Drive March 29-30, 2021 Baseflow sample were not detected above the laboratory reporting limits.

Figure 5-47 TSS Concentrations in the North Truckee Drain, FY2021

In FY2021 TSS concentrations measured in stormwater and baseflow samples collected at two different stations in Steamboat Creek and three tributaries downstream from Rhodes Road ranged from 11 mg/L to 220 mg/L (Figure 5-48). There are no numerical standards established for TSS in Steamboat Creek or its tributaries; a WQS established for Truckee River at Lockwood is shown for reference only. Boynton Slough exhibited the highest TSS concentrations (110 mg/L) measured in winter baseflow, and Steamboat Creek at Clean Water Way (88 mg/L) measured in summer baseflow. Steamboat Creek at the Narrows had the highest single TSS concentration measured during the year, TSS was not detected in winter baseflow samples at South Evans Creek and Thomas Creek.



Water quality standards do not exist for Total Suspended Solids (TSS) in this segment of Steamboat Creek. For reference, the water quality standard for Truckee River at Lockwwod (A-Avg. ≤ 25 and S.V. ≤ 50) is pictured; exceedance of this reference **does NOT** imply a violoation of water quality standard.

Sampling Site Locations

- **1 - Steamboat Creek at Rhodes Road**
- **2 - Steamboat Creek at Narrows**
- **3 - Steamboat Creek at Clean Water Way**
- **4 - Thomas Creek at S. Meadows Pkwy**
- **5 - South Evans Creek at Kietzke Lane**
- **6 - Yori Drain at Steamboat Creek**
- **7 - Boynton Slough at Steamboat Creek**

The Thomas Creek at S. Meadows Pkwy and South Evans Creek at Kietzke Lane March 29-30, 2021 Baseflow samples were both not detected above the laboratory reporting limits.

Figure 5-48 TSS Concentrations in Steamboat Creek and Tributaries, FY2021

TSS concentrations were 13 mg/L from summer baseflow and 190 mg/L from stormwater in Whites Creek (Figure 5-49). TSS was not detected in the winter baseflow sample. Established WQS do not exist for Whites Creek.

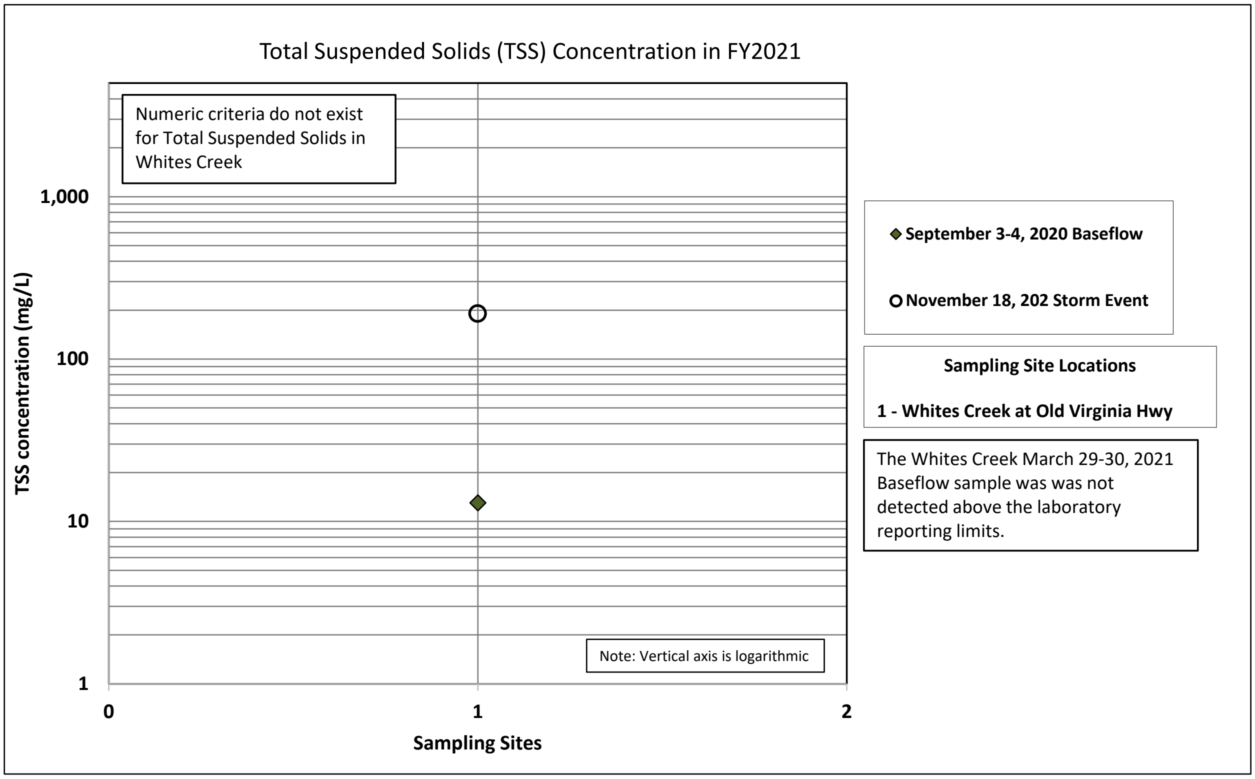


Figure 5-49 TSS Concentrations in Whites Creek, FY2021

5.4.5 ESCHERICHIA COLI BACTERIA

In FY2021, four storm samples were successfully sampled and transferred to the laboratory within the holding time. *E.coli* samples were also collected and analyzed during winter and summer baseflow at stations identified for E.coli sampling in the 2021 SAP (Figure 5-50, Figure 5-49, and Figure 5-52).

E.coli counts for the November 18, 2020 stormwater sample collected at Alum Creek measured 3,080 MPN/100 mL and exceeded the established WQS for beneficial uses (<410 MPN/100 mL). The Alum Creek summer baseflow sample measured 137 MPN/100 mL. *E.coli* samples collected from stormwater at the Arlington and Mary Wahl urban outfalls were above the laboratory count limit (>2,419 MPN/100 mL) and therefore exceed the established WQS for beneficial uses(Figure 5-50).

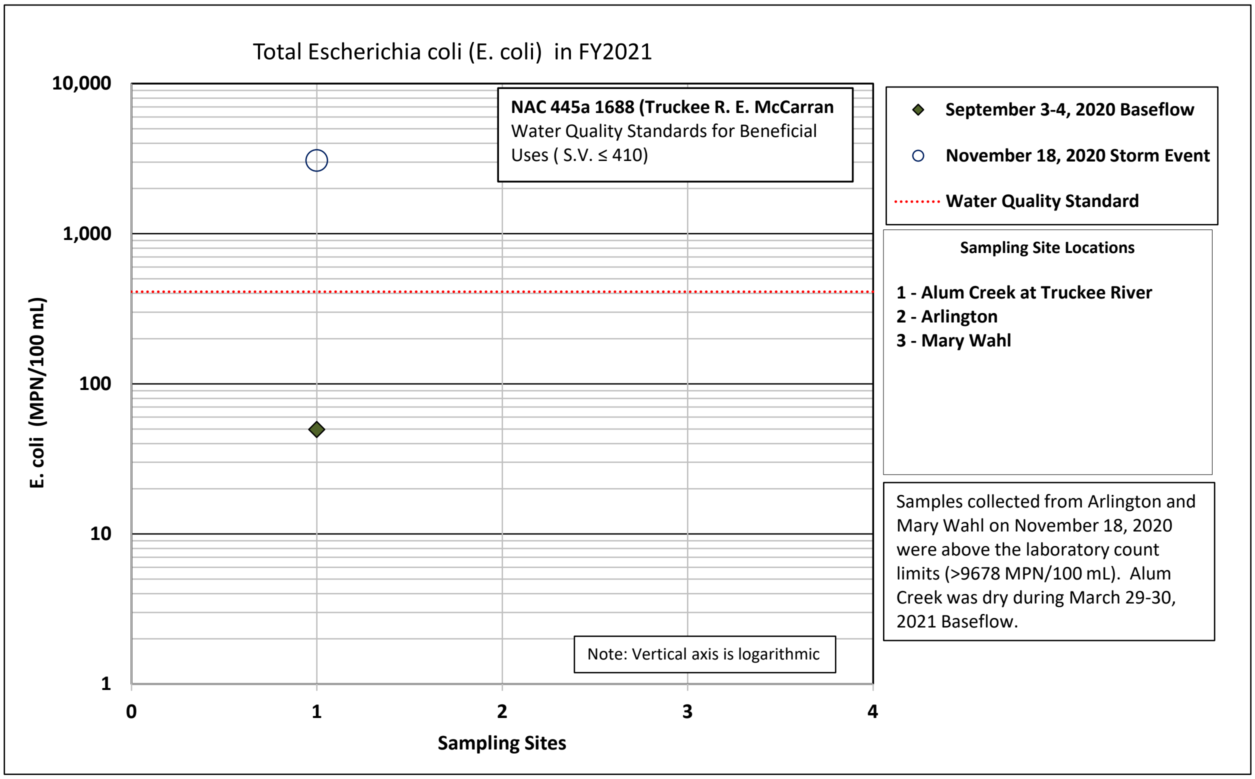


Figure 5-50 ***E.coli*** Counts for Samples Collected in Alum Creek and Urban Stormwater Outfalls, FY2021

In FY2021 *E. coli* samples collected at Whites Creek during the November 18, 2020 storm event were above the laboratory count limit (9678 MPN/100mL) and therefore exceed the established WQS for Whites Creek. Baseflow samples were measured to be 30 MPN/100 mL in winter and 90 MPN/100 mL in summer (Figure 5-51).

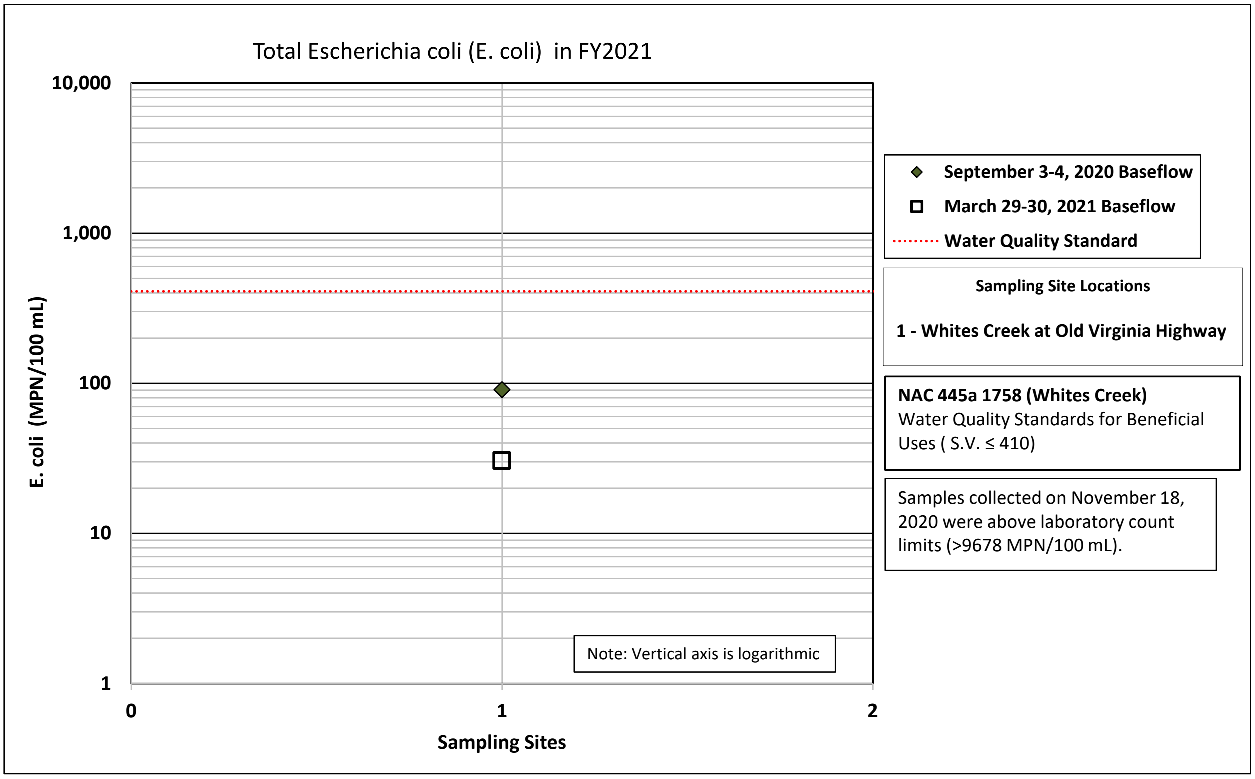


Figure 5-51 ***E.coli*** Counts for Samples Collected in Whites Creek, FY2021

A stormwater sample collected on November 18, 2020, measured 3,106 MPN/100 mL at Steamboat Creek at Rhodes Road and exceeds the WQS established for Steamboat Creek. Baseflow samples at Steamboat Creek at Rhodes Road measured 52 MPN/100 mL in winter and 165 MPN/100 mL in summer. South Evans Creek baseflow samples measured 18.5 MPN/100 mL in winter and 178.9 MPN/ 100 mL in summer (Figure 5-52).

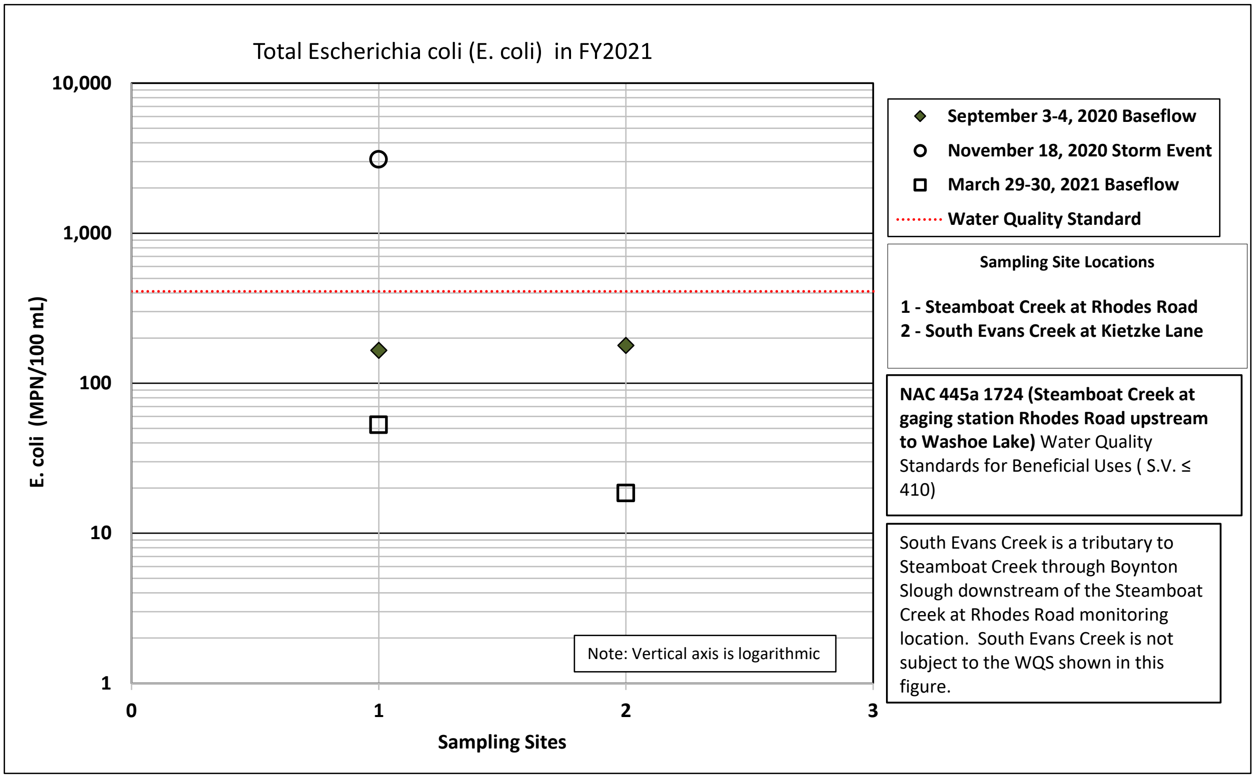


Figure 5-52 ***E.coli*** Counts for Samples Collected in Steamboat Creek, FY2021

5.4.6 PHYSICAL AND CHEMICAL PARAMETERS: DISSOLVED OXYGEN, PH, SPECIFIC CONDUCTANCE AND TURBIDITY

Physical and chemical parameters were measured of waters sampled during each site visit and when streamflow was present. This section presents these data from all monitoring stations to provide greater context for water quality conditions throughout the monitoring year. NDEP (2014) recognizes that instantaneous measures of physical and chemical parameters are only representative of a specific point in time and can naturally vary over a 24-hour period.

DO concentrations measured in FY2021 are shown in Figure 5-53, Figure 5-54, and Figure 5-55, grouped by their listed water body and specific numeric criterion for DO. In the Truckee River, WQS for DO varies depending on the time of year, and unlike other constituents, represents the lowest acceptable value.

DO concentrations ranged from 1.1 mg/L to as high as 15.2 mg/L at all stations discharging to the Truckee River in FY2021 (Figure 5-53). Most DO concentrations measured across all stations discharging to the Truckee River met the WQS to protect beneficial uses. Measurements that did not meet the WQS included stormwater in North Truckee Drain at Big Fish Drive in August 2020 and June 2021. Higher DO concentrations were measured during the winter months, whereas the lowest DO concentrations measured were during the summer and fall months. The highest concentrations measured were on North Truckee Drain and Chalk Creek during baseflow sampling in March 2021.

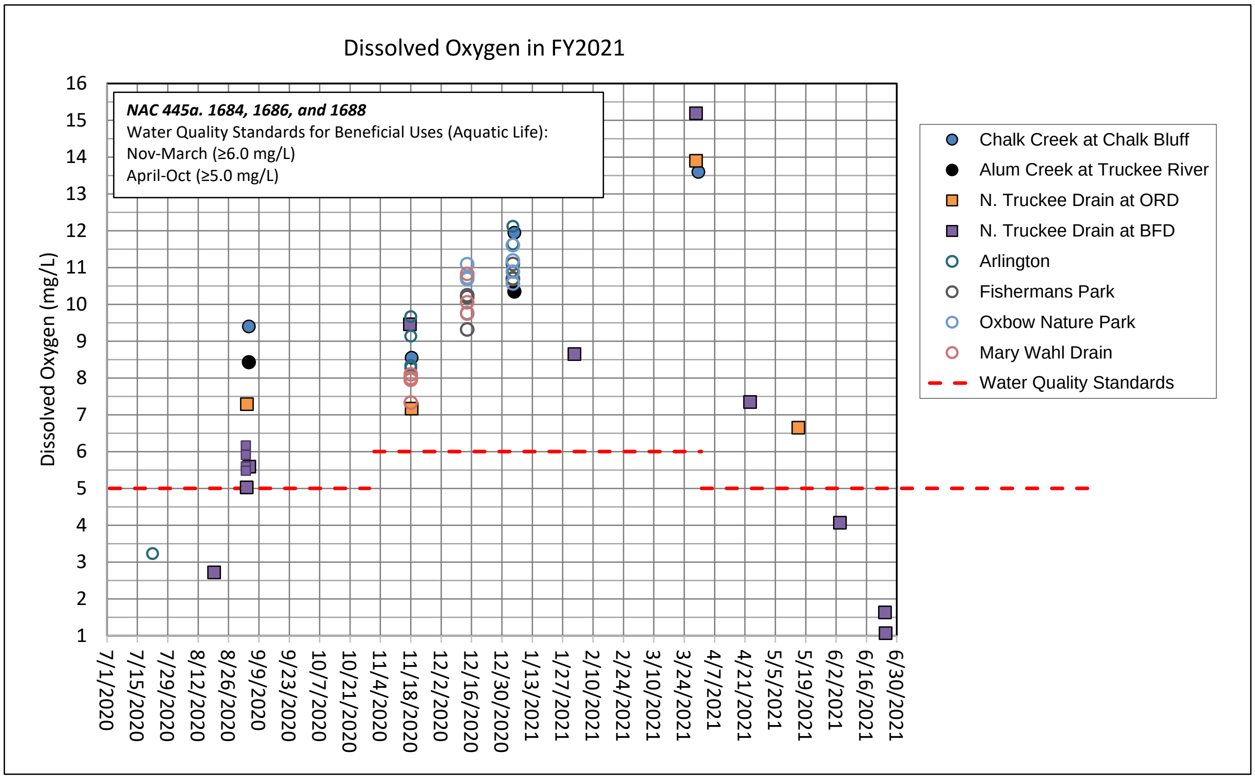


Figure 5-53 DO Concentrations in Tributaries and Urban Stormwater Outfalls to the Truckee River from Lockwood upstream to California/Nevada State Line, FY2021

DO concentrations in Steamboat Creek and tributaries downstream from Rhodes Road were between 1.0 mg/L and 14.5 mg/L during FY2021 (Figure 5-54). All measurements met the WQS established to protect beneficial uses (≥ 3 mg/L, below Rhodes Road to the Truckee River) except the Yori Drain sample from September 3, 2020 baseflow.

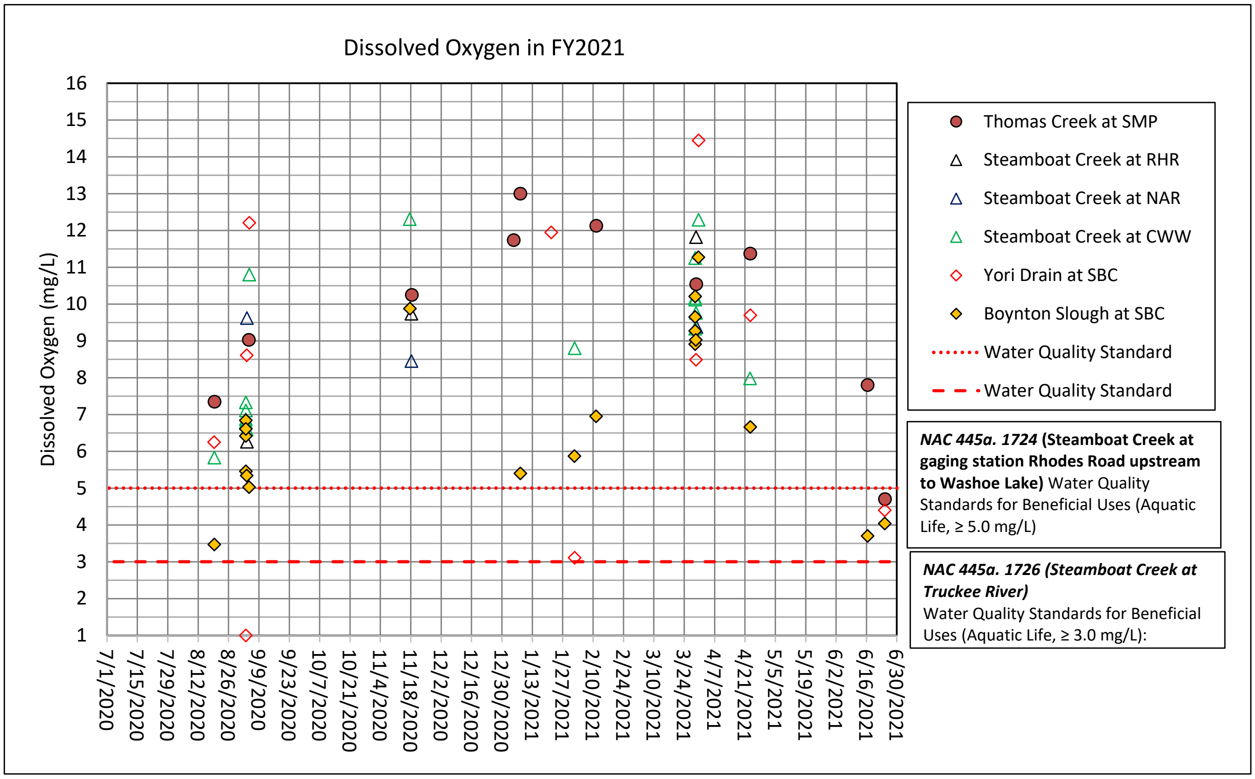


Figure 5-54 DO Concentrations in Steamboat Creek and Tributaries, FY2021

FY2021 DO concentrations in Whites Creek were limited to 4 measurements and ranged from 9.8 mg/L to 12.5 mg/L (Figure 5-55). All measures met the WQS to protect beneficial uses (≥ 5.0 mg/L).

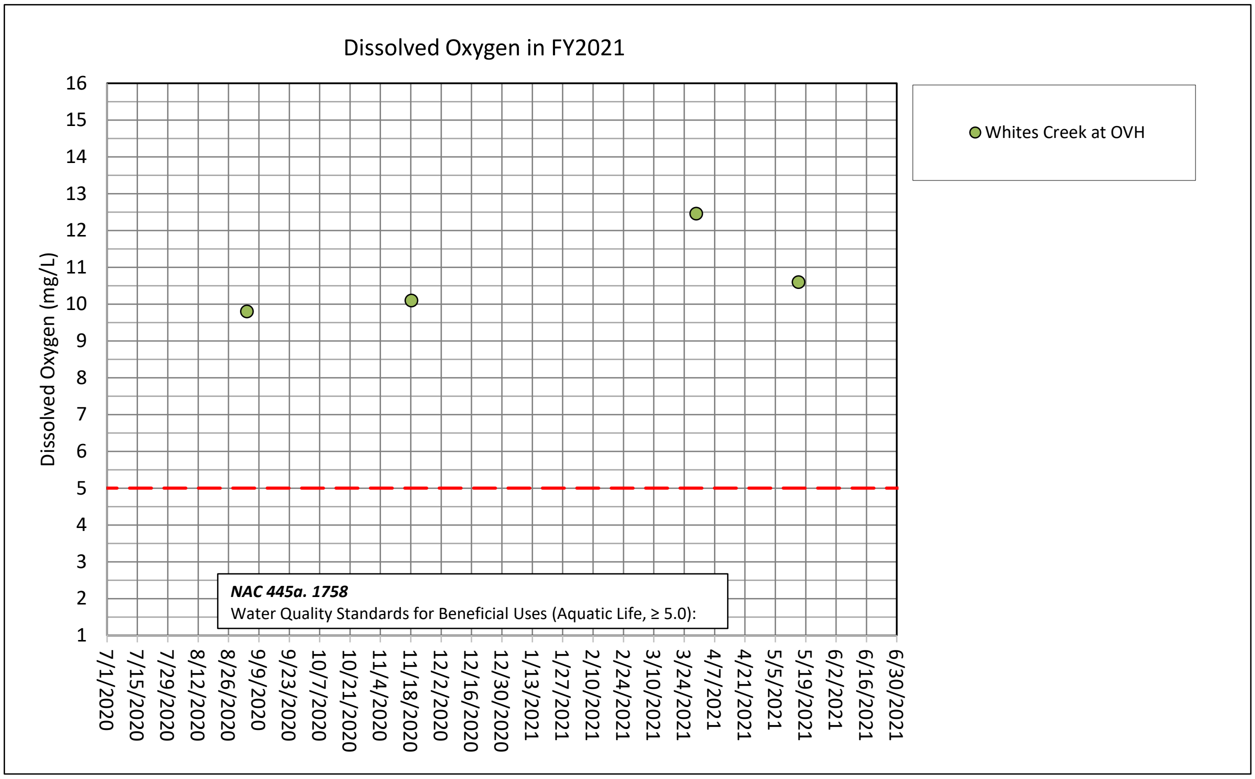


Figure 5-55 DO Concentrations in Whites Creek, FY2021

pH values measured throughout the Truckee Meadows in FY2021 during storms and baseflow are in Figure 5-56, Figure 5-57, Figure 5-58, Figure 5-59, and Figure 5-60, grouped by their listed water body and specific numeric criterion for pH.

pH ranged from 7.48 to 8.51 in the two tributaries and one urban stormwater outfall discharging to the Truckee River upstream of Idlewild in FY2021 (Figure 5-56). Thus, all pH measures met the WQS to protect beneficial uses, while a few measurements of pH from Oxbow Nature Park urban outfall and Chalk Creek failed to meet the requirement to maintain existing higher quality.

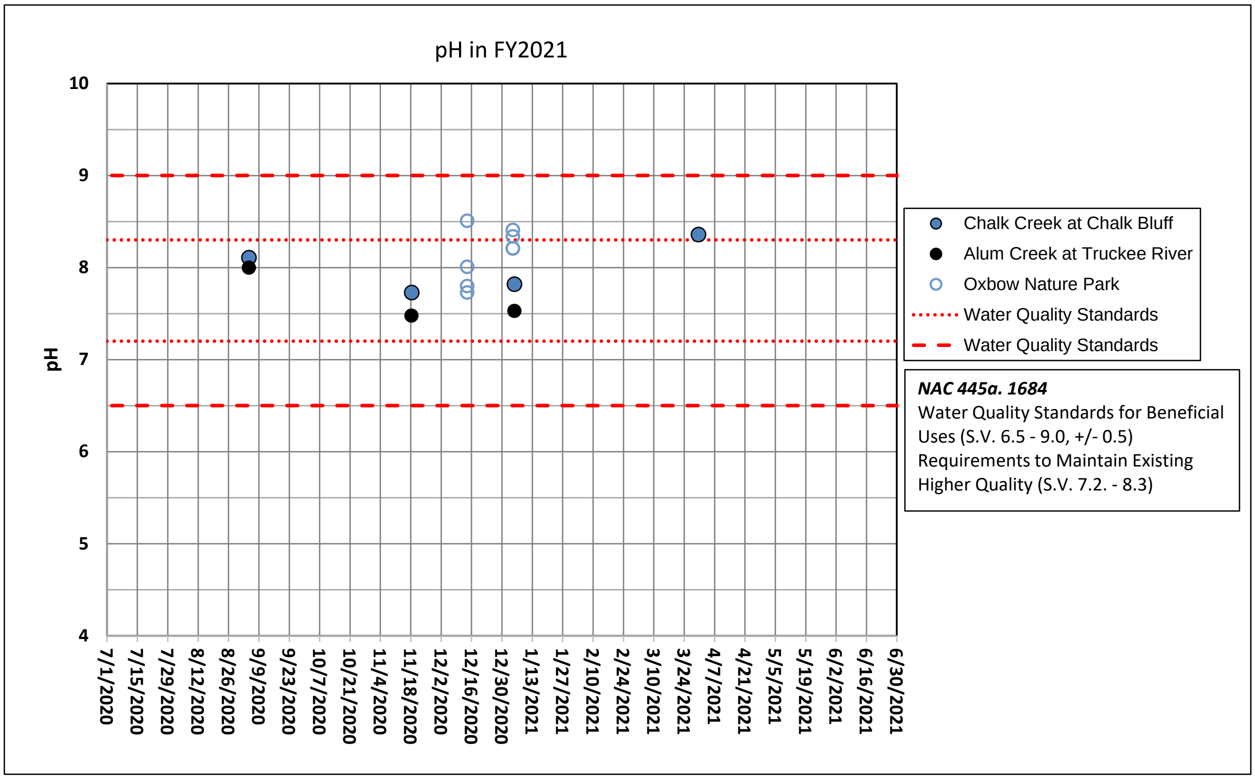


Figure 5-56 pH in Tributaries and an Urban Stormwater Outfalls to the Truckee River upstream of Idlewild, FY2021

In FY2021 the pH of waters across all three urban stormwater outfalls discharging to the Truckee River between E. McCarran and Idlewild ranged from 6.04 to as high as 7.92 (Figure 5-57). All but one measurement of pH met the WQS to protect beneficial uses. A single sample from Arlington during a July 22, 2020 thunderstorm event measured slightly below this WQS. pH measured from Fisherman's Park II urban outfall failed to meet the requirements to maintain existing higher quality.

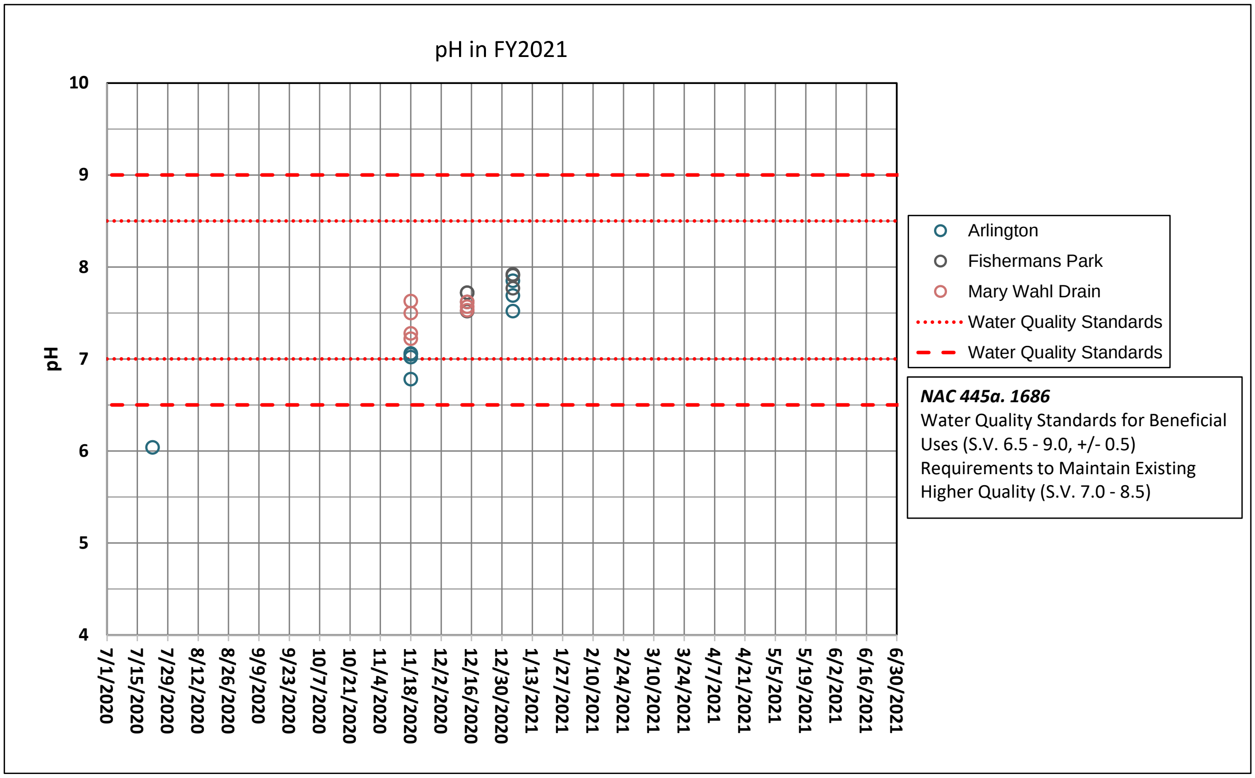


Figure 5-57 pH in Urban Stormwater Outfalls to the Truckee River from E. McCarran upstream to Idlewild, FY2021

In FY2021, the pH of waters from two stations on North Truckee Drain ranged from 6.46 to 8.51 (Figure 5-58). All but one sample met the WQS to protect beneficial uses. One sample from June 24, 2021 at North Truckee Drain at Big Fish Drive was slightly below the WQS range.

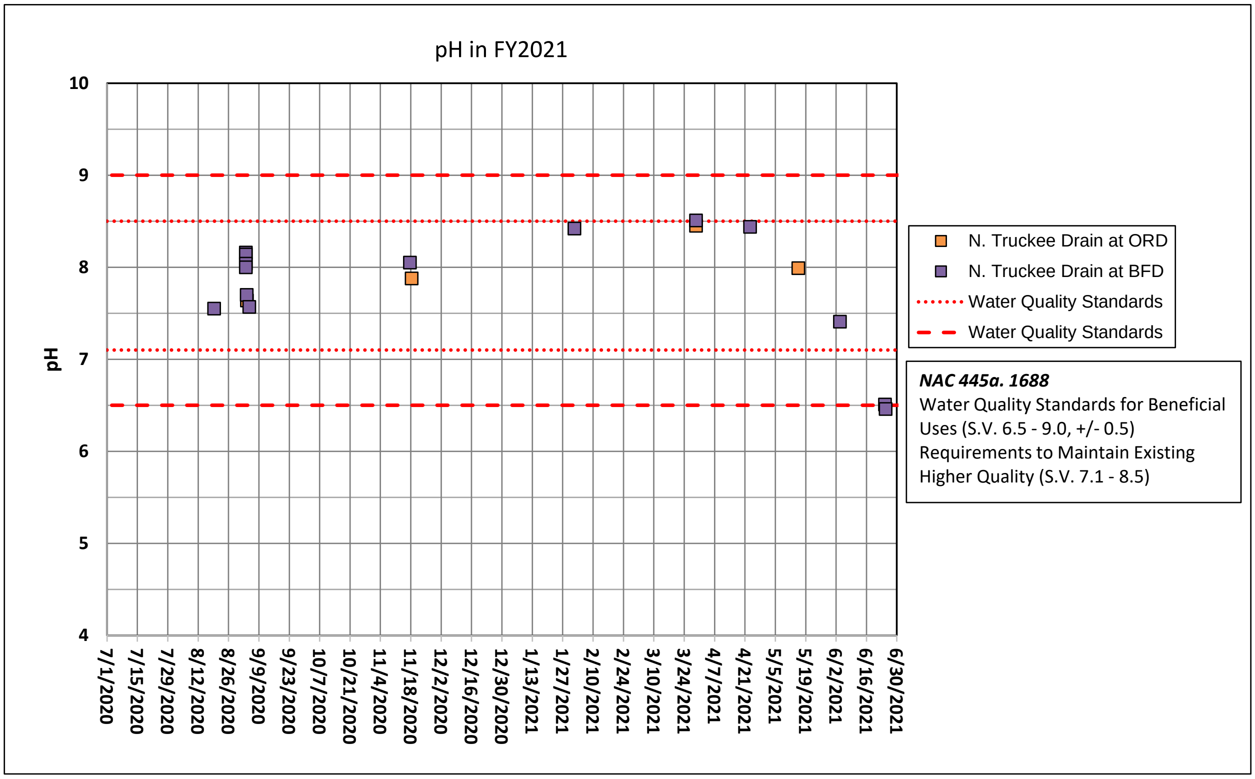
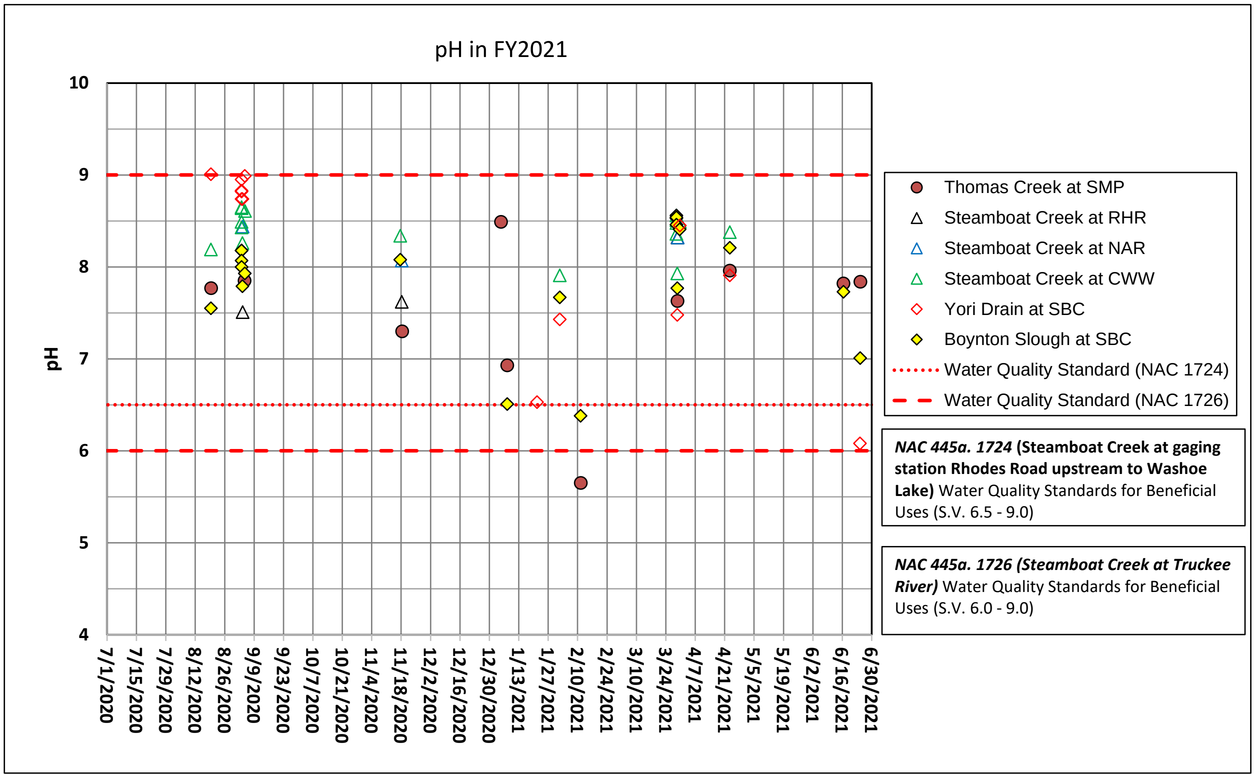


Figure 5-58 pH in the North Truckee Drain, FY2021

The pH of waters measured in Steamboat Creek and tributaries downstream of Rhodes Road ranged between 5.65 and 9.01 in FY2021 (Figure 5-59). All but one pH measurement was within the WQS. pH in Thomas Creek was 5.65 in February 2021. The NAC 445a. 1724 WQS of single value 6.5 to 9.0 is for Steamboat Creek at Rhodes Road only and all other measurements fall under NAC 445a. 1726 single value 6.0 to 9.0.



***NAC 445a. 1724* (Steamboat Creek at gaging station Rhodes Road upstream to Washoe Lake)** Water Quality Standards for Beneficial Uses (S.V. 6.5 - 9.0)

NAC 445a. 1726 (Steamboat Creek at Truckee River) Water Quality Standards for Beneficial Uses (S.V. 6.0 - 9.0)

Figure 5-59 pH in Steamboat Creek and Tributaries, FY2021

The pH measured in waters of Whites Creek ranged between 7.50 and 8.00 (Figure 5-60), well within WQS established to protect beneficial uses in this tributary.

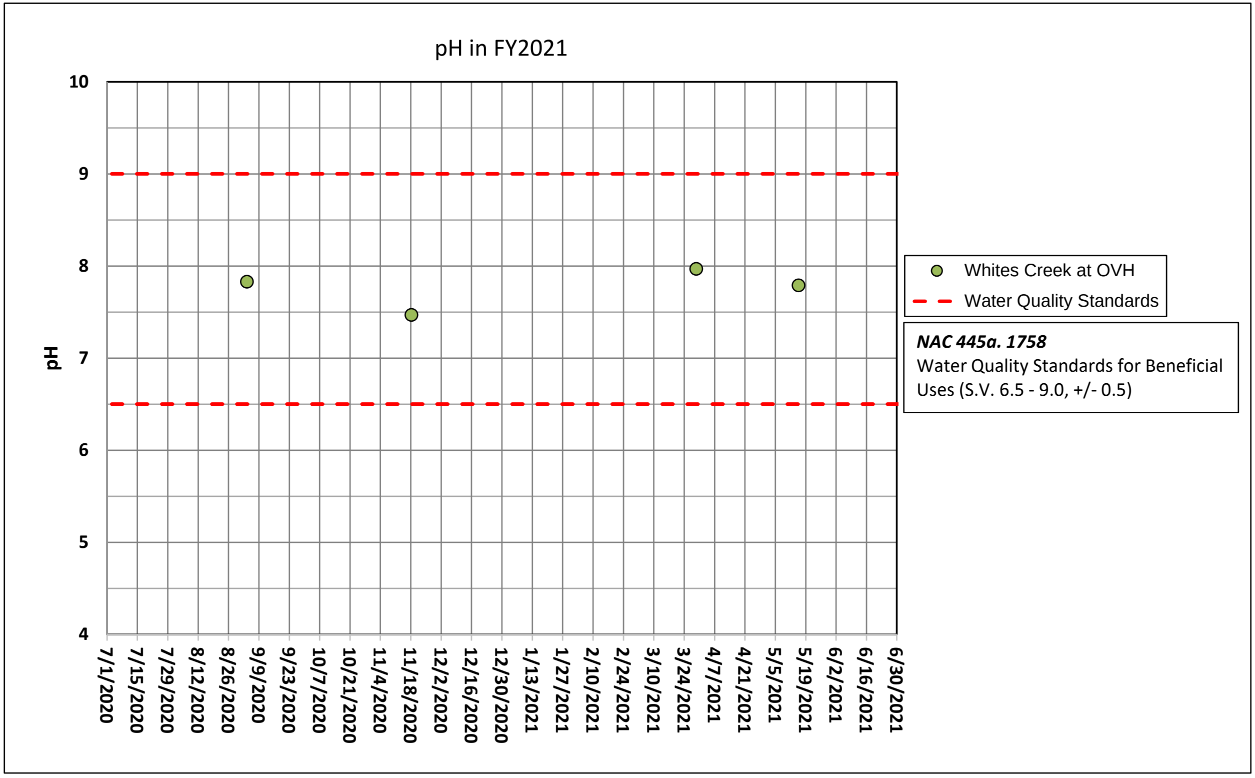


Figure 5-60 pH in Whites Creek, FY2021

Figure 5-61 compares Specific Conductance (SC) across all monitoring stations in the Truckee Meadows in FY2021. Currently, there are no WQS for SC in the Truckee Meadows.

In FY2021, SC ranged between 62 µS and 2,694 µS across all locations measured. 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 SC; therefore, elevated values are generally within the range expected for this creek from previous years' data. 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. Conversely, Whites Creek, Thomas Creek, and Yori Drain exhibit the lowest SC values. These creeks have watersheds that originate in higher elevations with streamflow supported by snowmelt runoff and Truckee River irrigation waters via tailouts from several irrigation ditches, while Yori Drain receives streamflow from the Truckee River via Pioneer Ditch.

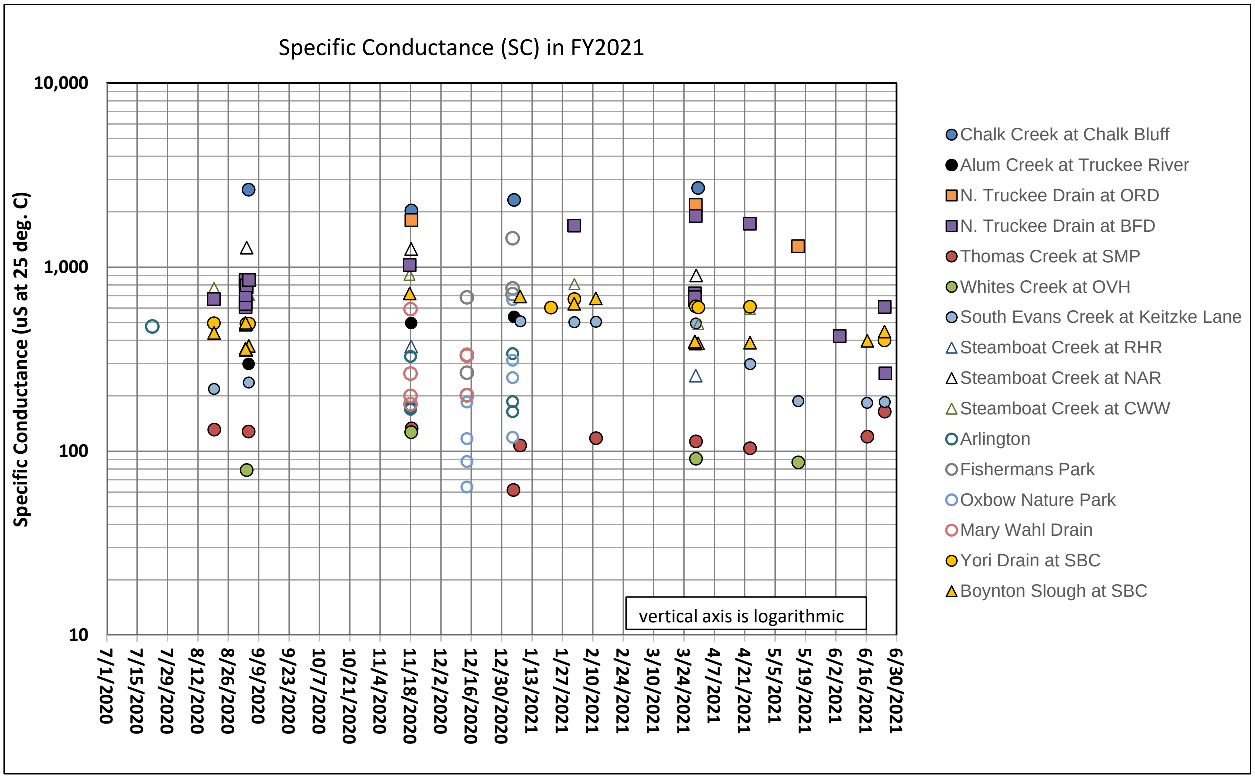


Figure 5-61 SC at all Stations, Truckee Meadows, FY2021

Figure 5-62 compares turbidity across all stations for samples collected in FY2021. The water quality standard for beneficial uses for the Truckee River specifies turbidity to be equal to or less than 10 NTU (S.V.). There are no established WQS for turbidity in Steamboat Creek and Whites Creek.

In FY2021and across all tributaries, turbidity ranged between 6 NTU and 70 NTU during summer baseflow conditions and 1 NTU and 93 NTU during winter baseflow conditions. Both Steamboat Creek at Clean Water Way (71 NTU) and North Truckee Drain at Big Fish Drive (70 NTU) exhibited the highest turbidity values during summer baseflow. Steamboat Creek at Clean Water Way (47 NTU) and Boynton Slough at Steamboat Creek (93 NTU) exhibited the highest values during winter baseflow. Most samples collected during baseflow exceeded the WQS, except for Chalk Creek, Whites Creek, and Thomas Creek during the winter baseflow sampling. During storm events, all stormwater runoff samples exhibited turbidity values above the WQS, ranging between 15 NTU and 291 NTU. The highest stormwater turbidity value measured was at Arlington during the July 22, 2020 thunderstorm event (841 NTU). The Arlington sample was collected as a grab sample and was diluted 3 times to get a reading within the instrument tolerance limit (1000 NTU), the actual sample measurement is estimated > 2500 NTU.

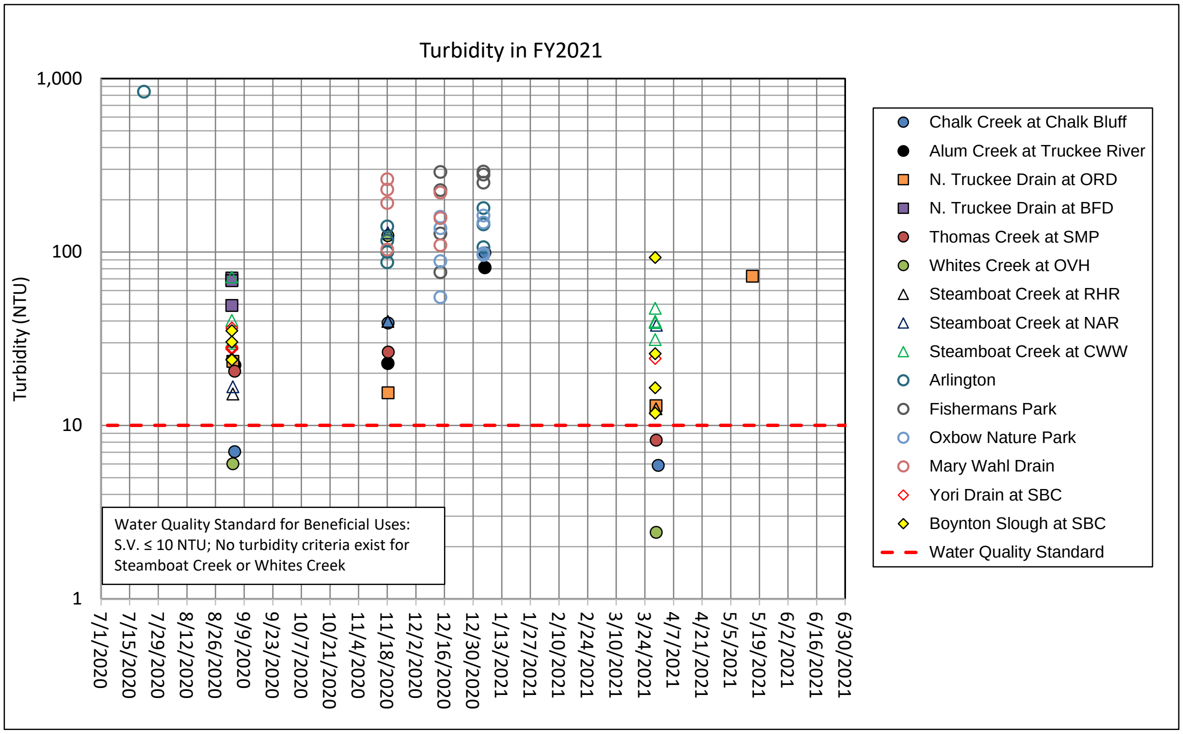


Figure 5-62 Turbidity at all Stations, Truckee Meadows, FY2021 Stormwater and Baseflow samples

5.5 Stormwater and Baseflow Instantaneous Load

This section compares instantaneous loads for a limited number of constituents (Total-N, Total-P, and TDS) across tributary stations where grab samples and instantaneous flow were measured simultaneously during stormwater and baseflow conditions without automated collection of multiple samples. The instantaneous load is calculated using instantaneous flow at the time of sample collection and the constituent concentration from a grab sample. While these measures are “snapshots” in time, they provide more information than the concentration alone. For example, the instantaneous load is commonly reported in lbs./day and allows for comparisons to TMDLs. Instantaneous loading rates for some tributary stations were not calculated because constituents were not detected above laboratory detection limits.

5.5.1 TOTAL-N INSTANTANEOUS LOAD

Figure 5-63 compares instantaneous load for Total-N at tributary stations as measured in FY2021 in both stormwater and baseflow.

Instantaneous Total-N loads from stormwater ranged from 3.9 lbs./day to 703 lbs./day. Instantaneous Total-N loads from baseflow samples ranged from 0.6 lbs./day to 55 lbs./day. The highest instantaneous Total-N loads were measured from North Truckee Drain and Steamboat Creek.

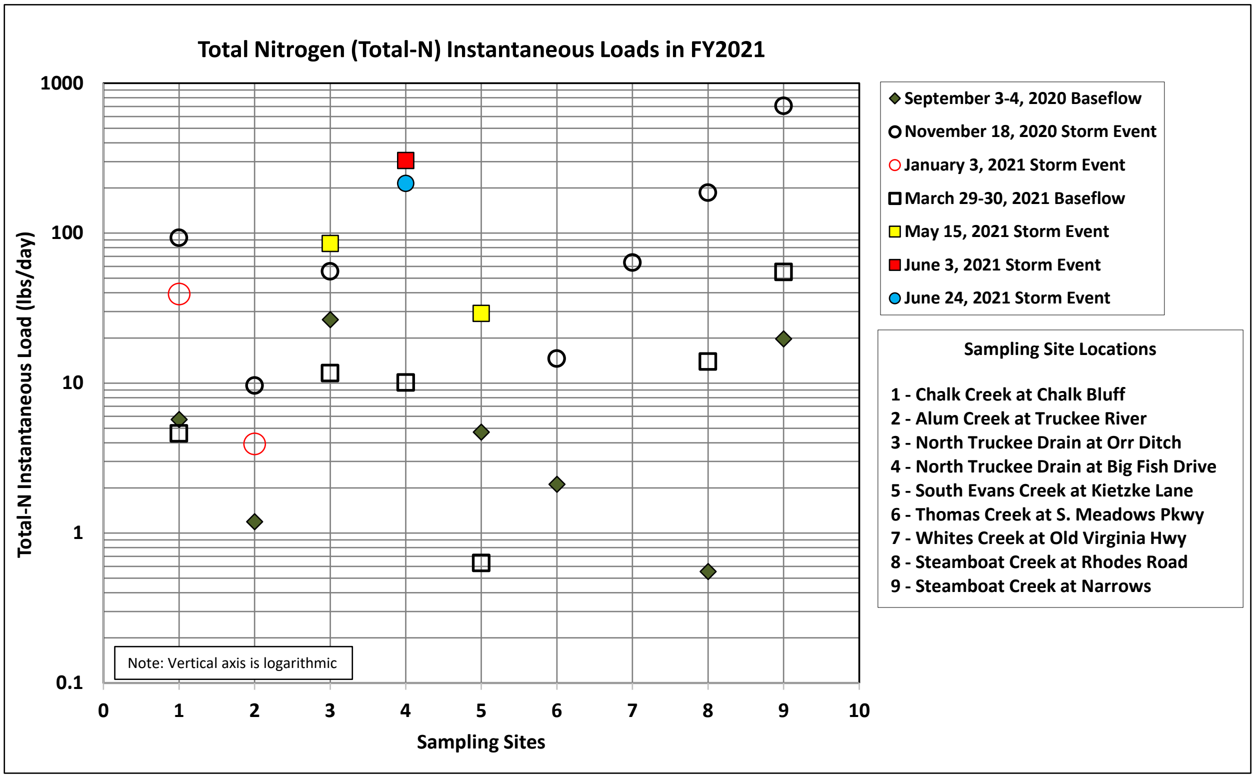


Figure 5-63 Total-N Instantaneous Load at Tributary Stations in Truckee Meadows, FY2021

5.5.2 TOTAL-P INSTANTANEOUS LOAD

Figure 5-64 compares Total-P instantaneous loads at tributary stations measured in FY2021 in stormwater and baseflow.

Instantaneous Total-P load from stormwater samples ranged from 0.3 lbs./day to 68 lbs./day. Instantaneous Total-P load from baseflow samples ranged from 0.06 lbs./day to 24 lbs./day.

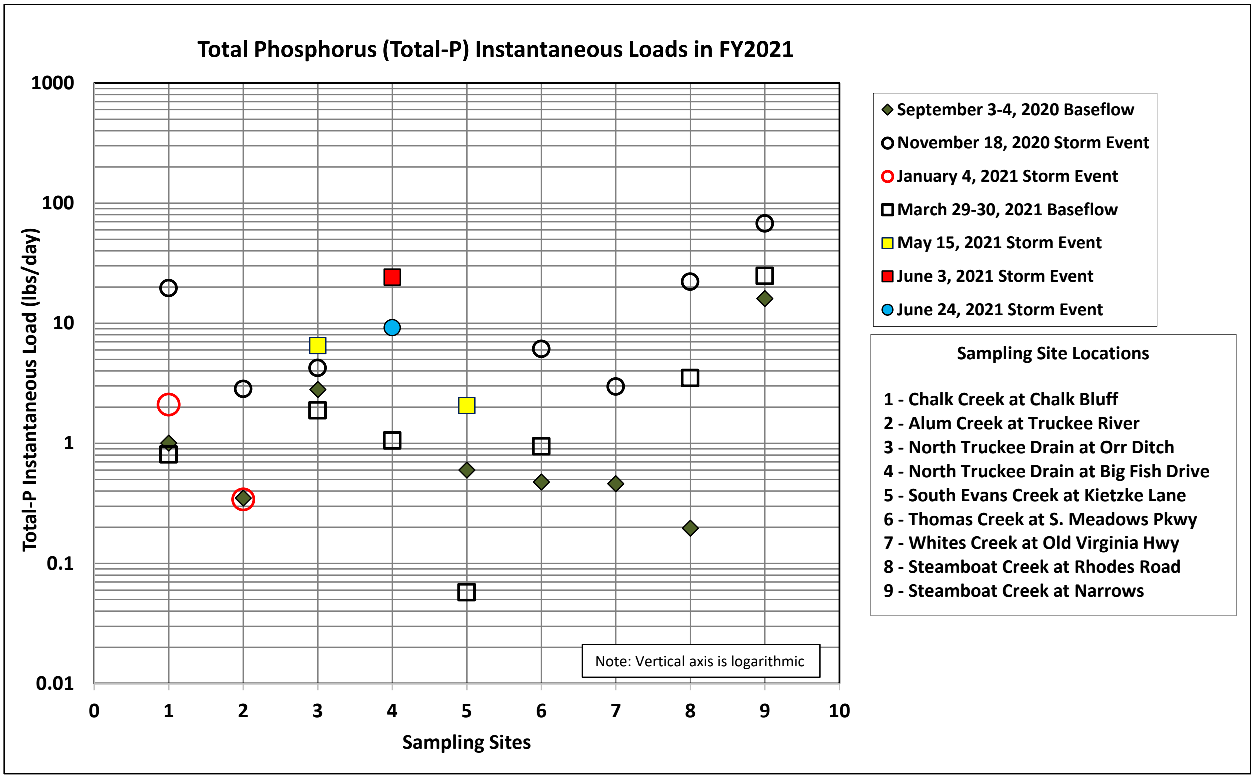


Figure 5-64 Total-P Instantaneous Load at Tributary Stations in Truckee Meadows, FY2021

5.5.3 TDS INSTANTANEOUS LOAD

Figure 5-65 compares instantaneous load for TDS across tributary stations measured in FY2021 in both stormwater and baseflow. Instantaneous TDS load computed from stormwater ranged from 891 lbs./day to 203,069 lbs./day. Instantaneous TDS load computed from baseflow ranged from 189 lbs./day to 47,680 lbs./day.

The highest calculated instantaneous TDS load was measured during the November 18, 2020 storm event from Steamboat Creek at Narrows.

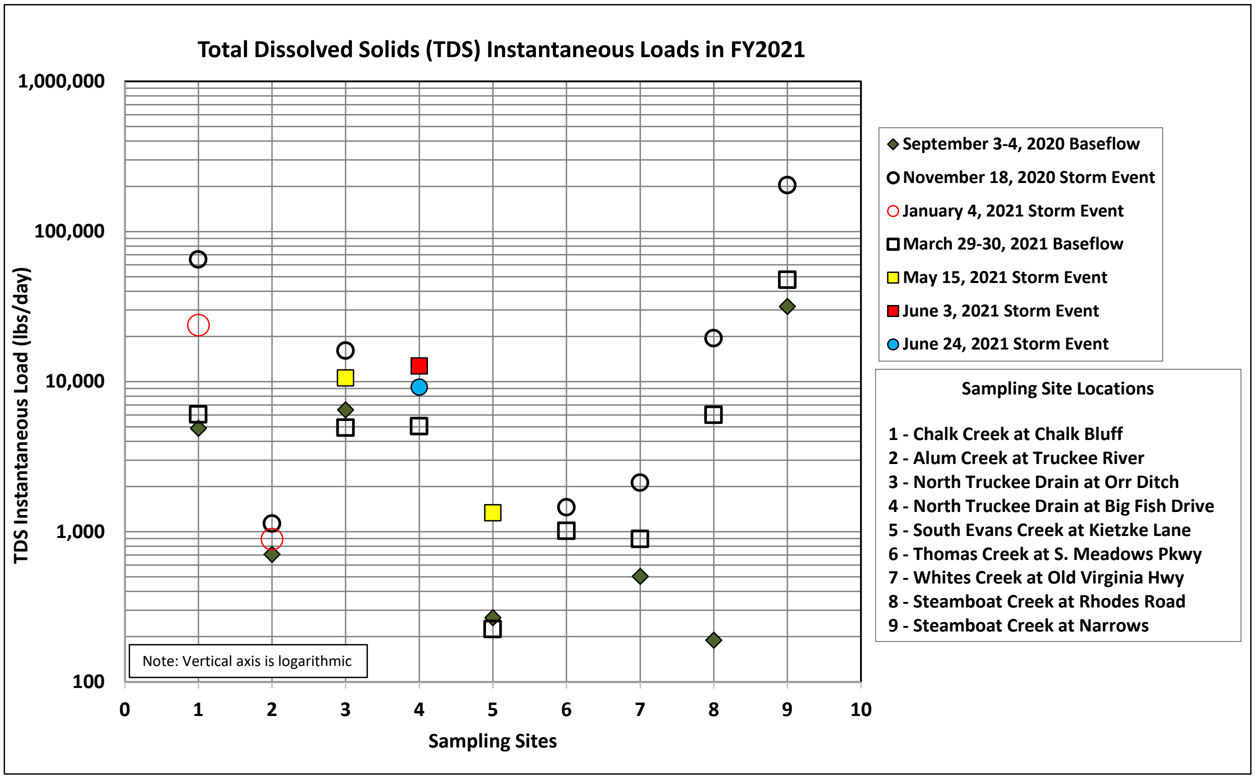


Figure 5-65 TDS Instantaneous Load at Tributary Stations in Truckee Meadows, FY2021

5.6 Stormwater and Baseflow Constituent Loads and Yields

Automated sampling of stormwater at multiple times over the hydrograph was conducted during three storm events and two 24-hour baseflow periods representing both summer and winter baseflow conditions (see Table 5-1).

Runoff volumes and constituent load calculations are provided for the entire runoff event and for distinct segments of the storm hydrograph to show variability in load, which is directly related to variability in constituent concentrations and runoff volumes measured in each hydrograph segment. Constituent yields reflect the constituent loads normalized by watershed area and are calculated by dividing the storm load by the station watershed or contributing area (lbs./square mile). Constituent yields allow comparisons across tributaries with different watershed areas and within watersheds with ‘nested’ stations such that areas which deliver excess nutrients or constituents of concern can be better identified. Watershed areas with higher yields can then be prioritized for implementation of best stormwater management practices.

Total storm event runoff, loads, and yields measured at two urban stormwater outfalls during the November 18, 2020 storm event are provided in Table 5-3. Total storm rainfall was 0.16 inches at the Reno-Tahoe International Airport.

During the November 18 storm, Nitrogen, TDS, and TSS loading was generally higher in Mary Wahl Drain, likely the result of its larger drainage area and overall higher storm runoff volume. Phosphorous (both Total-P and Ortho-P) loading was similar between Arlington and Mary Wahl Drain. With higher concentrations and less total runoff, however, Arlington exhibits higher yields across all constituents, indicating that the contributing watershed to the Arlington storm drain is producing and delivering nutrients, sediment, and TDS at a much higher rate than the area contributing to the Mary Wahl Drain.

Table 5-3 Storm Runoff Volumes and Constituent Loads and Yields from Arlington and Mary Wahl Urban Stormwater Outfalls, November 18, 2020 Storm Event

Mary Wahl Drain								
		Storm Loads						
Hydrograph	Storm Runoff Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)	*(lbs)*						
First Flush	11,666	8.0	2.8	5.0	0.4	0.3	306	87
Rising Limb	9,687	4.1	0.4	3.6	0.3	0.3	139	206
Peak	5,873	1.9	0.3	1.7	0.1	0.2	66	121
Falling Limb	10,194	4.3	0.5	3.8	0.2	0.3	102	153
Totals	**37,421**	**18**	**4.0**	**14**	**1.0**	**1.1**	**613**	**567**
	(cf/sq. mi)	*(lbs./sq. mi)*						
Yields	**14,968**	**7.3**	**1.6**	**5.7**	**0.4**	**0.4**	**245**	**227**

Arlington								
		Storm Loads						
Hydrograph	Storm Runoff Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)	*(lbs)*						
First Flush	3,595	2.5	0.2	2.2	0.2	0.4	92	45
Rising Limb	1,118	0.4	0.06	0.4	0.1	0.1	18	10
Peak	2,787	1.2	0.2	1.1	0.3	0.2	35	26
Falling Limb	3,648	1.4	0.2	1.2	0.3	0.3	50	22
Totals	**11,148**	**5.5**	**0.6**	**4.8**	**0.9**	**1.0**	**195**	**103**
	(cf/sq. mi)	*(lbs./sq. mi)*						
Yields	**34,837**	**17**	**1.9**	**15**	**2.9**	**3.2**	**610**	**323**
		(lbs.)						
TOTALS 2 URBAN OUTFALLS		**24**	**4.7**	**19**	**1.9**	**2.1**	**808**	**670**

Notes:

Yields are estimates based on the contributing areas provided by City of Reno, City of Sparks, USGS or other entity.

Total stormwater load and yields measured from three urban outfalls during the December 13, 2020 storm event are shown in Table 5-4. Rainfall of 0.15 inches was recorded at the Reno-Tahoe International Airport over the course of this storm.

Constituent loads were generally higher at Fisherman’s Park, again, likely due to its larger drainage area. However, normalized constituent yields are generally similar between the three urban outfalls, with slightly higher Total-N and TKN yields from the outfall at Oxbow Nature Park.

Table 5-4 Storm Runoff Volumes, Constituent Loads and Yields from Oxbow Park, Fisherman's Park II and Mary Wahl Drain Urban Stormwater Outfalls, December 13, 2020 Storm Event

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	966	0.2	0.02	0.2	0.04	0.02	10	8.4
Rising Limb	2,035	0.4	0.04	0.4	0.04	0.04	14	15
Peak	2,183	0.3	0.03	0.3	0.02	0.03	12	19
Falling Limb	7,299	0.7	0.08	0.6	0.1	0.09	44	19
Totals	**12,483**	**1.6**	**0.2**	**1.4**	**0.2**	**0.2**	**80**	**62**
	(cf/sq. mi)	*(lbs./sq. mi)*						
Yields	**34,674**	**4.4**	**0.5**	**3.9**	**0.5**	**0.5**	**222**	**172**

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	8,108	4.7	0.5	4.0	0.2	0.08	228	101
Rising Limb	9,665	2.4	0.3	2.0	0.2	0.2	115	84
Peak	7,625	1.8	0.2	1.5	0.2	0.1	67	44
Falling Limb	28,950	5.1	1.0	4.0	0.6	0.5	361	67
Totals	**54,347**	**14**	**2.1**	**11**	**1.2**	**0.9**	**771**	**297**
	(cf/sq. mi)	*(lbs./sq. mi)*						
Yields	**10,656**	**2.7**	**0.4**	**2.3**	**0.2**	**0.2**	**151**	**58**

Mary Wahl Drain

		Storm Loads						
Hydrograph	Storm Runoff Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)	*(lbs)*						
First Flush	--	--	--	--	--	--	--	--
Rising Limb	4,662	1.4	0.3	1.1	0.07	0.07	70	41
Peak	11,438	3.9	0.7	3.2	0.4	0.2	129	207
Falling Limb	12,194	2.8	0.4	2.4	0.2	0.3	99	76
Totals	**28,294**	**8.1**	**1.3**	**6.7**	**0.7**	**0.5**	**297**	**324**
	(cf/sq. mi)	*(lbs./sq. mi)*						
Yields	**11,318**	**3.2**	**0.5**	**2.7**	**0.3**	**0.2**	**119**	**130**
		(lbs.)						
TOTALS 3 URBAN OUTFALLS		**24**	**3.5**	**20**	**2.1**	**1.6**	**1,148**	**683**

Notes:

Yields are estimates based on the contributing areas provided by City of Reno, City of Sparks, USGS or other entity.

Total storm runoff, stormwater load, and yields measured from the storm of January 4, 2021, are presented in Table 5-5 for three urban outfalls. Total storm rainfall was 0.08 inches at the Reno-Tahoe International Airport. We note that runoff volumes, loads, and yields could not be computed for the rising limb of the storm hydrograph at two of the three outfalls due to the quick onset of the storm hydrograph. Sample collection began at the stage threshold collecting first flush samples, but the volume of stormwater between the onset of the storm and the peak flow was less than the calculated amount for sample collection and thus no samples were collected during the rising limb. The calculated volume of the samples is representative of the complete storm hydrograph.

In general, Oxbow Nature Park outfall exhibited higher yields across all constituents measured compared to all three locations.

Table 5-5 Storm Runoff Volumes, Constituent Loads and Yields from Oxbow Park, Fisherman's Park II and Arlington Urban Stormwater Outfalls, January 4, 2021 Storm Event

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	3,043	0.6	0.07	0.6	0.07	0.04	68	32.3
Rising Limb	3,748	0.5	0.05	0.4	0.05	0.04	44	17.1
Peak	5,650	0.9	0.07	0.8	0.2	0.06	71	67.0
Falling Limb	6,560	0.7	0.07	0.6	0.1	0.07	45	41.0
Totals	**19,002**	**2.7**	**0.3**	**2.4**	**0.4**	**0.2**	**228**	**157**
	(cf/sq. mi)	*(lbs./sq. mi)*						
Yields	**52,783**	**7.4**	**0.7**	**6.7**	**1.1**	**0.6**	**635**	**437**

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	1,070	0.6	0.07	0.5	0.04	0.02	55	55
Rising Limb	--	--	--	--	--	--	--	--
Peak	16,088	6.0	0.6	5.3	0.4	0.3	442	372
Falling Limb	9,989	3.1	0.4	2.6	0.3	0.1	243	262
Totals	**27,147**	***10***	***1.1***	***8.5***	***0.7***	***0.4***	***741***	***688***
	(cf/sq. mi)	*(lbs./sq. mi)*						
Yields	**5,323**	***1.9***	***0.2***	***1.7***	***0.1***	***0.1***	***145***	***135***

Arlington

		Storm Loads						
Hydrograph	Storm Runoff Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)	*(lbs)*						
First Flush	120	0.07	0.004	0.06	0.003	0.002	1.7	1.8
Rising Limb	--	--	--	--	--	--	--	--
Peak	2,724	0.7	0.1	0.6	0.1	0.1	26	34
Falling Limb	2,755	0.7	0.1	0.5	0.1	0.1	26	17
Totals	**5,599**	**1.5**	**0.2**	**1.2**	**0.2**	**0.2**	**53**	**52**
	(cf/sq. mi)	*(lbs./sq. mi)*						
Yields	**17,498**	**4.6**	**0.7**	**3.8**	**0.7**	**0.7**	**165**	**164**
		(lbs.)						
TOTALS 3 URBAN OUTFALLS		**14**	**1.5**	**12**	**1.3**	**0.9**	**1,022**	**898**

Notes:

Yields are estimates based on the contributing areas provided by City of Reno, City of Sparks, USGS or other entity.

5.6.1 REPRESENTATIVE BASEFLOW LOADS AND YIELDS FROM STEAMBOAT CREEK, YORI DRAIN, BOYNTON SLOUGH, AND NORTH TRUCKEE DRAIN

Representative baseflow constituent loads and yields were calculated for Boynton Slough, Yori Drain, Steamboat Creek at Clean Water Way, and North Truckee Drain at Big Fish Drive for 24 hours in the summer and the winter of FY2021. Yori Drain and Boynton Slough are tributaries to Steamboat Creek upstream of the Clean Water Way monitoring station.

Baseflow samples were collected hourly for 24 hours on September 3-4, 2020, for summer baseflow conditions and March 29-30, 2021, for winter baseflow conditions. 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). Loadings and sub-watershed yields were calculated for each period and at each station.

5.6.1.1 Representative Summer Baseflow Constituent Loads and Yields

Representative summer baseflow loads and yields for Steamboat Creek at Clean Water Way, Yori Drain, Boynton Slough, and North Truckee Drain at Big Fish Drive are provided in Table 5-6. During this sampling event, Steamboat Creek baseflow ranged from 25 to 28 cfs, Boynton Slough baseflow ranged from 11 to 15 cfs, Yori Drain baseflow ranged from 5 to 8 cfs, and North Truckee Drain baseflow ranged from 4 to 5 cfs during the 24 hours sampled.

North Truckee Drain[5] and Steamboat Creek are significant tributaries to the Truckee River, draining 244 sq. miles and roughly 100 sq. miles, respectively, as shown in Figure 5-66, which also shows the computed loadings and yields during summer baseflows.

Summer constituent loads measured in Steamboat Creek and its nested catchments, Yori Drain and Boynton Slough, provide an opportunity to evaluate potential source areas of nutrients measured in Steamboat Creek at Clean Water Way. A nested watershed approach uses loads measured at the watershed outlet and sub-catchments to estimate loads from remaining ungaged/unsampled sub-catchments, and calculated yields for the different portions of the watershed. Figure 5-67, Figure 5-68, and Figure 5-69 show

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[5] North Truckee Drain sampling location was relocated from Kleppe Lane to Big Fish Drive in 2018 to accommodate construction impacts to the former location. Actual drainage areas above these locations are unreported; the area provided here is an estimate.

Steamboat Creek watershed summer baseflow loads and yields for Total-N, Total-P, and TDS.

Across all three constituents sampled, Yori Drain exhibited the highest summer baseflow yields relative to other areas in the Steamboat Creek watershed. Yori Drain is a small sub-catchment within the Steamboat Creek watershed that consists of both urban and agricultural areas. Yori Drain also receives Truckee River water via Pioneer. Immediately upstream of its confluence with Steamboat Creek and the monitoring station, Yori Drain flows through a constructed wetland. The source of higher nutrients, TDS, and TSS is unknown but could be associated with any of these land-uses.

Table 5-6 Representative Summer Baseflow Volumes, Constituent Loads and Yields from Boynton Slough, Yori Drain, North Truckee Drain and Steamboat Creek, September 3 and 4, 2020

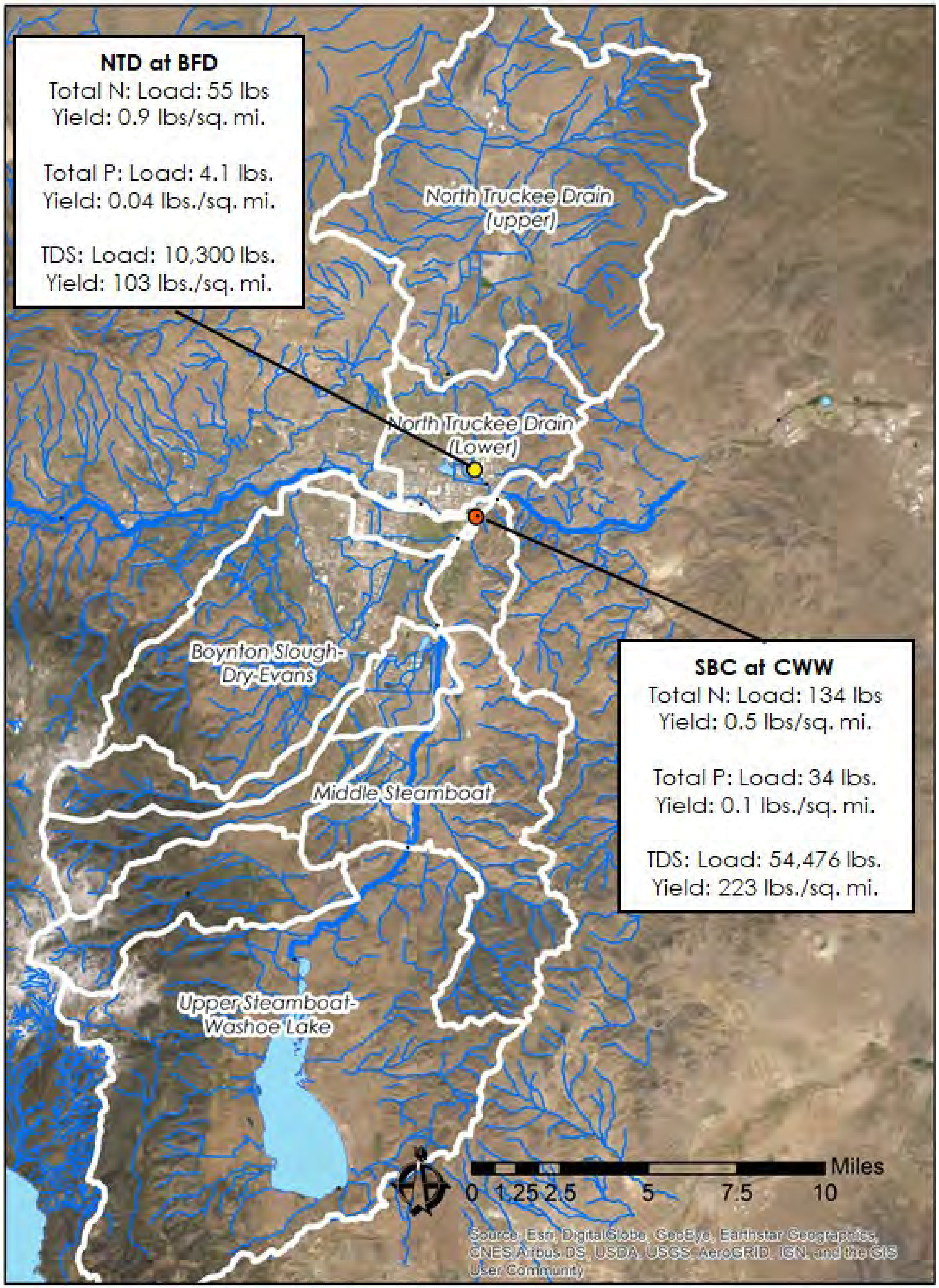
Boynton Slough at Steamboat Creek								
		Baseflow Loads						
Hydrograph	Baseflow Runoff Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)	*(lbs)*						
Afternoon	265,118	*23*	*6.3*	*17*	*3.3*	*1.8*	*3,310*	*844*
Evening	267,487	*18*	*6.8*	*12*	*3.0*	*2.2*	*3,841*	*534*
Early Morning	216,868	*15*	*5.8*	*9.1*	*2.3*	*1.8*	*2,708*	*433*
Late Morning	232,013	*17*	*5.6*	*12*	*2.9*	*2.0*	*3,042*	*579*
Totals	***981,486***	***74***	***25***	***49***	***12***	***7.8***	***12,900***	***2,391***
	(cf/sq. mi)	*(lbs./sq. mi)*						
Yields	***20,237***	***1.5***	***0.5***	***1.0***	***0.2***	***0.2***	***266***	***49***

Yori Drain at Steamboat Creek								
		Baseflow Loads						
Hydrograph	Baseflow Runoff Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)	*(lbs)*						
Afternoon	171,248	*14*	*0.8*	*13*	*1.5*	*0.5*	*2,993*	*417*
Evening	155,592	*11*	*0.9*	*9.2*	*1.2*	*0.4*	*2,428*	*282*
Early Morning	135,626	*10*	*1.0*	*9.3*	*0.7*	*0.4*	*2,201*	*305*
Late Morning	111,807	*9.1*	*0.8*	*8.4*	*0.9*	*0.4*	*1,815*	*272*
Totals	***574,273***	***44***	***3.5***	***40***	***4.2***	***1.7***	***9,438***	***1,276***
	(cf/sq. mi)	*(lbs./sq. mi)*						
Yields	***136,732***	***10***	***0.8***	***9.5***	***1.0***	***0.4***	***2247***	***304***

Steamboat Creek at Clean Water Way								
		Baseflow Loads						
Hydrograph	Baseflow Runoff Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)	*(lbs)*						
Afternoon	520,380	*49*	*3.6*	*45*	*6.5*	*6.8*	*12,994*	*2,859*
Evening	536,940	*33*	*2.2*	*30*	*9.4*	*6.4*	*13,743*	*1,475*
Early Morning	513,990	*25*	*4.5*	*21*	*8.3*	*6.7*	*14,118*	*1,091*
Late Morning	484,830	*27*	*4.5*	*23*	*9.4*	*7.3*	*13,620*	*1,029*
Totals	***2,056,140***	***134***	***15***	***119***	***34***	***27***	***54,476***	***6,454***
	(cf/sq. mi)	*(lbs./sq. mi)*						
Yields	***8,427***	***0.5***	***0.1***	***0.5***	***0.1***	***0.1***	***223***	***26***

North Truckee Drain at Big Fish Drive								
		Baseflow Loads						
Hydrograph	Baseflow Runoff Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)	*(lbs)*						
Afternoon	*87,633*	*14.8*	*5.5*	*9.3*	*1.5*	*0.8*	*2,845*	*602*
Evening	*87,525*	*14.2*	*5.4*	*8.7*	*0.7*	*0.7*	*2,295*	*656*
Early Morning	*84,168*	*11.6*	*4.7*	*6.8*	*0.7*	*0.6*	*2,049*	*510*
Late Morning	*95,823*	*15.0*	*5.8*	*9.0*	*1.3*	*0.7*	*3,111*	*473*
Totals	***355,149***	***55***	***21***	***34***	***4.1***	***2.8***	***10,299***	***2,240***
	(cf/sq. mi)	*(lbs./sq. mi)*						
Yields	***3,551***	***0.6***	***0.2***	***0.3***	***0.04***	***0.03***	***103***	***22***

Notes:
ISCO samplers are run to collect samples every hour for 24 hours during baseflow sampling.
Each 6 hour set is composited into one composite sample totally 4 composite samples per 24 hour period.



NTD at BFD
Total N: Load: 55 lbs
Yield: 0.9 lbs/sq. mi.

Total P: Load: 4.1 lbs.
Yield: 0.04 lbs./sq. mi.

TDS: Load: 10,300 lbs.
Yield: 103 lbs./sq. mi.

SBC at CWW
Total N: Load: 134 lbs
Yield: 0.5 lbs/sq. mi.

Total P: Load: 34 lbs.
Yield: 0.1 lbs./sq. mi.

TDS: Load: 54,476 lbs.
Yield: 223 lbs./sq. mi.

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 5-66 Comparison of Representative Summer Baseflow Constituent Loads and Yields, Steamboat Creek and North Truckee Drain, September 3-4, 2020

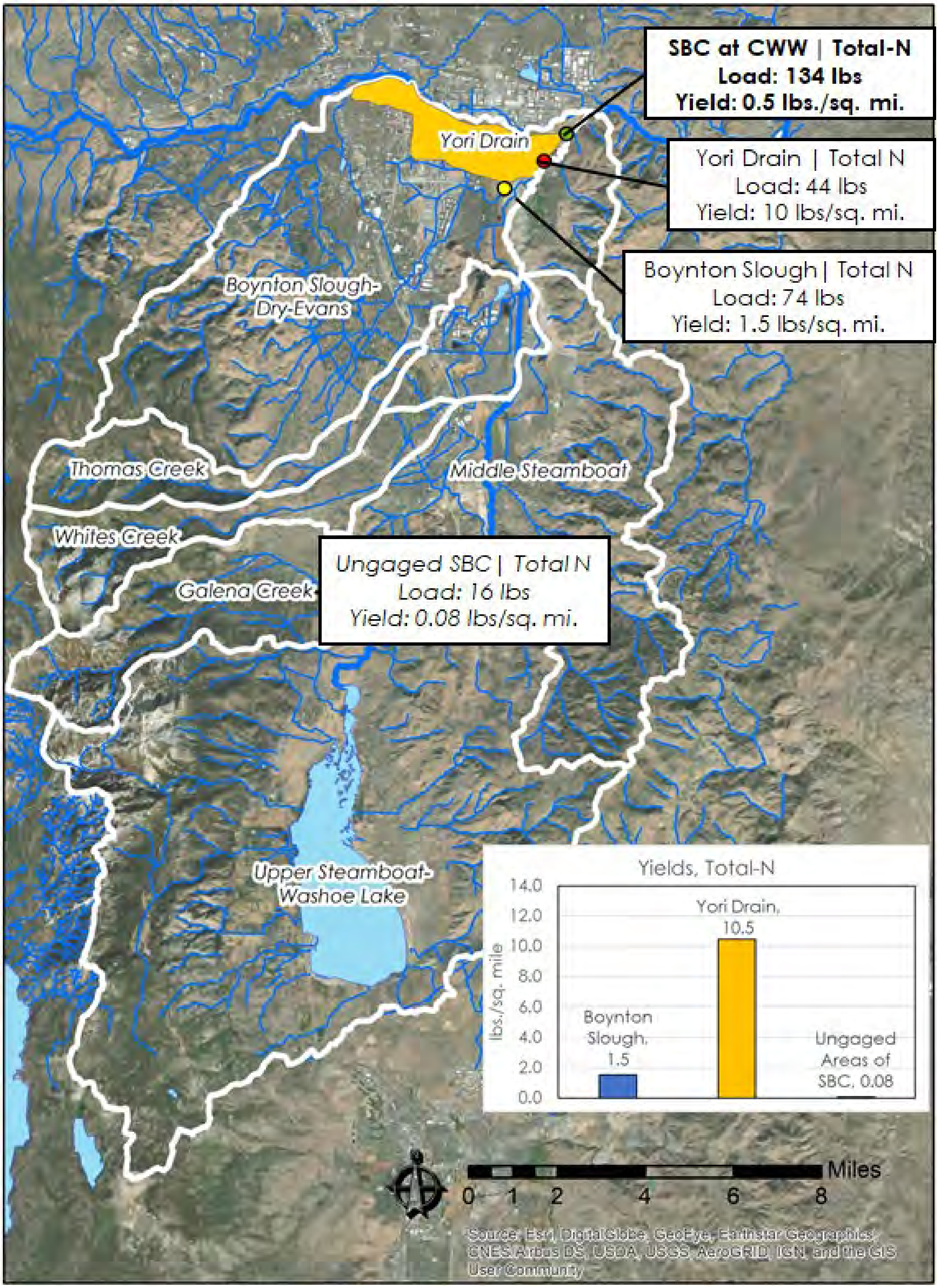


Figure 5-67 Comparison of Representative Summer Baseflow Total-N Loads and Yields, Steamboat Creek and Subcatchments, September 3-4, 2020

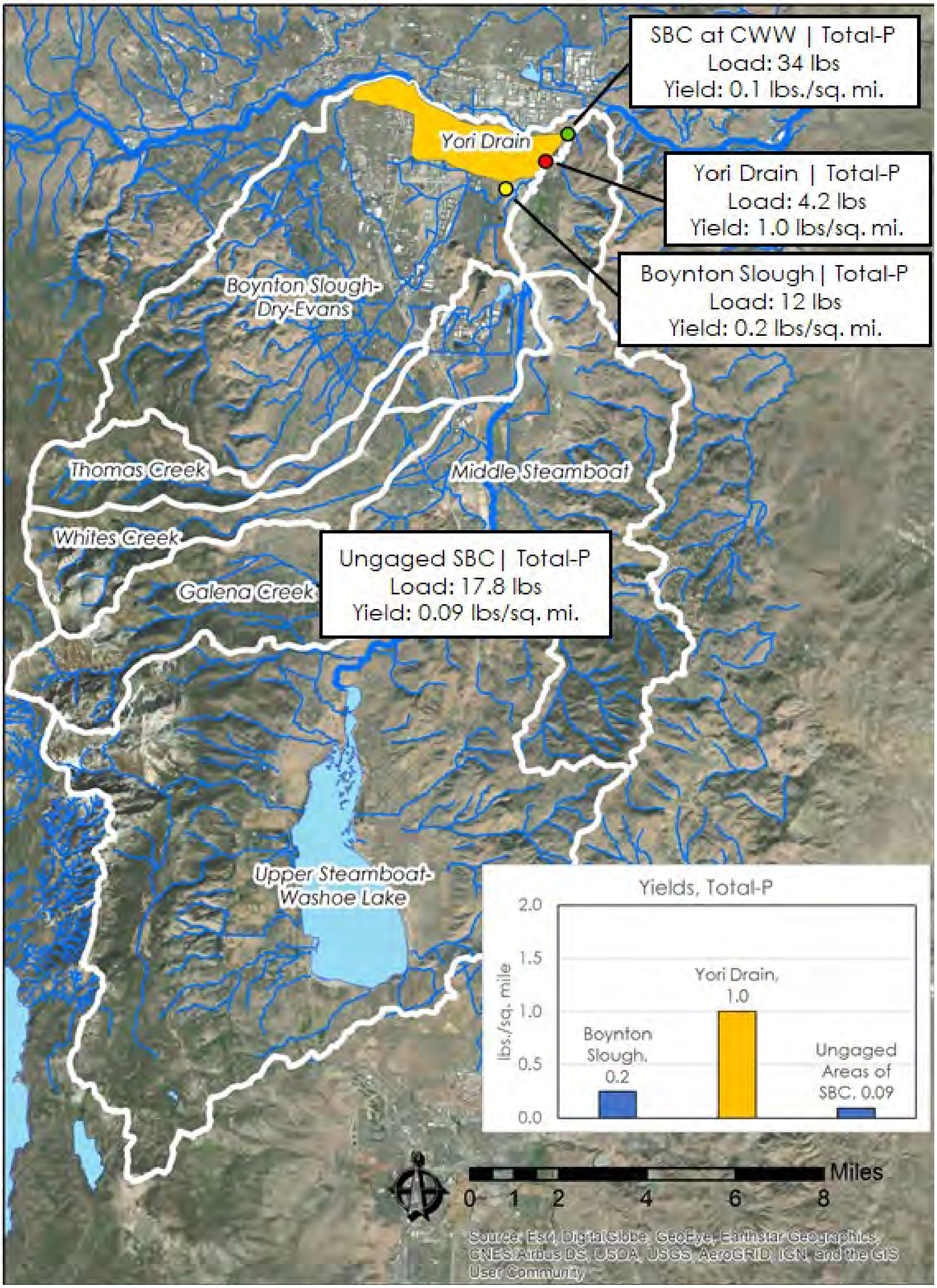
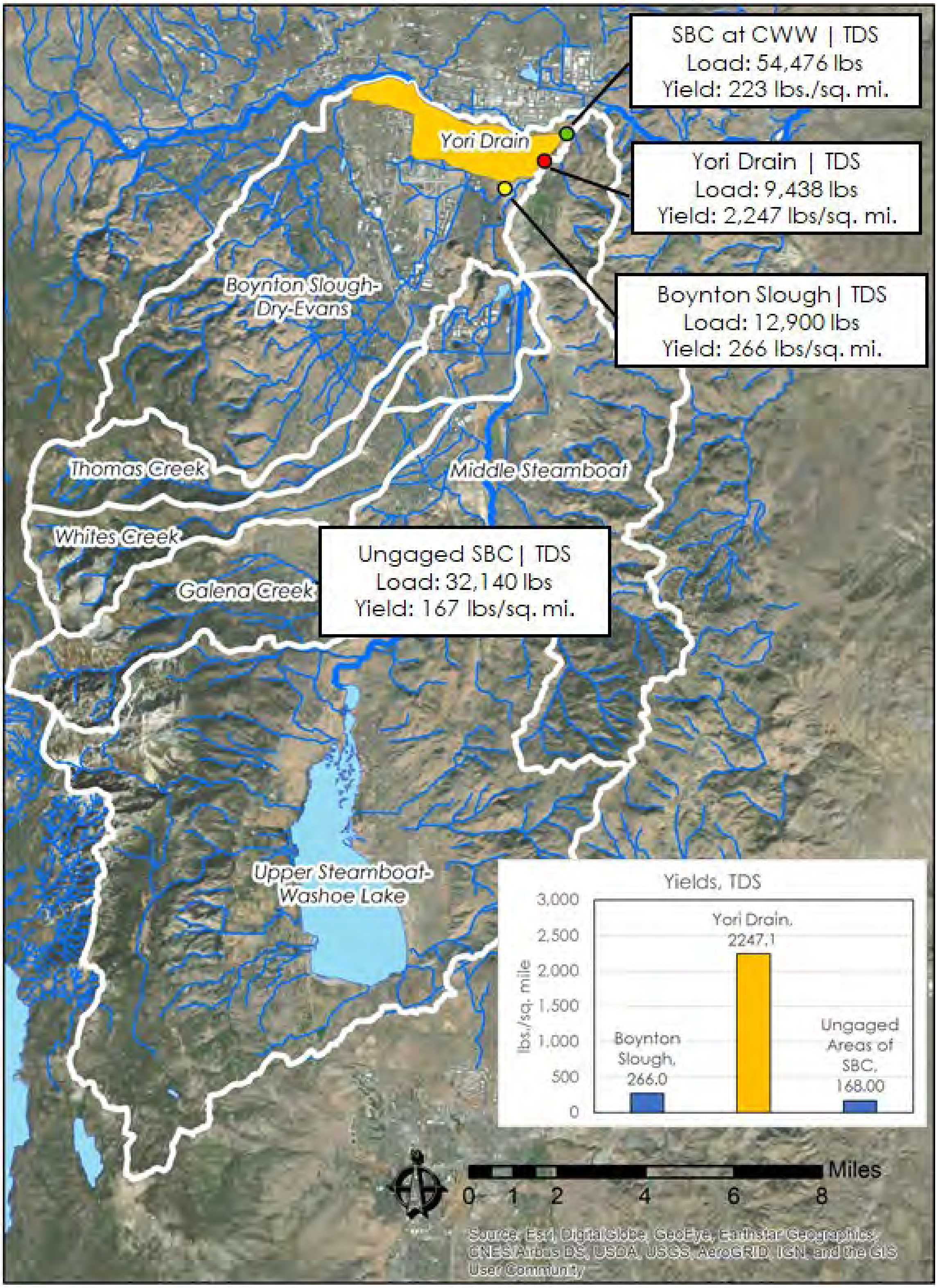


Figure 5-68 Comparison of Representative Summer Baseflow Total-P Loads and Yields, Steamboat Creek and Subcatchments, September 3-4, 2020



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 5-69 Comparison of Representative Summer Baseflow TDS Loads and Yields, Steamboat Creek and Subcatchments, September 3-4, 2020

5.6.1.2 Representative Winter Baseflow Constituent Loads and Yields

Representative winter baseflow loads and yields for Steamboat Creek at Clean Water Way, Yori Drain, and Boynton Slough are provided in Table 5-7. North Truckee Drain winter baseflow loads and yields were estimated based on one grab sample collected on March 29, 2021 and the USGS daily streamflow. Steamboat Creek baseflow ranged from 33 to 40 cfs and Boynton Slough baseflow ranged from 7 to 9 cfs during the 24 hours sampled. Yori Drain streamflow gaging station was not effective, but stage record implies that the flow rate did not change substantially during the sampling period and estimated between 4 and 6 cfs, and North Truckee Drain daily flow was 0.85 cfs for March 29, 2021.

North Truckee Drain[6] and Steamboat Creek are significant tributaries to the Truckee River, draining 244 sq. miles and roughly 100 sq. miles, respectively, as shown in Figure 5-70, which also shows the computed loadings and yields during winter baseflows.

Winter constituent loads measured in Steamboat Creek and its nested catchments, Yori Drain and Boynton Slough, provide an opportunity to evaluate potential source areas of nutrients measured in Steamboat Creek at Clean Water Way during non-irrigation season and using a nested watershed approach, similar to our summer analysis for irrigation season. Figure 5-71, Figure 5-72, and Figure 5-73 show Steamboat Creek watershed winter baseflow loads and yields for Total-N, Total-P, and TDS.

Across all three constituents sampled, Yori Drain exhibited the highest winter baseflow yields relative to other areas in the Steamboat Creek watershed. These results are consistent with yields measured during summer baseflow. The source of higher nutrients, TDS (and TSS) is unknown but could be associated with any of the upstream land-uses which are characterized as both urban and agricultural with diversions from the Truckee River (Pioneer Ditch).

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[6] North Truckee Drain sampling location was relocated from Kleppe Lane to Big Fish Drive in 2018 to accommodate construction impacts to the former location. Actual drainage areas above these locations are unreported; the area provided here is an estimate.

Table 5-7 Representative Winter Baseflow Volumes, Constituent Loads and Yields from Boynton Slough, Yori Drain and Steamboat Creek, March 29 and 30, 2021

Boynton Slough at Steamboat Creek

		Baseflow Loads						
Hydrograph	Baseflow Runoff Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)	*(lbs)*						
Afternoon	162,418	*16*	*3.9*	*12*	*1.1*	*0.7*	*2,129*	*1,115*
Evening	167,775	*10*	*4.1*	*6.0*	*1.7*	*0.9*	*1,885*	*429*
Early Morning	154,576	*8.4*	*3.9*	*4.5*	*1.1*	*0.8*	*2,123*	*212*
Late Morning	163,590	*8.4*	*4.0*	*4.4*	*1.4*	*0.8*	*2,043*	*174*
Totals	***648,359***	***43***	***16***	***27***	***5.3***	***3.2***	***8,180***	***1,931***
	(cf/sq. mi)	*(lbs./sq. mi)*						
Yields	***13,368***	***0.9***	***0.3***	***0.6***	***0.1***	***0.1***	***169***	***40***

Yori Drain at Steamboat Creek

		Baseflow Loads						
Hydrograph	Baseflow Runoff Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)	*(lbs)*						
Afternoon	113,204	*7.1*	*16*	*7.1*	*0.9*	*0.3*	*2,332*	*276*
Evening	103,015	*6.4*	*14*	*6.4*	*0.8*	*0.3*	*2,122*	*251*
Early Morning	93,744	*5.9*	*13*	*5.9*	*0.8*	*0.3*	*1,931*	*228*
Late Morning	106,868	*6.7*	*15*	*6.7*	*0.9*	*0.3*	*2,202*	*260*
Totals	***416,831***	***26***	***57***	***26***	***3.4***	***1.3***	***8,587***	***1,015***
	(cf/sq. mi)	*(lbs./sq. mi)*						
Yields	***99,245***	***6.2***	***14***	***6.2***	***0.8***	***0.3***	***2045***	***242***

Steamboat Creek at Clean Water Way

		Baseflow Loads						
Hydrograph	Baseflow Runoff Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)	*(lbs)*						
Afternoon	717,660	*49*	*16*	*35*	*10*	*7.2*	*19,265*	*1,971*
Evening	754,380	*52*	*16*	*37*	*8.5*	*7.5*	*15,070*	*2,543*
Early Morning	695,790	*43*	*14*	*30*	*7.8*	*7.8*	*13,900*	*2,476*
Late Morning	634,140	*40*	*14*	*26*	*7.5*	*7.5*	*15,835*	*2,098*
Totals	***2,801,970***	***184***	***60***	***127***	***34***	***30***	***64,069***	***9,088***
	(cf/sq. mi)	*(lbs./sq. mi)*						
Yields	***11,483***	***0.8***	***0.2***	***0.5***	***0.1***	***0.1***	***263***	***37***

Notes:
ISCO samplers are run to collect samples every hour for 24 hours during baseflow sampling.
Each 6 hour set is composited into one composite sample totally 4 composite samples per 24 hour period.
Yori Drain had instrument failure after eight collected samples; six samples were used for one composite laboratory sample
and volume was calculated for the first six hour period of sampling and estimated for the rest of the 24 hour period using stage data.

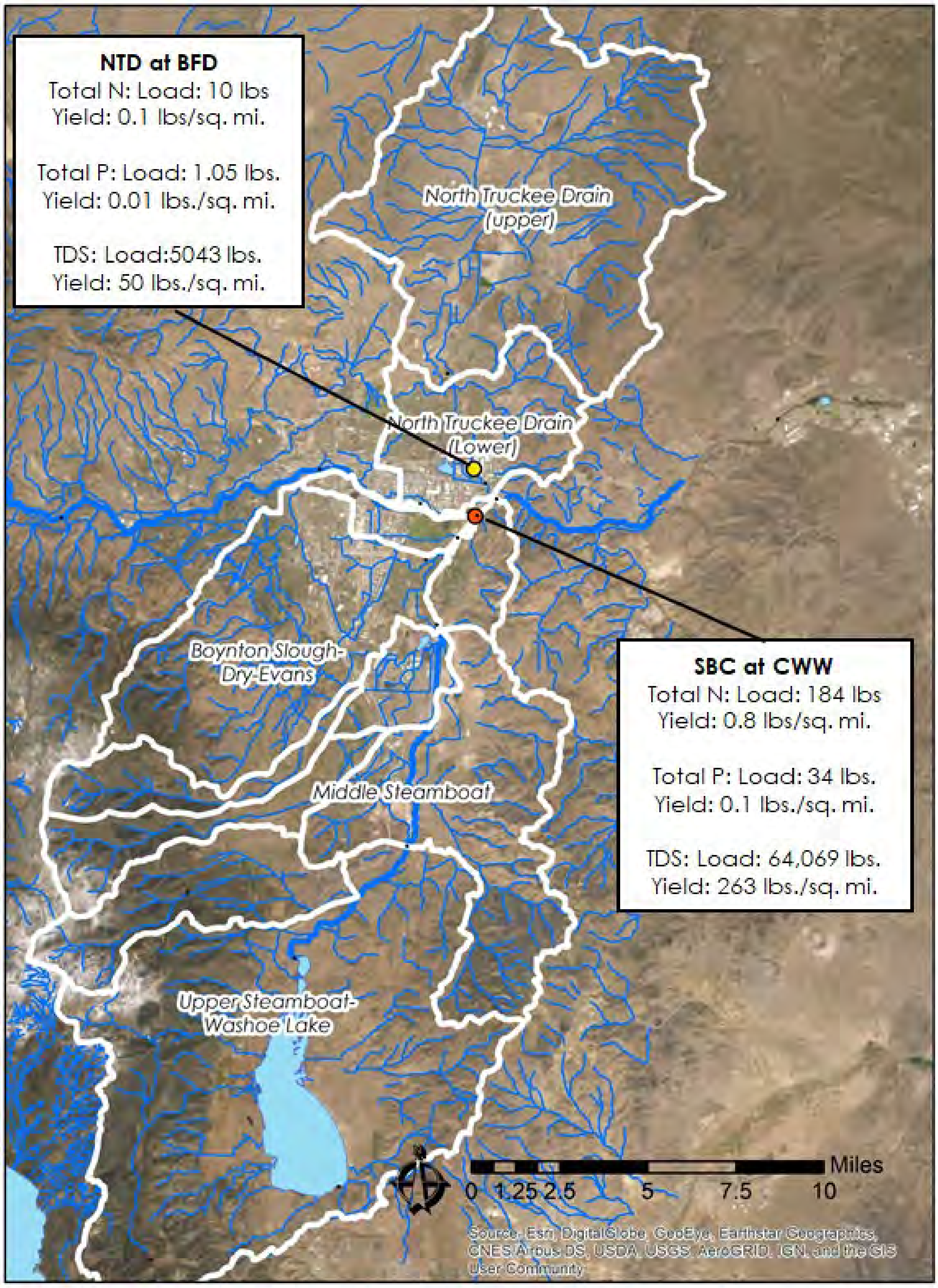
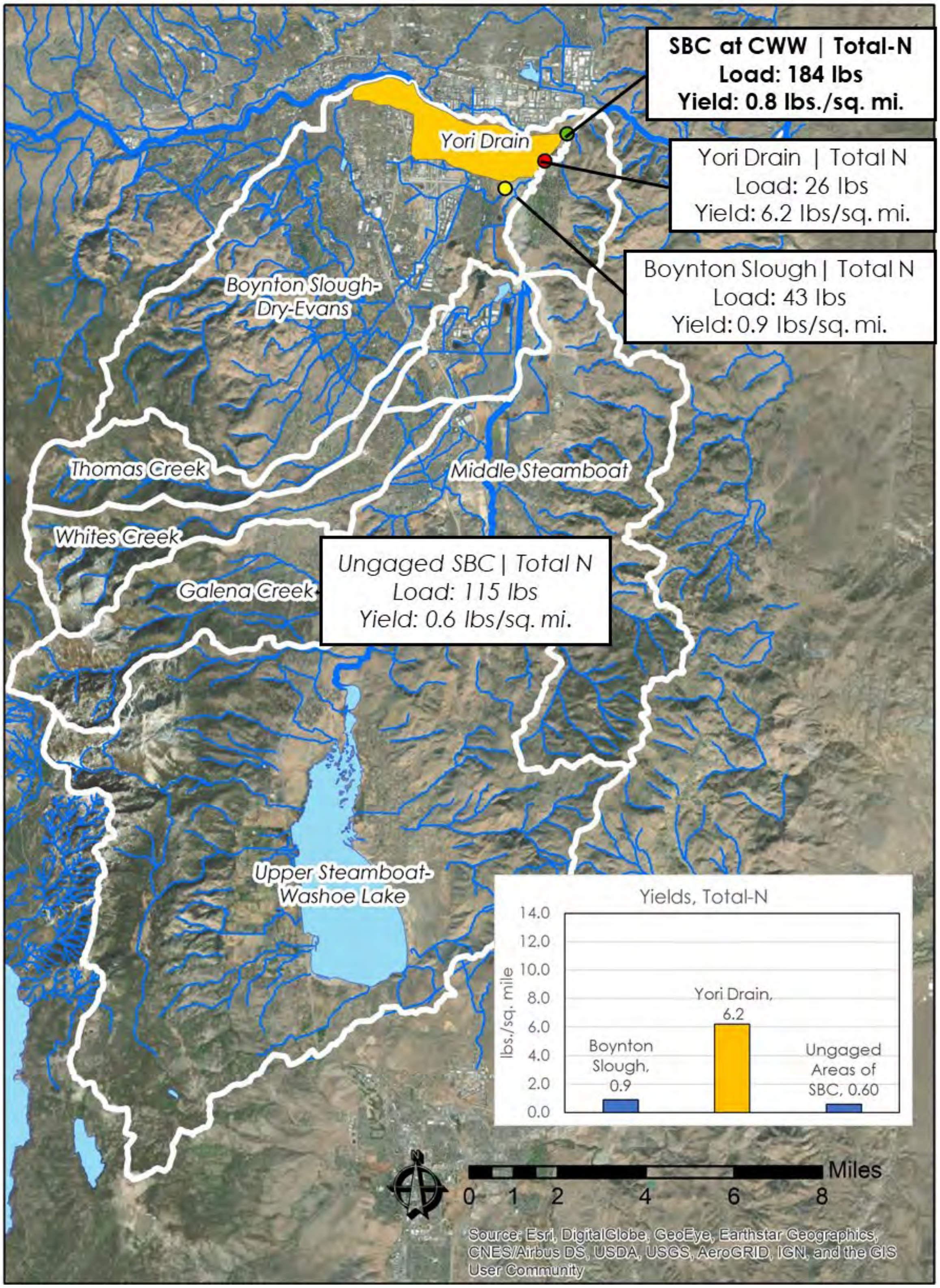


Figure 5-70 Comparison of Representative Winter Baseflow Constituent Loads and Yields, Steamboat Creek and North Truckee Drain, March 29-30, 2021



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 5-71 Comparison of Representative Winter Baseflow Total-N Loads and Yields, Steamboat Creek and Subcatchments, March 29-30, 2021

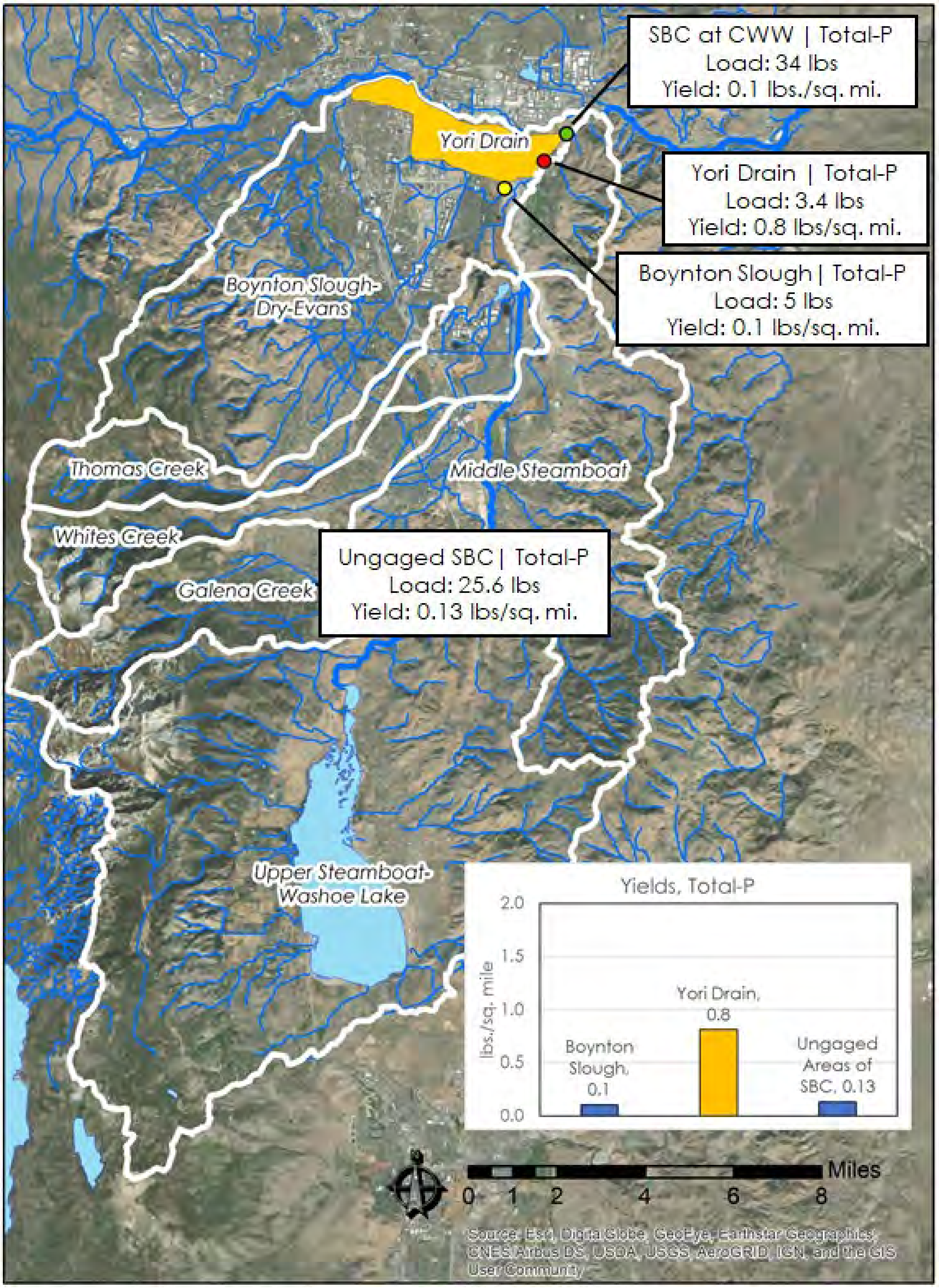


Figure 5-72 Comparison of Representative Winter Baseflow Total-P Loads and Yields, Steamboat Creek and Subcatchments, March 29-30, 2021

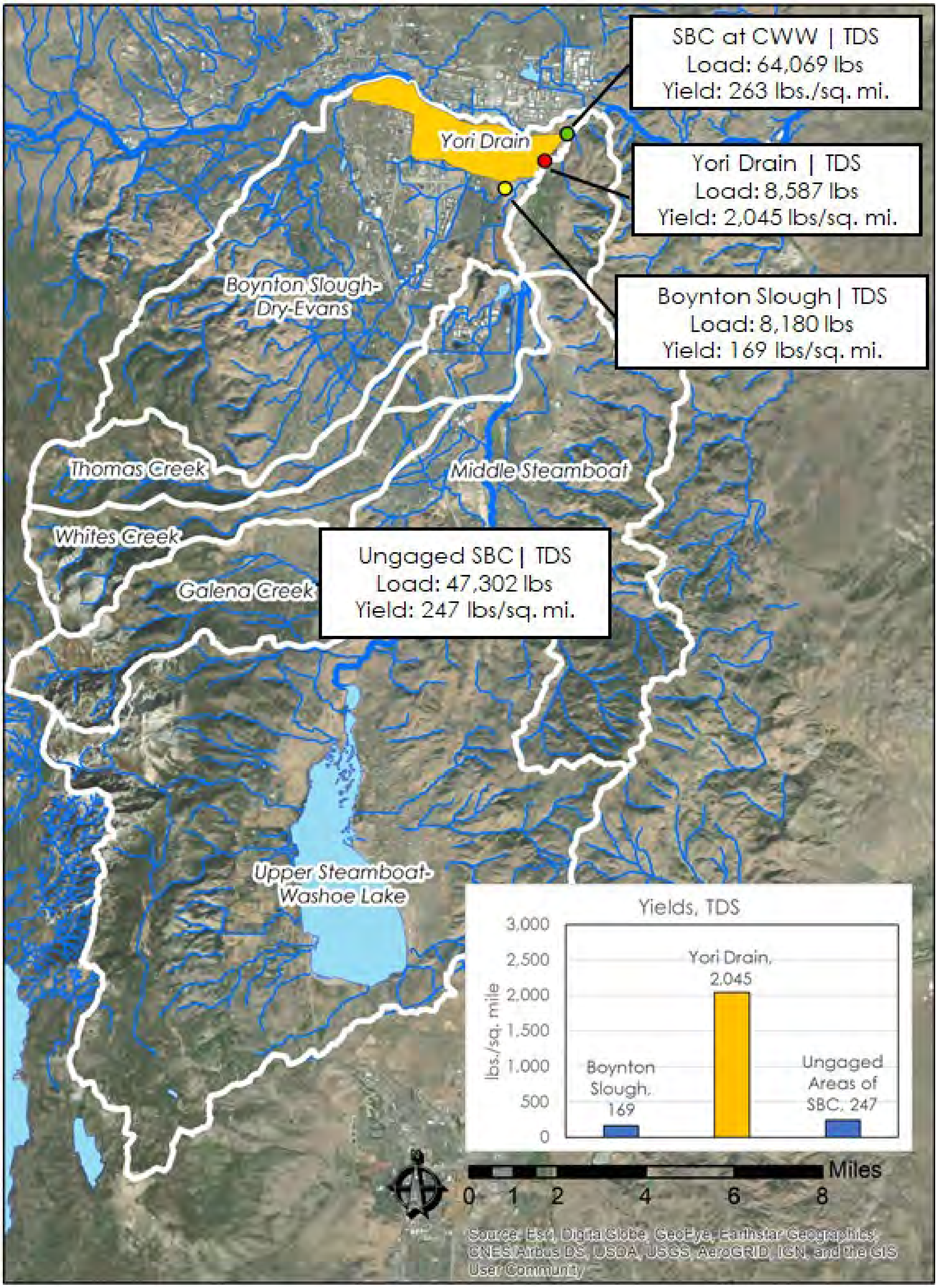


Figure 5-73 Comparison of Representative Winter Baseflow TDS Loads and Yields, Steamboat Creek and Subcatchments, March 29-30, 2021

5.6.2 TRUCKEE RIVER AT LOCKWOOD

NDEP (2020) reported that Total-N loads failed to meet the TMDL established for Truckee River at Lockwood for the assessment period 2016-2018. This is the first time since the TMDL was established in 1994 that the Truckee River did not meet this water quality standard at this location. Similar to previous assessment periods, instantaneous Total-P loads continue to exceed the TMDL at this location, while the TMDL for TDS continues to be met. Nutrient and TDS loads measured at tributaries as part of this stormwater program provide additional opportunities to identify potential sources of excess nutrients.

This section compares measured storm event loads to the allocated load under established TMDLs for three constituents in the Truckee River at Lockwood: Total-N, Total-P, and TDS. Since the FY2021 sampled storms were less than 24 hours in duration, we conservatively assume the total storm load approximates a daily load.

Table 5-8 shows the daily load measured in stormwater runoff on November 18, 2020, compared to TMDLs established for the Truckee River at Lockwood.

Table 5-7 Approximate Daily Load Measured from Storm Event Runoff, November 18, 2020

Daily Loads: November 18, 2020 Stormwater Loads

	Constituents		
Monitoring Station	Total-N	Total-P	TDS
Urban Outfalls		*(lbs/day)*	
Mary Wahl	*18.3*	*1.0*	*613*
Arlington	*17.3*	*2.9*	*610*
Totals	***36***	***3.9***	***1,222***
Load Allocations, TMDL Truckee River at Lockwood	**500**	**80**	**780,360**
Daily Load, Percent of Load Allocation under TMDL	***7%***	***5%***	***0.2%***

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)

The approximate calculated daily load from the Arlington urban outfall during the November 18, 2020 storm was 17 lbs. of Total-N, 3 lbs. of Total-P, and 610 lbs. of TDS. The approximate daily load from the Mary Wahl Drain urban outfall was 18 lbs. of Total-N, 1 lb. of Total-P, and 613 lbs. of TDS. In total, approximate daily load for Total-N and Total-P represent 7 and 5 percent of the load allocations under the Truckee River TMDL for these constituents. Daily load for TDS represents 0.2 percent of the load allocations under the Truckee River TMDL. These measurements are from two outfalls that total roughly 2.8 square miles of watershed or 1.7% of the Truckee Meadows area.

Table 5-9 shows daily load measured from stormwater runoff measured from three urban outfalls during the December 13, 2020 storm event compared to TMDLs established for the Truckee River at Lockwood.

Table 5-8 Daily Load Measured from Storm Event Runoff, December 13, 2020

Daily Loads: December 13, 2020 Stormwater Loads			
	Constituents		
Monitoring Station	Total-N	Total-P	TDS
Urban Outfalls		*(lbs/day)*	
Oxbow Nature Park	*1.6*	*0.2*	*80*
Fisherman's II	*14*	*1.2*	*771*
Mary Wahl	*8.1*	*0.7*	*297*
Totals	***24***	***2.1***	***1,148***
Load Allocations, TMDL Truckee River at Lockwood	**500**	**80**	**780,360**
Daily Load, Percent of Load Allocation under TMDL	***5%***	***3%***	***0.1%***

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)

Approximate Total-N daily load from all three urban outfalls totaled 24 lbs.; Total-P daily load totaled roughly 2.1 lbs.; and TDS daily load totaled 1,148 lbs. Total-N load during this storm was 5 percent of the daily load allocations, and Total-P was 3 percent of the daily load allocations at Lockwood. TDS load was approximately 0.1 percent of the daily load allocations for Lockwood. These small numbers are indicative of the size of the storm and the low volume of run-off. Load calculated from these stations reflects contributions from approximately 7.96 square miles of the urban watershed area or 4.9% of the Truckee Meadows area.

Table 5-10 shows daily load measured in stormwater runoff from three urban outfalls during the January 4, 2021 storm event compared to TMDLs established for the Truckee River at Lockwood.

Table 5-9 Daily Load Measured in Storm Event Runoff, January 4, 2021

Daily Loads: January 4, 2021 Stormwater Loads

	Constituents		
Monitoring Station	Total-N	Total-P	TDS
Urban Outfalls		*(lbs/day)*	
Oxbow Nature Park	*2.7*	*0.4*	*228*
Fisherman's II	*10*	*0.7*	*741*
Arlington	*1.5*	*0.2*	*53*
Totals	***14***	***1.3***	***1,022***
Load Allocations, TMDL Truckee River at Lockwood	**500**	**80**	**780,360**
Daily Load, Percent of Load Allocation under TMDL	***3%***	***2%***	***0.1%***

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)

Total rainfall during this storm event averaged 0.12 inches at six stations around the Truckee Meadows—a small precipitation event. Total-N daily load from these three outfalls totaled 14 lbs., equivalent to 3 percent of the load allocated under the TMDL for Total-N. Total-P daily load from the three outfalls totaled roughly 1.3 lbs., equal to 2 percent of the load allocated under the TMDL. TDS daily load from these stations totaled 1,022 lbs., 0.1 percent of the load allocated under the TMDL. Load calculated from these stations reflects contributions from approximately 5.78 square miles of the urban watershed area or 3.5% of the Truckee Meadows area.

5.6.3 BASEFLOW LOAD COMPARED TO TOTAL MAXIMUM DAILY LOAD ESTABLISHED FOR THE TRUCKEE RIVER AT LOCKWOOD

Summer baseflow load was measured on September 3 and 4, 2020. Daily load results compared to the allocations under the TMDL are in Table 5-11.

Table 5-10 Daily Load Measured from Baseflow in North Truckee Drain, Steamboat Creek, Boynton Slough, and Yori Drain, September 3-4, 2020

Daily Loads: September 3 - 4, 2020 Baseflow Loads			
	Constituents		
Monitoring Station	Total-N	Total-P	TDS
Tributaries		*(lbs/day)*	
Steamboat Creek at Clean Water Way	*134*	*34*	*54,476*
Yori Drain at Steamboat Creek	*44*	*4.2*	*9,438*
Boynton Slough at Steamboat Creek	*74*	*11.5*	*12,900*
North Truckee Drain at Big Fish Drive	*55*	*4.1*	*10,299*
Totals	***189***	***38***	***64775***
Load Allocations, TMDL Truckee River at Lockwood	**500**	**80**	**780,360**
Daily Load, Percent of Load Allocation under TMDL	***38%***	***47%***	***8%***

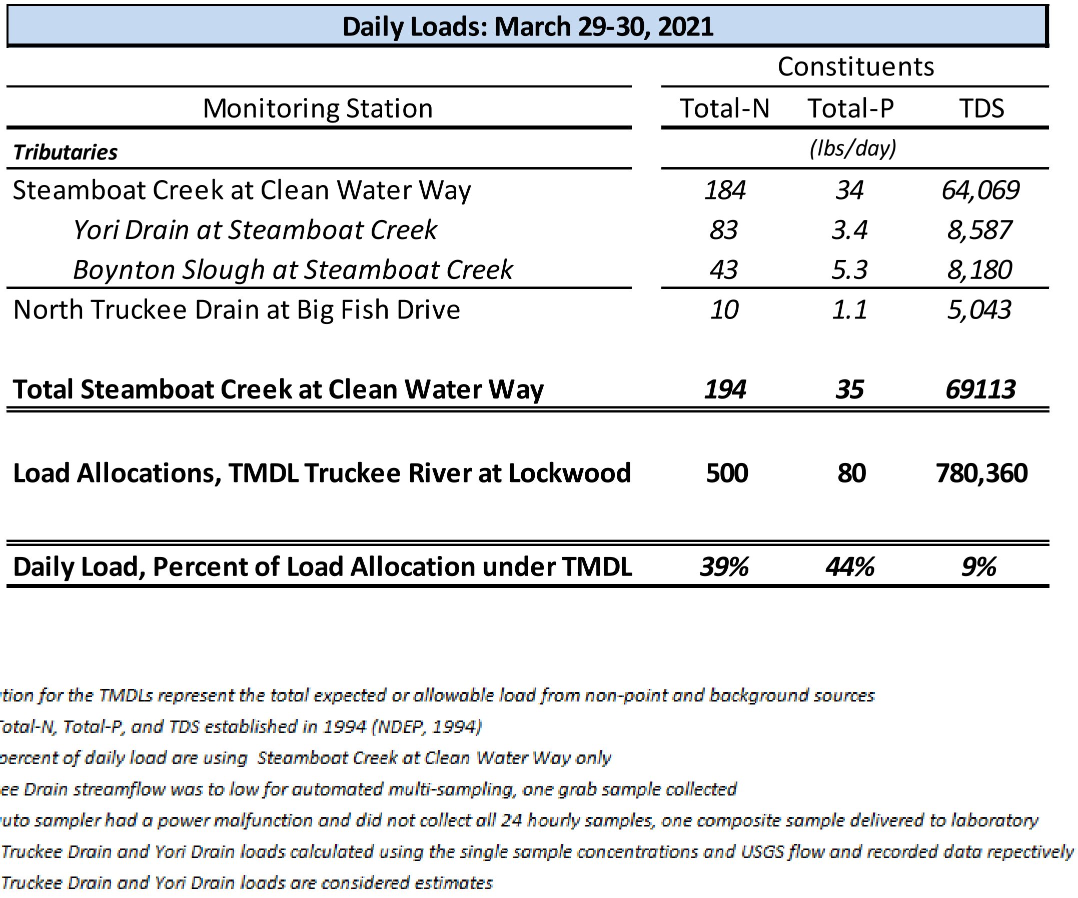
Notes:
Load Allocation for the TMDLs represent the total expected or allowable load from non-point and background sources
TMDLs for Total-N, Total-P, and TDS established in 1994 (NDEP, 1994)
Totals are calculated using only Steamboat Creek at Clean Water Way and North Truckee Drain at Big Fish Drive,
Yori Drain and Boynton Slough discharge into Steamboat Creek upstream of the Clean Water Way monitoring station.

The total loads shown in Table 5-11 represent those measured from Steamboat Creek at Clean Water Way and North Truckee Drain at Big Fish Drive, the two largest tributaries in the Truckee Meadows. Boynton Slough and Yori Drain discharge into Steamboat Creek upstream of the Clean Water Way monitoring location.

Daily winter baseflow loads were measured on Boynton Slough, Yori Drain, and Steamboat Creek. The measurements compared with TMDLs are presented in Table 5-12 for 24 hours sampled on March 29 and 30, 2021. We note that conditions prevented collection of multiple samples during the winter baseflow period at Yori Drain and North

Truckee Drain, so loadings at those stations are estimated as based on one composite sample and one single grab sample, respectively.

Table 5-11 Daily Load Measured from Baseflow in Steamboat Creek and Boynton Slough, March 29-30, 2021



Daily Loads: March 29-30, 2021			
	Constituents		
Monitoring Station	Total-N	Total-P	TDS
Tributaries		*(lbs/day)*	
Steamboat Creek at Clean Water Way	*184*	*34*	*64,069*
Yori Drain at Steamboat Creek	*83*	*3.4*	*8,587*
Boynton Slough at Steamboat Creek	*43*	*5.3*	*8,180*
North Truckee Drain at Big Fish Drive	*10*	*1.1*	*5,043*
Total Steamboat Creek at Clean Water Way	***194***	***35***	***69113***
Load Allocations, TMDL Truckee River at Lockwood	**500**	**80**	**780,360**
Daily Load, Percent of Load Allocation under TMDL	***39%***	***44%***	***9%***

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)

Totals and percent of daily load are using Steamboat Creek at Clean Water Way only

North Truckee Drain streamflow was to low for automated multi-sampling, one grab sample collected

Yori Drain auto sampler had a power malfunction and did not collect all 24 hourly samples, one composite sample delivered to laboratory

Both North Truckee Drain and Yori Drain loads calculated using the single sample concentrations and USGS flow and recorded data repectively

Both North Truckee Drain and Yori Drain loads are considered estimates

As discussed above in Sections 5.6.1.1 and 5.6.1.2, summer and winter baseflow yields suggest Boynton Slough and Yori drain may be a key source of nutrients to Steamboat Creek and the Truckee River compared to the rest of the Steamboat Creek watershed.

6 FY2021 SUMMARY

This section summarizes the FY2021 monitoring year results for stormwater and baseflow samples collected within the Truckee Meadows MS4 Permit Area. Data are representative of the storm characteristics and baseflow conditions sampled and may not be characteristic of other periods that were not sampled.

As measured at the Reno-Tahoe International Airport, total annual precipitation in the Truckee Meadows in FY2021 was 2.99 inches, the third driest year on record for July through June (NWS 2021). The lack of precipitation generated by storms and the amount of precipitation that fell as snow in FY2021 precluded the ability to meet the stormwater sampling goal of 2 samples per station.

Total-N concentrations in stormwater runoff exceeded established water quality standards (WQS) where WQS have been established. In addition, six of seven Total-N concentrations in tributary baseflow exceeded WQS across all locations sampled and where WQS exist. The highest measured stormwater runoff concentrations were from the Arlington urban stormwater outfall (25 mg/L). The highest measured baseflow concentrations were measured in Boynton Slough (3.2 mg/L), a large, urban tributary to Steamboat Creek.

Two tributaries are analyzed for nitrate concentrations in stormwater runoff and baseflow (Chalk Creek and Alum Creek). Both tributaries feed the Truckee River above Idlewild Park. Samples collected from both Alum Creek and Chalk Creek were measured below the established water quality standards (WQS) established for the Truckee River (S.V. ≤ 2.0 mg/L). The concentrations ranged from not detected above the laboratory reporting limits to 1.4 mg/L.

TKN is a measure of the total concentration of organic nitrogen and ammonia. Although we do not directly analyze for TKN in the SAP, the results are reported from laboratory samples in order to calculate Total-N. We include the TKN results in this report and results ranged from 0.91 mg/L to 25 mg/L. Baseflow results from the tributary stations ranged from not detected above the laboratory reporting limits to 1.70 mg/L.

Total-P concentrations ranged between 0.13 mg/L and 2.0 mg/L. The highest measured Total-P concentrations in stormwater runoff were from the Arlington Street urban outfall. Total-P concentrations in baseflow ranged between 0.05 mg/L to 0.42mg/L. Currently, WQS for Total-P for waters monitored under this program are expressed as annual-averages. Results presented in this report are single values and comparisons should be used with caution.

Measured TDS concentrations in stormwater runoff exceeded single value requirements to maintain existing higher water quality set by the NDEP in 16 of 22 of the samples collected in FY2021. TDS concentrations in baseflow exceeded the same requirement in samples from North Truckee Drain, Chalk Creek, Alum Creek, Yori Drain, and all three stations on Steamboat Creek. Additional water quality standards for TDS are measured in annual average and presented for reference only. In some cases, TDS concentrations in baseflow exceeded the single value requirement concentrations in stormwater runoff, suggesting water quality impairment may originate from irrigation returns, illicit discharges, or other sources that occur during non-precipitation runoff.

Limited storm event water samples were collected and analyzed for *E.coli* in FY2021 due to sampling holding time constraints and the limited runoff events, but water samples were collected at nearly all stations during baseflow conditions. Stormwater runoff samples were successfully collected and analyzed from only Alum Creek and Steamboat Creek at Rhodes Road, and counts from both samples exceeded established WQS. All baseflow water samples collected in FY2021 met WQS for E. coli.

Turbidity, Dissolved Oxygen (DO) and pH exceeded established WQS in some instances. All DO measurements were within an acceptable range or met WQS except those in summer baseflow measured in North Truckee Drain at Big Fish Drive. Only two pH measurements were below the WQS range: one from North Truckee Drain at Big Fish Drive and one from the Mary Wahl Drain urban stormwater outfall. All stormwater samples and most (except for 5) baseflow samples exceeded the WQS for turbidity (S.V. ≤ 10 NTU).

Storm loads were generally small from the urban stormwater outfall samples collected in FY2021. This is due both to the smaller storms that were sampled, as well as the relatively small contributing watershed areas. For example, storm loads from the November 18, 2020 sampled at Arlington and Mary Wahl compared to the Truckee River TMDL were 7% of the Total-N TMDL, 5% of the Total-P TMDL, and 0.2% of the TDS TMDL. This storm did not last for 24 hours and the storm load is not an estimate of daily load. Loadings from urban stormwater outfalls during the December 2020 and January 2021 storms were even smaller than the November 2020 storm.

Constituent ‘yields’ are normalized based on watershed area and provide an indication of constituent production and delivery rates from a given area. Yields are calculated and reported in terms of pounds per square mile of watershed area (lbs./sq. mile). For example, although total loads were higher at Mary Wahl Drain during the November storm, Arlington had higher yields, indicating that the contributing watershed area to the Arlington stormwater outfall is producing more nutrients, fine sediment, and dissolved solids relative to other portions of the watershed. In both the December 2020 and January 2021 storms, Fisherman's Park delivered the highest constituent loads, yet the Oxbow Park contributing watershed areas delivered the highest yields when normalized for watershed areas.

Nested baseflow sampling in the Steamboat Creek watershed showed that the Yori Drain sub-watershed delivered higher nutrient and TDS yields than either Boynton Slough or the rest of the upper Steamboat Creek watershed in both summer and winter baseflow.

7 RECOMMENDATIONS

Below we outline several recommendations based on the conclusions of the FY2021 annual report and separately authorized six-year water-quality trends analysis completed for the period 2015-2021.

1) We are using a nested monitoring approach to identify source areas of stormwater and non-stormwater pollution. This approach began in the Steamboat Creek Watershed with the instrumentation of Boynton Slough and Yori Drain in FY2017. Based on the concentration and yields analysis, this strategy would also benefit targeted sampling and analysis of Yori Drain, and the Arlington urban outfall watersheds. Additional upstream sampling locations would need to be identified and instrumented. Separately, this could also be targeted as part of a Special Study.

2) The four urban stormwater outfalls and four tributaries are operated using ISCO auto-samplers. Some of these systems have been deployed in the field for over six years. We have replaced some faulty instruments over the past few years on an as needed basis. Several locations are nearing the end of the expected life span for the instruments and beginning to experience more errors while in operation. It is our suggestion that we do an audit of the field instrumentation to upgrade and replace the older machines and instruments. Also, recent advancements in instrumentation and telemetry can offer unique opportunities to allow for collection of instantaneous data as well as increase the efficiency of the sample collection process.

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 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 can be incorporated if deemed necessary.

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APPENDICES

APPENDIX A

FY2021 Station Observer Logs

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)*	
2020-07-21 17:00	bt	dry	--	--	--	--	--	--	--	--	--	--	--	no	Iced ISCO; set for 0.15 inches of precipitation, 205.84 cf per sample starting >0.15; culvert is dry with some debris in covering the intake
2020-07-22 14:15	bt	dry	--	--	--	--	--	--	--	--	--	--	--	no	Re-iced ISCO; culvert still dry with debris over intake; ran diagnostics on ISCO and changed desiccant; set ISCO to sample 1023 cf/sample >0.3
2020-07-22 17:15	bt	0.19	S	--	--	--	--	--	--	--	--	--	--	yes	Some flow in culvert; some of the debris has been washed out but not all; flow and velocity not reading due to debris; grab sample collected manually with ISCO; discharge in culvert is brown and dirty
2020-07-22 17:40	bt	0.19	S	--	--	--	18.3	415	475	40	3.23	6.04	>1,100	yes	Processed the grab sample; intake is still under debris and flow is not reading out; had to dilute the sample 3 times (sample x 4) to get desktop turbidity to read; replaced ISCO bottle and capped all bottles
2020-11-17 11:45	bt	dry	--	--	--	--	--	--	--	--	--	--	--	no	Culvert dry; small amount of debris visible in the culvert; river is low; set ISCO to sample for 0.2 inches of precipitation every 487 cf starting at >0.2ft.
2020-11-18 11:57	bt, jj, np	0.15	F	0.16	R	f	--	--	--	--	--	--	140.5, 99.94, 116.4, 87.12	yes	23 samples collected; H-19 (1) T 6.1°C, C 210, SC 327, DO 90% 9.67 mg/L, pH 6.78; H-19 (2) T 8.3°C, 118 C , SC 173, DO 89% 9.14 mg/L, pH 7.02; H-19 (3) T 9.7°C, C 120, SC 170, DO 84% 8.34 mg/L, pH 7.06; H-19 (4) T 10.0°C, C 120, SC 169, DO 84% 8.28 mg/L, pH 7.05; H-19 (5) E.coli sample from 11:55 bottle; storm was two waves--one overnight early morning and second starting at 10:30
2020-12-12 14:56	bt	dry	--	--	--	--	--	--	--	--	--	--	--	no	No flow in culvert; set ISCO to sample 0.25 inches of rain to slow down sample collection from previous sample runs; previous samples have been collected too quickly
2020-12-14 10:20	bt	dry	--	--	--	--	--	--	--	--	--	--	--	no	Did not sample; capped and closed ISCO; stage data hovered around sample trigger level
2021-01-04 9:00	bt	dry	--	--	--	--	--	--	--	--	--	--	--	no	Culvert is dry; set ISCO to sample for 0.25 inches of rain-750 cf/sample starting >0.20ft.
2021-01-05 11:00	bt	dry	--	--	--	--	--	--	--	--	--	--	179.2, 144.1, 106.7	yes	Culvert is dry; 9 samples collected from a flashy hydrograph with a quick peak and no lengthy rising limb; H-19 (1) T 1.1°C, C 184, SC 339, DO 99% 12.12 mg/L, pH 7.85; H-19 (3) T 1.4°C, C 102, SC 186, DO 96% 11.64 mg/L, pH 7.69; H-19 (4) T 1.4°C, C 90, SC 164, DO 90% 10.90 mg/L, pH 7.52

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

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], 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 Drain (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)	
2020-07-22 15:30	bt	--	--	--	--	--	--	--	--	--	--	--	--	no	Ran diagnostics and changed desiccant; ISCO loaded with 24 bottles and capped
2020-11-17 12:43	bt	--	--	--	--	--	--	--	--	--	--	--	--	no	Battery check ok and charged; unable to visually inspect intake; set to sample 5100 cf flow based >0.2ft for 0.2 inches of rain
2020-11-18 12:50	bt, jj	0.43	F	1.90	R	f	--	--	--	--	--	--	103.3, 229.2, 262.7, 191.5	yes	8 samples collected; bottom of falling limb; first wave over night early morning with 3 samples collected; second wave started at 10:30 samples collected starting at 11:14; last sample was grab sample at arrival-SDOE 008936 (5) was E.coli sample from grab sample bottle at 13:00; (1) T 7.3°C, C 392, SC 592, DO 69% 7.33 mg/l, pH 7.50; SDOE008936 (2) T 9.5°C, C 186, SC 264, DO 82% 8.10 mg/l, pH 7.63; SDOE008936 (3) T 10.5°C, C 145, SC 200, DO 81% 8.00 mg/l, pH 7.28; SDOE008936 (4) T 12.3°C, C 136, SC 180, DO 85% 7.95 mg/l, pH 7.22
2020-12-12 15:49	bt	dry	--	--	--	--	--	--	--	--	--	--	--	no	Intake is dry; no flow in culvert but some pooled water; sediment under intake; intake is clear(visible)with some debris on arm; set to sample flow paced 4237 cf/sample starting at greater than 0.20 ft.
2020-12-14 11:40	bt	--	--	--	--	--	--	--	--	--	--	--	156.7, 220.3, 109.5	yes	6 samples collected; bottom of falling limb; short hydrograph on evening of 12/13/20: Only processed rising limb, peak and falling limb--rising limb was very fast and no clear first flush: SDOE 008936(2) T 1.6°C, C 184, SC 334, DO 84% 10.83 mg/l, pH 7.62; SDOE008936 (3) T 1.8°C, C 184, SC 331, DO 84% 10.06 mg/l, pH 7.57; SDOE008936 (4) T 1.9°C, C 113, SC 202, DO 82% 9.75 mg/l, pH 7.53

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), 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

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)*	
2020-07-22 14:50	bt	--	trickle	--	--	--	--	--	--	--	--	--	--	no	Filled ISCO with bottles and capped; ran diagnostics and changed desiccant; steady trickle of water in outfall
2020-11-17 12:12	bt	--	trickle	--	--	--	--	--	--	--	--	--	--	no	ISCO would not turn on; ISCO chirp sound was audible but no display; changed battery and no response from ISCO at all
2020-12-12 15:24	bt	0.02	trickle	--	--	--	--	--	--	--	--	--	--	no	ISCO worked when hooked up to new battery and not hooked up to solar panel; reprogrammed the ISCO as it was erased; set to sample flow paced 3409 cf/sample >0.15ft; light flow
2020-12-14 10:47	bt	0.02	trickle	--	--	--	--	See Remarks			--	--	289.2, 227.5, 127.9, 76.49	yes	14 bottles collected; low flow at outfall and pavement is dry; D-16 (1) T 1.5°C, C 378, SC 686, DO 77% 9.32 mg/l, pH 7.52; D-16 (2) T 1.7°C, C 148, SC 267, DO 86% 10.25 mg/l, pH 7.72; D-16 (3) T 1.9°C, C 112, SC 201, DO 90% 10.73 mg/l, pH 7.72; D-16 (4) T2.3°C, C 187, SC 331, DO 86% 10.2 mg/l, pH 7.62
2021-01-04 9:30	bt	dry	--	--	--	--	--	--	--	--	--	--	--	no	No flow in outfall; set to sample for 0.22 inches of rain; 5128 cf/sample starting >0.15ft.
2021-01-05 12:00	bt	dry	trickle	--	--	--	--	See Remarks			--	--	250.9, 291.1, 279.5	yes	6 bottles collected; pavement is dry; quick peak and no rising limb samples; D-16 (1) T 1.8°C, C 801, SC 1436, DO 93% 11.10 mg/l, pH 7.77; D-16 (3) T 1.8°C, C 428, SC 768, DO 89% 10.69 mg/l, pH 7.91; D-16 (4) T 2.1°C, C 402, SC 714, DO 90% 10.71 mg/l, pH 7.92

Observer Key: (bt) is Ben Trustman

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], 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)*	
2020-07-21 16:42	bt	0.10	S	--	--	--	--	--	--	--	--	--	--	no	Thunderstorm activity forecast for next few days; iced and set ISCO to sample 950cf/sample >0.175 ft. Low flow in culvert; intake clear of debris
2020-07-22 13:40	bt	0.10	S	--	--	--	--	--	--	--	--	--	--	no	Two bottles collected at 01:00 and 08:40--not stormwater samples--likely nuisance flow; replaced bottles and re-iced the ISCO; replaced desiccant on ISCO; set ISCO to sample for 0.25 inches of rain 1600 cf/sample >0.20 ft.; ISCO reading 1.71ft/s velocity but level too low for flow calculation
2020-11-17 11:22	bt	0.04	S	--	--	--	--	--	--	--	--	--	--	no	Forecast is for 0.2 inches of rain; set ISCO for flow paced sampling 1030 cf/sample >0.15 ft
2020-11-18 11:40	bt	--	--	--	--	--	--	--	--	--	--	--	--	no	Power failure with ISCO, unable to operate pump; battery was 11.2 volts and was 12.8V upon install on 11/17/20; battery needs replacement
2020-12-12 14:30	bt	0.02	S	--	--	--	--	--	--	--	--	--	--	no	Forecast is 0.15 inches of precipitation; set ISCO to sample flow paced 721 cf/sample >0.20 ft; visual inspection shows very low steady flow in outfall
2020-12-14 9:10	bt	0.04	S	--	--	--	--	See Remarks			--	--	137.0, 159.8, 88.72, 54.94	yes	18 bottles collected; small hydrograph that lasted roughly 2.5 hours; 1 inch of snow at site upon arrival; C-24(1) T 1.4°C, C 102, SC 185 DO 83% 9.77mg/L, pH 8.51; C-24(2) T 1.7°C, C 65, SC 117, DO 89% 10.69mg/L, pH 8.01; C-24(3) T 1.6°C, C 48, SC 88, DO 89% 10.73mg/L, pH 7.80; C-24(4) T 1.4°C, C 35, SC 64, DO 92% 11.09mg/L, pH 7.73
2021-01-04 8:25	bt	0.11	S	0.10	R	g	--	--	--	--	--	--	--	no	Forecast of 0.2 to 0.25 inches of precipitation ; set ISCO to sample 1158 cf/sample starting >0.175ft; visual inspection of intake is clear
2021-01-05 9:00	bt	--	-- --	--	--	--	--	See Remarks			--	--	162.3, 98.3, 147.8, 96.08	yes	17 bottles collected; small first flush (C-24 (1)) with a second hydrograph considered second flush (C-24 (2)) and finally a bigger hydrograph with a fast peak and falling limb (C-24 (3 and 4)); C-24(1) T 1.1°C, C 362, SC 666 DO 87% 10.57 mg/L, pH 8.41; C-24(2) T 2.3°C, C 176, SC 312, DO 93% 10.89mg/L, pH 8.34; C-24(3) T 2.7°C, C 144, SC 251, DO 96% 11.19mg/L, pH 8.21; C-24(4) T 2.7°C, C 68, SC 119, DO 100% 11.61mg/L, pH 8.21

Observer Key: (bt) is Ben Trustman

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], 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	Old Stage	New Stage	Hydrograph	Streamflow	Streamflow Source	Estimated Accuracy	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)*	*(oC)*	*(μmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*		
2020-07-21 17:24	bt		3.89	B	0.75	R	--	--	--	--	--	--	--	--	no		Rained a few minutes before arrival; some puddling in street but no indication of runoff; water clear and at baseflow level; staff has one inch of algae build up above the water line
2020-07-22 16:45	bt		3.87	B	0.52	R	--	--	--	--	--	--	--	--	no		Radar indicated a cell near monitoring location; heavy rain at Moana Ln; no rain at monitoring location at arrival; no change in gage; water clear
2020-08-19 13:09	bt		3.90	B	0.76	M	g/f	20.9	121	131	94	7.4	7.77	--	no		Lots of vegetation and grasses in channel; banks are overgrown; grasses upstream of gage are holding foam; water is clear
2020-09-04 9:52	bt		3.95	B	0.80	M	f	16.4	107	128	105	9.0	7.85	20.55	yes		Ambient water quality sample collected at 10:10; lots of vegetation around and in channel; water is slightly brown; stage dropped during measurement
2020-11-18 10:31	bt, jj ,np		4.46	R	2.70	M	g/f	5.2	83	133	93	10.3	7.30	26.51	yes		Water turbid; leaves and debris in the stream bunched at gage; removed at arrival possibly dropping stage; sample collected at 10:30
2021-01-04 11:22	bt		4.25	S	--	--	--	16.6	52	62	100	11.7	8.49	--	no		Checking stage before storm; channel clear and water clear
2021-01-07 12:30	pr		4.22	B	1.23	M	g/f	-0.8	55	107	101	13.0	6.93	--	no		Ice impacted staff, but not affecting flow; Culvert clear u/s. water is clear, cold, ice built up along edges
2021-02-11 10:54	bt		4.26	B	1.77	M	g	1.7	65	118	101	12.1	5.65	--	no		Water clear; no debris in channel; vegetation is dead; pH verified with manual strip
2021-03-29 12:30	bt		4.78	B	2.13	M	g	7.9	76	113	104	10.5	7.63	8.23	yes		Water slightly brown; some debris upstream of gage on the surface and easily removed to let it flow downstream; elevated flow compared to summer baseflow; sample collected at 12:55
2021-04-23 11:15	bt,de		4.40	B	1.59	M	g	10.2	75	104	116	11.4	7.96	--	no		Water clear; no debris in channel ; vegetation is still dry; downloaded logger
2021-05-15 16:03	bt, pr		4.30	B	1.18	R	--	--	--	--	--	--	--	--	no		Some lawn clippings in the channel; no evidence of storm water run-off; water clear
2021-06-16 11:15	bt		4.20	S	0.77	M	g	14.5	96	120	89	7.8	7.82	--	no		Water is brown; vegetation is full grown; lots of marmots around the gage area
2021-06-24 13:17	bt		3.59	S	--	--	--	21.3	152	164	57	4.7	7.84	--	no		Water very low with est. < 0.01 cfs; water clear
2021-06-24 15:30	bt		3.49	B	no flow	--	--	--	--	--	--	--	--	--	no		No flow; gage is shallow pool; high point just downstream of gage is where flow stops

Observer Key: (bt) is Ben Trustman, (np) is Noelle Patterson, (jj) is Jack Jacquet, (pr) is Paxton Ridgway, (de) is Devon Eckberg

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:
Alum Creek at Truckee River (AC@TR)

Site Conditions				Streamflow			Water Quality Observations								Remarks
Date/Time (observer time)	Observer	Stage (feet)	Hydrograph (R/F/S/B)	Streamflow (cfs)	Streamflow Source (M, R)	Estimated Accuracy (e/g/f/p)	Water Temperature (oC)	Field Specific Conductance (µmhos/cm)	Adjusted Specific Conductance (at 25 oC)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	pH	Turbidity (NTU)	Samples collected? (yes/no)	
2020-07-22 16:10	bt, jj	--	B	--	--	--	--	--	--	--	--	--	--	no	Rain starting while at the location; no change in stage for over 45 minutes and rain subsided; only wetted surface-no runoff
2020-09-04 8:41	bt	0.37	B	0.69	M	g/f	18.00	258.00	298.00	102.00	8.43	8.00	22.24	yes	Ambient sample collected at 9:05; Baseflow conditions; water clear; lots of fine sediment on the channel bed
2020-11-18 7:33	jj, np	0.48	R	0.53	M	f	5.30	310.00	497.00	72.00	--	7.48	22.80	yes	Stage previous night before rain was less than 0.2; water color is red/brown; lots of leaves in channel
2021-01-04 10:30	bt	0.22	S	0.05	E	p	--	--	--	--	--	--	--	no	Leaf dam at top of gaging pool; removed the dam which was also created by rocks placed in the channel; lots of leaf debris upstream of the gage pool
2021-01-04 17:00	jj,np	0.46	F	0.49	M	f	3.20	313.80	537.70	91.00	10.35	7.53	81.33	yes	Light showers earlier in the day with a heavy burst at 16:00; water turbid with significant leaf debris; sample collected at 17:02
2021-03-30 13:00	bt, dm	dry	-- --	--	--	-- --	--	--	--	--	--	--	--	no	Creek was dry; no sample collected

Observer Key: (bt) is Ben Trustman, (np) is Noelle Patterson, (jj) is Jack Jacquet, (np) is Noelle Patterson; (dm) is Daniel Moss -City of Reno

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:
Alum Creek at Mayberry Drive (AC@MAB)

Alum Creek at Mayberry Drive

Site Conditions				***Streamflow***			***Water Quality Observations***								***Remarks***
Date/Time (observer time)	Observer	Stage	Hydrograph	Streamflow	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/g/f/p)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
2020-08-19 14:30	bt	4.16	S	0.52	M	g	24.2	338	344	88	6.45	7.88	--	no	Water clear; possible ditch influenced flows; vegetation is green; lots of crawdads in the gage pool
2021-01-07 16:05	pr	3.93	B	2 gpm	E	P	0.30	513	979	89	11.1	7.57	--	no	Ice around edges and impacted staff - too low to measure flow - only a truckle, estimated 2 gpm.
2021-02-11 14:04	bt	4.05	B	0.08	M	g	6.2	598	937	94	10.0	6.03	--	no	Water clear; some leaf debris in the channel; looks like there has not been a flushing high flow but no leaf dam; pH was verified by manual strip
2021-04-23 14:36	bt,de	3.96	B	0.02	M	g	15.2	903	1111	65	5.7	7.58		no	Extremely low flow, water clear, a lot of leaf debris on channel bed, downloaded logger and baro logger
2021-06-16 9:30	bt	4.15	S	0.34	M	f	16.8	445	527	85	7.1	7.79	--	no	Water clear; lots of leaf debris and soft fine sediment on channel bed
2021-07-23 13:40	de	4.14	S	0.35	M	f	25.0	507	507	92	6.5	7.65	--	no	Water brown and cloudy; banks dry and grasses are drying out

Observer Key: (bt) is Ben Trustman, (de) is Devon Eckberg, (pr) is Paxton Ridgway

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	Hydrograph	Streamflow	Streamflow Source	Estimated Accuracy	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(R/F/S/B)	*(cfs)*	*(M, E)*	*(e/g/f/p)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
2020-09-04 8:05	bt	B	0.50	M	f	14.5	2109	2638	106	9.4	8.11	7.05	yes	Ambient sample collected at 8:20; duplicate sample labeled CC@W4 8:40; lots of vegetation growth near channel; beaver dam still intact; water clear
2020-11-18 9:05	jj,np	R	8.63	M	f/p	7.1	1339	2033	83	8.6	7.73	38.92	yes	Water is turbid; lots of foam; flow was increasing during measurement; sample collected at 9:05
2021-01-04 18:00	jj,np	R	2.60	M	f	5.2	1441	2319	111	12.0	7.82	98.88	yes	Light showers earlier in day with heavy burst at 16:00; water turbid and foamy; sample collected at 18:06
2021-03-30 12:35	bt,dm	S	0.53	M	g/f	7.6	1800	2694	129	13.6	8.36	5.88	yes	Beaver dam is intact; low water flow in pool and lots of sediment; water clear; vegetation is dead; sample collected at 12:35

Observer Key: (bt) is Ben Trustman, (np) is Noelle Patterson, (jj) is Jack Jacquet; (dm) is Daniel Moss

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:
Evans Creek@Kietzke Lane (EC@KL)

Site Conditions				*Streamflow*			*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Hydrograph	Streamflow	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, E)*	*(e/g/f/p)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
2020-08-19 11:37	bt	4.15	S	1.78	M	g	19.8	196	218	83	6.6	7.46	--	no	Water clear; grasses are green; streamflow is possibly influenced by ditch discharge
2020-09-04 10:42	bt	4.10	S	1.18	M	g	17.8	204	236	78	6.7	7.46	16.81	yes	Ambient sample collected at 11:15; water clear; lots of crayfish in gage pool; fine sediment in gage pool
2021-01-04 11:10	bt	4.07	S	--	--	--	--	--	--	--	--	--	--	no	Water clear; some plant debris in the channel upstream but not affecting flow; not raining and ground surfaces are dry; checking stage before storm
2021-01-07 14:35	pr	4.07	B	0.14	M	f	5.7	320	508	118	12.8	7.28	--	no	Blue skies, no wind, no run off for some time; low flow has exposed leafy muck along edges of channel; bed is highly variable, rip rap to muck to rip rap again = flows sporadic and depths tricky at low stage
2021-02-01 12:57	bt	4.08	B	--	--	--	8.3	343	503	96	9.8	7.98	--	no	Stage check before storm; storm is forecast for 2/2/21 with 0.15 inches of rain; abundant snow in Reno area should create more runoff; patchy snow on banks; some minor debris downstream of gage
2021-02-11 11:22	bt	4.02	B	0.28	M	g/f	7.4	335	505	90	9.3	6.31	--	no	Water clear; low flow; little trash downstream of the gage
2021-03-29 13:30	bt	3.96	B	0.13	M	g/f	12.5	375	495	134	12.3	8.19	6.63	yes	Water clear; lowest observed flow; dark buildup on staff plate at water level suggesting it has been at this level for an extended period of time; sample collected at 13:50
2021-04-23 13:04	bt, de	4.05	B	0.52	M	g/f	16.1	246	297	109	9.5	8.02	--	no	Water clear; grasses starting to grow; vegetation is starting to bud and leaf
2021-05-15 15:17	bt,pr	4.25	R	2.25	M	g/f	13.4	146	187	88	8.0	7.37	20.03	yes	Water had foamy bubbles on surface; water was brown tinted; storm water runoff from thunderstorm activity in the previous couple of hours; intermittent light rain upon leaving the site
2021-06-16 10:25	bt	4.21	F	1.53	M	f	15.5	150	183	83	7.1	7.91	--	no	Water is clear; some stick and shrub debris upstream of the gage but not affecting flow; vegetation is full and green
2021-06-24 12:59	bt	4.23	S	--	--	--	22.9	178	185	91	6.9	7.79	--	no	Water was brown; stage check in prep for possible thunderstorms
2021-07-23 11:30	de	4.26	S	2.76	M	g	20.2	163	178	65	5.0	7.48	--	no	Water brown and cloudy; banks dry

Observer Key: (bt) is Ben Trustman, (pr) is Paxton Ridgeway, (de) is Devon Eckberg

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:
Whites Creek at Old Virginia Hwy (WC@OVH)

Gage operated and maintained by TMWA

Site Conditions				***Streamflow***			***Water Quality Observations***								***Remarks***
Date/Time (observer time)	Observer	Stage	Hydrograph	Streamflow	Streamflow Source	Estimated Accuracy	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)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
2020-09-03 11:54	bt	0.43 (TROA)	S	1.6	R	f	16.3	66.0	79.0	113.0	9.8	7.8	6.01	yes	Sample collected at 12:00; water clear; low flow
2020-11-18 6:45	bt	0.76 (TROA)	R	3.9	R	f	6.9	80.6	126.9	93.2	10.1	7.5	124.2	yes	Water brown; elevated flow; starting to rain again; TROA data intermittent and gage height and flow is from 8:29 recorded point; extra sample collected for YSI measurements (11:00)-DO and temperature should be flagged
2021-03-29 12:07	bt	0.47 (TROA)	S	1.9	R	g	5.9	57.0	91.0	116.0	12.5	8.0	2.42	yes	Water very clear; sample collected at 12:15
2021-05-15 16:18	bt,pr	0.55 (TROA)	S	2.4	R	g	11.4	64.6	87.0	112.0	10.6	7.8	--	no	Water clear; no evidence of storm water run-off

Observer Key: (bt) is Ben Trustman, (pr) is Paxton Ridgway

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

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)

Gage operated and maintained by USGS Station #10349300

Site Conditions				***Streamflow***			***Water Quality Observations***								***Remarks***
Date/Time (observer time)	Observer	Stage	Hydrograph	Streamflow	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)*	*(a/p)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
2020-09-03 11:25	bt	0.15	B	0.1	R	a	18.9	434	491	76	6.3	7.51	15.19	yes	Sample collected at 11:30; very low flow; USGS staff plate is dry; water clear; lots of crayfish
2020-11-18 6:25	bt	1.06	F	16.4	R	a	6.6	233	370	89	9.7	7.62	39.80	yes	Sample collected at 6:30; water brown; elevated flow; extra sample collected for YSI measurements (11:00)-DO and temperature should be flagged
2021-03-29 11:35	bt	0.79	B	7.0	R	a	8.1	173	257	117	11.8	8.32	12.49	yes	Sample collected at 11:45; Labeled a duplicate sample SBC@MTR 11:50; water slightly brown
2021-06-24 15:30	bt	0.18	B	0.2	R	p	--	--	--	--	--	--	--	no	Rained on and off for 1 hour then heavy for 10 minutes and wet ground surface-no change in streamflow

Observer Key: (bt) is Ben Trustman

Stage: Water level observed on staff plate,

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

Streamflow Estimated Accuracy: Data approved (a) or data preliminary (p)

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 the Narrows (SBC@NAR)

Gage operated and maintained by USGS Station #10349849

Site Conditions				***Streamflow***			***Water Quality Observations***								***Remarks***
Date/Time (observer time)	Observer	Stage	Hydrograph	Streamflow	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)*	*(a,/p)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
2020-09-03 12:27	bt	-0.35	B	8.5	R	a	27.3	1332	1276	138	9.6	8.44	16.72	yes	Sample collected at 12:35; water clear
2020-11-18 7:05	bt	0.43	R	50.2	R	a	6.0	808	1257	81	8.5	8.07	129.1	yes	Sample collected at 7:10; flow elevated; water brown; break in rain; extra sample collected for YSI measurements (11:00)-DO and temperature should be flagged
2021-03-29 14:20	bt	-0.14	R	16.7	R	a	16.2	748	900	111	9.4	8.32	37.80	yes	Sample collected at 14:20; water brown; several water fowl under the bridge

Observer Key: (bt) is Ben Trustman

Stage: Water level observed on staff plate,

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

Streamflow Estimated Accuracy: Data approved (a) or data preliminary (p)

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)

Gage operated and maintained by USGS Station #10349980

Site Conditions				***Streamflow***			***Water Quality Observations***								***Remarks***
Date/Time (observer time)	Observer	Stage	Hydrograph	Streamflow	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)*	*(a/p)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
2020-08-19 10:14	bt	4.30	S	23.7	R	a	24.2	765	771	78	5.8	8.19	--	no	Ran diagnostics on ISCO; checked distribution arm; NDOT WQ: T 24.2, SC 764, DO 68% 4.87 mg/l, pH 7.76
2020-09-03 9:00	bt	4.40	S	26.7	R	a	20.9	675	732	84	6.6	8.26	10.6 (NDOT)	no	Filled ISCO with bottles and iced; set to sample every hour starting at 12:00; NDOT WQ: T 20.8°C, SC 708, DO 64.6% 4.91 mg/l, pH 7.92
2020-09-04 14:31	bt	4.41	S	27.0	R	a	26.8	726	706	153	10.8	8.61	71.65, 40.33, 29.74, 30.42	yes	24 non-storm samples collected; SBC@CWW (1) T 19.0°C, C 639, SC 723, DO 87% 7.11 mg/l, pH 8.64, SBC@CWW (2) T 18.8°C, C 606, SC 687, DO 90% 7.33 mg/l, pH 8.65, SBC@CWW (3) T 19.4°C, C 630, SC 704, DO 85% 6.87 mg/l, pH 8.49, SBC@CWW (4) T 22.6°C, C 704, SC 737, DO 77% 6.79 mg/l, pH 8.43; NDOT WQ: T 26.4°C, SC 372, DO 82% 6.7mg/l, pH 7.90, NTU 10.76
2020-11-17 13:00	bt	4.40	S	29.2	R	a	11.0	666	908	127	12.3	8.34	--	no	Loaded ISCO with bottles and capped; water brown; unable to connect to NDOT logger
2021-02-01 12:00	bt	4.63	S	42.1	R	a	6.8	528	810	82	8.8	7.91	14.1 (NDOT)	no	Loaded ISCO with ice and will set via logger link; forecast for 0.15 inches of rain and remnant snow should create runoff; hydrograph for the previous 3 days is from snow melt; NDOT WQ: T 6.7°C, SC 766, DO 45% 5.5 mg/L, pH 7.61
2021-02-02 10:56	jj	4.70	S	46.2	R	a	--	--	--	--	--	--	--	no	Capped bottles; storm did not spillover into Truckee Meadows
2021-03-29 10:00	bt	4.51	S	34.6	R	a	9.4	494	703	98	9.8	7.93	20.4 (NODT)	no	Set ISCO to sample every hour 400ml starting at 12:00; Water is brown and low; NDOT WQ T 10.2°C, SC 684, DO 95% 9.2 mg/L, pH 8.03
2021-03-30 15:40	bt	4.50	S	34.0	R	a	14.0	387	491	137	12.3	8.49	39.82, 39.21, 47.43, 31.26	yes	24 non-storm samples collected; SBC@CWW (1) T 4.4°C, C 415, SC 721, DO 101% 11.25 mg/l, pH 8.48, SBC@CWW (2) T 5.5°C, C 415, SC 660, DO 94% 10.17 mg/l, pH 8.56, SBC@CWW (3) T 5.7°C, C 426, SC 671, DO 95% 10.12 mg/l, pH 8.51, SBC@CWW (4) T 6.9°C, C 450, SC 688, DO 89% 9.33 mg/l, pH 8.36 ; NDOT WQ: T 14.8°C, SC 662, DO 134% 11.68 mg/l, pH 8.21, NTU 14.74
2021-04-23 9:15	bt, de	4.38	S	28.2	R	a	13.7	465	593	89	8.0	8.38	11.3 (NDOT)	no	Loaded ISCO with bottles ; water is slightly brown; NDOT WQ T 13.5°C, SC 725, DO 87%, 7.78 mg/L, pH 7.60

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

Stage: Water level observed on staff plate,

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

Streamflow Estimated Accuracy: Data approved (a) or data preliminary (p)

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 or from the NDOT water quality instrument located at the gage and do not reflect laboratory analysis and results

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

Gage operated and maintained by USGS Station #10348295

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)*	*(a/p)*	*(feet)*	*(M/D/YY)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
2020-08-19 8:45	bt	3.46	B	4.24	R	a	--	--	20.9	619	671	35	2.7	7.55	--	no	Ran diagnostics on ISCO-passed; tested the distribution arm; checked intake hose assembly and cleared; water is brown; no debris in channel
2020-09-03 10:00	bt	3.43	B	4.28	R	a	--	--	18.6	699	797	61	5.0	7.70	--	no	Iced ISCO and set to sample every hour starting at 12:00
2020-09-04 13:03	bt	3.53	B	5.18	R	a	--	--	22.1	807	852	74	5.6	7.57	69.00, 70.86, 68.30, 49.20	yes	24 ambient samples collected :NTD@BFD (1) T 21.4°C, C 784, SC 840, DO 76% 5.91 mg/l, pH 8.16; NTD@BFD (2) T 21.7°C, C 784, SC 834, DO 80% 6.17 mg/l, pH 8.14; NTD@BFD (3) T 23.1°C, C 758, SC 801, DO 74% 5.60 mg/l, pH 8.04; NTD@BFD (4) T 23.1°C, C 807, SC 852, DO 73% 5.48 mg/l, pH 8.00
2020-11-17 14:00	bt	2.06	B	1.61	R	a	--	--	9.7	727	1026	96	9.5	8.05	--	no	Water is lower than intake and intake is at the lowest setting; lowest observed water level since gage installation; USGS staff plate dry and 2 feet out of water; USGS bubbler partially exposed; filled ISCO with bottles and left a charged battery
2021-02-01 10:15	bt	2.15	B	2.29	R	a	--	--	4.5	1029	1679	76	8.7	8.42	--	no	Water is lower than intake and intake is at the lowest setting; lowest observed water level since gage installation; USGS staff plate dry and 2 feet out of water; some snow on banks; set ISCO to sample in anticipation of forecast rain on 2/2/21; set to sample every hour starting at 06:00
2021-02-02 10:00	jj	2.21	B	2.61	R	a	--	--	--	--	--	--	--	--	--	no	Capped bottles and shut off ISCO; disconnected battery; QPF forecast went to 0.01 inches and no runoff expected
2021-03-29 10:30	bt	1.98	B	0.85	R	a	--	--	8.0	1281	1897	149	15.2	8.51	5.30	yes	Water level is below the intake and intake is at the lowest setting; collected a grab sample at 10:35; water is clear with no debris; thick mud on channel bottom; water has a yellow hue
2021-04-23 9:15	bt, de	2.62	B	0.85	R	a	--	--	10.4	1245	1723	75	7.4	8.44	--	no	Flows and stage are higher then the 3/29/21 non storm sample; intake is in water; water is brown; vegetation is budding
2021-06-03 17:51	bt	3.62	R	7.85	R	p	4.32	2021-06-03	23.2	407	422	54	4.1	7.41	262.2	yes	Thunderstorm activity began at 16:30 in the Sparks area; flow is increasing from 2 cfs up to 8 at time of sample; water brown with lots of debris; grab sample collected at 17:56
2021-06-24 11:36	jj	2.55	R	0.72	R	p	--	--	20.5	555	607	21	1.6	6.51	--	no	Stage check before thunderstorms
2021-06-24 20:26	jj	3.62	R	8.10	R	p	--	--	21.5	247	265	14	1.1	6.46	110.6	yes	Grab sample collected at 20:35; water turbid with some debris floating; ≈3 hour delay from peak upstream at NTD@ORD

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

Stage: Water level observed on staff plate,

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

Streamflow Estimated Accuracy: Data approved (a) or data preliminary (p)

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:
North Truckee Drain at Orr Ditch (NTD@ORD)

Gage operated and maintained by USGS Station #10348245

Site Conditions					***Streamflow***			***Water Quality Observations***								***Remarks***
Date/Time (observer time)	Observer	Stage *(feet)*	Hydrograph *(R/F/S/B)*	Rainall *(in.)*	Streamflow *(cfs)*	Streamflow Source *(M, R)*	Estimated Accuracy *(a/p)*	Water Temperature *(oC)*	Field Specific Conductance *(µmhos/cm)*	Adjusted Specific Conductance *(at 25 oC)*	Dissolved Oxygen *(%)*	Dissolved Oxygen *(mg/L)*	pH	Turbidity *(NTU)*	Samples collected? *(yes/no)*	
2020-09-03 10:30	bt	1.77	B	--	2.7	R	a	17.6	667	777	87	7.3	7.64	23.43	yes	Sample collected at 10:40; higher flow than past baseflow samples; water clear
2020-11-18 8:50	bt	1.69	R	0.05	2.7	R	a	7.4	1196	1800	69	7.2	7.88	15.42	yes	Intermittent rain at site; raining steady north of Virginia St.; flow has already increased 2 cfs from late night early morning; water slightly brown; sample collected at 9:00; extra sample collected for YSI measurements (11:00)-DO and temperature should be flagged
2021-03-29 10:51	bt	1.60	B	--	0.83	R	a	8.1	1476	2180	138	13.9	8.45	13.01	yes	Water has a yellow hue; sample collected at 11:00; no debris in channel
2021-05-15 14:18	bt, pr	1.90	R	0.03	2.41	R	a	13.6	1015	1299	73	6.7	7.99	72.56	yes	Ground is wet; USGS record indicates storm hydrograph from thunderstorms; intermittent light rain while at station; sample collected at 14:20

Observer Key: (bt) is Ben Trustman, (pr) is Paxton Ridgway

Stage: Water level observed on staff plate,

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

Streamflow Estimated Accuracy: Data approved (a) or data preliminary (p)

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	New Stage (pillar)	Hydrograph	Streamflow	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/g/f/p)	(oC)	(µmhos/cm)	(at 25 oC)	(%)	(mg/L)		(NTU)	(yes/no)	
2020-08-19 10:46	bt	4.23	B	12.8	R	g	23.7	428	439	46	3.5	7.55	--	no	Ran diagnostics on ISCO; checked distribution arm; NDOT WQ: T 23.7°C, SC 435, DO 42% 3.61 mg/l, pH 7.53; water brown with spots of floating algae; big carp in channel
2020-09-03 9:31	bt	4.22	B	11.9	R	g	21.5	331	355	68	5.3	7.79	15.1 (NDOT)	no	Iced and set ISCO to sample every hour starting at 12:00 for ambient sampling; NDOT WQ: T21.5°C, SC 352, DO 68% 5.34 mg/l, pH 7.79; water brown
2020-09-04 12:06	bt	4.25	B	14.7	R	g	24.6	370	373	69	5.0	7.93	35.19, 24.09, 23.84, 30.26	yes	24 non-storm samples collected; BS@SBC(1) T17.7°C, C 305, SC 354, DO 76% 6.42 mg/l, pH 8.18; BS@SBC(2) T 17.6°C, C 310, SC 361, DO 81% 6.84 mg/l, pH 8.18; BS@SBC(3) T 19.4°C, C 321, SC 359, DO 82% 6.61 mg/l, pH 8.07; BS@SBC(4) T 23.2°C, C 347, SC 359, DO 73% 5.46 mg/l, pH 8.00; NDOT water quality T 24.0°C, SC 367, DO 69% 5.9 mg/l, pH 7.80, Turbidity 18.13 (NTU)
2020-11-17 13:40	bt	3.98	B	1.4	R	g	10.8	524	719	102	9.9	8.08	--	no	Loaded ISCO with bottles and capped; NDOT probe reading NAN
2021-01-07 10:45	pr	4.10	B	4.7	M	g	2.7	399	692	46	5.4	6.51	--	no	Blue skies; no wind low 30's;ice along edges; ice completely covers channels u/s around bend; REW has veg blocking flow; Soft bed, rod and feet sinking
2021-02-01 10:40	bt	4.15	B	6.7	R	g	6.6	411	633	55	5.9	7.67	3.2 (NDOT)	no	NDOT water quality: T 6.3°C, SC 608, DO 0.7% 0.09 mg/l; pH 7.42
2021-02-02 10:25	jj	--	--	--	--	--	--	--	--	--	--	--	--	no	Capped bottles and poured out ice
2021-02-11 9:57	bt	4.15	B	6.8	M	g	8.2	461	677	69	7.0	6.38	7.24 (NDOT)	no	NDOT water quality: T 8.7°C, SC 731, DO 67% 6.7 mg/l; pH 7.87; tumbleweed and debris on right bank; water brown and could not see probe at depth
2021-03-29 9:05	bt	4.20	B	10.2	R	g	10.5	277	384	93	9.0	7.77	9.01 (NDOT)	no	Set ISCO to sample every hour beginning at 12:00 400mL; water is brown; no debris in channel; NDOT WQ T 10.8°C, SC 403, DO 85% 8.13 mg/L, pH 8.00
2021-03-30 13:48	bt, dm	4.21	B	11.0	R	g	12.5	293	385	122	11.3	8.41	15.65 (NDOT)	yes	24 non-storm samples collected; BS@SBC(1) T5.1°C, C 242, SC 390, DO 86% 9.27 mg/l, pH 8.53, NTU 93.06; BS@SBC(2) T 5.4°C, C 245, SC 391, DO 94% 10.21 mg/l, pH 8.56, NTU 25.90; BS@SBC(3) T 6.8°C, C 258, SC 395, DO 92% 9.65 mg/l, pH 8.54, NTU 16.49; BS@SBC(4) T 9.6°C, C 279, SC 394, DO 91% 8.91 mg/l, pH 8.46, NTU 11.77; NDOT water quality T 14.0°C, SC 394, DO 123% 10.9 mg/l, pH 8.38, Turbidity 15.65 (NTU)
2021-04-23 11:00	bt, de	4.18	B	8.8	R	g	15.2	316	389	75	6.7	8.21	5.4 (NDOT)	no	Water slightly brown; no debris in channel; grasses dry; NDOT WQ T 15.8°C, SC 399, DO 93%, 7.95mg/l, pH 8.14
2021-06-16 12:08	bt	4.21	B	10.6	M	g	22.4	378	398	49	3.7	7.73	9.02 (NDOT)	no	Water is brown; cattails growing on the south bank; big carp in the stream; no debris in the channel under the bridge; NDOT WQ, T 23.7, SC 445, DO 51% 3.67mg/l, pH 7.80; NDOT Stage 4.18
2021-06-24 11:09	jj	4.20	B	10.2	R	g	21.8	419	447	54	4.0	7.01	--	no	Staff gage check before possible thunderstorms

Observer Key: (bt) is Ben Trustman, (de) is Devon Eckberg, (jj) is Jack Jacquet, (pr) is Paxton Ridgway; (dm) is Daniel Moss City of Reno

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 or from the NDOT water quality instrument located at the gage and do not reflect laboratory analysis and results

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

Site Conditions				*Streamflow*			*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	ISCO depth	Hydrograph	Streamflow	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/g/f/p)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
2020-08-19 9:26	bt	0.53	S	5.7	R	g/f	23.9	485	496	84	6.3	9.01	--	no	Ran diagnostics and maintenance; all checks ok; visual inspection ok; water brown; changed desiccant; downloaded ISCO; some foam on channel edges upstream of culvert
2020-09-03 8:52	bt	0.60	S	7.1	R	g/f	21.2	458	493	110	8.6	8.74	--	no	Loaded ISCO with ice and set to sample every hour starting at 12:00 for ambient sampling
2020-09-04 14:00	bt	0.43	S	5.1	R	g/f	26.9	511	493	172	12.2	8.99	36.41, 27.60, 28.27, 27.81	yes	24 ambient samples collected; separated into four composite bottles; YD@SBC (1) T 22.6°C, C 469, SC 492, DO 89% 6.72 mg/l, pH 8.82; YD@SBC (2) T 23.1°C, C 469, SC 487, DO 87% 6.51mg/l, pH 8.95; YD@SBC (3) T 24.0 °C, C 480, SC 489, DO 84% 6.22 mg/l, pH 8.83; YD@SBC (4) T24.5°C, C 494 , SC 498, DO 82% 6.02 mg/l, pH 8.74;
2021-01-21 16:28	bt	0.39	S	4.5	R	g/f	10.4	434	603	125	12.0	6.53	--	no	Received key from RTC Washoe County; downloaded ISCO; debris from upstream was cleared and is piled just out of the culvert outlet-could be affecting flow
2021-02-01 11:07	bt	0.37	S	4.9	R	g/f	10.4	412	671	31	3.1	7.43	--	no	Removed debris from outlet and cleaned off probe-debris was removed at 11:30; ISCO read 0.47ft and 6.2 cfs after removal; set to sample every hour starting above 0.55ft and not before 06:00 on 2/2/21; reset clock on ISCO
2021-02-02 12:24	jj	--	--	--	--	--	--	--	--	--	--	--	--	no	Capped bottles and stopped program; no spillover into Truckee Meadows
2021-03-29 9:35	bt	0.47	S	5.7	R	g/f	9.1	426	613	86	8.5	7.48	--	no	Probe was covered with algae reading depth but not flow; began reading after cleaned; set ISCO to sample 400mL every hour starting at 12:00
2021-03-30 15:15	bt	0.40	S	4.2	R	f	16.8	509	604	172	14.5	8.45	24.27	yes	Only 7 samples collected; error with battery; changed the battery; processed the 7 samples into one composite; DO has increased x2 since previous day; algae floating on water, but water is very clear upstream of the culvert
2021-04-23 10:10	bt, de	0.34	S	3.6	R	f	12.6	465	610	104	9.7	7.91	--	no	Water clear and no debris upstream; lots of algae on the probe possibly causing error in reading; cleaned the probe and the signal increased
2021-06-24 10:13	bt, jj	0.54	S	7.2	R	f	17.0	339	400	53	4.4	6.08	--	no	ISCO was not reading flow upon arrival; reading depth and velocity; debris (stick) was wedged in front of the probe and removed; once debris cleared flow reading resumed; Hach velocity check: depth 0.5ft, velocity 5.32ft/s (ISCO reading 5.67ft/s); downloaded ISCO and Solinst back up logger

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

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

FY2021 Equipment Calibration Logs

CALIBRATION SHEET

DATE/TIME 2020-07-16

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)	500	500	4.85	Acceptable cell const. 4.0-6.0	
	1000 (µs/cm)	1041	1000	4.85	Acceptable cell const. 4.0-6.0	y

	circle one			mV Value	Slope	
pH Point #1	4.00 [✓ 7.00] 10.00	7.09	6.99	-6.4	56.04	pH 7 mV value = 0 +/- 50
pH Point #2	[✓ 4.00] 7.00 10.00	3.97	4	177.6		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]	9.89	9.98	-158.9		Ideal slope is between 55 and 60

				1.25 mil yellow membrane Acceptable: 4.31 to 8.00 uA
DISSOLVED OXYGEN (% sat)	n/a	97	100	4.86
DISSOLVED OXYGEN (% sat)	n/a			

Comments or Notes

pH 10 out of mV range but slope ok

CALIBRATION SHEET

DATE/TIME 2020-07-16

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)	513	500		Acceptable cell const. 4.0-6.0	
	1000 (µs/cm)	935	1000		Acceptable cell const. 4.0-6.0	

	circle one			mV Value	Slope	
pH Point #1	4.00 [✓ 7.00] 10.00	7.13	6.99	-7.43	100.46	pH 7 mV value = 0 +/- 50
pH Point #2	[✓ 4.00] 7.00 10.00	4.01	4	178.3		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]	10.22	9.98	-176.57		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

Values were not stored on YSI-calculated from written logs; pH slope (((mV ph4- mVpH 7)/3)/59.16)*100= 85 to 105 then calibration is good

CALIBRATION SHEET

DATE/TIME 2020-09-03
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)	538	500		Acceptable cell const. 4.0-6.0	
	1000 (µs/cm)	935	1000		Acceptable cell const. 4.0-6.0	

	circle one			mV Value	Slope	
pH Point #1	4.00 [✓ 7.00] 10.00	6.99	6.99	0.57	97.23	pH 7 mV value = 0 +/- 50
pH Point #2	[✓ 4.00] 7.00 10.00	3.97	4	172.6		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]	9.93	9.98	-168		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

Values were not stored on YSI-calculated from written logs; pH slope (((mV ph4- mVpH 7)/3)/59.16)*100= 85 to 105 then calibration is good

CALIBRATION SHEET

DATE/TIME 2020-09-16
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)	521	500		Acceptable cell const. 4.0-6.0	
	1000 (µs/cm)	935	1000		Acceptable cell const. 4.0-6.0	

	circle one			mV Value	Slope	
pH Point #1	4.00 [✓ 7.00] 10.00	7.19	6.99	-10.86	104.32	pH 7 mV value = 0 +/- 50
pH Point #2	[✓ 4.00] 7.00 10.00	3.95	4	185.2		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]	9.77	9.98	-147.43		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

Values were not stored on YSI-calculated from written logs; pH slope (((mV ph4- mVpH 7)/3)/59.16)*100= 85 to 105 then calibration is good
pH 4 and 10 values off but slope ok

CALIBRATION SHEET

DATE/TIME 2020-11-16
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)	579	500		Acceptable cell const. 4.0-6.0	
	1000 (µs/cm)	905	1000		Acceptable cell const. 4.0-6.0	

	circle one			mV Value	Slope	
pH Point #1	4.00 [✓ 7.00] 10.00	7.5	6.99	-28.57	107.54	pH 7 mV value = 0 +/- 50
pH Point #2	[✓ 4.00] 7.00 10.00	4.16	4	190.9		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]	10.4	9.98	-165.72		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

Values were not stored on YSI-calculated from written logs; pH slope (((mV ph4- mVpH 7)/3)/59.16)*100= 85 to 105 then calibration is good

Calculated values are out of range

CALIBRATION SHEET

DATE/TIME	2020-12-11
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)	513	500		Acceptable cell const. 4.0-6.0	
	1000 (μs/cm)	1002	1000		Acceptable cell const. 4.0-6.0	

	circle one			mV Value	Slope	
pH Point #1	4.00 [✓ 7.00] 10.00	7.11	7.02	-5.6	56.00	pH 7 mV value = 0 +/- 50
pH Point #2	[✓ 4.00] 7.00 10.00	4	4	170.8		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]	10.05	9.98	-164.79		Ideal slope is between 55 and 60

				1.25 mil yellow membrane Acceptable: 4.31 to 8.00 uA
DISSOLVED OXYGEN (% sat)	n/a	86	100	2.97
DISSOLVED OXYGEN (% sat)	n/a			

Comments or Notes

DO replacement recommended

CALIBRATION SHEET

DATE/TIME 2020-12-31

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)	508	500	4.7		Acceptable cell const. 4.0-6.0	
	1000 (µs/cm)	938	1000	5		Acceptable cell const. 4.0-6.0	
	circle one			mV Value	Slope		
pH Point #1	4.00 [✓ 7.00] 10.00	7.11	7.02	-8.5	55.69	pH 7 mV value = 0 +/- 50	
pH Point #2	[✓ 4.00] 7.00 10.00	4	4	168.9		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]	10.05	9.98	-162		Ideal slope is between 55 and 60	
				1.25 mil yellow membrane Acceptable: 4.31 to 8.00 uA			
DISSOLVED OXYGEN (% sat)	n/a	86	100	2.97			
DISSOLVED OXYGEN (% sat)	n/a						

Comments or Notes

ph 10 values low; slope ok

CALIBRATION SHEET

DATE/TIME 2021-01-30

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)	538	500	4.66	Acceptable cell const. 4.0-6.0	y
	1000 (µs/cm)	935	1000	4.9	Acceptable cell const. 4.0-6.0	y

	circle one			mV Value	Slope	
pH Point #1	4.00 [✓ 7.00] 10.00	7.15	7.03	-12.2	57.00	pH 7 mV value = 0 +/- 50
pH Point #2	[✓ 4.00] 7.00 10.00	3.92	4	175.4		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]	10.15	10.09	-162.8		Ideal slope is between 55 and 60

				1.25 mil yellow membrane Acceptable: 4.31 to 8.00 uA
DISSOLVED OXYGEN (% sat)	n/a	92	100	2.97
DISSOLVED OXYGEN (% sat)	n/a			

Comments or Notes

ph 10 values low; slope ok

CALIBRATION SHEET

DATE/TIME 2021-03-28

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)	610	500	4.09	Acceptable cell const. 4.0-6.0	y
	1000 (µs/cm)	793	1000	5.1	Acceptable cell const. 4.0-6.0	y

	circle one			mV Value	Slope	
pH Point #1	4.00 [✓ 7.00] 10.00	7.12	7.03	-6.5	54.20	pH 7 mV value = 0 +/- 50
pH Point #2	[✓ 4.00] 7.00 10.00	3.97	4	169.9		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]	9.75	10.09	-151.6		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

ph 10 values low; slope low

CALIBRATION SHEET

DATE/TIME 2021-04-22
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)	514	500	5		Acceptable cell const. 4.0-6.0	y
	1000 (µs/cm)	979	1000	5.1		Acceptable cell const. 4.0-6.0	y
	circle one			**mV Value**	**Slope**		
pH Point #1	4.00 [✓ 7.00] 10.00	7.18	7.03	-5.6	56.90	pH 7 mV value = 0 +/- 50	
pH Point #2	[✓ 4.00] 7.00 10.00	3.93	4	169.7		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]	10.33	10.09	-168.6		Ideal slope is between 55 and 60	
				1.25 mil yellow membrane Acceptable: 4.31 to 8.00 uA			
DISSOLVED OXYGEN (% sat)	n/a	94	100	3.3			
DISSOLVED OXYGEN (% sat)	n/a						

Comments or Notes

DO uA low and needs replacement

CALIBRATION SHEET

DATE/TIME 2021-05-15

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)		500	5	Acceptable cell const. 4.0-6.0	
	1000 (µs/cm)		1000	5.1	Acceptable cell const. 4.0-6.0	

	circle one			mV Value	Slope	
pH Point #1	4.00 [✓ 7.00] 10.00	6.99	7.03	0.57	95.30	pH 7 mV value = 0 +/- 50
pH Point #2	[✓ 4.00] 7.00 10.00	4.03	4	169.1		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]	10.02	10.09	-173.1		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

Values were not stored on YSI-calculated from written logs; pH slope (((mV ph4- mVpH 7)/3)/59.16)*100= 85 to 105 then calibration is good

CALIBRATION SHEET

DATE/TIME 2021-06-03

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)		500	5	Acceptable cell const. 4.0-6.0	
	1000 (µs/cm)		1000	5.1	Acceptable cell const. 4.0-6.0	

	circle one			mV Value	Slope	
pH Point #1	4.00 [✓ 7.00] 10.00	7.09	7.01	-7.5	55.70	pH 7 mV value = 0 +/- 50
pH Point #2	[✓ 4.00] 7.00 10.00	4.1	4	169.2		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]	9.98	10.02	-163.8		Ideal slope is between 55 and 60

1.25 mil yellow membrane

Acceptable: 4.31 to 8.00 uA

DISSOLVED OXYGEN (% sat)	n/a		100	4.2
DISSOLVED OXYGEN (% sat)	n/a			

Comments or Notes

DO uA low and needs replacement

pH 10 values low but slope ok

CALIBRATION SHEET

DATE/TIME 2021-06-07

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)		500	5	Acceptable cell const. 4.0-6.0	
	1000 (µs/cm)		1000	5.1	Acceptable cell const. 4.0-6.0	

	circle one			mV Value	Slope	
pH Point #1	4.00 [✓ 7.00] 10.00	7.07	7.01	-8.8	50.00	pH 7 mV value = 0 +/- 50
pH Point #2	[✓ 4.00] 7.00 10.00	3.95	4	171.3		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]	9.4	10.03	-128.8		Ideal slope is between 55 and 60

1.25 mil yellow membrane
Acceptable: 4.31 to 8.00 uA

DISSOLVED OXYGEN (% sat)	n/a		100	4.2
DISSOLVED OXYGEN (% sat)	n/a			

Comments or Notes

DO uA low and needs replacement
pH 10 values low and slope low

CALIBRATION SHEET

DATE/TIME 2021-06-23

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)	515	500	4.8	Acceptable cell const. 4.0-6.0	y
	1000 (µs/cm)	970	1000	5	Acceptable cell const. 4.0-6.0	y

	circle one			mV Value	Slope	
pH Point #1	4.00 [✓ 7.00] 10.00	7.29	7.01	-8	50.30	pH 7 mV value = 0 +/- 50
pH Point #2	[✓ 4.00] 7.00 10.00	3.84	4	172.3		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]	9.82	10.04	-125.8		Ideal slope is between 55 and 60

1.25 mil yellow membrane
Acceptable: 4.31 to 8.00 uA

DISSOLVED OXYGEN (% sat)	n/a		100	4.2
DISSOLVED OXYGEN (% sat)	n/a			

Comments or Notes

DO uA low and needs replacement

pH 10 values low and slope low

CALIBRATION SHEET

DATE/TIME 2020-07-22

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)	517	500	4.54	Acceptable cell const. 4.0-6.0	y
	1000 (µs/cm)	1007	1000	4.86	Acceptable cell const. 4.0-6.0	y

	circle one			mV Value	Slope
pH Point #1	4.00 [✓ 7.00] 10.00	6.66	7	-29.2	55.84
pH Point #2	[✓ 4.00] 7.00 10.00	3.3	4	176.3	
pH Point #3	4.00 7.00 [✓ 10.00]	9.67	10.01	-157.69	

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)			

Comments or Notes

pH 10 mV low but slope ok; stored probe in pH 4 for 3 days to fix pH probe

-155.89

CALIBRATION SHEET

DATE/TIME 2020-11-16

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)	562	500		Acceptable cell const. 4.0-6.0	
	1000 (µs/cm)	900	1000		Acceptable cell const. 4.0-6.0	

	circle one			mV Value	Slope	
pH Point #1	4.00 [✓ 7.00] 10.00	7.25	7	-14.29	100.14	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	4.14	4	177.72		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	10.01	-157.14		

Acceptable: 4.31 to 8.00 uA

DISSOLVED OXYGEN (% sat)			

Comments or Notes

Values were not stored on YSI-calculated from written logs; pH slope (((mV ph4- mVpH 7)/3)/59.16)*100= 85 to 105 then calibration is good

-155.34

CALIBRATION SHEET

DATE/TIME 2020-12-11

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		Acceptable cell const. 4.0-6.0	
	1000 (µs/cm)	935	1000		Acceptable cell const. 4.0-6.0	

	circle one			mV Value	Slope	
pH Point #1	4.00 [✓ 7.00] 10.00	7.05	7	-2.86	103.67	pH 7 mV value = 0 +/- 50
	circle one					pH 4 mV value = +165 to +180 from 7 buffer mV value
pH Point #2	[✓ 4.00] 7.00 10.00	3.83	4	184		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]	9.96	10.01	-166.28		

Acceptable: 4.31 to 8.00 uA

DISSOLVED OXYGEN (% sat)	99		

Comments or Notes

Values were not stored on YSI-calculated from written logs; pH slope (((mV ph4- mVpH 7)/3)/59.16)*100= 85 to 105 then calibration is good

-164.48

CALIBRATION SHEET

DATE/TIME 2020-12-31

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)	538	500		Acceptable cell const. 4.0-6.0	
	1000 (µs/cm)	960	1000		Acceptable cell const. 4.0-6.0	

	circle one			mV Value	Slope	
pH Point #1	4.00 [✓ 7.00] 10.00	7.1	7	-5.71	97.55	pH 7 mV value = 0 +/- 50
	circle one					pH 4 mV value = +165 to +180 from 7 buffer mV value
pH Point #2	[✓ 4.00] 7.00 10.00	4.07	4	173.14		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]	9.96	10.01	-170.86		

			Acceptable: 4.31 to 8.00 uA
DISSOLVED OXYGEN (% sat)			

Comments or Notes

Values were not stored on YSI-calculated from written logs; pH slope (((mV ph4- mVpH 7)/3)/59.16)*100= 85 to 105 then calibration is good

-169.06

CALIBRATION SHEET

DATE/TIME 2021-01-07

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)	505	500		Acceptable cell const. 4.0-6.0	
	1000 (µs/cm)	979	1000		Acceptable cell const. 4.0-6.0	

	circle one			mV Value	Slope	
pH Point #1	4.00 [✓ 7.00] 10.00	7.2	7	-11.43	103.67	pH 7 mV value = 0 +/- 50
	circle one					pH 4 mV value = +165 to +180 from 7 buffer mV value
pH Point #2	[✓ 4.00] 7.00 10.00	3.98	4	184		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]	10.21	10.01	-172		

Acceptable: 4.31 to 8.00 uA

DISSOLVED OXYGEN (% sat)

Comments or Notes

Values were not stored on YSI-calculated from written logs; pH slope (((mV ph4- mVpH 7)/3)/59.16)*100= 85 to 105 then calibration is good

-170.2

CALIBRATION SHEET

DATE/TIME 2021-01-21

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)	532	500		Acceptable cell const. 4.0-6.0	
	1000 (µs/cm)	932	1000		Acceptable cell const. 4.0-6.0	

	circle one			mV Value	Slope	
pH Point #1	4.00 [✓ 7.00] 10.00	7.06	7	-3.43	97.23	pH 7 mV value = 0 +/- 50
	circle one					pH 4 mV value = +165 to +180 from 7 buffer mV value
pH Point #2	[✓ 4.00] 7.00 10.00	4.04	4	172.57		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]	10.04	10.01	-170.28		

Acceptable: 4.31 to 8.00 uA

DISSOLVED OXYGEN (% sat)

Comments or Notes

Values were not stored on YSI-calculated from written logs; pH slope (((mV ph4- mVpH 7)/3)/59.16)*100= 85 to 105 then calibration is good

-168.48

CALIBRATION SHEET

DATE/TIME 2021-01-26

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)	512	500		Acceptable cell const. 4.0-6.0	
	1000 (μs/cm)	997	1000		Acceptable cell const. 4.0-6.0	

	circle one			mV Value	Slope
pH Point #1	4.00 [✓ 7.00] 10.00	7.1	7.03	-35.29	95.89
pH Point #2	[✓ 4.00] 7.00 10.00	3.9	4	170.18	
pH Point #3	4.00 7.00 [✓ 10.00]	10.12	10.09	-160.1	

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

Acceptable: 4.31 to 8.00 uA

DISSOLVED OXYGEN (% sat)

Comments or Notes

All values were not stored on YSI-calculated from written logs; pH slope (((mV ph4- mVpH 7)/3)/59.16)*100= 85 to 105 then calibration is good

-158.3

CALIBRATION SHEET

DATE/TIME 2021-02-11

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)	501	500	4.6		Acceptable cell const. 4.0-6.0	y
	1000 (μs/cm)	1007	1000	4.7		Acceptable cell const. 4.0-6.0	y
	circle one			mV Value	Slope		
pH Point #1	4.00 [✓ 7.00] 10.00	7.15	7.03	-37.7	55.00	pH 7 mV value = 0 +/- 50	
	circle one					pH 4 mV value = +165 to +180 from 7 buffer mV value	
pH Point #2	[✓ 4.00] 7.00 10.00	3.88	4	177.2		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]	9.84	10.09	-145.6			
				Acceptable: 4.31 to 8.00 uA			
DISSOLVED OXYGEN (% sat)							

Comments or Notes

pH 10 value low but slope ok

-143.8

CALIBRATION SHEET

DATE/TIME 2021-03-28

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)	499	500	4.8	Acceptable cell const. 4.0-6.0	y
	1000 (µs/cm)	972	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	7.3	7.03	-40.79	55.00	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	4.1	4	169.29		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]	10.2	10.09	-154.01		

Acceptable: 4.31 to 8.00 uA

DISSOLVED OXYGEN (% sat)	93	100	2.85

Comments or Notes

pH 10 value low but slope ok; DO sensor uA is low

-152.21

CALIBRATION SHEET

DATE/TIME 2021-04-01

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)	514	500	4.6	Acceptable cell const. 4.0-6.0	y
	1000 (μs/cm)	970	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	7.17	7.03	-9.71	106.57	pH 7 mV value = 0 +/- 50
	circle one					pH 4 mV value = +165 to +180 from 7 buffer mV value
pH Point #2	[✓ 4.00] 7.00 10.00	3.86	4	189.14		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]	9.99	10.09	-161.15		

Acceptable: 4.31 to 8.00 uA

DISSOLVED OXYGEN (% sat)			

Comments or Notes

pH 4 and 10 values low

Values were not stored on YSI-calculated from written logs; pH slope (((mV ph4- mVpH 7)/3)/59.16)*100= 85 to 105 then calibration is good

Slope high

-159.35

CALIBRATION SHEET

DATE/TIME 2021-04-22

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)	518	500	4.6	Acceptable cell const. 4.0-6.0	y
	1000 (µs/cm)	969	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	7.12	7.03	-39	54.40	pH 7 mV value = 0 +/- 50
						pH 4 mV value = +165 to +180 from 7 buffer mV value
	circle one					pH 10 mV value = -165 to -180 from 7 buffer mV value
pH Point #2	[✓ 4.00] 7.00 10.00	3.91	4	172.1		
						Ideal slope is between 55 and 60
pH Point #3	4.00 7.00 [✓ 10.00]	9.94	10.1	-150.1		

Acceptable: 4.31 to 8.00 uA

DISSOLVED OXYGEN (% sat)	100	100	3.1

Comments or Notes

pH 10 values low

slope low

DO uA is low

-148.3

CALIBRATION SHEET

DATE/TIME 2021-05-15

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)		500		Acceptable cell const. 4.0-6.0	
	1000 (µs/cm)		1000		Acceptable cell const. 4.0-6.0	

	circle one			mV Value	Slope	
pH Point #1	4.00 [✓ 7.00] 10.00	7.09	7.02	-34.09	54.10	pH 7 mV value = 0 +/- 50
	circle one					pH 4 mV value = +165 to +180 from 7 buffer mV value
pH Point #2	[✓ 4.00] 7.00 10.00	4.09	4	160.39		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]	10.12	10.06	-161.51		

Acceptable: 4.31 to 8.00 uA

DISSOLVED OXYGEN (% sat)			

Comments or Notes

pH 4 and 10 values are low; slope low

-159.71

CALIBRATION SHEET

DATE/TIME 2021-06-16
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)	526	500		Acceptable cell const. 4.0-6.0	4.5
	1000 (µs/cm)	951	1000		Acceptable cell const. 4.0-6.0	4.8

	circle one			mV Value	Slope	
pH Point #1	4.00 [✓ 7.00] 10.00	7.02	7.02	-34.2	51.20	pH 7 mV value = 0 +/- 50
	circle one					pH 4 mV value = +165 to +180 from 7 buffer mV value
pH Point #2	[✓ 4.00] 7.00 10.00	3.75	4	173.8		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]	9.45	10.06	-128.49		

Acceptable: 4.31 to 8.00 uA

DISSOLVED OXYGEN (% sat)	94	100	3.49

Comments or Notes

pH 10 values are low; slope low

uA for DO low recommend replacement

-126.69

CALIBRATION SHEET

DATE/TIME 2021-06-23

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)	526	500		Acceptable cell const. 4.0-6.0	4.5
	1000 (µs/cm)	1000	1000		Acceptable cell const. 4.0-6.0	4.8

	circle one			mV Value	Slope	
pH Point #1	4.00 [✓ 7.00] 10.00	7.52	7.02	-44.09	50.00	pH 7 mV value = 0 +/- 50
	circle one					pH 4 mV value = +165 to +180 from 7 buffer mV value
pH Point #2	[✓ 4.00] 7.00 10.00	3.75	4	174.59		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]	9.45	10.06	-122.41		

Acceptable: 4.31 to 8.00 uA

DISSOLVED OXYGEN (% sat)

Comments or Notes

pH 10 values are low; slope low

uA for DO low recommend replacement

-120.61

CALIBRATION SHEET

DATE/TIME 2021-06-29

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)		500		Acceptable cell const. 4.0-6.0	
	1000 (µs/cm)		1000		Acceptable cell const. 4.0-6.0	

	circle one			mV Value	Slope
pH Point #1	4.00 [✓ 7.00] 10.00	7.29	7.02	-39.9	50.00
pH Point #2	[✓ 4.00] 7.00 10.00	3.79	4	173.7	
pH Point #3	4.00 7.00 [✓ 10.00]	9.82	10.06	-124.2	

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

Acceptable: 4.31 to 8.00 uA

DISSOLVED OXYGEN (% sat)			3.49

Comments or Notes

pH 10 values are low; slope low

uA for DO low recommend replacement

-122.4

CALIBRATION SHEET

DATE/TIME 2021-07-19
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)	496	500		Acceptable cell const. 4.0-6.0	4.6
	1000 (µs/cm)	960	1000		Acceptable cell const. 4.0-6.0	4.7

	circle one			mV Value	Slope	
pH Point #1	4.00 [✓ 7.00] 10.00	7.4	7.02	-42.2	55.00	pH 7 mV value = 0 +/- 50
	circle one					pH 4 mV value = +165 to +180 from 7 buffer mV value
pH Point #2	[✓ 4.00] 7.00 10.00	4.15	4	162.39		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]	10.69	10.06	-163.1		

Acceptable: 4.31 to 8.00 uA

DISSOLVED OXYGEN (% sat)			3.49

Comments or Notes

pH 4 and 10 values are low; slope ok

uA for DO low recommend replacement

-161.3

CALIBRATION SHEET

DATE/TIME 2021-07-29

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)	518	500		Acceptable cell const. 4.0-6.0	4.6
	1000 (µs/cm)	985	1000		Acceptable cell const. 4.0-6.0	4.7

	circle one			mV Value	Slope	
pH Point #1	4.00 [✓ 7.00] 10.00	6.55	7.02	-16.6	56.00	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	3.49	4	164.9		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]	9.7	10.06	-169.6		

Acceptable: 4.31 to 8.00 uA

DISSOLVED OXYGEN (% sat)			3.49

Comments or Notes

-167.8

APPENDIX C

FY2021 Constituent Concentrations

Nitrate as N

Lachat Method EPA 353.2 Nitrite +Nitrate (results in red)

Site Name	Sample ID	September 3-4, 2020 Baseflow			March 29-30, 2021 Baseflow			July 22, 2020			November 18, 2020			December 13, 2020			January 4, 2021			May 15, 2021			June 3, 2021			June 24, 2021		
		conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)
Chalk Creek @ Chalk Bluff	CC@CB	1.40	0.504	3.81	1.10	0.534	3.17				nd	8.63					1.00	2.597	14.01									
Alum Creek @ Truckee River	AC@TR	nd	0.69								0.26	0.53	0.74				0.21	0.49	0.55									
North Truckee Drain @ Orr Ditch	NTD@ORD	0.86	2.73	12.66	1.00	0.83	4.48				1.90	2.71	27.77							1.30	2.51	17.60						
North Truckee Drain at Big Fish Drive	NTD@BFD (1)	1.00	4.45	24.00	0.92	0.85	4.22																1.10	7.85	46.57	0.58	8.10	25.34
North Truckee Drain at Big Fish Drive	NTD@BFD(2)	0.99	4.71	25.15			0.00																					
North Truckee Drain at Big Fish Drive	NTD@BFD(3)	0.90	4.38	21.26			0.00																					
North Truckee Drain at Big Fish Drive	NTD@BFD(4)	0.97	4.90	25.64			0.00																					
South Evans Creek @ Kietzke Lane	EC@KL	0.37	1.18	2.35	0.64	0.13	0.45													0.14	2.25	1.70						
Thomas Creek @ S. Meadows Pkwy	TC@SMP	0.033	0.80	0.14		2.13					0.26	2.70	3.78															
Whites Creek @ Old Virginia Hwy	WC@OVH	nd	1.64		nd	1.88					0.34	3.93	7.21															
Steamboat Creek @ Rhodes Road	SBC@RHR	0.41	0.13	0.29	0.074	6.95	2.77				0.31	16.40																
Steamboat Creek @ Narrows	SBC@NAR	nd	8.50		nd	17.00					0.25	50.20																
Yori drain @ Steamboat Creek	YD@SBC(1)	0.071	7.97	3.05	2.20	5.03	59.70																					
Yori drain @ Steamboat Creek	YD@SBC(2)	0.096	7.37	3.81																								
Yori drain @ Steamboat Creek	YD@SBC(3)	0.12	6.86	4.44																								
Yori drain @ Steamboat Creek	YD@SBC(4)	0.11	5.94	3.52																								
Boynton Slough @ Steamboat Creek	BS@SBC (1)	0.38	13.38	27.42	0.38	8.60	17.62																					
Boynton Slough @ Steamboat Creek	BS@SBC (2)	0.41	15.28	33.80	0.39	9.07	19.08																					
Boynton Slough @ Steamboat Creek	BS@SBC (3)	0.43	11.79	27.34	0.40	9.06	19.56																					
Boynton Slough @ Steamboat Creek	BS@SBC (4)	0.39	11.30	23.77	0.39	8.58	18.04																					
Steamboat Creek @ Clean Water Way	SBC@CWW(1)	0.11	27.20	16.14	0.35	35.60	67.20																					
Steamboat Creek @ Clean Water Way	SBC@CWW(2)	0.067	27.60	9.97	0.34	40.00	73.35																					
Steamboat Creek @ Clean Water Way	SBC@CWW(3)	0.14	28.60	21.60	0.32	39.40	68.00																					
Steamboat Creek @ Clean Water Way	SBC@CWW(4)	0.15	26.10	21.12	0.36	34.60	67.18																					
Arlington (south)	H-19 (1)							0.32	0.612	1.06	0.94	0.168	0.85				0.53	0.391	1.12									
Arlington (south)	H-19 (2)										0.79	0.161	0.69															
Arlington (south)	H-19 (3)										0.91	0.119	0.58				0.62	1.828	6.11									
Arlington (south)	H-19 (4)										0.84	0.551	2.50				0.68	1.184	4.34									
Fisherman's Park II	D-16 (1)													1.00	0.718	3.87	1.10	0.274	1.63									
Fisherman's Park II	D-16 (2)													0.58	5.572	17.43												
Fisherman's Park II	D-16 (3)													0.49	5.482	14.49	0.60	9.866	31.93									
Fisherman's Park II	D-16 (4)													0.54	2.937	8.55	0.60	5.461	17.67									
Oxbow Nature Park	C-24 (1)													0.37	0.81	1.62	0.35	1.56	2.94									
Oxbow Nature Park	C-24 (2)													0.28	0.347	0.52	0.21	1.31	1.48									
Oxbow Nature Park	C-24 (3)													0.21	4.204	4.76	0.21	0.342	0.39									
Oxbow Nature Park	C-24 (4)													0.18	2.65	2.57	0.18	6.74	6.54									
Mary Wahl Ditch	SDOE-008936 (1)										3.90	0.139	2.92															
Mary Wahl Ditch	SDOE-008936 (2)										0.70	1.467	5.54	0.87	0.066	0.31												
Mary Wahl Ditch	SDOE-008936 (3)										0.69	4.267	15.88	0.92	4.911	24.37												
Mary Wahl Ditch	SDOE-008936 (4)										0.82	2.41	10.66	0.53	3.391	9.69												

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Site Name	Sample ID	September 3-4, 2020 Baseflow			March 29-30, 2021 Baseflow			July 22, 2020			November 18, 2020			December 13, 2020			January 4, 2021			May 15, 2021			June 3, 2021			June 24, 2021		
		conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)
Chalk Creek @ Chalk Bluff	CC@CB	0.38	0.504	1.03	0.26	0.534	0.75				0.70	8.63	32.58				0.27	2.597	3.78									
Alum Creek @ Truckee River	AC@TR	0.075	0.69	0.28							0.87	0.53	2.46				0.11	0.49	0.29									
North Truckee Drain @ Orr Ditch	NTD@ORD	0.16	2.73	2.36	0.33	0.83	1.48				0.20	2.71	2.92							0.29	2.51	3.93						
North Truckee Drain at Big Fish Drive	NTD@BFD (1)	0.15	4.45	3.60	0.17	0.85	0.78																0.13	7.85	5.50	0.17	8.10	7.43
North Truckee Drain at Big Fish Drive	NTD@BFD(2)	0.12	4.71	3.05																								
North Truckee Drain at Big Fish Drive	NTD@BFD(3)	0.12	4.38	2.83																								
North Truckee Drain at Big Fish Drive	NTD@BFD(4)	0.12	4.90	3.17																								
South Evans Creek @ Kietzke Lane	EC@KL	0.076	1.18	0.48	0.078	0.13	0.05													0.095	2.25	1.15						
Thomas Creek @ S. Meadows Pkwy	TC@SMP	0.088	0.80	0.38	0.047	2.13	0.54				0.31	2.70	4.51															
Whites Creek @ Old Virginia Hwy	WC@OVH	0.034	1.64	0.30	nd	1.88					0.26	3.93	5.51															
Steamboat Creek @ Rhodes Road	SBC@RHR	0.22	0.13	0.15	0.078	6.95	2.92				0.26	16.40	23.00															
Steamboat Creek @ Narrows	SBC@NAR	0.34	8.50	15.59	0.23	17.00	21.09				0.41	50.20	111.01															
Yori drain @ Steamboat Creek	YD@SBC(1)	0.047	7.97	2.02	0.05	5.03	1.33																					
Yori drain @ Steamboat Creek	YD@SBC(2)	0.04	7.37	1.59																								
Yori drain @ Steamboat Creek	YD@SBC(3)	0.047	6.86	1.74																								
Yori drain @ Steamboat Creek	YD@SBC(4)	0.056	5.94	1.79																								
Boynton Slough @ Steamboat Creek	BS@SBC (1)	0.11	13.38	7.94	0.071	8.60	3.29																					
Boynton Slough @ Steamboat Creek	BS@SBC (2)	0.13	15.28	10.72	0.082	9.07	4.01																					
Boynton Slough @ Steamboat Creek	BS@SBC (3)	0.13	11.79	8.27	0.083	9.06	4.06																					
Boynton Slough @ Steamboat Creek	BS@SBC (4)	0.14	11.30	8.53	0.082	8.58	3.79																					
Steamboat Creek @ Clean Water Way	SBC@CWW(1)	0.21	27.20	30.81	0.16	35.60	30.72																					
Steamboat Creek @ Clean Water Way	SBC@CWW(2)	0.19	27.60	28.28	0.16	40.00	34.52																					
Steamboat Creek @ Clean Water Way	SBC@CWW(3)	0.21	28.60	32.39	0.18	39.40	38.25																					
Steamboat Creek @ Clean Water Way	SBC@CWW(4)	0.24	26.10	33.79	0.19	34.60	35.46																					
Arlington (south)	H-19 (1)							0.99	0.612	3.27	1.60	0.168	1.45				0.29	0.391	0.61									
Arlington (south)	H-19 (2)										1.40	0.161	1.22															
Arlington (south)	H-19 (3)										1.40	0.119	0.90				0.56	1.828	5.52									
Arlington (south)	H-19 (4)										1.40	0.551	4.16				0.73	1.184	4.66									
Fisherman's Park II	D-16 (1)													0.16	0.718	0.62	0.26	0.274	0.38									
Fisherman's Park II	D-16 (2)													0.28	5.572	8.41												
Fisherman's Park II	D-16 (3)													0.31	5.482	9.17	0.26	9.866	13.84									
Fisherman's Park II	D-16 (4)													0.29	2.937	4.59	0.24	5.461	7.07									
Oxbow Nature Park	C-24 (1)													0.37	0.81	1.62	0.19	1.56	1.60									
Oxbow Nature Park	C-24 (2)													0.30	0.347	0.56	0.17	1.31	1.20									
Oxbow Nature Park	C-24 (3)													0.22	4.204	4.99	0.17	0.342	0.31									
Oxbow Nature Park	C-24 (4)													0.20	2.65	2.86	0.16	6.74	5.82									
Mary Wahl Ditch	SDOE-008936 (1)										0.44	0.139	0.33															
Mary Wahl Ditch	SDOE-008936 (2)										0.47	1.467	3.72	0.25	0.066	0.09												
Mary Wahl Ditch	SDOE-008936 (3)										0.55	4.267	12.66	0.29	4.911	7.68												
Mary Wahl Ditch	SDOE-008936 (4)										0.48	2.41	6.24	0.35	3.391	6.40												

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Site Name	Sample ID																											
		September 3-4, 2020 Baseflow			March 29-30, 2021 Baseflow			July 22, 2020			November 18, 2020			December 13, 2020			January 4, 2021			May 15, 2021			June 3, 2021			June 24, 2021		
		conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)
Chalk Creek @ Chalk Bluff	CC@CB	0.71	0.504	1.93	0.49	0.534	1.41				1.90	8.63	88.44				1.70	2.597	23.81									
Alum Creek @ Truckee River	AC@TR	0.30	0.69	1.11							3.10	0.53	8.78				1.30	0.49	3.41									
North Truckee Drain @ Orr Ditch	NTD@ORD	0.90	2.73	13.25	1.60	0.83	7.16				1.90	2.71	27.77							5.00	2.51	67.69						
North Truckee Drain at Big Fish Drive	NTD@BFD (1)	1.70	4.45	40.80	1.30	0.85	5.96																6.20	7.85	262.51	4.30	8.10	187.86
North Truckee Drain at Big Fish Drive	NTD@BFD(2)	1.60	4.71	40.65																								
North Truckee Drain at Big Fish Drive	NTD@BFD(3)	1.30	4.38	30.71																								
North Truckee Drain at Big Fish Drive	NTD@BFD(4)	1.50	4.90	39.64																								
South Evans Creek @ Kietzke Lane	EC@KL	0.37	1.18	2.35	0.26	0.13	0.18													2.30	2.25	27.91						
Thomas Creek @ S. Meadows Pkwy	TC@SMP	0.46	0.80	1.99	0.20	2.13	2.30				0.91	2.70	13.24															
Whites Creek @ Old Virginia Hwy	WC@OVH	nd	1.64		nd	1.88					2.60	3.93	55.11															
Steamboat Creek @ Rhodes Road	SBC@RHR	0.39	0.13	0.27	0.30	6.95	11.25				1.80	16.40	159.22															
Steamboat Creek @ Narrows	SBC@NAR	0.42	8.50	19.26	0.59	17.00	54.10				2.30	50.20	622.75															
Yori drain @ Steamboat Creek	YD@SBC(1)	1.20	7.97	51.58	1.00	5.03	27.14																					
Yori drain @ Steamboat Creek	YD@SBC(2)	0.95	7.37	37.74																								
Yori drain @ Steamboat Creek	YD@SBC(3)	1.10	6.86	40.72																								
Yori drain @ Steamboat Creek	YD@SBC(4)	1.20	5.94	38.45																								
Boynton Slough @ Steamboat Creek	BS@SBC (1)	1.00	13.38	72.15	1.20	8.60	55.64																					
Boynton Slough @ Steamboat Creek	BS@SBC (2)	0.69	15.28	56.88	0.57	9.07	27.89																					
Boynton Slough @ Steamboat Creek	BS@SBC (3)	0.67	11.79	42.60	0.47	9.06	22.98																					
Boynton Slough @ Steamboat Creek	BS@SBC (4)	0.80	11.30	48.75	0.43	8.58	19.89																					
Steamboat Creek @ Clean Water Way	SBC@CWW(1)	1.40	27.20	205.39	0.78	35.60	149.77																					
Steamboat Creek @ Clean Water Way	SBC@CWW(2)	0.90	27.60	133.98	0.78	40.00	168.28																					
Steamboat Creek @ Clean Water Way	SBC@CWW(3)	0.64	28.60	98.72	0.68	39.40	144.51																					
Steamboat Creek @ Clean Water Way	SBC@CWW(4)	0.75	26.10	105.58	0.66	34.60	123.17																					
Arlington (south)	H-19 (1)							25	0.612	82.52	9.70	0.168	8.79				8.40	0.391	17.71									
Arlington (south)	H-19 (2)										5.30	0.161	4.60															
Arlington (south)	H-19 (3)										6.10	0.119	3.92				3.70	1.828	36.48									
Arlington (south)	H-19 (4)										5.40	0.551	16.05				3.10	1.184	19.80									
Fisherman's Park II	D-16 (1)													8.00	0.718	30.98	8.10	0.274	11.97									
Fisherman's Park II	D-16 (2)													3.30	5.572	99.18												
Fisherman's Park II	D-16 (3)													3.10	5.482	91.66	5.30	9.866	282.03									
Fisherman's Park II	D-16 (4)													2.20	2.937	34.85	4.20	5.461	123.71									
Oxbow Nature Park	C-24 (1)													3.10	0.81	13.54	2.90	1.56	24.40									
Oxbow Nature Park	C-24 (2)													2.80	0.347	5.24	1.80	1.31	12.72									
Oxbow Nature Park	C-24 (3)													2.10	4.204	47.62	2.30	0.342	4.24									
Oxbow Nature Park	C-24 (4)													1.30	2.65	18.58	1.50	6.74	54.53									
Mary Wahl Ditch	SDOE-008936 (1)										6.90	0.139	5.17															
Mary Wahl Ditch	SDOE-008936 (2)										6.00	1.467	47.47	3.80	0.066	1.35												
Mary Wahl Ditch	SDOE-008936 (3)										4.60	4.267	105.87	4.50	4.911	119.20												
Mary Wahl Ditch	SDOE-008936 (4)										6.00	2.41	77.99	3.10	3.391	56.70												

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Site Name	Sample ID																											
		September 3-4, 2020 Baseflow			March 29-30, 2021 Baseflow			July 22, 2020			November 18, 2020			December 13, 2020			January 4, 2021			May 15, 2021			June 3, 2021			June 24, 2021		
		conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)
Chalk Creek @ Chalk Bluff	CC@CB	2.10	0.504	5.71	1.60	0.534	4.61				2.00	8.63	93.09				2.80	2.597	39.22									
Alum Creek @ Truckee River	AC@TR	0.32	0.69	1.19							3.40	0.53	9.63				1.50	0.49	3.93									
North Truckee Drain @ Orr Ditch	NTD@ORD	1.80	2.73	26.50	2.60	0.83	11.64				3.80	2.71	55.54							6.30	2.51	85.29						
North Truckee Drain at Big Fish Drive	NTD@BFD (1)	2.70	4.45	64.80	2.20	0.85	10.09																7.20	7.85	304.85	4.90	8.10	214.07
North Truckee Drain at Big Fish Drive	NTD@BFD(2)	2.60	4.71	66.05																								
North Truckee Drain at Big Fish Drive	NTD@BFD(3)	2.20	4.38	51.97																								
North Truckee Drain at Big Fish Drive	NTD@BFD(4)	2.50	4.90	66.07																								
South Evans Creek @ Kietzke Lane	EC@KL	0.74	1.18	4.71	0.90	0.13	0.63													2.40	2.25	29.13						
Thomas Creek @ S. Meadows Pkwy	TC@SMP	0.49	0.80	2.12		2.13					1.00	2.70	14.55															
Whites Creek @ Old Virginia Hwy	WC@OVH	nd	1.64		nd	1.88					3.00	3.93	63.59															
Steamboat Creek @ Rhodes Road	SBC@RHR	0.79	0.13	0.55	0.37	6.95	13.87				2.10	16.40	185.76															
Steamboat Creek @ Narrows	SBC@NAR	0.43	8.50	19.71	0.60	17.00	55.01				2.60	50.20	703.97															
Yori drain @ Steamboat Creek	YD@SBC(1)	1.30	7.97	55.88	3.20	5.03	86.83																					
Yori drain @ Steamboat Creek	YD@SBC(2)	1.10	7.37	43.70																								
Yori drain @ Steamboat Creek	YD@SBC(3)	1.20	6.86	44.42																								
Yori drain @ Steamboat Creek	YD@SBC(4)	1.30	5.94	41.66																								
Boynton Slough @ Steamboat Creek	BS@SBC (1)	1.40	13.38	101.01	1.60	8.60	74.18																					
Boynton Slough @ Steamboat Creek	BS@SBC (2)	1.10	15.28	90.68	0.96	9.07	46.97																					
Boynton Slough @ Steamboat Creek	BS@SBC (3)	1.10	11.79	69.94	0.87	9.06	42.54																					
Boynton Slough @ Steamboat Creek	BS@SBC (4)	1.20	11.30	73.12	0.82	8.58	37.93																					
Steamboat Creek @ Clean Water Way	SBC@CWW(1)	1.50	27.20	220.06	1.10	35.60	211.21																					
Steamboat Creek @ Clean Water Way	SBC@CWW(2)	0.97	27.60	144.40	1.10	40.00	237.32																					
Steamboat Creek @ Clean Water Way	SBC@CWW(3)	0.78	28.60	120.32	1.00	39.40	212.51																					
Steamboat Creek @ Clean Water Way	SBC@CWW(4)	0.90	26.10	126.70	1.00	34.60	186.62																					
Arlington (south)	H-19 (1)							25	0.612	82.52	11.00	0.17	9.97				9.00	0.391	18.98									
Arlington (south)	H-19 (2)										6.10	0.161	5.30															
Arlington (south)	H-19 (3)										7.00	0.119	4.49				4.40	1.828	43.38									
Arlington (south)	H-19 (4)										6.20	0.551	18.43				3.80	1.184	24.27									
Fisherman's Park II	D-16 (1)													9.30	0.718	36.02	9.50	0.274	14.04									
Fisherman's Park II	D-16 (2)													4.00	5.572	120.21												
Fisherman's Park II	D-16 (3)													3.70	5.482	109.40	6.00	9.866	319.28									
Fisherman's Park II	D-16 (4)													2.80	2.937	44.35	4.90	5.461	144.33									
Oxbow Nature Park	C-24 (1)													3.50	0.81	15.29	3.30	1.56	27.77									
Oxbow Nature Park	C-24 (2)													3.10	0.347	5.80	2.00	1.31	14.13									
Oxbow Nature Park	C-24 (3)													2.30	4.204	52.15	2.50	0.342	4.61									
Oxbow Nature Park	C-24 (4)													1.50	2.65	21.44	1.70	6.74	61.80									
Mary Wahl Ditch	SDOE-008936 (1)										11.00	0.139	8.25															
Mary Wahl Ditch	SDOE-008936 (2)										6.70	1.467	53.01	4.70	0.066	1.67												
Mary Wahl Ditch	SDOE-008936 (3)										5.30	4.267	121.98	5.50	4.911	145.68												
Mary Wahl Ditch	SDOE-008936 (4)										6.80	2.41	88.39	3.70	3.391	67.67												

Total P																												
Site Name	Sample ID																											
		September 3-4, 2020 Baseflow			March 29-30, 2021 Baseflow			July 22, 2020			November 18, 2020			December 13, 2020			January 4, 2021			May 15, 2021			June 3, 2021			June 24, 2021		
		conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)
Chalk Creek @ Chalk Bluff	CC@CB	0.37	0.504	1.006	0.28	0.534	0.81				0.42	8.63	19.55				0.15	2.597	2.10									
Alum Creek @ Truckee River	AC@TR	0.094	0.69	0.349							1.00	0.53	2.83				0.13	0.49	0.34									
North Truckee Drain @ Orr Ditch	NTD@ORD	0.19	2.73	2.798	0.42	0.83	1.88				0.29	2.71	4.24							0.48	2.51	6.50						
North Truckee Drain at Big Fish Drive	NTD@BFD(1)	0.28	4.45	6.720	0.23	0.85	1.05																0.57	7.85	24.13	0.21	8.10	9.17
North Truckee Drain at Big Fish Drive	NTD@BFD(2)	0.12	4.71	3.048																								
North Truckee Drain at Big Fish Drive	NTD@BFD(3)	0.13	4.38	3.071																								
North Truckee Drain at Big Fish Drive	NTD@BFD(4)	0.21	4.90	5.550																								
South Evans Creek @ Kietzke Lane	EC@KL	0.094	1.18	0.598	0.08	0.13	0.06													0.17	2.25	2.06						
Thomas Creek @ S. Meadows Pkwy	TC@SMP	0.11	0.80	0.475	0.08	2.13	0.94				0.42	2.70	6.11															
Whites Creek @ Old Virginia Hwy	WC@OVH	0.052	1.64	0.460	nd	1.88					0.14	3.93	2.97															
Steamboat Creek @ Rhodes Road	SBC@RHR	0.28	0.13	0.196	0.093	6.95	3.49				0.25	16.40	22.11															
Steamboat Creek @ Narrows	SBC@NAR	0.35	8.50	16.046	0.27	17.00	24.76				0.25	50.20	67.69															
Yori drain @ Steamboat Creek	YD@SBC(1)	0.14	7.97	6.017	0.13	5.03	3.53																					
Yori drain @ Steamboat Creek	YD@SBC(2)	0.12	7.37	4.767																								
Yori drain @ Steamboat Creek	YD@SBC(3)	0.078	6.86	2.887																								
Yori drain @ Steamboat Creek	YD@SBC(4)	0.13	5.94	4.166																								
Boynton Slough @ Steamboat Creek	BS@SBC (1)	0.2	13.38	14.430	0.11	8.60	5.10																					
Boynton Slough @ Steamboat Creek	BS@SBC (2)	0.18	15.28	14.839	0.16	9.07	7.83																					
Boynton Slough @ Steamboat Creek	BS@SBC (3)	0.17	11.79	10.809	0.11	9.06	5.38																					
Boynton Slough @ Steamboat Creek	BS@SBC (4)	0.2	11.30	12.187	0.14	8.58	6.48																					
Steamboat Creek @ Clean Water Way	SBC@CWW(1)	0.2	27.20	29.341	0.23	35.60	44.16																					
Steamboat Creek @ Clean Water Way	SBC@CWW(2)	0.28	27.60	41.682	0.18	40.00	38.83																					
Steamboat Creek @ Clean Water Way	SBC@CWW(3)	0.26	28.60	40.107	0.18	39.40	38.25																					
Steamboat Creek @ Clean Water Way	SBC@CWW(4)	0.31	26.10	43.640	0.19	34.60	35.46																					
Arlington (south)	H-19 (1)							1.90	0.612	6.27	0.68	0.168	0.62				0.38	0.391	0.80									
Arlington (south)	H-19 (2)										1.80	0.161	1.56															
Arlington (south)	H-19 (3)										2.00	0.119	1.28				0.56	1.828	5.52									
Arlington (south)	H-19 (4)										1.30	0.551	3.86				0.81	1.184	5.17									
Fisherman's Park II	D-16 (1)													0.47	0.718	1.82	0.56	0.274	0.83									
Fisherman's Park II	D-16 (2)													0.25	5.572	7.51												
Fisherman's Park II	D-16 (3)													0.44	5.482	13.01	0.35	9.866	18.62									
Fisherman's Park II	D-16 (4)													0.32	2.937	5.07	0.48	5.461	14.14									
Oxbow Nature Park	C-24 (1)													0.6	0.81	2.62	0.36	1.56	3.03									
Oxbow Nature Park	C-24 (2)													0.32	0.347	0.60	0.22	1.31	1.55									
Oxbow Nature Park	C-24 (3)													0.15	4.204	3.40	0.45	0.342	0.83									
Oxbow Nature Park	C-24 (4)													0.22	2.65	3.14	0.28	6.74	10.18									
Mary Wahl Ditch	SDOE-008936 (1)										0.51	0.139	0.38															
Mary Wahl Ditch	SDOE-008936 (2)										0.45	1.467	3.56	0.24	0.066	0.09												
Mary Wahl Ditch	SDOE-008936 (3)										0.35	4.267	8.06	0.58	4.911	15.36												
Mary Wahl Ditch	SDOE-008936 (4)										0.31	2.41	4.03	0.31	3.391	5.67												

Total Dissolved Solids																												
Site Name	Sample ID	September 3-4, 2020 Baseflow			March 29-30, 2021 Baseflow			July 22, 2020			November 18, 2020			December 13, 2020			January 4, 2021			May 15, 2021			June 3, 2021			June 24, 2021		
		conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)
Chalk Creek @ Chalk Bluff	CC@CB	1800	0.504	4893.09	2100	0.534	6048.40				1400	8.63	65165.63				1700	2.597	23812.26									
Alum Creek @ Truckee River	AC@TR	190	0.69	706.08							400	0.53	1132.66				340	0.49	891.24									
North Truckee Drain @ Orr Ditch	NTD@ORD	440	2.73	6478.81	1100	0.83	4924.37				1100	2.71	16078.36							780	2.51	10559.62						
North Truckee Drain at Big Fish Drive	NTD@BFD(1)	520	4.45	12480.82	1100	0.85	5043.03																300	7.85	12701.96	210	8.10	9174.54
North Truckee Drain at Big Fish Drive	NTD@BFD(2)	420	4.71	10669.65																								
North Truckee Drain at Big Fish Drive	NTD@BFD(3)	390	4.38	9213.37																								
North Truckee Drain at Big Fish Drive	NTD@BFD(4)	520	4.90	13742.93																								
South Evans Creek @ Kietzke Lane	EC@KL	42	1.18	267.31	320	0.13	224.37													110	2.25	1334.92						
Thomas Creek @ S. Meadows Pkwy	TC@SMP	nd	0.80		88	2.13	1010.98				100	2.70	1454.66															
Whites Creek @ Old Virginia Hwy	WC@OVH	57	1.64	504.19	88	1.88	892.32				100	3.93	2119.69															
Steamboat Creek @ Rhodes Road	SBC@RHR	270	0.13	189.32	160	6.95	5997.70				220	16.40	19460.16															
Steamboat Creek @ Narrows	SBC@NAR	690	8.50	31633.54	520	17.00	47679.54				750	50.20	203069.53															
Yori drain @ Steamboat Creek	YD@SBC(1)	280	7.97	12034.88	330	5.03	8954.64																					
Yori drain @ Steamboat Creek	YD@SBC(2)	250	7.37	9930.99																								
Yori drain @ Steamboat Creek	YD@SBC(3)	260	6.86	9624.26																								
Yori drain @ Steamboat Creek	YD@SBC(4)	260	5.94	8331.30																								
Boynton Slough @ Steamboat Creek	BS@SBC (1)	200	13.38	14429.99	210	8.60	9736.16																					
Boynton Slough @ Steamboat Creek	BS@SBC (2)	230	15.28	18961.03	180	9.07	8807.37																					
Boynton Slough @ Steamboat Creek	BS@SBC (3)	200	11.79	12716.84	220	9.06	10756.33																					
Boynton Slough @ Steamboat Creek	BS@SBC (4)	210	11.30	12796.55	200	8.58	9251.01																					
Steamboat Creek @ Clean Water Way	SBC@CWW(1)	400	27.20	58682.51	430	35.60	82565.43																					
Steamboat Creek @ Clean Water Way	SBC@CWW(2)	410	27.60	61034.12	320	40.00	69038.25																					
Steamboat Creek @ Clean Water Way	SBC@CWW(3)	440	28.60	67873.23	320	39.40	68002.67																					
Steamboat Creek @ Clean Water Way	SBC@CWW(4)	450	26.10	63347.98	400	34.60	74647.60																					
Arlington (south)	H-19 (1)							760	0.612	2508.68	410	0.168	371.51				220	0.391	463.96									
Arlington (south)	H-19 (2)										260	0.161	225.78															
Arlington (south)	H-19 (3)										200	0.119	128.37				150	1.828	1478.93									
Arlington (south)	H-19 (4)										220	0.551	653.81				150	1.184	957.91									
Fisherman's Park II	D-16 (1)													450	0.718	1742.68	830	0.274	1226.62									
Fisherman's Park II	D-16 (2)													190	5.572	5710.11												
Fisherman's Park II	D-16 (3)													140	5.482	4139.49	440	9.866	23413.89									
Fisherman's Park II	D-16 (4)													200	2.937	3168.21	390	5.461	11487.26									
Oxbow Nature Park	C-24 (1)													170	0.81	742.70	360	1.56	3029.05									
Oxbow Nature Park	C-24 (2)													110	0.347	205.87	190	1.31	1342.47									
Oxbow Nature Park	C-24 (3)													87	4.204	1972.70	200	0.342	368.92									
Oxbow Nature Park	C-24 (4)													96	2.65	1372.14	110	6.74	3998.82									
Mary Wahl Ditch	SDOE-008936 (1)										420	0.139	314.88															
Mary Wahl Ditch	SDOE-008936 (2)										230	1.467	1819.86	240	0.066	85.43												
Mary Wahl Ditch	SDOE-008936 (3)										180	4.267	4142.62	180	4.911	4767.85												
Mary Wahl Ditch	SDOE-008936 (4)										160	2.41	2079.78	130	3.391	2377.67												

TSS																												
Site Name	Sample ID	September 3-4, 2020 Baseflow			March 29-30, 2021 Baseflow			July 22, 2020			November 18, 2020			December 13, 2020			January 4, 2021			May 15, 2021			June 3, 2021			June 24, 2021		
		conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)	conc. (mg/L)	Flow (cfs)	Inst. Load (lbs/day)
Chalk Creek @ Chalk Bluff	CC@CB	22	0.504	59.80	nd	0.534					46	8.63	2141.16				88	2.597	1232.63									
Alum Creek @ Truckee River	AC@TR	31	0.69	115.20							20	0.53	56.63				58	0.49	152.04									
North Truckee Drain @ Orr Ditch	NTD@ORD	23	2.73	338.66	10	0.83	44.77				nd	2.71								100	2.51	1353.80						
North Truckee Drain at Big Fish Drive	NTD@BFD(1)	110	4.45	2640.17	nd	0.85																	470	7.85	######	170	8.10	7427.01
North Truckee Drain at Big Fish Drive	NTD@BFD(2)	120	4.71	3048.47																								
North Truckee Drain at Big Fish Drive	NTD@BFD(3)	97	4.38	2291.53																								
North Truckee Drain at Big Fish Drive	NTD@BFD(4)	79	4.90	2087.87																								
South Evans Creek @ Kietzke Lane	EC@KL	24	1.18	152.75	nd	0.13														12	2.25	145.63						
Thomas Creek @ S. Meadows Pkwy	TC@SMP	23	0.80	99.37	nd	2.13					15	2.70	218.20															
Whites Creek @ Old Virginia Hwy	WC@OVH	13	1.64	114.99	nd	1.88					190	3.93	4027.41															
Steamboat Creek @ Rhodes Road	SBC@RHR	14	0.13	9.82	11	6.95	412.34				58	16.40	5130.40															
Steamboat Creek @ Narrows	SBC@NAR	12	8.50	550.15	56	17.00	5134.72				220	50.20	59567.06															
Yori drain @ Steamboat Creek	YD@SBC(1)	39	7.97	1676.29	39	5.03	1058.28																					
Yori drain @ Steamboat Creek	YD@SBC(2)	29	7.37	1151.99																								
Yori drain @ Steamboat Creek	YD@SBC(3)	36	6.86	1332.59																								
Yori drain @ Steamboat Creek	YD@SBC(4)	39	5.94	1249.69																								
Boynton Slough @ Steamboat Creek	BS@SBC (1)	51	13.38	3679.65	110	8.60	5099.89																					
Boynton Slough @ Steamboat Creek	BS@SBC (2)	32	15.28	2638.06	41	9.07	2006.12																					
Boynton Slough @ Steamboat Creek	BS@SBC (3)	32	11.79	2034.70	22	9.06	1075.63																					
Boynton Slough @ Steamboat Creek	BS@SBC (4)	40	11.30	2437.44	17	8.58	786.34																					
Steamboat Creek @ Clean Water Way	SBC@CWW(1)	88	27.20	12910.15	44	35.60	8448.56																					
Steamboat Creek @ Clean Water Way	SBC@CWW(2)	44	27.60	6550.00	54	40.00	11650.20																					
Steamboat Creek @ Clean Water Way	SBC@CWW(3)	34	28.60	5244.75	57	39.40	12112.98																					
Steamboat Creek @ Clean Water Way	SBC@CWW(4)	34	26.10	4786.29	53	34.60	9890.81																					
Arlington (south)	H-19 (1)							1000	0.612	3300.89	200	0.168	181.23				240	0.391	506.14									
Arlington (south)	H-19 (2)										150	0.161	130.26															
Arlington (south)	H-19 (3)										150	0.119	96.28				200	1.83	1971.90									
Arlington (south)	H-19 (4)										96	0.551	285.30				97	1.18	619.45									
Fisherman's Park II	D-16 (1)													200	0.718	774.52	820	0.274	######									
Fisherman's Park II	D-16 (2)													140	5.572	4207.45												
Fisherman's Park II	D-16 (3)													93	5.482	2749.80	370	9.866	######									
Fisherman's Park II	D-16 (4)													37	2.937	586.12	420	5.461	######									
Oxbow Nature Park	C-24 (1)													140	0.81	611.64	170	1.56	1430.39									
Oxbow Nature Park	C-24 (2)													120	0.347	224.59	73	1.31	515.79									
Oxbow Nature Park	C-24 (3)													140	4.204	3174.46	190	0.342	350.48									
Oxbow Nature Park	C-24 (4)													42	2.65	600.31	100	6.74	3635.30									
Mary Wahl Ditch	SDOE-008936 (1)										120	0.139	89.97															
Mary Wahl Ditch	SDOE-008936 (2)										340	1.467	2690.23	140	0.066	49.84												
Mary Wahl Ditch	SDOE-008936 (3)										330	4.267	7594.80	290	4.911	7681.53												
Mary Wahl Ditch	SDOE-008936 (4)										240	2.41	3119.67	100	3.391	1828.97												

E. coli																												
Site Name	Sample ID	Results (MPN/100 mL)																										
		September 3-4, 2020 Baseflow			March 29-30, 2021 Baseflow			July 22, 2020			November 18, 2020			December 13, 2020			January 4, 2021			May 15, 2021			June 3, 2021			June 24, 2021		
		conc. (MPN/100 mL)	Flow (cfs)	Inst. Load (lbs/day)	conc. (MPN/100 mL)	Flow (cfs)	Inst. Load (lbs/day)	conc. (MPN/100 mL)	Flow (cfs)	Inst. Load (lbs/day)	conc. (MPN/100 mL)	Flow (cfs)	Inst. Load (lbs/day)	conc. (MPN/100 mL)	Flow (cfs)	Inst. Load (lbs/day)	conc. (MPN/100 mL)	Flow (cfs)	Inst. Load (lbs/day)	conc. (MPN/100 mL)	Flow (cfs)	Inst. Load (lbs/day)	conc. (MPN/100 mL)	Flow (cfs)	Inst. Load (lbs/day)	conc. (MPN/100 mL)	Flow (cfs)	Inst. Load (lbs/day)
Chalk Creek @ Chalk Bluff	CC@CB																											
Alum Creek @ Truckee River	AC@TR	49.6									3080.40																	
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)																											
South Evans Creek @ Kietzke Lane	EC@KL	178.9			18.50																							
Thomas Creek @ S. Meadows Pkwy	TC@SMP																											
Whites Creek @ Old Virginia Hwy	WC@OVH	90.5			30.50						>9678																	
Steamboat Creek @ Rhodes Road	SBC@RHR	165.8			52.80						3106.2																	
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)										>9678																	
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)										>12098																	
Mary Wahl Ditch	SDOE-008936 (2)																											
Mary Wahl Ditch	SDOE-008936 (3)																											
Mary Wahl Ditch	SDOE-008936 (4)																											

APPENDIX D

FY2021 Laboratory Reports

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

8/6/2020

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Ben Trustman

OrderID: *20070784*

Dear: Ben Trustman

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 7/23/2020. 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,

Cory Baker

Cory Baker
QA Specialist

Western Environmental Testing Laboratory
Report Comments

Balance Hydrologics - 20070784

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. The reported result should be considered an estimate.
K	--	The TPH Diesel Concentration reported here likely includes some heavier TPH Oil hydrocarbons reported in the TPH Diesel range as per EPA 8015.
L	--	The TPH Oil Concentration reported here likely includes some lighter TPH Diesel hydrocarbons reported in the TPH Oil range as per EPA 8015.
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. The reported result should be considered an estimate.

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.

Western Environmental Testing Laboratory
Analytical Report

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

Date Printed: 8/6/2020
OrderID: *20070784*

Customer Sample ID: H-19 (1)
WETLAB Sample ID: 20070784-001

Collect Date/Time: 7/22/2020 17:15
Receive Date: 7/23/2020 10:52

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.99	mg/L	5	0.10	7/23/2020	NV00925
Total Phosphorous as P	SM 4500-P E	1.9	mg/L	4	0.080	7/24/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	1000	mg/L	1	10	7/23/2020	NV00925
Total Nitrogen	Calc.	25	mg/L	1	2.0	8/4/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	760	mg/L	1	25	7/23/2020	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.32	mg/L	1	0.030	7/24/2020	NV00925
Nitrite Nitrogen	EPA 300.0	0.27	mg/L	1	0.020	7/24/2020	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	25	mg/L	5	2.0	8/4/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Western Environmental Testing Laboratory
QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC20070882	Blank 1	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC20070940	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC20071006	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC20071019	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC20071038	Blank 1	Nitrate Nitrogen	EPA 300.0	ND			mg/L
		Nitrite Nitrogen	EPA 300.0	ND			mg/L
QC20080128	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC20070882	LCS 1	Orthophosphate, as P	SM 4500-P E	0.243	0.250	97	mg/L
QC20070940	LCS 1	Total Phosphorous as P	SM 4500-P E	0.242	0.250	97	mg/L
QC20071006	LCS 1	Total Suspended Solids (TSS)	SM 2540D	198	200	99	mg/L
QC20071006	LCS 2	Total Suspended Solids (TSS)	SM 2540D	197	200	99	mg/L
QC20071019	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	142	150	95	mg/L
QC20071019	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	142	150	95	mg/L
QC20071038	LCS 1	Nitrate Nitrogen	EPA 300.0	0.489	0.500	98	mg/L
		Nitrite Nitrogen	EPA 300.0	0.486	0.500	97	mg/L
QC20080128	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	0.916	1.00	92	mg/L

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC20071006	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	20070668-002	ND	ND	mg/L	<1%
QC20071006	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	20070737-002	ND	ND	mg/L	<1%
QC20071019	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	20070770-003	1366	1338	mg/L	2 %
QC20071019	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	20070770-007	780	790	mg/L	1 %

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result	MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC20070882	MS 1	Orthophosphate, as P	SM 4500-P E	20070740-005	ND	0.254	0.253	0.25	mg/L	99	99	<1
QC20070940	MS 1	Total Phosphorous as P	SM 4500-P E	20070668-002	0.351	0.592	0.600	0.25	mg/L	96	99	1
QC20070940	MS 2	Total Phosphorous as P	SM 4500-P E	20070789-001	0.036	0.291	0.294	0.25	mg/L	102	103	1
QC20071038	MS 1	Nitrate Nitrogen	EPA 300.0	20070789-001	ND	0.514	0.517	0.5	mg/L	103	103	<1
		Nitrite Nitrogen	EPA 300.0	20070789-001	ND	0.122	0.125	0.125	mg/L	97	100	2
QC20080128	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	20070789-001	0.500	0.970	0.914	0.5	mg/L	94	83	6

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

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

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1084 Lamoille Highway | Elko, Nevada 89801
tel (775) 777-9933 | fax (775) 777-9933
3230 Polaris Ave., Suite 4 | Las Vegas, Nevada 89102
tel (702) 475-8899 | fax (702) 776-6152

WETLAB Order ID. 2007 0784
Sparks Control # ____
Elko Control # ____
LV Control # ____
Report Due Date
Page ____ of ____

Client Balance Hydrologics
Address On File
City, State & Zip
Contact
Phone
Collector's Name
Fax
PWS/Project Name
P.O. Number
PWS/Project Number
Email btrustman@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 Results Via
PDF ☐ EDD ☐
Other ____

Report to Regulatory Agency?
Yes ☐ No ☐

Standard QC Required?
Yes ☐ No ☐

Billing Address (if different than Client Address)
Company ____
Address ____
City, State & Zip ____
Contact ____
Phone ____ Fax ____
Email btrustman@balancehydro.com

Analyses Requested

SAMPLE ID/LOCATION	DATE	TIME	PRES TYPE *	SAMPLE TYPE **	NO. OF CONTAINERS	Total Nitrogen	Nitrate	Total Phosphorus	Ortho Phosphorus	Total Suspended Solids	Total Dissolved Solids					Spl. No.
H-19 (1)	7/22/20	17:15				✓	✓	✓	✓	✓	✓					
~~H-19 (1)~~	~~7/22/20~~	~~17:15~~														
~~H-19 (1)~~	~~7/22/20~~	~~17:15~~														
~~H-19 (1)~~	~~7/22/20~~	~~17:15~~														
~~H-19 (1)~~	~~7/22/20~~	~~17:15~~														
~~H-19 (1)~~	~~7/22/20~~	~~17:15~~														
~~H-19 (1)~~	~~7/22/20~~	~~17:15~~														
~~H-19 (1)~~	~~7/22/20~~	~~17:15~~														
~~H-19 (1)~~	~~7/22/20~~	~~17:15~~														

2007 2
0784 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
11.8°C	Y N [✓ None]	2	7/23/20	10:52	Sparks Lockbox	
°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

9/21/2020

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Ben Trustman

OrderID: *20090170*

Dear: Ben Trustman

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 9/3/2020. 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

Jennifer Delaney
QA Manager

Western Environmental Testing Laboratory
Report Comments

Balance Hydrologics - 20090170

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. The reported result should be considered an estimate.

K -- The TPH Diesel Concentration reported here likely includes some heavier TPH Oil hydrocarbons reported in the TPH Diesel range as per EPA 8015.

L -- The TPH Oil Concentration reported here likely includes some lighter TPH Diesel hydrocarbons reported in the TPH Oil range as per EPA 8015.

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. The reported result should be considered an estimate.

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.

Western Environmental Testing Laboratory
Analytical Report

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Ben Trustman
Phone: (510-704-1000 **Fax:** NoFax
PO\Project: *213136*

Date Printed: 9/21/2020
OrderID: *20090170*

Customer Sample ID: NTD @ ORD
WETLAB Sample ID: 20090170-001
Collect Date/Time: 9/3/2020 10:40
Receive Date: 9/3/2020 13:06

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.16	mg/L	1	0.020	9/4/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.19	mg/L	1	0.020	9/8/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	23	mg/L	1	10	9/8/2020	NV00925
Total Nitrogen	Calc.	1.8	mg/L	1	0.22	9/10/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	440	mg/L	1	25	9/3/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.86	mg/L	1	0.020	9/10/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	0.90	mg/L	0.5	0.20	9/9/2020	NV00925

Customer Sample ID: SBC @ RHR
WETLAB Sample ID: 20090170-002
Collect Date/Time: 9/3/2020 11:30
Receive Date: 9/3/2020 13:06

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.22	mg/L	1	0.020	9/4/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.28	mg/L	1	0.020	9/18/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	14	mg/L	1	10	9/8/2020	NV00925
Total Nitrogen	Calc.	0.79	mg/L	1	0.22	9/10/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	270	mg/L	1	25	9/3/2020	NV00925
Microbiological Analyses							
Total Coliform (MPN)	SM 9223B (Quantitray)	>2419.6	MPN/100ml	1	1.0	9/3/2020	NV00925
Escherichia Coli (MPN)	SM 9223B (Quantitray)	165.8	MPN/100ml	1	1.0	9/3/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.41	mg/L	1	0.020	9/10/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	0.39 M	mg/L	0.5	0.20	9/9/2020	NV00925

Customer Sample ID: WC @ OVH
WETLAB Sample ID: 20090170-003
Collect Date/Time: 9/3/2020 12:00
Receive Date: 9/3/2020 13:06

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.034	mg/L	1	0.020	9/4/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.052	mg/L	1	0.020	9/8/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: WC @ OVH
Collect Date/Time: 9/3/2020 12:00
WETLAB Sample ID: 20090170-003
Receive Date: 9/3/2020 13:06

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
Total Suspended Solids (TSS)	SM 2540D	13	mg/L	1	10	9/8/2020	NV00925
Total Nitrogen	Calc.	ND	mg/L	1	0.22	9/10/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	57	mg/L	1	25	9/3/2020	NV00925
Microbiological Analyses							
Total Coliform (MPN)	SM 9223B (Quantitray)	>2419.6	MPN/100ml	1	1.0	9/3/2020	NV00925
Escherichia Coli (MPN)	SM 9223B (Quantitray)	90.5	MPN/100ml	1	1.0	9/3/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	ND	mg/L	1	0.020	9/10/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	ND	mg/L	0.5	0.20	9/9/2020	NV00925

Customer Sample ID: SBC @ NAR
Collect Date/Time: 9/3/2020 12:35
WETLAB Sample ID: 20090170-004
Receive Date: 9/3/2020 13:06

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.34	mg/L	1	0.020	9/4/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.35	mg/L	1	0.020	9/8/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	12	mg/L	1	10	9/8/2020	NV00925
Total Nitrogen	Calc.	0.43	mg/L	1	0.22	9/10/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	690	mg/L	1	25	9/3/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	ND	mg/L	1	0.020	9/10/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	0.42	mg/L	0.5	0.20	9/9/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Western Environmental Testing Laboratory
QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC20090172	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC20090173	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC20090182	Blank 1	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC20090233	Blank 1	Total Coliform (MPN)	SM 9223B (Quant	ND			MPN/100ml
		Escherichia Coli (MPN)	SM 9223B (Quant	ND			MPN/100ml
QC20090289	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC20090294	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC20090360	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L
QC20090447	Blank 1	Nitrate + Nitrite Nitrogen	EPA 353.2	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC20090172	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	138	150	92	mg/L
QC20090172	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	140	150	93	mg/L
QC20090173	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	148	150	99	mg/L
QC20090173	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	142	150	95	mg/L
QC20090182	LCS 1	Orthophosphate, as P	SM 4500-P E	0.251	0.250	100	mg/L
QC20090289	LCS 1	Total Suspended Solids (TSS)	SM 2540D	197	200	98	mg/L
QC20090289	LCS 2	Total Suspended Solids (TSS)	SM 2540D	198	200	99	mg/L
QC20090294	LCS 1	Total Phosphorous as P	SM 4500-P E	0.223	0.250	89	mg/L
QC20090360	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	0.972	1.00	97	mg/L
QC20090447	LCS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	1.08	1.00	108	mg/L

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC20090172	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	20090096-004	746	698	mg/L	7 %
QC20090172	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	20090170-004	692	648	mg/L	7 %
QC20090173	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	20090096-006	698	712	mg/L	2 %
QC20090173	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	20090096-008	706	682	mg/L	4 %
QC20090289	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	20090135-002	ND	ND	mg/L	<1%
QC20090289	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	20090249-001	16.7	16.3	mg/L	2 %

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result		MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC20090182	MS 1	Orthophosphate, as P	SM 4500-P E	20090072-002	1.99		3.15	3.15	0.25	mg/L	92	93	<1
QC20090294	MS 1	Total Phosphorous as P	SM 4500-P E	20090067-002	0.047		0.298	0.304	0.25	mg/L	100	103	2
QC20090294	MS 2	Total Phosphorous as P	SM 4500-P E	20090161-001	3.84	SC	4.16	4.18	0.25	mg/L	NC	NC	NC
QC20090360	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	20090029-001	ND	M	0.457	0.463	0.5	mg/L	NC	NC	NC
QC20090360	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	20090170-002	0.387	M	1.02	1.01	0.5	mg/L	NC	NC	NC
QC20090447	MS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	20090046-001	0.840	M	6.38	6.38	1	mg/L	NC	NC	NC
QC20090447	MS 2	Nitrate + Nitrite Nitrogen	EPA 353.2	20090205-001	14.4		36.1	36.0	1	mg/L	108	108	<1

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tel (775) 777-9933 | fax (775) 777-9933
3230 Polaris Ave., Suite 4 | Las Vegas, Nevada 89102
tel (702) 475-8899 | fax (702) 776-6152

WETLAB Order ID. 20090170
Sparks
Elko
LV
Report Due Date
Page 1 of 1

Client Balance Hydrologics
Address ON File
City, State & Zip
Contact Ben Trustman
Phone
Collector's Name
Fax
Project 213136
P.O. Number
PWS Number
Email btrustman@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 X CA
Other

Report Results Via
[✓ PDF] EDD
Other Excel

Compliance Monitoring?
Yes [✓ No]

Report to Regulatory Agency?
Yes [✓ No]

Standard QC Required?
[✓ Yes] No

Billing Address (if different than Client Address)
Company Balance Hydrologics
Address
City, State & Zip ON File
Contact
Phone
Fax
Email

SAMPLE ID/LOCATION	DATE	TIME	PRES TYPE *	SAMPLE TYPE **	NO. OF CONTAINERS	Total N	Total P	TSS	TDS	Ortho P	Ecoli					Spl. No.
NTD @ ORD	9/3/20	10:40		aq	2	X	X	X	X	X						
SBC @ RHR		11:30			3	X	X	X	X	X	X					
WC @ OVH		12:00			3	X	X	X	X	X	X					
SBC @ NAR		12:35			2	X	X	X	X	X						

2009 2
0170 4

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=NH4Cl 9=H3PO4

Temp	On Ice	Custody Seal	DATE	TIME	Samples Relinquished By	Samples Received By
9.9°C	[✓ Y] / N	Y / [✓ N]	9-3-20	13:06		
°C	Y / N	Y / N				
°C	Y / N	Y / N				
°C	Y / N	Y / N				

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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). ________ 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

WETLAB
WESTERN ENVIRONMENTAL
TESTING LABORATORY

www.WETLaboratory.com

Specializing in Soil, Hazardous Waste and Water Analysis

9/21/2020

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Ben Trustman

OrderID: *20090235*

Dear: Ben Trustman

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 9/4/2020. 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

Jennifer Delaney
QA Manager

Western Environmental Testing Laboratory
Report Comments

Balance Hydrologics - 20090235

Specific Report Comments

The result for Orthophosphate on samples 20090235-001 and 002 is higher than expected, especially when compared to the Total Phosphorus result. Due to concentrations in the sample it can be inferred that all of the Total Phosphorus is Orthophosphate based.

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. The reported result should be considered an estimate.

K -- The TPH Diesel Concentration reported here likely includes some heavier TPH Oil hydrocarbons reported in the TPH Diesel range as per EPA 8015.

L -- The TPH Oil Concentration reported here likely includes some lighter TPH Diesel hydrocarbons reported in the TPH Oil range as per EPA 8015.

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. The reported result should be considered an estimate.

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.

Western Environmental Testing Laboratory
Analytical Report

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Ben Trustman
Phone: (510-704-1000 **Fax:** NoFax
PO\Project: *213136*

Date Printed: 9/21/2020
OrderID: *20090235*

Customer Sample ID: CC@CB
WETLAB Sample ID: 20090235-001

Collect Date/Time: 9/4/2020 08:20
Receive Date: 9/4/2020 15:05

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.38		mg/L	1	0.020	9/4/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.37		mg/L	1	0.020	9/9/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	22		mg/L	1	10	9/9/2020	NV00925
Total Nitrogen	Calc.	2.1		mg/L	1	0.70	9/9/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	1800		mg/L	1	25	9/4/2020	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	1.4		mg/L	10	0.30	9/4/2020	NV00925
Nitrite Nitrogen	EPA 300.0	ND	D	mg/L	10	0.20	9/4/2020	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.71		mg/L	0.5	0.20	9/9/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: CC@W4
WETLAB Sample ID: 20090235-002

Collect Date/Time: 9/4/2020 08:40
Receive Date: 9/4/2020 15:05

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.37		mg/L	1	0.020	9/4/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.32		mg/L	1	0.020	9/9/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	17		mg/L	1	10	9/9/2020	NV00925
Total Nitrogen	Calc.	1.9		mg/L	1	0.70	9/9/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	1800		mg/L	1	25	9/4/2020	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	1.4		mg/L	10	0.30	9/4/2020	NV00925
Nitrite Nitrogen	EPA 300.0	ND	D,QD	mg/L	10	0.20	9/4/2020	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.58		mg/L	0.5	0.20	9/9/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: AC@TR
WETLAB Sample ID: 20090235-003

Collect Date/Time: 9/4/2020 09:05
Receive Date: 9/4/2020 15:05

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.075	mg/L	1	0.020	9/4/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.094	mg/L	1	0.020	9/9/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	31	mg/L	1	10	9/9/2020	NV00925
Total Nitrogen	Calc.	0.32	mg/L	1	0.22	9/10/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	190	mg/L	1	25	9/4/2020	NV00925
Microbiological Analyses							
Total Coliform (MPN)	SM 9223B (Quantitray)	>2419.6	MPN/100ml	1	1.0	9/4/2020	NV00925
Escherichia Coli (MPN)	SM 9223B (Quantitray)	49.6	MPN/100ml	1	1.0	9/4/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	ND	mg/L	1	0.020	9/10/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	0.30	mg/L	0.5	0.20	9/9/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: TC@SMP
WETLAB Sample ID: 20090235-004

Collect Date/Time: 9/4/2020 10:10
Receive Date: 9/4/2020 15:05

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.088	mg/L	1	0.020	9/4/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.11	mg/L	1	0.020	9/9/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	23	mg/L	1	10	9/9/2020	NV00925
Total Nitrogen	Calc.	0.49	mg/L	1	0.22	9/10/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	ND	mg/L	1	25	9/4/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.033	mg/L	1	0.020	9/10/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	0.46	mg/L	0.5	0.20	9/9/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: EC@KL
WETLAB Sample ID: 20090235-005
Collect Date/Time: 9/4/2020 11:15
Receive Date: 9/4/2020 15:05

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.076		mg/L	1	0.020	9/4/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.094		mg/L	1	0.020	9/9/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	24		mg/L	1	10	9/9/2020	NV00925
Total Nitrogen	Calc.	0.74		mg/L	1	0.22	9/10/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	42		mg/L	1	25	9/4/2020	NV00925
Microbiological Analyses								
Total Coliform (MPN)	SM 9223B (Quantitray)	>2419.6		MPN/100ml	1	1.0	9/4/2020	NV00925
Escherichia Coli (MPN)	SM 9223B (Quantitray)	178.9		MPN/100ml	1	1.0	9/4/2020	NV00925
Flow Injection Analyses								
Nitrate + Nitrite Nitrogen	EPA 353.2	0.37	M	mg/L	1	0.020	9/10/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	0.37		mg/L	0.5	0.20	9/9/2020	NV00925

Customer Sample ID: NTD@BFD (1) **Collect Date/Time:** 9/3/2020 12:00
WETLAB Sample ID: 20090235-006 **Receive Date:** 9/4/2020 15:05

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.15	mg/L	1	0.020	9/4/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.28	mg/L	1	0.020	9/9/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	110	mg/L	1	10	9/9/2020	NV00925
Total Nitrogen	Calc.	2.7	mg/L	1	0.22	9/10/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	520	mg/L	1	25	9/4/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	1.0	mg/L	1	0.020	9/10/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	1.7	mg/L	0.5	0.20	9/9/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: NTD@BFD (2)
WETLAB Sample ID: 20090235-007

Collect Date/Time: 9/3/2020 18:00
Receive Date: 9/4/2020 15:05

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.12	mg/L	1	0.020	9/4/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.12	mg/L	1	0.020	9/9/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	120	mg/L	1	10	9/9/2020	NV00925
Total Nitrogen	Calc.	2.6	mg/L	1	0.22	9/10/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	420	mg/L	1	25	9/4/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.99	mg/L	1	0.020	9/10/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	1.6	mg/L	0.5	0.20	9/9/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: NTD@BFD (3) **Collect Date/Time:** 9/4/2020 00:00
WETLAB Sample ID: 20090235-008 **Receive Date:** 9/4/2020 15:05

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.12		mg/L	1	0.020	9/4/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.13		mg/L	1	0.020	9/9/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	97		mg/L	1	10	9/9/2020	NV00925
Total Nitrogen	Calc.	2.2		mg/L	1	0.22	9/10/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	390		mg/L	1	25	9/4/2020	NV00925
Flow Injection Analyses								
Nitrate + Nitrite Nitrogen	EPA 353.2	0.90		mg/L	1	0.020	9/10/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	1.3	M	mg/L	0.5	0.20	9/9/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: NTD@BFD (4) **Collect Date/Time:** 9/4/2020 06:00
WETLAB Sample ID: 20090235-009 **Receive Date:** 9/4/2020 15:05

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.12	mg/L	1	0.020	9/4/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.21	mg/L	1	0.020	9/9/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	79	mg/L	1	10	9/9/2020	NV00925
Total Nitrogen	Calc.	2.5	mg/L	1	0.22	9/11/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	520	mg/L	1	25	9/4/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.97	mg/L	1	0.020	9/11/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	1.5	mg/L	0.5	0.20	9/9/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: YD@SBC (1)
WETLAB Sample ID: 20090235-010

Collect Date/Time: 9/3/2020 12:00
Receive Date: 9/4/2020 15:05

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.047	mg/L	1	0.020	9/4/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.14	mg/L	1	0.020	9/9/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	39	mg/L	1	10	9/8/2020	NV00925
Total Nitrogen	Calc.	1.3	mg/L	1	0.22	9/11/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	280	mg/L	1	25	9/8/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.071	mg/L	1	0.020	9/11/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	1.2	mg/L	0.5	0.20	9/9/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: YD@SBC (2) **Collect Date/Time:** 9/3/2020 18:00
WETLAB Sample ID: 20090235-011 **Receive Date:** 9/4/2020 15:05

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.040	mg/L	1	0.020	9/4/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.12	mg/L	1	0.020	9/9/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	29	mg/L	1	10	9/8/2020	NV00925
Total Nitrogen	Calc.	1.1	mg/L	1	0.22	9/11/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	250	mg/L	1	25	9/8/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.096	mg/L	1	0.020	9/11/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	0.95	mg/L	0.5	0.20	9/9/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: YD@SBC (3) **Collect Date/Time:** 9/4/2020 00:00
WETLAB Sample ID: 20090235-012 **Receive Date:** 9/4/2020 15:05

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.047	mg/L	1	0.020	9/4/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.078	mg/L	1	0.020	9/9/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	36	mg/L	1	10	9/9/2020	NV00925
Total Nitrogen	Calc.	1.2	mg/L	1	0.22	9/11/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	260	mg/L	1	25	9/8/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.12	mg/L	1	0.020	9/11/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	1.1	mg/L	0.5	0.20	9/9/2020	NV00925

Customer Sample ID: YD@SBC (4)
WETLAB Sample ID: 20090235-013

Collect Date/Time: 9/4/2020 06:00
Receive Date: 9/4/2020 15:05

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.056	mg/L	1	0.020	9/4/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.13	mg/L	1	0.020	9/9/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	39	mg/L	1	10	9/9/2020	NV00925
Total Nitrogen	Calc.	1.3	mg/L	1	0.22	9/11/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	260	mg/L	1	25	9/8/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.11	mg/L	1	0.020	9/11/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	1.2	mg/L	0.5	0.20	9/9/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: BS@SBC (1)
WETLAB Sample ID: 20090235-014

Collect Date/Time: 9/3/2020 12:00
Receive Date: 9/4/2020 15:05

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.11	mg/L	1	0.020	9/4/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.20	mg/L	1	0.020	9/9/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	51	mg/L	1	10	9/9/2020	NV00925
Total Nitrogen	Calc.	1.4	mg/L	1	0.22	9/11/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	200	mg/L	1	25	9/8/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.38	mg/L	1	0.020	9/11/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	1.0	mg/L	0.5	0.20	9/9/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: BS@SBC (2)
WETLAB Sample ID: 20090235-015

Collect Date/Time: 9/3/2020 18:00
Receive Date: 9/4/2020 15:05

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.13		mg/L	1	0.020	9/4/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.18		mg/L	1	0.020	9/9/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	32		mg/L	1	10	9/9/2020	NV00925
Total Nitrogen	Calc.	1.1		mg/L	1	0.22	9/11/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	230		mg/L	1	25	9/8/2020	NV00925
Flow Injection Analyses								
Nitrate + Nitrite Nitrogen	EPA 353.2	0.41	M	mg/L	1	0.020	9/11/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	0.69		mg/L	0.5	0.20	9/9/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: BS@SBC (3)
WETLAB Sample ID: 20090235-016
Collect Date/Time: 9/4/2020 00:00
Receive Date: 9/4/2020 15:05

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.13	mg/L	1	0.020	9/4/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.17	mg/L	1	0.020	9/11/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	32	mg/L	1	10	9/9/2020	NV00925
Total Nitrogen	Calc.	1.1	mg/L	1	0.22	9/11/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	200	mg/L	1	25	9/8/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.43	mg/L	1	0.020	9/11/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	0.67	mg/L	0.5	0.20	9/9/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: BS@SBC (4)
WETLAB Sample ID: 20090235-017

Collect Date/Time: 9/4/2020 06:00
Receive Date: 9/4/2020 15:05

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.14	mg/L	1	0.020	9/4/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.20	mg/L	1	0.020	9/11/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	40	mg/L	1	10	9/9/2020	NV00925
Total Nitrogen	Calc.	1.2	mg/L	1	0.22	9/11/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	210	mg/L	1	25	9/8/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.39	mg/L	1	0.020	9/11/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	0.80	mg/L	0.5	0.20	9/9/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: SBC@CWW (1)
WETLAB Sample ID: 20090235-018

Collect Date/Time: 9/3/2020 12:00
Receive Date: 9/4/2020 15:05

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.21	mg/L	1	0.020	9/4/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.20	mg/L	1	0.020	9/11/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	88	mg/L	1	10	9/9/2020	NV00925
Total Nitrogen	Calc.	1.5	mg/L	1	0.22	9/11/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	400	mg/L	1	25	9/8/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.11	mg/L	1	0.020	9/11/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	1.4	mg/L	0.5	0.20	9/9/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: SBC@CWW (2)
WETLAB Sample ID: 20090235-019

Collect Date/Time: 9/3/2020 18:00
Receive Date: 9/4/2020 15:05

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.19	mg/L	1	0.020	9/4/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.28	mg/L	1	0.020	9/11/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	44	mg/L	1	10	9/9/2020	NV00925
Total Nitrogen	Calc.	0.97	mg/L	1	0.22	9/11/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	410	mg/L	1	25	9/8/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.067	mg/L	1	0.020	9/11/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	0.90	mg/L	0.5	0.20	9/9/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: SBC@CWW (3) **Collect Date/Time:** 9/4/2020 00:00

WETLAB Sample ID: 20090235-020 **Receive Date:** 9/4/2020 15:05

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.21	mg/L	1	0.020	9/4/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.26	mg/L	1	0.020	9/11/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	34	mg/L	1	10	9/9/2020	NV00925
Total Nitrogen	Calc.	0.78	mg/L	1	0.22	9/11/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	440	mg/L	1	25	9/8/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.14	mg/L	1	0.020	9/11/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	0.64	mg/L	0.5	0.20	9/9/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: SBC@CWW (4)
WETLAB Sample ID: 20090235-021

Collect Date/Time: 9/4/2020 06:00
Receive Date: 9/4/2020 15:05

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.24	mg/L	1	0.020	9/4/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.31	mg/L	1	0.020	9/11/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	34	mg/L	1	10	9/9/2020	NV00925
Total Nitrogen	Calc.	0.90	mg/L	1	0.22	9/11/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	450	mg/L	1	25	9/8/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.15	mg/L	1	0.020	9/11/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	0.75	mg/L	0.5	0.20	9/9/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Western Environmental Testing Laboratory
QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC20090232	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC20090236	Blank 1	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC20090236	Blank 2	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC20090257	Blank 1	Total Coliform (MPN)	SM 9223B (Quant	ND			MPN/100ml
		Escherichia Coli (MPN)	SM 9223B (Quant	ND			MPN/100ml
QC20090280	Blank 1	Nitrate Nitrogen	EPA 300.0	ND			mg/L
		Nitrite Nitrogen	EPA 300.0	ND			mg/L
QC20090281	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC20090282	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC20090289	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC20090331	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC20090333	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC20090354	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC20090360	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L
QC20090361	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L
QC20090450	Blank 1	Nitrate + Nitrite Nitrogen	EPA 353.2	ND			mg/L
QC20090490	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC20090498	Blank 1	Nitrate + Nitrite Nitrogen	EPA 353.2	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC20090232	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	136	150	91	mg/L
QC20090232	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	137	150	91	mg/L
QC20090236	LCS 1	Orthophosphate, as P	SM 4500-P E	0.248	0.250	99	mg/L
QC20090236	LCS 2	Orthophosphate, as P	SM 4500-P E	0.245	0.250	98	mg/L
QC20090280	LCS 1	Nitrate Nitrogen	EPA 300.0	0.487	0.500	97	mg/L
		Nitrite Nitrogen	EPA 300.0	0.485	0.500	97	mg/L
QC20090281	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	138	150	92	mg/L
QC20090281	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	153	150	102	mg/L
QC20090282	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	136	150	91	mg/L
QC20090282	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	145	150	97	mg/L
QC20090289	LCS 1	Total Suspended Solids (TSS)	SM 2540D	197	200	98	mg/L
QC20090289	LCS 2	Total Suspended Solids (TSS)	SM 2540D	198	200	99	mg/L
QC20090331	LCS 1	Total Suspended Solids (TSS)	SM 2540D	198	200	99	mg/L
QC20090331	LCS 2	Total Suspended Solids (TSS)	SM 2540D	196	200	98	mg/L
QC20090333	LCS 1	Total Suspended Solids (TSS)	SM 2540D	198	200	99	mg/L
QC20090333	LCS 2	Total Suspended Solids (TSS)	SM 2540D	198	200	99	mg/L
QC20090354	LCS 1	Total Phosphorous as P	SM 4500-P E	0.234	0.250	94	mg/L
QC20090360	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	0.972	1.00	97	mg/L
QC20090361	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	1.05	1.00	105	mg/L
QC20090450	LCS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	1.08	1.00	108	mg/L
QC20090490	LCS 1	Total Phosphorous as P	SM 4500-P E	0.232	0.250	93	mg/L
QC20090498	LCS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	1.07	1.00	107	mg/L

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC20090232	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	20090158-002	826	892	mg/L	8 %
QC20090232	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	20090158-005	1040	944	mg/L	10 %
QC20090281	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	20090125-001	1378	1394	mg/L	1 %

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC20090281	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	20090235-018	403	429	mg/L	6 %
QC20090282	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	20090249-001	480	528	mg/L	10 %
QC20090282	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	20090235-021	451	437	mg/L	3 %
QC20090289	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	20090135-002	ND	ND	mg/L	<1%
QC20090289	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	20090249-001	16.7	16.3	mg/L	2 %
QC20090331	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	20090282-002	ND	ND	mg/L	<1%
QC20090331	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	20090235-002	16.7	17.7	mg/L	6 %
QC20090333	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	20090282-003	ND	ND	mg/L	<1%
QC20090333	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	20090236-002	ND	ND	mg/L	NA

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result		MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC20090236	MS 1	Orthophosphate, as P	SM 4500-P E	20090235-001	0.377		0.608	0.607	0.25	mg/L	93	92	<1
QC20090236	MS 2	Orthophosphate, as P	SM 4500-P E	20090235-011	0.040		0.267	0.265	0.25	mg/L	91	90	<1
QC20090236	MS 3	Orthophosphate, as P	SM 4500-P E	20090235-021	0.235		0.465	0.461	0.25	mg/L	92	91	<1
QC20090280	MS 1	Nitrate Nitrogen	EPA 300.0	20090235-002	1.35		6.34	6.38	0.5	mg/L	100	101	<1
		Nitrite Nitrogen	EPA 300.0	20090235-002	ND	D,Q	1.10	1.40	0.125	mg/L	88	112	24
QC20090354	MS 1	Total Phosphorous as P	SM 4500-P E	20090235-001	0.366		0.609	0.620	0.25	mg/L	97	102	2
QC20090354	MS 2	Total Phosphorous as P	SM 4500-P E	20090235-010	0.143		0.384	0.402	0.25	mg/L	96	103	5
QC20090360	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	20090029-001	ND	M	0.457	0.463	0.5	mg/L	NC	NC	NC
QC20090360	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	20090170-002	0.387	M	1.02	1.01	0.5	mg/L	NC	NC	NC
QC20090361	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	20090235-008	1.33	M	2.20	2.34	0.5	mg/L	NC	NC	NC
QC20090361	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	20090235-018	1.43		1.98	2.04	0.5	mg/L	110	122	3
QC20090450	MS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	20090220-003	ND	M	1.20	1.17	1	mg/L	NC	NC	NC
QC20090450	MS 2	Nitrate + Nitrite Nitrogen	EPA 353.2	20090235-005	0.369	M	1.51	1.53	1	mg/L	NC	NC	NC
QC20090490	MS 1	Total Phosphorous as P	SM 4500-P E	20090223-004	ND		0.228	0.237	0.25	mg/L	91	95	4
QC20090490	MS 2	Total Phosphorous as P	SM 4500-P E	20090235-019	0.283		0.525	0.486	0.25	mg/L	97	81	8
QC20090498	MS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	20090210-001	1.18		6.67	6.69	1	mg/L	110	110	<1
QC20090498	MS 2	Nitrate + Nitrite Nitrogen	EPA 353.2	20090235-015	0.409	M	1.56	1.53	1	mg/L	NC	NC	NC

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tel (775) 777-9933 | fax (775) 777-9933
3230 Polaris Ave., Suite 4 | Las Vegas, Nevada 89102
tel (702) 475-8899 | fax (702) 776-6152

WETLAB Order ID. 20090235
Sparks
Elko
LV
Report Due Date
Page 1 of 3

Client: Balance Hydrologics
Address
City, State & Zip: ON File
Contact: Ben Trustman
Phone
Collector's Name
Fax
Project: 213136
P.O. Number
PWS Number
Email: btrustman@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 X CA
Other

Report Results Via
[✓ PDF] EDD
Other Excel

Compliance Monitoring?
Yes [✓ No]

Report to Regulatory Agency?
Yes [✓ No]

Standard QC Required?
[✓ Yes] No

Billing Address (if different than Client Address)
Company: Balance Hydrologics
Address: on file
City, State & Zip
Contact
Phone
Fax
Email

SAMPLE ID/LOCATION	DATE	TIME	PRES TYPE *	SAMPLE TYPE **	NO. OF CONTAINERS	Total N	Total P	Ortho P	TSS	TDS	NO3	e coli				Spl. No.
CC @ CB	9/4/20	8:20		4	2	X	X	X	X	X	X					
CC @ W4	9/4/20	8:40			2	X	X	X	X	X	X					
AC@TR	9/4/20	9:05			3	X	X	X	X	X		X				
TC@SMP	9/4/20	10:10			2	X	X	X	X	X						
EC@KL	9/4/20	11:15			3	X	X	X	X	X		X				
NTD @ BFD (1)	9/3/20	12:00			2	X	X	X	X	X					2009	2
NTD@BFD (2)	9/3/20	18:00			2	X	X	X	X	X					0235	21
NTD @ BFD (3)	9/4/20	0:00			2	X	X	X	X	X						
NTD @ BFD (4)	9/4/20	6:00			2	X	X	X	X	X						

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=NH4Cl 9=H3PO4

Temp	On Ice	Custody Seal	DATE	TIME	Samples Relinquished By	Samples Received By
15°C	[✓ Y] / N	Y / [✓ N]	9-4-20	13:05		
°C	Y / N	Y / N				
°C	Y / N	Y / N				
°C	Y / N	Y / N				

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

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WETLAB Order ID. 2009235
Sparks
Elko
LV
Report Due Date
Page 2 of 3

Client Balance Hydrologics
Address
City, State & Zip
Contact Ben
Phone
Collector's Name
Fax
Project 213136
P.O. Number
PWS 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 X 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	Total N	Total P	Ortho P	TSS	TDS						Spl. No.
YD @ SBC (1)	9/3/20	12:00		Aq	2	X	X	X	X	X						
YD @ SBC (2)	9/3/20	18:00			2											
YD @ SBC (3)	9/4/20	0:00			2											
YD @ SBC (4)	9/4/20	6:00			2											
BS @ SBC (1)	9/3/20	12:00			2											
BS @ SBC (2)	9/3/20	18:00			2											
BS @ SBC (3)	9/4/20	0:00			2											
BS @ SBC (4)	9/4/20	6:00			2											

2009 2
0235 21

Instructions/Comments/Special Requirements:

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***SAMPLE PRESERVATIVES:** 1=Unpreserved 2=H2SO4 3=NaOH 4=HCl 5=HNO3 6=Na2S2O3 7=ZnOAc+NaOH 8=NH4Cl 9=H3PO4

Temp	On Ice	Custody Seal	DATE	TIME	Samples Relinquished By	Samples Received By
15 °C	[✓ Y] / N	Y / [✓ N]	9-4-20	15:05		
°C	Y / N	Y / N				
°C	Y / N	Y / N				
°C	Y / N	Y / N				

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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

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WETLAB Order ID. 20090235
Sparks
Elko
LV
Report Due Date
Page 3 of 3

Client Balance Hydrologics
Address
City, State & Zip
Contact Ron
Phone
Collector's Name
Fax
Project
P.O. Number
PWS 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 X 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	Total N	Total P	OrthoP	TSS	TDS						Spl. No.
SBC@CWW(1)	9/3/20	12:00		Ag	2	X	X	X	X	X						
SBC @CWW(2)	9/3/20	18:00			2											
SBC@ CWW(3)	9/4/20	0:00			2											
SBC@CWW(4)	9/4/20	6:00			2											

2009 2
0235 21

Instructions/Comments/Special Requirements:

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***SAMPLE PRESERVATIVES:** 1=Unpreserved 2=H2SO4 3=NaOH 4=HCl 5=HNO3 6=Na2S2O3 7=ZnOAc+NaOH 8=NH4Cl 9=H3PO4

Temp	On Ice	Custody Seal	DATE	TIME	Samples Relinquished By	Samples Received By
15 °C	[✓ Y] / N	Y / [✓ N]	9-4-20	15:05		
°C	Y / N	Y / N				
°C	Y / N	Y / N				
°C	Y / N	Y / N				

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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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12/8/2020

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Ben Trustman

OrderID: *20110563*

Dear: Ben Trustman

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 11/18/2020. 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,

Cory Baker

Cory Baker
QA Specialist

Kat A Langford

Kat Langford KatL@wetlaboratory.com
Project Manager (775) 200-9876

Western Environmental Testing Laboratory
Report Comments

Balance Hydrologics - 20110563

Specific Report Comments

The result for Orthophosphate on sample 20110563-001 is higher than expected, especially when compared to the Total Phosphorus result. Due to concentrations in the sample it can be inferred that all of the Total Phosphorus is Orthophosphate based. In addition, Total Phosphorus was reanalyzed with confirming result.

The results for Orthophosphate on samples 20110563-002 and 003 is higher than expected, especially when compared to the Total Phosphorus results. It is thought that particulate matter contained in the sample (based on elevated Total Suspended Solids result) interfered with the Orthophosphate result 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. The samples were reanalyzed for Total Phosphorus with confirming results.

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. The reported result should be considered an estimate.

K -- The TPH Diesel Concentration reported here likely includes some heavier TPH Oil hydrocarbons reported in the TPH Diesel range as per EPA 8015.

L -- The TPH Oil Concentration reported here likely includes some lighter TPH Diesel hydrocarbons reported in the TPH Oil range as per EPA 8015.

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. The reported result should be considered an estimate.

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.

Western Environmental Testing Laboratory
Analytical Report

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Ben Trustman
Phone: (510-704-1000 **Fax:** NoFax
PO\Project: *213136*

Date Printed: 12/8/2020
OrderID: *20110563*

Customer Sample ID: SBC@RHR
WETLAB Sample ID: 20110563-001

Collect Date/Time: 11/18/2020 06:30
Receive Date: 11/18/2020 09:33

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.26	mg/L	1	0.020	11/18/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.25	mg/L	1	0.020	11/20/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	58	mg/L	1	10	11/18/2020	NV00925
Total Nitrogen	Calc.	2.1	mg/L	1	0.22	11/25/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	220	mg/L	1	25	11/18/2020	NV00925
Microbiological Analyses							
Total Coliform (MPN)	SM 9223B (Quantitray)	>4839.2	MPN/100ml	2	2.0	11/18/2020	NV00925
Escherichia Coli (MPN)	SM 9223B (Quantitray)	3106.2	MPN/100ml	2	2.0000	11/18/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.31	mg/L	1	0.020	11/25/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	1.8 M	mg/L	0.5	0.20	11/25/2020	NV00925

Customer Sample ID: SBC@NAR
WETLAB Sample ID: 20110563-002

Collect Date/Time: 11/18/2020 07:10
Receive Date: 11/18/2020 09:33

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.41	mg/L	1	0.020	11/18/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.25	mg/L	1	0.020	11/20/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	220	mg/L	1	10	11/18/2020	NV00925
Total Nitrogen	Calc.	2.6	mg/L	1	0.22	11/25/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	750	mg/L	1	25	11/18/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.25	mg/L	1	0.020	11/25/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	2.3	mg/L	0.5	0.20	11/25/2020	NV00925

Customer Sample ID: WC@OVH
WETLAB Sample ID: 20110563-003

Collect Date/Time: 11/18/2020 06:50
Receive Date: 11/18/2020 09:33

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.26	mg/L	1	0.020	11/18/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.14	mg/L	1	0.020	11/23/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: WC@OVH **Collect Date/Time:** 11/18/2020 06:50

WETLAB Sample ID: 20110563-003 **Receive Date:** 11/18/2020 09:33

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
Total Suspended Solids (TSS)	SM 2540D	190	mg/L	1	10	11/18/2020	NV00925
Total Nitrogen	Calc.	3.0	mg/L	1	0.22	11/25/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	100	mg/L	1	25	11/18/2020	NV00925
Microbiological Analyses							
Total Coliform (MPN)	SM 9223B (Quantitray)	>9678.4	MPN/100ml	4	4.0	11/18/2020	NV00925
Escherichia Coli (MPN)	SM 9223B (Quantitray)	>9678.4	MPN/100ml	4	4.0	11/18/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.34	mg/L	1	0.020	11/25/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	2.6	mg/L	0.5	0.20	11/25/2020	NV00925

Customer Sample ID: NTD@ORD **Collect Date/Time:** 11/18/2020 09:00

WETLAB Sample ID: 20110563-004 **Receive Date:** 11/18/2020 09:33

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.20	mg/L	1	0.020	11/18/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.29	mg/L	1	0.020	11/23/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	ND	mg/L	1	10	11/18/2020	NV00925
Total Nitrogen	Calc.	3.8	mg/L	1	0.22	11/25/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	1100	mg/L	1	25	11/18/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	1.9	mg/L	1	0.020	11/25/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	1.9	mg/L	0.5	0.20	11/25/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Western Environmental Testing Laboratory
QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC20110720	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC20110760	Blank 1	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC20110772	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC20110852	Blank 1	Total Coliform (MPN)	SM 9223B (Quant	ND			MPN/100ml
		Escherichia Coli (MPN)	SM 9223B (Quant	ND			MPN/100ml
QC20110903	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC20110948	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC20111065	Blank 1	Nitrate + Nitrite Nitrogen	EPA 353.2	ND			mg/L
QC20111076	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC20110720	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	146	150	97	mg/L
QC20110720	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	151	150	101	mg/L
QC20110760	LCS 1	Orthophosphate, as P	SM 4500-P E	0.252	0.250	101	mg/L
QC20110772	LCS 1	Total Suspended Solids (TSS)	SM 2540D	197	200	98	mg/L
QC20110772	LCS 2	Total Suspended Solids (TSS)	SM 2540D	199	200	99	mg/L
QC20110903	LCS 1	Total Phosphorous as P	SM 4500-P E	0.244	0.250	97	mg/L
QC20110948	LCS 1	Total Phosphorous as P	SM 4500-P E	0.278	0.250	111	mg/L
QC20111065	LCS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	1.01	1.00	101	mg/L
QC20111076	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	0.974	1.00	97	mg/L

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result		Units	RPD
QC20110720	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	20110528-003	846	860		mg/L	2 %
QC20110720	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	20110560-004	950	820	QD	mg/L	15 %
QC20110772	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	20110468-002	ND	ND		mg/L	NA
QC20110772	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	20110478-002	ND	ND		mg/L	<1%

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result		MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC20110760	MS 1	Orthophosphate, as P	SM 4500-P E	20110563-001	0.260		0.493	0.501	0.25	mg/L	93	96	2
QC20110903	MS 1	Total Phosphorous as P	SM 4500-P E	20110469-002	0.068		0.299	0.335	0.25	mg/L	92	107	11
QC20110903	MS 2	Total Phosphorous as P	SM 4500-P E	20110537-001	0.058		0.305	0.341	0.25	mg/L	99	113	11
QC20110948	MS 1	Total Phosphorous as P	SM 4500-P E	20110563-004	0.292		0.528	0.584	0.25	mg/L	94	117	10
QC20110948	MS 2	Total Phosphorous as P	SM 4500-P E	20110611-003	0.171	QD	0.380	0.293	0.25	mg/L	84	49	26
QC20111065	MS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	20110549-004	2.74		7.71	7.72	1	mg/L	99	100	<1
QC20111065	MS 2	Nitrate + Nitrite Nitrogen	EPA 353.2	20110563-003	0.344		1.30	1.31	1	mg/L	96	97	<1
QC20111076	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	20110502-001	ND	M	0.752	0.734	0.5	mg/L	NC	NC	NC
QC20111076	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	20110563-001	1.83	M	2.40	2.41	0.5	mg/L	NC	NC	NC

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

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

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3230 Polaris Ave., Suite 4 | Las Vegas, Nevada 89102
tel (702) 475-8899 | fax (702) 776-6152

WETLAB Order ID 20110563
Sparks
Elko
LV
Report Due Date
Page 1 of 1

Client Balance Hydrologics
Address ON File
City, State & Zip
Contact
Phone
Collector's Name
Fax
Project 213136
P.O. Number
PWS Number
Email btrustman@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 X CA Other

Compliance Monitoring?
Yes [✓ No]

Report to Regulatory Agency?
Yes [✓ No]

Report Results Via
[✓ PDF] EDD
Other Excel

Standard QC Required?
[✓ Yes] No

Billing Address (if different than Client Address)
Company ON File
Address
City, State & Zip
Contact
Phone
Fax
Email

SAMPLE ID/LOCATION	DATE	TIME	PRES TYPE *	SAMPLE TYPE **	NO. OF CONTAINERS	Total N	Total P	Ortho P	TDS	TSS	E.coli					Spl. No.
SBC@RHR	11/18/20	6:30		Aq	3	X	X	X	X	X	X					
SBC@NAR		7:10			2	X	X	X	X	X						
WC@OVH		6:50			3	X	X	X	X	X	X					
NTD@ORD		9:00			2	X	X	X	X	X						

2011 .2
0563 4

Analyses Requested

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=NH4Cl 9=H3PO4

Temp	On Ice	Custody Seal	DATE	TIME	Samples Relinquished By	Samples Received By
5.3 °C	[✓ Y] / N	Y / [✓ N]	11-18-20	0933		
°C	Y / N	Y / N				
°C	Y / N	Y / N				
°C	Y / N	Y / N				

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

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

12/8/2020

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Ben Trustman

OrderID: *20110586*

Dear: Ben Trustman

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 11/18/2020. 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,

Cory Baker

Cory Baker
QA Specialist

Kat A Langford

Kat Langford KatL@wetlaboratory.com
Project Manager (775) 200-9876

Specific Report Comments

Due to the sample matrix it was necessary to analyze the following at a dilution:

20110586-007 Nitrate Nitrogen
20110586-007 Nitrite Nitrogen

The reporting limits have been adjusted accordingly.

The result for Orthophosphate on samples 20110586-001, 010, 011 and 012 is higher than expected, especially when compared to the Total Phosphorus result. It is thought that particulate matter contained in the sample (based on elevated Total Suspended Solids result) interfered with the Orthophosphate result 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. The samples were reanalyzed for Total Phosphorus with confirming results.

The result for Orthophosphate on sample 20110586-007 is higher than expected, especially when compared to the Total Phosphorus result. The Total Phosphorus was reanalyzed with confirming results. The Orthopohosphate was not reanalyzed due the EPA recommended holding time being expired. The chemical irregularity may be due to a sample matrix interference. We apologize for any inconveniece 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. The reported result should be considered an estimate.
K	--	The TPH Diesel Concentration reported here likely includes some heavier TPH Oil hydrocarbons reported in the TPH Diesel range as per EPA 8015.
L	--	The TPH Oil Concentration reported here likely includes some lighter TPH Diesel hydrocarbons reported in the TPH Oil range as per EPA 8015.
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. The reported result should be considered an estimate.

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.

Western Environmental Testing Laboratory
Analytical Report

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Ben Trustman
Phone: (510-704-1000 **Fax:** NoFax
PO\Project: *213136*

Date Printed: 12/8/2020
OrderID: *20110586*

Customer Sample ID: H-19 (1) **Collect Date/Time:** 11/18/2020 02:44
WETLAB Sample ID: 20110586-001 **Receive Date:** 11/18/2020 13:56

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	1.6	mg/L	5	0.10	11/19/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.68	mg/L	5	0.10	12/7/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	200	mg/L	1	10	11/19/2020	NV00925
Total Nitrogen	Calc.	11	mg/L	1	0.42	11/25/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	410	mg/L	1	25	11/18/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.94	mg/L	1	0.020	11/25/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	9.7	mg/L	1	0.40	11/25/2020	NV00925

Customer Sample ID: H-19 (2) **Collect Date/Time:** 11/18/2020 10:51
WETLAB Sample ID: 20110586-002 **Receive Date:** 11/18/2020 13:56

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	1.4	mg/L	5	0.10	11/19/2020	NV00925
Total Phosphorous as P	SM 4500-P E	1.8	mg/L	5	0.10	12/7/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	150	mg/L	1	10	11/19/2020	NV00925
Total Nitrogen	Calc.	6.1	mg/L	1	0.42	11/25/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	260	mg/L	1	25	11/18/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.79	mg/L	1	0.020	11/25/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	5.3	mg/L	1	0.40	11/25/2020	NV00925

Customer Sample ID: H-19 (3) **Collect Date/Time:** 11/18/2020 11:08
WETLAB Sample ID: 20110586-003 **Receive Date:** 11/18/2020 13:56

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	1.4	mg/L	5	0.10	11/19/2020	NV00925
Total Phosphorous as P	SM 4500-P E	2.0	mg/L	5	0.10	12/7/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	150	mg/L	1	10	11/19/2020	NV00925
Total Nitrogen	Calc.	7.0	mg/L	1	0.42	11/25/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	200	mg/L	1	25	11/18/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: H-19 (3) **Collect Date/Time:** 11/18/2020 11:08
WETLAB Sample ID: 20110586-003 **Receive Date:** 11/18/2020 13:56

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.91	mg/L	1	0.020	11/25/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	6.1	mg/L	1	0.40	11/25/2020	NV00925

Customer Sample ID: H-19 (4) **Collect Date/Time:** 11/18/2020 11:17
WETLAB Sample ID: 20110586-004 **Receive Date:** 11/18/2020 13:56

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	1.4	mg/L	5	0.10	11/19/2020	NV00925
Total Phosphorous as P	SM 4500-P E	1.3	mg/L	5	0.10	11/23/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	96	mg/L	1	10	11/19/2020	NV00925
Total Nitrogen	Calc.	6.2	mg/L	1	0.42	11/25/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	220	mg/L	1	25	11/18/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.84	mg/L	1	0.020	11/25/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	5.4	mg/L	1	0.40	11/25/2020	NV00925

Customer Sample ID: H-19 (5) **Collect Date/Time:** 11/18/2020 11:55
WETLAB Sample ID: 20110586-005 **Receive Date:** 11/18/2020 13:56

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
Microbiological Analyses							
Total Coliform (MPN)	SM 9223B (Quantitray)	>9678.4	MPN/100ml	4	4.0	11/18/2020	NV00925
Escherichia Coli (MPN)	SM 9223B (Quantitray)	>9678.4	MPN/100ml	4	4.0	11/18/2020	NV00925

Customer Sample ID: AC@TR **Collect Date/Time:** 11/18/2020 07:33
WETLAB Sample ID: 20110586-006 **Receive Date:** 11/18/2020 13:56

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.87	mg/L	5	0.10	11/19/2020	NV00925
Total Phosphorous as P	SM 4500-P E	1.0	mg/L	5	0.10	11/23/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	20	mg/L	1	10	11/19/2020	NV00925
Total Nitrogen	Calc.	3.4	mg/L	1	0.22	11/25/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	400	mg/L	1	25	11/18/2020	NV00925
Microbiological Analyses							
Total Coliform (MPN)	SM 9223B (Quantitray)	>9678.4	MPN/100ml	4	4.0	11/18/2020	NV00925
Escherichia Coli (MPN)	SM 9223B (Quantitray)	3080.4	MPN/100ml	4	4.0000	11/18/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.26	mg/L	1	0.020	11/25/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	3.1	mg/L	0.5	0.20	11/25/2020	NV00925

Customer Sample ID: CC@CB
Collect Date/Time: 11/18/2020 09:05
WETLAB Sample ID: 20110586-007
Receive Date: 11/18/2020 13:56

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.70		mg/L	1	0.020	11/19/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.42		mg/L	1	0.020	12/7/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	46		mg/L	1	10	11/19/2020	NV00925
Total Nitrogen	Calc.	2.0		mg/L	1	0.45	11/25/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	1400		mg/L	1	25	11/18/2020	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	ND	D	mg/L	5	0.15	11/19/2020	NV00925
Nitrite Nitrogen	EPA 300.0	ND	D	mg/L	5	0.10	11/19/2020	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	1.9		mg/L	0.5	0.20	11/25/2020	NV00925

Customer Sample ID: TC@SMP
Collect Date/Time: 11/18/2020 10:30
WETLAB Sample ID: 20110586-008
Receive Date: 11/18/2020 13:56

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.31		mg/L	1	0.020	11/19/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.42		mg/L	1	0.020	11/23/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	15		mg/L	1	10	11/19/2020	NV00925
Total Nitrogen	Calc.	1.0		mg/L	1	0.22	11/25/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	100		mg/L	1	25	11/18/2020	NV00925
Flow Injection Analyses								
Nitrate + Nitrite Nitrogen	EPA 353.2	0.099		mg/L	1	0.020	11/25/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	0.91	M	mg/L	0.5	0.20	11/25/2020	NV00925

Customer Sample ID: SDOE008936 (1)
Collect Date/Time: 11/18/2020 03:56
WETLAB Sample ID: 20110586-009
Receive Date: 11/18/2020 13:56

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.44		mg/L	1	0.020	11/19/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.51		mg/L	1	0.020	12/7/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	120		mg/L	1	10	11/19/2020	NV00925
Total Nitrogen	Calc.	11		mg/L	1	0.48	11/25/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	420		mg/L	1	25	11/18/2020	NV00925
Flow Injection Analyses								
Nitrate + Nitrite Nitrogen	EPA 353.2	3.9		mg/L	4	0.080	11/25/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	6.9		mg/L	1	0.40	11/25/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: SDOE008936 (2) **Collect Date/Time:** 11/18/2020 11:14
WETLAB Sample ID: 20110586-010 **Receive Date:** 11/18/2020 13:56

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.47	mg/L	1	0.020	11/19/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.45	mg/L	1	0.020	11/23/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	340	mg/L	1	10	11/19/2020	NV00925
Total Nitrogen	Calc.	6.7	mg/L	1	0.42	11/25/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	230	mg/L	1	25	11/19/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.70	mg/L	1	0.020	11/25/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	6.0	mg/L	1	0.40	11/25/2020	NV00925

Customer Sample ID: SDOE008936 (3) **Collect Date/Time:** 11/18/2020 12:11
WETLAB Sample ID: 20110586-011 **Receive Date:** 11/18/2020 13:56

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.55	mg/L	1	0.020	11/19/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.35	mg/L	1	0.020	11/23/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	330	mg/L	1	10	11/19/2020	NV00925
Total Nitrogen	Calc.	5.3	mg/L	1	0.22	11/25/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	180	mg/L	1	25	11/19/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.69	mg/L	1	0.020	11/25/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	4.6	mg/L	0.5	0.20	11/25/2020	NV00925

Customer Sample ID: SDOE008936 (4) **Collect Date/Time:** 11/18/2020 12:44
WETLAB Sample ID: 20110586-012 **Receive Date:** 11/18/2020 13:56

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.48	mg/L	1	0.020	11/19/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.31	mg/L	1	0.020	11/23/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	240	mg/L	1	10	11/19/2020	NV00925
Total Nitrogen	Calc.	6.8	mg/L	1	0.42	11/25/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	160	mg/L	1	25	11/19/2020	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.82	mg/L	1	0.020	11/25/2020	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	6.0	mg/L	1	0.40	11/25/2020	NV00925

Customer Sample ID: SDOE008936 (5) **Collect Date/Time:** 11/18/2020 13:00
WETLAB Sample ID: 20110586-013 **Receive Date:** 11/18/2020 13:56

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
Microbiological Analyses							
Total Coliform (MPN)	SM 9223B (Quantitray)	>12098.	MPN/100ml	5	5.0	11/18/2020	NV00925
Escherichia Coli (MPN)	SM 9223B (Quantitray)	>12098.	MPN/100ml	5	5.0	11/18/2020	NV00925

Customer Sample ID: SDOE008936 (5)
Collect Date/Time: 11/18/2020 13:00
WETLAB Sample ID: 20110586-013
Receive Date: 11/18/2020 13:56

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Western Environmental Testing Laboratory
QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC20110731	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC20110782	Blank 1	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC20110797	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC20110836	Blank 1	Nitrate Nitrogen	EPA 300.0	ND			mg/L
		Nitrite Nitrogen	EPA 300.0	ND			mg/L
QC20110852	Blank 1	Total Coliform (MPN)	SM 9223B (Quant	ND			MPN/100ml
		Escherichia Coli (MPN)	SM 9223B (Quant	ND			MPN/100ml
QC20110888	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC20110948	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC20111065	Blank 1	Nitrate + Nitrite Nitrogen	EPA 353.2	ND			mg/L
QC20111066	Blank 1	Nitrate + Nitrite Nitrogen	EPA 353.2	ND			mg/L
QC20111075	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L
QC20111076	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC20110731	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	137	150	91	mg/L
QC20110731	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	138	150	92	mg/L
QC20110782	LCS 1	Orthophosphate, as P	SM 4500-P E	0.259	0.250	103	mg/L
QC20110797	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	155	150	103	mg/L
QC20110797	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	149	150	99	mg/L
QC20110836	LCS 1	Nitrate Nitrogen	EPA 300.0	0.485	0.500	97	mg/L
		Nitrite Nitrogen	EPA 300.0	0.461	0.500	92	mg/L
QC20110888	LCS 1	Total Suspended Solids (TSS)	SM 2540D	197	200	99	mg/L
QC20110888	LCS 2	Total Suspended Solids (TSS)	SM 2540D	198	200	99	mg/L
QC20110948	LCS 1	Total Phosphorous as P	SM 4500-P E	0.278	0.250	111	mg/L
QC20111065	LCS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	1.01	1.00	101	mg/L
QC20111066	LCS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	1.01	1.00	101	mg/L
QC20111075	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	1.00	1.00	100	mg/L
QC20111076	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	0.974	1.00	97	mg/L

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result		Units	RPD
QC20110731	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	20110518-001	836	854		mg/L	2 %
QC20110731	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	20110518-002	834	754	QD	mg/L	10 %
QC20110797	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	20110520-002	976	1068		mg/L	9 %
QC20110797	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	20110520-003	784	798		mg/L	2 %
QC20110888	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	20110518-002	ND	ND		mg/L	<1%
QC20110888	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	20110520-002	ND	ND		mg/L	<1%

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result		MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC20110782	MS 1	Orthophosphate, as P	SM 4500-P E	20110587-002	3.62		4.83	4.78	0.25	mg/L	97	93	1
QC20110782	MS 2	Orthophosphate, as P	SM 4500-P E	20110587-001	5.71		8.12	8.20	0.25	mg/L	96	100	1
QC20110836	MS 1	Nitrate Nitrogen	EPA 300.0	20110586-007	ND	D	2.54	2.48	0.5	mg/L	100	97	2
		Nitrite Nitrogen	EPA 300.0	20110586-007	ND	D	0.585	0.578	0.125	mg/L	94	92	1
QC20110836	MS 2	Nitrate Nitrogen	EPA 300.0	20110668-002	0.109		0.622	0.634	0.5	mg/L	103	105	2
		Nitrite Nitrogen	EPA 300.0	20110668-002	ND		0.126	0.127	0.125	mg/L	93	94	<1

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result		MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC20110948	MS 1	Total Phosphorous as P	SM 4500-P E	20110563-004	0.292		0.528	0.584	0.25	mg/L	94	117	10
QC20110948	MS 2	Total Phosphorous as P	SM 4500-P E	20110611-003	0.171	QD	0.380	0.293	0.25	mg/L	84	49	26
QC20111065	MS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	20110549-004	2.74		7.71	7.72	1	mg/L	99	100	<1
QC20111065	MS 2	Nitrate + Nitrite Nitrogen	EPA 353.2	20110563-003	0.344		1.30	1.31	1	mg/L	96	97	<1
QC20111066	MS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	20110586-010	0.698		1.69	1.69	1	mg/L	99	99	<1
QC20111066	MS 2	Nitrate + Nitrite Nitrogen	EPA 353.2	20110597-001	ND		5.11	5.14	1	mg/L	102	103	<1
QC20111075	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	20110586-008	0.912	M	1.48	1.54	0.5	mg/L	NC	NC	NC
QC20111075	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	20110611-006	1.12		1.62	1.63	0.5	mg/L	99	102	<1
QC20111076	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	20110502-001	ND	M	0.752	0.734	0.5	mg/L	NC	NC	NC
QC20111076	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	20110563-001	1.83	M	2.40	2.41	0.5	mg/L	NC	NC	NC

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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3230 Polaris Ave., Suite 4 | Las Vegas, Nevada 89102
tel (702) 475-8899 | fax (702) 776-6152

WETLAB Order ID. 20110586
Sparks
Elko
LV
Report Due Date
Page 1 of 2

Client Balance Hydrologics
Address ON File
City, State & Zip
Contact
Phone
Collector's Name
Fax
Project 213136
P.O. Number
PWS Number
Email btrustman@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 X CA Other

Compliance Monitoring? Yes [✓ No]

Report to Regulatory Agency? Yes [✓ No]

Report Results Via [✓ PDF] EDD Other Excel

Standard QC Required? [✓ Yes] No

Billing Address (if different than Client Address)
Company on File
Address
City, State & Zip
Contact
Phone
Fax
Email

SAMPLE ID/LOCATION	DATE	TIME	PRES TYPE *	SAMPLE TYPE **	NO. OF CONTAINERS	Total N	NO3	Total P	Ortho P	TDS	TSS	E coli				Spl. No.
H-19(1)	11/18/20	2:44		Aq	2	X		X	X	X	X					1
H-19 (2)		~~11:08~~	10:51		2	X		X	X	X	X					2
H-19 (3)		~~11:17~~	11:08		2	X		X	X	X	X					3
H-19 (4)			11:17		2	X		X	X	X	X					4
H-19 (5)			11:55		1							X				5
AC@TR		7:33			3	X		X	X	X	X	X				6
CC@CB		9:05			2	X	X	X	X	X	X					7
TC@SMP		10:30			2	X		X	X	X	X					8
																9 NR

2011 6
0586 13

Instructions/Comments/Special Requirements: Low-level, quant

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=NH4Cl 9=H3PO4

Temp	On Ice	Custody Seal	DATE	TIME	Samples Relinquished By	Samples Received By
8.8°C	[✓ Y] / N	Y / [✓ N]	11/18/20	1356	X	
°C	Y / N	Y / N				
°C	Y / N	Y / N				
°C	Y / N	Y / N				

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

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WETLAB Order ID. 2011586
Sparks
Elko
LV
Report Due Date
Page 2 of 2

Client
Address
City, State & Zip
Contact
Phone
Collector's Name
Fax
Project 213136
P.O. Number
PWS 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 Results Via
PDF EDD
Other

Report to Regulatory Agency?
Yes No

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	Total N	Total P	Ortho P	TDS	TSS	E.coli					Spl. No.	
SDOE 008936 (1)	11/18/20	3:56		Aq	2	X	X	X	X	X						NR 10	9
SDOE 008936 (2)		11:14			2	X	X	X	X	X						NR 11	10
SDOE 008936 (3)		12:11			1	X	X	X	X	X						NR 12	11
SDOE 008936 (4)		12:44			2	X	X	X	X	X						NR 13	12
SDOE 008936 (5)		13:00			1						X					NR 14	13

2011 6
0586 13

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=NH4Cl 9=H3PO4

Temp	On Ice	Custody Seal	DATE	TIME	Samples Relinquished By	Samples Received By
8.8 °C	[✓ Y] / N	Y / [✓ N]	11/18/20	1356	X	
°C	Y / N	Y / N				
°C	Y / N	Y / N				
°C	Y / N	Y / N				

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

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

12/30/2020

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Ben Trustman

OrderID: *20120510*

Dear: Ben Trustman

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 12/14/2020. 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

Jennifer Delaney
QA Manager

Kat A Langford

Kat Langford
Project Manager

KatL@wetlaboratory.com
(775) 200-9876

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

Western Environmental Testing Laboratory
Report Comments

Balance Hydrologics - 20120510

Specific Report Comments

The result for Orthophosphate on samples 20120510-003, 006, 009, and 011 are higher than expected, especially when compared to the Total Phosphorus results. It is possible the particulate matter contained in the sample (based on elevated Total Suspended Solids result) interfered with the Orthophosphate result 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. The reported result should be considered an estimate.
K	--	The TPH Diesel Concentration reported here likely includes some heavier TPH Oil hydrocarbons reported in the TPH Diesel range as per EPA 8015.
L	--	The TPH Oil Concentration reported here likely includes some lighter TPH Diesel hydrocarbons reported in the TPH Oil range as per EPA 8015.
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. The reported result should be considered an estimate.

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.

Western Environmental Testing Laboratory
Analytical Report

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Ben Trustman
Phone: (510-704-1000 **Fax:** NoFax
PO\Project: *213136*

Date Printed: 12/30/2020
OrderID: *20120510*

Customer Sample ID: C-24 (1)
WETLAB Sample ID: 20120510-001
Collect Date/Time: 12/13/2020 18:05
Receive Date: 12/14/2020 12:30

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.37		mg/L	1	0.020	12/15/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.60		mg/L	1	0.020	12/15/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	140		mg/L	1	10	12/16/2020	NV00925
Total Nitrogen	Calc.	3.5		mg/L	1	0.25	12/21/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	170		mg/L	1	25	12/15/2020	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.37		mg/L	1	0.030	12/14/2020	NV00925
Nitrite Nitrogen	EPA 300.0	0.070		mg/L	1	0.020	12/14/2020	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	3.1	M	mg/L	0.5	0.20	12/21/2020	NV00925

Customer Sample ID: C-24 (2)
WETLAB Sample ID: 20120510-002
Collect Date/Time: 12/13/2020 18:49
Receive Date: 12/14/2020 12:30

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.30		mg/L	1	0.020	12/15/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.32		mg/L	1	0.020	12/15/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	120		mg/L	1	10	12/16/2020	NV00925
Total Nitrogen	Calc.	3.1		mg/L	1	0.25	12/21/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	110		mg/L	1	25	12/15/2020	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	0.28		mg/L	1	0.030	12/14/2020	NV00925
Nitrite Nitrogen	EPA 300.0	0.047		mg/L	1	0.020	12/14/2020	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	2.8		mg/L	0.5	0.20	12/21/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: C-24 (3) **Collect Date/Time:** 12/13/2020 19:10

WETLAB Sample ID: 20120510-003 **Receive Date:** 12/14/2020 12:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.22	mg/L	1	0.020	12/15/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.15	mg/L	1	0.020	12/15/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	140	mg/L	1	10	12/16/2020	NV00925
Total Nitrogen	Calc.	2.3	mg/L	1	0.25	12/21/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	87	mg/L	1	25	12/15/2020	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.21	mg/L	1	0.030	12/14/2020	NV00925
Nitrite Nitrogen	EPA 300.0	0.028	mg/L	1	0.020	12/14/2020	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	2.1	mg/L	0.5	0.20	12/21/2020	NV00925

Customer Sample ID: C-24 (4) **Collect Date/Time:** 12/13/2020 19:20

WETLAB Sample ID: 20120510-004 **Receive Date:** 12/14/2020 12:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.20	mg/L	1	0.020	12/15/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.22	mg/L	1	0.020	12/17/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	42	mg/L	1	10	12/16/2020	NV00925
Total Nitrogen	Calc.	1.5	mg/L	1	0.25	12/21/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	96	mg/L	1	25	12/15/2020	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.18	mg/L	1	0.030	12/14/2020	NV00925
Nitrite Nitrogen	EPA 300.0	0.024	mg/L	1	0.020	12/14/2020	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	1.3	mg/L	0.5	0.20	12/21/2020	NV00925

Customer Sample ID: D-16 (1) **Collect Date/Time:** 12/13/2020 18:46

WETLAB Sample ID: 20120510-005 **Receive Date:** 12/14/2020 12:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.16	mg/L	1	0.020	12/15/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.47	mg/L	1	0.020	12/17/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	200	mg/L	1	10	12/16/2020	NV00925
Total Nitrogen	Calc.	9.3	mg/L	1	0.50	12/21/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	450	mg/L	1	25	12/15/2020	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	1.0	mg/L	2	0.060	12/14/2020	NV00925
Nitrite Nitrogen	EPA 300.0	0.30	mg/L	2	0.040	12/14/2020	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	8.0	mg/L	1	0.40	12/21/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: D-16 (2) **Collect Date/Time:** 12/13/2020 20:07

WETLAB Sample ID: 20120510-006 **Receive Date:** 12/14/2020 12:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.28	mg/L	1	0.020	12/15/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.25	mg/L	1	0.020	12/17/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	140	mg/L	1	10	12/16/2020	NV00925
Total Nitrogen	Calc.	4.0	mg/L	1	0.25	12/21/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	190	mg/L	1	25	12/15/2020	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.58	mg/L	1	0.030	12/14/2020	NV00925
Nitrite Nitrogen	EPA 300.0	0.11	mg/L	1	0.020	12/14/2020	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	3.3	mg/L	0.5	0.20	12/21/2020	NV00925

Customer Sample ID: D-16 (3) **Collect Date/Time:** 12/13/2020 20:42

WETLAB Sample ID: 20120510-007 **Receive Date:** 12/14/2020 12:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.31	mg/L	1	0.020	12/15/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.44	mg/L	1	0.020	12/30/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	93	mg/L	1	10	12/16/2020	NV00925
Total Nitrogen	Calc.	3.7	mg/L	1	0.25	12/21/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	140	mg/L	1	25	12/15/2020	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.49	mg/L	1	0.030	12/14/2020	NV00925
Nitrite Nitrogen	EPA 300.0	0.076	mg/L	1	0.020	12/14/2020	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	3.1	mg/L	0.5	0.20	12/21/2020	NV00925

Customer Sample ID: D-16 (4) **Collect Date/Time:** 12/13/2020 21:10

WETLAB Sample ID: 20120510-008 **Receive Date:** 12/14/2020 12:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.29	mg/L	1	0.020	12/15/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.32	mg/L	1	0.020	12/30/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	37	mg/L	1	10	12/16/2020	NV00925
Total Nitrogen	Calc.	2.8	mg/L	1	0.25	12/21/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	200	mg/L	1	25	12/15/2020	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.54	mg/L	1	0.030	12/14/2020	NV00925
Nitrite Nitrogen	EPA 300.0	0.072	mg/L	1	0.020	12/14/2020	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	2.2	mg/L	0.5	0.20	12/21/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: SDOE 008936 (2) **Collect Date/Time:** 12/13/2020 19:11

WETLAB Sample ID: 20120510-009 **Receive Date:** 12/14/2020 12:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.25	mg/L	1	0.020	12/15/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.24	mg/L	1	0.020	12/17/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	140	mg/L	1	10	12/16/2020	NV00925
Total Nitrogen	Calc.	4.7	mg/L	1	0.25	12/21/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	240	mg/L	1	25	12/15/2020	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.87	mg/L	1	0.030	12/14/2020	NV00925
Nitrite Nitrogen	EPA 300.0	0.091	mg/L	1	0.020	12/14/2020	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	3.8 M	mg/L	0.5	0.20	12/21/2020	NV00925

Customer Sample ID: SDOE 008936 (3) **Collect Date/Time:** 12/13/2020 20:23

WETLAB Sample ID: 20120510-010 **Receive Date:** 12/14/2020 12:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.29	mg/L	1	0.020	12/15/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.58	mg/L	1	0.020	12/17/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	290	mg/L	1	10	12/16/2020	NV00925
Total Nitrogen	Calc.	5.5	mg/L	1	0.25	12/21/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	180	mg/L	1	25	12/15/2020	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.92	mg/L	1	0.030	12/14/2020	NV00925
Nitrite Nitrogen	EPA 300.0	0.082	mg/L	1	0.020	12/14/2020	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	4.5	mg/L	0.5	0.20	12/21/2020	NV00925

Customer Sample ID: SDOE 008936 (4) **Collect Date/Time:** 12/13/2020 21:11

WETLAB Sample ID: 20120510-011 **Receive Date:** 12/14/2020 12:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.35	mg/L	1	0.020	12/15/2020	NV00925
Total Phosphorous as P	SM 4500-P E	0.31	mg/L	1	0.020	12/17/2020	NV00925
Total Suspended Solids (TSS)	SM 2540D	100	mg/L	1	10	12/16/2020	NV00925
Total Nitrogen	Calc.	3.7	mg/L	1	0.25	12/21/2020	NV00925
Total Dissolved Solids (TDS)	SM 2540C	130	mg/L	1	25	12/15/2020	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.53	mg/L	1	0.030	12/14/2020	NV00925
Nitrite Nitrogen	EPA 300.0	0.075	mg/L	1	0.020	12/14/2020	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	3.1	mg/L	0.5	0.20	12/21/2020	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Western Environmental Testing Laboratory
QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC20120573	Blank 1	Nitrate Nitrogen	EPA 300.0	ND			mg/L
		Nitrite Nitrogen	EPA 300.0	ND			mg/L
QC20120593	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC20120595	Blank 1	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC20120618	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC20120624	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC20120659	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC20120755	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC20120864	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L
QC20120865	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC20120573	LCS 1	Nitrate Nitrogen	EPA 300.0	0.496	0.500	99	mg/L
		Nitrite Nitrogen	EPA 300.0	0.485	0.500	97	mg/L
QC20120593	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	164	150	109	mg/L
QC20120593	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	151	150	101	mg/L
QC20120595	LCS 1	Orthophosphate, as P	SM 4500-P E	0.260	0.250	104	mg/L
QC20120618	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	151	150	101	mg/L
QC20120618	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	149	150	99	mg/L
QC20120624	LCS 1	Total Phosphorous as P	SM 4500-P E	0.277	0.250	111	mg/L
QC20120659	LCS 1	Total Suspended Solids (TSS)	SM 2540D	197	200	99	mg/L
QC20120659	LCS 2	Total Suspended Solids (TSS)	SM 2540D	200	200	100	mg/L
QC20120755	LCS 1	Total Phosphorous as P	SM 4500-P E	0.238	0.250	95	mg/L
QC20120864	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	0.969	1.00	97	mg/L
QC20120865	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	0.938	1.00	94	mg/L

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC20120593	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	20120467-004	988	1002	mg/L	1 %
QC20120593	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	20120467-006	930	922	mg/L	1 %
QC20120618	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	20120477-001	1322	1374	mg/L	4 %
QC20120618	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	20120483-006	710	664	mg/L	7 %
QC20120659	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	20120548-001	25.0	24.0	mg/L	4 %
QC20120659	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	20120510-003	140	138	mg/L	1 %

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result	MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC20120573	MS 1	Nitrate Nitrogen	EPA 300.0	20120510-004	0.182	0.679	0.706	0.5	mg/L	99	105	4
		Nitrite Nitrogen	EPA 300.0	20120510-004	0.024	0.140	0.148	0.125	mg/L	92	99	6
QC20120573	MS 2	Nitrate Nitrogen	EPA 300.0	20120510-011	0.531	1.06	1.06	0.5	mg/L	106	107	<1
		Nitrite Nitrogen	EPA 300.0	20120510-011	0.075	0.200	0.199	0.125	mg/L	100	100	<1
QC20120595	MS 1	Orthophosphate, as P	SM 4500-P E	20120510-001	0.373	0.595	0.631	0.25	mg/L	89	103	6
QC20120595	MS 2	Orthophosphate, as P	SM 4500-P E	20120510-011	0.347	0.591	0.600	0.25	mg/L	98	102	2
QC20120624	MS 1	Total Phosphorous as P	SM 4500-P E	20120412-001	0.419	0.638	0.655	0.25	mg/L	87	94	3
QC20120624	MS 2	Total Phosphorous as P	SM 4500-P E	20120507-003	ND HT	0.234	0.242	0.25	mg/L	84	87	3
QC20120755	MS 1	Total Phosphorous as P	SM 4500-P E	20120464-002	ND	0.250	0.266	0.25	mg/L	93	100	6
QC20120755	MS 2	Total Phosphorous as P	SM 4500-P E	20120479-002	0.042	0.292	0.262	0.25	mg/L	100	88	11

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result		MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC20120864	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	20120310-001	0.102	M,J	0.549	0.500	0.5	mg/L	NC	NC	NC
QC20120864	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	20120510-001	3.10	M	3.52	3.91	0.5	mg/L	NC	NC	NC
QC20120865	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	20120510-009	3.75	M	4.70	4.21	0.5	mg/L	NC	NC	NC

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

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1084 Lamoille Highway | Elko, Nevada 89801
tel (775) 777-9933 | fax (775) 777-9933
3230 Polaris Ave., Suite 4 | Las Vegas, Nevada 89102
tel (702) 475-8899 | fax (702) 776-6152

WETLAB Order ID. 20120510
Sparks
Elko
LV
Report Due Date
Page 1 of 2

Client Balance Hydrologics
Address
City, State & Zip ON File
Contact Ben Trustman
Phone
Collector's Name
Fax
Project 213136
P.O. Number
PWS Number
Email btrustman@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 X CA
Other

Report Results Via
[✓ PDF] EDD
Other Excel

Compliance Monitoring?
Yes No X

Report to Regulatory Agency?
Yes No X

Standard QC Required?
[✓ Yes] No

Billing Address (if different than Client Address)
Company Balance Hydrologics
Address ON File
City, State & Zip
Contact Rachel Boitano
Phone
Fax
Email rboitano@balancehydro.com

Analyses Requested

SAMPLE ID/LOCATION	DATE	TIME	PRES TYPE *	SAMPLE TYPE **	NO. OF CONTAINERS	Total N	Total P	Ortho P	TDS	TSS	NO3					Spl. No.
C-24(1)	12/13/20	18:05		2	Aq	X	X	X	X	X	X					
C-24(2)		18:49		2		X	X	X	X	X	X					
C-24(3)		19:10		2		X	X	X	X	X	X					
C-24(4)		19:20		2		X	X	X	X	X	X					
D-16(1)		18:46		2		X	X	X	X	X	X					
D-16(2)		20:07		2		X	X	X	X	X	X					
D-16(3)		20:42		2		X	X	X	X	X	X					
D-16(4)		21:10		2		X	X	X	X	X	X					

2012 2
0510 11

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=NH4Cl 9=H3PO4

Temp	On Ice	Custody Seal	DATE	TIME	Samples Relinquished By	Samples Received By
2.1 °C	[✓ Y] / N	Y / [✓ N]	12/14/20	12:38		
°C	Y / N	Y / N				
°C	Y / N	Y / N				
°C	Y / N	Y / N				

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

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WETLAB Order ID. 20120510
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Report Due Date
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Client
Address
City, State & Zip
Contact
Phone
Collector's Name
Fax
Project
P.O. Number
PWS 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____

Report Results Via
PDF EDD Other

Compliance Monitoring?
Yes No

Report to Regulatory Agency?
Yes No

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	Total N	Total P	Ortho P	TDS	TSS	NO3					Spl. No.
SDOE 008936 (2)	12/13/20	19:11		Aq	2	X	X	X	X	X	X					
SDOE 008936 (3)		20:23			2	X	X	X	X	X	X					
SDOE 008936 (4)		21:11			2	X	X	X	X	X	X					

2012 2
0510 11

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=NH4Cl 9=H3PO4

Temp	On Ice	Custody Seal	DATE	TIME	Samples Relinquished By	Samples Received By
1.1 °C	[✓ Y] / N	Y / [✓ N]	12/14/20	12:30		
°C	Y / N	Y / N				
°C	Y / N	Y / N				
°C	Y / N	Y / N				

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

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

1/19/2021

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Ben Trustman

OrderID: *21010076*

Dear: Ben Trustman

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 1/5/2021. 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,

Cory Baker

Cory Baker
QA Specialist

Kat A Langford

Kat Langford
Project Manager

KatL@wetlaboratory.com
(775) 200-9876

Western Environmental Testing Laboratory
Report Comments

Balance Hydrologics - 21010076

Specific Report Comments

The result for Orthophosphate on sample 21010076-007 is higher than expected, especially when compared to the Total Phosphorus result. The Total Phosphorus was reanalyzed with confirming results. The Orthopohosphate was not reanalyzed due the EPA recommended holding time being expired. The chemical irregularity may be due to a sample matrix interference. We apologize for any inconveniece 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. The reported result should be considered an estimate.
K	--	The TPH Diesel Concentration reported here likely includes some heavier TPH Oil hydrocarbons reported in the TPH Diesel range as per EPA 8015.
L	--	The TPH Oil Concentration reported here likely includes some lighter TPH Diesel hydrocarbons reported in the TPH Oil range as per EPA 8015.
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. The reported result should be considered an estimate.

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.

Western Environmental Testing Laboratory
Analytical Report

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Ben Trustman
Phone: (510-704-1000 **Fax:** NoFax
PO\Project: *213136*

Date Printed: 1/19/2021
OrderID: *21010076*

Customer Sample ID: D-16 (1)
WETLAB Sample ID: 21010076-001
Collect Date/Time: 1/4/2021 16:22
Receive Date: 1/5/2021 13:04

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.26	mg/L	1	0.020	1/6/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.56	mg/L	1	0.020	1/8/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	820	mg/L	1	10	1/6/2021	NV00925
Total Nitrogen	Calc.	9.5	mg/L	1	0.50	1/12/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	830	mg/L	1	25	1/5/2021	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	1.1	mg/L	2	0.060	1/5/2021	NV00925
Nitrite Nitrogen	EPA 300.0	0.25	mg/L	2	0.040	1/5/2021	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	8.1	mg/L	1	0.40	1/12/2021	NV00925

Customer Sample ID: D-16 (3)
WETLAB Sample ID: 21010076-002
Collect Date/Time: 1/4/2021 16:47
Receive Date: 1/5/2021 13:04

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.26	mg/L	1	0.020	1/6/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.35	mg/L	1	0.020	1/8/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	370	mg/L	1	10	1/6/2021	NV00925
Total Nitrogen	Calc.	6.0	mg/L	1	0.45	1/12/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	440	mg/L	1	25	1/5/2021	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.60	mg/L	1	0.030	1/5/2021	NV00925
Nitrite Nitrogen	EPA 300.0	0.096	mg/L	1	0.020	1/5/2021	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	5.3	mg/L	1	0.40	1/12/2021	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: D-16 (4) **Collect Date/Time:** 1/4/2021 17:17
WETLAB Sample ID: 21010076-003 **Receive Date:** 1/5/2021 13:04

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.24	mg/L	1	0.020	1/6/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.48	mg/L	1	0.020	1/8/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	420	mg/L	1	10	1/6/2021	NV00925
Total Nitrogen	Calc.	4.9	mg/L	1	0.25	1/12/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	390	mg/L	1	25	1/5/2021	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.60	mg/L	1	0.030	1/5/2021	NV00925
Nitrite Nitrogen	EPA 300.0	0.12	mg/L	1	0.020	1/5/2021	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	4.2	mg/L	0.5	0.20	1/12/2021	NV00925

Customer Sample ID: H-19 (1) **Collect Date/Time:** 1/4/2021 17:11
WETLAB Sample ID: 21010076-004 **Receive Date:** 1/5/2021 13:04

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.29	mg/L	2	0.040	1/6/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.38	mg/L	1	0.020	1/12/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	240	mg/L	1	10	1/6/2021	NV00925
Total Nitrogen	Calc.	9.0	mg/L	1	0.45	1/12/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	220	mg/L	1	25	1/5/2021	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.53	mg/L	1	0.030	1/5/2021	NV00925
Nitrite Nitrogen	EPA 300.0	0.043	mg/L	1	0.020	1/5/2021	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	8.4	mg/L	1	0.40	1/12/2021	NV00925

Customer Sample ID: H-19 (3) **Collect Date/Time:** 1/4/2021 17:25
WETLAB Sample ID: 21010076-005 **Receive Date:** 1/5/2021 13:04

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.56	mg/L	2	0.040	1/6/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.56	mg/L	1	0.020	1/12/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	200	mg/L	1	10	1/6/2021	NV00925
Total Nitrogen	Calc.	4.4	mg/L	1	0.25	1/12/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	150	mg/L	1	25	1/5/2021	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.62	mg/L	1	0.030	1/5/2021	NV00925
Nitrite Nitrogen	EPA 300.0	0.053	mg/L	1	0.020	1/5/2021	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	3.7	mg/L	0.5	0.20	1/12/2021	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: H-19 (4) **Collect Date/Time:** 1/4/2021 17:54

WETLAB Sample ID: 21010076-006 **Receive Date:** 1/5/2021 13:04

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.73	mg/L	2	0.040	1/6/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.81	mg/L	1	0.020	1/19/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	97	mg/L	1	10	1/6/2021	NV00925
Total Nitrogen	Calc.	3.8	mg/L	1	0.25	1/12/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	150	mg/L	1	25	1/5/2021	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.68	mg/L	1	0.030	1/5/2021	NV00925
Nitrite Nitrogen	EPA 300.0	0.043	mg/L	1	0.020	1/5/2021	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	3.1	mg/L	0.5	0.20	1/12/2021	NV00925

Customer Sample ID: CC@CB **Collect Date/Time:** 1/4/2021 18:06

WETLAB Sample ID: 21010076-007 **Receive Date:** 1/5/2021 13:04

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.27	mg/L	1	0.020	1/6/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.15	mg/L	1	0.020	1/12/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	88	mg/L	1	10	1/6/2021	NV00925
Total Nitrogen	Calc.	2.8	mg/L	1	0.30	1/12/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	1700	mg/L	1	25	1/5/2021	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	1.0	mg/L	2	0.060	1/5/2021	NV00925
Nitrite Nitrogen	EPA 300.0	ND D	mg/L	2	0.040	1/5/2021	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	1.7	mg/L	0.5	0.20	1/12/2021	NV00925

Customer Sample ID: AC@TR **Collect Date/Time:** 1/4/2021 17:02

WETLAB Sample ID: 21010076-008 **Receive Date:** 1/5/2021 13:04

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.11	mg/L	1	0.020	1/6/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.13	mg/L	1	0.020	1/12/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	58	mg/L	1	10	1/6/2021	NV00925
Total Nitrogen	Calc.	1.5	mg/L	1	0.25	1/12/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	340	mg/L	1	25	1/5/2021	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.21	mg/L	1	0.030	1/5/2021	NV00925
Nitrite Nitrogen	EPA 300.0	0.039	mg/L	1	0.020	1/5/2021	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	1.3	mg/L	0.5	0.20	1/12/2021	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: C-24 (1) **Collect Date/Time:** 1/4/2021 11:25

WETLAB Sample ID: 21010076-009 **Receive Date:** 1/5/2021 13:04

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.19	mg/L	1	0.020	1/6/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.36	mg/L	1	0.020	1/12/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	170	mg/L	1	10	1/6/2021	NV00925
Total Nitrogen	Calc.	3.3	mg/L	1	0.25	1/12/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	360	mg/L	1	25	1/5/2021	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.35	mg/L	1	0.030	1/5/2021	NV00925
Nitrite Nitrogen	EPA 300.0	0.070	mg/L	1	0.020	1/5/2021	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	2.9	mg/L	0.5	0.20	1/12/2021	NV00925

Customer Sample ID: C-24 (2) **Collect Date/Time:** 1/4/2021 12:20

WETLAB Sample ID: 21010076-010 **Receive Date:** 1/5/2021 13:04

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.17	mg/L	1	0.020	1/6/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.22	mg/L	1	0.020	1/19/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	73	mg/L	1	10	1/6/2021	NV00925
Total Nitrogen	Calc.	2.0	mg/L	1	0.25	1/12/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	190	mg/L	1	25	1/5/2021	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.21	mg/L	1	0.030	1/5/2021	NV00925
Nitrite Nitrogen	EPA 300.0	0.043	mg/L	1	0.020	1/5/2021	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	1.8	mg/L	0.5	0.20	1/12/2021	NV00925

Customer Sample ID: C-24 (3) **Collect Date/Time:** 1/4/2021 15:59

WETLAB Sample ID: 21010076-011 **Receive Date:** 1/5/2021 13:04

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.17	mg/L	1	0.020	1/6/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.45	mg/L	1	0.020	1/12/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	190	mg/L	1	10	1/6/2021	NV00925
Total Nitrogen	Calc.	2.5	mg/L	1	0.25	1/12/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	200	mg/L	1	25	1/6/2021	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.21	mg/L	1	0.030	1/5/2021	NV00925
Nitrite Nitrogen	EPA 300.0	0.036	mg/L	1	0.020	1/5/2021	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	2.3	mg/L	0.5	0.20	1/12/2021	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: C-24 (4) **Collect Date/Time:** 1/4/2021 16:23

WETLAB Sample ID: 21010076-012 **Receive Date:** 1/5/2021 13:04

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.16	mg/L	1	0.020	1/6/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.28	mg/L	1	0.020	1/12/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	100	mg/L	1	10	1/6/2021	NV00925
Total Nitrogen	Calc.	1.7	mg/L	1	0.25	1/12/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	110	mg/L	1	25	1/6/2021	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.18	mg/L	1	0.030	1/5/2021	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.020	1/5/2021	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	1.5	mg/L	0.5	0.20	1/12/2021	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Western Environmental Testing Laboratory
QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC21010066	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC21010083	Blank 1	Nitrate Nitrogen	EPA 300.0	ND			mg/L
		Nitrite Nitrogen	EPA 300.0	ND			mg/L
QC21010089	Blank 1	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC21010126	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC21010140	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC21010223	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC21010285	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC21010325	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC21010066	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	147	150	98	mg/L
QC21010066	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	140	150	93	mg/L
QC21010083	LCS 1	Nitrate Nitrogen	EPA 300.0	0.494	0.500	99	mg/L
		Nitrite Nitrogen	EPA 300.0	0.499	0.500	100	mg/L
QC21010089	LCS 1	Orthophosphate, as P	SM 4500-P E	0.258	0.250	103	mg/L
QC21010126	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	149	150	99	mg/L
QC21010126	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	152	150	101	mg/L
QC21010140	LCS 1	Total Suspended Solids (TSS)	SM 2540D	200	200	100	mg/L
QC21010140	LCS 2	Total Suspended Solids (TSS)	SM 2540D	200	200	100	mg/L
QC21010223	LCS 1	Total Phosphorous as P	SM 4500-P E	0.262	0.250	105	mg/L
QC21010285	LCS 1	Total Phosphorous as P	SM 4500-P E	0.258	0.250	103	mg/L
QC21010325	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	0.996	1.00	100	mg/L

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC21010066	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	20120949-003	192	190	mg/L	1 %
QC21010066	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	21010076-001	832	790	mg/L	5 %
QC21010126	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	21010046-002	936	930	mg/L	1 %
QC21010126	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	21010065-002	1130	1124	mg/L	<1%
QC21010140	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	21010065-002	ND	ND	mg/L	<1%
QC21010140	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	21010106-001	ND	ND	mg/L	<1%

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result		MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC21010083	MS 1	Nitrate Nitrogen	EPA 300.0	21010076-006	0.681		1.21	1.22	0.5	mg/L	106	107	<1
		Nitrite Nitrogen	EPA 300.0	21010076-006	0.043		0.169	0.171	0.125	mg/L	101	103	1
QC21010083	MS 2	Nitrate Nitrogen	EPA 300.0	21010076-012	0.178		0.686	0.692	0.5	mg/L	102	103	<1
		Nitrite Nitrogen	EPA 300.0	21010076-012	ND		0.135	0.136	0.125	mg/L	98	99	<1
QC21010089	MS 1	Orthophosphate, as P	SM 4500-P E	21010076-001	0.264		0.501	0.504	0.25	mg/L	95	96	<1
QC21010089	MS 2	Orthophosphate, as P	SM 4500-P E	21010076-011	0.168		0.412	0.417	0.25	mg/L	98	100	1
QC21010223	MS 1	Total Phosphorous as P	SM 4500-P E	21010046-002	0.076		0.329	0.322	0.25	mg/L	101	98	2
QC21010223	MS 2	Total Phosphorous as P	SM 4500-P E	21010158-006	0.100		0.363	0.367	0.25	mg/L	105	107	1
QC21010285	MS 1	Total Phosphorous as P	SM 4500-P E	21010116-002	0.132	M	0.264	0.275	0.25	mg/L	NC	NC	NC
QC21010285	MS 2	Total Phosphorous as P	SM 4500-P E	21010167-002	0.056		0.275	0.278	0.25	mg/L	88	89	1
QC21010325	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	21010076-007	1.71		2.19	2.16	0.5	mg/L	97	90	1
QC21010325	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	21010147-002	10.4	SC	11.5	11.5	0.5	mg/L	NC	NC	NC

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

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

475 E. Greg Street #119 | Sparks, Nevada 89431 | www.WETLaboratory.com
tel (775) 355-0202 | fax (775) 355-0817
1084 Lamoille Highway | Elko, Nevada 89801
tel (775) 777-9933 | fax (775) 777-9933
3230 Polaris Ave., Suite 4 | Las Vegas, Nevada 89102
tel (702) 475-8899 | fax (702) 776-6152

WETLAB Order ID. 21010076
Sparks
Elko
LV
Report Due Date
Page 1 of 2

Client: Balance Hydrologics
Address: ON File
City, State & Zip:
Contact: Ben Trustman
Phone:
Collector's Name:
Fax:
Project: 213136
P.O. Number:
PWS Number:
Email: btrustman@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 X CA ____ Other ____

Compliance Monitoring? Yes [✓ No]

Report to Regulatory Agency? Yes [✓ No]

Report Results Via
[✓ PDF] EDD Other Excel

Standard QC Required? [✓ Yes] No

Billing Address (if different than Client Address)
Company: on file
Address:
City, State & Zip:
Contact: Rachel Boitano
Phone:
Fax:
Email: rboitano@balancehydro.com

SAMPLE ID/LOCATION	DATE	TIME	PRES TYPE *	SAMPLE TYPE **	NO. OF CONTAINERS	Total N	Total P	Ortho P	NO3	TKN	TSS					Spl. No.
D-16 (1)	1/4/21	16:22		Aq	2	X	X	X	X	X	X					
D-16 (3)	1/4/21	16:47			2	X	X	X	X	X	X					
D-16 (4	1/4/21	17:17			2	X	X	X	X	X	X					
H-19 (1)	1/4/21	17:11			2	X	X	X	X	X	X					
H-19 (3)	1/4/21	17:25			2	X	X	X	X	X	X				2101	2
H-19 (4)	1/4/21	17:54			2	X	X	X	X	X	X				0076	12
CC@CB	1/4/21	18:06			2	X	X	X	X	X	X					
AC@TR	1/4/21	17:02			2	X	X	X	X	X	X					

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=NH4Cl 9=H3PO4

Temp	On Ice	Custody Seal	DATE	TIME	Samples Relinquished By	Samples Received By
23 °C	[✓ Y] / N	Y / [✓ N]	1·5·21	1304		
°C	Y / N	Y / N				
°C	Y / N	Y / N				
°C	Y / N	Y / N				

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

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WETLAB Order ID 21010076
Sparks
Elko
LV
Report Due Date
Page 2 of 2

Client
Address
City, State & Zip
Contact
Phone
Collector's Name
Fax
Project
P.O. Number
PWS 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	Total N	Total P	Ortho P	NO3	TDS	TSS					Spl. No.
C-24(1)	1/4/21	11:25		Aq	2	X	X	X	X	X	X					
C-24(2)	1/4/21	12:20			2	X	X	X	X	X	X					
C-24 (3)	1/4/21	15:59			2	X	X	X	X	X	X					
C-24(4)	1/4/21	16:25			2	X	X	X	X	X	X					2101 2 0076 12

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=NH4Cl 9=H3PO4

Temp	On Ice	Custody Seal	DATE	TIME	Samples Relinquished By	Samples Received By
2.3°C	[✓ Y] / N	Y / [✓ N]	1.5.21	1304		
°C	Y / N	Y / N				
°C	Y / N	Y / N				
°C	Y / N	Y / N				

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

WETLAB
WESTERN ENVIRONMENTAL
TESTING LABORATORY

www.WETLaboratory.com

Specializing in Soil, Hazardous Waste and Water Analysis

4/12/2021

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Ben Trustman

OrderID: *21030851*

Dear: Ben Trustman

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 3/29/2021. 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,

Cory Baker

Cory Baker
QA Specialist

Mckenna Oh MckennaO@wetlaboratory.com
Project Manager (775) 200-9876

Western Environmental Testing Laboratory
Report Comments

Balance Hydrologics - 21030851

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. The reported result should be considered an estimate.

K -- The TPH Diesel Concentration reported here likely includes some heavier TPH Oil hydrocarbons reported in the TPH Diesel range as per EPA 8015.

L -- The TPH Oil Concentration reported here likely includes some lighter TPH Diesel hydrocarbons reported in the TPH Oil range as per EPA 8015.

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. The reported result should be considered an estimate.

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.

Western Environmental Testing Laboratory
Analytical Report

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Ben Trustman
Phone: (510-704-1000 **Fax:** NoFax
PO\Project: *213136*

Date Printed: 4/12/2021
OrderID: *21030851*

Customer Sample ID: NTD@ORD **Collect Date/Time:** 3/29/2021 11:00
WETLAB Sample ID: 21030851-001 **Receive Date:** 3/29/2021 15:15

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.33	mg/L	1	0.020	3/30/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.42	mg/L	1	0.020	4/1/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	10	mg/L	1	10	3/30/2021	NV00925
Total Nitrogen	Calc.	2.6	mg/L	1	0.22	4/7/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	1100	mg/L	1	25	3/30/2021	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	1.0	mg/L	1	0.020	4/5/2021	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	1.6	mg/L	0.5	0.20	4/7/2021	NV00925

Customer Sample ID: SBC@RHR **Collect Date/Time:** 3/29/2021 11:45
WETLAB Sample ID: 21030851-002 **Receive Date:** 3/29/2021 15:15

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.078	mg/L	1	0.020	3/30/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.093	mg/L	1	0.020	4/1/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	11	mg/L	1	10	3/30/2021	NV00925
Total Nitrogen	Calc.	0.37	mg/L	1	0.22	4/7/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	160	mg/L	1	25	3/30/2021	NV00925
Microbiological Analyses							
Total Coliform (MPN)	SM 9223B (Quantitray)	488.4	MPN/100ml	1	1.0	3/29/2021	NV00925
Escherichia Coli (MPN)	SM 9223B (Quantitray)	52.8	MPN/100ml	1	1.0	3/29/2021	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.074	mg/L	1	0.020	4/5/2021	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	0.30	mg/L	0.5	0.20	4/7/2021	NV00925

Customer Sample ID: SBC@MTR **Collect Date/Time:** 3/29/2021 11:50
WETLAB Sample ID: 21030851-003 **Receive Date:** 3/29/2021 15:15

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.078	mg/L	1	0.020	3/30/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.10	mg/L	1	0.020	4/1/2021	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: SBC@MTR **Collect Date/Time:** 3/29/2021 11:50

WETLAB Sample ID: 21030851-003 **Receive Date:** 3/29/2021 15:15

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
Total Suspended Solids (TSS)	SM 2540D	11	mg/L	1	10	3/30/2021	NV00925
Total Nitrogen	Calc.	0.39	mg/L	1	0.22	4/7/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	160	mg/L	1	25	3/30/2021	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.075	mg/L	1	0.020	4/5/2021	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	0.32	mg/L	0.5	0.20	4/7/2021	NV00925

Customer Sample ID: NTD@BFD (1) **Collect Date/Time:** 3/29/2021 10:35

WETLAB Sample ID: 21030851-004 **Receive Date:** 3/29/2021 15:15

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.17	mg/L	1	0.020	3/30/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.23	mg/L	1	0.020	4/1/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	ND	mg/L	1	10	3/30/2021	NV00925
Total Nitrogen	Calc.	2.2	mg/L	1	0.22	4/7/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	1100	mg/L	1	25	3/30/2021	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.92	mg/L	1	0.020	4/5/2021	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	1.3	mg/L	0.5	0.20	4/7/2021	NV00925

Customer Sample ID: WC@OVH **Collect Date/Time:** 3/29/2021 12:15

WETLAB Sample ID: 21030851-005 **Receive Date:** 3/29/2021 15:15

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	ND	mg/L	1	0.020	3/30/2021	NV00925
Total Phosphorous as P	SM 4500-P E	ND	mg/L	1	0.020	4/5/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	ND	mg/L	1	10	3/30/2021	NV00925
Total Nitrogen	Calc.	ND	mg/L	1	0.22	4/7/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	88	mg/L	1	25	3/30/2021	NV00925
Microbiological Analyses							
Total Coliform (MPN)	SM 9223B (Quantitray)	114.5	MPN/100ml	1	1.0	3/29/2021	NV00925
Escherichia Coli (MPN)	SM 9223B (Quantitray)	30.5	MPN/100ml	1	1.0	3/29/2021	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	ND	mg/L	1	0.020	4/5/2021	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	ND	mg/L	0.5	0.20	4/7/2021	NV00925

Customer Sample ID: TC@SMP **Collect Date/Time:** 3/29/2021 12:55

WETLAB Sample ID: 21030851-006 **Receive Date:** 3/29/2021 15:15

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.047	mg/L	1	0.020	3/30/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.082	mg/L	1	0.020	4/5/2021	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: TC@SMP **Collect Date/Time:** 3/29/2021 12:55

WETLAB Sample ID: 21030851-006 **Receive Date:** 3/29/2021 15:15

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
Total Suspended Solids (TSS)	SM 2540D	ND	mg/L	1	10	3/30/2021	NV00925
Total Nitrogen	Calc.	ND	mg/L	1	0.22	4/7/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	88	mg/L	1	25	3/30/2021	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	ND	mg/L	1	0.020	4/5/2021	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	0.20	mg/L	0.5	0.20	4/7/2021	NV00925

Customer Sample ID: EC@KL **Collect Date/Time:** 3/29/2021 13:50

WETLAB Sample ID: 21030851-007 **Receive Date:** 3/29/2021 15:15

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.078	mg/L	1	0.020	3/30/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.082	mg/L	1	0.020	4/5/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	ND	mg/L	1	10	3/30/2021	NV00925
Total Nitrogen	Calc.	0.90	mg/L	1	0.25	4/7/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	320	mg/L	1	25	3/30/2021	NV00925
Microbiological Analyses							
Total Coliform (MPN)	SM 9223B (Quantitray)	>2419.6	MPN/100ml	1	1.0	3/29/2021	NV00925
Escherichia Coli (MPN)	SM 9223B (Quantitray)	18.5	MPN/100ml	1	1.0	3/29/2021	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.64	mg/L	1	0.030	3/30/2021	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.020	3/30/2021	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	0.26	mg/L	0.5	0.20	4/7/2021	NV00925

Customer Sample ID: SBC@NAR **Collect Date/Time:** 3/29/2021 14:20

WETLAB Sample ID: 21030851-008 **Receive Date:** 3/29/2021 15:15

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.23	mg/L	1	0.020	3/30/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.27	mg/L	1	0.020	4/5/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	56	mg/L	1	10	3/30/2021	NV00925
Total Nitrogen	Calc.	0.60	mg/L	1	0.22	4/7/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	520	mg/L	1	25	3/30/2021	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	ND	mg/L	1	0.020	4/5/2021	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	0.59	mg/L	0.5	0.20	4/7/2021	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Western Environmental Testing Laboratory
QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC21030990	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC21030995	Blank 1	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC21031014	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC21031020	Blank 1	Total Coliform (MPN)	SM 9223B (Quant	ND			MPN/100ml
		Escherichia Coli (MPN)	SM 9223B (Quant	ND			MPN/100ml
QC21031041	Blank 1	Nitrate Nitrogen	EPA 300.0	ND			mg/L
		Nitrite Nitrogen	EPA 300.0	ND			mg/L
QC21040033	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC21040110	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC21040112	Blank 1	Nitrate + Nitrite Nitrogen	EPA 353.2	ND			mg/L
QC21040113	Blank 1	Nitrate + Nitrite Nitrogen	EPA 353.2	ND			mg/L
QC21040221	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC21030990	LCS 1	Total Suspended Solids (TSS)	SM 2540D	198	200	99	mg/L
QC21030990	LCS 2	Total Suspended Solids (TSS)	SM 2540D	197	200	99	mg/L
QC21030995	LCS 1	Orthophosphate, as P	SM 4500-P E	0.248	0.250	99	mg/L
QC21031014	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	148	150	99	mg/L
QC21031014	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	150	150	100	mg/L
QC21031041	LCS 1	Nitrate Nitrogen	EPA 300.0	0.482	0.500	96	mg/L
		Nitrite Nitrogen	EPA 300.0	0.478	0.500	96	mg/L
QC21040033	LCS 1	Total Phosphorous as P	SM 4500-P E	0.223	0.250	89	mg/L
QC21040110	LCS 1	Total Phosphorous as P	SM 4500-P E	0.224	0.250	90	mg/L
QC21040112	LCS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	0.953	1.00	95	mg/L
QC21040113	LCS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	0.959	1.00	96	mg/L
QC21040221	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	1.04	1.00	104	mg/L

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC21030990	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	21030752-002	ND	ND	mg/L	NA
QC21030990	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	21030851-002	10.7	10.7	mg/L	<1%
QC21031014	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	21030835-001	360	356	mg/L	1 %
QC21031014	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	21030851-004	1052	1072	mg/L	2 %

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result	MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC21030995	MS 1	Orthophosphate, as P	SM 4500-P E	21030851-005	ND	0.264	0.266	0.25	mg/L	99	100	<1
QC21031041	MS 1	Nitrate Nitrogen	EPA 300.0	21030851-007	0.636	1.15	1.16	0.5	mg/L	104	105	<1
		Nitrite Nitrogen	EPA 300.0	21030851-007	ND	0.111	0.101	0.125	mg/L	89	81	9
QC21040033	MS 1	Total Phosphorous as P	SM 4500-P E	21030809-002	0.123	0.357	0.373	0.25	mg/L	94	100	4
QC21040033	MS 2	Total Phosphorous as P	SM 4500-P E	21030825-002	0.061	M, 0.382	0.361	0.25	mg/L	NC	NC	NC
QC21040110	MS 1	Total Phosphorous as P	SM 4500-P E	21030856-002	0.113	0.360	0.393	0.25	mg/L	99	112	9
QC21040110	MS 2	Total Phosphorous as P	SM 4500-P E	21030900-001	0.278	0.529	0.521	0.25	mg/L	101	97	2
QC21040112	MS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	21020564-001	ND	5.20	5.12	1	mg/L	104	102	2
QC21040112	MS 2	Nitrate + Nitrite Nitrogen	EPA 353.2	21030814-002	0.632	5.71	5.74	1	mg/L	102	102	<1
QC21040113	MS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	21030835-005	0.272	5.45	5.40	1	mg/L	104	102	<1
QC21040113	MS 2	Nitrate + Nitrite Nitrogen	EPA 353.2	21030863-002	ND	5.21	5.23	1	mg/L	104	104	<1
QC21040221	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	21030900-001	0.492	M 0.906	0.927	0.5	mg/L	NC	NC	NC

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result	MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC21040221	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	21030851-001	1.58	2.05	2.13	0.5	mg/L	94	110	4

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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1084 Lamoille Highway | Elko, Nevada 89801
tel (775) 777-9933 | fax (775) 777-9933
3230 Polaris Ave., Suite 4 | Las Vegas, Nevada 89102
tel (702) 475-8899 | fax (702) 776-6152

WETLAB Order ID. 21030851
Sparks
Elko
LV
Report Due Date
Page ____ of ____

Client Balance Hydrologics
Address
City, State & Zip ON File
Contact
Phone
Collector's Name
Fax
Project 213136
P.O. Number
PWS Number
Email bfrustman@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 X CA ____ Other ____

Compliance Monitoring?
Yes [✓ No]

Report to Regulatory Agency?
Yes [✓ No]

Report Results Via
[✓ PDF] EDD Other Excel

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	Total N	Total P	NO3	Ortho P	TDS	TSS	E coli				Spl. No.
~~NTD@BFD(1)~~ NTD@ORD	3/29/21	11:00		Aq	2	X	X		X	X	X					
SBC@RHR	3/29/21	11:45			3	X	X		X	X	X	X				
SBC@MTR	3/29/21	11:50			2	X	X		X	X	X					
NTD@BFD(1)	3/29/21	10:35			2	X	X		X	X	X					
WC@OVH	3/29/21	12:15			3	X	X		X	X	X	X				
TC@SMP	3/29/21	12:55			2	X	X		X	X	X					
EC@KL	3/29/21	13:50			3	X	X	X	X	X	X	X				
SBL@NAR	3/29/21	14:20			2	X	X		X	X	X					

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=NH4Cl 9=H3PO4

Temp	On Ice	Custody Seal	DATE	TIME	Samples Relinquished By	Samples Received By
8 °C	[✓ Y] / N	Y / [✓ N]	3·29	315p		
°C	Y / N	Y / N				
°C	Y / N	Y / N				
°C	Y / N	Y / N				

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

WETLAB
WESTERN ENVIRONMENTAL
TESTING LABORATORY

www.WETLaboratory.com

Specializing in Soil, Hazardous Waste and Water Analysis

4/13/2021

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Ben Trustman

OrderID: *21030900*

Dear: Ben Trustman

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 3/30/2021. 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,

Cory Baker

Cory Baker
QA Specialist

Mckenna Oh
Project Manager

McKennaO@wetlaboratory.com
(775) 200-9876

Western Environmental Testing Laboratory
Report Comments

Balance Hydrologics - 21030900

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. The reported result should be considered an estimate.

K -- The TPH Diesel Concentration reported here likely includes some heavier TPH Oil hydrocarbons reported in the TPH Diesel range as per EPA 8015.

L -- The TPH Oil Concentration reported here likely includes some lighter TPH Diesel hydrocarbons reported in the TPH Oil range as per EPA 8015.

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. The reported result should be considered an estimate.

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.

Western Environmental Testing Laboratory
Analytical Report

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Ben Trustman
Phone: (510-704-1000 **Fax:** NoFax
PO\Project: *213136*

Date Printed: 4/13/2021
OrderID: *21030900*

Customer Sample ID: CC @ CB
WETLAB Sample ID: 21030900-001
Collect Date/Time: 3/30/2021 12:35
Receive Date: 3/30/2021 16:32

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.26		mg/L	1	0.020	3/31/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.28		mg/L	1	0.020	4/5/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	ND		mg/L	1	10	3/31/2021	NV00925
Total Nitrogen	Calc.	1.6		mg/L	1	0.30	4/7/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	2100		mg/L	1	25	3/31/2021	NV00925
Anions by Ion Chromatography								
Nitrate Nitrogen	EPA 300.0	1.1		mg/L	2	0.060	3/30/2021	NV00925
Nitrite Nitrogen	EPA 300.0	ND	D	mg/L	2	0.040	3/30/2021	NV00925
Flow Injection Analyses								
Total Kjeldahl Nitrogen	EPA 351.2	0.49	M	mg/L	0.5	0.20	4/7/2021	NV00925

Customer Sample ID: BS @ SBC (1)
WETLAB Sample ID: 21030900-002
Collect Date/Time: 3/29/2021 12:00
Receive Date: 3/30/2021 16:32

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.071		mg/L	1	0.020	3/31/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.11		mg/L	1	0.020	4/5/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	110		mg/L	1	10	3/31/2021	NV00925
Total Nitrogen	Calc.	1.6		mg/L	1	0.22	4/7/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	210		mg/L	1	25	3/31/2021	NV00925
Flow Injection Analyses								
Nitrate + Nitrite Nitrogen	EPA 353.2	0.38		mg/L	1	0.020	4/6/2021	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	1.2		mg/L	0.5	0.20	4/7/2021	NV00925

Customer Sample ID: BS @ SBC (2)
WETLAB Sample ID: 21030900-003
Collect Date/Time: 3/29/2021 18:00
Receive Date: 3/30/2021 16:32

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.082		mg/L	1	0.020	3/31/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.16		mg/L	1	0.020	4/5/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	41		mg/L	1	10	3/31/2021	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: BS @ SBC (2) **Collect Date/Time:** 3/29/2021 18:00
WETLAB Sample ID: 21030900-003 **Receive Date:** 3/30/2021 16:32

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
Total Nitrogen	Calc.	0.96	mg/L	1	0.22	4/7/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	180	mg/L	1	25	3/31/2021	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.39	mg/L	1	0.020	4/6/2021	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	0.57	mg/L	0.5	0.20	4/7/2021	NV00925

Customer Sample ID: BS @ SBC (3) **Collect Date/Time:** 3/30/2021 00:00
WETLAB Sample ID: 21030900-004 **Receive Date:** 3/30/2021 16:32

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.083	mg/L	1	0.020	3/31/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.11	mg/L	1	0.020	4/5/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	22	mg/L	1	10	3/31/2021	NV00925
Total Nitrogen	Calc.	0.87	mg/L	1	0.22	4/7/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	220	mg/L	1	25	3/31/2021	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.40	mg/L	1	0.020	4/6/2021	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	0.47	mg/L	0.5	0.20	4/7/2021	NV00925

Customer Sample ID: BS @ SBC (4) **Collect Date/Time:** 3/30/2021 06:00
WETLAB Sample ID: 21030900-005 **Receive Date:** 3/30/2021 16:32

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.082	mg/L	1	0.020	3/31/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.14	mg/L	1	0.020	4/7/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	17	mg/L	1	10	3/31/2021	NV00925
Total Nitrogen	Calc.	0.82	mg/L	1	0.22	4/7/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	200	mg/L	1	25	3/31/2021	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.39	mg/L	1	0.020	4/6/2021	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	0.43	mg/L	0.5	0.20	4/7/2021	NV00925

Customer Sample ID: YD @ SBC (1) **Collect Date/Time:** 3/29/2021 12:00
WETLAB Sample ID: 21030900-006 **Receive Date:** 3/30/2021 16:32

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.049	mg/L	1	0.020	3/31/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.13	mg/L	1	0.020	4/7/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	39	mg/L	1	10	3/31/2021	NV00925
Total Nitrogen	Calc.	3.2	mg/L	1	0.24	4/7/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	330	mg/L	1	25	3/31/2021	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: YD @ SBC (1) **Collect Date/Time:** 3/29/2021 12:00

WETLAB Sample ID: 21030900-006 **Receive Date:** 3/30/2021 16:32

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	2.2	mg/L	2	0.040	4/6/2021	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	1.0	mg/L	0.5	0.20	4/7/2021	NV00925

Customer Sample ID: SBC @ CWW (1) **Collect Date/Time:** 3/29/2021 12:00

WETLAB Sample ID: 21030900-007 **Receive Date:** 3/30/2021 16:32

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.16	mg/L	1	0.020	3/31/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.23	mg/L	1	0.020	4/7/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	44	mg/L	1	10	3/31/2021	NV00925
Total Nitrogen	Calc.	1.1	mg/L	1	0.22	4/7/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	430	mg/L	1	25	3/31/2021	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.35	mg/L	1	0.020	4/6/2021	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	0.78	mg/L	0.5	0.20	4/7/2021	NV00925

Customer Sample ID: SBC @ CWW (2) **Collect Date/Time:** 3/29/2021 18:00

WETLAB Sample ID: 21030900-008 **Receive Date:** 3/30/2021 16:32

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.16	mg/L	1	0.020	3/31/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.18	mg/L	1	0.020	4/7/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	54	mg/L	1	10	3/31/2021	NV00925
Total Nitrogen	Calc.	1.1	mg/L	1	0.22	4/7/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	320	mg/L	1	25	3/31/2021	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.34	mg/L	1	0.020	4/6/2021	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	0.78	mg/L	0.5	0.20	4/7/2021	NV00925

Customer Sample ID: SBC @ CWW (3) **Collect Date/Time:** 3/30/2021 00:00

WETLAB Sample ID: 21030900-009 **Receive Date:** 3/30/2021 16:32

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.18	mg/L	1	0.020	3/31/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.18	mg/L	1	0.020	4/7/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	57	mg/L	1	10	3/31/2021	NV00925
Total Nitrogen	Calc.	1.0	mg/L	1	0.22	4/7/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	320	mg/L	1	25	3/31/2021	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.32	mg/L	1	0.020	4/6/2021	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	0.68	mg/L	0.5	0.20	4/7/2021	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Customer Sample ID: SBC @ CWW (3) **Collect Date/Time:** 3/30/2021 00:00

WETLAB Sample ID: 21030900-009 **Receive Date:** 3/30/2021 16:32

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID

Customer Sample ID: SBC @ CWW (4) **Collect Date/Time:** 3/30/2021 06:00

WETLAB Sample ID: 21030900-010 **Receive Date:** 3/30/2021 16:32

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.19	mg/L	1	0.020	3/31/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.19	mg/L	1	0.020	4/7/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	53	mg/L	1	10	3/31/2021	NV00925
Total Nitrogen	Calc.	1.0	mg/L	1	0.22	4/7/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	400	mg/L	1	25	3/31/2021	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.36	mg/L	1	0.020	4/6/2021	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	0.66	mg/L	0.5	0.20	4/7/2021	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Western Environmental Testing Laboratory
QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC21031036	Blank 1	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC21031041	Blank 1	Nitrate Nitrogen	EPA 300.0	ND			mg/L
		Nitrite Nitrogen	EPA 300.0	ND			mg/L
QC21031052	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC21031064	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC21040015	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC21040110	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC21040156	Blank 1	Nitrate + Nitrite Nitrogen	EPA 353.2	ND			mg/L
QC21040157	Blank 1	Nitrate + Nitrite Nitrogen	EPA 353.2	ND			mg/L
QC21040200	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC21040221	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC21031036	LCS 1	Orthophosphate, as P	SM 4500-P E	0.247	0.250	99	mg/L
QC21031041	LCS 1	Nitrate Nitrogen	EPA 300.0	0.482	0.500	96	mg/L
		Nitrite Nitrogen	EPA 300.0	0.478	0.500	96	mg/L
QC21031052	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	140	150	93	mg/L
QC21031052	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	150	150	100	mg/L
QC21031064	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	140	150	93	mg/L
QC21031064	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	145	150	97	mg/L
QC21040015	LCS 1	Total Suspended Solids (TSS)	SM 2540D	196	200	98	mg/L
QC21040015	LCS 2	Total Suspended Solids (TSS)	SM 2540D	198	200	99	mg/L
QC21040110	LCS 1	Total Phosphorous as P	SM 4500-P E	0.224	0.250	90	mg/L
QC21040156	LCS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	0.965	1.00	97	mg/L
QC21040157	LCS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	0.952	1.00	95	mg/L
QC21040200	LCS 1	Total Phosphorous as P	SM 4500-P E	0.254	0.250	101	mg/L
QC21040221	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	1.04	1.00	104	mg/L

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC21031052	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	21030817-001	1010	1006	mg/L	<1%
QC21031052	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	21030835-003	432	431	mg/L	<1%
QC21031064	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	21030848-002	798	740	mg/L	8 %
QC21031064	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	21030856-002	864	832	mg/L	4 %
QC21040015	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	21030825-002	ND	ND	mg/L	<1%
QC21040015	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	21030900-001	ND	ND	mg/L	<1%

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result		MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC21031036	MS 1	Orthophosphate, as P	SM 4500-P E	21030900-001	0.256		0.500	0.501	0.25	mg/L	98	98	<1
QC21031036	MS 2	Orthophosphate, as P	SM 4500-P E	21030900-005	0.082		0.332	0.333	0.25	mg/L	100	100	<1
QC21031041	MS 1	Nitrate Nitrogen	EPA 300.0	21030851-007	0.636		1.15	1.16	0.5	mg/L	104	105	<1
		Nitrite Nitrogen	EPA 300.0	21030851-007	ND		0.111	0.101	0.125	mg/L	89	81	9
QC21040110	MS 1	Total Phosphorous as P	SM 4500-P E	21030856-002	0.113		0.360	0.393	0.25	mg/L	99	112	9
QC21040110	MS 2	Total Phosphorous as P	SM 4500-P E	21030900-001	0.278		0.529	0.521	0.25	mg/L	101	97	2
QC21040156	MS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	21030879-001	ND		4.80	5.20	1	mg/L	96	104	8
QC21040156	MS 2	Nitrate + Nitrite Nitrogen	EPA 353.2	21030887-006	ND	M	2.34	3.22	1	mg/L	NC	NC	NC

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result		MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC21040157	MS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	21030892-001	1.30	M	5.48	6.40	1	mg/L	NC	NC	NC
QC21040157	MS 2	Nitrate + Nitrite Nitrogen	EPA 353.2	21030910-002	1.28		6.38	6.39	1	mg/L	102	102	<1
QC21040200	MS 1	Total Phosphorous as P	SM 4500-P E	21030900-005	0.143		0.367	0.411	0.25	mg/L	90	107	11
QC21040200	MS 2	Total Phosphorous as P	SM 4500-P E	21030900-006	0.129		0.347	0.364	0.25	mg/L	87	94	5
QC21040221	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	21030900-001	0.492	M	0.906	0.927	0.5	mg/L	NC	NC	NC
QC21040221	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	21030851-001	1.58		2.05	2.13	0.5	mg/L	94	110	4

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1084 Lamoille Highway | Elko, Nevada 89801
tel (775) 777-9933 | fax (775) 777-9933
3230 Polaris Ave., Suite 4 | Las Vegas, Nevada 89102
tel (702) 475-8899 | fax (702) 776-6152

WETLAB Order ID. 21030900
Sparks
Elko
LV
Report Due Date
Page 1 of 2

Client: Balance Hydrologics
Address:
City, State & Zip: ON File
Contact:
Phone:
Collector's Name:
Fax:
Project: 21313.6
P.O. Number:
PWS Number:
Email: btrustman@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 X CA ____ Other ____

Compliance Monitoring? Yes [✓ No]

Report to Regulatory Agency? Yes [✓ No]

Report Results Via [✓ PDF] EDD Other Excel

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	Total N	Total P	Ortho P	TDS	TSS	NO_3					Spl. No.
LC@CB	3/30/21	12:35		Aq	2	X	X	X	X	X	X					
BS@SBC (1)	3/29/21	12:00			2	X	X	X	X	X						
BS@SBC (2)	3/29/21	18:00			2	X	X	X	X	X						
BS@SBC (3)	3/30/21	0:00			2	X	X	X	X	X						
BS@SBC (4)	3/30/21	06:00			2	X	X	X	X	X						
YD@SBC(1)	3/29/21	12:00			2	X	X	X	X	X						
SBC@CWW(1)	3/29/21	12:00			2	X	X	X	X	X						
SBC@CWW (2)	3/29/21	18:00			2	X	X	X	X	X						
SBC@CWW(3)	3/30/21	0:00			2	X	X	X	X	X						

2103 2
0900 10

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=NH4Cl 9=H3PO4

Temp	On Ice	Custody Seal	DATE	TIME	Samples Relinquished By	Samples Received By
11.3°C	[✓ Y] / N	Y / [✓ N]	3-30-21	1632		
°C	Y / N	Y / N				
°C	Y / N	Y / N				
°C	Y / N	Y / N				

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

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tel (775) 777-9933 | fax (775) 777-9933
3230 Polaris Ave., Suite 4 | Las Vegas, Nevada 89102
tel (702) 475-8899 | fax (702) 776-6152

WETLAB Order ID. 21030900
Sparks
Elko
LV
Report Due Date
Page 2 of 2

Client
Address
City, State & Zip
Contact
Phone
Collector's Name
Fax
Project
P.O. Number
PWS 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	Total N	Total P	Ortho P	TSS	TDS						Spl. No.
SBC @ CWW (4)	3/30/21	06:00		Aq	2	X	X	X	X	X						

2103 2
0900 10

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=NH4Cl 9=H3PO4

Temp	On Ice	Custody Seal	DATE	TIME	Samples Relinquished By	Samples Received By
11.3 °C	[✓ Y] / N	Y / [✓ N]	3-30-21	1632		
°C	Y / N	Y / N				
°C	Y / N	Y / N				
°C	Y / N	Y / N				

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

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5/27/2021

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Ben Trustman

OrderID: *21050512*

Dear: Ben Trustman

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 5/17/2021. 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,

Cory Baker

Cory Baker
QA Specialist

Mckenna Oh
Project Manager

McKennaO@wetlaboratory.com
(775) 200-9876

Western Environmental Testing Laboratory
Report Comments

Balance Hydrologics - 21050512

Specific Report Comments

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. The reported result should be considered an estimate.
K	--	The TPH Diesel Concentration reported here likely includes some heavier TPH Oil hydrocarbons reported in the TPH Diesel range as per EPA 8015.
L	--	The TPH Oil Concentration reported here likely includes some lighter TPH Diesel hydrocarbons reported in the TPH Oil range as per EPA 8015.
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. The reported result should be considered an estimate.

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.

Western Environmental Testing Laboratory
Analytical Report

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

Date Printed: 5/27/2021
OrderID: *21050512*

Customer Sample ID: NTD@ORD
WETLAB Sample ID: 21050512-001
Collect Date/Time: 5/15/2021 14:20
Receive Date: 5/17/2021 09:25

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.29	mg/L	1	0.020	5/17/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.48	mg/L	1	0.020	5/20/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	100	mg/L	1	10	5/18/2021	NV00925
Total Nitrogen	Calc.	6.3	mg/L	1	0.22	5/21/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	780	mg/L	1	25	5/18/2021	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	1.3	mg/L	1	0.020	5/21/2021	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	5.0	mg/L	0.5	0.20	5/21/2021	NV00925

Customer Sample ID: EC@KL
WETLAB Sample ID: 21050512-002
Collect Date/Time: 5/15/2021 15:30
Receive Date: 5/17/2021 09:25

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.095	mg/L	1	0.020	5/17/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.17	mg/L	1	0.020	5/20/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	12	mg/L	1	10	5/18/2021	NV00925
Total Nitrogen	Calc.	2.4	mg/L	1	0.25	5/21/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	110	mg/L	1	25	5/18/2021	NV00925
Anions by Ion Chromatography							
Nitrate Nitrogen	EPA 300.0	0.14	mg/L	1	0.030	5/17/2021	NV00925
Nitrite Nitrogen	EPA 300.0	ND	mg/L	1	0.020	5/17/2021	NV00925
Flow Injection Analyses							
Total Kjeldahl Nitrogen	EPA 351.2	2.3	mg/L	0.5	0.20	5/21/2021	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Western Environmental Testing Laboratory
QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC21050575	Blank 1	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC21050597	Blank 1	Nitrate Nitrogen	EPA 300.0	ND			mg/L
		Nitrite Nitrogen	EPA 300.0	ND			mg/L
QC21050604	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC21050694	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC21050746	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC21050775	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L
QC21050793	Blank 1	Nitrate + Nitrite Nitrogen	EPA 353.2	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC21050575	LCS 1	Orthophosphate, as P	SM 4500-P E	0.275	0.250	110	mg/L
QC21050597	LCS 1	Nitrate Nitrogen	EPA 300.0	0.476	0.500	95	mg/L
		Nitrite Nitrogen	EPA 300.0	0.462	0.500	92	mg/L
QC21050604	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	149	150	99	mg/L
QC21050604	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	156	150	104	mg/L
QC21050694	LCS 1	Total Suspended Solids (TSS)	SM 2540D	199	200	100	mg/L
QC21050694	LCS 2	Total Suspended Solids (TSS)	SM 2540D	200	200	100	mg/L
QC21050746	LCS 1	Total Phosphorous as P	SM 4500-P E	0.265	0.250	106	mg/L
QC21050775	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	0.959	1.00	96	mg/L
QC21050793	LCS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	1.01	1.00	101	mg/L

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC21050604	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	21050500-001	758	784	mg/L	3 %
QC21050604	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	21050513-002	484	509	mg/L	5 %
QC21050694	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	21050482-002	ND	ND	mg/L	<1%
QC21050694	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	21050501-002	ND	ND	mg/L	<1%

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result		MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC21050575	MS 1	Orthophosphate, as P	SM 4500-P E	21050512-001	0.288		0.518	0.528	0.25	mg/L	92	96	2
QC21050597	MS 1	Nitrate Nitrogen	EPA 300.0	21050512-002	0.142		0.668	0.666	0.5	mg/L	105	105	<1
		Nitrite Nitrogen	EPA 300.0	21050512-002	ND		0.125	0.124	0.125	mg/L	100	100	<1
QC21050746	MS 1	Total Phosphorous as P	SM 4500-P E	21050482-002	0.118		0.383	0.390	0.25	mg/L	106	109	2
QC21050746	MS 2	Total Phosphorous as P	SM 4500-P E	21050513-005	0.088		0.320	0.329	0.25	mg/L	92	96	3
QC21050775	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	21050302-001	ND	QD	0.678	0.979	0.5	mg/L	106	167	36
QC21050775	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	21050525-003	0.344	M	0.870	0.832	0.5	mg/L	NC	NC	NC
QC21050793	MS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	21050495-001	0.375		5.46	5.49	1	mg/L	102	102	<1
QC21050793	MS 2	Nitrate + Nitrite Nitrogen	EPA 353.2	21050500-002	0.740		5.81	5.72	1	mg/L	101	100	2

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tel (775) 777-9933 | fax (775) 777-9933
3230 Polaris Ave., Suite 4 | Las Vegas, Nevada 89102
tel (702) 475-8899 | fax (702) 776-6152

WETLAB Order ID. 21050512
Sparks Control #
Elko Control #
LV Control #
Report Due Date
Page ____ of ____

Client Balance Hydrologics
Address
City, State & Zip ON File
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 X CA ____
Other ____

Report Results Via
[✓ PDF] EDD
Other Excel

Compliance Monitoring?
Yes [✓ No]

Report to Regulatory Agency?
Yes [✓ No]

Standard QC Required?
[✓ Yes] No

Billing Address (if different than Client Address)
Company ON File
Address
City, State & Zip
Contact
Phone ____ Fax ____
Email

Analyses Requested

SAMPLE ID/LOCATION	DATE	TIME	PRES TYPE *	SAMPLE TYPE **	NO. OF CONTAINERS	Total P	Ortho P	Total N	TDS	TSS	NO_3					Spl. No.
NTD @ ORD	5/15/21	14:20		Aq	2	X	X	X	X	X						
EC @ KL	5/15/21	15:30		Aq	2	X	X	X	X	X	X					

2105 2
0512 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
7.8 °C	Y N [✓ None]	4	5.17.21	0925		
°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

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www.WETLaboratory.com

Specializing in Soil, Hazardous Waste and Water Analysis

6/18/2021

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Ben Trustman

OrderID: *21060147*

Dear: Ben Trustman

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 6/4/2021. 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,

Cory Baker

Cory Baker
QA Specialist

Mckenna Oh MckennaO@wetlaboratory.com
Project Manager (775) 200-9876

Western Environmental Testing Laboratory
Report Comments

Balance Hydrologics - 21060147

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. The reported result should be considered an estimate.

K -- The TPH Diesel Concentration reported here likely includes some heavier TPH Oil hydrocarbons reported in the TPH Diesel range as per EPA 8015.

L -- The TPH Oil Concentration reported here likely includes some lighter TPH Diesel hydrocarbons reported in the TPH Oil range as per EPA 8015.

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. The reported result should be considered an estimate.

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.

Western Environmental Testing Laboratory
Analytical Report

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

Date Printed: 6/18/2021
OrderID: *21060147*

Customer Sample ID: NTD @ BFD (1)
WETLAB Sample ID: 21060147-001

Collect Date/Time: 6/3/2021 17:56
Receive Date: 6/4/2021 09:16

Analyte	Method	Results		Units	DF	RL	Analyzed	LabID
General Chemistry								
Orthophosphate, as P	SM 4500-P E	0.13		mg/L	1	0.020	6/4/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.57		mg/L	1	0.020	6/14/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	470		mg/L	1	10	6/8/2021	NV00925
Total Nitrogen	Calc.	7.2		mg/L	1	0.42	6/16/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	300		mg/L	1	25	6/4/2021	NV00925
Flow Injection Analyses								
Nitrate + Nitrite Nitrogen	EPA 353.2	1.1	M	mg/L	1	0.020	6/16/2021	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	6.2		mg/L	1	0.40	6/11/2021	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Western Environmental Testing Laboratory
QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC21060218	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC21060224	Blank 1	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC21060354	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC21060504	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L
QC21060556	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC21060691	Blank 1	Nitrate + Nitrite Nitrogen	EPA 353.2	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC21060218	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	150	150	100	mg/L
QC21060218	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	147	150	98	mg/L
QC21060224	LCS 1	Orthophosphate, as P	SM 4500-P E	0.274	0.250	110	mg/L
QC21060354	LCS 1	Total Suspended Solids (TSS)	SM 2540D	197	200	99	mg/L
QC21060354	LCS 2	Total Suspended Solids (TSS)	SM 2540D	197	200	99	mg/L
QC21060504	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	1.02	1.00	102	mg/L
QC21060556	LCS 1	Total Phosphorous as P	SM 4500-P E	0.277	0.250	111	mg/L
QC21060691	LCS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	0.988	1.00	99	mg/L

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC21060218	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	21060113-009	1216	1252	mg/L	3 %
QC21060218	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	21060139-007	514	506	mg/L	2 %
QC21060354	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	21060139-006	ND	ND	mg/L	<1%
QC21060354	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	21060152-001	12.0	11.7	mg/L	3 %

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result		MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC21060224	MS 1	Orthophosphate, as P	SM 4500-P E	21060147-001	0.126		0.363	0.368	0.25	mg/L	95	97	1
QC21060504	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	21060055-001	0.106	J	0.644	0.654	0.5	mg/L	108	110	2
QC21060504	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	21060163-003	1.17	M	1.87	1.77	0.5	mg/L	NC	NC	NC
QC21060556	MS 1	Total Phosphorous as P	SM 4500-P E	21060086-002	0.126		0.360	0.386	0.25	mg/L	93	104	7
QC21060556	MS 2	Total Phosphorous as P	SM 4500-P E	21060340-002	0.080	M	0.450	0.417	0.25	mg/L	NC	NC	NC
QC21060691	MS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	21060147-001	1.06	M	1.89	1.82	1	mg/L	NC	NC	NC
QC21060691	MS 2	Nitrate + Nitrite Nitrogen	EPA 353.2	21060195-003	ND		4.93	5.02	1	mg/L	98	100	2

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

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

475 E. Greg Street #119 | Sparks, Nevada 89431 | www.WETLaboratory.com
tel (775) 355-0202 | fax (775) 355-0817
1084 Lamoille Highway | Elko, Nevada 89801
tel (775) 777-9933 | fax (775) 777-9933
3230 Polaris Ave., Suite 4 | Las Vegas, Nevada 89102
tel (702) 475-8899 | fax (702) 776-6152

WETLAB Order ID. 21060147
Sparks
Elko
LV
Report Due Date
Page ____ of ____

Client Balance Hydrologics
Address
City, State & Zip
Contact Ben Trustman
Phone
Collector's Name
Fax
Project
P.O. Number
PWS Number
Email

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____
Report Results Via PDF EDD Other ____
Compliance Monitoring? Yes No
Report to Regulatory Agency? Yes No
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	TDS	TSS	Total P	Total N	Ortho P						Spl. No.
NTD @ BFD (1)	6/3/21	17:56		Aq ①		X	X	X	X	X						

2106 2
0147 1

Instructions/Comments/Special Requirements: ① Based on previous orders - GC 6/4

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=NH4Cl 9=H3PO4

Temp	On Ice	Custody Seal	DATE	TIME	Samples Relinquished By	Samples Received By
14.1 °C	[✓ Y] / N	Y / [✓ N]	6/4	916	x	GG
°C	Y / N	Y / N				
°C	Y / N	Y / N				
°C	Y / N	Y / N				

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). GG 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. GG 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. GG initial

WETLAB
WESTERN ENVIRONMENTAL
TESTING LABORATORY

www.WETLaboratory.com

Specializing in Soil, Hazardous Waste and Water Analysis

7/9/2021

Balance Hydrologics
800 Baucroft Ave. Suite 101
Berkeley, CA 94710
Attn: Ben Trustman

OrderID: *21060867*

Dear: Ben Trustman

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 6/25/2021. 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,

Cory Baker

Cory Baker
QA Specialist

Mckenna Oh
Project Manager

McKennaO@wetlaboratory.com
(775) 200-9876

Western Environmental Testing Laboratory
Report Comments

Balance Hydrologics - 21060867

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. The reported result should be considered an estimate.

K -- The TPH Diesel Concentration reported here likely includes some heavier TPH Oil hydrocarbons reported in the TPH Diesel range as per EPA 8015.

L -- The TPH Oil Concentration reported here likely includes some lighter TPH Diesel hydrocarbons reported in the TPH Oil range as per EPA 8015.

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. The reported result should be considered an estimate.

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.

Western Environmental Testing Laboratory
Analytical Report

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

Date Printed: 7/9/2021
OrderID: *21060867*

Customer Sample ID: NTD @ BFD (2)
WETLAB Sample ID: 21060867-001

Collect Date/Time: 6/24/2021 20:35
Receive Date: 6/25/2021 09:17

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
General Chemistry							
Orthophosphate, as P	SM 4500-P E	0.17	mg/L	1	0.020	6/25/2021	NV00925
Total Phosphorous as P	SM 4500-P E	0.21	mg/L	1	0.020	6/28/2021	NV00925
Total Suspended Solids (TSS)	SM 2540D	170	mg/L	1	10	6/29/2021	NV00925
Total Nitrogen	Calc.	4.9	mg/L	1	0.22	7/2/2021	NV00925
Total Dissolved Solids (TDS)	SM 2540C	210	mg/L	1	25	6/29/2021	NV00925
Flow Injection Analyses							
Nitrate + Nitrite Nitrogen	EPA 353.2	0.58	mg/L	1	0.020	7/2/2021	NV00925
Total Kjeldahl Nitrogen	EPA 351.2	4.3	mg/L	0.5	0.20	7/1/2021	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Western Environmental Testing Laboratory
QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC21061115	Blank 1	Orthophosphate, as P	SM 4500-P E	ND			mg/L
QC21061166	Blank 1	Total Phosphorous as P	SM 4500-P E	ND			mg/L
QC21061184	Blank 1	Total Dissolved Solids (TDS)	SM 2540C	ND			mg/L
QC21061252	Blank 1	Total Suspended Solids (TSS)	SM 2540D	ND			mg/L
QC21070045	Blank 1	Total Kjeldahl Nitrogen	EPA 351.2	ND			mg/L
QC21070093	Blank 1	Nitrate + Nitrite Nitrogen	EPA 353.2	ND			mg/L

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC21061115	LCS 1	Orthophosphate, as P	SM 4500-P E	0.277	0.250	111	mg/L
QC21061166	LCS 1	Total Phosphorous as P	SM 4500-P E	0.266	0.250	107	mg/L
QC21061184	LCS 1	Total Dissolved Solids (TDS)	SM 2540C	144	150	96	mg/L
QC21061184	LCS 2	Total Dissolved Solids (TDS)	SM 2540C	154	150	103	mg/L
QC21061252	LCS 1	Total Suspended Solids (TSS)	SM 2540D	202	200	101	mg/L
QC21061252	LCS 2	Total Suspended Solids (TSS)	SM 2540D	199	200	100	mg/L
QC21070045	LCS 1	Total Kjeldahl Nitrogen	EPA 351.2	1.01	1.00	101	mg/L
QC21070093	LCS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	1.02	1.00	102	mg/L

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result	Units	RPD
QC21061184	Duplicate 1	Total Dissolved Solids (TDS)	SM 2540C	21060839-001	2532	2540	mg/L	<1%
QC21061184	Duplicate 2	Total Dissolved Solids (TDS)	SM 2540C	21060861-002	366	364	mg/L	<1%
QC21061252	Duplicate 1	Total Suspended Solids (TSS)	SM 2540D	21060839-005	ND	ND	mg/L	<1%
QC21061252	Duplicate 2	Total Suspended Solids (TSS)	SM 2540D	21060861-001	24.0	23.0	mg/L	4 %

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result	MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %
QC21061115	MS 1	Orthophosphate, as P	SM 4500-P E	21060867-001	0.166	0.404	0.413	0.25	mg/L	96	99	2
QC21061166	MS 1	Total Phosphorous as P	SM 4500-P E	21060771-002	0.138	0.383	0.385	0.25	mg/L	98	99	<1
QC21061166	MS 2	Total Phosphorous as P	SM 4500-P E	21060878-001	0.026	QD 0.242	0.302	0.25	mg/L	87	110	22
QC21070045	MS 1	Total Kjeldahl Nitrogen	EPA 351.2	21060763-001	0.256	0.763	0.727	0.5	mg/L	101	94	5
QC21070045	MS 2	Total Kjeldahl Nitrogen	EPA 351.2	21060878-001	ND	0.606	0.578	0.5	mg/L	103	98	5
QC21070093	MS 1	Nitrate + Nitrite Nitrogen	EPA 353.2	21060665-001	ND	5.13	5.07	1	mg/L	102	101	1
QC21070093	MS 2	Nitrate + Nitrite Nitrogen	EPA 353.2	21060906-001	ND	5.11	5.16	1	mg/L	101	101	1

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

WETLAB
WESTERN ENVIRONMENTAL TESTING LABORATORY
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475 E. Greg Street #119 | Sparks, Nevada 89431 | www.WETLaboratory.com
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1084 Lamoille Highway | Elko, Nevada 89801
tel (775) 777-9933 | fax (775) 777-9933
3230 Polaris Ave., Suite 4 | Las Vegas, Nevada 89102
tel (702) 475-8899 | fax (702) 776-6152

WETLAB Order ID. 21060867
Sparks ____
Elko ____
LV ____
Report Due Date
Page ____ of ____

Client Balance Hydrologics
Address
City, State & Zip
Contact Ben Trustman
Phone
Collector's Name Jack Jacquet
Fax
Project
P.O. Number
PWS 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	Total Nitrogen	Total Phosphorus	Ortho Phosphorus	TSS	TDS						Spl. No.
NTD @ BFD (2)	6/24	20:35				X	X	X	X	X						

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=NH4Cl 9=H3PO4

Temp	On Ice	Custody Seal	DATE	TIME	Samples Relinquished By	Samples Received By
11.3°C	Y / [✓ N]	Y / [✓ N]	6/25	917		
°C	Y / N	Y / N				
°C	Y / N	Y / N				
°C	Y / N	Y / N				

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

APPENDIX E

Nevada Water Quality Standards

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			All life stages of mountain whitefish, 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			*								
pH - SU	S.V. 7.2 - 8.3	S.V. 6.5 - 9.0 ΔpH ± 0.5			*								
Dissolved Oxygen - mg/l		S.V. Nov-Mar ≤ 6.0 S.V. Apr-Oct ≤ 5.0			*								
Total Phosphates (as P) - mg/l	A-Avg.≤ 0.05	A-Avg.≤ 0.10			*	*							
Ortho Phosphates (as P) - mg/l	S.V. ≤ 0.02	S.V. ≤ 0.05			*	*							
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			*	*							
Total Ammonia (as N) - mg/l		c			*								
Suspended Solids - mg/l	A-Avg.≤ 15.0	S.V.≤ 25			*								
Turbidity - NTU	A-Avg. ≤ 8.0 S.V. ≤ 9.0	S.V. ≤ 10			*								
Color - PCU	d	S.V. ≤ 75						*					
Total Dissolved Solids - mg/l	A-Avg. ≤ 80.0 S.V. ≤ 95.0	A-Avg.≤ 500						*					
Chloride - mg/l	A-Avg. ≤ 7.0 S.V. ≤ 10.0	S.V.≤ 250						*					
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		*									
Alkalinity (as CaCO3) - mg/l		S.V. ≥ 20			*								
E. coli - cfu/100 ml[e]		G.M. ≤ 126 S.V. ≤ 410				*							
Fecal Coliform - No./100 ml	A.G.M. ≤ 50.0 S.V. ≤ 200.0	S.V.≤ 1000		*									
BOD- mg/l		A-Avg. ≤ 2.5 S.V. ≤ 3.0		*									
Toxic Materials		f		*									

* = The most restrictive 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 standard.

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.

e The geometric mean must not be exceeded in any 30-day period. The single value must not be exceeded in more than 10 percent of the samples collected within any 30-day period.

f The water quality criteria for toxic materials are specified in NAC 445A.1236.

A.G.M annual geometric mean

A-AVG means 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

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			All life stages of mountain whitefish, 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			*								
pH - SU	S.V. 7.0 - 8.5	S.V. 6.5 - 9.0 ΔpH ± 0.5			*								
Dissolved Oxygen - mg/l		S.V. Nov-Mar ≤ 6.0 S.V. Apr-Oct ≤ 5.0			*								
Total Phosphates (as P) - mg/l	A-Avg.≤ 0.05	A-Avg.≤ 0.10			*	*							
Ortho Phosphates (as P) - mg/l	S.V. ≤ 0.02	S.V. ≤ 0.05			*	*							
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			*	*							
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			*								
Color - PCU	d	S.V. ≤ 75						*					
Total Dissolved Solids - mg/l	A-Avg. ≤ 90.0 S.V. ≤ 120.0	A-Avg.≤ 500						*					
Chloride - mg/l	A-Avg. ≤ 7.0 S.V. ≤ 10.0	S.V.≤ 250						*					
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		*									
Alkalinity (as CaCO3) - mg/l		S.V. ≥ 20			*								
E. coli - cfu/100 ml[e]		G.M. ≤ 126 S.V. ≤ 410				*							
Fecal Coliform - No./100 ml	A.G.M. ≤ 75.0 S.V. ≤ 350.0	S.V.≤ 1000		*									
BOD- mg/l		A.G.M. ≤ 3.0 S.V. ≤ 5.0		*									
Toxic Materials		f											

* = 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 standard.

[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.

[e] The geometric mean must not be exceeded in any 30-day period. The single value must not be exceeded in more than 10 percent of the samples collected within any 30-day period.

[f] The water quality criteria for toxic materials are specified in NAC 445A.1236.

A.G.M	the 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

STANDARDS OF WATER QUALITY

Truckee River at Lockwood Bridge

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 ≤ 13 S.V. Apr ≤ 21c S.V. May ≤ 22c,d S.V. Jun-Oct ≤ 23c,d ΔT ≤ 2			*								
pH - SU	S.V. 7.1 - 8.5	S.V. 6.5 - 9.0 ΔpH ± 0.5			*								
Dissolved Oxygen - mg/l		S.V. Nov-Mar ≤ 6.0 S.V. Apr-Oct ≤ 5.0			*								
Total Phosphates (as P) - mg/l		A-Avg.≤ 0.05			*	*							
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			*	*							
Total Ammonia (as N) - mg/l		e			*								
Suspended Solids - mg/l	A-Avg.≤ 25.0	S.V.≤ 50			*								
Turbidity - NTU		S.V. ≤ 10			*								
Color - PCU	f	S.V. ≤ 75						*					
Total Dissolved Solids - mg/l	A-Avg. ≤ 210.0 S.V. ≤ 260.0	A-Avg.≤ 500						*					
Chloride - mg/l	A-Avg. ≤ 26.0 S.V. ≤ 30.0	S.V.≤ 250						*					
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		*									
Alkalinity (as CaCO3) - mg/l		S.V. ≥ 20			*								
E. coli - cfu/100 ml[g]		G.M. ≤ 126 S.V. ≤ 410				*							
Fecal Coliform - No./100 ml	A.G.M. ≤ 90.0 S.V. ≤ 300.0	S.V.≤ 1000		*									
Toxic Materials		h											

* = 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 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.

g The geometric mean must not be exceeded in any 30-day period. The single value must not be exceeded in more than 10 percent of the samples collected within any 30-day period.

h The water quality criteria for toxic materials are specified in NAC 445A.1236.

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

STANDARDS OF WATER QUALITY
Steamboat Creek at Truckee River

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			
Aquatic Life Species of Concern													
pH - SU		S.V. 6.0 - 9.0			*								
Dissolved Oxygen - mg/l		S.V. ≥ 3.0			*								
Total Ammonia (as N) - mg/l		b			*								
E. coli - cfu/100 ml[c]		G.M. ≤ 126 S.V. ≤ 410				*							
Toxic Materials		d											

* = 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.
c The geometric mean must not be exceeded in any 30-day period. The single value must not be exceeded in more than 10 percent of the samples collected within any 30-day period.
d The water quality criteria for toxic materials are specified in NAC 445A.1236.
G.M the annual geometric mean
A-AVG annual average
S.V. single value

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			*								
pH - SU		S.V. 6.5 - 9.0			*	*				*			
Dissolved Oxygen - mg/l		S.V. ≥ 5.0			*								
Total Phosphorus (as P) - mg/l		S.V. ≤ 0.33			*	*							
Total Ammonia (as N) - mg/l		c			*								
Total Dissolved Solids - mg/l		S.V. ≤ 500						*					
E. coli - cfu/100 ml[d]		G.M. ≤ 126 S.V. ≤ 410				*							
Fecal Coliform -No./100 ml		S.V. ≤ 1,000		*									
Toxic Materials		e											

* = The most restrictive beneficial use.

X = Beneficial use.

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

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 standard. The ΔT of

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

d The geometric mean must not be exceeded in any 30-day period. The single value must not be exceeded in more than 10 percent of the samples collected within any 30-day period.

e The water quality criteria for toxic materials are specified in NAC 445A.1236.

G.M the annual geometric mean

A-AVG annual average

S.V. single value

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													
Temperature - °C ΔT[b] - °C		S.V. ≤ 24 ΔT = 0			*								
pH - SU		S.V. 6.5 - 9.0			*								
Dissolved Oxygen - mg/l		S.V. ≤ 5.0			*								
Total Phosphorus (as P) - mg/l		S.V. ≤ 0.10			*	*							
Total Ammonia (as N) - mg/l		c			*								
Total Dissolved Solids - mg/l		S.V. ≤ 500						*					
E. coli - cfu/100 ml[d]		G.M. ≤ 126 S.V. ≤ 410				*							
Fecal Coliform - No./100 ml		S.V.≤ 1000		*									
Toxic Materials		e		*									

* = The most restrictive 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

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

d The geometric mean must not be exceeded in any 30-day period. The single value must not be exceeded in more than 10 percent of the samples collected within any 30-day period.

e The water quality criteria for toxic materials are specified in NAC 445A.1236.

G.M the annual geometric mean

ΔT change in temperature

S.V. single value

7 WATER QUALITY TRENDS ANALYSIS, 2015-2021

This section presents an analysis of water-quality data collected by Balance over the previous six years (2015 - 2021) at selected stations. We analyzed these data separately from other available surface water-quality data because sampling schedules, procedures, field methods, personnel, and laboratory analysis methods were consistent over this time. This multi-year data set allows for evaluation of temporal and spatial patterns and identifies whether specific constituent concentrations are improving or degrading over time. This analysis follows previous efforts to summarize long-term water quality data from other monitoring locations on the Truckee River (Hastings and Trustman, 2019a) and Truckee River tributaries (Hastings and Trustman, 2019b).

In this study, we examined the three constituents with established Total Maximum Daily Loads (TMDLs) on the Truckee River: Total nitrogen (Total-N), total phosphorus (Total-P), and total dissolved solids (TDS). Total-N and TDS also have established water-quality standards (WQS) or requirements to maintain existing higher quality (RMEHQ). We evaluated the selected constituents in stormwater collected at four urban stormwater outfalls (Oxbow Nature Park, Arlington Street, Fisherman’s Park II, and Mary Wahl Drain) and in stormwater and baseflow from two major tributaries (North Truckee Drain and Steamboat Creek).

We evaluated the data using two different methods: (1) Comparison of distributions across locations, within a storm, and across seasons; and (2) using a Mann-Kendall statistical test to identify trends if they exist. Our analysis was used to develop recommendations to improve stormwater and baseflow quality in the Truckee Meadows MS4 permit area. These methods, results, and recommendations are described below. Each subsection lists conclusions from each separate analysis and the overall section concludes with a complete list of suggested management and monitoring recommendations based on the collective results shown below.

7.1 Method #1: Comparison of Distributions in Constituent Concentrations

We compiled 6 years of data into box-and-whisker plots, an illustrative method used to display data distribution in quartiles. The centerline of each box represents the median value, the length of the box represents the Interquartile Range (IQR), or the range of data within the lower 25th and upper 75th percentiles and the whiskers extend 1.5 x the IQR above and below the central values. Outliers are not shown in the figures.

In most years, we sampled two storms and two different baseflow periods (summer and winter). Four composite samples were typically collected and analyzed for each sampling event at each location. Therefore, annual box plots include eight samples (n = 8) at stations where only stormwater was collected (i.e., urban stormwater outfalls), and 16 samples (n = 16) for stations where both stormwater and baseflow samples were collected (i.e., tributaries). In some very dry years, fewer samples were collected. In cases where constituent concentrations were not detected by the analytical laboratory or detected below the detection limit for that method, we conservatively include the data in this analysis as if it were detected at the laboratory reporting limit.

7.1.1 STORMWATER CONSTITUENT CONCENTRATIONS ACROSS A STORM HYDROGRAPH FROM FOUR URBAN OUTFALLS

In Figure 7-1, the distribution of three different constituent concentrations (Total-N, Total-P, TDS) is compared across four urban outfalls for six years (2015-2021).

Conclusions from this comparison show:

1) Of the 4 outfall locations, Mary Wahl exhibited the highest median Total-N concentration; however, Arlington shows near similar results with a distribution of concentrations greater than those measured at Mary Wahl;

2) Arlington had the highest median and IQR of Total-P concentrations across all 4 locations;

3) Fisherman’s Park II exhibited the highest median and IQR of TDS concentrations across all 4 locations;

4) Oxbow Nature Park exhibited the lowest median and IQR of concentrations in stormwater across all three constituents; however, concentrations continue to exceed RMEHQ.

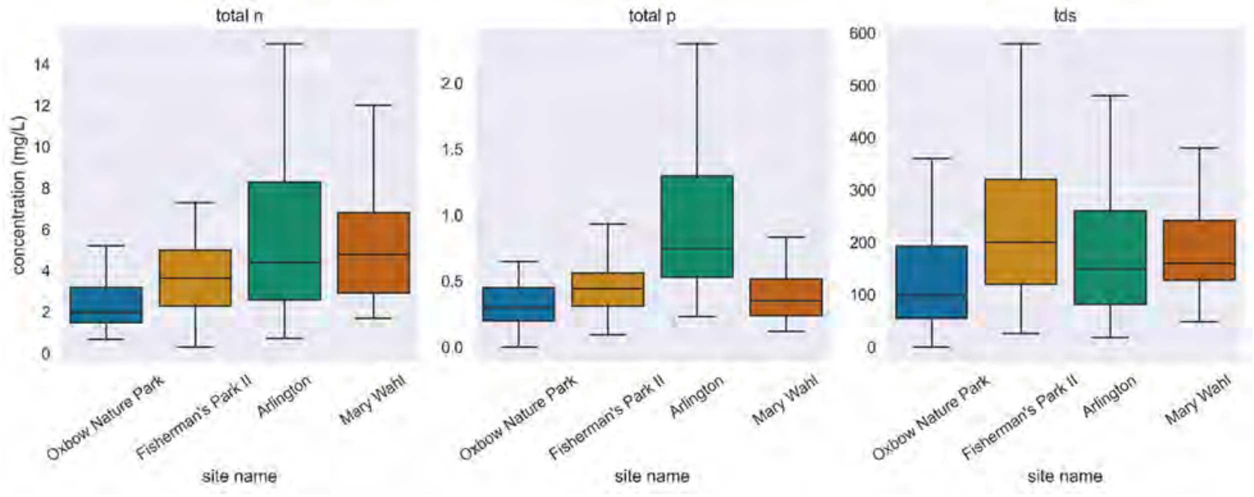

Figure 7-1 Concentrations of Three Constituents in Stormwater Across Four Urban Stormwater Outfalls (2015-2021)

7.1.2 STORMWATER CONSTITUENT CONCENTRATIONS AT FOUR URBAN OUTFALLS, SEPARATED BY STORM HYDROGRAPH COMPONENT AND ACROSS SEASONS

Total-N, Total-P, TDS concentrations in samples from all four urban stormwater outfalls is separated into four different hydrograph components (First flush, rising limb, peak flow, falling limb) and across seasons (Fall, Winter, Spring, Summer), and shown side-by-side in Figure 7-1.

Conclusions from this comparison show:

1) In general, higher median and IQR constituent concentrations were measured in the first flush component of the storm hydrograph, especially in the fall;

2) Higher nutrient concentrations (Total-N and Total-P) were generally measured in the fall and summer relative to spring and winter;

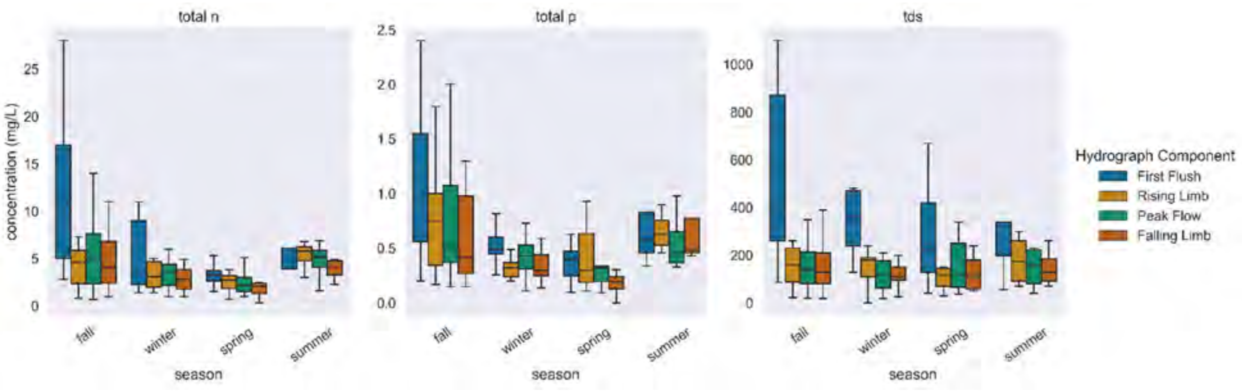

Figure 7-2 Total N, Total P and TDS in Stormwater Across Storm Hydrograph Components and Seasons, 4 Urban Stormwater Outfalls (2015-2021)

7.1.3 Comparison of Constituent Concentrations in Stormwater at Four Urban Stormwater Outfalls and Two Major Tributaries

Total-N, Total-P, and TDS concentrations in stormwater from four urban stormwater outfalls and two main tributaries to the Truckee River are shown in Figure 7-3. These include North Truckee Drain at Big Fish Drive[1] and Steamboat Creek at Clean Water Way.

Conclusions from this comparison show:

1) Median concentrations of Total-N and Total-P in stormwater were higher from urban outfalls than from tributaries. However, median TDS concentrations were higher from the tributaries than from urban stormwater outfalls.

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[1] The USGS gage and monitoring station was relocated from Kleppe Lane to Big Fish Drive in 2017. Data from both sites were combined for this comparison.

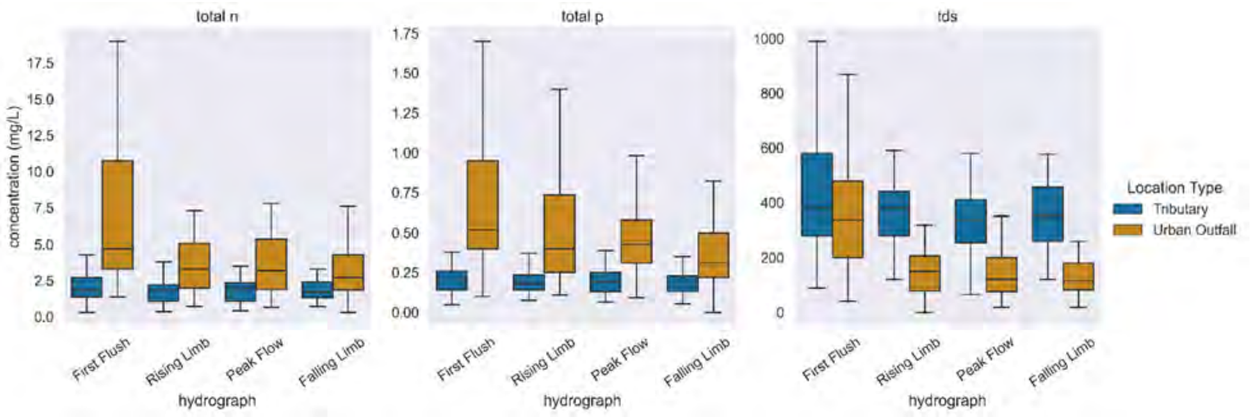

Figure 7-3 Total N, Total P, and TDS in Stormwater at Urban Stormwater Outfall and Two Major Tributaries, Steamboat Creek and North Truckee Drain (2015-2021)

7.1.4 COMPARISON OF TOTAL N, TOTAL P, AND TDS IN STORMWATER FROM NORTH TRUCKEE DRAIN AND STEAMBOAT CREEK

Total-N, Total-P, and TDS concentrations in North Truckee Drain (NTD) and Steamboat Creek (SC) stormwater are compared in Figure 7-4. Data are also separated into the four different components of the storm hydrograph.

A comparison between the two tributaries shows:

1) Median constituent concentrations were generally higher during the first flush of the storm hydrograph with few exceptions;

2) Total-N and TDS median and IQR concentrations were generally higher in NTD when compared to SBC;

3) Total -P median and IQR concentrations measured in SBC were generally higher than NTD.

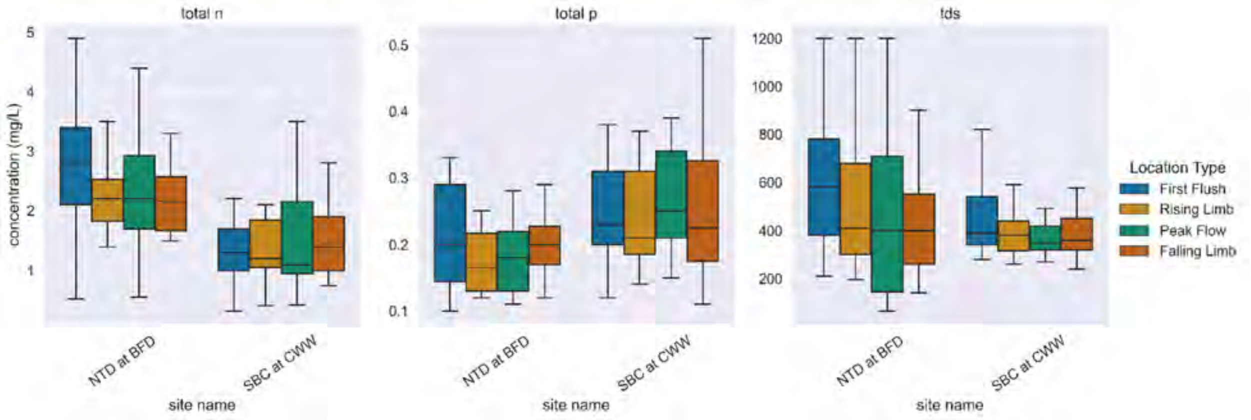

Figure 7-4 Comparison of Total N, Total P, and TDS in Stormwater across Storm Hydrograph Components from North Truckee Drain and Steamboat Creek (2015-2021)

7.1.5 COMPARISON OF TOTAL N, TOTAL P, AND TDS IN STORMWATER AND BASEFLOW AT NORTH TRUCKEE DRAIN AND STEAMBOAT CREEK

Total-N, Total-P, and TDS concentrations in North Truckee Drain (NTD) and Steamboat Creek (SC) baseflow are compared to stormwater concentrations in Figure 7-5.

Conclusions from this comparison show:

1) In baseflow, NTD exhibited higher median concentrations of Total-N and TDS than at SBC, whereas, SBC exhibited higher median Total-P concentrations than NTD;
2) In stormwater, we also see similar trends in that NTD exhibited higher median concentrations of Total-N and TDS than SBC, whereas SBC exhibited higher median Total-P concentations than NTD;
3) Median constituent concentrations were generally lower in baseflow than in stormwater, except for Total N and TDS in NTD, which had generally higher Total N and TDS concentrations during baseflow periods.

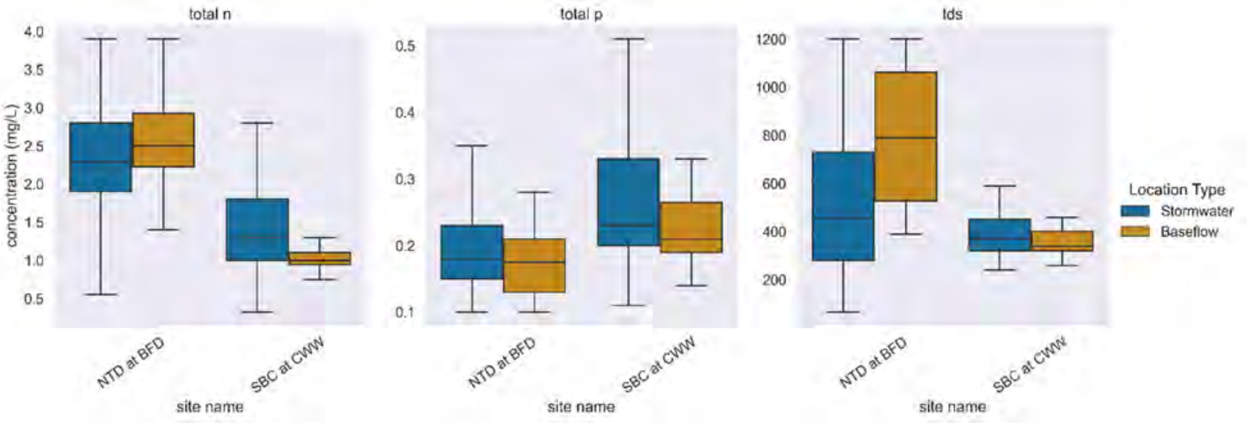

Figure 7-5 Comparison of Total N, Total P, and TDS between Stormwater and Baseflow in North Truckee Drain and Steamboat Creek (2015-2021)

7.1.6 COMPARISON OF TOTAL N, TOTAL P, AND TDS AT ALL STATIONS

Constituent loads measured at all six monitoring locations are presented in Figure 7-6. Loads are also expressed as yields (lbs./square mile) to eliminate differences in contributing watershed areas. The distributions of constituent yields are: (1) compared across stormwater from outfalls; and (2) in both stormwater and baseflow from tributaries (Figure 7-6).

Conclusions from these comparisons show:

1) The lowest median yields (across all three constituents) were measured at Fisherman's Park II;
2) Total-N median yields were similar at Oxbow, Arlington, and Mary Wahl; Arlington exhibited the highest median yield for Total-P, while Oxbow exhibited the highest median and IQR yield for TDS;
3) In both tributary watersheds, stormwater median and IQR yields were generally greater than baseflow median yields;
4) SBC exhibited higher stormwater and baseflow median yields when compared with NTD. As such, SBC is likely a source of excessive nutrients and TDS;

5) In general, median yields for all three constituents were higher in stormwater from urban stormwater outfalls when compared to stormwater in the tributaries, with few exceptions (TDS in SBC);

6) In Oxbow Nature Park, we measured lower concentrations of three constituents relative to the other 3 urban outfalls; however, we calculated higher median and IQR in yields. We identified that this drainage area exhibits higher runoff volumes across similar precipitation depths relative to other urban areas; therefore, shows increased yields.

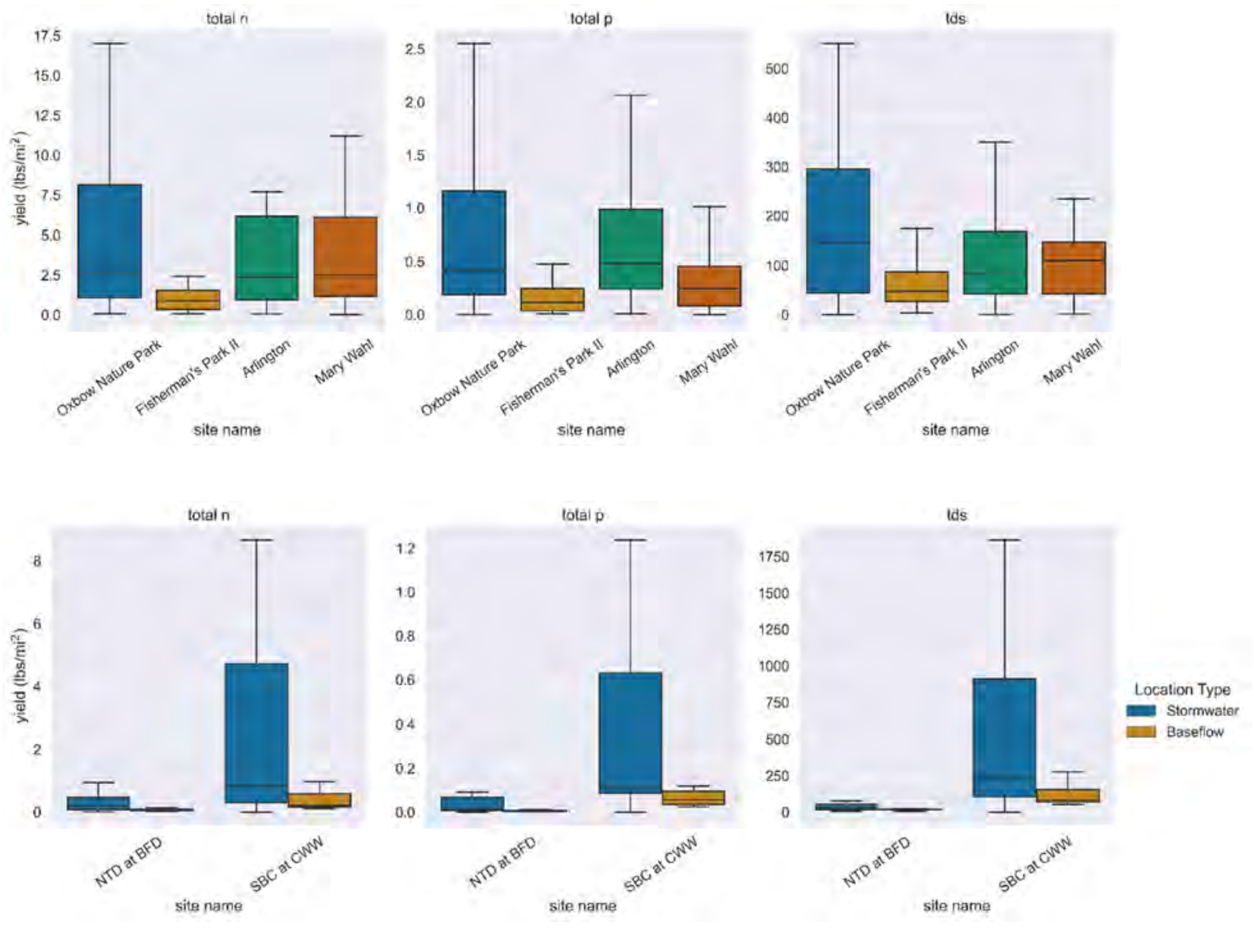

Figure 7-6 Comparison of Total N, Total P, and TDS in Stormwater and Baseflow at Urban Stormwater Outfalls and from North Truckee Drain and Steamboat Creek (2015-2021)

7.2 Method #2: Temporal Trends in Stormwater and Baseflow Quality

We used scatter plots and applied the Mann-Kendall statistical test to identify temporal trends in the six-year dataset for monitoring locations with a sufficient number of samples each year. The Mann-Kendall test evaluates whether concentrations, loads, or yields tend to increase or decrease over time through what is essentially a nonparametric form of monotonic trend regression analysis. The test analyzes the sign of the difference between later-measured data and earlier-measured data. Missing values are allowed, and the data do not need to conform to any particular distribution. The Mann-Kendall test assumes that a value can always be declared less than, greater than, or equal to another value, and the data are independent (Meals and others, 2011). The result of each test is a value (tau) that can range between -1 and +1. The closer the result is to -1 or +1, the stronger the trend (e.g., -0.9 suggests a strong trend of decreasing concentrations over time or +0.25 suggests a relatively weak trend of increasing concentrations over time); however, the value must be accompanied by a level of significance or p-value, which we set at less than 0.05. Degrading water quality trends are illustrated in red; improving water quality trends are presented in blue. If there is no trend, results are shown in black. All results are also compared to established water quality values when applicable.

A summary of the Mann-Kendall tests and trends are in Table 7-1. Below we discuss detailed results of the tests and locations.

Table 7-1 Results of Mann-Kendall statistical analysis

Constituent	Location	WQ Trend	Trend Strength	P-value	Trend Significance
			[-1.0<<tau>>+1.0]	<0.05 significance	
Total-N	Oxbow Nature Park	no change	0.04	0.58	NO
	Arlington	degrading	0.25	0.001	YES
	Fishermans Park II	no change	0.08	0.26	NO
	Mary Wahl Drain	no change	0.07	0.39	NO
	North Truckee Drain	degrading	0.27	<0.001	YES
	Steamboat Creek	improving	-0.12	-0.12	YES
Total-P	Oxbow Nature Park	no change	0.05	0.47	NO
	Arlington	degrading	0.15	0.04	YES
	Fishermans Park II	improving	-0.18	0.006	YES
	Mary Wahl Drain	improving	-0.22	0.008	YES
	North Truckee Drain	no change	-0.09	0.17	NO
	Steamboat Creek	improving	-0.25	<0.001	YES
TDS	Oxbow Nature Park	no change	0.02	0.81	NO
	Arlington	degrading	0.24	0.001	YES
	Fishermans Park II	degrading	0.15	0.02	YES
	Mary Wahl Drain	no change	0.07	0.42	NO
	North Truckee Drain	degrading	0.17	0.007	YES
	Steamboat Creek	improving	-0.17	0.006	YES

7.2.1 Temporal Trends in Stormwater Quality across Four Urban Stormwater Outfalls

Scatter plots of Total-N concentrations for years 2015-2021 and across four urban stormwater outfalls are provided in Figure 7-7.

Conclusions from this analysis show:

1) Arlington exhibited a significant but weak trend of increasing Total-N concentrations over time (degrading water quality);

2) Although trends were not detected in data from 3 other urban stormwater outfalls, 100 percent of data collected at all 4 locations exhibited concentrations over the 6-year period that exceeded requirements to maintain existing higher quality (RMEHQ) for Total-N in the Truckee River; and

3) Total-N concentrations exceeded established Requirements to Maintain Existing Higher Quality for 100 percent of the data at Arlington, 100 percent of the data at Fisherman’s Park II, and 98 percent of the data at Mary Wahl Drain. The RMEHQ established for Oxbow is an annual average value.

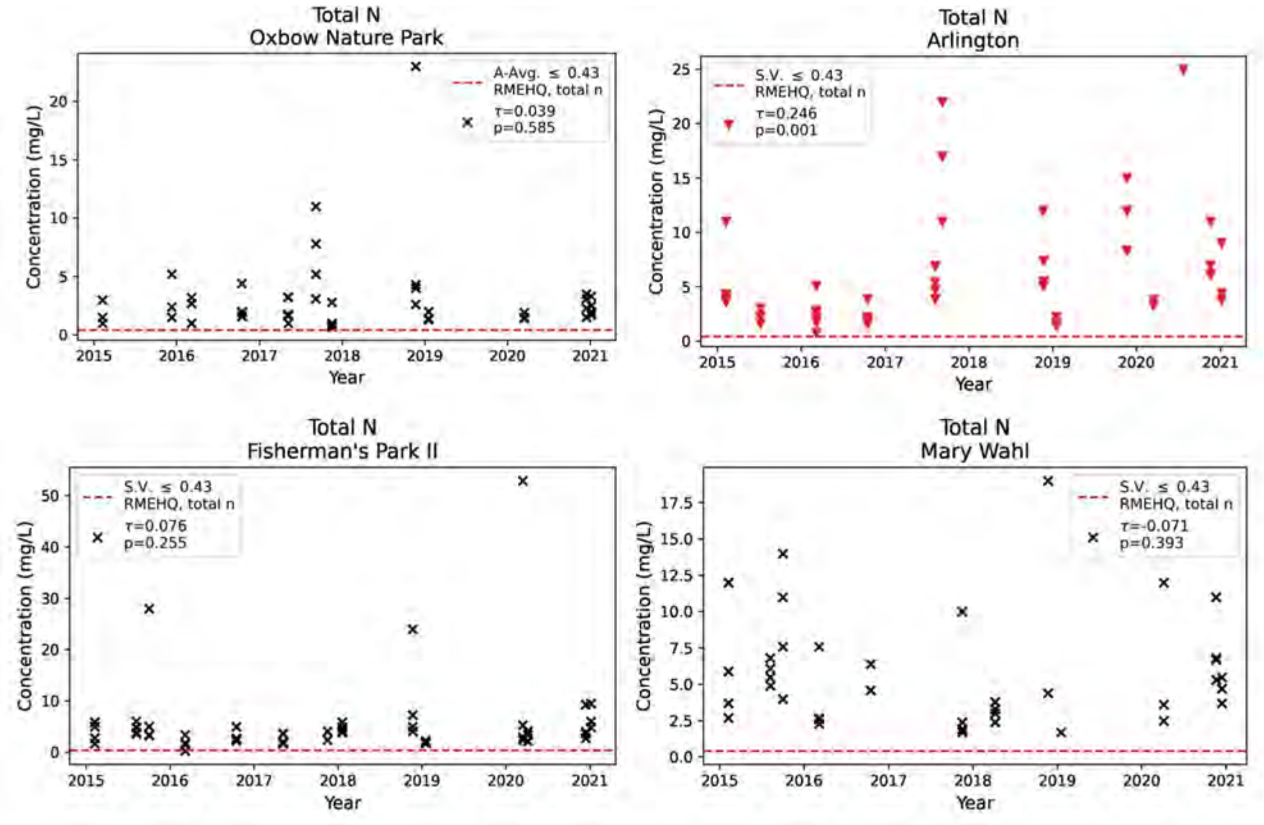

Figure 7-7 Total-N Concentrations in Stormwater from Urban Stormwater Outfalls over Time (2015-2021).

Scatter plots of Total-P concentrations for years 2015-2021 and across four urban stormwater outfalls are provided in Figure 7-8.

Conclusions from this analysis show:

1) Arlington exhibited a significant but weak trend of increasing Total-P concentrations over time (degrading water quality);

2) Fisherman's Park II and Mary Wahl Drain both exhibited a significant but weak trend of decreasing Total-P concentrations over time (improving water quality);

3) Total-P concentrations across all four locations were higher than established water quality standards established for the Truckee River; however, these standards are 'average annual values' and cannot be compared to 'single values'.

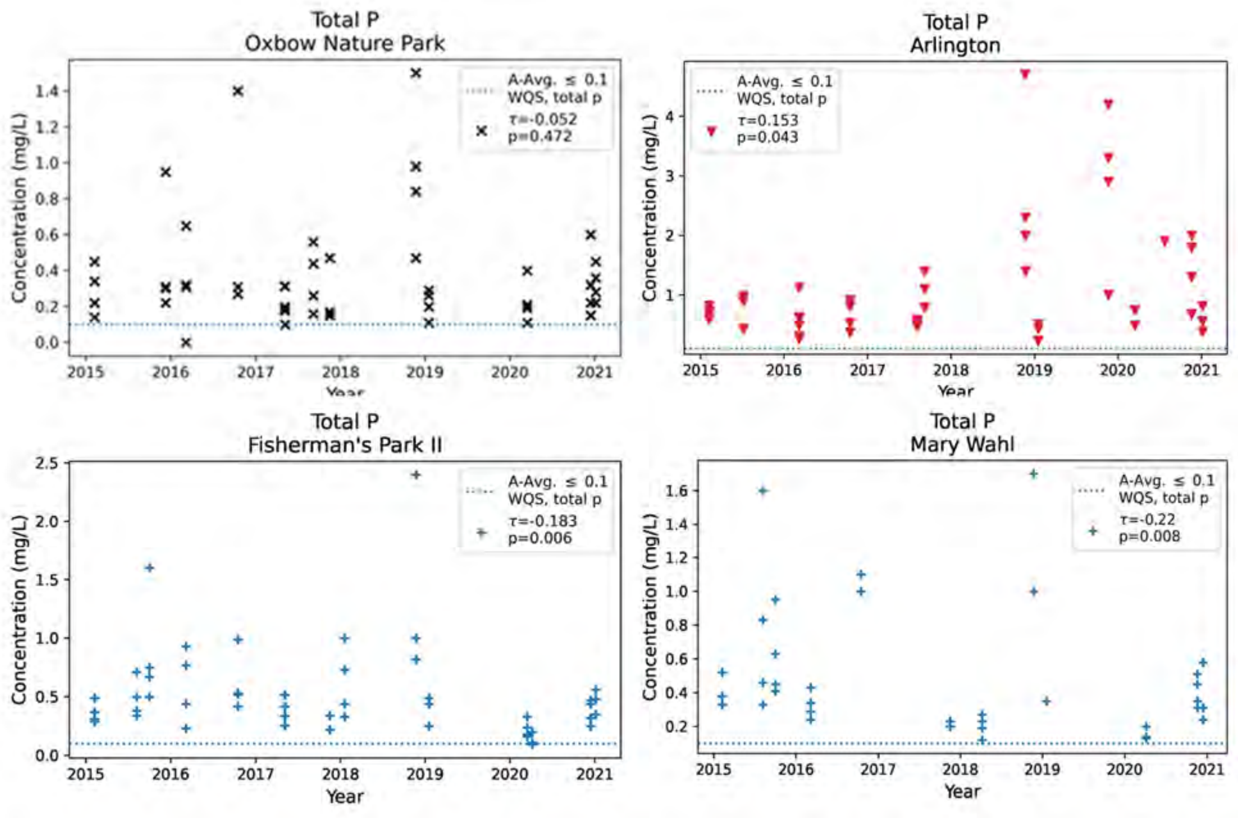

Figure 7-8 Total-P Concentrations in Stormwater from Urban Stormwater Outfalls over Time (2015-2021).

Scatter plots of TDS concentrations for the years 2015-2021 and across the four urban stormwater outfalls are provided in Figure 7-9.

Conclusions from this analysis show:

1) Arlington and Fisherman's Park II exhibited a significant but weak trend of increasing TDS concentrations over time (degrading water quality);

2) No temporal trends were detected in TDS from Oxbow Nature Park or Mary Wahl Drain;

3) TDS concentrations exceeded established Requirements to Maintain Existing Higher Quality for 53 percent of the data at Oxbow Nature Park, 56 percent of the data at Arlington, 75 percent of the data at Fisherman's Park II, and 79 percent of the data at Mary Wahl Drain.

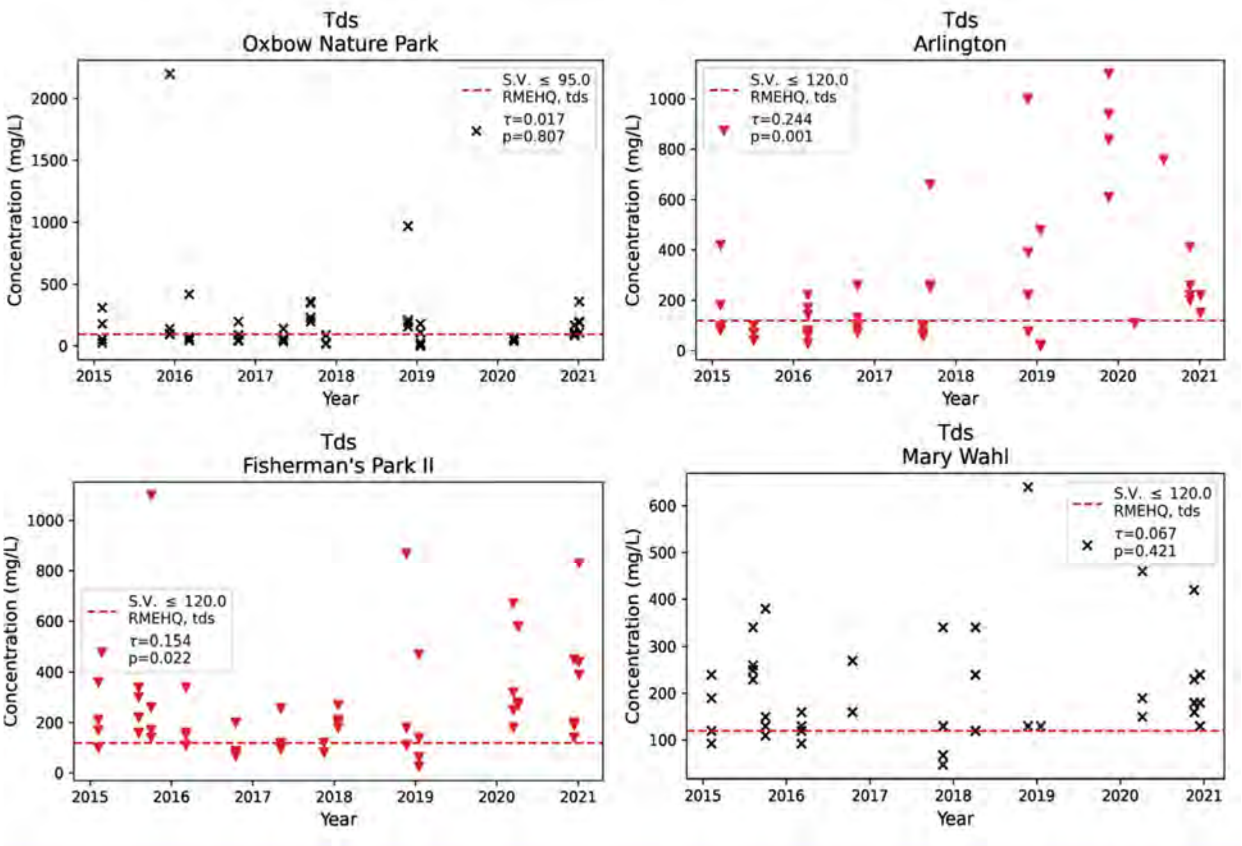

Figure 7-9 TDS Concentrations in Stormwater from Urban Stormwater Outfalls over Time (2015-2021).

7.2.2 TEMPORAL TRENDS IN STORMWATER AND BASEFLOW QUALITY IN NORTH TRUCKEE DRAIN

Scatter plots of concentrations of three constituents (Total-N, Total-P, and TDS) measured between 2015 and 2012 in North Truckee Drain at Big Fish Drive (NTD at BFD) are provided in Figure 7-10.

Conclusions from this analysis show:

1) NTD exhibited significant but weak trends of increasing Total-N and TDS concentrations over time (degrading water quality);

2) 95 percent of samples exceeded WQS for Total-N established for NTD; 81 percent of samples exceeded RMEHQ for TDS established for NTD at BFD; and

3) No temporal trend was detected in Total-P concentrations for NTD at BFD.

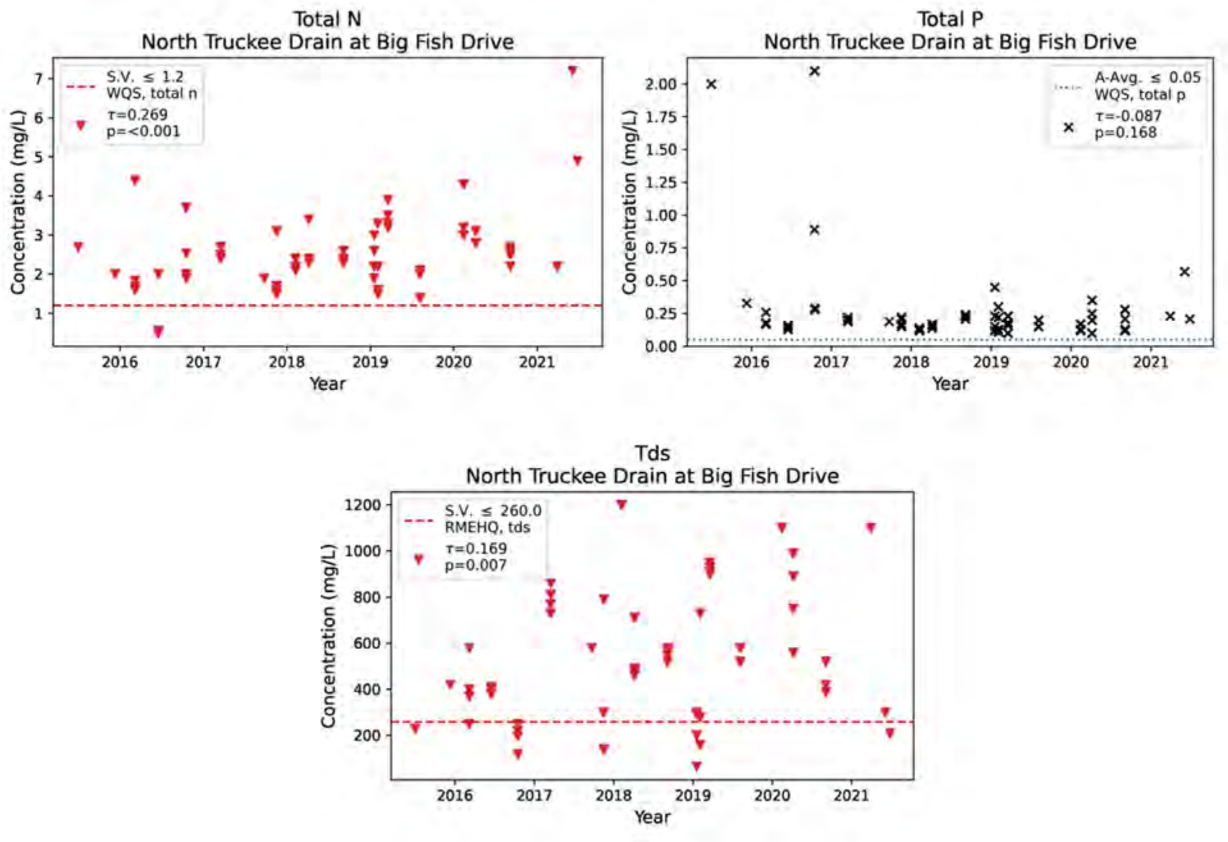

Figure 7-10 Concentrations of Total N, Total P, and TDS in Stormwater and Baseflow from the North Truckee Drain over Time (2015-2021).

7.2.3 TEMPORAL TRENDS IN STORMWATER AND BASEFLOW QUALITY IN STEAMBOAT CREEK

Scatter plots of concentrations of three constituents (Total-N, Total-P, and TDS) measured between 2015 and 2021 in Steamboat Creek at Clean Water Way (SBC at CWW) are provided in Figure 7-11.

Conclusions from this analysis show:

1) SBC at CWW exhibited significant but weak trends of decreasing Total-N, Total-P and TDS concentrations over time (improving water quality);
2) 40 percent of samples analyzed for Total-N concentration in SBC at CWW were higher than single value water quality standards established downstream in the Truckee River at Lockwood.

3) 98 percent samples analyzed for TDS concentration in SBC at CWW were higher than single value water quality standards established downstream in the Truckee River at Lockwood.

It should be noted that the single value water quality standards established for the Truckee River at Lockwood do not apply directly to Steamboat Creek since this tributary is a ‘Designated Water’ under the Nevada 303(d) List (NDEP, 2018); they are shown as a reference value only.

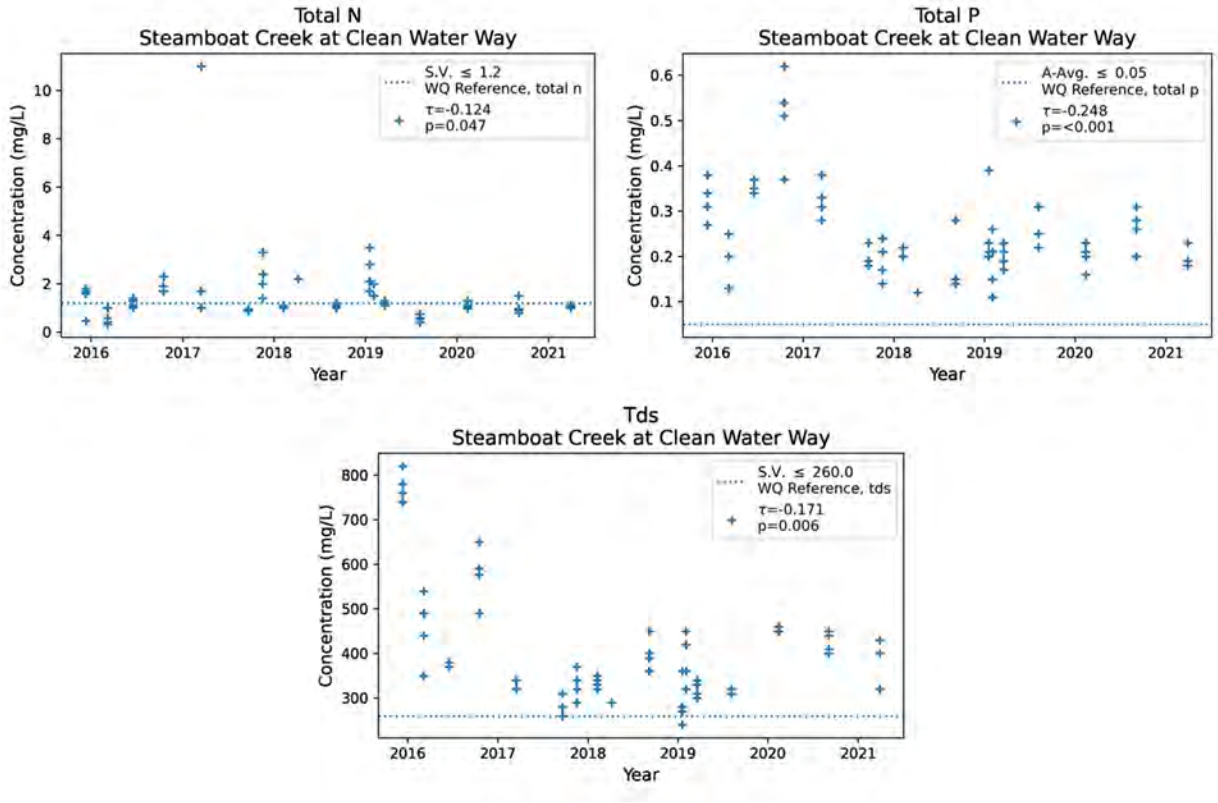

Figure 7-11 Concentrations of Total-N, Total-P, and TDS in Stormwater and Baseflow from Steamboat Creek over Time (2015-2021).

7.3 Summary

We examined water quality at selected stations using data collected by Balance over the previous six years (2015 - 2021). Specifically, we examined three constituents with established TMDLs on the Truckee River, Total-N, Total-P, and Total Dissolved Solids (TDS), and compared results with established water quality standards (WQS) or requirements to maintain existing higher quality (RMEHQ), if applicable. Our analysis included water quality from stormwater at four urban stormwater outfalls and from stormwater and baseflow in two tributaries (North Truckee Drain and Steamboat Creek).

We analyzed these data using two different methods: (1) Comparison of distributions across locations, within a storm, and across seasons; and (2) using a Mann-Kendall statistical test to identify trends if they exist.

In stormwater, across 4 urban stormwater outfalls, results were mixed. Mary Wahl exhibited the highest median Total-N concentrations; however, Arlington exhibited a wider range (IQR), but also exhibited the highest median Total-P concentration. Fisherman's Park II exhibited the highest median TDS. Conversely, Oxbow Nature Park showed the narrowest range and lowest median concentrations.

In stormwater, between two major tributaries, Total-N and TDS median concentrations were higher in North Truckee Drain, while the median Total-P concentration was higher in Steamboat Creek. Results were similar when baseflow concentrations were compared. We note that SBC streamflow can be augmented by groundwater which includes geothermal waters, and can have higher concentrations of naturally occurring orthophosphate and Total-P;

Across all stations examined for this study, we measured higher median constituent concentrations in stormwater during the first flush, or initial runoff period of a storm. Similarly, we measured higher median concentrations of constituents in storms sampled during the Fall. In both instances, we postulate that nutrients and TDS are likely concentrated in soils and on urban surfaces with increasing time since the last rainfall.

In both stormwater and baseflow, concentrations of Total-N and TDS were higher in North Truckee Drain than in Steamboat Creek; however, when normalized by watershed area, higher yields were computed from Steamboat Creek across all three constituents examined. Although these results suggest Steamboat Creek is a concern, our temporal trends analysis also suggest North Truckee Drain has exhibited degrading trends in water quality related to Total-N and TDS, while conditions may be improving in Steamboat Creek.

Degrading water-quality trends were detected from Arlington across all three constituents in the six years evaluated. TDS measured from Fisherman's Park II also indicated a degrading water-quality trend in the same time. In all urban stormwater outfalls, Total-N from stormwater exceeded established water-quality standards.

7.4 Management and Monitoring Recommendations:

We provide management and monitoring recommendations based on the findings of this study below:

1) Increase stormwater management activities such as street sweeping and storm drain clean out, especially ahead of early season and fall storm events. These increased maintenance activities should be completed before storms with greater than 0.1 inches of precipitation forecasted, as well as the spring and again in late summer before fall storms arrive and before each significant storm;
2) Stormwater Pollution Preventions Plans (SWPPPs), construction, and post-construction BMPs should be inspected, and requirements enforced through the summer and before fall storms arrive;
3) Consider installation of stormwater treatment structural controls in the drainage areas of all four monitored outfalls following guidance in the Truckee Meadows Structural Controls Design and Low Impact Development Manual (Knust and Rios, 2015);
4) In tributaries, consider constructed wetlands for stormwater treatment, or restoration of urban creeks to restore functional floodplain features and retention areas where appropriate;
5) Further encourage or require new construction to design and implement appropriate stormwater controls per the Truckee Meadows Stormwater Structural Controls and Low Impact Design Manual (Knust and Rios, 2015); and
6) Stormwater BMPs implemented in urbanized areas should be selected based on effectiveness in removing nutrients; see below for recommendations on improving TDS concentrations in tributary watersheds;
7) Investigate illicit discharges and sources of nuisance flows during baseflow periods;
8) While Oxbow Nature Park exhibited lower concentrations in nutrients and TDS relative to the other urban outfalls monitored, it exhibited higher runoff volumes per unit area which contributed to higher pollutant yields; however, if stormwater runoff controls are implemented, these yields could be greatly reduced. Stormwater detention or infiltration basins may be appropriate and effective in this small urban catchment;

9) Install an additional monitoring station in Arlington drainage such that a nested watershed monitoring approach can be used to narrow the sources of excess nutrients measured in this urban subcatchment;

10) Install an additional automated monitoring station in the NTD subcatchment such that a nested watershed monitoring approach can be used to evaluate sources of increasing Total-N and TDS. This may include augmenting the existing monitoring station at Orr Ditch with automated equipment;

11) Continue and expand SBC stormwater and baseflow monitoring using a nested watershed monitoring approach to narrow sources of excessive nutrients and TDS. These results and recommendations are consistent with the results and recommendations provided in the FY2021 Truckee Meadows Stormwater Monitoring Annual Report (Trustman and others, 2021);

12) Both tributaries monitored and examined in this study can receive a measurable amount of baseflow from irrigation returns in most years. Water quality of irrigation returns has not been investigated as part of this program. A special study may be appropriate to evaluate how irrigation return flows impact receiving waters; and

13) Finally, results and recommendations from this analysis support management measures identified in the Watershed Management and Protection Plan for Tributaries to the Truckee River (NCE, 2020). Results should be used to apply for and receive Clean Water Act (CWA) Section 319(h) federal grant funding in support of watershed and capital improvement projects that will improve Truckee River tributary water quality. We would be happy to work with the Truckee Meadows Coordinated Stormwater Committee to review these recommendations in context of previous recommendations by others to implement stormwater BMPs.

Truckee Meadows Storm Water Management Program Work Plan Effectiveness Assessment

Item B.2

CASQA Classifications: 1 = Documenting; 2= Awareness;
3= Behavior; 4= Sources; 5= Runoff Quality;
6= Receiving Water Quality

Element: Public Outreach and Education

			Milestone or Accomplishment			Implementation Ranking:			
BMP#	Title or Measurable Goal	2005 Permit Reference	CASQA BMP Classification	Ongoing or deadline	Notes	SWPCC	COR	COS	Washoe
EDU-01, Public Outreach and Education Typical Events		IV.D.2							
EDU-1.1	Coordinate and attend (booth or table) at least one community event per year		2	⇔	Hosted 2 stenciling events.	9			
EDU-1.2	Host at least two BMP related workshops per year		3	⇔	1 BMP-specific Workshop held in spring. In addition, 1 LID workshop held in spring, 2 HOA stormwater infrastructure maintenance trainings held in fall, & 1 KTMB Teacher Training on Watersheds held in fall.	9			
EDU-1.4	Maintain the existing web tools with updated content and current information		2	⇔	Updated City's and SWPCC's website, including adding new SWPCC Logo to webpages.	9			
EDU-1.5	Provide support to educators by maintaining and promoting tools for their use on www.tmstormwater.com and in coordination with the Truckee Meadows Water Authority (TMWA)		2	⇔	Tools are maintained and posted on new website	9			
EDU-02, Public Outreach and Education Materials		IV.D.							
EDU-2.1	Distribute at least 100 storm water fact sheets per year		2	⇔	Designed new Prevent Local Stromwater Pollution pamphlet (English and Spanish), to be distributed at agency offices, libraries, non-profits just after close of FY2021. PDFs available on website.	9			
EDU-2.2	Implement educational bill inserts for regional distribution, explaining storm water pollution, prevention and tips		2	⇔	Designed new Prevent Local Stromwater Pollution pamphlet, which was parsed and summarized in a monthly TMWA bill newsletter, to be distributed to all TMWA customers just after close of FY2021.	9			
EDU-2.3	Digitize storm water fact sheets and post on the www.tmstormwater.com website for public access		2	⇔	Completed.	9			
EDU-2.4	Participate in existing public celebrations with booth or other SWPCC presence (1/year), using banners and Enviroscape diorama		2	⇔	Canceled due to covid19	8			
EDU-03, Storm Drain Labeling Program		IV.D.3 & 4							
EDU-3.1	Develop a list of volunteers to use in future efforts		3	⇔	Coordination with KTMB to develop volunteer lists	9			
EDU-3.2	Label 75 storm drains each year through volunteer efforts		3	⇔	Working on a neighborhood focused effort. 109 during spring 2021. Hundreds of flyers handed out.	9			
EDU-3.3	Continue mapping of storm drain facilities through the Truckee Meadows region over the current permit cycle		4	⇔	Yearly effort coordinated with KTMB River Clean Up Day	9			
EDU-04, Partnerships and Affiliations		IV.D.5							
EDU-4.1	Maintain existing partnerships and affiliations		3	⇔	Maintained partnerships. Working to expand partners including One Truckee River, Urban Ecology Solutions, Integrated Source Water Protection, Resiliant Reno	9			
EDU-4.2	Collaborate with at least five partners per year		3	⇔	Co-permittees, NDOT, KTMB, Truckee Meadows Parks Foundation, One Truckee River, etc.; working to expand	9			
EDU-05, Regional Program Website www.tmstormwater.com		IV.D.3 & 4							
EDU-5.1	Post 100% of approved SWMP related documents		1	⇔	Posted	9			
EDU-5.2	List all (100%) BMP training workshops		2	⇔	Workshops advertised on website	9			
EDU-5.3	Within www.tmstormwater.com, create a Household Hazardous Waste page for safe disposal (see IDD-05). Reference other sites with hours of operation for hazardous waste management assistance		2	⇔	Provided links to EPA resources	9			
Symbol Key: ⇔ Ongoing Activity; 🕘 Deliverable or SWMP Milestone									

Implementation Ranking: 1-3 = Not Fully Implemented, Requires Improvement
4-6 = Implemented, Actively Improving
7-9 = Complete, Little Improvement Needed

n/a = not applicable

Truckee Meadows Storm Water Management Program Work Plan Effectiveness Assessment

CASQA Classifications: 1 = Documenting; 2= Awareness;
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6= Receiving Water Quality

Element: Public Outreach and Education

			Milestone or Accomplishment			Implementation Ranking:			
BMP#	Title or Measurable Goal	2005 Permit Reference	CASQA BMP Classification	Ongoing or deadline	Notes	SWPCC	COR	COS	Washoe
EDU-06, Truckee River Watershed Map Tool		IV.D.3 & 4							
EDU-6.1	Distribute 100 website postcards to the community at public education days, with the website and a description of the tool		3	⇔	Designed new Prevent Local Stromwater Pollution pamphlet, containing link to website, to be distributed at agency offices, libraries, non-profits just after close of FY2021. PDFs available on website. Reevaluating how best to incorporate the map tool.	7			
EDU-6.2	Support teachers using this website by providing them with curriculum ideas for meeting science standards (coordinate with Washoe County Science Coordinator annually)		2	⇔	No contact made with Washoe County School Dist. Did maintain tool availability for students.	3			
EDU-6.3	Provide two updates per year to the content in the Map Tool		1	⇔	Did not have any updates to the Map Tool this year. Map Tool needs to be updated and reposted to website.	6			
EDU-07, Demonstration Projects - Typical		IV.D.3 & 4							
EDU-7.1	Maintain project descriptions and summaries / results on either www.tmstormwater.com or www.truckeeriverinfo.org		2	⇔	No recent demonstration projects have been implemented, to post online.	6			
EDU-7.2	Make an annual presentation of the results of a demonstration project and reference these projects in training sessions on storm water and BMPs, as they correlate to improving storm water, as well as sharing lessons learned		3	⇔	Presentation at NWEA summer conference	9			
EDU-08, Workshop and Training Seminars		IV.D.5							
EDU-8.1	Conduct two training sessions per fiscal year		3	⇔	4 workshops - BMPs/SWPPP, LID, HOA's	8			
EDU-8.2	Provide materials and presentations for use throughout the community in trainings for storm water and watershed protection		3	⇔	Provided on the website and at workshops	9			

Symbol Key: ⇔ Ongoing Activity; ◷ Deliverable or SWMP Milestone

n/a = not applicable

Implementation Ranking: 1-3 = Not Fully Implemented, Requires Improvement
4-6 = Implemented, Actively Improving
7-9 = Complete, Little Improvement Needed

Element: Construction Site Discharge Program

		Milestone or Accomplishment				Implementation Ranking:			
BMP#	Title or Measurable Goal	2005 Permit Reference	CASQA BMP Classification	Ongoing or deadline	Notes	SPCC	COR	COS	Washoe
CONST-01, Construction Site Inspections		IV.J.							
CONST-1.1	Inspect all (100%) construction sites at least once		6	⇔	Completed		8	9	5
CONST-1.2	Record and follow up on all (100%) observed deficiencies		6	⇔	All deficiencies addressed through corrective action or referral		9	9	8
CONST-02, Construction Site BMP Training		IV.J.4.d							
CONST-2.1	Conduct at least two Construction Site Storm Water BMP Training Workshops each year		3	⇔	Only 1 conducted. Fall 2020 cancelled due to Covid	9			
CONST-2.3	Disseminate Nevada Construction BMP field guides to all attendees		3	⇔	Completed	9			
CONST-2.4	Provide training announcements on www.tmstormwater.com, and through local industry newsletters		2	⇔	Completed	9			
CONST-03, Construction Site BMP Handbooks		IVJ.							
CONST-3.1	Make the handbooks available to site development and redevelopment projects within the Truckee Meadows MS4 permit area		2	⇔	Digital or by request	9			
CONST-3.2	Meet the schedule for updating the Nevada BMP Field Guide and Construction Site BMP handbook (both due for update June 2013)		2	◷	Completed	9			

Symbol Key: ⇔ Ongoing Activity; ◷ Deliverable or SWMP Milestone

Element: Intergovernmental Coordination

		Milestone or Accomplishment				Implementation Ranking:			
BMP#	Title or Measurable Goal	2005 Permit Reference	CASQA BMP Classification	Ongoing or deadline	Notes	SPCC	COR	COS	Washoe
GOV-01, Intergovernmental Coordination		IV.K.							
GOV-1.1	Administer the Storm Water program per Interlocal Agreement (2004) and in accordance with the permit		3	⇔	Ongoing	9			
GOV-1.2	Continually maintain the Interlocal Agreement (no lapse)		3	⇔	Ongoing	9			
GOV-1.3	Schedule regular public-noticed SWPCC meetings, at least bimonthly		3	⇔	Ongoing	9			
GOV-1.4	Participate in Coordinated Monitoring Program activities on the Truckee River watershed		3	⇔	Ongoing	9			
GOV-1.5	Post and provide maintenance for the CMP document on the Truckee River Information Gateway (TRIG) website at www.truckeeriverinfo.org		2	⇔	Ongoing and continuing to seek out new data contributors and collaborators	9			
GOV-02, Municipal Codes and Ordinances		III.							
GOV-2.1	Continually maintain adequate legal authority to enforce and support the provisions in the MS4 permit (goal: no code deficiencies observed or reported annually)		3	⇔	Ongoing	9			
GOV-2.2	Review agency design manuals, codes and ordinances, and update as needed, to support Low Impact Development and other storm water control techniques		3	⇔	Ongoing: updated ordinances for LID and SC guidance this FY.	9			
GOV-03, Complaint Hotline		IV.G.1.f							
GOV-3.1	Respond to 100% of the calls received		4	⇔	Reno Direct	9			
GOV-3.2	Document calls received		1	⇔	Reno Direct/EC	9			
GOV-04, Truckee Meadows Regional Drainage Manual		III.							
GOV-4.1	Record the number of manuals distributed and workshops and training events		1	⇔	This is available online and not distributed in paper form	9			
GOV-4.2	Provide assistance with periodic updates of the Drainage Manual		1	⇔	Ongoing	9			
GOV-05, Code Enforcement		III., IV.G.1							
GOV-5.1	Educate contractors, developers and builders, convey requirements of storm water related expectations and obtain voluntary compliance to reduce or prevent the need for enforcement actions (Discuss code and code enforcement at two outreach events per year)		3	⇔	Construction Site BMP trainings annually. 1 held due to covid19	9			
GOV-5.2	Record and document enforcement actions within the MS4 permit area in the Annual Report to NDEP		1	⇔	Ongoing.	9			
GOV-06, Plan Review		III.							
GOV-6.1	Record applicable building and development plans with respect to storm water quality management practices, requirements and waterway protection measures with the MS4 permit area		4	⇔	Ongoing: all three agencies issue a Stormwater Permit above and beyond that of NDEP.	9			

Symbol Key: ⇔ Ongoing Activity; ⏲ Deliverable or SWMP Milestone

Element: Illicit Discharge Detection and Elimination

		Milestone or Accomplishment				Implementation Ranking:			
BMP#	Title or Measurable Goal	2005 Permit Reference	CASQA BMP Classification	Ongoing or deadline	Notes	SPCC	COR	COS	Washoe
IDDE-01, Illicit Discharge Report and Response Database		IV.G.							
IDDE-1.1	Maintain individual databases for records management of IDDE		1	⇔			9	9	n/a
IDDE-1.2	Manage and mitigate storm water runoff quality through the reduction of illicit discharges in a timely manner (data entry within 5 working days of an event)		6	⇔			9	9	n/a
IDDE-1.3	Investigate feasibility of developing a collective process whereby spill response and records management are consistent and able to be merged.		3	⇔	Feasibility has been discussed and deemed not feasible - Each municipality uses their own software and data management systems.	7			
IDDE-02, Spill Control and Prevention									
IDDE-2.1	Inspect 100% of commercial and industrial facilities at least once a year		6	⇔			9	9	n/a
IDDE-2.2	Record and follow up on all reportable spills		5	⇔			9	9	n/a
IDDE-03, IDDE Corrective Action and Follow-Up Protocols		IV.G.1							
IDDE-3.1	Investigate 100% of reported/discovered instances of illicit discharges within the MS4 permit area in a timely manner		6	⇔			9	9	9
IDDE-3.2	Clean-up and mitigate 100% of known illicit discharges		6	⇔			9	9	9
IDDE-3.3	Follow up on 100% of known illicit discharge actions and clean-up mandates		6	⇔			9	9	9
IDDE-04, Sanitary and Storm Sewer Inspection Program		IV.G.1.h							
IDDE-4.1	Increase awareness among staff of the significance of sanitary/storm system interconnections and illicit discharges (100% of inspection staff trained)		4	⇔			9	8	8
IDDE-4.2	Record and report the length and location of collection system inspected annually (100% of the inspections recorded)		2	⇔			9	8	7
IDDE-4.3	Correct or list 100% of identified field issues on future CIP lists		3	⇔			9	9	9
IDDE-05, Household Hazardous Waste Program		IV.G.							
IDDE-5.1	Support local programs focused on educating residents about household products that are environmentally hazardous and the disposal alternatives available in the Truckee Meadows (distribute printed materials at one community event per year, minimum)		2	⇔	Referal to KTMB.org on the website and in future years share community postings	6			
IDDE-5.2	Promote, publicize or assist in existing community collection events		2	⇔		5			
IDDE-5.3	Create a link on www.tmstormwater.com for residential hazardous waste management, identifying and linking to local waste collection events, programs or companies		2	⇔		9			

Symbol Key: ⇔ Ongoing Activity; ⏲ Deliverable or SWMP Milestone

Element: Industrial Facility Monitoring and Control

		Milestone or Accomplishment				Implementation Ranking:			
BMP#	Title or Measurable Goal	2005 Permit Reference	CASQA BMP Classification	Ongoing or deadline	Notes	SPCC	COR	COS	Washoe
IND-01, Commercial and Industrial Storm Water Inspections		IV.H.1							
IND-1.1	Inspect all permitted sites at least once a year		5	⇔	Goal met		9	9	n/a
IND-1.2	Respond to and follow up on 100% complaints and/or observed deficiencies		6	⇔	Goal met		9	9	n/a
IND-02, Commercial and Industrial Storm Water Outreach and Education		IV.H							
IND-2.1	Conduct at least one commercial and industrial outreach and education training session each year		3	⇔	Training sessions are done during annual inspections for each business license.		8	8	
IND-03, Housekeeping - Commercial/Industrial		IV.H.							
IND-3.1	Promote good housekeeping practices through inspection of permitted facilities (100% of facilities inspected)		4	⇔	Goal met		9	9	n/a
IND-3.2	Respond to 100% of substantiated reports and complaints relating to poor housekeeping practices that have the potential to enter the waterways of the MS4 permit area		6	⇔	Goal met		9	9	n/a
IND-04, Commercial/Industrial Facility Inventory		IV.H.1.b							
IND-4.1	Maintain existing inventory of industrial facilities		2	⇔	Goal met		9	9	n/a
IND-4.2	Annually verify that no industries listed in Section IV.H.1 are in operation within the MS4 permit area		2	⇔	Goal met		9	9	n/a
IND-05, Industrial and Commercial Storm Water BMP Handbook		IV.H.							
IND-5.1	Distribute the industrial and commercial educational video and manual to new commercial and industrial facilities within the MS4 permit area		2	⇔	New fliers and links to updated manual		8	8	n/a
IND-5.2	Assess the need to update the Industrial and Commercial Storm Water BMP Handbook		1	⇔	Update completed	9			
IND-5.3	If necessary, develop a schedule for updating the Handbook		1	⇔	Goal met	9			

Symbol Key: ⇔ Ongoing Activity; 🕘 Deliverable or SWMP Milestone

Truckee Meadows Storm Water Management Program Work Plan
Effectiveness Assessment

CASQA Classifications: 1 = Documenting; 2= Awareness;
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Element: MS4 Collective Municipal and SWPCC Activities

		Milestone or Accomplishment				Implementation Ranking:			
BMP#	Title or Measurable Goal	2005 Permit Reference	CASQA BMP Classification	Ongoing or deadline	Notes	SPCC	COR	COS	Washoe
MS4-01, Outfall, Channel and Tributary Inspections and Assessments		IV.G.1.b, c, & d							
MS4-1.1	Respond to 100% of all illicit discharges within the MS4 permit area		6	⇔	Goal met	9			
MS4-1.2	Record the channels, drains and tributaries inspected (100% of the inspections recorded, analyzed and reported)		1	⇔	Goal met	9			
MS4-1.3	100% of field issues identified are reported, corrected or rectified		6	⇔	Goal met	9			
MS4-1.4	Perform tributary assessment annually (per schedule)		2	⇔	Goal met	9			
MS4-02, MS4 Mapping		IV.B.1							
MS4-2.1	Maintain and update maps showing boundaries of the permit area, major storm water infrastructure and land use		2	⇔	Goal met	6			
MS4-2.2	Examine the feasibility of a common mapping format for use by all entities showing the location of permit defined major outfalls		1		Possible layer in ISWP tool hosted by the TMRPA	9			
MS4-03, Monitoring - Dry Weather		V.A.1							
MS4-3.1	Conduct regular dry weather monitoring		4	⇔	Goal met	9			
MS4-3.2	Conduct storm event monitoring in the dry season		4	⇔	Goal met	9			
MS4-3.3	Review and report 100% of analytical results, noting shifts or changes (i.e., flags)		3	⇔	Goal met	9			
MS4-3.4	Review and revise the SAP annually, as needed		3	⇔	Goal met	9			
MS4-04, MS4 Monitoring Wet Weather		V.A.							
MS4-4.1	Conduct regular sampling in wet season as described in the current SAP		2	⇔	Goal met	9			
MS4-4.2	Conduct storm event monitoring in wet season as described in the current SAP		2	⇔	Goal met	9			
MS4-4.3	Review and report 100% of analytical results, noting shifts or changes (i.e., flags)		3	⇔	Goal met	9			
MS4-4.4	Review and revise the SAP annually, as needed		3	⇔	Goal met	9			
MS4-4.5	Take action or report on 100% of field issues identified to SWPCC		5	⇔	Goal met	9			
MS4-05, Identification of New Storm Water BMPs		IV.A.5 & 7							
MS4-5.1	Discuss new BMPs in committee at least once each year		2	⇔	CASQA highlights	9			
MS4-5.2	Compare another MS4's BMPs with those used in the Truckee Meadows once each year		2	⇔	CASQA highlights	9			
MS4-5.3	Search at least three websites each year for new BMPs or new maintenance guidance on existing BMPs		2	⇔	CASQA highlights	9			
MS4-5.4	Talk to the co-permittees' maintenance divisions once each year to solicit input on BMP related issues		3	⇔	CASQA highlights	9			
MS4-06, SWMP Effectiveness Assessment		II.B.2.i, & V.C.3.b							
MS4-6.1	Review the CASQA methodology and define the approach to be used		2	⇔	Completed	9			
Symbol Key: ⇔ Ongoing Activity; 🕓 Deliverable or SWMP Milestone									

Implementation Ranking: 1-3 = Not Fully Implemented, Requires Improvement
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7-9 = Complete, Little Improvement Needed

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Element: MS4 Collective Municipal and SWPCC Activities

		Milestone or Accomplishment				Implementation Ranking:			
BMP#	Title or Measurable Goal	2005 Permit Reference	CASQA BMP Classification	Ongoing or deadline	Notes	SPCC	COR	COS	Washoe
MS4-6.2	Review existing BMP measurable goals with respect to their ability to support the desired outcome level		3	⇔	Goal met	9			
MS4-6.3	Perform annual effectiveness assessments		2	⇔	Goal met	9			
MS4-6.4	Include effectiveness assessment outcomes in the Annual Report		2		Goal met	9			
MS4-07, SWMP Effect on Drinking Water Quality		IV.F.5							
MS4-7.1	Hold one annual meeting with local water purveyors to discuss storm water impacts on surface water and groundwater quality		2	⇔	Goal met	9			
MS4-7.2	Discuss in committee the utility of modifying the annual monitoring plan to include considerations related to drinking water		2	⇔	Goal met	9			
MS4-7.3	Discuss in committee the utility of developing a GIS based tool for land use planning and permit approval based on relative risk for contamination of drinking water supplies, both surface water and groundwater		2	⇔	Goal met	9			
MS4-08, Impaired Waters		II.							
MS4-8.1	For each impairment, evaluate whether storm water discharges from any party of the MS4 permit area contribute directly or indirectly to the listing of a water body on the 303(d) list (goal: demonstrate yearly progress)		3	⇔	Goal met	9			
MS4-8.2	In the event that the data show that storm water runoff aggravates the 303(d) listing, identify BMPs that might be practicable to be implemented to mitigate the listing conditions (goals: demonstrate yearly progress)		3		Goal met	9			
MS4-09, Truckee Meadows Watershed Protection Manual		IV.							
MS4-9.1	Record number of manuals distributed at workshops and training events		1	⇔	This distribution of information happens online.	9			
MS4-9.2	Provide assistance with periodic updates of the Watershed Protection Manual		2	⇔	Managed in Tributary Assessments.	9			

Symbol Key: ⇔ Ongoing Activity; ⏲ Deliverable or SWMP Milestone

Implementation Ranking: 1-3 = Not Fully Implemented, Requires Improvement
4-6 = Implemented, Actively Improving
7-9 = Complete, Little Improvement Needed

n/a= not applicable

Element: Municipal Operations

		Milestone or Accomplishment				Implementation Ranking:			
BMP#	Title or Measurable Goal	2005 Permit Reference	CASQA BMP Classification	Ongoing or deadline	Notes	SPCC	COR	COS	Washoe
MUNI-01, Storm Drain and Channel Maintenance		IV.E.1.e							
MUNI-1.1	Maintain and inspect major storm water inlets and conveyance channels at least once a year		4	⇔			9	9	7
MUNI-1.2	Report for action 100% of observed structural definitions and evidence of illicit discharges		4	⇔			9	8	8
MUNI-1.3	Record the area and location of the drains and channels inspected (100% recordkeeping)		2	⇔			9	9	9
MUNI-1.4	100% of field issues identified are corrected or prioritized on future CIP lists		5	⇔			9	9	8
MUNI-02, Street Sweeping		IV.E.1.b							
MUNI-2.1	Sweep the MS4 permit area monthly		6	⇔	Monthly Schedule online for residents		9	9	8
MUNI-2.2	Perform leaf sweeping when necessary		6	⇔	October through November		9	9	7
MUNI-2.3	Sweep up all sand within 4 days following a storm event (in which sand and salt was applied)		6	⇔	Required by stormwater and regional air program		9	9	9
MUNI-03, Maintenance of City and County Owned Facilities		IV.E.1.e							
MUNI-3.1	Maintain and inspect 100% of City/County owned structural storm water BMPs and facilities annually		6	⇔			9	9	8
MUNI-3.2	Report for action 100% of observed deficiencies and evidence of illicit discharge		3	⇔			9	9	8
MUNI-3.3	Record the area, location and type of maintenance activity for City/County owned structural storm water BMPs (100% recordkeeping)		2	⇔			7	8	8
MUNI-3.4	Correct of list on future CIP lists, 100% of field issues identified		2	⇔			7	7	8
MUNI-3.5	Submit compilation of maintenance activities for inclusion in the Annual Report. This may warrant coordination between departments within each entity to consolidate a summary of activities in a consistent format		3	⇔	Summarized in O&M templates. Activity logs maintained by departments.		7	7	7
MUNI-04, Pesticide, Herbicide and Fertilizer Application Management - Internal		IV.E.1.d							
MUNI-4.1	Record types of chemicals used, the amount, application method, location, date and purpose		3	⇔			7	7	7
MUNI-4.4	Establish a consistent reporting format intra-departmentally and across the jurisdictions		3				8	8	8
MUNI-05, Staff Training - Operations and Maintenance - Internal		IV.E.1.a							
MUNI-5.1	Coordinate and provide internal O&M staff storm water related training (100% of O&M staff trained or informed) annually		3	⇔	No class setting due to covid19	7			
MUNI-5.2	Provide refresher training courses in specific areas of interest of storm water protection as they arise		2	⇔		7			

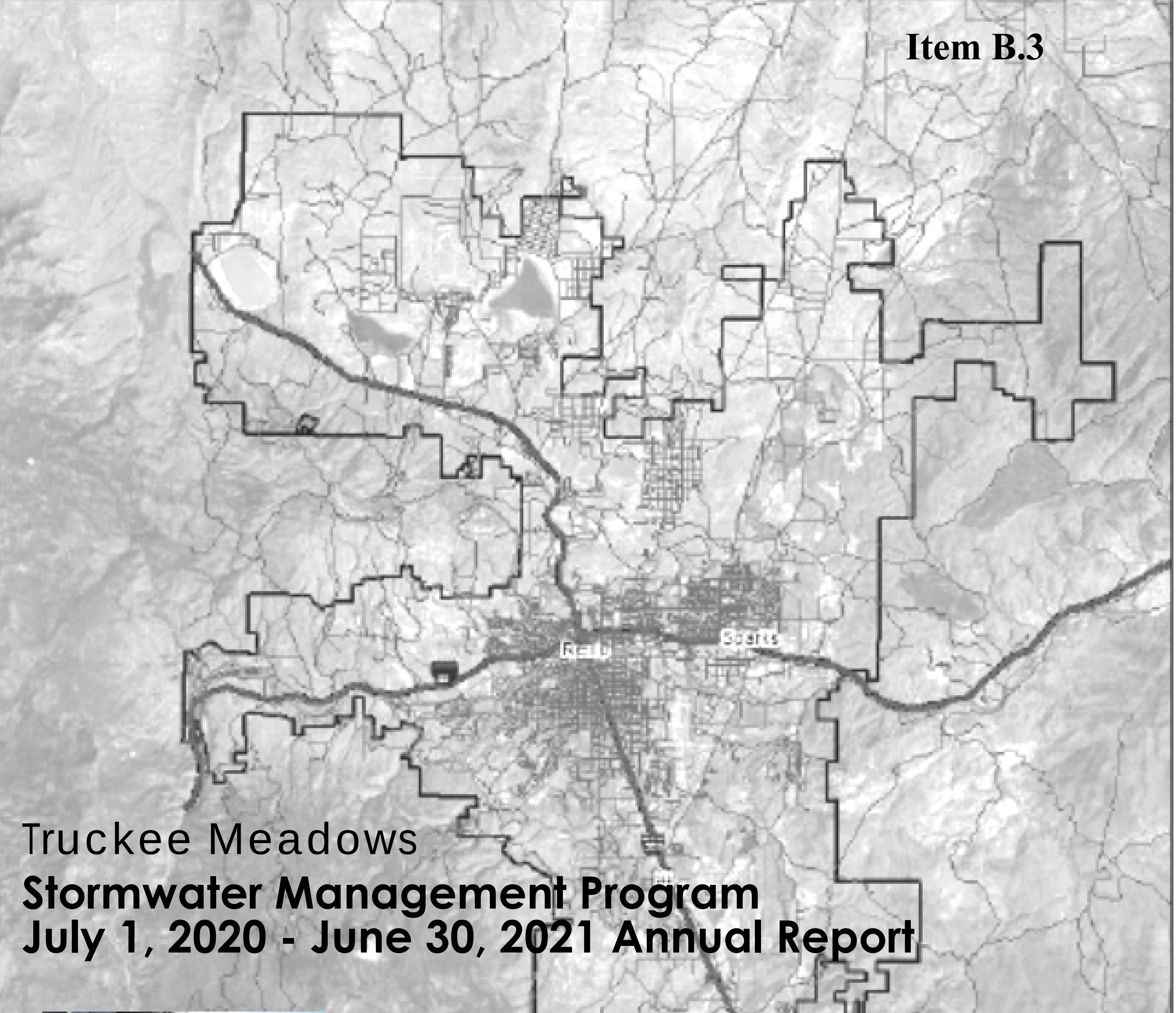
Symbol Key: ⇔ Ongoing Activity; ⏲ Deliverable or SWMP Milestone

Element: Post Construction for New Development and Significant Redevelopment

		Milestone or Accomplishment				Implementation Ranking:			
BMP#	Title or Measurable Goal	2005 Permit Reference	CASQA BMP Classification	Ongoing or deadline	Notes	SPCC	COR	COS	Washoe
POST-01, Land Development		IV.F							
POST-1.1	Review (100%) land development project plans for new or significant redevelopment that disturb areas greater that one acre (or <1 acre if part of a larger common development) to ensure that storm water runoff is treated or mitigated to the MEP		4	⇔			6	8	8
POST-1.2	Revise development codes as needed to support the Post Construction Storm Water program		4	⇔	Reno Title 18 update. No improvements identified.		9	9	9
POST-1.3	Define the approach and timeline for developing a database of post-construction BMPs controls		2	⇔	Currently maintaining lists.		5	6	ILA
POST-02, Truckee Meadows Structural Controls Design Manual		IVJ.4.d							
POST-2.1	Maintain the manual on the website with hard copies available if desired		3	⇔		9			
POST-2.2	Update the Structural Controls Design Manual in accordance with the planned schedule		3	⇔		9			
POST-2.3	Post updates on the website and publish amendments at a minimum of 5 years		3	⇔		9			
POST-03, Truckee Meadows Low Impact Development Handbook		IV.f.3.a.ii							
POST-3.1	Distribute the LID handbook (electronically) within the Truckee Meadows MS4 permit area		3	⇔		9			
POST-3.2	Develop a schedule for updating the LID handbook		2	⇔	Scheduling the update will be evaluated annually. Update scheduled for FY2223.	9			
POST-04, Truckee Meadows Standard Design Guidance Worksheets		IV.F.4							
POST-4.1	Maintain the worksheets on the website		3	⇔	Done	9			
POST-4.2	Update the Design Guidance Worksheet in accordance with the planned schedule		2	⇔		9			
POST-4.3	Post updates on the website and publish amendments as necessary		3	⇔		9			
POST-05, Future Regional Flood Projects		IV.F.3.a.iv							
POST-5.1	Hold one annual meeting with the flood staff from the Cities of Reno and Sparks, Washoe County and the TMWRF		2	⇔	The agencies participate in regional flood management and planning activites	1			
POST-5.2	Discuss in committee the necessity of developing a more formal process (e.g., a checklist, or additional BMPs in the Truckee Meadows Drainage manual) annually		2	⇔		1			

Symbol Key: ⇔ Ongoing Activity; ⏲ Deliverable or SWMP Milestone

Item B.3



Truckee Meadows

Stormwater Management Program
July 1, 2020 - June 30, 2021 Annual Report

Prepared for submittal to: Nevada Division of Environmental Protection by the Truckee Meadows Stormwater Permit Coordinating Committee

Truckee Meadows
Stormwater Permit
Coordinating Committee
Reno · Sparks · Washoe County

January 2022

Acknowledgements

The SWPCC was formed in 1990 to manage the regional stormwater discharge permit mandated by the Clean Water Act and issued by the Nevada Division of Environmental Protection (NDEP). Since 2004, the SWPCC has also addressed watershed management as it relates to water quality. The SWPCC comprises two representatives each from the City of Reno, City of Sparks, and Washoe County.

Members active in the program implementation and annual reporting efforts include:

> Theresa Jones, P.E., M.S., City of Reno, Public Works Department, Committee Coordinator

> James Pehrson, P.E., City of Reno, Community Development Department

> Kevin Porter, P.E., City of Sparks, Community Services Department, Committee Chair

> Cody McDougall, City of Sparks, Environmental Control Section

> Walter H. West, P.E., Washoe County Engineering and Capital Division

> Jennifer Heeran, P.E., Washoe County Engineering, Community Services Agency

Also acknowledged:

> Susan Ball Rothe, City of Reno, Legal Counsel, Deputy City Attorney

> Daniel Moss, P.E., City of Reno, Public Works Department, Staff Support

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Truckee Meadows
Stormwater Permit
Coordinating Committee
Reno · Sparks · Washoe County

Truckee Meadows Stormwater Permit Coordinating Committee

January 14, 2022

Andrew Dixon
Bureau of Water Pollution Control
Nevada Division of Environmental Protection
401 S. Stewart St.
Carson City, NV 89701

Subject: NVS000001 Truckee Meadows MS4 Annual Report – Fiscal Year 2020 - 2021

Dear Mr. Dixon,

On behalf of the Truckee Meadows Stormwater Permit Coordinating Committee (SWPCC), I am pleased to submit this annual report documenting the efforts, progress, and activities by the Truckee Meadows community. This annual report has been prepared pursuant to the National Pollutant Discharge Elimination System Permit for Discharges from Municipal Separate Storm Sewer Systems issued May 26, 2010.

In reviewing this report, it is clear that there continues to be strong commitment to implement the Truckee Meadows Stormwater Management Program to the maximum extent practicable. To the best of our knowledge the City of Reno, the City of Sparks and Washoe County are in full compliance with the permit conditions.

If there are any questions or concerns regarding this matter, please contact me at (775) 334-3311 or jonest@reno.gov.

Sincerely,

Theresa Jones, M.S., P.E.
Associate Engineer, Stormwater Program Coordinator
City of Reno, Utility Services

One East First Street, 7th Floor, Post Office Box 1900, Reno, Nevada 89505, Tel. (775) 334-2350, Fax (775) 334-2490
Website: “www.tmstormwater.com”

Truckee Meadows MS4 Statement of Compliance FY2021

The Truckee Meadows Stormwater Management Program is currently operating under National Pollutant Discharge Elimination System (NPDES) Permit NVS000001 effective May 26, 2010.

The Current Truckee Meadows Municipal Separate Storm Sewer System (MS4) Permit has been administratively continued until the renewal can be completed by NDEP. The Permittees submitted renewal application to Nevada Division Environmental Protection (NDEP) on September 25, 2014.

Based upon the on-going assessment by the co-permittees, the programmatic Best Management Practices (BMPs) identified in the Stormwater Management Program (SWMP) have or continue to be implemented and the MS4 is in compliance with the permit conditions. A new permit is anticipated and the Permittees are expecting to revise the SWMP in accordance with the renewed permit requirements.

As required this annual report is submitted by January 15 of each year. Enclosed are compliance summaries and the data templates, which track activities for each SWMP element, annual water quality monitoring report, program assessment and review, and program budget summaries.

Public Outreach and Education (EDU) FY2021

The Cities of Reno and Sparks, and Washoe County provide a regular presence with the community in public outreach efforts. The goal of the program remains to engage and inform the community regarding the importance of and ways they can protect their community's water resources. The SWMP educational program in the Truckee Meadows is meeting or exceeding goals, as is depicted within this section.

During the reporting period, a few outreach activities and events were cancelled due to the ongoing SARS-COV-2 pandemic. While a portion of the usual outreach activities were cancelled, the SWPCC was able to host outreach activities in-person and conduct trainings digitally, and regular monthly meetings were held both digitally and in-person. The fall Construction BMP Workshop was cancelled due to a lack of sign-ups, however that time was spent to develop the spring LID and Structural Controls Workshop.

FY2021 outreach activities included:

Creation of new SWPCC Logo (attached)

Production of the "Prevent Local Stormwater Pollution" trifold pamphlet, completed and distributed just after FY20-21 (attached)

Storm drain stenciling event, with KTMB in Truckee River Cleanup Day April 24, 2021 – 109 storm drains stenciled, hundreds of door hangers distributed, with the help of 13 volunteers (attached)

Truckee Meadows Parks Foundation support with doggie waste pick up bags for stocking stations and funding the Doggie Ambassador Program in the amount of $2,495.01– March 2021

Construction Stormwater BMP Workshop (Virtual) – June 23, 2021

LID and Structural Controls Workshop (Virtual) – June 28 – 29, 2021

Earth Day - Cancelled

Truckee River SnapShot Day – Cancelled

Participation in Reno Resilience: Planning for Climate Change - ongoing only rain in the stormdrain

Truckee Meadows
Stormwater Permit
Coordinating Committee
Reno · Sparks · Washoe County

Truckee Meadows

only rain in the stormdrain

Stormwater Permit
Coordinating Committee
Reno · Sparks · Washoe County

Getting Things Done!

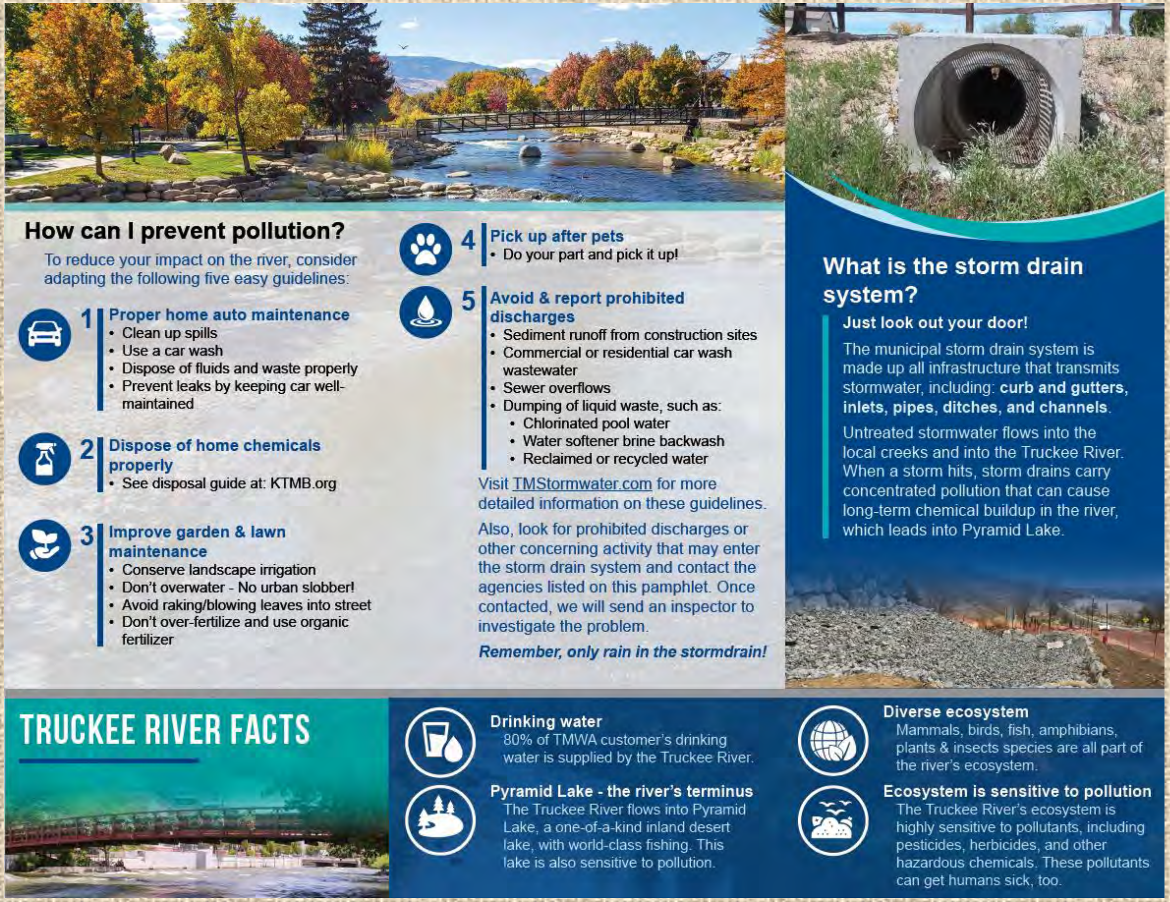
Environmental Engineering – Truckee Meadows Storm Water Permit Coordinating Committee (SWPCC) Stormdrain Stenciling Project during KTMB's Great Community Cleanup:

City of Reno Environmental Engineering staff administer the Truckee Meadows Storm Water Program (a requirement of the Truckee Meadows MS4 permit) through the Storm Water Permit Coordinating Committee (SWPCC). A regular part of SWPCC's required public outreach effort include stenciling stormdrains throughout the City with the phrase: "No Dumping – Drains to River". Last weekend, Daniel Moss, on behalf of SWPCC, partnered with KTMB's Annual Spring Great Community Cleanup to lead a group of volunteers in a stenciling event. This year, SWPCC and KTMB coordinated with Washoe County to locate a handful of Incorporated Washoe County neighborhoods along the Mt. Rose Hwy corridor, in need of stenciling. On the morning of May 1, a group of seven (7) adults plus six (6) children stenciled a total of 136 stormdrains, in five (5) separate neighborhoods. They staged out of South Valley Regional Park, and enjoyed a beautiful day of stenciling the sidewalk (with blue spray paint), and picking up some trash too!

Getting Things Done!

Truckee Meadows Storm Water Permit Coordinating Committee – Prevent Stormwater Pollution Educational Pamphlet:

City of Reno Utility Services staff, administering the Storm Water Permit Coordinating Committee (SWPCC), has printed a water quality protection informational pamphlet in English and Spanish and distributed them to many partner non-profit organizations and Washoe County libraries. Digital flipbook versions are available on TMstormwater.com.



How can I prevent pollution?

To reduce your impact on the river, consider adapting the following five easy guidelines:

1 **Proper home auto maintenance**
- Clean up spills
- Use a car wash
- Dispose of fluids and waste properly
- Prevent leaks by keeping car well-maintained

2 **Dispose of home chemicals properly**
- See disposal guide at: KTMB.org

3 **Improve garden & lawn maintenance**
- Conserve landscape irrigation
- Don't overwater - No urban slobber!
- Avoid raking/blowing leaves into street
- Don't over-fertilize and use organic fertilizer

4 **Pick up after pets**
- Do your part and pick it up!

5 **Avoid & report prohibited discharges**
- Sediment runoff from construction sites
- Commercial or residential car wash wastewater
- Sewer overflows
- Dumping of liquid waste, such as:
  - Chlorinated pool water
  - Water softener brine backwash
  - Reclaimed or recycled water

Visit TMStormwater.com for more detailed information on these guidelines.

Also, look for prohibited discharges or other concerning activity that may enter the storm drain system and contact the agencies listed on this pamphlet. Once contacted, we will send an inspector to investigate the problem.

Remember, only rain in the stormdrain!

What is the storm drain system?

Just look out your door!

The municipal storm drain system is made up all infrastructure that transmits stormwater, including: **curb and gutters, inlets, pipes, ditches, and channels.**

Untreated stormwater flows into the local creeks and into the Truckee River. When a storm hits, storm drains carry concentrated pollution that can cause long-term chemical buildup in the river, which leads into Pyramid Lake.

TRUCKEE RIVER FACTS

Drinking water
80% of TMWA customer's drinking water is supplied by the Truckee River.

Pyramid Lake - the river's terminus
The Truckee River flows into Pyramid Lake, a one-of-a-kind inland desert lake, with world-class fishing. This lake is also sensitive to pollution.

Diverse ecosystem
Mammals, birds, fish, amphibians, plants & insects species are all part of the river's ecosystem.

Ecosystem is sensitive to pollution
The Truckee River's ecosystem is highly sensitive to pollutants, including pesticides, herbicides, and other hazardous chemicals. These pollutants can get humans sick, too.

Como puedo prevenir la contaminacion?

Para reducir su impacto al Truckee river, considere adaptar las siguientes normas:

1 **Mantenimiento de su automóvil**
- Limpiar derrames
- Utilizar el auto lavado
- Desechar liquidos y desperdicio apropiadamente
- Evitar fugas manteniendo su coche en buen estado

2 **Desechar productos quimicos correctamente**
- Consulte la guía de desecho en: KTMB.org

3 **Mejorar el mantenimiento del jardín y el césped**
- Conserve el sistema de riego
- No regar en exceso
- Evite hechar o barrer las hojas de su arbol a la calle
- Evite el exceso de fertilizantes y utilize fertilizador orgánico

4 **Recoja los desechos de sus mascotas**
- Haz tu parte y recógelo!

5 **Evite y reporte descargas ilegales**
- Escurrimiento de sedimento de zonas de construccion
- Todo tipo de agua residual del auto lavado
- Desbordamiento del drenaje sanitario
- Desechar residuos de liquido, tal como:
  - Agua de piscina clorinada
  - Agua con suavizador
  - Agua reciclada o regenerada

Visite TMStormwater.com para más información detallada.

Tambien, busque descargas prohibidas u otra actividad relacionada que pueda entrar al sistema de drenaje pluvial y comuníquese con las agencias enumeradas en este folleto. Una vez que se contacte, enviaremos a un inspector para investigar el problema.

Y recuerda, solo lluvia en el desagüe pluvial!

Que es el sistema de drenaje pluvial?

Solo mire hacia afuera!

El sistema municipal de alcantarillado pluvial está compuesto por toda la infraestructura que transporta las aguas pluviales, incluyendo: bordillos y cunetas, tuberías, zanjas y canales.

Las aguas pluviales que no han sido tratadas fluyen hacia los arroyos locales y hacia el Truckee river. Cuando una tormenta azota la región, el alcantarillado pluvial transporta concentraciones de contaminación causadas por la acumulacion de quimicos a largo plazo en el río, que terminan en el Pyramid Lake.

DATOS DEL TRUCKEE RIVER

Agua potable
El 80% del agua potable de los clientes de TMWA proviene del río Truckee.

Pyramid Lake – el término del rio
El Truckee river desemboca en el Pyramid lake, un lago desértico único en su tipo, con pesca de clase mundial. Este lago también es sensible a la contaminación.

Ecosistema diversificado
Las especies de mamíferos, aves, peces, anfibios, plantas e insectos forman parte del ecosistema del río.

El ecosistema es sensible a la contaminación
El ecosistema del Truckee river es muy sensible a los contaminantes, incluyendo pesticidas, herbicidas y otros químicos peligrosos. Estos contaminantes también pueden enfermar a los humanos.

Government Coordination (GOV) FY2021

The SWPCC intergovernmental coordination is a key component of the success of the Truckee Meadows Stormwater Management Program. The co-permittees have maintained their interlocal agreement to administer the program with no changes during the reporting period.

During the reporting period the SWPCC coordinated with the Western Regional Water Committee (WRWC) to obtain funding needed to administer the committee activities for the fiscal year. WRWC allocated annual funding in the amount of $262,500.

The SWPCC and Nevada Department of Transportation (NDOT) entered into a multi-year joint funding agreement for certain activities performed by the SWPCC. The agreement is for NDOT to reimburse up to 25% of the cost for qualifying activities such as regional monitoring program.

During the reporting period the regional Watershed Management and Protection Plan for Tributaries to the Truckee River was completed and submitted to NDEP and EPA for approval. Coordination in this effort was put forth above and beyond the Stormwater Program implementation and included all of the regional partners.

Additional coordination includes: NDEP Integrated Source Water Protection Program (ISWP), One Truckee River, and the Truckee Meadows Water Authority (TMWA).

Coordination with TMWA and NDPE ISWP has been an ongoing effort through the routine stormwater meetings. The committee has received numerous updates on the ISWP GIS planning tool which will be used to identify wells and areas of source water protection which can be considered during the siting of stormwater BMPs. This coordination will address potential impacts to groundwater (V.C.3.i).

Annexations in the reporting period did not result in any changes to the SWMP. Annexed areas in FY20/21 are listed as (IV.M.2):

- Reno: None
- Sparks: Bill 2779 ordinance 2597 property ~ 34.7 acres of property generally located 555 Highland Ranch Parkway. Approved Nov 23, 2020.

DOC # 5125893
01/07/2021 02:51:39 PM
Requested By
SPARKS CITY
Washoe County Recorder
Kalie M. Work - Recorder
Fee: $43.00 RPTT:
Page 1 of 5

When Recorded Return to:
Sparks City Clerk
PO Box 857
Sparks, NV 89432

Introduced by City Council

BILL NO. 2779

ORDINANCE NO. 2597

PCN19-0040 - 5 RIDGES, 34.71 ACRES GENERALLY LOCATED AT 555 HIGHLAND RANCH PARKWAY.

A GENERAL ORDINANCE PROVIDING FOR THE ANNEXATION OF CERTAIN LANDS TO THE CITY OF SPARKS; LANDS MORE SPECIFICALLY DESCRIBED AS ASSESOR PARCEL NUMBER 508-020-01, A SITE APPROXIMATELY 34.71 ACRES IN SIZE, OWNED BY QK, LLC GENERALLY LOCATED AT 555 HIGHLAND RANCH PARKWAY WITHIN THE CITY OF SPARKS' SPHERE OF INFLUENCE; AND PROVIDING OTHER MATTERS PROPERLY RELATING THERETO.

THE CITY COUNCIL OF THE CITY OF SPARKS DOES ORDAIN:

SECTION 1: The property described in Exhibit 'A' and depicted in Exhibit 'B', which is attached hereto and incorporated herein by reference, and situated in the County of Washoe, State of Nevada, shall become and hereafter shall be a part of the City of Sparks and shall be embraced within the corporate limits of this said City.

SECTION 2: All ordinances or parts of ordinances in conflict herewith are hereby repealed.

SECTION 3: The City Clerk is instructed and authorized to publish the title to this ordinance as provided by law.

SECTION 4: This ordinance shall become effective upon passage, approval and publication.

SECTION 5: The provisions of this ordinance shall be liberally construed to effectively carry out its purposes in the interest of the public health, safety, welfare and convenience.

SECTION 6: If any subsection, phrase, sentence or portion of this section is for any reason held invalid or unconstitutional by any court of competent jurisdiction, such portion shall be deemed a separate, distinct and independent provision, and such holding shall not affect the validity of the remaining portions.

SECTION 7: The City Council finds that this ordinance is not likely to impose a direct and significant economic burden upon a business or directly restrict the formation, operation or expansion of a business, or is otherwise exempt from Nevada Revised Statutes Chapter 237.

PASSED AND ADOPTED this 23rd day of November 2020 by the following vote of the City Council:

AYES: Abbott, VanderWell, Anderson, Bybee, Dahir
NAYS: N/A
ABSENT: N/A
ABSTAIN: N/A

APPROVED this 23rd day of November 2020.

Ed Lawson, Mayor

ATTEST:

Lisa Hunderman
City Clerk

APPROVED AS TO FORM & LEGALITY:

Chester H. Adams
City Attorney

EXHIBIT "A"
LEGAL DESCRIPTION

APN: 508-020-01

All that certain real property being a portion of Northeast Quarter (NE ¼) of Section 8, Township 20 North, Range 20 East, M.D.M., City of Sparks, County of Washoe, State of Nevada, being more particularly described as follows:

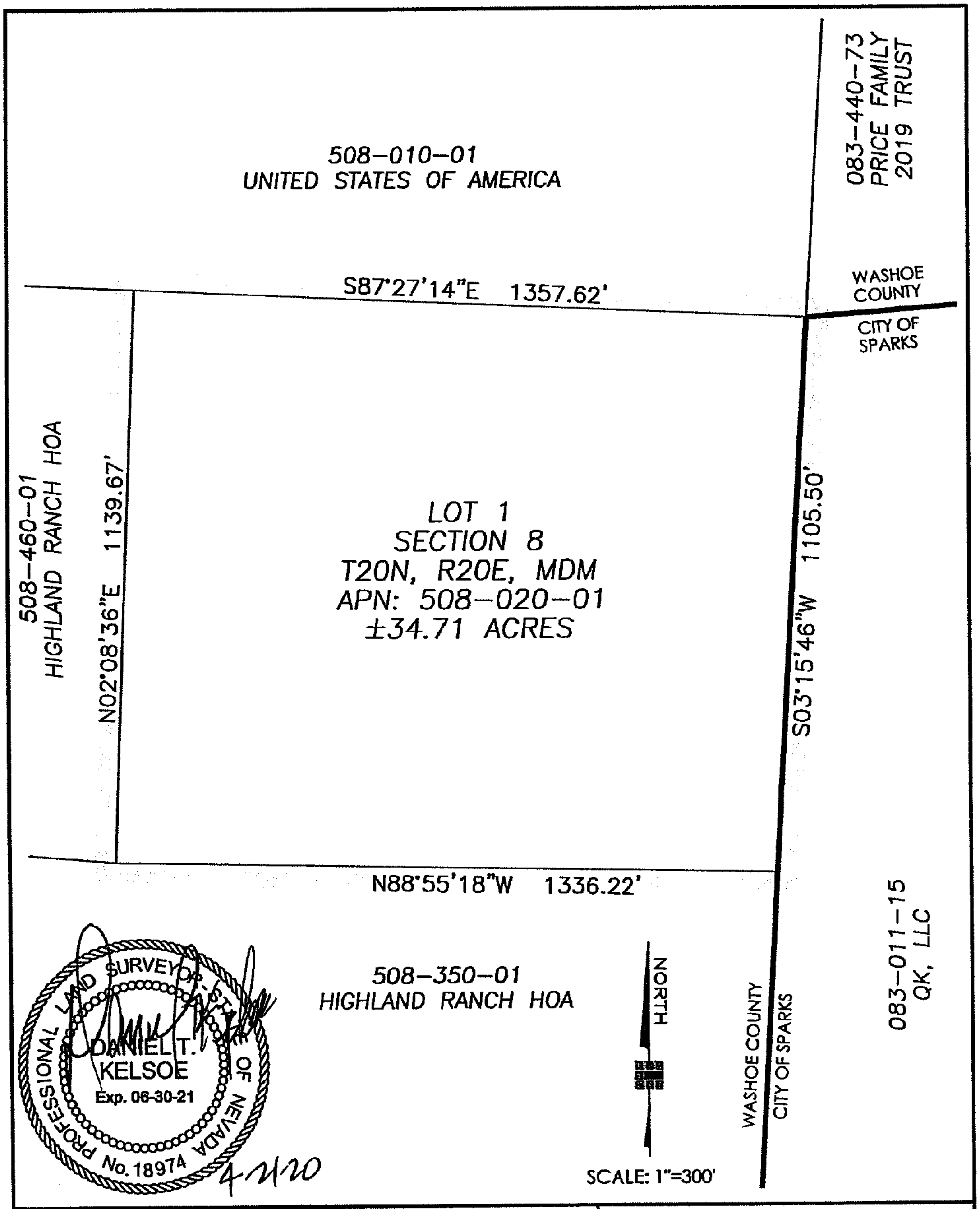
Being Lot 1, Section 8, Township 20 North, Range 20 East, M.D.M., per United States Patent number N-59899, 27-2001-0041, recorded April 10, 2001 as File No. 2541714, Official Records of Washoe County, Nevada.

Containing:	34.71 Acres, more or less
Basis of Bearings:	The Basis of Bearings for this description being the Nevada State Plane Coordinate System, West Zone, NAD 83/94, based on found Washoe County Control monuments.

PROFESSIONAL LAND SURVEYOR STATE OF NEVADA
DANIEL T. KELSOE
Exp. 6-30-21
No. 18974

4-21-20

Prepared by:
Christy Corporation
Sparks, Nevada
89436
775.502.8852



ANNEXATION EXHIBIT

2346 DONATELLO DRIVE
WASHOE COUNTY, NEVADA 89433
APN: 508-020-01

CHRISTY
CORPORATION

1000 Kiley Pkwy | Sparks Nevada 89436
P 775.502.8552 W christynv.com

RGJ media
PART OF THE USA TODAY NETWORK

Order Confirmation for Ad #: 0004462557

Customer: SPARKS/CITY OF
Address: FINANCE DEPARTMENT
SPARKS NV 89431 USA
Acct. #: REN-315801
Phone: 7753532325

SPARKS/CITY OF
Ordered By: Julie Torres

OrderStart Date: 11/12/2020 **Order End Date: 11/12/2020**

Tear Sheets	Affidavits	Blind Box	Promo Type	Materials	Special Pricing	Size
0	1					2 X 30.00

Net Amount	Tax Amount	Total Amount	Payment Method	Payment Amount	Amount Due
$247.00	$0.00	$247.00	Invoice	$0.00	$247.00

Ad Order Notes:
Sales Rep: FGrade **Order Taker:** FGrade **Order Created** 11/10/2020

Product	# Ins	Start Date	End Date
	1	**11/12/2020**	**11/12/2020**
11-12-20,			
	1	**11/12/2020**	**11/12/2020**
11-12-20,			

*** ALL TRANSACTIONS CONSIDERED PAID IN FULL UPON CLEARANCE OF FINANCIAL INSTITUTION**

Text of Ad: 11/10/2020

NOTICE

INTRODUCED BY COUNCIL

NOTICE IS HEREBY GIVEN that the City Council of the City of Sparks, Nevada, at a regular meeting on November 9, 2020, introduced Bills No. 2779, 2780, and 2781 the title of which are as follows:

Bill No. 2779

FIRST READING of Bill 2779 to annex real property approximately 34.71 acres in size generally located at 555 Highland Ranch Parkway, Washoe County, Nevada. Upon annexation the parcel will convert from a Washoe County zoning designation of GR (General Rural) to a City of Sparks zoning designation of A-40 (Agriculture). (PCN19-0040)

Bill No. 2780

FIRST READING of Bill 2780 to rezone real property approximately 34.71 acres in size generally located at 555 Highland Ranch Parkway from 34.71 acres of A-40 (Agriculture) to 10.00 acres of SF-6 (Single-Family Residential, 6,000 sq. foot lots) and 24.71 acres of A-5 (Agriculture). (PCN19-0040)

Bill No. 2781

FIRST READING of Bill No. 2781 for approval of the Development Agreement, Amendment Number 2, pursuant to NRS 278.0201, between the City of Sparks, QK, LLC and 5 Ridges Development Company, Inc., providing for planning and development of a site 421.58 acres in size located at 555 Highland Ranch Parkway, Sparks, Nevada (PCN19-0040). (FOR POSSIBLE ACTION)

A public hearing will be held, and Bills No. 2779, 2780, and 2781 will be acted upon at the regular meeting of the Sparks City Council on Monday, November 23, 2020 at 2:00 pm a virtual meeting hosted in ZOOM.

BY ORDER OF THE SPARKS CITY COUNCIL dated this 9th day of November, 2020.

s/Lisa Hunderman
City Clerk
0004462557 Nov. 12, 2020

PROOF OF PUBLICATION

STATE OF WISCONSIN SS.
COUNTY OF BROWN

SPARKS/CITY OF
FINANCE DEPARTMENT
431 PRATER WAY
SPARKS NV 89431

Being first duly sworn, deposes and says: That as the legal clerk of the Reno Gazette-Journal, a daily newspaper of general circulation published in Reno, Washoe County, State of Nevada, that the notice referenced below has published in each regular and entire issue of said newspaper between the date: 11/27/2020 - 11/27/2020, for exact publication dates please see last line of Proof of Publication below.

11/27/2020

Legal Clerk

Subscribed and sworn before me this 27th of November 2020.

Shelly Hora

NOTARY PUBLIC RESIDING
AT STATE OF WISCONSIN
COUNTY OF BROWN

Notary Expires: 8-25-23

SHELLY HORA
Notary Public
State of Wisconsin

Ad#:0004483509
P O : Bill No. 2779, 2780, 2781
# of Affidavits 1

This is not an invoice

NOTICE

Ordinance No. 2597
Introduced by Council

Bill No. 2779

An ordinance annexing real property approximately 34.71 acres in size generally located at 555 Highland Ranch Parkway, Washoe County, Nevada. Upon annexation the parcel will convert from a Washoe County zoning designation of GR (General Rural) to a City of Sparks zoning designation of A-40 (Agriculture). (PCN19-0040)

Ayes: Abbott, VanderWell,
Anderson, Bybee, Dahir
Nays: None
Absent: None
Abstain: None

Ordinance No. 2597 was approved by the City Council on this 23rd day of November, 2020.

Ordinance No. 2598
Introduced by Council

Bill No. 2780

An ordinance rezoning real property approximately 34.71 acres in size generally located at 555 Highland Ranch Parkway from 34.71 acres of A-40 (Agriculture) to 10.00 acres of SF-6 (Single-Family Residential, 6,000 sq. foot lots) and 24.71 acres of A-5 (Agriculture). (PCN19-0040)

Ayes: Abbott, VanderWell,
Anderson, Bybee, Dahir
Nays: None
Absent: None
Abstain: None

Ordinance No. 2598 was approved by the City Council on this 23rd day of November, 2020.

Ordinance No. 2599
Introduced by Council

Bill No. 2781

An ordinance approving Development Agreement, Amendment Number 2, pursuant to NRS 278.0201, between the City of Sparks, QK, LLC and 5 Ridges Development Company, Inc., providing for planning and development of a site 421.58 acres in size located at 555 Highland Ranch Parkway, Sparks, Nevada (PCN19-0040). (FOR POSSIBLE ACTION)

Ayes: Abbott, VanderWell,
Anderson, Bybee, Dahir
Nays: None
Absent: None
Abstain: None

Ordinance No. 2599 was approved by the City Council on this 23rd day of November, 2020.

s/Ed Lawson
MAYOR

ATTEST:
s/Lisa Hunderman
City Clerk
0004483509

Illicit Discharge Detection and Elimination (IDDE) FY2021

The IDDE program aims to respond and to resolve all spills, illegal discharges within the MS4 as soon as possible upon discovery. The Cities of Reno and Sparks conduct an annual field screening to investigate dry weather flows to identify any illicit discharges and connections to the Truckee River (BMP ID# MS4-03). Citizen reports by phone, email, or community system such as Reno Direct are used to identify and respond to illicit discharges as well as track responses.

Dry weather monitoring is performed annually. Flowing outfalls are screened in the field, qualitatively and quantitatively. The goal of dry weather monitoring is to identify illicit discharges and any cross connections between sewer and storm drain system that may exist, and make corrections. Public Service Announcements developed in FY1718 continue to be run on local media outlets.

Number of Incidents Reported

	FY1819	**FY1920**	**FY2021**
City of Reno	138	159	149
City of Sparks	68	85	50

Number of Cross-Connections Identified:

	FY1819	**FY1920**	**FY2021**
City of Reno	0	0	0
City of Sparks	0	0	0

Number of Flowing Outfalls:

	FY1819	**FY1920**	**FY2021**
City of Reno	3	3	3
City of Sparks	1	0	0

Number of Violations issued for Illicit Discharge:

	FY1819	**FY1920**	**FY2021**
City of Reno	10	11	8
City of Sparks	17	9	7

Number of Citations issued for Illicit Discharge:

	FY1819	**FY1920**	**FY2021**
City of Reno	5	6	15
City of Sparks	0	0	0

City of Reno
Summary of Compliance
Illicit Discharge Detection and Elimination (IDDE)
FY 20/21

Dry weather monitoring

To fulfill the requirements of the 2010 State of Nevada Municipal Separate Storm Sewer Systems (MS4) Permit No. NVS000001 section IV.G.1.c and as outlined in the December 2011 (revised 2014) Truckee Meadows Regional Storm Water Quality Management Program (SWMP) section 3.2 Illicit Discharge Detection and Elimination (IDDE) and BMP ID# MS4-03, an annual field screening to investigate dry weather flows is performed by the City of Reno (COR) Environmental Control Section (ECS). The purpose of this field screening is to evaluate for, detect, and eliminate any illicit discharges and cross-connections from sanitary sewer to the Truckee River. This year's survey was conducted on October 27-28, 2020 and samples were collected from flowing outfalls on October 29, 2020. Based on the field observations and sampling results, no apparent illicit discharges or cross-connections were discovered during the survey.

Spill Response

The COR ECS responds to any and all reports of spills or other illicit discharges, reported by the public, COR staff, other agencies, or via the 24-hour / 7 days a week spill hotline advertised to the public. All ECS permits include requirements to notify COR ECS in the event of a spill. COR ECS oversees and documents mitigation of illicit discharges, and notifies other agencies as necessary.

	FY 1819	FY 1920	FY 2021
Number of Spills reported	138	159	149
Number of cross connections discovered	0	0	0
Number of Flowing Outfalls	3	3	3
Number of Violations issued for Illicit Discharge	10	11	8
Number of Citations issued for Illicit Discharge	5	6	15

City of Sparks
Summary of Compliance
Illicit Discharge Detection and Elimination (IDDE)
FY 20/21

Dry Weather Monitoring

To fulfill requirements of the 2010 State of Nevada Municipal Separate Storm Sewer Systems (MS4) Permit No. NVS000001 section IV.G.1.c and as outlined in the December 2011 (revised 2014) Truckee Meadows Regional Storm Water Quality Management Program (SWMP) section 3.2 Illicit Discharge Detection and Elimination (IDDE) and BMP ID# MS4-03, an annual field screening to investigate dry weather flows is performed by the City of Sparks Environmental Control Section (ECS). The purpose of which is to detect and eliminate any illicit discharges and cross-connections to the Truckee River. This year's survey was conducted on November 17, 2020 and no illicit discharges or cross-connections were discovered in the City of Sparks during the survey.

Spill Response

The ECS maintains and monitors a 24-hour / 7 days a week spill hotline for mitigating any threats to the sanitary sewer and storm drain systems. All ECS permits include the requirement to notify the ECS of any spills. Additionally, all Sparks corporation yard staff, Sparks Fire, Sparks Police and Sparks dispatch are educated about the sanitary sewer and storm drain systems and are instructed to contact the ECS at any time for any type of incident that may impact these systems. The ECS immediately responds to all spill notifications and either mitigate and clean-up the incident or require the responsible party or subcontractor to do the same.

IDDE Stormwater Activities:			
	FY 18/19	FY 19/20	FY 20/21
Number of Incidents reported	68	85	50
Number of cross connections discovered	0	0	0
Number of Flowing Outfalls	0	0	0
Number of Violations issued for Illicit Discharge	17	9	7
Number of Citations issued for Illicit Discharge	0	0	0

Construction (CONST) FY2021

The SWMP Construction program aims to educate, inspect, and enforce the requirement to implement sediment controls at active construction sites above one acre throughout the Truckee Meadows.

Active construction sites are inspected for appropriate permit coverage, BMP placement and maintenance, and site condition. Inspections allow for in the field education and correction of deficiencies. Correction may be made by verbal warning; written violations are tracked and if not corrected may be escalated to the issuance of a citation or referral to state enforcement.

It is noted that while the City of Reno encountered many SWPPP-related issues in the last year, all issues were solved through direct communication with contractors, so no Violations or Citations had to be pursued.

During the reporting period one construction stormwater workshop was held in June 2021. There were no Fall 2020 construction stormwater workshop due to Covid. In lieu of a fall class the SWPCC sent an informational outreach email to remind people of the BMP resources available.

Number of Construction Stormwater Inspections

	FY1819	**FY1920**	**FY2021**
City of Reno	1808	1446	1368
City of Sparks	135	145	118
Washoe County	40	57	73

Number of Violations issued at Construction Sites

	FY1819	**FY1920**	**FY2021**
City of Reno	0	0	0
City of Sparks	6	6	2
Washoe County	0	0	0

Number of Citations issued at Construction Sites

	FY1819	**FY1920**	**FY2021**
City of Reno	0	0	0
City of Sparks	0	0	0
Washoe County	0	0	0

City of Sparks

Truckee Meadows Storm Water
Permit Annual Report

CONSTRUCTION SITE DISCHARGE INSPECTION & ENFORCEMENT ACTIVITIES

For Fiscal Year 7-1-20 thru 6-30-21

Number of Construction Site (SWPPP) Inspections:	118
Number of Corrective Actions:	0
Number of Notices of Violation:	2
Citations:	0
Stop Work Order (Cease & Desist):	0
Total Violations:	2
Training:	1 employee attended Truckee Meadows Structural Controls Design and Low Impact Development (LID) Manual Training presented by Cardno, hosted by SWPCC, on June 28 & 29, 2021. 2 employees attended “Stormwater Compliance and BMPs for Construction Sites” Training presented by hosted by SWPCC, on June 23, 2021. No additional stormwater training.

LIST NOTICES OF VIOLATION

Date	Business Name	Address	Remarks
09/10/2020	Lennar	6171 Cotton Rosser Rd	Track out from construction site
04/17/2021	Raphael Construction	100 Legends Bay Dr.	Missing weekly insp., BMP’s need replaced, SWPPP not up to

Washoe County

Truckee Meadows Storm Water Permit Annual Report

CONSTRUCTION SITE DISCHARGE INSPECTION & ENFORCEMENT ACTIVITIES

For Fiscal Year 7-1-20 thru 6-30-21

Number of Construction Site (SWPPP) Inspections:	73
Number of Corrective Actions.	6
Number of Notices of Violation:	0
Citations:	0
Stop Work Order (Cease & Desist):	0
Total Violations:	0
Training:	5 employees attended Truckee Meadows Structural Controls Design and Low Impact Development (LID) Manual Training presented by Cardno, hosted by SWPCC, on June 28 & 29, 2021. 2 employees attended “Stormwater Compliance and BMPs for Construction Sites” Training presented by COR and hosted by SWPCC, on June 23, 2021. No additional stormwater training.

LIST NOTICES OF VIOLATION

Date	Business Name	Address	Remarks

City of Reno

Truckee Meadows Storm Water
Permit Annual Report
CONSTRUCTION SITE DISCHARGE INSPECTION & ENFORCEMENT ACTIVITIES

For Fiscal Year 7-1-20 thru 6-30-21

Number of Construction Site (SWPPP) Inspections:	1368
Number of Corrective Actions:	All Corrections completed by date of re-inspection.
Number of Notices of Violation:	0
Citations:	0
Stop Work Order (Cease & Desist):	0
Total Violations:	0
Training:	1 employee attended LID Training put on by Cardno. 2 employees attended "Stormwater Compliance and BMPs for Construction Sites" Training hosted by SWPCC. No additional stormwater training.

LIST NOTICES OF VIOLATION

Date	Business Name	Address	Remarks

Industrial (IND) FY2021

The Truckee Meadows agencies meet objectives set forth for the Industrial Program through collaboration of the regional inspection program. The Cities of Reno and Sparks Environmental Control (EC) sections perform inspection and enforcement activities for their respective service areas and for areas of Washoe County through industrial inspection interlocal agreements. New businesses are provided information regarding the compliance requirements for both the regional stormwater program and the pretreatment program. During annual inspection EC staff utilize the opportunity to outreach to permittees on best management practices and how to address any deficiencies, as well as point out areas where the permittee is in compliance.

Other activities during the reporting period include the continued distribution of the Environmental BMPs Commercial Facilities and Environmental BMPs Food Service Establishments info handouts.

Number of Active Environmental Control Permits:

	FY1819	**FY1920**	**FY2021**
City of Reno	1660	1769	1751
City of Sparks	917	853	797

Number of Business Licenses Reviewed:

	FY1819	**FY1920**	**FY2021**
City of Reno	3648	2907	2908
City of Sparks	2497	618	676

Number of Industrial/Commercial Inspections:

	FY1819	**FY1920**	**FY2021**
City of Reno	1660	1649	1648
City of Sparks	1030	817	662

Number of Notice of Violations Issued for Industrial Storm Water Regulations:

	FY1819	**FY1920**	**FY2021**
City of Reno	30	21	14
City of Sparks	20	20	6

Number of Citations Issued for Violation of Storm Water Regulations:

	FY1819	**FY1920**	**FY2021**
City of Reno	7	7	8
City of Sparks	0	0	0

ENVIRONMENTAL BEST MANAGEMENT PRACTICES

COMMERCIAL FACILITIES

Most outside drains are storm drains that feed directly to the Truckee River or other water bodies! Stormwater is not cleaned or filtered in any way. Pollution that reaches the storm drains affects water quality and the health of fish, wildlife, plants, and people. Do your part to prevent stormwater contamination from your business. It's the right thing to do, and it's the law!

PROTECT OUR WATERWAYS

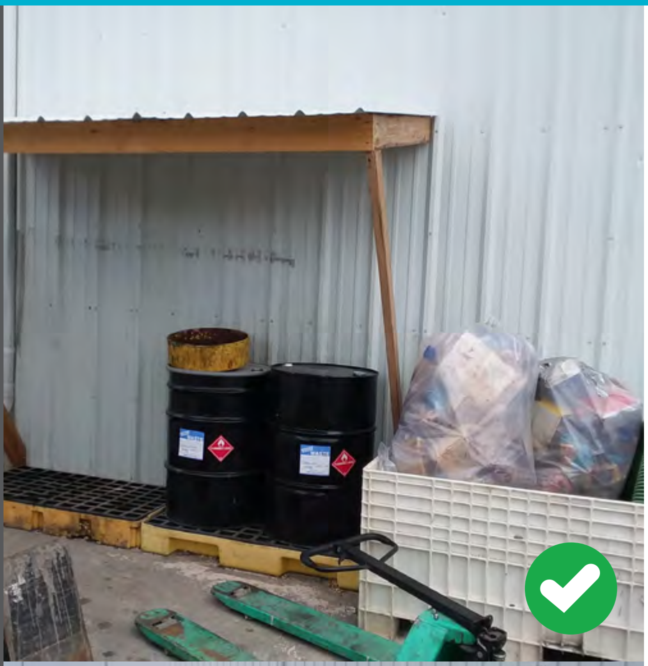
Wastewater generated from facility cleaning operations must be properly disposed.

Public manhole lids and storm drains are NOT acceptable places to dispose of wastewater or solid waste.

Dumping or allowing your wastes to leak into sewer or storm drains is against the law!

- Do not dispose of any petroleum products, solvents, herbicides, or pesticides to the sewer or storm drains.
- Dispose of waste materials through a licensed disposal company.
- Keep your waste disposal records well organized.
- If you have a sand-oil interceptor, maintain it properly and in accordance with your Environmental Control Permit.

Refer to your City of Reno Environmental Control Permit, if you have one, for requirements specific to your facility.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GOOD PRACTICES

- Do not hose down your shop or floor into the alley, parking lot, or street. It is best to dry-sweep regularly.
- Cover outdoor chemical or waste storage areas, making sure they have secondary containment to trap spills that may occur.
- Do not leave oily, leaky equipment or vehicle parts outside without cover and secondary containment.
- Wash equipment indoors or in areas that discharge to an approved pretreatment device.
- Wash vehicles at a commercial car wash where wash water is captured and processed properly.
- Keep containers of product and waste closed.
- Post "No fluids in the drain" signs or similar language that makes sense for your operation.

Communicate with your employees…

It's your responsibility to make sure they understand that protecting storm drains is important to your business and the environment.

If you have questions or need to report spills or other issues, call City of Reno Environmental Control 24/7: (775) 722-4660.
Visit TMStormWater.com for more information on stormwater.

ENVIRONMENTAL BEST MANAGEMENT PRACTICES

FOOD SERVICE ESTABLISHMENTS

Food waste and the byproducts of food-related cleaning can harm the environment if they enter the storm drain system. Examples include leaky dumpsters, washing mops or mats outside, and spilling oil & grease while dumping into rendering containers.

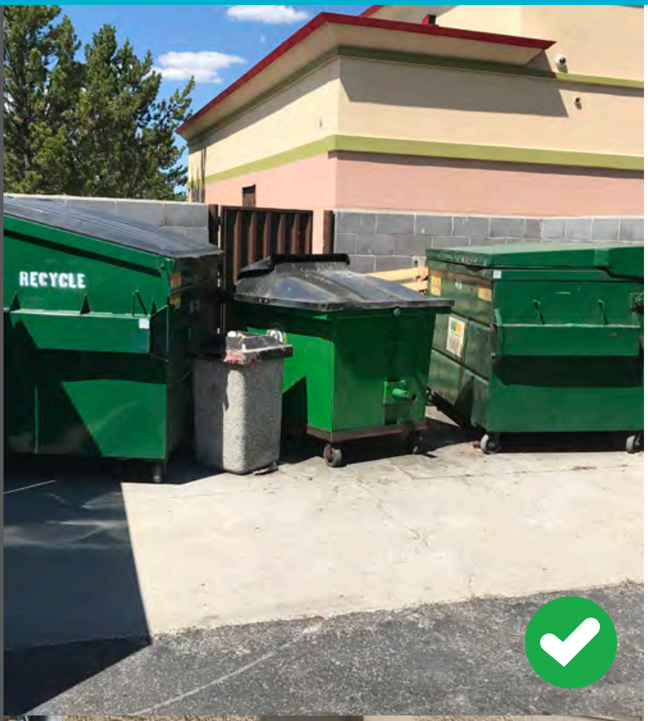
PROTECT THE SEWER SYSTEM

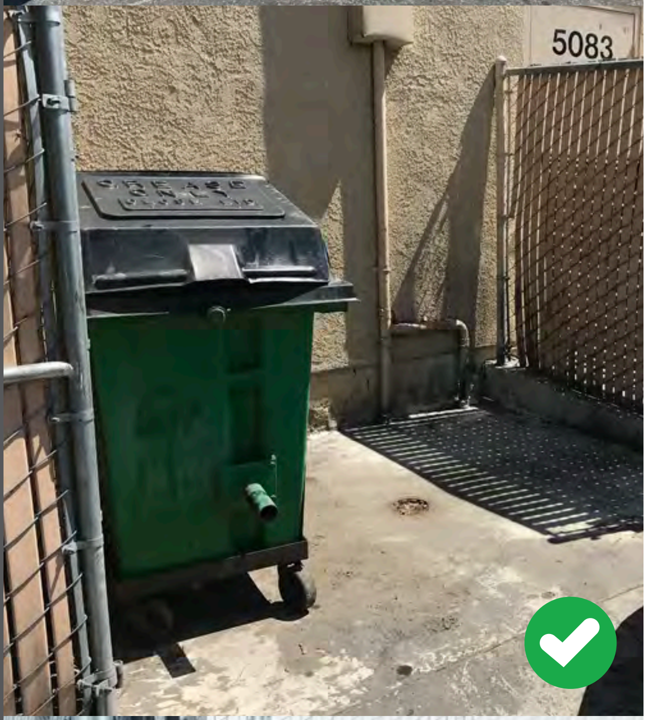
Your restaurant likely utilizes a grease interceptor, a device that captures fats, oils, grease, and solids from kitchen wastewater prior to discharge into the sewer. It must be maintained and pumped in accordance with the requirements found in your Environmental Control Permit.

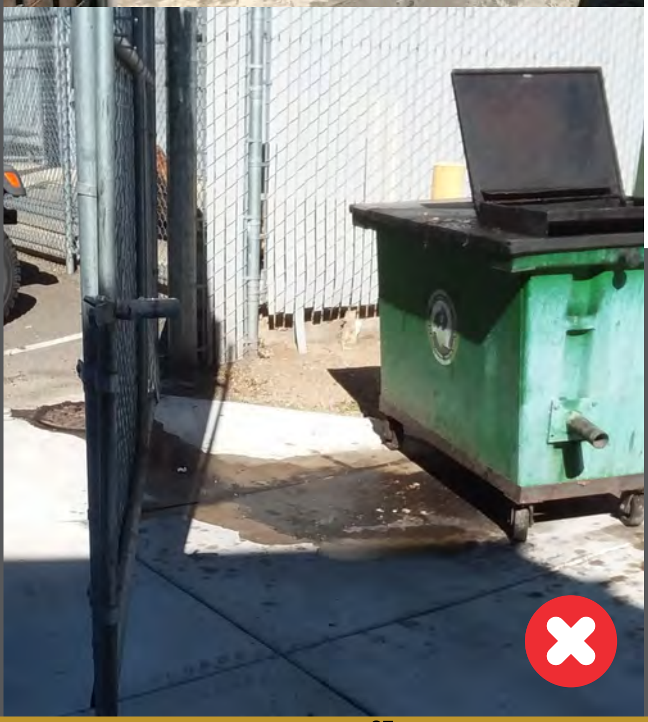
MINIMIZE GREASE LOADING

- Post “NO GREASE” signs above or on sinks.
- “Dry wipe” pots, pans, and plates before washing in sinks or loading into dishwasher.
- Screen or filter out food solids at your drains to prevent discharge to the sewer.
- Use paper towels to soak up oil & grease on fryer baskets.
- Don’t pour fats, oils, & grease (FOG) into floor drains, sinks, or dumpsters – recycle instead.
- Snake or water jet blockages between the kitchen and interceptor.

Refer to your City of Reno Environmental Control Permit, if you have one, for requirements specific to your facility.







PROTECT THE STORM DRAIN SYSTEM

Most outside drains feed directly to the Truckee River or other water bodies!

Stormwater is not cleaned or filtered in any way. Pollution that reaches the storm drains affects water quality and the health of fish, wildlife, plants, and people.

Do your part to prevent stormwater contamination from your business. It’s the right thing to do, and it’s the law!

- Cover dumpsters, compactors, and rendering containers, and clean up any leaks.
- Don’t wash kitchen equipment or food contaminated materials outside.
- Ask your garbage hauler to exchange a dirty or damaged dumpster for a new one.
- Store containers away from storm drains.
- Use absorbent pads or other material to clean up spills around outside containers.
- Check for and remove any blockages in trench drains.

Communicate with your employees…

It’s your responsibility to make sure they understand that protecting storm drains is important to your business and the environment.

If you have questions or need to report spills or other issues, call City of Reno Environmental Control 24/7: (775) 722-4660.
Visit TMStormWater.com for more information on stormwater.

City of Reno
Industrial Stormwater Program
Inspection and Enforcement Activities
FY 20/21

In conjunction with the Pretreatment Program for the sanitary sewer system, the City of Reno (COR) Environmental Control Section (ECS) permits and inspects businesses in the COR that have potential to impact the storm sewer system. During this reporting period, the COR ECS continued to inspect, educate and permit a majority of the industrial / commercial users in the COR, enforce *Reno Municipal Code Title 12.16 Article IV Storm water management and discharge control* and fulfill requirements of the NPDES Permits NV0020150 (issued to the Truckee Meadows Water Reclamation Facility) and NVS000001 (issued to the Cities of Reno and Sparks and Washoe Co.)

Industrial / commercial users issued a COR ECS Permit are inspected a minimum of once a year, with additional inspections as necessary if compliance issues are known, to ensure compliance with COR, State and Federal storm water regulations. Staffing levels during this reporting period included one Environmental Control (EC) Supervisor, five EC Officer's and one Administrative support person. See below for a summary of activities for the past three years and a listing of Notice of Violation (NOV) issued for industrial storm water violations during this reporting period.

	FY 1819	FY 1920	FY 2021
Number of Active Environmental Control Permits	1660	1769	1751
Business Licenses Reviewed	3648	2907	2908
Industrial/Commercial Stormwater Inspections	1660	1649	1648
Number of Violations issued at Industrial sites	30	21	14
Number of Citations issued for Industrial Stormwater Issues	7	7	8

Citations issued for violation of industrial stormwater regulations:

Date	Business/Person	Location	Violation	Description
07/14/2020	Sanford Ranch Beef	760 Lazy Heart Ln. Fallon , NV	Stormwater Management and Discharge Control 12.16 Article IV	Brewers spent grain discharged to storm drain.
07/23/2020	Bj's Restaurant and Brewery	13999 S. Virginia St. Reno, NV	Stormwater Management and Discharge Control 12.16 Article IV	Spent grain and spent fluids discharged into on-site sewer drop inlet and drainage.
01/01/2021	Easy Rooter	125 London Dr'	Stormwater	Dumping of

	Plumbing	Reno, NV	Management and Discharge Control 12.16 Article IV	competitor's grease rendering container into nearby vegetation and soil.
02/11/2021	Storage Units	1080 Telegraph Reno, NV	Stormwater Management and Discharge Control 12.16 Article IV	Dumping of human waste into a storm drain and bucket of oil leaking outside.
04/14/2021	KTM Industries Inc.	6645 Echo Ave. Reno, NV	Stormwater Management and Discharge Control 12.16 Article IV	Packing material scattered by loading docks, driveway and landscaping.
05/26/2021	Mountain Vista Apartments	4175 Neil Rd. Reno, NV	Stormwater Management and Discharge Control 12.16 Article IV	Discharge of sewer to the storm drain collection system.
06/16/2021	Riverwood Apartments	755 Kuenzli Ln. Reno, NV	Stormwater Management and Discharge Control 12.16 Article IV	Discharge of sewer to the storm drain collection system.
06/17/2021	Reno Livestock Event Center	1350 N. Wells Ave. Reno, NV	Stormwater Management and Discharge Control 12.16 Article IV	Discharge of greywater from a corndog stand to the storm drain.

City of Sparks
Industrial Stormwater Program
Inspection and Enforcement Activities
FY 20/21

In conjunction with the Pretreatment Program for the sanitary sewer system, the City of Sparks (COS) Environmental Control Section (ECS) permits and inspects businesses in the COS that have potential to impact the storm sewer system. During this reporting period, the COS ECS continued to inspect, educate and permit a majority of the industrial / commercial users in the COS, enforce *Sparks Municipal Code Title 13 Water and Sewage* and fulfill requirements of the NPDES Permits NV0020150 (issued to the Truckee Meadows Water Reclamation Facility) and NVS000001 (issued to the Cities of Reno and Sparks and Washoe Co.) In addition, all businesses in the COS with an active Storm Water General Permit NVR050000 for Storm Water Associated with Industrial Activity without a "No Exposure Waiver" have been inspected and where necessary, issued an ECS Permit.

Industrial / commercial users issued a COS ECS Permit are inspected a minimum of once a year with many being inspected two to four times a year to ensure compliance with COS, State and Federal storm water regulations. Staffing levels during this reporting period included one Environmental Control (EC) Supervisor and three EC Officer's with minor IT and Administrative support from two other staff. See below for a summary of activities for the past three years and a listing of Notice of Violation (NOV) issued for industrial storm water violations during this reporting period.

Industrial Stormwater Activities:			
	FY 18/19	FY 19/20	FY 20/21
Number of Active Environmental Control Permits	917	853	797
Business Licenses Reviewed	2497	618	676
Scheduled Industrial/Commercial Storm Water Inspections	1030	817	662
Violations issued for Industrial Storm Water Issues	20	20	6
Citations issued for Industrial Storm Water Issues	0	0	0

Notice of violation issued for violation of industrial storm water regulations:				
Date	Business/Person	Location	Violation	Description
07/14/2020	Trench Plate Rental Co.	2050 Brierly Way	Terms & Conditions of Permit 13.70.050 (Storm).	Formal documentation of BMP's used must be in place and made available upon request.
11/04/2020	RV Country	399 Legends Bay Dr.	Outdoor Storage 13.65.070	Batteries stored outside, not covered or in secondary.
11/04/2020	RV Country	399 Legends Bay Dr.	Prohibited Discharges 13.65.030 (Storm).	Washing RV's outside and allowing wash water to storm drain.

Notice of violation issued for violation of industrial storm water regulations continued:				
Date	Business/Person	Location	Violation	Description
02/08/2021	Wendy's	130 Saloman Ct	Surface Cleaning 13.65.060	During the inspection, it was noticed that the front of the business and rear of the business were recently washed with water and detergent. The manager was asked about this and he admitted to the rinsing the sidewalks with detergents and water without capturing the waste water. He was advised this was not permittable.
03/30/2021	Silver State Trading	895 S. 21st St.	Good Housekeeping Practices 13.65.040	NOV was issued for sediment being in the curb and gutter and BMP maintenance not being conducted.
03/30/2021	Silver State Trading	895 S. 21st St.	Prohibited Discharges 13.65.030 (Storm).	No person shall cause a discharge or disposal of wastewater into the storm sewer system from cleaning tools, vehicles, and equipment associated with any building materials i.e., concrete, plaster, stucco and painting, etc.

Municipal (MUNI) FY2021

The Cities of Reno and Sparks and Washoe County maintain storm drain infrastructure, sweep streets, maintain public facilities, preserve conveyance capacity in channels discharging to the Truckee River, and protect the watershed by treating noxious weeds on public lands.

Municipal operations staff training occurs at least annually. Stormwater training is provided to all public works operations staff for each agency. Due to Covid, staff training was not held in a group workshop setting. The agencies also provide an annual snow conference on proper brine preparation, application, and storage as well as sand and salt sweeping procedure and general winter pollution prevention.

During the reporting period, homeless camp cleanup efforts continued regionally. The City of Reno, City of Sparks, and Washoe County have all utilized in-house resources as well as contracting this work out to a specialty contractor. While the detrimental effects on our waterways is hard to quantify, homelessness is a larger issue far beyond the scope of the stormwater program.

Regional municipal operations related to MS4 operations include the following activity summaries and attached reporting templates.

Number of catch basins cleaned:

	FY1819	FY1920	FY2021
City of Reno	13,009	18,017	12,518
City of Sparks	11,392	11,392	10,179
Washoe County	1,407	224	600

Total debris removed from catch basins (cy):

	FY1819	FY1920	FY2021
City of Reno	4,646	45,936	4,131
City of Sparks	543	542.5	958
Washoe County	371	250	526

Total drainage way area cleaned (sf):

	FY1819	FY1920	FY2021
City of Reno	3,376,089	3,114,673	1,529,345
City of Sparks	2,415,849	3,070,334	1,470,726
Washoe County	901,155	1,812,200	818,025

Number of bar screens cleaned (irrigation and drainages):

	FY1819	FY1920	FY2021
City of Reno	1,200	1,952	2,036
City of Sparks	16,260	16,260	599
Washoe County	0	1	1

Total amount of debris removed by street sweeping (cy):

	FY1819	FY1920	FY2021
City of Reno	16,092	14,305	13,533
City of Sparks	2,823	2,823	5,062
Washoe County	2,395	4,348	2,934

City of Reno (Public Works Maintenance and Operations)

Truckee Meadows Stormwater Program (MS4) Annual Report

FY 20/21

MUNICIPAL OPERATIONS & MAINTENANCE ACTIVITIES

Streets Maintenance: sweeping and applications

1. Model & Quantity of Street Sweepers utilized during this FY?

9 Elgin Eagles
2 Tymco vacuum

2. Budget for Street Sweeping / How much staff effort is dedicated to Street Sweeping during this FY?
$1,647,315.00. 6 FTE are dedicated to street sweeping annually plus .75 FTE is dedicated to the hook truck to take dumpsters to the sweeper operators.

3a. Total Amount of debris removed from street sweeping activities (cubic yards):

13,533 CYs – Routine-8,223, Leaves-4,399, Winter-911

3b. Total Roadways swept (miles)

Routine: 21,636

Winter: 862

Leaves: 2,406

Total: 24,904

4a. Comment on any improvements of storm water Best Management Practices related to maintenance of streets (during the past fiscal year).
The City has replaced 3 street sweepers over this past fiscal year to improve efficiencies in sweeper operations and overall pickup of material.

4b. Were there any illicit discharges reported by staff during these activities?

No

5a. What material(s) is/are currently used for maintaining safe roadways in winter weather?

Salt brine
Sand / Salt mixture

5b. How are these materials applied, and how much of each was applied in this FY?

Salt brine: Spray application using in-bed truck applicator, 90,754 gallons mixed at a 23.3% solution of salt to water.
Sand / Salt: Truck spreader, approx. 822 tons (5:1); Sand: approx. 658 tons, Salt: approx.164 tons

5c. Where are these materials stored year-around? Please describe storage area(s):

Salt brine: City of Reno Maintenance Yard, fenced gated. Salt inside a dome and mixed brine in tanks.
Salt/Sand: City of Reno Maintenance yard in a locked dome. Moana Substation in a locked building. Stead Treatment Plant in a locked fenced gated facility covered with a tarp. Northgate Substation in a locked building.

6a. What material(s) is/are currently used for maintaining safe sidewalks and other non-street municipal properties in winter weather?

De-icer applied to city facility sidewalks
ATV with plow
Snow shovels

6b. How are these materials applied and how much of each was applied in this FY?

Hand spreader, approximately 100 pounds.

6c. Where are these materials stored year-around? Please describe storage area(s):

Within chemical storage building at City Maintenance Facility and in a locked room at the City parking garage on Sierra & 1st Streets.

US EPA & NDEP indicated it is very important to have measurable goals. Outline what you set out to do and what you accomplished for this last FY:

7a. Per the SWMP (2011) for the Truckee Meadows, there are storm water protection objectives for maintenance of streets, roads and parking lots. These include reducing pollutants in storm water runoff from streets to the Maximum Extent Practicable (MEP) through the effective street sweeping program.

7b. Measurable goals for next fiscal year July 1, 2022 thru June 30, 2023 include:

- Sweeping permit area monthly
- Leaf sweeping when necessary- Use of new equipment for leaf removal
- Sweeping all sand within four days of a storm event where sand was applied

Please describe your plans to meet these measurable goals:

The City's sweeping program, equipment, and staff are funded for the remaining 2021/2022FY. The City revises sweeping routes as necessary to improve post storm response time and general sweeping operations.

City of Reno (Public Works Maintenance and Operations)
Truckee Meadows Stormwater Program (MS4) Annual Report
FY 20/21

MUNICIPAL OPERATIONS & MAINTENANCE ACTIVITIES
Streets: Herbicide usage

PESTICIDES/HERBICIDES:

1. Please report on chemicals used on Public Rights of Way (common name and active ingredient) and for what purposes? If more than one, describe situation for use of each during this FY.

Ranger Pro, Roundup Custom (Glyphosate), Aquaneat, Tribune, and Amine 4 2, 4D – control of pest weeds
Pendulum – pre-emergent weed control

2. For each chemical listed above, please report each equipment or method used for herbicide or pesticide applications, and the annual amount of each used (lbs/volume…) for this FY.

Ranger Pro 13,710 Gal., Roundup Custom 700 Gal., Aquaneat 1,400 Gal, Tribune 5,600 Gal., Amine 4 2, 4D 1,030 Gal. – truck sprayer, hand gun, boom, backpack.

Specticle 6,915 Gal – truck sprayer, hand gun, boom, backpack.

3. Certification/training level held by staff for management of herbicides?

Nevada Pest Control Government License

STORAGE:

4a. Where is each material/chemical product stored year-round?

Chemical storage room, Reno Public Works Maintenance Yard. 1640 E. Commercial Row, Reno, NV

4b. Please describe the storage area(s) (security, indoor/outdoor, locked, covered?) at each location:

Chemical room is climate controlled and locked, located within a locked building, which is located within an electronic gate controlled and fenced facility.

USEPA & NDEP indicated it is very important to have measurable goals. Outline what you set out to do and what you accomplished:

5a. For the Truckee Meadows, there are objectives for the management of pesticide and fertilizer applications. These include – reduction in the potential for chemicals to enter our waterways through consistent training and providing clear procedures. The City is currently developing an improved Vegetation Management Plan in partnership with the US Department of Agriculture and Resource Concept Inc (RCI). The City is actively pursuing improvements to our pesticide and fertilizer application, safety, target efficiency, and consistent use of proper BMPs.

5b. Measurable goals for next fiscal year July 1, 2021 thru June 30, 2022 include:

- Improve the frequency of herbicide training.
- Improved timing of pre-emergent herbicide.
- Maintain weed free roadways, roadside ditches, and sidewalks within our community.
- Increased use of mechanical weed removal.

Performance Measures

Measure	2020 Actual	2021 Target	2022 Target	Strategic Priority
Average weighted Pavement Condition Index of City roads: A. Neighborhood (Non RTP) B. Regional (RTP) and Industrial	A) B)	A) 86 B) 90	A) B)	Vibrant Neighborhoods and Public Places
Violations of storm water NPDES Permit resulting in penalties or fines	0	0		Vibrant Neighborhoods and Public Places
Treatment plant upsets due to industrial/commercial discharge	0	0		Vibrant Neighborhoods and Public Places
Time Facility Maintenance spends on preventative maintenance activities	%	50%	%	Other - Internal Service
Traffic Engineering requests to Paint and Sign for sign, stencils, and striping completed within 4 weeks except during winter months	%	98%	%	Vibrant Neighborhoods and Public Places
Pothole calls received from public repaired within 1 business day after citizen requests are received	%	70%	%	Vibrant Neighborhoods and Public Places
Sanitary sewer blockages responded to and found to be related to the City Sewer System	10	11	11	Vibrant Neighborhoods and Public Places
Catch basins cleaned	12,518	20,000	20,000	Vibrant Neighborhoods and Public Places
Discharge permit violations and fines at Stead Water Reclamation Facility		0		Vibrant Neighborhoods and Public Places
Streets routinely swept every 4 weeks per work plan (Excluding snow/ice events)	%	97%	%	Vibrant Neighborhoods and Public Places

City of Reno (Parks O&M)

Truckee Meadows Storm Water Permit Annual Report

Fiscal Year 7-1-2021 through 6-30-2021

MAINTENANCE ACTIVITIES WITHIN PUBLIC LANDS: *Pesticide & Herbicide Usage*

PESTICIDES/HERBICIDES:

1. Please report on chemicals used on Public parks and open spaces (not streets), (common name and active ingredient) and for what purposes?

Mad Dog Plus: glyphosate: Non-selective herbicide for all weed control
Garlon 4: triclopyr: Selective control of woody plant material
Amine 4 2,4-D: Selective broadleaf herbicide
Crew herbicide: isoxaben, dithiopyr: Pre-emergent selective herbicide for weed control

2. For each chemical listed above, please report each equipment or method used for herbicide or pesticide applications. If more than one, describe situation for use of each:

Mad Dog Plus, Garlon 4, Amine 4 2,4-D: 15 gallon electric tank sprayer, 3-4 gallon hand pump backpack sprayer for spot spraying weeds and woody plant material, 50 gal tow behind sprayer with gasoline engine powered pump.
Crew herbicide: Walk behind broadcast spreader or hand held broadcast spreader for broadcast applications to planter beds

3. How is each chemical applied? Please report the method of application.
See #2

4. How much of each material was applied during the FY? Please report the annual use amount (lbs/volume/etc) for each chemical:

Glyphosate: 3864.3 oz
Garlon 4: 28.8 oz
Amine 4 2,4-D: 4 oz
Crew herbicide: 256 lbs

5. How much land was treated by each herbicide/pesticide application? Report the number of acres of drainages/open spaces/park lands that were treated by each chemical application:

Mad Dog Plus: 34.12 Acres
Garlon 4: .34 Acres
Amine 4 2-4D: 2,730 sq. ft.
Crew herbicide: 1.28 Acres

6. Certification/training level held by field staff or supervisor applying pesticides and herbicides.

Nevada Pest Control Government License issued by Nevada Department of Agriculture

STORAGE:

7a. Where is each material/chemical product stored year-round? List various locations if appropriate.
All chemicals are kept in a locked chemical shed located at the Idlewild Park maintenance office. Supervisor clearance only.

7b. Please describe the storage area(s) (security, indoor/outdoor, locked, covered?) and any Best Management Practices in place at each location.
The chemical storage unit is a stand alone, locked metal shed designed for chemical storage, which is equipped with an up to date fire suppression system. It has spill containment flooring and metal shelves with granular and powdered pesticides on the upper shelves and liquids on the lower. All PPE standards are followed for all pesticide applicators and handlers.

8. Number of square feet of drainages or acres of parks and open space that were treated by herbicide application by parks staff. (if your staff did not apply pesticides to drainages, parks or open space please state that.)
Approximately 35.80 acres received pesticide applications. The approximate number of acres includes multiple applications applied to the same site at different times.

9a. Comment on any Best Management Practices issues related to pesticide applications.

None

9b. Were there any illicit discharges reported by staff during these activities?

None

10a. Please estimate hours your staff spent on maintaining public lands with storm water protection BMPs for the fiscal year:
524.75 hrs

10b. Please estimate staff costs for this time, including salary and benefits:
Approximately $20,490.98

USEPA & NDEP indicated it is very important to have measurable goals. Outline what you set out to do and what you accomplished: **The primary goal of the parks department is to eliminate or minimize weed populations in our parks and open spaces by first using integrated pest management tactics, followed by the safe and monitored application of general use pesticides. During the 2020-2021 fiscal year there were zero accidents, incidents, or misapplications.**

11a. Per the SWMP (2011) for the Truckee Meadows, there are objectives for the management of pesticide and fertilizer applications. These include – reduce the potential for chemicals to enter our waterways through consistent management by training and providing clear procedures. Also – improve pesticide and fertilizer application safety and target efficiency.

11b. Please list the measurable goals you have planned to meet objectives for the next fiscal year July 1, 2021 thru June 30, 2022: **The primary goal for the parks department is to continue with zero incidents involving any type of pesticide. Health and safety are always of utmost importance**

regarding the general public and our employees. Park maintenance also implements IPM to help minimize pesticide usage.

Application: **The use of properly calibrated equipment and recommended application rates per the product labels. Use of recommended PPE found on the product label to be followed at a minimum.**

Preventative care: **All pesticides are transported in a locked container. Applicators carry extra PPE and a spill containment kit consisting of water and an absorbent material in case of a spillage incident.**

Equipment cleaning: **Use of proper tank cleaner designed for use with chemical sprayers. To be cleaned at the shop wash pad where the sand/oil separator is installed.**

Container disposal: **Triple rinse, puncture (when directed), and proper disposal of container per NDOA and label recommendations.**

Storage: **All chemicals to be stored inside the locked chemical shed at all times with proper hazard warnings posted. Chemical building temperature to be maintained to specifications of product with lowest noted storage temperature at a minimum. Proper ventilation of the chemical building to be maintained.**

City of Reno (Parks, Recreation & Community Services)

Truckee Meadows Storm Water Permit Annual Report

Fiscal Year 7-1-20 through 6-30-2021

MUNICIPAL MAINTENANCE ACTIVITIES IN DRAINAGES, PARKS OR OPEN SPACE

Fertilizer Usage

FERTILIZERS:

1. Common name of each fertilizer product, N/P/K ratio, and amount used in parks or open spaces.

Site Pro Custom Blend 25-3-10: 24,400 lbs.
Nutriculture 20-20-20 soluble: 650 lbs

2. For each product listed above, please report each equipment or method used for fertilizer applications. If more than one, describe goal in the use of each (e.g. park lawn, rose garden, etc.).

25-3-10 - Lely broadcast spreader towed behind pickup truck. Walk behind broadcast spreader.
Nutriculture 20-20-20 soluble - Kubota cart with 100 gal water tank with hose for watering flower baskets. Hand broadcast spreader in the Rose Garden

3. Annual use amount (lbs/volume/etc.), during this fiscal year on each product and each application method type.

Site Pro Custom Blend 25-3-10: 24,400 lbs total used. Applied with Lely & walk behind broadcast spreader.
Nutriculture 20-20-20 soluble: 650 lbs total, dissolved in water and applied with water tank and hose. Also applied to Rose Garden with hand broadcast spreader

4. Certification/training level held by field staff or supervisor applying fertilizer.

Product labels, equipment operation manuals and calibrations, on the job training, seminars, Nevada Pest Control Government License.

5. How much land was treated by each product application? Report the number of acres or square feet (or other unit of measure) of open spaces/park lands that were treated by each type of product.

25-3-10: 186.7 acres
Nutriculture 20-20-20 soluble: Flower baskets: 130 sq. ft.
Rose Garden: .28 acres

STORAGE:

6a. Where is each material/chemical product stored year-round? List various locations if appropriate.

Idlewild Shop: Inside shop building or under covered lean-to shed covered with a tarp.
Mira Loma Shop: Inside shop building

6b. Please describe the storage area(s) (security, indoor/outdoor, locked, covered?) and any Best Management Practices in place at each location.

Both shop yards and buildings are locked and fenced when employees are not present, and both yards are monitored by security cameras. All fertilizer products are covered and stored on pallets to prevent ground moisture contamination.
Greenhouse is gated, locked, and alarmed.

7a. Comment on any fertilizer Best Management Practices usage issues during the fiscal year.

None

7b. Were there any illicit discharges reported by staff during these activities?
None

8a. Please estimate hours your staff spent on maintaining public lands with storm water protection BMPs for the fiscal year:
556.25

8b. Please estimate staff costs for this time, including salary and benefits:
$8,637.92

USEPA & NDEP indicated it is very important to have measurable goals. Outline what you set out to do and what you accomplished: **Fertilize turf with .5 to 3 lbs N. /1000 sq. ft. / year, depending upon funding and growing conditions; fertilize flower baskets, rose garden, and flower beds as environmental conditions and plant health dictate. Average precipitation allowed for a normal fertilizer application in early summer.**

9a. Per the SWMP (2011) for the Truckee Meadows, there are objectives for the management of pesticide and fertilizer applications. These include – reduce the potential for chemicals to enter our waterways through consistent management by training and providing clear procedures. Also – improve pesticide and fertilizer application safety and target efficiency.

10. Please list the measurable goals you have planned to meet objectives for the next fiscal year July 1, 2021 thru June 30, 2022:
<u>Selection:</u> Use a well-balanced formulation, slow release nitrogen fertilizer for park turf. Use a safe fertilizer with a readily available Nitrogen source for optimum flower health.
<u>Application:</u> Effectively and efficiently apply the proper rate of fertilizer to needed turf areas using properly calibrated equipment.
<u>Equipment cleaning:</u> Rinse used equipment at the wash rack (sand/oil separator.) Spilled fertilizer to be swept up and re-used.
<u>Storage:</u> Unused fertilizer to be stored on pallets either inside the shop or covered and under the lean-to.

City of Sparks (Public Works Maintenance and Operations)
Truckee Meadows Stormwater Program (MS4) Annual Report
FY20-21

MUNICIPAL OPERATIONS & MAINTENANCE ACTIVITIES
Streets Maintenance: sweeping and applications

1. Model & Quantity of Street Sweepers utilized during this FY?

3 @ Schwarzes Sweepers
3 @ Elgin Sweepers
1 @ Tymco Sweeper
1 @ Revo Sweeper

TOTAL: **8 Sweepers**

2. Budget for Street Sweeping / How much staff effort is dedicated to Street Sweeping during this FY?

(4) full time staff members.

3a. Total Amount of debris removed from street sweeping activities (cubic yards): 5,062 CY'S

3b. Total Roadways swept (miles)

Routine: 8,478.2 (swept miles)

Winter: 651.9 (swept miles)

Leaves: 1,188 (swept miles)

Total: 10,318.1 (swept miles)

4a. Comment on any improvements of storm water Best Management Practices related to maintenance of streets (during the past fiscal year).

4b. Were there any illicit discharges reported by staff during these activities?

None

5a. What material(s) is/are currently used for maintaining safe roadways in winter weather?

Salt brine
Sand / Salt mixture

5b. How are these materials applied, and how much of each was applied in this FY?

Salt brine: Spray application using in-bed truck applicator, **178,705 gallons**
Sand / Salt: Truck spreader, 284 Tons (3:1 ratio)

5c. Where are these materials stored year-around? Please describe storage area(s):

Salt brine: poly tanks within containment areas at Horseman's Park, Golden Eagle Regional Park, and Sparks Maintenance Yard. All fenced and gated
Salt/Sand: covered shed at Horseman's Park, designated stockpile areas at Golden Eagle Regional Park and Sparks Maintenance Yard. All fenced and gated.

6a. What material(s) is/are currently used for maintaining safe sidewalks and other non-street municipal properties in winter weather?

De-icer applied to city facility sidewalks
ATV with plow

6b. How are these materials applied and how much of each was applied in this FY?

Hand spreader, 3,961 pounds

6c. Where are these materials stored year-around? Please describe storage area(s):

Within chemical storage building at City Maintenance Facility

US EPA & NDEP indicated it is very important to have measurable goals. Outline what you set out to do and what you accomplished for this last FY:

7a. Per the SWMP (2011) for the Truckee Meadows, there are storm water protection objectives for maintenance of streets, roads, and parking lots. These include reducing pollutants in storm water runoff from streets to the Maximum Extent Practicable (MEP) through the effective street sweeping program.

7b. Measurable goals for next fiscal year include:

- Sweeping permit area monthly
- Leaf sweeping when necessary
- Sweeping all sand within four days of a storm event where sand was applied

Please describe your plans to meet these measurable goals:

Continue operations and staffing to meet goals

City of Sparks (Public Works Maintenance and Operations)

Truckee Meadows Stormwater Program (MS4) Annual Report

FY21/22

MUNICIPAL OPERATIONS & MAINTENANCE ACTIVITIES

Streets: Herbicide usage

PESTICIDES/HERBICIDES:

1. Please report on chemicals used on Public Rights of Way (common name and active ingredient) and for what purposes? If more than one, describe situation for use of each during this FY.

1	DRYPHOSATE 75 SG	Glyphosate	Weed Killer
2	FLUMIGARD	Flumioxazin	Aquatic weed control
3	MOJAVE 70 EG	Diuron, Imazapyr	Ground sterilizer
4	IMOX	Imazapyr	Sensitive area weed control
5	Dicamba + 2, 4-D DMA	Dicamba / 2-4-D	Weed Killer
6	Laramie 25 DF	Rimsulfuron	Pre-emergent, weed suppression
7	Glyphosate 5.4	Glyphosate	Weed Killer
8	Promenade XTL	Flumioxazin / Rimsulfuron	Pre-emergent, weed suppression
9	ROUNDUP PRO	Glyphosate	Weed Killer
10	WEEDAR	Sulfentrazone, 2-4-D	Weed suppression in turf
11	OUST	Sulfometuron Methyl	Weed Killer
12	BROMACIL 40/40	Bromacil, Diuron	Pre-emergent, weed suppression

2. For each chemical listed above, please report each equipment or method used for herbicide or pesticide applications, and the annual amount of each used (lbs/volume…) for this FY.

1	DRYPHOSATE 75 SG	Glyphosate	Weed Killer	4,513	lbs.
2	FLUMIGARD	Flumioxazin	Aquatic weed control	1,586.50	oz.
3	MOJAVE 70 EG	Diuron, Imazapyr	Ground sterilizer	237.5	lbs.
4	IMOX	Imazapyr	Sensitive area weed control	448	oz.
5	Dicamba + 2, 4-D DMA	Dicamba / 2-4-D	Weed Killer	192	oz.
6	Laramie 25 DF	Rimsulfuron	Pre-emergent, weed suppression	372.5	oz.
7	Glyphosate 5.4	Glyphosate	Weed Killer	512	oz.
8	Promenade XTL	Flumioxazin / Rimsulfuron	Pre-emergent, weed suppression	363	oz.
9	ROUNDUP PRO	Glyphosate	Weed Killer	2,966	oz.
10	WEEDAR	Sulfentrazone, 2-4-D	Weed suppression in turf	2,563	oz.
11	OUST	Sulfometuron Methyl	Weed Killer	573	oz.
12	BROMACIL 40/40	Bromacil, Diuron	Pre-emergent, weed suppression	30.00	lbs.

3. Certification/training level held by staff for management of herbicides?

Nevada Department of Agriculture – Nevada Pest Control Government License.

STORAGE:

4a. Where is each material/chemical product stored year-round?

All products are stored in an indoor secured area at the City of Sparks Maintenance Facility, 225 S. 21st Street, Sparks Nevada.

4b. Please describe the storage area(s) (security, indoor/outdoor, locked, covered?) at each location:

All products stored in an indoor secured area with ventilation and a captured drain system.

USEPA & NDEP indicated it is very important to have measurable goals. Outline what you set out to do and what you accomplished:

5a. Per the SWMP (2011) for the Truckee Meadows, there are objectives for the management of pesticide and fertilizer applications. These include – reduce the potential for chemicals to enter our waterways through consistent management by training and providing clear procedures. Also – improve pesticide and fertilizer application safety and target efficiency.

5b. Measurable goals for next fiscal year July 1, 2021 thru June 30, 2022 include:

Maintain all roadside, ditches, and sidewalks clean and clear of weeds.
Keep over 25% of staff certified with a current Nevada Pesticide Applicator certification.
Apply only prescribed concentrations of chemicals as listed on the label with a calibrated applicator.
Minimize spillage and reduce overspray.
Maintain a clean and organized storage area.

City of Sparks (Public Works Maintenance and Operations)

Truckee Meadows Stormwater Program (MS4) Annual Report

Fiscal Year 7-1-20 thru 6-30-21

MUNICIPAL OPERATIONS & MAINTENANCE ACTIVITIES

Storm Sewer System Maintenance and Herbicide Usage

1. Models & quantity of equipment used in cleaning catch basins, detention basins, and other related storm water catchments or facilities:

Currently, (6) combination sewer cleaning trucks are utilized to clean catch basins and storm water facilities. These units employ a vacuum tube to remove debris from the basin sump. The debris is stored in an enclosed body, dewatered and transported to the disposal site.

2. Number of catch basins that were cleaned or repaired: 10,179

2b. Total amount of debris removed from catch basins (cubic yards): 958 CY

3. Was weed litter removed from drainageways by burning during the fiscal year? If so, how many square feet were burned? No

4. Were herbicides used to maintain conveyance and capacity in drainageways, as treatment of noxious weeds? Yes

4a. Which herbicide products were used (also list active ingredient), and for what purpose? For each: what total amount (lbs. or volume sprayed) was used, with what method of application, and how many acres or sf of drainage were treated, during the FY?

2,4-D Amine 4 / Dimethylamine Salt of 2, 4-D / Broadleaf plant control –
Total amount applied: 12.5 Gallons
Method used to apply: Hand / Truck sprayer
Approximate sf treated: 508,167

Glyphosate Pro 4 / Glyphosate, N-glycine / non-aquatic plant control
Total amount applied: 30 Gallons
Method used to apply: Roto mister / Truck sprayer
Approximate sf treated:1,318,263

Aqua Neat / Glyphosate, N-glycine / Aquatic plant control
Total amount applied: 15 Gallons
Method used to apply: Roto mister / Truck sprayer
Approximate sf treated:2,211,040

STORAGE:

5a. Where is each material/chemical product stored year-round?

Material is stored in limited quantity at the Corp Yard. Material is generally picked up from supplier as needed to reduce storage at corp. yard facility.

5b. Please describe the storage area(s) (security, indoor/outdoor, locked, covered?) at each location:

Material is stored in locked cabinets in the sewer shop area.

5c. Certification/training level held by staff for management of herbicides.

Staff is certified through the State of Nevada Department of Agriculture Herbicide Applicators Program.

6a. Number of square feet of drainageways that were cleaned by hand and by equipment:

Square feet cleaned by hand: 84,866 LF.
Square feet cleaned with equipment: 63,443 LF.

6b. Number of bar screens that were cleaned: 599

7a. Comment on any issues related to maintenance of storm sewer system. None

7b. Were there any illicit discharges reported by staff during these activities? None

8. Budget for catch basin maintenance and cleaning and drainageway clearing (include staffing increase, decrease, or no change.):

$950,000 – No Changes

USEPA & NDEP indicated it is very important to have measurable goals. Outline what you set out to do and what you accomplished:

GOALS	ACCOMPLISHED
Catch basin cleaning: 10,000 basins	10,159
Drainage inspection: 264,000sqft	59,151 LF.
Drain hand clean: 1,760,000sqft	84,866 LF.
Drain equipment clean: 1,000,000	302,575 LF.
Irrigation bar screen cleaning: 1,320 screens	599
Drainage bar screen cleaning: 756 screens	19
Herbicide application: 5,000,000sqft	4,391,866

9a. Per the SWMP (2011) for the Truckee Meadows, there are storm water objectives for the maintenance of City and County owned facilities. These include the use of practices which reduce the contaminants in storm water runoff to the Maximum Extent Practicable (MEP).

9b. Measurable goals for the next fiscal year July 1, 2021 thru June 30, 2022 include:

- Maintain and inspect all major storm water inlets and conveyance channels at least once a year
- Report for action 100% of observed structural deficiencies and evidence of illicit discharges
- Record the area and location of the drains and channels inspected (100% recordkeeping)
- 100% of field issues identified are corrected or listed on future CIP lists

Please describe your plans to meet these measurable goals:
The existing storm water/drainage maintenance program, equipment and staff, will be funded and remain in place for FY 20/21. Maintenance staff will continue to identify and document deficiencies/issues/illicit discharges etc. for immediate correction or placement on CIP lists.

Truckee Meadows Stormwater Program (MS4) Annual Report
City of Sparks (Parks, Recreation & Community Services)
Fiscal Year 7-1-20 thru 6-30-21
Maintenance Activities Within Public Lands: Pesticide & Herbicide Usage

PESTICIDES/HERBICIDES:

1. Please report on chemicals used on Public parks and open spaces (not streets), (common name and active ingredient) and for what purposes?

1	DRYPHOSATE 75 SG	Glyphosate	Weed Killer
2	FLUMIGARD	Flumioxazin	Aquatic weed control
3	MOJAVE 70 EG	Diuron, Imazapyr	Ground sterilizer
4	IMOX	Imazapyr	Sensitive area weed control
5	Dicamba + 2, 4-D DMA	Dicamba / 2-4-D	Weed Killer
6	Laramie 25 DF	Rimsulfuron	Pre-emergent, weed suppression
7	Promenade XTL	Flumioxazin / Rimsulfuron	Pre-emergent, weed suppression
8	ROUNDUP PRO	Glyphosate	Weed Killer
9	WEEDAR	Sulfentrazone, 2-4-D	Weed suppression in turf
10	OUST	Sulfometuron Methyl	Weed Killer

2. For each chemical listed above, please report each equipment or method used for herbicide or pesticide applications. If more than one, describe situation for use of each:

One-gallon and five-gallon hand pressurized sprayer; 100 and 200 gallon truck mounted sprayer; 25 gallon ATV mounted sprayer; 25 and 50 pound walk behind spreaders; 500 pound tractor mounted spreader.

3. How is each chemical applied? Please report the method of application.

Hand and machine spread with the equipment listed above.

4. How much of each material was applied during the FY? Please report the annual use amount (lbs/volume/etc) for each chemical:

1	DRYPHOSATE 75 SG	Glyphosate	Weed Killer	2,066	lbs.
2	FLUMIGARD	Flumioxazin	Aquatic weed control	785.5	oz.
3	MOJAVE 70 EG	Diuron, Imazapyr	Ground sterilizer	50	lbs.
4	IMOX	Imazapyr	Sensitive area weed control	64	oz.
5	Dicamba + 2, 4-D DMA	Dicamba / 2-4-D	Weed Killer	192	oz.
6	Laramie 25 DF	Rimsulfuron	Pre-emergent, weed suppression	192	oz.
7	Promenade XTL	Flumioxazin / Rimsulfuron	Pre-emergent, weed suppression	99	oz.
8	ROUNDUP PRO	Glyphosate	Weed Killer	2,800	oz.
9	WEEDAR	Sulfentrazone, 2-4-D	Weed suppression in turf	1,788	oz.
10	OUST	Sulfometuron Methyl	Weed Killer	164.5	oz.

5. How much land was treated by each herbicide/pesticide application? Report the number of acres of drainages/open spaces/park lands that were treated by each chemical application:

1	DRYPHOSATE 75 SG	Glyphosate	Weed Killer	86.23	ac.
2	FLUMIGARD	Flumioxazin	Aquatic weed control	60.11	ac.
3	MOJAVE 70 EG	Diuron, Imazapyr	Ground sterilizer	4.59	ac.
4	IMOX	Imazapyr	Sensitive area weed control	1.22	ac.
5	Dicamba + 2, 4-D DMA	Dicamba / 2-4-D	Weed Killer	1.38	ac.
6	Laramie 25 DF	Rimsulfuron	Pre-emergent, weed suppression	44.08	ac.
7	Promenade XTL	Flumioxazin / Rimsulfuron	Pre-emergent, weed suppression	7.58	ac.
8	ROUNDUP PRO	Glyphosate	Weed Killer	10.04	ac.
9	WEEDAR	Sulfentrazone, 2-4-D	Weed suppression in turf	12.83	ac.
10	OUST	Sulfometuron Methyl	Weed Killer	25.18	ac.

6. Certification/training level held by field staff or supervisor applying pesticides and herbicides.

Nevada Department of Agriculture – Nevada Pest Control Government License.

STORAGE:

7a. Where is each material/chemical product stored year-round? List various locations if appropriate.

All products are stored in an indoor secured area at the City of Sparks Maintenance Facility, 225 S. 21st Street, Sparks Nevada.

7b. Please describe the storage area(s) (security, indoor/outdoor, locked, covered?) and any Best Management Practices in place at each location.

All products stored in an indoor secured area with ventilation and a captured drain system.

8. Number of square feet of drainages or acres of parks and open space that were treated by herbicide application by parks staff. (if your staff did not apply pesticides to drainages, parks or open space please state that.)

Stated above

9a. Comment on any Best Management Practices issues related to pesticide applications.

No issues

9b. Were there any illicit discharges reported by staff during these activities?

None were reported

10a. Please estimate hours your staff spent on maintaining public lands with stormwater protection BMPs for the fiscal year:

N/A

10b. Please estimate staff costs for this time, including salary and benefits:

N/A

USEPA & NDEP indicated it is very important to have measurable goals. Outline what you set out to do and what you accomplished:

11a. Per the SWMP (2011) for the Truckee Meadows, there are objectives for the management of pesticide and fertilizer applications. These include – reduce the potential for chemicals to enter our waterways through consistent management by training and providing clear procedures. Also – improve pesticide and fertilizer application safety and target efficiency.

11b. Please list the measurable goals you have planned to meet objectives for the next fiscal year July 1, 2021 thru June 30, 2022:

Maintain all parks and open spaces clean and clear of weeds.
Keep over 25% of staff certified with a current Nevada Pesticide Applicator certification.
Apply only prescribed concentrations of chemicals as listed on the label with a calibrated applicator.
Minimize spillage and reduce overspray.
Maintain a clean and organized storage area.

Truckee Meadows Stormwater Program (MS4) Permit Annual Report
City of Sparks (Parks, Recreation & Community Services)
Fiscal Year 7-1-20 thru 6-30-21
Municipal Maintenance Activities in Drainages, Parks or Open Space: Fertilizer Usage

FERTILIZERS:

1. Common name of each fertilizer product, N/P/K ratio, and amount used in parks or open spaces.
A: Best Super Turf 25-5-5

2. For each product listed above, please report each equipment or method used for fertilizer applications. If more than one, describe goal in the use of each (e.g. park lawn, rose garden, etc.).
A-C: Walk behind manual spreader – Tractor mounted spreader (300 pound capacity).

3. Annual use amount (lbs/volume/etc.), during this fiscal year on each product and each application method type.
A: 25-5-5 47,150 pounds

4. Certification/training level held by field staff or supervisor applying fertilizer.
Nevada Department of Agriculture – Nevada Pest Control Government License.

5. How much land was treated by each product application? Report the number of acres or square feet (or other unit of measure) of open spaces/park lands that were treated by each type of product.
A: 25-5-5 159 acres

STORAGE:

6a. Where is each material/chemical product stored year-round? List various locations if appropriate.
All products are stored in an indoor secured area at the City of Sparks Maintenance Facility, 225 S. 21st Street, Sparks Nevada.

6b. Please describe the storage area(s) (security, indoor/outdoor, locked, covered?) and any Best Management Practices in place at each location.
All products are stored in an indoor area with a hard floor surface.

7a. Comment on any fertilizer Best Management Practices usage issues during the fiscal year.
Follow manufacturers application rates.
Apply only to designated turf areas away from waterways.

7b. Were there any illicit discharges reported by staff during these activities?
None reported

8a. Please estimate hours your staff spent on maintaining public lands with storm water protection BMPs for the fiscal year:

Not tracked
8b. Please estimate staff costs for this time, including salary and benefits: 3 Maintenance Worker II's working 40 hrs. = $7400.00 Salary/Benefits
USEPA & NDEP indicated it is very important to have measurable goals. Outline what you set out to do and what you accomplished:
9a. Per the SWMP (2011) for the Truckee Meadows, there are objectives for the management of pesticide and fertilizer applications. These include – reduce the potential for chemicals to enter our waterways through consistent management by training and providing clear procedures. Also – improve pesticide and fertilizer application safety and target efficiency.
10. Please list the measurable goals you have planned to meet objectives for the next fiscal year July 1, 2021, thru June 30, 2022: Keep over 50% of staff certified with a Nevada Pesticide Applicator Certification. Apply only prescribed amount of fertilizer with a calibrated applicator. Maintain a clean and organized storage facility. Minimize spillage and apply only to designated areas away from waterways.

Washoe County Community Services Department
Operations (Roads)
Truckee Meadows Storm Water Permit Annual Report
Fiscal Year 7-1-20 thru 6-30-21

MUNICIPAL OPERATIONS & MAINTENANCE ACTIVITIES
Streets Maintenance: sweeping and applications

1. Model & Quantity of Street Sweepers utilized during this FY?
Washoe County operated six sweepers in the Truckee Meadows. Two sweepers are Elgin Eagle Sweepers which are PM-10 compliant. Four sweepers are Tymco Dustless Regenerative Air Vacuum PM 10 compliant sweepers.

2. Budget for Street Sweeping / How much staff effort is dedicated to Street Sweeping during this FY?
3310 staff hours were expended operating street sweeping activities.

3. Total Amount of debris removed from street sweeping activities (cubic yards):
2934cy

4a. Comment on any improvements of storm water Best Management Practices related to maintenance of streets (during the past fiscal year).
Continued use of brine has proven to be effective in reducing the amount of salt/sand necessary.

4b. Were there any illicit discharges reported by staff during these activities?
No

5a. What material(s) is/are currently used for maintaining safe roadways in winter weather?

1. **Salt and Sand mix.**
2. **Straight Salt**
3. **Pre-wetting of salt and sand mixture with brine**
4. **Straight brine**

5b. How are these materials applied, and how much of each was applied in this FY?
Plow trucks equipped with salt and sand spreaders and saddle tanks for brine.
Also designated brine tanks for applying straight brine

1. **Sand & Salt mix: 1408 tons**
2. **Salt: 0**
3. **Brine: 62,249 Gallons**

5c. Where are these materials stored year-around? Please describe storage area(s):

The main storage area is located at Washoe County's Longley Lane maintenance facility. The sand & salt mixture is stored in an 11,200sf sprung structure building. The brine is stored in two 10,000gl plastic containers. The brine containers are stored inside of a concrete containment area. The salt is stored on an asphalt surface with straw wattles placed around the salt pile.

6a. What material(s) is/are currently used for maintaining safe sidewalks and other non-street municipal properties in winter weather?

Washoe County contracts with a service provider to shovel snow and apply ice melt to municipal properties.

6b. How are these materials applied and how much of each was applied in this FY?

Applied by contracted service provider with hand spreader.

6c. Where are these materials stored year-around? Please describe storage area(s):

Stored by service provider and brought to location

US EPA & NDEP indicated it is very important to have measurable goals. Outline what you set out to do and what you accomplished for this last FY:

7a. Per the SWMP (2011) for the Truckee Meadows, there are storm water protection objectives for maintenance of streets, roads and parking lots. These include reducing pollutants in storm water runoff from streets to the Maximum Extent Practicable (MEP) through the effective street sweeping program.

7a. Measurable goals for next fiscal year July 1, 2021 thru June 30, 2022 include:

- Sweeping permit area monthly
- Leaf sweeping when necessary
- Sweeping all sand/salt within four days of a storm event where sand was applied

Please describe your plans to meet these measurable goals:

Continue the use of brine application to reduce sand/salt application as conditions allow.
Expand the use of new technology available on the newly outfitted sanders which limits and measures application of sand/salt/brine.

Washoe County Community Services Department
Operations (Roads)
Truckee Meadows Storm Water Permit Annual Report
Fiscal Year 7-1-20 thru 6-30-21

MUNICIPAL OPERATIONS & MAINTENANCE ACTIVITIES
Streets: Herbicide usage

PESTICIDES/HERBICIDES:

1. Please report on chemicals used on Public Rights of Way (common name and active ingredient) and for what purposes? If more than one, describe situation for use of each during this FY.

Ranger Pro (Isopropylamine salt of Glyphosate) – grass & weed control in rights of ways and storm drain system (open ditch)
Specticle 20 Wsp (Indaziflam 20%) – pre-emergent
Weedar 64 (46.5- Dimethylamine Salt of 2,4-Dichlorophenoxyacetic Acid) – broadleaf weed control in rights of ways and storm drain system (open ditch)
No Foam (Alkyl Phenol Ethoxylate, Isopropyl Alcohol) Surfactant

2. For each chemical listed above, please report each equipment or method used for herbicide or pesticide applications, and the annual amount of each used (lbs/volume…) for this FY.

The Roads division uses a pre-mixed cocktail of these chemicals plus surfactant and is applied by our weed spraying truck.

Ranger Pro- 69.02gls
Weedar 64- 69.02
Specticle-67.46oz
No Foam-0gls

3. Certification/training level held by staff for management of herbicides?

Four operators for the spray truck hold a Nevada restricted use pesticide certificate

STORAGE:

4a. Where is each material/chemical product stored year-round?

All products are stored at suppliers' warehouse until needed by the Roads Division and then stored at 3101 Longley Lane Reno, NV.

4b. Please describe the storage area(s) (security, indoor/outdoor, locked, covered?) at each location:

Chemicals are stored inside a locked warehouse at the Roads Division Longley Lane Facility. The facility is patrolled by the Washoe County Sheriff's office that shares the facility with the Roads Division. The chemicals are stacked on a pallet rack with secondary containment underneath the rack. Spill Kits with absorbent, disposal bags, broom and dust pan are located in the room.

USEPA & NDEP indicated it is very important to have measurable goals. Outline what you set out to do and what you accomplished:

5a. Per the SWMP (2011) for the Truckee Meadows, there are objectives for the management of pesticide and fertilizer applications. These include – reduce the potential for chemicals to enter our waterways through consistent management by training and providing clear procedures. Also – improve pesticide and fertilizer application safety and target efficiency.

5b. Measurable goals for next fiscal year July 1, 2021 thru June 30, 2022 include:

- **Reduce fire hazard presented by grasses and weeds in right of way**
- **Reduce the amount of noxious weeds that are transported throughout the county.**
- **Apply pre-emergent to problem areas in late winter/early spring as conditions allow.**
- **Apply more pre-emergent than in the past. To help minimize the amount of noxious weeds that grow in the county maintained right of way.**

Washoe County Community Services Department
Operations (Roads)
Truckee Meadows Storm Water Permit Annual Report
Fiscal Year 7-1-20 thru 6-30-21

MUNICIPAL OPERATIONS & MAINTENANCE ACTIVITIES
Storm Sewer System Maintenance and Herbicide Usage

1. Models & quantity of equipment used in cleaning catch basins, detention basins, and other related storm water catchments or facilities:
Washoe County currently uses 2 Vactors model #2100, both have 10 yard debris capacity, along with 1500 gallon fresh water capacity. This equipment, along with 2 excavators with ditch cleaning buckets, is used for all of the cleaning of the ditches and catch basins. As weather and personal resources have allowed, we have rented a third mini-excavator for ditch cleaning. Washoe County has a garbage truck, which is frequently used by hand crews for the removal of tumbleweeds and debris from the ditches. We also use 1 mini excavator and hand held weed eaters to mow and clean ditches and catch basins.

2. Number of catch basins that were cleaned or repaired:
600 cleaned
2b. Total amount of debris removed from catch basins (cubic yards):
Approximately 526 cubic yards of sediment

3. Was weed litter removed from drainage ways by burning during the fiscal year? If so, how many square feet were burned?
No. Burning is not a Washoe County SOP.

4. Were herbicides used to maintain conveyance and capacity in drainage ways, as treatment of noxious weeds?
Yes

4a. Which herbicide products were used (also list active ingredient), and for what purpose? For each: what total amount (lbs. or volume sprayed) was used, with what method of application, and how many acres or sf of drainage were treated, during the FY?
Ranger Pro- (Isopropyl amine salt of Glyphosate). Grass and weed control. 69.02gls
Weedar 64- (46.5-Dimethylamine salt of 2,4-Dichlorophenoxyacetic acid). Broadleaf weed control. 69.02gls
Specticle 20- (Indaziflam 20%).Pre-emergent weed control. 67.46oz
No Foam A-(Alkyl Phenol Ethoxylate, Isopropyl Alcohol). Surfactant. 0gls

Herbicide is applied using a pre-mixed cocktail plus surfactant. It is applied using a weed spraying truck.
307 acres were treated.

STORAGE:

5a. Where is each material/chemical product stored year-round?
All products are stored at the suppliers' warehouse until needed by the Roads Division. And, then the products are stored at 3101 Longley Lane Reno, NV.

5b. Please describe the storage area(s) (security, indoor/outdoor, locked, covered?) at each location:
Chemicals are stored inside a locked warehouse at the suppliers' location. Chemicals are stored on a pallet rack inside a locked warehouse at the Longley facility with secondary containment underneath the pallet rack.

5c. Certification/training level held by staff for management of herbicides.
Four operators of the spray truck hold a Nevada restricted use pesticide certificate

6a. Number of square feet of drainage ways that were cleaned by hand and by equipment:
163,025 LF of ditch x 5 = 818,025 sf of drainage ditch was cleaned.
3610 LF of pipe was cleaned.

6b. Number of bar screens that were cleaned:
1

7a. Comment on any issues related to maintenance of storm sewer system.
With the winter of fiscal year 20-21 being considered a severe drought year, the amount of precipitation conveyed thru the drainage system within Washoe County was minimal. Which reduced the amount of sediment needing to be cleaned.

7b. Were there any illicit discharges reported by staff during these activities?
No

8. Budget for catch basin maintenance and cleaning and drainage way clearing (include staffing increase, decrease, or no change.):
Washoe County does not specifically budget for separate road maintenance activities.
Labor hours- 10,128= $923,441. Cost for cleaning of our drainage infrastructure.

USEPA & NDEP indicated it is very important to have measurable goals. Outline what you set out to do and what you accomplished:

9a. Per the SWMP (2011) for the Truckee Meadows, there are storm water objectives for the maintenance of City and County owned facilities. These include the use of practices which reduce the contaminants in storm water runoff to the Maximum Extent Practicable (MEP).

9b. Measurable goals for the next fiscal year July 1, 2021 thru June 30, 2022 include:

- Maintain and inspect all major storm water inlets and conveyance channels at least once a year
- Report for action 100% of observed structural deficiencies and evidence of illicit discharges
- Record the area and location of the drains and channels inspected (100% recordkeeping)
- 100% of field issues identified are corrected or listed on future CIP lists

Please describe your plans to meet these measurable goals:

With the continued use of brine application, the amount of sand used for deicing will continue to be reduced. This will be a major step in reducing the amount of sediment that will accumulate in the drainage infrastructure. This will also help with the air quality in the Truckee Meadows. With being more aggressive in applying pre-emergent in the late winter and early spring the noxious weed problem should be greatly reduced as well.

Washoe County Community Services Department
(Parks and Open Space)
Truckee Meadows Storm Water Permit Annual Report
Fiscal Year 7-1-20 thru 6-30-21

MAINTENANCE ACTIVITIES WITHIN PUBLIC LANDS: *Pesticide & Herbicide Usage*

PESTICIDES/HERBICIDES:

1. Please report on chemicals used on Public parks and open spaces (not streets), (common name and active ingredient) and for what purposes?

Glyphosate Pro 4/ Ranger Pro– Glyphosate of salt 41.0% - ornamental weed control
Cheetah Pro – Flufosinate ammonium. Nonselective herbicide
Barricade 4L-Prodiamine. Pre-emergent

2. For each chemical listed above, please report each equipment or method used for herbicide or pesticide applications. If more than one, describe situation for use of each:

All chemicals are applied by either a 50 Gallon boom sprayer or backpack pump sprayer
The 50 gallon sprayer is used for broadcast and spot spraying.
The back pack pump sprayer is used for spot spraying.

3. How is each chemical applied? Please report the method of application.

Ranger Pro-3oz/gallon water
Cheetah Pro-2oz/gallon water
Barricade 4L-21oz/acre
They are applied by either a 50-gallon sprayer or backpack pump sprayer.

4. How much of each material was applied during the FY? Please report the annual use amount (lbs/volume/etc) for each chemical:

22 gallons of Glyphosate-Ranger Pro.
3 gallons of Barricade 4L
6.25 gallons of Cheetah

5. How much land was treated by each herbicide/pesticide application? Report the number of acres of drainages/open spaces/park lands that were treated by each chemical application:

35 acres for Glyphosate
18 acres for Barricade
15 acres Cheetah

6. Certification/training level held by field staff or supervisor applying pesticides and herbicides.

Nevada Dept. of Agriculture- Nevada Pesticide Applicator

STORAGE:

7a. Where is each material/chemical product stored year-round? List various locations if appropriate.

Central Maintenance Storage Container at Rancho San Rafael Regional Park

7b. Please describe the storage area(s) (security, indoor/outdoor, locked, covered?) and any Best Management Practices in place at each location.

The Storage Container is locked and marked

8. Number of square feet of drainages or acres of parks and open space that were treated by herbicide application by parks staff. (if your staff did not apply pesticides to drainages, parks or open space please state that.)

35 acres

9a. Comment on any Best Management Practices issues related to pesticide applications.

None

9b. Were there any illicit discharges reported by staff during these activities?

No

10a. Please estimate hours your staff spent on maintaining public lands with stormwater protection BMPs for the fiscal year:

60 hrs.

10b. Please estimate staff costs for this time, including salary and benefits:

$ 3,000.00

USEPA & NDEP indicated it is very important to have measurable goals. Outline what you set out to do and what you accomplished: Control weeds in ornamental areas with minimal use of herbicides. Satisfactory control was accomplished.

11a. Per the SWMP (2011) for the Truckee Meadows, there are objectives for the management of pesticide and fertilizer applications. These include – reduce the potential for chemicals to enter our waterways through consistent management by training and providing clear procedures. Also – improve pesticide and fertilizer application safety and target efficiency.

11b. Please list the measurable goals you have planned to meet objectives for the next fiscal year July 1, 2021 thru June 30, 2022:

- Provide healthy/aesthetically pleasing areas for the public to enjoy while managing risk to applicators and storage areas.
- Reduce and control noxious and invasive weeds. Targeted weeds include; Teasel, Tall White Top and Hoary Cress, Yellow Star Thistle, Russian Knapweed, Spotted Knapp weed, Bull Thistle, Canadian Thistle, Musk Thistle, Scotch Thistle and others from the area. Also reduce and control Purple Loosestrife, Russian Olive and Puncture vine.
- Apply all pesticides in a safe, effective manner according to its label.
- Continue training staff in the proper use of pesticides.

Washoe County Community Services Department
(Parks and Open Space)
Truckee Meadows Storm Water Permit Annual Report
Fiscal Year 7-1-20 thru 6-30-21

MUNICIPAL MAINTENANCE ACTIVITIES IN DRAINAGES, PARKS OR OPEN SPACE
Fertilizer Usage

FERTILIZERS:

1. Common name of each fertilizer product, N/P/K ratio, and amount used in parks or open spaces.

Sierra Pacific Turf Blend (25-3-10), 199 bags – 9,950 lbs. total
Andersons (6-24-24), 170 bags – 8500 lbs. total
Best (15-15-15), 36 bags- 1,800lbs. total

2. For each product listed above, please report each equipment or method used for fertilizer applications. If more than one, describe goal in the use of each (e.g., park lawn, rose garden, etc.).

Walk behind broadcast spreader – to apply in small areas of turf
Broadcast spreader behind John Deere tractor – to apply fertilizer to large areas of turf

3. Annual use amount (lbs./volume/etc.), during this fiscal year on each product and each application method type.

Sierra Pacific Turf Blend *(25-3-10) - 450 lbs. with walk behind broadcast spreader*
Sierra Pacific Turf Blend (25-3-10) – 9,500 lbs. with broadcast spreader behind tractor
Andersons (6-24-24) 8200 lbs. with broadcast spreader behind tractor and 300 lbs with walk behind spreader
Best 15-15-15- 1,800 lbs. with broadcast spreader

4. Certification/training level held by field staff or supervisor applying fertilizer.

Nevada Dept. of Agriculture – Nevada Pesticide Applicator

5. How much land was treated by each product application? Report the number of acres or square feet (or other unit of measure) of open spaces/park lands that were treated by each type of product.

34.21 Acres of turf

STORAGE:

6a. Where is each material/chemical product stored year-round? List various locations if appropriate.

Maintenance facility at Rancho San Rafael Regional Park

6b. Please describe the storage area(s) (security, indoor/outdoor, locked, covered?) and any Best Management Practices in place at each location.

Stored outside the Maintenance shop and covered with tarps. The product is delivered a few weeks before it is applied to the turf. The Maintenance yard is fenced and it is locked when not in use.

7a. Comment on any fertilizer Best Management Practices usage issues during the fiscal year.

X

7b. Were there any illicit discharges reported by staff during these activities?

No

8a. Please estimate hours your staff spent on maintaining public lands with stormwater protection BMPs for the fiscal year:

60 hrs.

8b. Please estimate staff costs for this time, including salary and benefits:

$3,000.00

USEPA & NDEP indicated it is very important to have measurable goals. Outline what you set out to do and what you accomplished: fertilized 34.21 acres of turf 2 times during the fiscal year with no contamination to storm water or drainages in the Arboretum.

9a. Per the SWMP (2011) for the Truckee Meadows, there are objectives for the management of pesticide and fertilizer applications. These include – reduce the potential for chemicals to enter our waterways through consistent management by training and providing clear procedures. Also – improve pesticide and fertilizer application safety and target efficiency.

10. Please list the measurable goals you have planned to meet objectives for the next fiscal year July 1, 2021 thru June 30, 2022:

- Provide healthy/aesthetically pleasing turf areas for the public to enjoy.
- All application sites are cleaned up after application and public access is properly restricted during application.
- All products are watered in after application.
- Keep fertilizers to only targeted areas.

Washoe County Community Services Department
(Parks and Open Space)
North District
Truckee Meadows Storm Water Permit Annual Report
Fiscal Year 7-1-20 thru 6-30-21

MAINTENANCE ACTIVITIES WITHIN PUBLIC LANDS: *Pesticide & Herbicide Usage*

PESTICIDES/HERBICIDES:

1. Please report on chemicals used on Public parks and open spaces (not streets), (common name and active ingredient) and for what purposes?

- Glyphosate Pro 4 (Glyphosate) – Weed control in ornamental beds and open spaces.
- No foam B (Alkyl polyoxyethylene ether – surfactant and penetrant.
- Reward (Diquat) - Weed control in ornamental beds and open spaces.

2. For each chemical listed above, please report each equipment or method used for herbicide or pesticide applications. If more than one, describe situation for use of each:

- Back pack sprayer. Glyphosate, Reward and No-foam B. Spot spraying weeds.
- 8hp, 200 gallon spray tank and 5hp 150 gallon spray tank used to spray post emergent herbicide. Tank sprayers for Reward and Glyphosate on large open areas and landscape beds in and around park areas.

3. How is each chemical applied? Please report the method of application.

- Hand pumped for Reward, Glyphosate, and No-foam B.
- Mechanically pumped for Reward and Glyphosate. 8 hp, 200 gallon spray tank and 5hp 150 gallon spray tank sprayer for large open areas and landscape beds in and around park areas. Hand held gun.

4. How much of each material was applied during the FY? Please report the annual use amount (lbs/volume/etc) for each chemical:

- Glyphosate – 22,400 oz. (175 gal.)
- No-foam B – 3200 oz. (25 gal.)
- Reward – 7040 oz (55 gals)

5. How much land was treated by each herbicide/pesticide application? Report the number of acres of drainages/open spaces/park lands that were treated by each chemical application:

- Approximately 53 acres of ornamental landscape beds - selective spot spraying of Glyphosate/ Diquat mixture by backpack sprayer and tank spraying of larger areas with Barricade or Glyphosate.

6. Certification/training level held by field staff or supervisor applying pesticides and herbicides.

- One employee has Nevada Restricted Use Pesticide Certificate training through Nevada Department of Agriculture.
- Maintenance Worker II attends pesticide training and handling through NDA.
- Seasonal staff is given basic pesticide safety training on an annual basis.

STORAGE:

7a. Where is each material/chemical product stored year-round? List various locations if appropriate.

- Chemicals are stored in the maintenance building at the North Valleys Sports Complex.

7b. Please describe the storage area(s) (security, indoor/outdoor, locked, covered?) and any Best Management Practices in place at each location.

- The storage facility is well ventilated with eye wash kits and spill kits available. All used containers are triple rinsed and discarded as required by NDEP.
- An additional “Spill Kits” is near the mixing area.
- MSDA Sheets are available in the storage facilities, MSDS sheets are also in vehicles when they are being applied.
- The area is locked.

8. Number of square feet of drainages or acres of parks and open space that were treated by herbicide application by parks staff. (if your staff did not apply pesticides to drainages, parks or open space please state that.)

- Approximately 88 acres of ornamental landscape beds

9a. Comment on any Best Management Practices issues related to pesticide applications.

- None

9b. Were there any illicit discharges reported by staff during these activities?

- N/A

10a. Please estimate hours your staff spent on maintaining public lands with stormwater protection BMPs for the fiscal year: 20 hours

10b. Please estimate staff costs for this time, including salary and benefits: $1,000

USEPA & NDEP indicated it is very important to have measurable goals. Outline what you set out to do and what you accomplished:

- Reduce and control noxious and invasive weeds in the Peavine and Pah Rah Parks. Targeted weeds include; Teasel, Tall White Top and Hoary Cress, Yellow Star Thistle, Russian Knapweed, Spotted Knapp weed, Bull Thistle, Canadian Thistle, Musk Thistle, Scotch Thistle and others from the area. Also reduce and control Purple Loosestrife, Russian Olive and Puncture vine.

11a. Per the SWMP (2011) for the Truckee Meadows, there are objectives for the management of pesticide and fertilizer applications. These include – reduce the potential for chemicals to enter our waterways through consistent management by training and providing clear procedures. Also – improve pesticide and fertilizer application safety and target efficiency.

11b. Please list the measurable goals you have planned to meet objectives for the next fiscal year July 1, 2020 thru June 30, 2021:

- Provide healthy/aesthetically pleasing areas for the public to enjoy while managing risk to applicators and storage areas.
- Reduce and control noxious and invasive weeds. Targeted weeds include; Teasel, Tall White Top and Hoary Cress, Yellow Star Thistle, Russian Knapweed, Spotted Knapp weed, Bull Thistle, Canadian Thistle, Musk Thistle, Scotch Thistle and others from the area. Also reduce and control Purple Loosestrife, Russian Olive and Puncture vine.
- Apply all pesticides in a safe, effective manner according to its label.
- Continue training staff in the proper use of pesticides.

Washoe County Community Services Department
(Parks and Open Space)
North District
Truckee Meadows Storm Water Permit Annual Report
Fiscal Year 7-1-20 thru 6-30-21

MUNICIPAL MAINTENANCE ACTIVITIES IN DRAINAGES, PARKS OR OPEN SPACE
Fertilizer Usage

FERTILIZERS:

1. Common name of each fertilizer product, N/P/K ratio, and amount used in parks or open spaces.

- 24-3-9 Fairway Gold 7 tons (16,000 lbs.)

2. For each product listed above, please report each equipment or method used for fertilizer applications. If more than one, describe goal in the use of each (e.g. park lawn, rose garden, etc.).

- Broadcast spreader using a John Deer tractor.
- Broadcast Spreader using Kubota tractor
- Small ride on Lesco spreader

3. Annual use amount (lbs/volume/etc.), during this fiscal year on each product and each application method type.

- Peavine District - Total gross weight is: 25-3-10 = 6000 lbs
- Pah Rah District – Total gross weight is: 25-3-10 = 9000 lbs

4. Certification/training level held by field staff or supervisor applying fertilizer.

- Nevada Department of Agriculture Pesticide Applicator Training.
- International Society of Arboriculture Certification (ISA)
- Horticulture Training

5. How much land was treated by each product application? Report the number of acres or square feet (or other unit of measure) of open spaces/park lands that were treated by each type of product.

- 91 acres

STORAGE:

6a. Where is each material/chemical product stored year-round? List various locations if appropriate.

- The material was stored in the North Valleys Sports complex facility.

6b. Please describe the storage area(s) (security, indoor/outdoor, locked, covered?) and any Best Management Practices in place at each location.

- Storage buildings are locked facility with restricted access.

7a. Comment on any fertilizer Best Management Practices usage issues during the fiscal year.

- N/A

7b. Were there any illicit discharges reported by staff during these activities?

- No

8a. Please estimate hours your staff spent on maintaining public lands with storm water protection BMPs for the fiscal year: 20 hours

8b. Please estimate staff costs for this time, including salary and benefits: $1,800

USEPA & NDEP indicated it is very important to have measurable goals. Outline what you set out to do and what you accomplished:

- Provide healthy/aesthetically pleasing turf areas for the public to enjoy.
- All application sites are cleaned up after application and public access is restricted during application.
- All products are watered in after application.

9a. Per the SWMP (2011) for the Truckee Meadows, there are objectives for the management of pesticide and fertilizer applications. These include – reduce the potential for chemicals to enter our waterways through consistent management by training and providing clear procedures. Also – improve pesticide and fertilizer application safety and target efficiency.

10. Please list the measurable goals you have planned to meet objectives for the next fiscal year July 1, 2020 thru June 30, 2021:

- Provide healthy/aesthetically pleasing turf areas for the public to enjoy.
- All application sites are cleaned up after application and public access is properly restricted during application.
- All products are watered in after application.
- Keep fertilizers to only targeted areas.

Washoe County Community Services Department
(Parks and Open Space)
South District
Truckee Meadows Storm Water Permit Annual Report
Fiscal Year 7-1-20 thru 6-30-21

MAINTENANCE ACTIVITIES WITHIN PUBLIC LANDS: *Pesticide & Herbicide Usage*

PESTICIDES/HERBICIDES:

1. Please report on chemicals used on Public parks and open spaces (not streets), (common name and active ingredient) and for what purposes:

Ranger Pro (Glyphosate) ---To control weeds in planter beds and open spaces.
Cheetah (Glufosinate Ammonium) ---To control weeds in planter beds and open spaces.
Round-up Pro (Glyphosate)—To control weeds in planter beds and open spaces

2. For each chemical listed above, please report each equipment or method used for herbicide or pesticide applications. If more than one, describe situation for use of each:

Roundup Pro---50 gallon motorized tank sprayer with hand held wand/back-pack sprayer.
Ranger Pro ---50 gallon motorized tank sprayer with hand held wand.
Cheetah—back-pack sprayer

3. How is each chemical applied? Please report the method of application:

Roundup Pro---Tank mixed in 50 gallons of water and applied via hand held wand.
Ranger Pro---Tank mixed in 50 gallons of water and applied via hand held wand.
Cheetah—backpack sprayer for spot spraying

4. How much of each material was applied during the FY? Please report the annual use amount (lbs./volume/etc.) for each chemical:

Ranger Pro---6.25 gallons
Cheetah---85 oz
Round-up Pro-7.5 gallons

5. How much land was treated by each herbicide/pesticide application? Report the number of acres of drainages/open spaces/park lands that were treated by each chemical application:

Ranger Pro-12 Acres
Roundup Pro---12 Acres
Cheetah-- 1 acre

6. Certification/training level held by field staff or supervisor applying pesticides and herbicides. In house training each year and outside training put on by the Department of Agriculture, certified pesticide training.

Nevada Dept of Agriculture Pesticide Applicator

STORAGE:

7a. Where is each material/chemical product stored year-round? List various locations if appropriate.

All pesticides are stored in locked yard in a locked Securall Safety Storage container. Yes, year round. Location-15650 Wedge Parkway Maintenance Facility, South Valleys Sports Complex.

7b. Please describe the storage area(s) (security, indoor/outdoor, locked, covered?) and any Best Management Practices in place at each location. Maintenance yard is fenced and locked and Securall Storage unit is locked at all times. Absorbent on hand for any spills, protective equipment, eyewash locations.

8. Number of square feet of drainages or acres of parks and open space that were treated by herbicide application by parks staff. (If your staff did not apply pesticides to drainages, parks or open space please state that.)

25 acres

9a. Comment on any Best Management Practices issues related to pesticide applications. None

9b. Were there any illicit discharges reported by staff during these activities? None

10a. Please estimate hours your staff spent on maintaining public lands with storm water protection BMPs for the fiscal year:

55 hours

10b. Please estimate staff costs for this time, including salary and benefits: $2,200

USEPA & NDEP indicated it is very important to have measurable goals. Outline what you set out to do and what you accomplished:

Keep weeds and pests under control in all parks and open spaces.
We kept weeds and pests under control in all county parks.

11a. Per the SWMP (2011) for the Truckee Meadows, there are objectives for the management of pesticide and fertilizer applications. These include – reduce the potential for chemicals to enter our waterways through consistent management by training and providing clear procedures. Also – improve pesticide and fertilizer application safety and target efficiency.

11b. Please list the measurable goals you have planned to meet for the next fiscal year July 1, 2021 thru June 30, 2022:

- Provide healthy/aesthetically pleasing areas for the public to enjoy while managing risk to applicators and storage areas.
- Reduce and control noxious and invasive weeds. Targeted weeds include; Teasel, Tall White Top and Hoary Cress, Yellow Star Thistle, Russian Knapweed, Spotted Knapp weed, Bull Thistle, Canadian Thistle, Musk Thistle, Scotch Thistle and others from the area. Also reduce and control Purple Loosestrife, Russian Olive and Puncture vine.
- Apply all pesticides in a safe, effective manner according to its label.
- Continue training staff in the proper use of pesticides.

Washoe County Community Services Department
(Parks and Open Space)
South District
Truckee Meadows Storm Water Permit Annual Report
Fiscal Year 7-1-20 thru 6-30-21

MUNICIPAL MAINTENANCE ACTIVITIES IN DRAINAGES, PARKS OR OPEN SPACE
Fertilizer Usage

FERTILIZERS:

1. Common name of each fertilizer product, N/P/K ratio, and amount used in parks or open spaces.
Spring time:

Spring application (Sierra Pacific Turf Blend 25-3-10) 164 - 50 lb. bags
Fall application (Andersons 6-24-24) 80 - 50lb. bags

2. For each product listed above, please report each equipment or method used for fertilizer applications. If more than one, describe goal in the use of each (e.g. park lawn, rose garden, etc.).

Broadcast spreader behind John Deere tractor. Walk behind broadcast spreader for park lawn where tractor isn't applicable.

3. Annual use amount (lbs./volume/etc.), during this fiscal year on each product and each application method type.

25-3-10 8200 lbs. Sierra Pacific Turf Blend (broadcast)
6-24-24 4000lbs Andersons (broadcast)

4. Certification/training level held by field staff or supervisor applying fertilizer.

1. Nevada Department of Agriculture Pesticide Applicator

5. How much land was treated by each product application? Report the number of acres or square feet (or other unit of measure) of open spaces/park lands that were treated by each type of product.

25-3-10…46.95 Acres turf
6-24-24…19.73 Acres turf

STORAGE:

6a. Where is each material/chemical product stored year-round? List various locations if appropriate. ‘s Stored at the South Valleys Maintenance yard, outside. Always covered on pallets then put out as soon as possible. Not stored year round.

South Valleys Sports Complex
Address: 15650 Wedge Parkway D 89511

6b. Please describe the storage area(s) (security, indoor/outdoor, locked, covered?) and any Best Management Practices in place at each location. Inside locked storage yard at South Valleys Sports Complex.

- Will not apply product in windy conditions
- Apply according to label
- Wear proper PPE

7a. Comment on any fertilizer Best Management Practices usage issues during the fiscal year. None

7b. Were there any illicit discharges reported by staff during these activities? None

8a. Please estimate hours your staff spent on maintaining public lands with storm water protection BMPs for the fiscal year: 60 hours

8b. Please estimate staff costs for this time, including salary and benefits: Staff Cost $ 3,000.00

USEPA & NDEP indicated it is very important to have measurable goals. Outline what you set out to do and what you accomplished: Our goal is to maintain the health and life of the turf for playability and safety of the public. We accomplished our goal.

9a. Per the SWMP (2011) for the Truckee Meadows, there are objectives for the management of pesticide and fertilizer applications. These include – reduce the potential for chemicals to enter our waterways through consistent management by training and providing clear procedures. Also – improve pesticide and fertilizer application safety and target efficiency. We only applied fertilizer to targeted turf areas.

10. Please list the measurable goals you have planned to meet objectives for the next fiscal year July 1, 2021 thru June 30, 2022:

- Provide healthy/aesthetically pleasing turf areas for the public to enjoy.
- All application sites are cleaned up after application and public access is properly restricted during application.
- All products are watered in after application.
- Keep fertilizers to only targeted areas.

Post-Construction New Development and Significant Redevelopment (POST) FY2021

The stormwater program element for post construction structural controls, new development and significant redevelopment has included the development of the Truckee Meadows Structural Controls and Low Impact Development Manual, ordinances requiring implementation of the manuals practices, and tracking of such control structures.

The criteria developed in the Truckee Meadows Structural Controls Design and Low Impact Development Manual (LID Manual) is expected to reduce pollutants entering the MS4. The criteria, where implemented, requires structural controls to treat runoff from the 90th percentile storm. The variability of BMP's listed in the LID Manual were selected to meet the regional needs and situational demands to achieve pollutant reductions to the Maximum Extent Practicable. For more information, see the LID Manual available at www.tmstormwater.com. Lists of approved LID installations continue to be kept and tracked by COR, COS, and Washoe County.

It should be noted that the implementation of LID and structural controls throughout the Truckee Meadows is not expected to negatively impact water supplies (IV.F.5.b). No specific studies are known to have been conducted regionally to examine the impact of LID on water supplies.

During reporting period the SWPCC hosted a technical training that focused on using the Truckee Meadows Structural Controls and Low Impact Development (LID) Manual. The class was held on zoom on June 28 and 29, 2021, with 45 attendees.

Post-Construction Program Items Included:

- City of Reno efforts on post-construction
    - Structural controls tracking list
- City of Sparks efforts on post-construction
    - Structural controls tracking list
- Washoe County efforts on post-construction
    - Structural controls tracking list

Permit section(s) addressed: IV.F.5.a, IV.F.5.b

City of Reno
Post-Construction and Structural Controls
FY 20/21

Structural controls for stormwater are required during the plans approval process for construction permits. Properly sized units are required by the City of Reno Community Development Department on all new construction projects five (5) acres or greater. Additionally, on a case by case basis, new construction projects that discharge directly to the Truckee River are required to install structural controls.

Structural controls are inspected for proper installation during the construction phase by City of Reno building inspection staff. Post-construction, the property owner or other designated party becomes responsible for ensuring compliance with applicable ordinances. The City of Reno maintains a list of structural controls, found in the attached excel table.

Table A – City of Reno Industrial / Commercial Structural Controls

Job Name and Address	Date	Lot Size	Feature
Cabelas* I-80 at Boomtown	04-07	23.08 Acres	Parking lot landscape bioretention areas. Surrounding bioretention areas.
United Construction * 5300 Mill Street	09-08	2.064 Acres	Detention basins.
Ironworker's Local* 14295 Mt. Bismark, Stead	09-08	85,497 Sq Ft.	Stormwater runoff retention basins.
Kawasaki/Arctic Cat of Reno* 2315 Market Street	12-07	59,807 Sq Ft.	Landscape detention basins.
WMS Gaming 887 Trademark	08-09	3.69 Acres	Rainstore 3 underground detention and infiltration system. Jensen stormwater treatment system. Also used parking lot curb openings to low flow rock lined swales.
Thrifty Car Rental and Sales Villanova and Terminal	10-09	48,352 Sq Ft.	Stormtech SC310 detention and stormwater treatment system.
The Goddard School 455 Somersett Parkway BLD10-00605	09-09	41,937 Sq Ft.	Stormwater detention and rip rap swales. LID Worksheet
RTC 4th Street Transit Station* 4th Street and Evans	12-08	2.619 Acres	Rainstore 3 underground detention system. Vorsentry VS70 stormwater treatment system.
Mathewson Residence 4000 Goodsell BLD10-01937	12-09	1.080 Acres	Infiltration Trenches, dripline trenches, drywell for stormwater storage.
Office Building 5590 Kietzke Lane	12-09	2.06 Acres	V Notch in parking lot islands for drainage into island vegetation. Detention pond in rear of properties
US Citizenship and Immigration Office 790 Sandhill Road BLD10-01587	1-10	1.6 Acres	Dry creek bed infiltration swale. Cobblestone infiltration and conveyance channel. Grass lined storm drainage channel. LID Worksheet
Reno VOA Elderly Housing 2350 Paradise Drive	2-10	.973 acres	Gravel infiltration trench under perforated storm drain, rock lines swales at all roof overflow scuppers, Rainstore chamber stormwater detention and rainstore infiltration gallery. Parking lot curb openings to allow stormwater into vegetated areas.
Neil Road Senior Apartments 0 Neil Road BLD10-02564	2-10	2 acres	Jensen/Contech StormVault for volumetric separation treatment.
A Plus Animal Hospital 7440 and 7450 Longley Lane BLD10-03186	2-10	1 acre	LID Bioswale, V notch in parking lot curbs, LID Worksheet provided
Washoe Co. School District Academy of Arts, Careers and Technology -380 Edison Way BLD09-01512	01-09	3 acres	Storm Water Retention Area (2 large areas). Depressed curb for drainage into retention swale.
Smith's Fuel Center 750 South Meadows Parkway BLD10-04283	5-10	1.25 Total .75 Disturbed	STC 450i Stormceptor Removes pollutants through gravity separation and flotation.
Office Building 575 Parr Blvd BLD10-04661	6-10	.29 acres	Vegetated LID Bioswale
Pepsi Beverage Co Drainage Imp 355 Edison Way BLD10-04132	5-10	5 acres	Jensen Precast Interceptor (wet vault) with private maintenance agreement. Will get GPS coordinates.
River Senior Apts 895 Kuenzli BLD10-02593	5-10	1.46 acres	Reduced runoff from existing. Drain inlet filtration added to the catch basins. Sloped vegetated swale.

Reno Sparks Cab Company 475 Gentry Way BLD10-04417	7-10	1.9 acres	Landscape detention area to take runoff from the parking area.
Maverik Store Stead Boulevard BLD10-03968	7-10	2.12 acres	River Cobble Swale LID Worksheet
Medical Office for Ryan Gini Monte Vista Village Lot 18, S. McCarran BLD11-00712	9-10	27,334 Sq ft	Cudo Water Treatment System before being let into the storm drain system. Will travel from site to McCarran by way of vegetated swale with check dams.
Mathewson Residence (Private) 4000 Goodsell Drive BLD10-01937	9-10	28,000 Sq Ft.	Contech CDS2015-4 storm water quality treatment system with outlet to the Truckee River with 12" Fresno valve
Walmart at Sky Vista BLD10-02424 or SIT10-00001	9-10	115.17 acres	Community Detention Basin
Maverik Store Sharlands and Ambassador BLD11-01727	12-10	1.37 acres	Curb cuts to landscape areas, rock lined infiltration swale and roof drains. Private Stormgate precast vault and internal weir structure. LID Worksheet
Elias – Floorcraft 1350 Holcomb Lane BLD10-03752	3-25-10*	34,656 sq. ft.	Curb cuts to allow for drainage to landscape areas. Sidewalk drains with water dispersion to landscape areas in the exterior landscape strip. No LID worksheet.
Mackinaw Investments N. Virginia Street APN # 003-150-23 BLD11-03242	2-22-11	8058 sf	Curb cuts to allow drainage into bioretention basin and landscape areas. No LID worksheet.
NV Energy 101 Ohm Place BLD11-03481	3-30-11	7 cares disturbed 10 acres total	Infiltration basins. LID worksheet.
Lutheran Church of Good Shepherd 501 California Ave Addition, curb, gutter, sidewalk BLD11-03956	4-5-11	.24 acres disturbed .58 acres total	Rainstore 3 Infiltration trench and rock-filled infiltration trench. Exempt from mandatory Post Const Water Quality. No Worksheet. Used LID from manual.
Maverik Store Panther Drive and N. Virginia (15 Panther Drive) BLD11-04362	4-27-11	1.18 acres	Detention basin. Vegetated bioswales. LID worksheet
Burger King Golden Valley and North Hills BLD12-00759	8-25-11	30,000 sf	Community Detention basin.
Elias1, LLC Holcomb and Arroyo APN 014-073-25 BLD10-03752	9-26-11	34,656 sf	Depressed curbs to allow stormwater to infiltrate landscape areas.
Virginia Lake Senior Apartments 2350 Lymbery Street BLD12-01328	11-21-11	138,085 sf	Roof drains to SD system and swales to detention ponds (2).
Re/Max Premier Properties RTTC Town Center 10795 Double R Blvd BLD12-03943	4-24-12	1.23 acres	Vegetated swales. Part of South Meadows Master Drainage Plan LID Worksheet
Double Diamond Park City of Reno Wilbur May Pkwy and South Meadows Pkwy	6-18-12	2.5 acres	Swales, catch basins, storm drain and detention. LID Worksheet

Dollar General Store 10695 Stead Blvd BLD12-04766	7-10-12	1.07 acres	Stormwater interceptor and bio-swales
Eco Pak 640 Orrcrest Drive BLD13-00215	7-24-12	2.05 acres	Drainage channel and detention pond No worksheet
Big O Tire Store Southtowne Auto Center-Pad 17 12270 Old Virginia Road BLD13-00177	9-15-12	1.05	Curb openings to drain to bioretention basins. Worksheet provided
Reno Alzheimer's Special Care Center 6155 Stone Valley Dr BLD13-04053	10-16-12	2.84	Contech Stormwater Solutions CDS Concrete Water Quality System Worksheet provided.
Maverik Store 11795 Veteran's Parkway BLD13-00538	10-17-12	2.77	Lansacape swales. Rip-rap lines swales.
Roter Office Building 4055 S. Virginia Street BLD13-01443	11-16-12	1.51	Desiltation/retention pond. Worksheet Provided
Village at Arrowcreek Apts. (208) Arrowcreek Parkway	1-30-13	12 acres	Rip rap channels and detention basin. Further LID may be required when expanded into retail center. Worksheet included.
North Hills Vet Clinic 1440 North Hills Blvd BLD13-02985	3-1-13	2	Detention Pond. Stormwater treatment control vegetation. Worksheet Included.
Discount Tire N McCarran Blvd-Canyon BDL13-02664 SWP13-00017	3-29-13	1.26	ADS water quality unit model # 4220WQA with inspection risers, solid cover and concrete collar. Privately owned with manufacturer's maintenance schedule included. Worksheet included.
Rocking O Office and Warehouse 190 Woodland Ave, Reno BLD13-05101	5-13	1.1 acres	Stormtech SC-310 Infiltration field, with isolator row with weir overflow structure.
City of Reno Fire Station 12 Damonte Ranch BLD13-05658	6-13	1.33 acres	Vegetation swale/detention basins then to existing steamboat creek. Worksheet included
United Federal Credit Union 980 Ambassador BLD13-06377	7-13	.87 acres	Bioretention, infiltration and Contech Triton catch basin inserts. Curb openings to 4 landscape areas. Worksheet included inn drainage report.
Courtyard by Marriot 340 E. 2nd Street BLD13-06344 SWP14-	8-13		Sand Oil separator treating water prior to outfall into the Truckee River. Jensen 500 gallon Model JL500EE-SO.
Silver Ridge Apts 1555 Sky Valley Drive BLD14-00836 SWP14-00007	8-13	2.1 acres	Contech Stormgate Vault with weir.
Mogul Fire Station #35 10201 W. 4th Street BLD14-00222 SWP14-00013	9-13	1.85	Sand/oil separator for treatment. Retention basin with maintenance schedule. Private storm drain with maintenance schedule. Worksheet included.
Marriot Courtyard 340 E. 2nd Street BLD13-06344 SWP14-	12-13	31,138 sf On the river	All drainage goes to a new manhole, then to a sand oil separator, then is discharged to the Truckee River. All agencies controlling the river have approved the site.
Dr Pepper/ Snapple Parking Lot BLD14-03129	1-14	10,000 sf	Detention basin, worksheet included, drainage report included.

Villas at Keystone Canyon Leadership and Victory BLD14-03655 SWP14-00023	1-14	16.2 acres	On site collection of all flows, which discharges to an existing ephemeral drainage, which then flows through existing culverts under McCarran to an existing detention facility designed to mitigate development of the Keystone Canyon PUD. Perpetuates the existing drainage pattern. Worksheet included.
Juniper Village 525 Morrill Ave BLD14-03183	1-14	1.0 acres	Detention Pond. Worksheet included
LDS Church Parking Lot Expansion 2000 Beaumont BLD14-03385 Waiver on SWP	1-14	7.91	Detention Pond. Worksheet included.
Reno Tech Center Parking Lot 9390 Gateway Drive BLD14-02180 SWP14-00022	4-14	3.54	Detention Pond then discharge to historical drainage. Worksheet Included.
Logisticenter 395 Lemmon Valley and N Virginia BLD14-04332 SWP14-00021	4-14	42.95 acres	Detention and retention ponds. Worksheet included.
Hampton In Ambassador Ambassador Drive BLD14-03975	4-14	1.79 acres	Detention Ponds, onsite storm drain and catch basins. Worksheet included.
MPT of Reno LLC parking lot 6th and Ralston BLD14-04148	5-14	30,754 sq ft	Underground retention system with HDPE. 3 risers. Worksheet incl. N14869214.02 E2276095.39 ELEV = 4520.74 at North Riser
McCarran Crossing RV Storage Lot BLD14-06329 SWP15-	7-14	14.03 acres	Detention basin. This is in Critical Flood Zone 1 and has stormwater quality management as well as 79,645 cu. yds of flood mitigation.
Promenade on the River	10-14	1 acre	Installed new sand/oil separator to treat stormwater prior to entering the river.
Mission Senior Living Patriot Blvd BLD15-01943 SWP15-	10-14	6.25 acres	8 retention basins with SD interceptor for overflow.
Fed Ex Parking Lot 0 Trademark BLD15-01795 SWP15-00011	10-14	1.9 Acres	3 infiltration ponds with bio-swales. Worksheet included.
Reno Dental Office So Meadows and Lauren BLD14-04825 SWP15-	10-14	1 acre	4 Detention Ponds. Worksheet included.
TMWA Accessory Bldg 1355 Corporate Blvd BLD15-01858 SWP15-00014	10-14	1.98 acres	Bioswale. Worksheet included.
KRT Capital Partners Lawson Products 1381 Capital Blvd BLD15-02989 Drainage improvements	11-14	10.37 acres	New Stormtec h SC740 with 3 chambers for underground detention.
Sala Family Denistry Addition 4875 Summit Ridge BLD15-03280	2-15	40,000 sf	Pipe to landscape detention areas. Worksheet included

Witt RV Storage BLD15-02886 SWP15-	2-15	1.57 acres	Retention/Detention Basins. Some existing, some resized and some added. Worksheet included.
Anytime Fitness Silver Lake and Red Rock BLD15-05450	3-15	.92 acres this project 4.52 acres for worksheet	Detention basins with on site storm drains. Worksheet included.
United Federal Credit Union Summit Sierra	4-15	.92 acres	Vegetated swales and basins. Worksheet included.
Select Comfort Sales 6350 S Virginia BLD15-05648	5-15	27,400 sf, no new impervious surface	They are placing 1764 sf of permeable pavers on the East parking lot. Maintenance schedule included in plans.
NW Reno Skilled Nursing Facility Sharlands Ave BLD15-08214-Grading SWP16-00006	7-15	45.94 acres	3 detention sub basins. Worksheet included.
No Nevada Sikh Society Parking Lot BLD15-4158	7-15	.96 acres	One detention basin for pre-treatment. Worksheet included.
Wolf Run Apartments 1900 Valley Road BLD16-00799 SWP16-00008	9-15	2.23 acres	Two large detention areas. Worksheet included.
North Valley Commerce Center Ph 1 N Virginia St BLD15-08073	1-16	97 acres	4 Detention basins, 1 Retention basin
JNG Properties New office and warehouse buildings 1120 Financial Blvd BLD15-07426 SWP16-00014	10-15	2.45 acres	Grate inlet filter (GISB) added to all on site private catch basins. Worksheet Included.
Washoe County Medical Examiner Facility 9th Street BLD16-02842 SWP16-	10-15	2.56 acres	(2) Stormtech SC310 chambers. Worksheet included
Mountain View Estates 1B-1 Coastal SIT15-00008	10/2015	14.6 acres	Detention Basim
Waste Management 1390 Commercial Row BLD16-03363 BLD16-05895	1-16	.6 acres 90,000 sf	Water Quality Basin. Worksheet included. Sand oil separator and rainstorm vault with overflow to river.
Sierra Pallet 400 Western Road BLD15-07317	2-16	2.06 acres	Detention basin and landscape filter.
Hillside Meadows Apartments 2757 Beck Street BLD16-04965 SWP16-00033	3-16	3.0 acres	Detention Basin. Worksheet included.
South Valley Commerce Sandhill Road BLD16-06213 SWP16-	4-16	17.54 acres	All drainage will go to the drainage chip channel north of the site on Trademark Drive, per the South Meadows PUD Phase III master drainage study. All on site drainage will be conveyed by a private storm drain system and the channel will provide the Post Construction Stormwater Quality. Worksheet included.

Alamo Square Townhomes Alamo Square Way SIT16-00009	4/2016	2.8 acres	Detention Basin.
Robb Drive Commerce Center Sharlands and Ambassador BLD16-06869 SWP16-00045	5-16	66,600 sf	Detention basin with orifice to meter on pre construction flows out. Worksheet included.
Reno Student Housing 1551 N. Virginia BLD16-05039	5-16	.75 acres	Underslab Jensen Storm Vault. Worksheet included.
Surf Thru Car Wash 9796 S Virginia BLD16-03119 SWp16-00049	5-16	1.2 acres	On site detention. On site storm drain with metered outlet to Thomas Creek.
Sierra Health Behavioral Center 6940 Sierra Center Parkway BLD16-05753 SWP16-00031	6-16	4.94 acres	Roof runoff goes to landscaping. Parking lot runoff is treated with xeripave in catch basin. Low flow channels. Worksheet included.
Golden Valley Retail Golden Valley and North Hills BLD16-04624 SWP16-00037	6-16	1.66 acres	2 Retention ponds. Worksheet included.
Stonehouse Drillling 805 Bennie Lane BLD16-07840	6-16	2.79 acres .81 acres new impervious	Detention Pond. Worksheet included.
Pink Hill Housing 1375 N. Virginia BLD17-00002	8-16	.52 acres	36” detention pipe for drainage prior to going to the public system.
Sharlands Apartments Mae Anne/Sharlands BLD16-08178 SWP16-00051	8-16	20.14 acres	Existing detention pond for private on-site system. Worksheet included.
Bedrosians Tile 6796 Longley Lane BLD16-06388 SWP17-	8-16	3.2 acres	Contech Hydrodynamic Seperator and vegetated detention swales. Worksheet included.
Palisades (All Phases) McCauley Ranch Blvd SIT16-00010 SIT17-00006 SIT18-00009	10/2016 10/2017 8/2018	186.6 acres	2 Detention **B**asins
South Meadows Promenade Gateway and South Meadows NE BLD17-00002 SWP17-00009	10-16	9.2 acres	Private storm drain system to 2 STC 900 Concrete Stormceptors for the increased 5 year flows.
West 4th Street Mini Storage BLD17-01242 SWP17-00016	11-16	5.09 acres	Retention basins with infiltration. Rate at 9.0 ft/hr. Worksheet included. Agreement to be executed prior to C of O.
Stead Maverik Addition BLD17-03067	11-16	11,000 sf	R tank underground stormwater treatment facility. Worksheet included. Agreement to be executed prior to C of O.
Mountain America Credit Union 1181 Steamboat Parkway BLD17-04676	3-17	.42 acres	(5) Landscape swales Worksheet included

KTVN Employee Parking 4925 Energy Way BLD17-00338	9-16	< 1.00 acres	Swale
Sierra Vista Apartments Arrowcreek Parkway BLD16-08645 SWP16-00056	12-16	16.59 acres	East and West detention ponds. Worksheet included.
Meridian 120 North (Villages 1, 2, 3) Boomtown Garson Rd			
SIT16-00016	5/1/2017		
SIT17-00011	10/2017		
SIT18-00012	TBD	101.8 acres	Detention Basin
KRNV Parking Lot 1790 Vassar Street BLD17-06420	5-17	.71 acres	Detention ponds. Worksheet included.
Ridge Hollow Meridian Lane SIT17-00003	6/2017	36.7 acres	Detention Basin
Northridge (Units 1, 2, 3) Beckworth Drive			
SIT17-00005	6/2017		
SIT18-00004	3/2018		
SIT18-00008	6/2018	91.8 acres	Utilizing existing Detention Basin.
Rancharrah Villages 1, 2, 3 Talbot Lane SIT16-00015	7/2017	40 acres	Detention Basin
Trademark 170 Building Trademark Drive Reno, NV BLD16-08652 SWP16-00005	8-17	8.15 acres	Detention basins. Worksheet included.
Stead Elementary School Access Improvements BLD17-07945 SWP17-00050	8-17	4.44 acres disturbed	3 Retention ponds. Worksheet included.
West Meadows Estates Phase 1 Unit 1 US Hwy 40 SIT17-00002	8/2017	200 acres	1 small detention/retention basin
Charles Schwab Office Building Commercial Road (APN 040-900-24) BLD18-0142 SWP18-000	9-17	1.55 acres	One large detention pond for post construction runoff. Worksheet included.
Core Const Office Building Reno Corporate Drive BLD17-06822 SWP18-00007	9-17	1.05 acres	Drains to existing Double R drainage channel.
Rancharrah Senior Living Kietzke Lane BLD17-04357	9-17	1.5 acres	Drains from private storm drain to Kietzke roadside ditch
Mill Street Lofts Mill Street BLD17-2161	10-16	.96 acres	Detention ponds.
Versa Grade Western Road BLD17-05274	8-17	3.5 acres	Detention ponds. Rip rap ditches. Revegetation. Worksheet included.

Logisticenter I-80 BLD16-07017 SWP16-00038	10-17	48.88 acres	Large detention pond. Worksheet included
The Lakes at Lemmon Valley Sky Vista Pkwy BLD17-07682	12-18	55 acres	7 Detention and Retention ponds
Reno Tahoe Construction Office Building BLD18-03826 BLD18-03827 SWP18-000	12-17	130,680 sq ft	Detention Pond. Worksheet included
Evans Warehouse 520 Evans Street	12-17		
740 Del Monte Site and Building 740 Del Monte Lane BLD18-04109- Site BLD18-04115 – Building SWP18-000	12-17	109,925 square feet	Bioswales, detention pond, discharge to community pond. Worksheet imcluded.
Slide Mountain Office Building 8895 Terrabyte BLD18-06017 SWP18-00048	4-18	1.48 acres	Contech Chambermaxx 7 chamber stormwater vault. Worlsheet included.
Stead 40 Silver Dollar Lane SIT18-00003	4/2018	41 acres	2 Retention/Detention basins
Somersett Village 6 (Phases A, B, C) Somersett Pkwy SIT17-00019 SIT17-00022 SIT18-00002	5/2018 10/2018 12/2018	167.6 acres	Detention Basin
Patagonia Parking Lot 0 Sugar Pine BLD18-04532 SWP18-00061	76,230 sf	76,320 sf	Detention sub basins. Worksheet included
North Valley Commer Center Ph 2 9550 N Virginia St BLD18-04537	10/2018	43.1 acres	3 Retention Basins
Mountaingate 78 Arrowcreek Pkwy SIT18-00017	6/2018	41.3 acres	Detention basin
Grove Street 10 Apartments 480 Grove Street BLD18-09344	7-2018	.46 acres	
Regency Park II (Phases B1, B2, B3) Stead Blvd SIT18-00007 SIT18-00020 SIT19-00021	7/1/2018 12/11/20 TBD	11 acres	1 Retention Basin
Wild Stallion Estates (Phases 8 & 9) Buck SIT17-00012 SIT18-00025	9/2018 4/2019	53 acres	1 Rentention basin
Renown Health Parking Lot 10101 Double R Blvd. BLD18-08519	10-2018	16.5 acres	Detention Basin.

Parking Lot 333, 311, 347 Ralston 505, 511 3rd St.	1/2019	0.99 acres	Infiltration Basin (Grading not to start until house on one lot is removed / relocated.)
HTA Plumbing 700 Bennie Lane BLD19-03797	1/2019	0.92 acres	Rip Rap Swale (unvegetated)
NV Energy Ohm Operations Center Ampere Way BLD19-04001	1/2019	18.4 acres	Detention Basin.
Regency Park II (Phases A1, A2) Military Road SIT18-00006 SIT18-00010	12/11/2020 7/8/2021		1 Retention Basin In Area A1 (note an offsite basin located at the southeast corner of the Regency Development was converted from a detention to a retention basin)
Rancharrah Equestrian Village Silver Charm Way SIT18-00011	10/2/2019	7.26 acres	6,900 SF Rip Rap Swale (unvegetated)
The Overlook at Keystone Canyon Leadrership Pkwy SIT18-00021	Cancelled	Cancelled	Permit Cancelled
Mountain View Estates 3-1 Pimlico SIT18-00024	7/29/2019	12.5 acres	Dentention Basin
Vista Enclave (Phase 1 and 2) Sky Vista Pkwy SIT19-00002 SIT21-00013	3/1/2020 TBD		1 Retention Basin (Basin constructed under Phase 1)
Summit Ridge Townhomes Summit Ridge Dr SIT19-00003	4/2019	2.90 acres	2 drainage detention swales
Silver Dollar Estates Area 2 (Phases 1,2,3) Trading Post SIT19-00006 SIT19-00025 SIT21-00002	6/5/2019 4/22/2020 12/18/2020	22 acres	2 Detention basins that serve all of Area 2 as well as Area 3, volume mitigation accounted for in SDE Infrastructure retention basin
North Valley Estates Unit 1 & 2 Phase 1 Pan American Way SIT19-00007	8/2019	38.7 acres	Retention/Detention Basin
Silver Dollar Estates Infrastructure Trading Post SIT19-000081	5/20/2019	2.7 acres	1 Retention Basin w/ diversion swale in major drainageway
West Meadows Neighborhood Commercial Fenhollow Drive SIT19-00009	4/2/2019	2.62 acres	Detention Basin
Silver Dollar Estates Area 1 (Phases 1, 2) Trading Post SIT19-00010 SIT20-00013	6/11/2019 1/15/2021	17 acres	Detention Basin, volume mitigation accounted for in SDE Infrastructure retention basin
Silver Dollar Estates Area 3 (Phases 1,2,3) Trading Post SIT19-00011 SIT19-00027 SIT21-00003	6/5/2019 8/6/2020 1/19/2021	26 acres	This portion of the Silver Dollar Estates developement served by the 2 dentention basins within Area 2, volume mitigation accounted for in SDE Infrastructure retention basin
Estancia (wild Stallion 4B) North Hills SIT19-00012	10/31/2019	36.2 acres	2 Retention Basins, Detention component at Buck Drive crossings

Silver Dollar Estates Area 4 (Phases1,2,3) Trading Post SIT19-00013 Cancelled SIT19-00015 Cancelled SIT21-00012	Cancelled Cancelled TBD	21 acres	Detention component in drainageway at road crossing within Area 4, volume mitigation accounted for in SDE Infrastructure retention basin
Manzanita Lane Manzanita Ln SIT19-00017	5/21/2019	7.16 acres	Underground detention chambers
Mayberry Lofts Mayberry SIT19-00026	5/27/2021	.42 acres	1 priviate undergound drywell component within the private road. Northeast portion of the site.
Gentry Apartments BLD19-074175	7/1/2019	.85 acres	2 Retention Basins for both Gentry and Brinkby Apartments parcels and a detention channel component at Brinkby Apartments
Rancharrah Village 6A	8/5/2019	17.09 acres	This portion of Rancharrah Village 6A served by a private offsite detention basin northeast of the development.
N Virginia Industrial Ph 1 N Virginia St BLD20-00443	Expired		1 Retention basin w/ Phase 1 (Ph 2 will include a 2nd basin)
Cloud Shadow & Chase Canyon (StoneGate Phase 1) SIT20-00001	TBD		2 Detention basins south of highway, Retention north of Highway, major drainageways realigned with LID features, LID drainage swales along roadways
Echo Ave Industrial Echo Ave BLD19-02992	7/19/19	18.9 acres	1 Detention Basin
Sonic @ Neil S Virginia St BLD19-10848	9/29/2020	1.36 acrea	1 Detention Basin
Red Roof Self Storage Phase 3 7755 N Virginia St BLD19-01848	7/25/19	9.98 acres	2 Retention/Detention Basins
North Valley Commerce Center Ph 3 9560 N Virginia St BLD19-05891	5/23/19	16.65 acres	1 Retention and 1 Detention Basin
North Valley Commerce Center Ph 4 N Virginia St BLD19-08523	7/12/19	95 acres	2 Retention and 3 Detention Basins
OnTrac 9715 N Virginia St BLD19-00731	6/25/19	32.8 acres	3 Detention Basins and 1 Retention/Detention Basin
Makita Military Rd BLD19-08955	8/11/2020	46.58 acres	2 Retention Basins
Project TUSK BLD20-08516 (Grading BLD20-07376)	3/2020	36 acres	4 Retention Basins
Silver Peak Apartments Phase IV BLD18-03303	6/18/2018		3 Retention Basins
Deep Roots Medical	9/11/2020	.813 acres	Underground detention chambers (2 rows of three stormtech SC-740 chambers) 667 cubic feet of volume
Villas II at Keystone Canyon SIT20-00008	8/27/2020	24.09 acres	1 Detention Basin, Rip Rap Interceptor Swales around the development
Desert Winds at Holcomb Ranch SIT20-00002	3/3/2020	5.75 acres	1 Detention Basin
Esplanade at Northgate SIT18-00023	07/02/2020	6.21 acres	Regarding of an existing retention/detention basin

Mountain View Estates Unit 4 SIT20-00003 BLD20-02288 (grading)	9/20/2021 10/8/2020	20.33 acres	3 Detention Basins
Rancharrah Village 6A SIT19-00028	8/30/2020	17.09 acres	1 Detention Basin
Sage Point 8 BLD19-10866	9/25/2020	12.49 acres	4 retention/detention basins
Scandia Realty Group 3 Warehouse BLD20-09985E	8/26/2020	.845 acres	1 Detention Basin
Aspen Earthworks BLD20-06523E mass grading	1/20/2021	3 acres	2 Detention Basins
Ladera North Valley BLD21-04357E mass grading	1/20/2021	23 acres	2 Retention Basins
Syres Reno Multi Family BLD20-04969E	12/2020	12 acres	Detention Basin
Taylor Single Family Resident BLD21-03599	1/20/2021	0.454	1 Detention Basin
Truckee River Green Townhomes SIT21-00005	9/22/2021	5.14 acres	1 Detention Basin
Verdi Executive RV & Boat Storage BLD21-08869E	7/9/21	34.9	Detention
NVCC Building C BLD21-08045E	6/8/2021	14.3	Retention/Detention Basin
Empowerment Center Marvel Way BLD21-06491E	6/22/2021	3	Detention
North Peak Apartments BLD21-03232E	12/15/2020	1.5	Retention Basins
O'Brien Middle School BLD21-04987E	8/11/2020	16	Retention Basins
Academy Reno BLD21-04787E	8/20/2021	1.2	Underground Retention / Detention
Majestic BLD21-07599	3/2/2021	33	Retention Basins
Stead Mini Storage BLD21-06619E	9/28/2021	11	Retention Basins
Cityview Townhomes SIT21-00004	TBD	? acres	??? Retention/Detention Basin
Cottages at Comstock Phase 1 SIT21-00007	TBD	? acres	3 Detention Basins
Shailyn Drive Extension BLD20-09125	TBD	? acres	1 Detention Basin
Emily 5 (SIT21-00010/FNL21-00011)	TBD	33,379 SQ FT	1 Retention Basin
Mountain View Unit 1 (SIT21-00014/FNL21-00015)	TBD	? acres	1 Existing Detention Basin
Legacy Village Townhomes Unit 1 SIT21-00018	TBD	? acres	1 retention basin and drainage swales
Oye Single Family Residence BLD21-08279E	TBD	0.518 acres	2 Detention Basins
Hernandez Garage BLD21-08835	5/27/2021	0.804 acres	2 Detention Basins
Linden St 6 Unit Apartments BLD21-11813E	TBD	0.350 acres	1 Retention Basin
1250 W 2ND Street 24 Apartments BLD21-13325E	TBD	0.562 acres	1 Retension Basin
2690 Fair Cir Residence BLD21-12037E	7/29/2021	0.420 acres	1 Detention Basin
Copper Point Duplex BLD21-11633 and BLD21-11634	9/7/2021	5.53 acres	100 S.F. Dissipater basin
Zlink Kitchen & Bath BLD22-01571E	TBD	4.62 acres	??? Retention/Detention Basin

4186 Del Curto Dr BLD21-12384E	TBD	13,939 SF	??? Retention/Detention Basin
4345 Rewana Way BLD21-06034E	9/24/2021	0.414 acres	2 Retention Basins
425 Western Dr BLD21-10698E	8/30/2021	4.740 acres	1 Detention Bio-Retention
9611 Prototype ct BLD22-00139	10/5/2021	1.102 acres	??? Retention/Detention Basin
625 Innovation Dr BLD22-00415E	TBD	22.203 acres	1 Detention Basin
10400 Old Virginia Rd BLD21-00819E	8/6/2021	2.739 acres	1 Bioretention Swale
0 Orovada St BLD22-02039E	TBD	1.750 acres	2 Detention Basins
Vandamme 385 River Pines DR BLD21-08034E	TBD	1.010 acres	2 infiltration trenches and 2 drywell components

City of Sparks
Post-Construction and Structural Controls
FY 20/21

Structural controls for storm water are required during the plans approval process for construction permits. Properly sized units are required by the City of Sparks Community Development Department on all new construction projects five (5) acres or greater. Additionally, on a case by case basis, new construction projects that discharge directly to the Truckee River are required to install structural controls.

Structural controls are inspected for proper installation during the construction phase by City of Sparks Environmental Control staff. Post-construction, the property owner or other designated party is issued an ECS Permit containing storm water regulations, requirements and a maintenance schedule for installed structural controls. ECS Permits are updated as necessary and re-issued annually during on-site inspections. Listed in *Table A* are industrial / commercial businesses that have structural controls that are maintained privately by subcontractors. *Table B* lists structural controls that are the property of the City of Sparks and are maintained by City staff.

Table A – Industrial / Commercial Structural Controls

A1 Autobody	2050 Glendale Ave.	2000 G Jensen JPHV
American Ready Mix	1475 E. Greg Street	5000 G Vortechnics
Bonanza Produce	1925 Freeport Blvd.	500 G Jensen
Costco Wholesale #646	4810 Galleria Parkway	900 G & 450 G, STC Stormceptors, 1000 G Jensen
Cummins	150 Glendale Ave.	250 G Jensen
D'Andrea Marketplace	2800 Vista & Baring	5000 G Baysaver
Eastland Hills Villas	1855 Baring Way	2-4800 G Jensen
Flyers Energy	655 South Stanford Way	5000 G & 2000 G Jensen JPHVII's
Home Depot USA Inc.	4755 Galleria Parkway	2-5000 G & 2000 G Jensen JPHVII's
Inter-State Oil	50 Lillard Drive	1000 G Jensen
Kimball Equipment Co.	635 E. Nugget Ave.	5000 G Jensen JPHV
Los Altos Crossing	5318 Sparks Blvd.	2-900 G STC Stormceptors
MorningStar	2360 Wingfield Hills Dr.	450 G Stormceptor 450i
Nevada DOT	310 Galletti Way	1-2760 G Contec CDS3040
Parts Unlimited	45 Isidore Ct. (Washoe County)	900 G & 450 G STC Stormceptors
Peterbilt (Larkin)	2272 Larkin Circle	1934 G VortSentry HS 72
Pioneer Hills West (Donahue Schriber)	2473 Wingfield Hills Rd.	2-300 G VortSentry HS 48, 1025 G VortSentry HS 72, 2440 G VortSentry HS 96
Primestor Development	2135 Oddie Blvd.	7200 G Stormceptor
Pick-N-Pull	2205 Larkin Circle	2-750 G Jensen clarifiers
RTC	1421 Victorian Ave.	2500 G JPHVII, Rainstore 3

Table A continued – Industrial / Commercial Structural Controls

Kohl’s	5035 Pyramid Lake Rd.	11000 G STC Stormceptor
Roadway Express (YRC Inc.)	1650 Kleppe Lane	9000 G Vortech
Safeway, Inc.	2808 Vista Blvd.	5000 G Baysaver
Silver State International	2255 Larkin Circle	1500 G & 2000 G Jensen JPHVII’s
Sims Metal Management	1655 Franklin Way	470 G Stormceptor 450i
Sonic Burger	4995 Galleria Parkway	450 G STC Stormceptor
Swift Transportation Co.	1455 Hulda Way	2500 G Jensen clarifier
Spanish Springs Medical	5070 Ion Drive	2-900 G STC Stormceptors
Sparks Auto Wrecking	2245 Larkin Circle	2000 G Jensen JPHV
Sparks Crossing (RCG Ventures)	Galleria & Los Altos	4800 G & 900 G STC Stormceptors
Sparks Galleria	171 Disc Drive & Galleria Parkway	2400 G, 900 G, 1000 G, 750 G, JPHVII’s
TEC Equipment	1955 E. Greg Street	640 G VortSentry HS 48
USF Reddaway (Industrial)	1875 Industrial Way	5000 G Vortec
Vista Business Park Owners	511 Vista Blvd.	808 G Aquashield AS#5
Walgreen Co. (Los Altos)	292 Los Altos Parkway	900 G STC Stormceptor
Walgreen Co. (Vista)	3000 Vista Blvd.	2000 G Baysaver
Wal-Mart Supercenter #3729	5065 Pyramid Lake Rd.	11000 G Stormceptor
Western Metals Recycling	1325 Hymer Ave.	1500 G Jensen

Table B – City of Sparks Structural Controls

Area 13 SD sumps	Whitewood, Valencia, Figoni	15-500 G
Fisherman’s Park	Galletti Way	3000 G Baysaver
Legends North	Legends	10000 G Vortech
Legends South	Legends	7500 G Vortech
Peoples Ditch & NTD	Kleppe Lane & I-80 (tp07) - Removed in 2017	
Sparks Marina	Harbour Cove Drive	2-3000 G Baysavers
Sparks Marina NE corner	E. Lincoln	Concrete diversion structure
Sparks Blvd.	Sparks Blvd.	7-650 Vortsenty
Bergin Way	Bergin Way	7000 Vortech

Washoe County Post Construction Storm Water Quality Projects			
Job Name and Address	**Date**	**Lot Size**	**Feature**
*	n/a	n/a	n/a

*There were no commercial or industrial projects which constructed Post Construction Storm Water Quality features during the reporting period of July 1, 2020 through June 30, 2021

Effectiveness Assessment FY2021

SWMP Effectiveness Evaluation

The SWPCC performs a program effectiveness evaluation and BMP assessment each year. This assessment is used to reflect on BMPs which may be removed or replaced and where improvements can be made in implementing the program.

In past years comments to the annual report from the Nevada Division of Environmental Protection have directed the Stormwater Permit Coordinating Committee to evaluate the annual effectiveness assessment. The committee evaluated the methodology of the California Stormwater Quality Association (CASQA) rank outcome evaluation and made modifications. The CASQA system effectively identified the target outcomes of each program Best Management Practice (BMP) but did not reflect the outcome. In FY1718 the SWPCC modified the ranking and has now categorized the BMPs to the CASQA outcome classification and implemented an implementation rating to better describe the effectiveness of the SWMP. The goal of implementation rating for BMPs is to reflect the level of engagement and assessment for possible improvement.

SWMP Status of Achievement of Measurable Goals

SWMP activities listed in the following program effectiveness assessment are indicated as deadline or ongoing program activities by a clock or arrow symbol respectively. Those bmp activities with deadlines have been completed this permit cycle.

Items included this year:

- Short Term (FY2020-FY2021) Effectiveness Assessment

Truckee Meadows Storm Water Management Program Work Plan Effectiveness Assessment

CASQA Classifications: 1 = Documenting; 2= Awareness;
3= Behavior; 4= Sources; 5= Runoff Quality;
6= Receiving Water Quality

Element: Public Outreach and Education

		Milestone or Accomplishment				Implementation Ranking:			
BMP#	Title or Measurable Goal	2005 Permit Reference	CASQA BMP Classification	Ongoing or deadline	Notes	SWPCC	COR	COS	Washoe
EDU-01, Public Outreach and Education Typical Events		IV.D.2							
EDU-1.1	Coordinate and attend (booth or table) at least one community event per year		2	⇔	Hosted 2 stenciling events.	9			
EDU-1.2	Host at least two BMP related workshops per year		3	⇔	1 BMP-specific Workshop held in spring. In addition, 1 LID workshop held in spring, 2 HOA stormwater infrastructure maintenance trainings held in fall, & 1 KTMB Teacher Training on Watersheds held in fall.	9			
EDU-1.4	Maintain the existing web tools with updated content and current information		2	⇔	Updated City's and SWPCC's website, including adding new SWPCC Logo to webpages.	9			
EDU-1.5	Provide support to educators by maintaining and promoting tools for their use on www.tmstormwater.com and in coordination with the Truckee Meadows Water Authority (TMWA)		2	⇔	Tools are maintained and posted on new website	9			
EDU-02, Public Outreach and Education Materials		IV.D.							
EDU-2.1	Distribute at least 100 storm water fact sheets per year		2	⇔	Designed new Prevent Local Stromwater Pollution pamphlet (English and Spanish), to be distributed at agency offices, libraries, non-profits just after close of FY2021. PDFs available on website.	9			
EDU-2.2	Implement educational bill inserts for regional distribution, explaining storm water pollution, prevention and tips		2	⇔	Designed new Prevent Local Stromwater Pollution pamphlet, which was parsed and summarized in a monthly TMWA bill newsletter, to be distributed to all TMWA customers just after close of FY2021.	9			
EDU-2.3	Digitize storm water fact sheets and post on the www.tmstormwater.com website for public access		2	⇔	Completed.	9			
EDU-2.4	Participate in existing public celebrations with booth or other SWPCC presence (1/year), using banners and Enviroscape diorama		2	⇔	Canceled due to covid19	8			
EDU-03, Storm Drain Labeling Program		IV.D.3 & 4							
EDU-3.1	Develop a list of volunteers to use in future efforts		3	⇔	Coordination with KTMB to develop volunteer lists	9			
EDU-3.2	Label 75 storm drains each year through volunteer efforts		3	⇔	Working on a neighborhood focused effort. 109 during spring 2021. Hundreds of flyers handed out.	9			
EDU-3.3	Continue mapping of storm drain facilities through the Truckee Meadows region over the current permit cycle		4	⇔	Yearly effort coordinated with KTMB River Clean Up Day	9			
EDU-04, Partnerships and Affiliations		IV.D.5							
EDU-4.1	Maintain existing partnerships and affiliations		3	⇔	Maintained partnerships. Working to expand partners including One Truckee River, Urban Ecology Solutions, Integrated Source Water Protection, Resiliant Reno	9			
EDU-4.2	Collaborate with at least five partners per year		3	⇔	Co-permittees, NDOT, KTMB, Truckee Meadows Parks Foundation, One Truckee River, etc.; working to expand	9			
EDU-05, Regional Program Website www.tmstormwater.com		IV.D.3 & 4							
EDU-5.1	Post 100% of approved SWMP related documents		1	⇔	Posted	9			
EDU-5.2	List all (100%) BMP training workshops		2	⇔	Workshops advertised on website	9			
EDU-5.3	Within www.tmstormwater.com, create a Household Hazardous Waste page for safe disposal (see IDD-05). Reference other sites with hours of operation for hazardous waste management assistance		2	⇔	Provided links to EPA resources	9			
Symbol Key: ⇔ Ongoing Activity; ⏲ Deliverable or SWMP Milestone									

n/a = not applicable

Implementation Ranking: 1-3 = Not Fully Implemented, Requires Improvement
4-6 = Implemented, Actively Improving
7-9 = Complete, Little Improvement Needed

Truckee Meadows Storm Water Management Program Work Plan Effectiveness Assessment

CASQA Classifications: 1 = Documenting; 2= Awareness;
3= Behavior; 4= Sources; 5= Runoff Quality;
6= Receiving Water Quality

Element: Public Outreach and Education

			Milestone or Accomplishment			Implementation Ranking:			
BMP#	Title or Measurable Goal	2005 Permit Reference	CASQA BMP Classification	Ongoing or deadline	Notes	SWPCC	COR	COS	Washoe
EDU-06, Truckee River Watershed Map Tool		IV.D.3 & 4							
EDU-6.1	Distribute 100 website postcards to the community at public education days, with the website and a description of the tool		3	⇔	Designed new Prevent Local Stromwater Pollution pamphlet, containing link to website, to be distributed at agency offices, libraries, non-profits just after close of FY2021. PDFs available on website. Reevaluating how best to incorporate the map tool.	7			
EDU-6.2	Support teachers using this website by providing them with curriculum ideas for meeting science standards (coordinate with Washoe County Science Coordinator annually)		2	⇔	No contact made with Washoe County School Dist. Did maintain tool availability for students.	3			
EDU-6.3	Provide two updates per year to the content in the Map Tool		1	⇔	Did not have any updates to the Map Tool this year. Map Tool needs to be updated and reposted to website.	6			
EDU-07, Demonstration Projects - Typical		IV.D.3 & 4							
EDU-7.1	Maintain project descriptions and summaries / results on either www.tmstormwater.com or www.truckeeriverinfo.org		2	⇔	No recent demonstration projects have been implemented, to post online.	6			
EDU-7.2	Make an annual presentation of the results of a demonstration project and reference these projects in training sessions on storm water and BMPs, as they correlate to improving storm water, as well as sharing lessons learned		3	⇔	Presentation at NWEA summer conference	9			
EDU-08, Workshop and Training Seminars		IV.D.5							
EDU-8.1	Conduct two training sessions per fiscal year		3	⇔	4 workshops - BMPs/SWPPP, LID, HOA's	8			
EDU-8.2	Provide materials and presentations for use throughout the community in trainings for storm water and watershed protection		3	⇔	Provided on the website and at workshops	9			

Symbol Key: ⇔ Ongoing Activity; ◷ Deliverable or SWMP Milestone

Implementation Ranking: 1-3 = Not Fully Implemented, Requires Improvement
4-6 = Implemented, Actively Improving
7-9 = Complete, Little Improvement Needed

n/a = not applicable

Element: Construction Site Discharge Program

		Milestone or Accomplishment				Implementation Ranking:			
BMP#	Title or Measurable Goal	2005 Permit Reference	CASQA BMP Classification	Ongoing or deadline	Notes	SPCC	COR	COS	Washoe
CONST-01, Construction Site Inspections		IV.J.							
CONST-1.1	Inspect all (100%) construction sites at least once		6	⇔	Completed		8	9	5
CONST-1.2	Record and follow up on all (100%) observed deficiencies		6	⇔	All deficiencies addressed through corrective action or referral		9	9	8
CONST-02, Construction Site BMP Training		IV.J.4.d							
CONST-2.1	Conduct at least two Construction Site Storm Water BMP Training Workshops each year		3	⇔	Only 1 conducted. Fall 2020 cancelled due to Covid	9			
CONST-2.3	Disseminate Nevada Construction BMP field guides to all attendees		3	⇔	Completed	9			
CONST-2.4	Provide training announcements on www.tmstormwater.com, and through local industry newsletters		2	⇔	Completed	9			
CONST-03, Construction Site BMP Handbooks		IVJ.							
CONST-3.1	Make the handbooks available to site development and redevelopment projects within the Truckee Meadows MS4 permit area		2	⇔	Digital or by request	9			
CONST-3.2	Meet the schedule for updating the Nevada BMP Field Guide and Construction Site BMP handbook (both due for update June 2013)		2	🕒	Completed	9			

Symbol Key: ⇔ Ongoing Activity; 🕒 Deliverable or SWMP Milestone

Element: Intergovernmental Coordination

		Milestone or Accomplishment				Implementation Ranking:			
BMP#	Title or Measurable Goal	2005 Permit Reference	CASQA BMP Classification	Ongoing or deadline	Notes	SPCC	COR	COS	Washoe
GOV-01, Intergovernmental Coordination		IV.K.							
GOV-1.1	Administer the Storm Water program per Interlocal Agreement (2004) and in accordance with the permit		3	⇔	Ongoing	9			
GOV-1.2	Continually maintain the Interlocal Agreement (no lapse)		3	⇔	Ongoing	9			
GOV-1.3	Schedule regular public-noticed SWPCC meetings, at least bimonthly		3	⇔	Ongoing	9			
GOV-1.4	Participate in Coordinated Monitoring Program activities on the Truckee River watershed		3	⇔	Ongoing	9			
GOV-1.5	Post and provide maintenance for the CMP document on the Truckee River Information Gateway (TRIG) website at www.truckeeriverinfo.org		2	⇔	Ongoing and continuing to seek out new data contributors and collaborators	9			
GOV-02, Municipal Codes and Ordinances		III.							
GOV-2.1	Continually maintain adequate legal authority to enforce and support the provisions in the MS4 permit (goal: no code deficiencies observed or reported annually)		3	⇔	Ongoing	9			
GOV-2.2	Review agency design manuals, codes and ordinances, and update as needed, to support Low Impact Development and other storm water control techniques		3	⇔	Ongoing: updated ordinances for LID and SC guidance this FY.	9			
GOV-03, Complaint Hotline		IV.G.1.f							
GOV-3.1	Respond to 100% of the calls received		4	⇔	Reno Direct	9			
GOV-3.2	Document calls received		1	⇔	Reno Direct/EC	9			
GOV-04, Truckee Meadows Regional Drainage Manual		III.							
GOV-4.1	Record the number of manuals distributed and workshops and training events		1	⇔	This is available online and not distributed in paper form	9			
GOV-4.2	Provide assistance with periodic updates of the Drainage Manual		1	⇔	Ongoing	9			
GOV-05, Code Enforcement		III., IV.G.1							
GOV-5.1	Educate contractors, developers and builders, convey requirements of storm water related expectations and obtain voluntary compliance to reduce or prevent the need for enforcement actions (Discuss code and code enforcement at two outreach events per year)		3	⇔	Construction Site BMP trainings annually. 1 held due to covid19	9			
GOV-5.2	Record and document enforcement actions within the MS4 permit area in the Annual Report to NDEP		1	⇔	Ongoing.	9			
GOV-06, Plan Review		III.							
GOV-6.1	Record applicable building and development plans with respect to storm water quality management practices, requirements and waterway protection measures with the MS4 permit area		4	⇔	Ongoing: all three agencies issue a Stormwater Permit above and beyond that of NDEP.	9			

Symbol Key: ⇔ Ongoing Activity; 🕙 Deliverable or SWMP Milestone

Element: Illicit Discharge Detection and Elimination

		Milestone or Accomplishment				Implementation Ranking:			
BMP#	Title or Measurable Goal	2005 Permit Reference	CASQA BMP Classification	Ongoing or deadline	Notes	SPCC	COR	COS	Washoe
IDDE-01, Illicit Discharge Report and Response Database		IV.G.							
IDDE-1.1	Maintain individual databases for records management of IDDE		1	⇔			9	9	n/a
IDDE-1.2	Manage and mitigate storm water runoff quality through the reduction of illicit discharges in a timely manner (data entry within 5 working days of an event)		6	⇔			9	9	n/a
IDDE-1.3	Investigate feasibility of developing a collective process whereby spill response and records management are consistent and able to be merged.		3	⇔	Feasibility has been discussed and deemed not feasible - Each municipality uses their own software and data management systems.	7			
IDDE-02, Spill Control and Prevention									
IDDE-2.1	Inspect 100% of commercial and industrial facilities at least once a year		6	⇔			9	9	n/a
IDDE-2.2	Record and follow up on all reportable spills		5	⇔			9	9	n/a
IDDE-03, IDDE Corrective Action and Follow-Up Protocols		IV.G.1							
IDDE-3.1	Investigate 100% of reported/discovered instances of illicit discharges within the MS4 permit area in a timely manner		6	⇔			9	9	9
IDDE-3.2	Clean-up and mitigate 100% of known illicit discharges		6	⇔			9	9	9
IDDE-3.3	Follow up on 100% of known illicit discharge actions and clean-up mandates		6	⇔			9	9	9
IDDE-04, Sanitary and Storm Sewer Inspection Program		IV.G.1.h							
IDDE-4.1	Increase awareness among staff of the significance of sanitary/storm system interconnections and illicit discharges (100% of inspection staff trained)		4	⇔			9	8	8
IDDE-4.2	Record and report the length and location of collection system inspected annually (100% of the inspections recorded)		2	⇔			9	8	7
IDDE-4.3	Correct or list 100% of identified field issues on future CIP lists		3	⇔			9	9	9
IDDE-05, Household Hazardous Waste Program		IV.G.							
IDDE-5.1	Support local programs focused on educating residents about household products that are environmentally hazardous and the disposal alternatives available in the Truckee Meadows (distribute printed materials at one community event per year, minimum)		2	⇔	Referal to KTMB.org on the website and in future years share community postings	6			
IDDE-5.2	Promote, publicize or assist in existing community collection events		2	⇔		5			
IDDE-5.3	Create a link on www.tmstormwater.com for residential hazardous waste management, identifying and linking to local waste collection events, programs or companies		2	⇔		9			

Symbol Key: ⇔ Ongoing Activity; ⏲ Deliverable or SWMP Milestone

Element: Industrial Facility Monitoring and Control

		Milestone or Accomplishment				Implementation Ranking:			
BMP#	Title or Measurable Goal	2005 Permit Reference	CASQA BMP Classification	Ongoing or deadline	Notes	SPCC	COR	COS	Washoe
IND-01, Commercial and Industrial Storm Water Inspections		IV.H.1							
IND-1.1	Inspect all permitted sites at least once a year		5	⇔	Goal met		9	9	n/a
IND-1.2	Respond to and follow up on 100% complaints and/or observed deficiencies		6	⇔	Goal met		9	9	n/a
IND-02, Commercial and Industrial Storm Water Outreach and Education		IV.H							
IND-2.1	Conduct at least one commercial and industrial outreach and education training session each year		3	⇔	Training sessions are done during annual inspections for each business license.		8	8	
IND-03, Housekeeping - Commercial/Industrial		IV.H.							
IND-3.1	Promote good housekeeping practices through inspection of permitted facilities (100% of facilities inspected)		4	⇔	Goal met		9	9	n/a
IND-3.2	Respond to 100% of substantiated reports and complaints relating to poor housekeeping practices that have the potential to enter the waterways of the MS4 permit area		6	⇔	Goal met		9	9	n/a
IND-04, Commercial/Industrial Facility Inventory		IV.H.1.b							
IND-4.1	Maintain existing inventory of industrial facilities		2	⇔	Goal met		9	9	n/a
IND-4.2	Annually verify that no industries listed in Section IV.H.1 are in operation within the MS4 permit area		2	⇔	Goal met		9	9	n/a
IND-05, Industrial and Commercial Storm Water BMP Handbook		IV.H.							
IND-5.1	Distribute the industrial and commercial educational video and manual to new commercial and industrial facilities within the MS4 permit area		2	⇔	New fliers and links to updated manual		8	8	n/a
IND-5.2	Assess the need to update the Industrial and Commercial Storm Water BMP Handbook		1	⇔	Update completed	9			
IND-5.3	If necessary, develop a schedule for updating the Handbook		1	⇔	Goal met	9			

Symbol Key: ⇔ Ongoing Activity; ⏲ Deliverable or SWMP Milestone

CASQA Classifications: 1 = Documenting; 2= Awareness;
3= Behavior; 4= Sources; 5= Runoff Quality;
6= Receiving Water Quality

Element: MS4 Collective Municipal and SWPCC Activities

		Milestone or Accomplishment				Implementation Ranking:			
BMP#	Title or Measurable Goal	2005 Permit Reference	CASQA BMP Classification	Ongoing or deadline	Notes	SPCC	COR	COS	Washoe
MS4-01, Outfall, Channel and Tributary Inspections and Assessments		IV.G.1.b, c, & d							
MS4-1.1	Respond to 100% of all illicit discharges within the MS4 permit area		6	⇔	Goal met	9			
MS4-1.2	Record the channels, drains and tributaries inspected (100% of the inspections recorded, analyzed and reported)		1	⇔	Goal met	9			
MS4-1.3	100% of field issues identified are reported, corrected or rectified		6	⇔	Goal met	9			
MS4-1.4	Perform tributary assessment annually (per schedule)		2	⇔	Goal met	9			
MS4-02, MS4 Mapping		IV.B.1							
MS4-2.1	Maintain and update maps showing boundaries of the permit area, major storm water infrastructure and land use		2	⇔	Goal met	6			
MS4-2.2	Examine the feasibility of a common mapping format for use by all entities showing the location of permit defined major outfalls		1		Possible layer in ISWP tool hosted by the TMRPA	9			
MS4-03, Monitoring - Dry Weather		V.A.1							
MS4-3.1	Conduct regular dry weather monitoring		4	⇔	Goal met	9			
MS4-3.2	Conduct storm event monitoring in the dry season		4	⇔	Goal met	9			
MS4-3.3	Review and report 100% of analytical results, noting shifts or changes (i.e., flags)		3	⇔	Goal met	9			
MS4-3.4	Review and revise the SAP annually, as needed		3	⇔	Goal met	9			
MS4-04, MS4 Monitoring Wet Weather		V.A.							
MS4-4.1	Conduct regular sampling in wet season as described in the current SAP		2	⇔	Goal met	9			
MS4-4.2	Conduct storm event monitoring in wet season as described in the current SAP		2	⇔	Goal met	9			
MS4-4.3	Review and report 100% of analytical results, noting shifts or changes (i.e., flags)		3	⇔	Goal met	9			
MS4-4.4	Review and revise the SAP annually, as needed		3	⇔	Goal met	9			
MS4-4.5	Take action or report on 100% of field issues identified to SWPCC		5	⇔	Goal met	9			
MS4-05, Identification of New Storm Water BMPs		IV.A.5 & 7							
MS4-5.1	Discuss new BMPs in committee at least once each year		2	⇔	CASQA highlights	9			
MS4-5.2	Compare another MS4's BMPs with those used in the Truckee Meadows once each year		2	⇔	CASQA highlights	9			
MS4-5.3	Search at least three websites each year for new BMPs or new maintenance guidance on existing BMPs		2	⇔	CASQA highlights	9			
MS4-5.4	Talk to the co-permittees' maintenance divisions once each year to solicit input on BMP related issues		3	⇔	CASQA highlights	9			
MS4-06, SWMP Effectiveness Assessment		II.B.2.i, & V.C.3.b							
MS4-6.1	Review the CASQA methodology and define the approach to be used		2	⇔	Completed	9			
Symbol Key: ⇔ Ongoing Activity; ⏲ Deliverable or SWMP Milestone									

Implementation Ranking: 1-3 = Not Fully Implemented, Requires Improvement
4-6 = Implemented, Actively Improving
7-9 = Complete, Little Improvement Needed

n/a= not applicable

Element: MS4 Collective Municipal and SWPCC Activities

		Milestone or Accomplishment				Implementation Ranking:			
BMP#	Title or Measurable Goal	2005 Permit Reference	CASQA BMP Classification	Ongoing or deadline	Notes	SPCC	COR	COS	Washoe
MS4-6.2	Review existing BMP measurable goals with respect to their ability to support the desired outcome level		3	⇔	Goal met	9			
MS4-6.3	Perform annual effectiveness assessments		2	⇔	Goal met	9			
MS4-6.4	Include effectiveness assessment outcomes in the Annual Report		2		Goal met	9			
MS4-07, SWMP Effect on Drinking Water Quality		IV.F.5							
MS4-7.1	Hold one annual meeting with local water purveyors to discuss storm water impacts on surface water and groundwater quality		2	⇔	Goal met	9			
MS4-7.2	Discuss in committee the utility of modifying the annual monitoring plan to include considerations related to drinking water		2	⇔	Goal met	9			
MS4-7.3	Discuss in committee the utility of developing a GIS based tool for land use planning and permit approval based on relative risk for contamination of drinking water supplies, both surface water and groundwater		2	⇔	Goal met	9			
MS4-08, Impaired Waters		II.							
MS4-8.1	For each impairment, evaluate whether storm water discharges from any party of the MS4 permit area contribute directly or indirectly to the listing of a water body on the 303(d) list (goal: demonstrate yearly progress)		3	⇔	Goal met	9			
MS4-8.2	In the event that the data show that storm water runoff aggravates the 303(d) listing, identify BMPs that might be practicable to be implemented to mitigate the listing conditions (goals: demonstrate yearly progress)		3		Goal met	9			
MS4-09, Truckee Meadows Watershed Protection Manual		IV.							
MS4-9.1	Record number of manuals distributed at workshops and training events		1	⇔	This distribution of information happens online.	9			
MS4-9.2	Provide assistance with periodic updates of the Watershed Protection Manual		2	⇔	Managed in Tributary Assessments.	9			

Symbol Key: ⇔ Ongoing Activity; 🕙 Deliverable or SWMP Milestone

Element: Municipal Operations

		Milestone or Accomplishment				Implementation Ranking:			
BMP#	Title or Measurable Goal	2005 Permit Reference	CASQA BMP Classification	Ongoing or deadline	Notes	SPCC	COR	COS	Washoe
MUNI-01, Storm Drain and Channel Maintenance		IV.E.1.e							
MUNI-1.1	Maintain and inspect major storm water inlets and conveyance channels at least once a year		4	⇔			9	9	7
MUNI-1.2	Report for action 100% of observed structural definitions and evidence of illicit discharges		4	⇔			9	8	8
MUNI-1.3	Record the area and location of the drains and channels inspected (100% recordkeeping)		2	⇔			9	9	9
MUNI-1.4	100% of field issues identified are corrected or prioritized on future CIP lists		5	⇔			9	9	8
MUNI-02, Street Sweeping		IV.E.1.b							
MUNI-2.1	Sweep the MS4 permit area monthly		6	⇔	Monthly Schedule online for residents		9	9	8
MUNI-2.2	Perform leaf sweeping when necessary		6	⇔	October through November		9	9	7
MUNI-2.3	Sweep up all sand within 4 days following a storm event (in which sand and salt was applied)		6	⇔	Required by stormwater and regional air program		9	9	9
MUNI-03, Maintenance of City and County Owned Facilities		IV.E.1.e							
MUNI-3.1	Maintain and inspect 100% of City/County owned structural storm water BMPs and facilities annually		6	⇔			9	9	8
MUNI-3.2	Report for action 100% of observed deficiencies and evidence of illicit discharge		3	⇔			9	9	8
MUNI-3.3	Record the area, location and type of maintenance activity for City/County owned structural storm water BMPs (100% recordkeeping)		2	⇔			7	8	8
MUNI-3.4	Correct of list on future CIP lists, 100% of field issues identified		2	⇔			7	7	8
MUNI-3.5	Submit compilation of maintenance activities for inclusion in the Annual Report. This may warrant coordination between departments within each entity to consolidate a summary of activities in a consistent format		3	⇔	Summarized in O&M templates. Activity logs maintained by departments.		7	7	7
MUNI-04, Pesticide, Herbicide and Fertilizer Application Management - Internal		IV.E.1.d							
MUNI-4.1	Record types of chemicals used, the amount, application method, location, date and purpose		3	⇔			7	7	7
MUNI-4.4	Establish a consistent reporting format intra-departmentally and across the jurisdictions		3				8	8	8
MUNI-05, Staff Training - Operations and Maintenance - Internal		IV.E.1.a							
MUNI-5.1	Coordinate and provide internal O&M staff storm water related training (100% of O&M staff trained or informed) annually		3	⇔	No class setting due to covid19	7			
MUNI-5.2	Provide refresher training courses in specific areas of interest of storm water protection as they arise		2	⇔		7			

Symbol Key: ⇔ Ongoing Activity; ⏲ Deliverable or SWMP Milestone

Element: Post Construction for New Development and Significant Redevelopment

		Milestone or Accomplishment				Implementation Ranking:			
BMP#	Title or Measurable Goal	2005 Permit Reference	CASQA BMP Classification	Ongoing or deadline	Notes	SPCC	COR	COS	Washoe
POST-01, Land Development		IV.F							
POST-1.1	Review (100%) land development project plans for new or significant redevelopment that disturb areas greater that one acre (or <1 acre if part of a larger common development) to ensure that storm water runoff is treated or mitigated to the MEP		4	⇔			6	8	8
POST-1.2	Revise development codes as needed to support the Post Construction Storm Water program		4	⇔	Reno Title 18 update. No improvements identified.		9	9	9
POST-1.3	Define the approach and timeline for developing a database of post-construction BMPs controls		2	⇔	Currently maintaining lists.		5	6	ILA
POST-02, Truckee Meadows Structural Controls Design Manual		IVJ.4.d							
POST-2.1	Maintain the manual on the website with hard copies available if desired		3	⇔		9			
POST-2.2	Update the Structural Controls Design Manual in accordance with the planned schedule		3	⇔		9			
POST-2.3	Post updates on the website and publish amendments at a minimum of 5 years		3	⇔		9			
POST-03, Truckee Meadows Low Impact Development Handbook		IV.f.3.a.ii							
POST-3.1	Distribute the LID handbook (electronically) within the Truckee Meadows MS4 permit area		3	⇔		9			
POST-3.2	Develop a schedule for updating the LID handbook		2	⇔	Scheduling the update will be evaluated annually. Update scheduled for FY2223.	9			
POST-04, Truckee Meadows Standard Design Guidance Worksheets		IV.F.4							
POST-4.1	Maintain the worksheets on the website		3	⇔	Done	9			
POST-4.2	Update the Design Guidance Worksheet in accordance with the planned schedule		2	⇔		9			
POST-4.3	Post updates on the website and publish amendments as necessary		3	⇔		9			
POST-05, Future Regional Flood Projects		IV.F.3.a.iv							
POST-5.1	Hold one annual meeting with the flood staff from the Cities of Reno and Sparks, Washoe County and the TMWRF		2	⇔	The agencies participate in regional flood management and planning activites	1			
POST-5.2	Discuss in committee the necessity of developing a more formal process (e.g., a checklist, or additional BMPs in the Truckee Meadows Drainage manual) annually		2	⇔		1			

Symbol Key: ⇔ Ongoing Activity; ⏲ Deliverable or SWMP Milestone

BMP Review FY2021

The SWMP BMP assessment is performed during the program effectiveness assessment annually. During the assessment for the FY2021 no BMPs were identified as needing to be replaced, modified, or removed.

Throughout the year new BMP approaches, technologies and devices are discussed for possible future implementation. Specific BMPs may be considered for use on a case by case basis if not already recognized in the regional guidance.

The Truckee River and tributaries within the MS4 continue to be listed on the current State of Nevada 303(d) List of Impaired Waters as listed in Table 1-1 of the Water Quality Monitoring Report. The BMPs adopted under the Stormwater Management Program are expected to have a positive impact on water quality. It is expected that after the issuance of a permit renewal the Stormwater Management Program will receive an update which will result in a more in-depth review of progress toward achieving water quality goals (permit item II.B.3).

Monitoring Summary FY2021

The Truckee Meadows Stormwater Program utilizes dry weather and wet weather sampling at sites distributed across urban outfalls and tributary locations. Data assessed each year is used to inform changes to the Sampling and Analysis Plan and identify sources of pollution.

During the reporting period Balance Hydrologic implemented the 2020 Sampling and Analysis Plan for FY2021. The monitoring program continues to implement a tributary approach to assess tributary and outfall contributions. Enclosed in Appendix A is the 2021 Fiscal Year Stormwater Quality Monitoring Report.

The reporting period had far less than average annual precipitation which resulted in fewer sampling opportunities, however, the plan was modified so that all wet weather samples were collected by increasing the number of grab samples through the year. The program findings and annual precipitation summary is presented in the Stormwater Quality Monitoring report.

This year, Balance Hydrologic performed water quality trends analysis based on past six years of annual reporting. If funds allow, in FY 2122, they will replace water quality monitoring equipment, and make an effort to condense the formatting of the annual report so it’s more digestible.

Monitoring activity performed in the reporting period:

- Preparation and submission of the 2021 Sampling and Analysis Plan letter
- Minimum two wet weather monitoring
- Two dry weather monitoring events
- Preparation and submission of the 2021 Fiscal Year Stormwater Quality Monitoring Report
- Trends Analysis of Annual Stormwater Quality Monitoring

Budget Summaries FY2021

The budgets tracked for the implementation of the regional stormwater program include annual budget for the SWPCC. The agencies' expenditures related to stormwater are also tracked across several departments and gathered annually via the financial questionnaire.

During the reporting period there was no changes made to the financial reporting methods. Covid did not impact available funds however some expenditures for contracts were extended into fiscal year 2021.

Annual expenditures for the agencies vary each reporting period but are expected to be within the historical range in the coming year.

Agency Expenditure Summary:

Agency/Fiscal Year	**FY1819**	**FY1920**	**FY2021**
City of Reno	**$3,626,893**	**$3,233,056.04**	**Pending**
City of Sparks	**$468,377**	**$461,945.28**	**$476,112.13**
Washoe County	**$1,125,181**	**$2,163,917**	**$921,885**
SWPCC Budget WRWC Fund limit NDOT fund limit SWPCC Expenditures	$300,219 $262,500 $60,000 **$260,636**	$310,827 $262,500 $60,000 **$238,913**	$311,097 $262,500 $60,000 **$248,337**
Total Expenditures	**$5,481,087**	**$6,097,831.32**	**Pending**

Expected Stormwater Activities FY2122

During the FY2122 the SWPCC is expected to resume watershed assessments of the tributaries, perform water quality trends analysis based on past six years of annual reporting, and replace water quality monitoring equipment, if funds allow.

Agency activities are expected to stay within historic expenditure ranges supporting MS4 operations and maintenance activities.

TMSWPCC Storm Water Management Budget Fiscal Year 2020-2021
4th Quarter - End Fiscal Year 2020-2021

Category	Budget Items	Program Budget	WRWC Contribution	NDOT Participation	Total Billed WRWC	Total Billed NDOT	Total Budget Remaining	% Spent	% Remain	Notes
Stormwater Quality	USGS	$ 12,350.00	$ 10,806.25	$ 1,543.75	$ 10,806.25	$ 1,543.75	$ -	100%	0%	
	Field Supplies Equipment misc	$ 5,000.00	$ 5,000.00		$ -		$ 5,000.00	0%	100%	
	Balance Hydro	$ 162,747.20	$ 122,060.40	$ 40,686.80	$ 98,431.69	$ 32,810.56	$ 31,504.95	81%	19%	
	Cardno Ind BMP hand	$ 23,465.50	$ 17,599.13	$ 5,866.38	$ 11,501.91	$ 3,833.97	$ 8,129.62	65%	35%	
	Misc. Stormwater Support	$ 15,479.36	$ 15,479.36				$ 15,479.36	0%	100%	
	Subtotal	*$ 219,042.06*	*$ 170,945.13*	$ 48,096.93	$ 120,739.85	$ 38,188.28	$ 60,113.93	73%	27%	
Outreach	KTMB	$ 2,000.00	$ 1,500.00	$ 500.00	$ -	$ -	$ 2,000.00	0%	100%	
	Cardno Training	$ 34,904.68	$ 34,904.68		$ 31,195.25		$ 3,709.43	89%	11%	
	SWAG		$ -				$ -			
	TMPF	$ 2,795.01	$ 2,795.01		$ 2,795.01		$ -	100%	0%	
	Misc	$ 1,079.18	$ 1,079.18		$ 1,079.18		$ -	100%	0%	
	Subtotal	*$ 40,778.87*	*$ 40,278.87*	*$ 500.00*	*$ 35,069.44*	*$ -*	*$ 5,709.43*	86%	14%	
Administration and Support	NDEP	$ 1,276.00	$ 1,276.00		$ 1,276.00		$ -	100%	0%	
	City of Reno/Staffing	$ 50,000.00	$ 50,000.00		$ 53,063.65		$ (3,063.65)	106%	-6%	
	Subtotal	$ 51,276.00	$ 51,276.00	$ -	$ 54,339.65	$ -	$ (3,063.65)	106%	-6%	
Total	Totals	$ 311,097	$ 262,500	$ 48,597	$ 210,149	$ 38,188	$ 62,760			Total Budget/Billed WRWC/NDOT
Check		$ 322,500	$ 262,500	$ 60,000	$ 210,149	$ 38,188	$ 62,760			Totals check
		OK	OK	OK	OK	OK				Over budget check
					OK	OK				Invoice Tab Check

Percent Total Budget Spent		**80%**
Percent WRWC Budget Spent		**80%**
Percent NDOT Budget Spent		**79%**
Unallocated Budget WRWC	**$**	**52,351.00**
Total Budget Remaining	**$**	**62,760.00**
Total WRWC Budget Remaining	**$**	**52,351.00**
Total NDOT Budget Remaining	**$**	**10,409.00**

Financial Questionnaire: Fiscal Year 2020-2021

Agency-Specific Storm Water Management Program Indirect Costs

Agency name/division: City of Reno	**Indirect Program Costs**
PUBLIC WORKS: MAINTENANCE DIVISION	
Model & Quantity of Street Sweepers replaced during this fy?	$ 880,354.92
Maintenance of street sweepers: time : Broom changing labor	$ 7,551.69
and maintenance expenses, parts, etc. : Broom replacements	$ 36,112.00
How much staff effort is dedicated to Street Sweeping and disposal - this FY? 5.7 FTE	$ 624,823.00
Annual purchasing costs for products to maintain traction on roads in winter:	$ 44,077.54
Time spent maintaining equipment for abrasive application?	
Annual costs for products to maintain safe sidewalks in winter, at agency facilities?	$ 2,000.00
Time spent on BMPs for safer products/storage solutions/application equipment?	$ 2,000.00
Models & quantity of equipment purchased for cleaning catch basins, detention basins, and other related storm water catchments or facilities - this FY?	$ 927,447.84
Time spent removing debris from catch basins, repairing or replacing cb's?	$ 360,569.00
Time spent on maintaining vactors and other storm drain cleaning equipment?	$ 379,217.22
Staff time spent on maintenance of drainage ways for conveyance of storm water: cost:	$ 379,217.00
Repairs to equipment used for drainage way conveyance/clearing/spraying products?	$ 30,893.86
Model & quantity of vactors and other equipment used in CB cleaning, replaced during this FY? 2 Camel 1200 Flush/Vac trucks	$ -
Any repair costs to vactor or other large equipment? Mechanics time.	$ 37,727.22
Annual expenditures on herbicides to eradicate noxious weeds in drainages:	$ 9,894.00
Time spent on training for application / certification of herbicide use:	$ 2,000.00
Time spent installing, maintaining, inspecting public domain BMPs?	40 hrs
Time spent investigating illicit discharges and reporting/ fixing by staff?	100 hrs
Time spent on storm water BMP trainings: FY	100 hrs
Time spent in FY on inspection and resolution of homeless camps?	$ 421,329.81
Time spent in FY on inspection, resolution of other non point source issues?	$ 350.00
Public Works Maintenance Subtotal:	**$ 4,145,565.10**

Financial Questionnaire: Fiscal Year 2020-2021

Agency-Specific Storm Water Management Program Indirect Costs

Agency name/division: City of Reno	**Indirect Program Costs**
PUBLIC WORKS: ENVIRONMENTAL SERVICES and Engineering	
Design engineering time for channel restoration, contract management to reduce NPS pollution	
IDDE program: participation in staff trainings (agency-wide)	$ 7,524.76
IDDE call management: responses and routing, reporting, river walk,	$ 142,959.75
IDDE expenses in emergency cleanup from spills or dumping: FY cost	$ 43,884.02
IDDE program: annual inspections for pretreatment/storm water program	$ 329,477.90
Storm water quality monitoring, ambient program. Time/cost per FY?*	
Storm water quality monitoring, storm event program: Time/cost per FY*	
Water Quality Monitoring equipment and supplies purchased/serviced: FY*	
Mapping of storm drain system, drainage ways, surveying: Time	
Mapping software/hardware/survey hardware/software: cost/FY	Catie Harrison getting CP's costs
Administration, management of interlocal agreements*	
Administration, attendance of SWPCC meetings (members/staff)*	
Administration, coordination/budgeting/agendas/minutes. Time/cost/FY*	
Administration, grant writing and reporting time	
*Total administrative and contract management costs for all SWPCC activities /FY	$ 248,337.00
Engineering review time for LID-SC on plans (incorporated into Community Development Plan Review cost)	$ -
Other permit support and oversight	
Flood and drainage way (misc.)	
Public Works Environmental Services and Engineering Subtotal:	**$ 772,183.43**
PARKS MAINTENANCE	
Time spent tracking fertilizer and pesticide usage, training with Dept. of Ag	$ 771.70
Time spent applying best management practices, curb and gutter cleaning, river cleanup, 10% of fertilizer/leaf removal time	$ 53,907.10
Time spent on storm water BMP trainings: FY	$ 1,245.52
Parks Maintenance Subtotal:	**$ 55,924.32**
COMMUNITY DEVELOPMENT	
Plan reviews, to include post-construction BMP review and other permit support.	$ 455,000.00
Construction program: inspections and enforcement	$ 137,077.00
Construction program: participation in community trainings	$ -
SWPCC meeting attendance/preparation	$ 997.00
Parking ordinance support: FY cost:	
Community Development Subtotal:	**$ 593,074.00**
OTHER SUPPORTING DEPARTMENTS:	
Public Works, Code Enforcement ,and RPD in assistance with homeless camps?	$ 99,290.71
Other Support Subtotal:	**$ 99,290.71**
Grand total storm water management program support:	**$ 5,666,037.56**

Financial Questionnaire: Fiscal Year 2020-21

Agency-Specific Storm Water Management Program Indirect Costs

Agency name/division: CITY OF SPARKS	**Indirect Program Costs**
PUBLIC WORKS: MAINTENANCE DIVISION	
Model & Quantity of Street Sweepers replaced during this fy?	One Elgin Eagle was replaced
Maintenance of street sweepers: time	$56,700.00
and maintenance expenses, parts, etc. :	$49,998.00
How much staff effort is dedicated to Street Sweeping and disposal - this FY?	2 full time employee's
Annual purchasing costs for products to maintain traction on roads in winter:	
Time spent maintaining equipment for abrasive application?	220.4 hours
Annual costs for products to maintain safe sidewalks in winter, at agency facilities?	$36,595
Time spent on BMPs for safer products/storage solutions/application equipment?	
Models & quantity of equipment purchased for cleaning catch basins, detention basins, and other related storm water catchments or facilities - this FY?	$ -
Time spent removing debris from catch basins, repairing or replacing cb's?	1772 hours
Time spent on maintaining vactors and other storm drain cleaning equipment?	$36,470.00
Staff time spent on maintenance of drainage ways for conveyance of storm water: cost:	$168,937.06
Repairs to equipment used for drainage way conveyance/clearing/spraying products?	
Model & quantity of vactors and other equipment used in CB cleaning, replaced during this FY?	$ -
Any repair costs to vactor or other CB cleaning equipment this FY?	$67,266.04
Annual expenditures on herbicides to eradicate noxious weeds in drainages:	
Time spent on training for application / certification of herbicide use: cost:	
Time spent installing, maintaining, inspecting public domain BMPs?	
Time spent investigating illicit discharges and reporting/ fixing by staff?	
Time spent on storm water BMP trainings: FY	
Time spent in FY on inspection and resolution of non point source pollution issues?	
PW Maint subtotal:	**$ 415,966.10**
PUBLIC WORKS: ENVIRONMENTAL SERVICES	
Design engineering time for channel restoration, contract management to reduce NPS pollution	
IDDE program: participation in staff trainings (agency-wide)	
IDDE call management: responses and routing, reporting, river walk,	$ 3,725.78
IDDE expenses in emergency cleanup from spills or dumping: FY cost	$ 6,214.51
IDDE program: annual inspections for pretreatment/storm water program	$ 37,858.78
Storm water quality monitoring, ambient program. Time/cost per FY?	
Storm water quality monitoring, storm event program: Time/cost per FY	

Financial Questionnaire: Fiscal Year 2020-21
Agency-Specific Storm Water Management Program Indirect Costs

Agency name/division: CITY OF SPARKS	**Indirect Program Costs**
Water Quality Monitoring equipment and supplies purchased/serviced: FY	$ 979.60
Mapping of storm drain system, surveying: Time	
Mapping software/hardware/survey hardware/software: cost/FY	
Administration, management of interlocal agreements	$ 128.82
Administration, attendance of SWPCC meetings (members/staff)	$ 2,469.00
Administration, coordination/budgeting/agendas/minutes. Time/cost/FY	
Administration, grant writing and reporting time	
Contract management for all environmental services/FY	
Engineering review time for LID-SC on plans	
Other permit support and oversight	$ 1,430.32
PW EE subtotal:	**$ 52,806.81**
PARKS MAINTENANCE	
Time spent tracking fertilizer and pesticide usage, training with Dept of Ag	
Time spent applying best management practices to keep lawn care products out of drainage ways	
Time spent on storm water BMP trainings: FY	
Time spent on best management of vehicles, equipment, sprayers to avoid non point source pollution in parks facilities:	
Parks subtotal:	
COMMUNITY DEVELOPMENT	
Plan reviews, to include post-construction BMP review and other permit support.	
Construction program: inspections and enforcement	$ 6,940.43
Construction program: participation in community trainings	$ 398.79
Parking ordinance support: FY cost:	
CD subtotal:	**$ 7,339.22**
OTHER SUPPORTING DEPARTMENTS:	
Legal time for SWPCC consultation and attending meetings	
Support, videography, contract management, meetings to plan outreach	
Support, website, flyers, design, community outreach	
Other supported community activities (KTMB River Cleanup, etc.): cash	
Other supported community activities (KTMB River Cleanup, etc.): time	
Automobile collision cleanup: PD/FD time spent/FY	
Other support Subtotal:	
Grand Total Storm Water Management Program Support:	**$ 476,112.13**

Financial Questionaire, Agency-specific Storm Water Management Program indirect costs.

Agency name/division: Washoe County	**FY2020/2021**
Areas of staff or contract support:	**Time spent/FY OR Budget expended/FY**
PUBLIC WORKS: MAINTENANCE DIVISION	
Model & Quantity of Street Sweepers replaced during this fy?	-
Maintenance of street sweepers: time	-
and maintenance expenses, parts, etc. :	$175,562
How much staff effort is dedicated to Street Sweeping and disposal - this FY?	$129,720
Annual purchasing costs for products to maintain traction on roads in winter:	$69,706
Time spent maintaining equipment for abrasive application?	$22,245
Annual costs for products to maintain safe sidewalks in winter, at agency facilities?	-
Time spent on BMPs for safer products/storage solutions/application equipment?	-
Models & quantity of equipment purchased for cleaning catch basins, detention basins, and other related storm water catchments or facilities - this FY?	-
Time spent removing debris from catch basins, repairing or replacing cb's?	$119,778
Time spent on maintaining vactors and other storm drain cleaning equipment?	$290
Staff time spent on maintenance of drainageways for conveyance of storm water: cost:	$301,122
Repairs to equipment used for drainageway conveyance/clearing/spraying products?	$30,788
Model & quantity of vactors and other equipment used in CB cleaning, replaced during this FY?	-
Any repair costs to vactor or other CB cleaning equipment this FY?	$17,649
Annual expenditures on herbicides to eradicate noxious weeds in drainages:	-
Time spent on training for application / certification of herbicide use: cost:	-
Time spent installing, maintaining, inspecting public domain BMPs?	-
Time spent investigating illicit discharges and reporting/ fixing by staff?	-
Time spent on storm water BMP trainings: FY	-
Time spent in FY on inspection and resolution of non point source pollution issues?	-
Public Works Maintenance Subtotal:	**$866,860**
PUBLIC WORKS: ENVIRONMENTAL SERVICES	
Design engineering time for channel restoration, contract management to reduce NPS pollution	-
IDDE program: participation in staff trainings (agency-wide)	-
IDDE call management: responses and routing, reporting, river walk,	-
IDDE expenses in emergency cleanup from spills or dumping: FY cost	-
IDDE program: annual inspections for pretreatment/storm water program	-
Storm water quality monitoring, ambient program. Time/cost per FY?	-
Storm water quality monitoring, storm event program: Time/cost per FY	-
Water Quality Monitoring equipment and supplies purchased/serviced: FY	-
Mapping of storm drain system, surveying: Time	$1,692
Mapping software/hardware/survey hardware/software: cost/FY	-
Administration, management of interlocal agreements	-
Administration, attendance of SWPCC meetings (members/staff)	$6,527
Administration, coordination/budgeting/agendas/minutes. Time/cost/FY	-
Administration, grant writing and reporting time	-
Contract management for all environmental services/FY	-
Engineering review time for LID-SC on plans	-
Other permit support and oversight	-
Public Works Envornmental Services Subtotal:	**$8,219**

Financial Questionaire, Agency-specific Storm Water Management Program indirect costs.	
Agency name/division: Washoe County	**FY2020/2021**
Areas of staff or contract support:	**Time spent/FY OR Budget expended/FY**
PARKS MAINTENANCE	
Time spent tracking fertilizer and pesticide usage, training with Dept of Ag	$1,750
Time spent applying best management practices to keep lawn care products out of drainageways	$13,200
Time spent on storm water BMP trainings: FY	
Time spent on best management of vehicles, equipment, sprayers to avoid non point source pollution in parks facilities:	$6,600
Parks Maintenance Subtotal:	**$21,550**
COMMUNITY DEVELOPMENT	
Plan reviews, to include post-construction BMP review and other permit support.	$17,287
Construction program: inspections and enforcement	$4,887
Construction program: participation in community trainings	$3,082
Parking ordinance support: FY cost:	
Community Development Subtotal:	**$25,256**
OTHER SUPPORTING DEPARTMENTS:	
Legal time for SWPCC consultation and attending meetings	-
Support, videography, contract management, meetings to plan outreach	-
Support, website, flyers, design, community outreach	-
Other supported community activities (KTMB River Cleanup, etc): cash	-
Other supported community activities (KTMB River Cleanup, etc): time	-
Automobile collision cleanup: PD/FD time spent/FY	-
Other Supporting Departments Subtotal:	**-**
Grand Total Storm Water Management Program Support:	**$921,885**

Appendix

1. **SWPCC FY2122 ROADMAP**
2. **ANNUAL WATER QUALITY MONITORING REPORT FY2021**

SWPCC 21-22 Roadmap

NOT A COMPLETE LIST (Items listed do not necessarily translate to agenda items each month)

January

- Storm Water Management Program Annual Report submitted to NDEP
- Quarterly SWPCC Budget Review

February

- Discussion of SWPCC Program Budget for current and future FY
- Receive and respond to potential NDEP comments to SWMP Annual Report
- Public Outreach Effort spring plan

March

- Present next year scopes of work
- Quarterly review of SWPCC Budget
- Review of WRWC Scope-of-Work of SWPCC Program Budget for next FY

April

- Approve next FY contracts for monitoring or other
- Review of WRWC Scope-of-Work of SWPCC Program Budget for FY upcoming
- Review program assessment and improvements for next FY
- Everything needing a PO must be approved this meeting for FY

May

- Finalize Sampling and Analysis Plan to
- Finalize Scope for Monitoring Sampling Contract
- Submit SWPCC Program Budget Scope-of-Work to NNWPC/WRWC
- Truckee River Snapshot Day?
- Annual payment for MS4 Permit
- All invoices received

June

- Send Annual Report Financial Questionnaires to City of Reno, Sparks and Washoe County
- Review of yearend SWPCC Program Budget FY
- Nomination and Election of Chairperson to SWPCC

- WRWC Interlocal Agreement
- Submittal of SAP to NDEP

July

- Annual budget overview and discussion of priorities
- Agreements for Storm Water Monitoring (Balance) and Watershed Assessments (CDM)
- Circulate Annual Report Templates

August

- Discussion and development of Storm Water Monitoring Scope-or-Work and Agreement for Water Year
- Development of SAP for Fiscal Year to be submitted to NDEP in October

September

- Truckee River Clean-up Day
- Quarterly Review Annual Report
- Construction Site BMP Training
- Ambient storm water monitoring

October

- Draft 2122 Storm Water Monitoring Report
- Quarterly SWPCC Budget Review

November

- Review of Watershed Assessment
- Review of FY2122 SWPCC SWMP Annual Report (incl Effectiveness Assessment)

December

- Final Review and Approval of SWPCC SWMP Annual Report
- Quarterly Review Annual Report for finalization

Standing Items

- Approval of receipts
- Update Source Water and Watershed Protection Program activities
- Update on Stormwater Management Program activities

- Update from NDEP
- Updates on funding opportunities and training available

Possible Tasks/Events/Presentations/Trainings/ETC

- Review of NDOT/Las Vegas Valley Permits to assess possible tone of Truckee Meadows Permit
- Early discussions with NDEP regarding impending issuance of new permit for Truckee Meadows
- Review of Industrial Program Handbook for future update once Industrial Permit is issued
- SWPCC Presentations at various events – ideas/volunteers?
- Discussion for preparing for next audit (typically occur every 5 years)

PLACEHOLDER FOR
MONITORING
REPORT