

Truckee Meadows Storm Water Monitoring
2014 Annual Report

Balance Hydrologics, Inc.

Prepared for:

City of Reno,

The Truckee Meadows Storm Water Permit Coordinating Committee,

and in cooperation with the Nevada Department of Transportation

July 2015

City of Sparks

NEVADA DOT SAFE AND CONNECTED

A REPORT PREPARED FOR:

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(NPDES MS4 Discharge Permit No. NV000001)

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EXECUTIVE SUMMARY

In 2010, the Nevada Division of Environmental Protection (NDEP) issued a municipal separate storm sewer (MS4) permit to the Truckee Meadows Region which includes the Cities of Reno and Sparks and Washoe County. The permit requires the continued administration, implementation and enforcement of a Storm Water Management Program (SWMP) to mitigate pollution from stormwater runoff within the Truckee Meadows permit area including receiving waters of the Truckee River and its tributaries. The Truckee River through Truckee Meadows is impaired by excessive nutrients and TDS. Water quality is of particular concern because the river has a number of beneficial uses including aquatic habitat, recreation, and a potable water source. The NDEP has developed a Total Maximum Daily Load (TMDL) for nitrogen, phosphorus, and TDS to attain nutrient-related water quality objectives in the Truckee River. Since 2003, storm event and baseflow or ambient water quality samples have been collected as part of the SWMP to better characterize stormwater quality. This annual report is provided as part of the requirements under the MS4 permit to: a) report stormwater quality measured in 2014; b) continue developing a robust data set of stormwater quality that may facilitate timely identification of potential problems with water quality or environmental degradation of the Truckee River; c) document changes in water quality over time in response to land management, sediment control strategies, and other implementation measures, and; d) promote future protection of the Truckee River.

In 2014, monitoring continued with collection of grab samples and analysis of constituent concentrations, and began a transition to quantifying constituent loads as recommended by previous investigators. Quantification of stormwater loads measured from events in 2014 are compared to load allocations for non-point sources for existing TMDLs established for the Truckee River. Results from these comparisons may facilitate revisions to the Sample and Analysis Plan and improve our understanding of stormwater quality in the Truckee Meadows. Results and recommendations are included as part of this annual report.

Annual precipitation in 2014 across the Truckee Meadows ranged between 4.99 inches at the Reno-Tahoe International Airport and 10.82 inches in Mogul. Four storm events were sampled to characterize constituent concentrations, and in some cases, constituent loads, at 19 monitoring locations (12 tributary sites and 7 urban outfalls). Baseflow conditions in tributaries were also sampled and characterized in early June 2014 for a comparison to storm conditions. Similarly, pre- and post-storm baseflow was sampled from Steamboat Creek in immediately before and after the January 29-30, 2014 storm.

We identified relatively high concentrations of nutrients in both tributaries and outfalls when compared to regulatory water-quality standards established for the Truckee River at Lockwood. Elevated levels of nutrients were identified in the following tributaries to the Truckee River: Chalk Creek, North Truckee Drain, and Steamboat Creek, and in the following urban outfalls: Oxbow Nature Park, Arlington, Fisherman's Park, Mary Wahl, Cottonwood Park and Greg Street. Elevated concentrations of TDS were identified in Chalk Creek, North Truckee Drain, Steamboat Creek, Fishermans' Park outfall, Mary Wahl outfall, and Paradise Park outfall. TDS can also be elevated as the result of erosion of native soils and geology with high levels of sulfate. Such geology and soils exist in Chalk Creek and Steamboat Creek watersheds. Elevated concentrations of TSS were identified in Fisherman's Park outfall and Arlington outfall. Bacteria (total coliform and *E. coli*) was identified in all samples and across all sites sampled for bacteria and results suggest bacteria is elevated at all monitoring locations as consistent with bacteria measured in urban stormwater as presented in the literature.

In 2014, initial trials for measuring loads using automated samplers and continuous-recording discharge were implemented for a major tributary (i.e., Steamboat Creek) and three separate urban outfalls to the Truckee River: Oxbow Nature Park, Arlington Street, and Fisherman's Park II. Results from one storm event suggest storm nutrient loads from these four points of discharge to the Truckee River can amount to a large component or exceed the Daily Load Allocations established under the TMDLs for the Truckee River at Lockwood, downstream. For example, 330 lbs/day of Total Nitrogen (Total-N) was measured from the sum of four points of discharge, as compared to the 500 lbs/day Load Allocation set under the Total-N TMDL. Total Phosphorus (Total-P) was calculated to be 91 lbs/day from the sum of the four points of discharge which exceeds the 80 lbs/day Load Allocation established under the Total-P TMDL. These values are significant because these loads are likely a small portion of the total loads discharged to the Truckee River in a single event. Additional storms will be quantified during the next monitoring year.

1 INTRODUCTION AND PROJECT PURPOSE

1.1 Introduction

The Truckee Meadows Storm Water Permit Coordinating Committee (Committee), composed of representatives of the City of Reno, City of Sparks and Washoe County, is responsible for the development, administration, and implementation of the Storm Water Quality Management Program (SWMP) for the Truckee Meadows (**Figure 1-1**) as part of the National Pollution Discharge Elimination System (NPDES) Permit to monitor and implement source controls designed to reduce and prevent harmful pollutants from being washed by runoff into local water bodies. The Committee is required to conduct a stormwater monitoring program following a Sample and Analysis Plan (SAP) that describes the general sampling program and approach. Under this program, sampling has been conducted from a number of established monitoring stations across the Truckee Meadows since 2003 with results reported to the Nevada Department of Environmental Protection (NDEP). In 2014, Balance Hydrologics (Balance) was contracted to continue implementation of the stormwater monitoring program, under the guidance of the Committee and in accordance with the most current SAP (Stantec, 2012). Balance has also been asked to identify monitoring improvements in the program.

1.2 Project Purpose

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

1. Characterize the baseflow and stormwater quality in major tributaries and urban 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 (background) and stormwater quality in selected outfalls, catchments and land-use types within the MS4 permit area, and;
4. Conduct special studies and investigations as the needs arise and funding is available to better understand stormwater issues in the area.

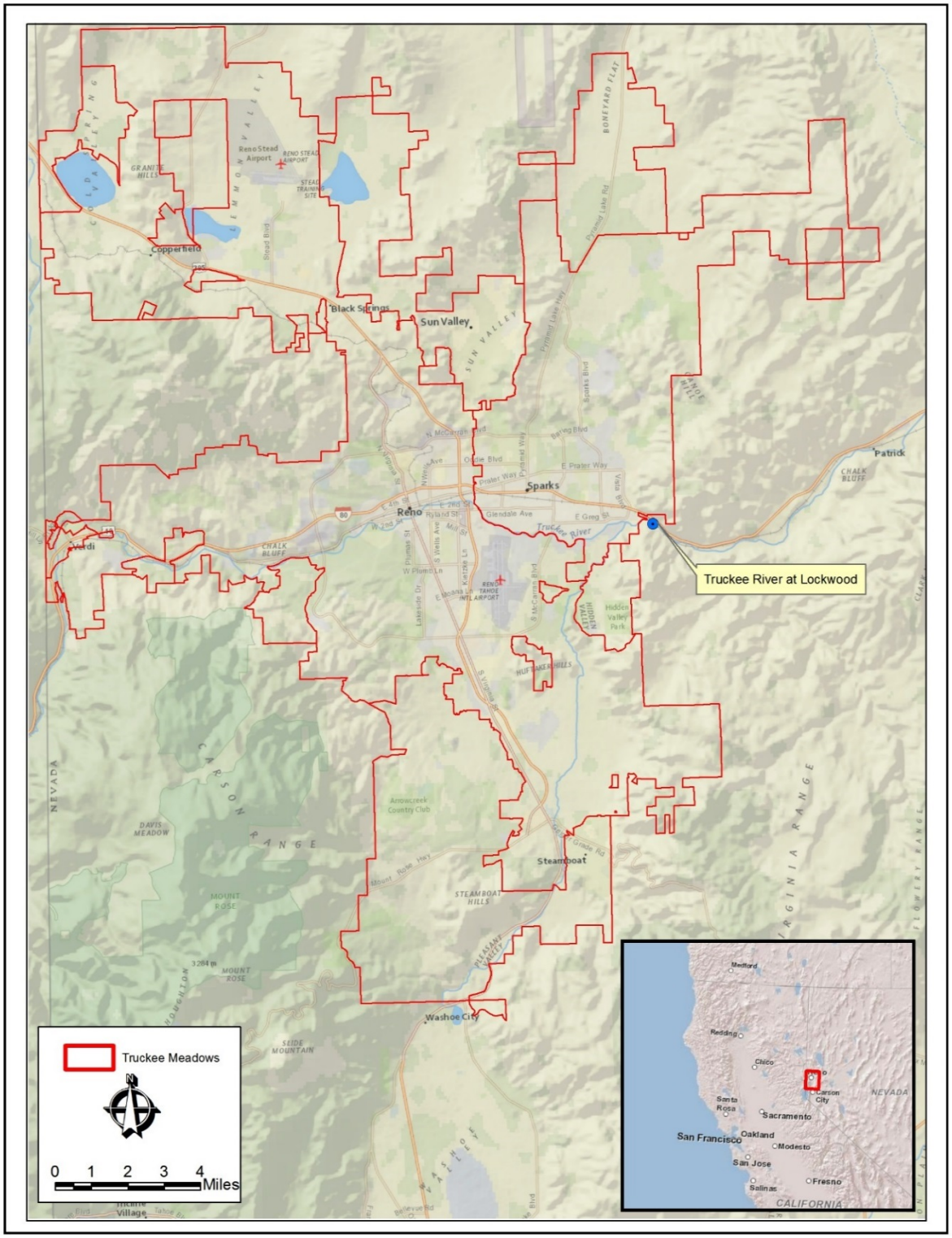

Figure 1-1: Location map for Truckee Meadows: Cities of Reno and Sparks, and portions of Washoe County, Nevada. Water Quality standards referenced in this report were established for the Truckee River at Lockwood.

1.3 Regulatory Background

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

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

Every two years, NDEP is required to prepare and submit an updated 303(d) list to the U.S. Environmental Protection Agency (USEPA). The most recent list (NDEP, 2014) identifies 9 tributaries, 3 lakes/ponds, and the Truckee River within the Truckee Meadows as impaired. Impairment differs between listed water bodies, but cited constituents of concern include nutrients, bacteria, metals, and general physical parameters such as pH and temperature (**Table 1-1**).

Table 1-1: 2012 Impaired Waters and Listed Constituents, 303(d) List, Truckee Meadows, Nevada

Water Name	Reach Impaired	Impairment	Impaired Beneficial Use
Truckee River	From NV-CA state line to E. McCarran	Water Temperature	AQL
Alum Creek	Entire reach	pH	PWL, RWC
		Total-P	AQL, RWC
		OP	AQL, RWC
		Water Temperature	AQL
		TDS	MDS
		TSS	AQL
Chalk Creek	Entire reach	Nitrate	AQL, RWC
		Total-P	AQL, RWC
		OP	AQL, RWC
		Selenium	AQL
		Sulfates	MDS
		Temperature	AQL
		TDS	MDS
		TSS	AQL
Sparks Marina	Entire reservoir	Total-N	AQL, RWC
		Total-P	AQL, RWC
		TDS	MDS
Tracy Pond	Entire area	pH	AQL, PWL, RWC
Dry Creek	headwaters to Boynton Slough	E-coli	RWC
Evans Creek	HWY 395 to Dry Creek	E-coli	RWC
Franktown Creek	From irrigation diversion to Washoe Lake	Iron	AQL
Galena Creek	(see NDEP, 2014)	pH	AQL, PWL, RWC
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
Thomas Creek	Below Steamboat Ditch	Arsenic	AQL, IRR, WLS
		Boron	IRR, WLS
Washoe Lakes	Entire lakes	Mercury in fish tissue	FC
Whites Creek	Middle Fork	E-coli	RWC
		Iron	AQL
		Total-P	AQL, RWC
	North and South Forks and Whites Creek	pH	AQL, PWL, RWC
		Total-P	AQL, RWC
	North Fork	E-coli	RWC

Notes:

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.

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

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

Table 1-2: Total Maximum Daily Loads, Truckee River at Lockwood

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

1.4 2012 Sample and Analysis Plan and Addendums

Each year, a revised Sample and Analysis Plan (SAP) is submitted to the NDEP and outlines the sampling program and approach, including the stormwater sampling activities to be

conducted, locations of sampling, and lists of constituents for laboratory analysis. During implementation of the SAP, field realities often necessitate the need to make minor revisions to the SAP before a revised SAP can be completed. These revisions are typically documented *as addendums* to the SAP.

1.4.1 Sample and Analysis Plan

In 2014, Balance conducted the monitoring program under the most recent SAP, dated December 2012 (Stantec, 2012). The SAP identifies two different sampling activities that includes: 1) scheduled, non-rain event, semi-annual tributary sampling and, 2) unscheduled, storm event semi-annual sampling. The 2012 SAP identified 12 tributary monitoring sites that required both scheduled non-rain event sampling and unscheduled storm event sampling, and 10 urban outfall monitoring sites that required only unscheduled, storm event sampling. Sampling at all sites required grab samples and measurements or estimates of discharge.

1.4.2 Addendums to the Sample and Analysis Plan

Since the 2012 SAP was approved by the Committee, two addendums have been added. In 2013, three urban outfall sampling locations presented complications for sample collection and characterization of stormwater runoff. As a result, alternate access points in the storm drain network were recommended. Additionally, the NDEP revised 303(d) list was issued after the 2012 SAP was approved and some of the impaired waters were reclassified or removed. Finally, the 2013 addendum identified the need for streamflow gaging stations on tributaries used for sample collection and monitoring. Gaging stations would allow for near-continuous streamflow data for quantifying constituent loads. At the time of this report, Washoe County had installed a Parshall flume with telemetry on Whites Creek (Old Virginia Highway).

In 2014, another addendum identified two urban outfalls to be removed from the monitoring program (Dickerson Road, C-22 and Arlington North, E-19, later identified as Vine Street, D-19) because conditions at the outfalls were not conducive to sampling. The 2014 Addendum also identified four sites that could be instrumented with automated samplers and area-velocity modules for measurement of near-continuous stormwater runoff. Three of the four automated sites were operated in 2014 for a single event.

1.5 Constituents of Concern

The 2012 SAP identifies the following constituents of concern: 1) total nitrogen (Total-N), 2) nitrate as nitrogen (NO_3), 3) total phosphorus (Total-P), 4) ortho-phosphate (Ortho-P), 5) total dissolved solids (TDS), 6) total suspended solids (TSS), 7) total coliform bacteria, 8) Total Escherichia coli bacteria (*E. coli*), and 6) standard physical parameters including water temperature, turbidity, pH, dissolved oxygen (DO), and specific conductance (SC). Depending on the methods used to evaluate Total-N a calculation or quantification of other forms of nitrogen include nitrite as nitrogen (NO_2) and ammonia (NH_3). Below, we define and briefly discuss the importance of these parameters as they relate to stormwater measured in the Truckee Meadows.

1.5.1 Nitrogen and Phosphorus

Nitrogen and phosphorus are the principal constituents of concern in urban stormwater. The major sources of these nutrients in urban stormwater are urban landscape runoff, atmospheric deposition, animal waste, improperly functioning septic systems, or undertreated wastewater returned to the river (Terrene Institute, 1996). The degree to which nitrogen and phosphorus are present in a river can determine the trophic status and amount of algal biomass produced. Excess nutrients tend to increase primary biological productivity which in turn cause increase algal blooms. A secondary impact is the residual negative effects of decomposing algae which depletes dissolved oxygen concentrations necessary to support other aquatic life (USEPA, 2006). The Truckee River is impaired for dissolved oxygen and is, therefore, regulated for both nitrogen and phosphorus.

There are several forms of nitrogen and phosphorus found in runoff. Total-N includes three forms including NO_3, NO_2, NH_3, and ammonium (NH_4). NO_3 and NO_2 are the inorganic fractions of nitrogen, although very little NO_2 is found in stormwater. NO_3, however is readily transported in water and stable over a considerable range of conditions. NO_3 is highly toxic to humans and fish at high concentrations and long exposure. NH_3 is usually the most readily toxic to aquatic life (Hem, 1985). TKN measures the organic forms of nitrogen, NH_3, and NH_4, and is a good indicator of forms of nitrogen most biologically available to aquatic life. Total-P measures both organic and inorganic forms of phosphorus. Ortho-P measures the phosphorus most present in stormwater and immediately biologically available to aquatic life.

The Truckee River at Lockwood is listed for both Total-N and Total-P under the Clean Water Act and the Nevada Integrated Waters 303(d) List. Lockwood is downstream of non-

point sources in the Truckee Meadows including Steamboat Creek, North Truckee Drain, stormwater outfalls of the Truckee Meadows and point-sources such as the Truckee Meadows Water Reclamation Facility (TMWRF). As such, a TMDL has been established for the Truckee River at Lockwood to address these constituents (as discussed under Section 1.3, Regulatory Background).

1.5.2 Suspended and Dissolved Solids

TSS is a measure of both organic and inorganic solids suspended in the water column, whereas, TDS is a measure of the combined content of all inorganic and organic substances dissolved in the water column (Hem, 1985). Both TSS and TDS are the most common contaminants in urban stormwater, because they originate from many sources including erosion of pervious surfaces and dust, litter, and other particles deposited on impervious surfaces from human activities, sediment runoff at construction sites as well as streambank erosion.

Elevated TSS and TDS concentrations increase turbidity, reduce light penetration in streams, and limit the growth of desirable aquatic plants. TSS can settle in backwater habitat and periods of low flow and contribute to sedimentation and can alter or impair aquatic habitat. TDS can also provide a medium for accumulation, transport and storage of other pollutants including nutrients and metals (USEPA, 2006).

Although TSS and TDS are not typically associated with health effects, they are used as aesthetic indicators as well as aggregate indicators of the presence of chemical contaminants. Concentrations can also be naturally elevated from natural erosion of geologic sources. For instance, naturally high sulfates are found in the Chalk Creek watershed and commonly are source of high TDS concentrations. Increases over background TSS and/or TDS may originate from agricultural and residential runoff as well as point-source pollution discharge from industrial and sewage treatment plants. Most aquatic ecosystems can tolerate TDS levels of 1,000 mg/L (Boyd, 1999). A TMDL has been established to address TDS in the Truckee River (as discussed under Section 3.1, Regulatory background). There are currently no standards for TSS for the Truckee River within the Truckee Meadows.

1.5.3 Pathogens

Pathogens are disease-producing organisms that present a potential public health threat when they are present in waters (USEPA, 2006). Pathogens typically originate from warm-blooded animal excrement which can include wild animals, urban animals (i.e.,

raccoons), or humans (i.e., raw sewage spills). Direct exposure to pathogens in stormwater is usually limited; however, when runoff is discharged to recreational waters such as the Truckee River, there is a potential public health risk. Runoff can contain many different pathogens that cannot be measured directly; therefore, indicator organisms such as *E. coli* are used to predict the health risks (NDEP, 2012). While *E. coli* may suggest pathogenic sources, elevated total coliform may suggest erosion of other organic sources of soil-borne bacteria. High counts of bacteria may not necessarily confirm the presence of pathogens, but provides an indicator for risk. In this report, bacteria is reported in units of Most Probable Number (MPN) per 100 mL of water; a value less than 410 MPN is a common guidance for contact and non-contact beneficial uses.

1.5.4 Other Physical Parameters

Standard physical parameters provide additional context for stormwater quality and conditions relative to receiving waters. Water temperature in an important measure of water quality. Specifically, water holds less oxygen as it becomes warmer, resulting in less oxygen available for respiration by aquatic organisms (USEPA, 2006). Stormwater runoff from high temperature impervious surfaces can contribute to increases in temperature in the river, especially during baseflow conditions.

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 (McDonald and others, 1991). Low DO levels are commonly associated with major point source pollution or decomposing organic matter in the water column. Urban stormwater typically will have low to moderate levels of DO but commonly increases when diluted in receiving waters. As mentioned earlier, decomposing algae—from increased nutrient loads—depletes DO concentrations to the point where aquatic life is affected. Waters rich in nutrients (eutrophic) can register wide swings in DO concentrations between algae respiration at night and photosynthesis during daylight hours. Wide diurnal fluctuations can stress aquatic life more than constant low DO concentrations.

Most aquatic biota are also sensitive to variations in pH. Most pH impacts in urban waters are caused by runoff of rainwater with low pH levels (USEPA, 2006). Urban areas tend to have more acidic rainfall than less developed areas.

Specific conductance of waters refers to the ability of water to conduct an electrical current and is related to the concentration of dissolved solids. While there are no

recommended water quality criteria for conductivity, it can be used as a surrogate for other dissolved ions.

2 MONITORING STATIONS

There are 19 monitoring stations under the current stormwater monitoring program. Locations of monitoring stations, rain gages and streamflow gages used for this monitoring program are shown in **Figure 2-1. Plate 1** describes the characteristics of the sites and their drainage areas, including land-uses, constituents of concern, instrumentation, comments and known existing studies. We have used information summarized in recent watershed assessments, special studies, zoning maps from Washoe County, stormwater system maps from City of Reno, aerial photos available on Google Earth®, and field observations to establish the drainage areas for each monitoring station.

2.1 Tributary Stations

The 2012 SAP identifies six tributaries with 12 monitoring stations. With the exception of Chalk Creek, five tributaries have two or three monitoring stations at different locations along a stream, allowing for evaluation of possible water-quality degradation from stormwater in a downstream direction as the result of urbanization.

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

2.2 Urban Outfall Stations

The 2014 addendum to the 2012 SAP identifies seven stormwater urban outfalls as monitoring stations. Urban stormwater outfalls are not considered Waters of the State or Waters of the U.S. therefore, water quality standards are not applicable. However, stormwater quality from discharge at these outfalls can affect water quality and beneficial uses in receiving waters of the Truckee River. Analysis of water quality from urban stormwater outfalls provides a perspective on the concentrations and loading from these non-point sources and can also be compared to natural tributaries with undeveloped watersheds in the Truckee Meadows.

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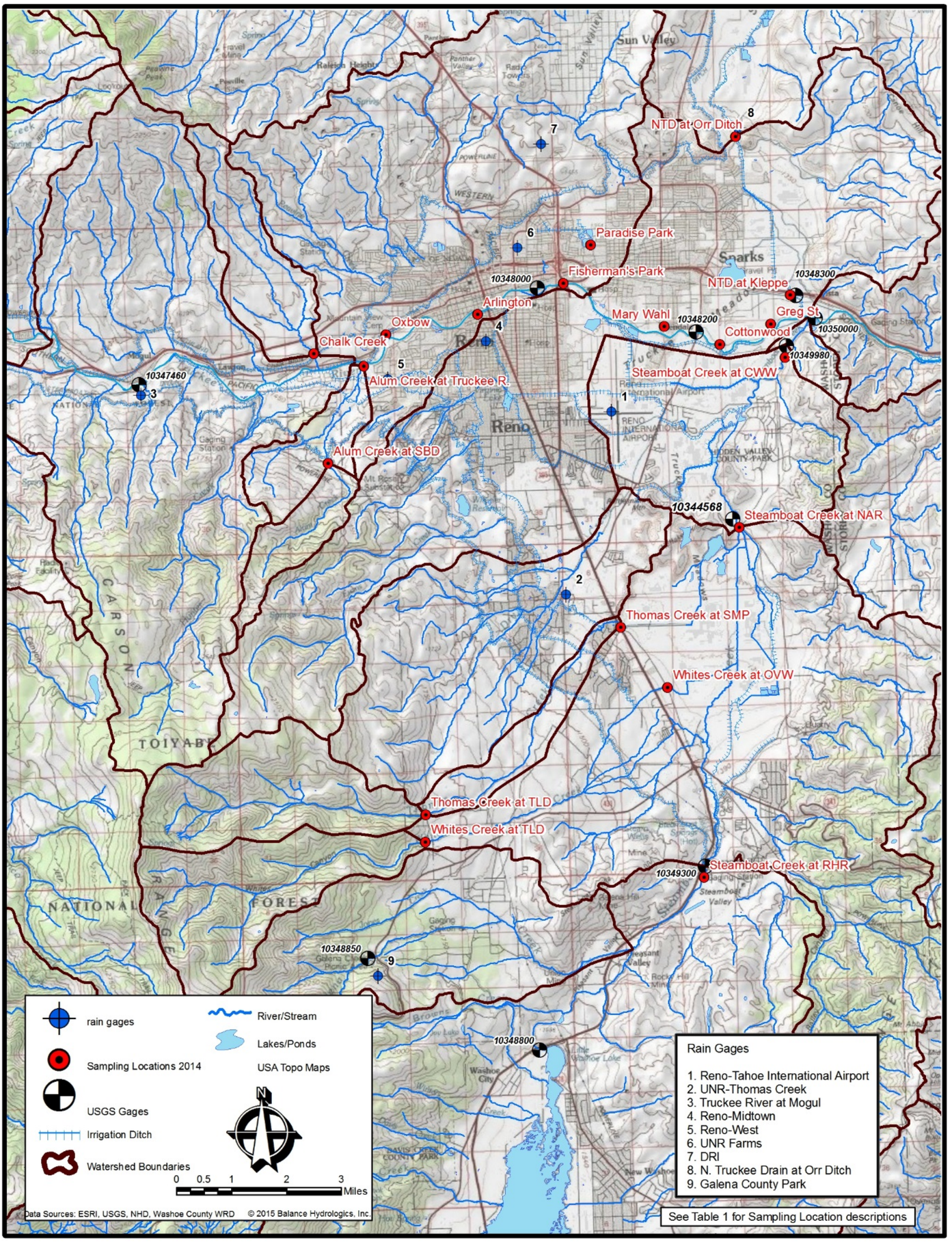

Figure 2-1: Monitoring locations, USGS streamflow gaging stations, and rain gages, Truckee Meadows, 2014

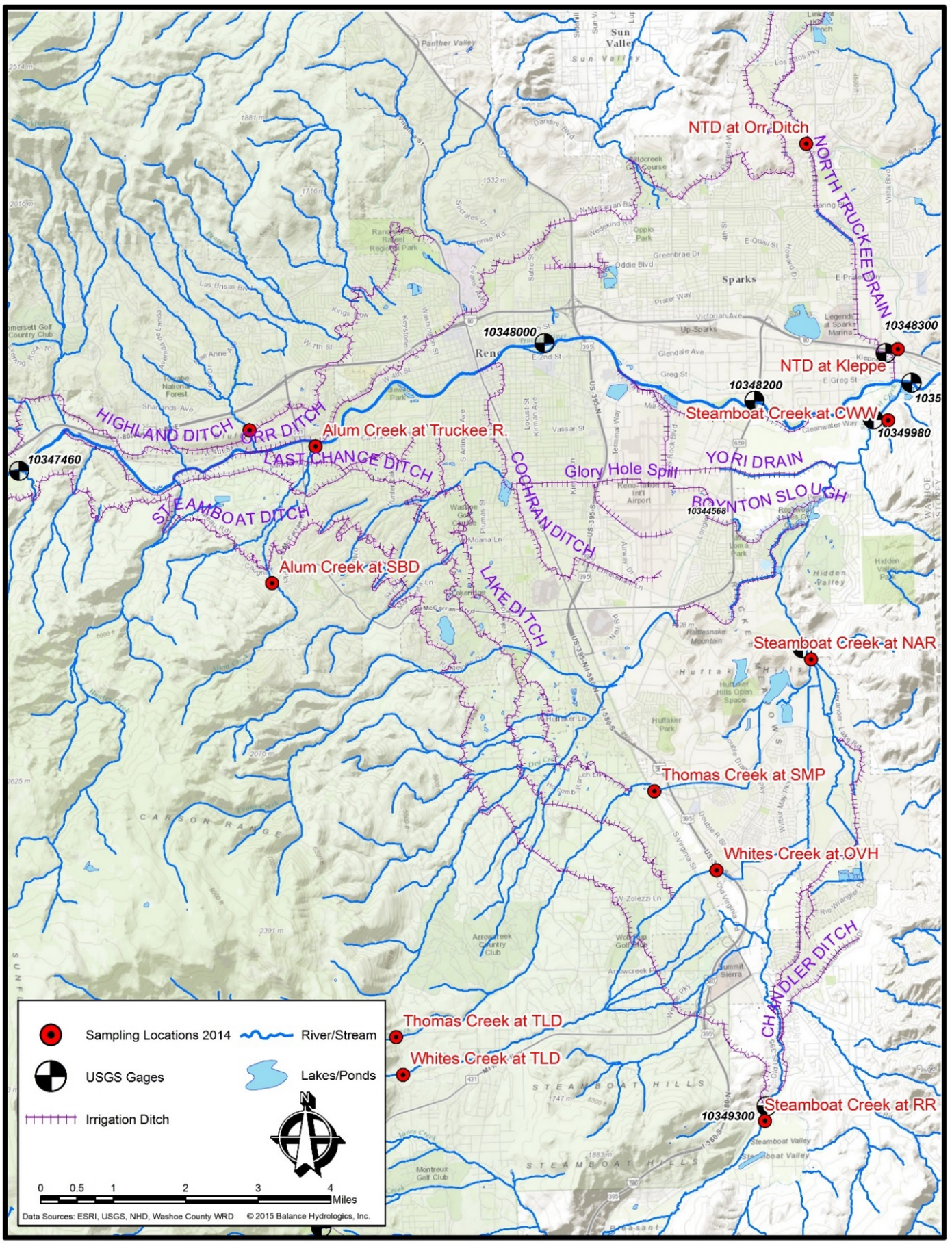

Figure 2-2: **Irrigation return flows or tailouts, tributaries to Truckee River, Reno-Sparks, Nevada**

Table 2-1: Tributaries Monitoring Sites Receiving tailwaters from Irrigation Ditches

Irrigation Ditch	Monitoring Sites that Receive Tailwaters
Steamboat Ditch	Alum Creek at Truckee River
	Thomas Creek at SMP
	Whites Creek at OVH
	Steamboat Creek at NAR and CWW
Last Chance Ditch	Alum Creek at Truckee River
	Thomas Creek at SMP
	Whites Creek at OVH
	Steamboat Creek at NAR and CWW
Lake Ditch	Thomas Creek at SMP
Orr Ditch	NTD at Kleppe

3 MONITORING PROGRAM METHODS

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

3.1 Types of Equipment

Table 3-1 lists the field parameters measured, instruments used, and the resolution and accuracy of each instrument.

Table 3-1: Instruments used to measure water quality, runoff and physical parameters

Parameter	Units	Instrument	Range	Accuracy	Calibration	Comments
Velocity	ft/s	Hach, Marsh-McBurney	-0.5 to +20	+/- 2%	Factory	Used for calculation of instantaneous discharge
Velocity	ft/s	Teledyne-ISCO 750 AV module	-5 to +5	+/- 1%	Factory	Measures near-continuous velocity; used for calculation of discharge
Velocity	ft/s	Bucket-wheel meter	0.2 to 25	+/- 2%	Manual	Used for calculation of instantaneous discharge
Depth	ft	Teledyne-ISCO 750 AV module	0.03 to 5.0	+/- 0.008	Factory	Measures near-continuous depth; used for calculation of discharge
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

3.2 Sampling Procedures

Selection of each storm for sampling required that antecedent conditions were dry for at least 10 days before the event, in accordance with the SAP.

Stormwater samples were collected using a variety of methods depending on the site and instrumentation. In accordance with the SAP, samples collected at non-instrumented sites were grab samples. Grab samples were typically collected using a clean, triple-rinsed container, and were collected, composited, and mixed to fill laboratory-required volumes.

When site conditions permit, Balance staff used a hand-held DH-48 sampler with a 1/4-inch nozzle, as adopted by the Federal Interagency Sedimentation Project (FISP), to capture an integrated-depth sample of water across the width of an open channel

system or pipe. Water samples were collected using the Equal Transit Rate (ETR) method such that each sample was collected by raising and lowering the sampler at a number of equally-spaced verticals across the stream channel or pipe; collection in each vertical was integrated across the full depth of the water column; and a constant transit rate was maintained while raising and lowering the equipment until the sample bottle was just less than full (Edwards and Glysson, 1999). Water samples were typically collected from between three and eight verticals, and each vertical was executed within 5 to 15 seconds, for a total of approximately 30 to 60 elapsed seconds per sample. Following this protocol to expedite sampling avoided the confounding effects of significant changes in constituent concentrations due to rapidly fluctuating discharge.

Samples collected at automated (instrumented) sampling stations used time-interval techniques to automatically fill discrete sample bottles over the duration of the storm hydrograph. This method is further described in Section 3.4 below.

All storm samples collected during an event were delivered to Alpha Analytical Laboratory in Sparks, Nevada under Chain-of-Custody (COC). Baseflow or ambient samples were delivered to the TMWRF laboratory under COC. Sample processing and procedures were completed as outlined in the SAP (Stantec, 2012).

3.3 Discharge Measurements

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

an instantaneous discharge. Use of the discharge data to calculate pollutant loads is explained below.

3.4 Automated Sampling and Discharge

The 2012 SAP (Stantec, 2012) suggests that as monitoring progresses, the field team will consider where and how best to incorporate automated sampling and collection of near-continuous streamflow or discharge measurements in following years. In 2014, Balance worked with City of Reno and Committee members to select and instrument 3 urban outfall stations with Teledyne-ISCO® 6712 automated samplers and ISCO® 750 area-velocity modules: 1) Arlington (H-19); 2) Oxbow (C-24), and; 3) Fisherman's Park II (D-16). The automated samplers were programmed to measure stormwater depth and velocity every 5 minutes and initiate sampling once stormwater depth met or exceeded 0.1 feet at the point of monitoring/sampling. Automated samplers are equipped with ISCO® 750 area-velocity module which allow for computation of discharge rates and discharge volume for the duration of the storm. The automated sampler collected 24 discrete samples over the duration of the runoff event. In the absence of known contributing watershed areas to each sampling location or relationships between rainfall depth and runoff volumes, the automated samplers were programmed using the time-interval method such that samples were collected every 10 to 20 minutes during a runoff event, depending on location. This method is simple and reliable, but has limitations. For instance, if the time intervals are too small, frequent sampling will produce a large number of samples and will limit the length of storm duration that can be sampled (Harmel and others, 2003). Harmel and others (2003) note that flow-weighted sampling best represents storm loads because a greater proportion of samples are collected at higher flow rates. Future efforts should incorporate additional information about each site (i.e., rainfall depth-runoff volume rating curves, contributing areas) to allow for flow-weighted sampling in subsequent monitoring years.

Following each sampling event, the storm hydrograph and timing of sample collection was examined in order to evaluate which samples best captured different portions of the storm hydrograph. Samples were composited into 4 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 were measured from subsample of each composite and composites were used to fill laboratory-provided bottles and delivered to the laboratory in accordance with the SAP (Stantec, 2012).

3.5 Calculation of Constituent Loads and Yields

Constituent loads are a measure of mass transported over time, and can only be calculated when both the constituent concentration (mass/volume of water) and discharge (volume of water/time) are known. Constituent concentrations from grab samples may only provide limited information on the range of concentrations in a single storm event for a given location. We know from collection of grab samples over the entire hydrograph of a single event, concentrations can range across one or two orders of magnitude, depending on the constituent. Ultimately, the grab sample or 'snapshot' approach leaves many gaps in characterization of the system (McKay and others, 2013).

A change in approach was implemented in 2014 on a limited basis. Automated samplers were deployed at three different USGS streamflow gaging stations on Steamboat Creek and at three urban outfalls. Outfalls were also instrumented with area-velocity modules to compute a record of continuous flow. Multiple samples were collected during the storm event and composited to characterize 4 components of the storm hydrograph (i.e., first flush, rising limb, peak flow, and falling limb)[1]. Using this approach, constituent loads were calculated for each component of the storm hydrograph and over the total storm. Loads were then compared to TMDLs established for the Truckee River. Finally, contributing areas to each urban outfall were delineated, pollutant yields (lbs/square mile) were computed and used to further compare between sites, normalized by area.

3.6 Quality Assurance and Quality Control

The 2012 SAP (Stantec, 2012) outlines a quality assurance and quality control (QA/QC) project plan. Balance followed this plan using a combination of field quality control activities and data assessment and validation techniques during the monitoring program. Field quality control activities included: a) assigning a minimum of one senior and experienced staff to each field team who are trained in stormwater sampling procedures and streamflow or discharge measurements; b) adherence to approved methods and procedures; c) 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 and observations were documented in observer logs and are provided in **Appendix A**. All field equipment and

[1] Composited sampling methods were chosen to reduce analytical fees associated with the number of samples analyzed.

instruments were calibrated before and after each storm and records of calibrations are provided in **Appendix B.**

Separately, Balance designated a staff member who was not involved with the field activities to perform a review of all collected data, calculations, and laboratory results, in accordance with the Quality Assurance and Quality Control (QA/QC) procedures in the SAP (Stantec, 2012). All laboratory results were transposed to Excel for analysis reporting purposes and QA/QC review, and are included in **Appendix C**. Teams also collected duplicate samples and field blanks for laboratory analysis when feasible, included in Appendix C. Original laboratory data reports are included in **Appendix D**.

3.7 Deviations from the Sample and Analysis Plan

Weather conditions, hydrologic response, time of day, and/or expediency often required deviations from procedures set forth in the SAP. The following are deviations from the SAP during the 2014 monitoring year:

- Paradise Park (C-15) and Alum Creek above Steamboat Ditch (AC@SBD) were only sampled one of the required two times due to the absence of flow during some events;
- Field notes and discharge measurements were collected on Balance-provided note books and forms as standard practice, instead of any Committee-provided forms;
- Bacteria hold times were exceeded in 2 of the 3 storm events sampled due to unavailability of laboratory staff after business hours and/or method of sampling (automated samplers);
- Bottle blanks were prepared once instead of the required twice per season;
- Field parameters were not measured in the order suggested by the SAP (i.e., Dissolved oxygen measured first, then other parameters) because a multi-meter unit that includes dissolved oxygen was used; and
- Turbidity was not measured in the field, but instead was collected from a subsample of the composite and transported back to the office for analysis using a desktop turbidity meter.

4 MONITORING RESULTS 2014

This chapter begins with a description of the water-quality monitoring work conducted in 2014 for the Truckee Meadows SWMP and following the 2012 SAP and addendums. We describe annual precipitation, characterize the storms used for sampling and the regional hydrologic response, and conclude with a summary of results for constituent concentrations and instantaneous or total storm loads. We present analytical results in both graphic form (this report) and tabular form (Appendix C) with original laboratory reports included as Appendix D.

4.1 Work Conducted in 2014

Staff from the City of Reno (Public Works Department), Washoe County, and Balance Hydrologics collected samples from four storm events and during dry or baseflow conditions in tributaries only during 2014. Stormwater at each monitoring location was characterized from samples collected over different storms. Baseline or baseflow conditions were characterized from samples collected during a non-storm period, in accordance with the 2012 SAP and addendums. Streamflow or urban outfall discharge was measured or estimated. Preliminary streamflow records from USGS were downloaded at monitoring stations equipped with USGS streamflow gaging stations. Finally, storm and annual rainfall data were summarized from local rainfall gages were downloaded or obtained from numerous different agencies or internet resources.

In late 2014, and at the request of the Committee, Balance instrumented three urban outfalls with automated samplers and area-velocity modules in an effort to characterize constituents and runoff volume for the duration of a storm event and calculate constituent loading to the Truckee River.

4.2 Precipitation Summary 2014

Precipitation data used for this study were evaluated from nine precipitation stations across the Truckee Meadows area (see Figure 2-1). Cumulative daily precipitation for 2014 at six of these stations was compared to evaluate the spatial variability of rainfall in the Truckee Meadows (**Figure 4-1**). Total annual rainfall in 2014 for the Truckee Meadows ranged from 4.99 inches at the Reno-Tahoe International Airport to 10.82 inches in Mogul, less than 9 miles away and 300 feet higher in elevation. This variability is common along the Sierra Nevada Front and is associated with a rain-shadow effect when a storm's flow direction is west to east. Spatial variability is also induced during convective thunderstorms during summer months. Long-term average annual precipitation for at the

Reno-Tahoe International Airport is 7.5 inches. Some urban outfalls respond with stormwater runoff after only 0.2 inches of rain; whereas, tributaries with less developed watersheds may require more than 0.5 inches of rain in a storm to generate a hydrologic response.

Roughly 15 distinct precipitation events occurred in 2014. Measurable rainfall was recorded in late January and February. Little to no precipitation was recorded in March and most of April, while two rain events occurred in late April and late May. Summer thunderstorms were recorded in July, while most of August and early September was mostly dry. Significant rainfall was measured again in late September, early November and early December. In total, 2014 annual precipitation ranged widely across the Truckee Meadows with areas west and southwest (i.e., Carson Range foothills) receiving the most rainfall.

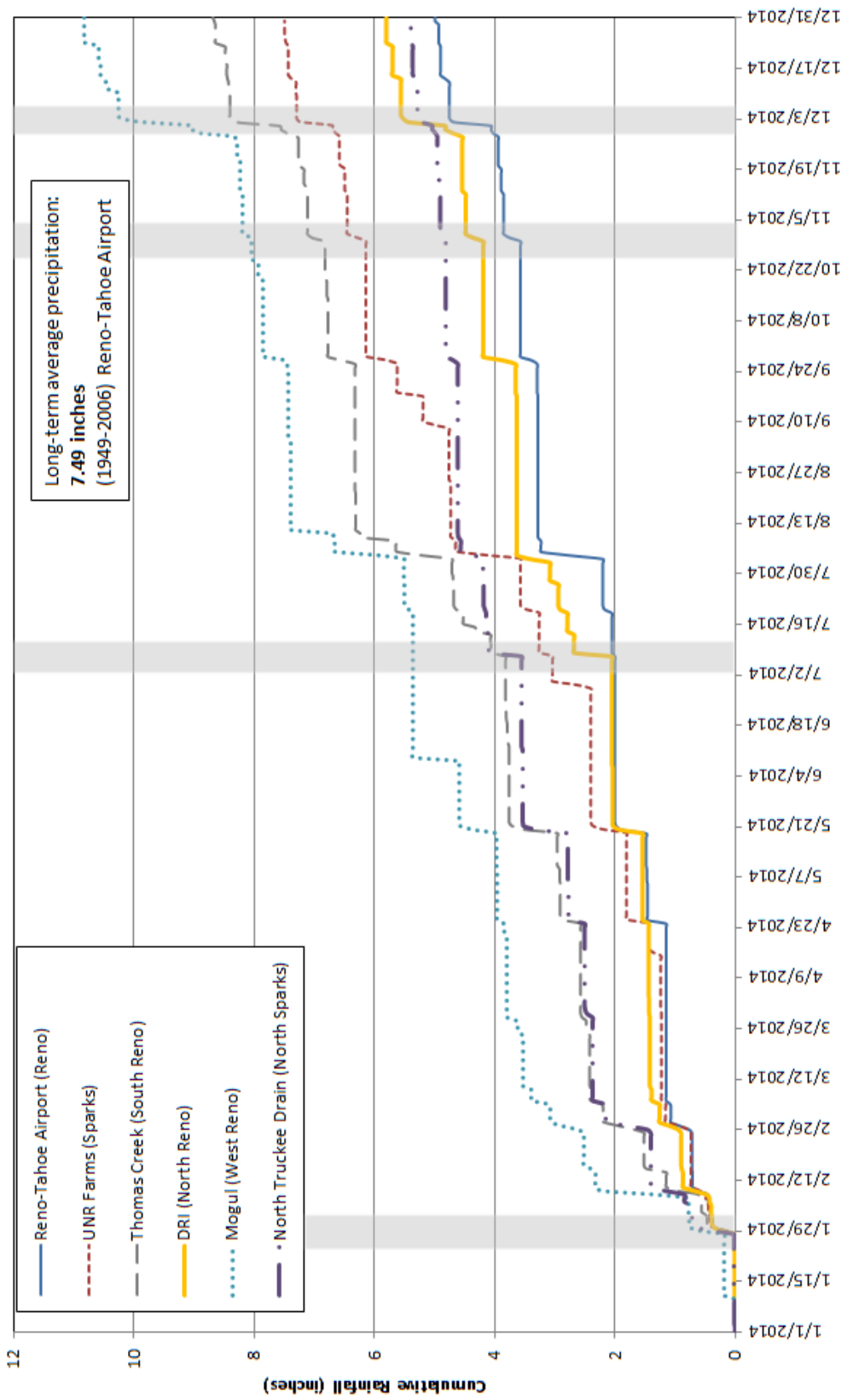

Figure 4-1: Cumulative rainfall at 6 different rain gages, Truckee Meadows, Nevada, January 1 - December 31, 2014. Rain gages in the Truckee Meadows recorded approximately 12 to 15 rainfall and runoff events in 2014 with lower than average annual precipitation in most locations; however, rainfall occurrence, depths and durations varied widely across the area with total annual rainfall ranging from 4.99 inches at the Reno-Tahoe Airport to 10.82 inches at Mogul. The four events that were sampled are indicated by the gray bars. See Figure 2-1 for rainfall gage locations.

4.2.1 STORM EVENTS SAMPLED AND THEIR CHARACTERISTICS

In 2014, storm monitoring occurred during four rainfall-runoff events (see Figure 4-1) with 2 samples[2] collected at each monitoring location with the exception of Paradise Park and Alum Creek below Steamboat Ditch. Sampling dates and associated storm precipitation from 6 rain gages are shown in **Table 4-1**. Storm depths ranged between 0.24 inches and 0.59 inches when all 6 rain gages were averaged over a storm event; however, rainfall across the Truckee Meadows area ranged by as much as 0.65 inches in a single event. Nevertheless, these storm depths are characteristic of moderate events for the Truckee Meadows. In fact, daily rainfall greater than 1.0 inch has occurred only 32 times in over 100 years of record (O'Hara, 2006).

Table 4-1: Summary of rainfall depths for 6 rain gages over 4 storm events, Truckee Meadows, 2014

Rainfall gage	Location	Storm Events Sampled			
		January 29-30, 2014	July 8, 2014	Oct-31 to Nov-1, 2014	December 2, 2014
		(inches)	(inches)	(inches)	(inches)
Reno-Tahoe Airport	Reno	0.38	0.05	0.28	0.62
UNR-Farms	Sparks	0.4	0.22	0.31	0.53
UNR-Thomas Creek	South Reno	0.43	0.24	0.29	0.7
DRI	North Reno	0.24	0.63	0.29	0.61
USGS-Mogul	West Reno (Mogul)	0.58	0.00	0.15	0.85
USGS-N. Truckee Drain	North Sparks	0.66	0.54	0.09	0.2
	Mean	**0.45**	**0.28**	**0.24**	**0.59**
	Min	0.24	0.00	0.09	0.20
	Max	0.66	0.63	0.31	0.85

Notes:

Rainfall in the January event started on Jan-29 and continued into the early morning hours of Jan-30

Rainfall in the November event started late on Oct-31 and ended early morning of Nov-1

4.2.2 NON-STORM OR BASEFLOW CONDITIONS SAMPLED

The City of Reno staff collected grab samples in tributary monitoring stations on June 3 and 4, and December 3 and 16, 2014 to characterize baseflow or non-storm conditions, in accordance with the SAP. June conditions were characterized by warm, sunny weather and preceded by a dry period of 10-days or more. December conditions were characterized by cool, wet conditions with rainfall and snowfall in the days preceding

[2] With the exception of 4 composite samples that were collected at each of three urban outfalls using automated samplers on November 1, 2014.

the day of sample collection; but streamflows were not elevated. Analytical results from these samples provide a baseline and comparison to stormwater runoff concentrations.

The City of Reno and Washoe County staff also collected grab samples from Steamboat Creek during baseflow conditions before and after the January 29-30, 2014 storm event. Analytical results from these samples were used with baseflow volumes measured at the USGS gaging station to develop a better understanding of baseflow constituent loading from Steamboat Creek before and after a storm event.

4.3 Hydrologic Response

Hydrologic response to a rain event can be measured in runoff volume (cubic feet) with near-continuous streamflow data collected at gaging stations. Unfortunately not all stormwater monitoring locations in Truckee Meadows are equipped with gaging stations. Therefore, we describe the general hydrologic response to the 4 storm events sampled in 2014 using local USGS gaging stations (**Table 4-2**).

Hunter Creek, a gaged non-urbanized watershed, displays the general hydrologic response to storms relative to the response from urbanized watersheds (e.g., North Truckee Drain, Steamboat Creek, and Truckee River at Reno and Vista). Hunter Creek headwaters originate at the crest of the Carson Range and, on average, receive significantly more precipitation than lower-lying areas within the Truckee Meadows. However, runoff can be highly variable depending on antecedent soil moisture conditions.

Table 4-2: Hydrologic response in the Truckee River and three tributaries to 4 storm events

		Storm Events							
		January 29-30, 2014		July 8, 2014		November 1, 2014		December 2, 2014	
USGS SITE ID	SITE NAME	RUNOFF VOLUME	PEAK FLOW	RUNOFF VOLUME	PEAK FLOW	RUNOFF VOLUME	PEAK FLOW	RUNOFF VOLUME	PEAK FLOW
		(cf)	*(cfs)*	*(cf)*	*(cfs)*	*(cf)*	*(cfs)*	*(cf)*	*(cfs)*
10350000	Truckee River at Mogul	38,588,400	445	7,935,300	309	656,100	30	11,509,200	266
10347600	Hunter Creek	499,500	8.0	132,660	2.5	242,730	3.9	147,420	3.9
10348000	Truckee River at Reno	40,427,100	461	7,488,900	343	1,341,900	80	25,934,400	402
10348300	North Truckee Drain at Kleppe Lane	575,460	21	1,219,500	42	550,620	31	478,530	26
10348245	North Truckee Drain at Orr Ditch	52,992	1.8	215,550	11	180,810	5.6	150,471	4.1
10349300	Steamboat Creek at Rhodes Road	618,660	4.9	0	0	0	0	223,200	2.5
10349849	Steamboat Creek at the Narrows	1,688,760	12	46,710	3.6	356,670	5.6	346,590	9.6
10349980	Steamboat Creek at Clean Water Way	6,183,900	51	3,638,700	49	2,425,500	34	6,237,000	119
10350000	Truckee River at Vista	56,364,300	554	25,599,600	438	14,400,000	190	54,358,200	615
	Truckee Meadows: Estimated Runoff	17,775,900	--	17,664,300	--	13,743,900	--	42,849,000	--

Notes:
Storm runoff volumes are calculated based on a distinct hydrograph response beginning with a rise in stage and ending with a return to pre-storm baseflow or when stage or flow is steady for a period of hours and in the absence of precipitation
USGS 10348245 is also referred to as North Truckee Drain at Spanish Springs by the USGS
USGS 10349300 is also referred to as Steamboat Creek at Steamboat Creek by the USGS
USGS 10349849 is also referred to as Steamboat Creek at Short Lane by the USGS
Truckee Meadows estimated runoff is calculated from the difference in runoff between Truckee River at Vista and Truckee River at Mogul, for each event.

The hydrologic response to a storm event in the Truckee Meadows is best characterized by changes in streamflow along the Truckee River. **Figure 4-2** shows daily mean flow for three stream gages along the Truckee River within the Truckee Meadows in 2014. **Table 4-2** shows streamflow volume and peak flows in the Truckee River at Mogul relative to the Truckee River at Vista (Sparks). In the July 8 and November 1 storm events, precipitation was limited or isolated to the Truckee Meadows region. As a result, increases in flow for the Truckee River at Vista are primarily the result of stormwater runoff within Truckee Meadows. For instance, on July 8, streamflow volume increased by more than 3 times between Vista (25,599,600 cf) and roughly 9 river miles upstream at Mogul (7,935,300 cf). While a portion of this increase originates from major tributaries like North Truckee Drain (1,219,500 cf) and Steamboat Creek (3,638,700 cf), the remaining difference is still measurable and suggests that a major component of discharge to the Truckee River

during these events originates from smaller urban tributaries and urban outfalls. In fact, runoff from the Truckee Meadows during each event is estimated from difference between gages upstream (Mogul) and downstream (Vista) of Truckee Meadows (see Table 4-2).

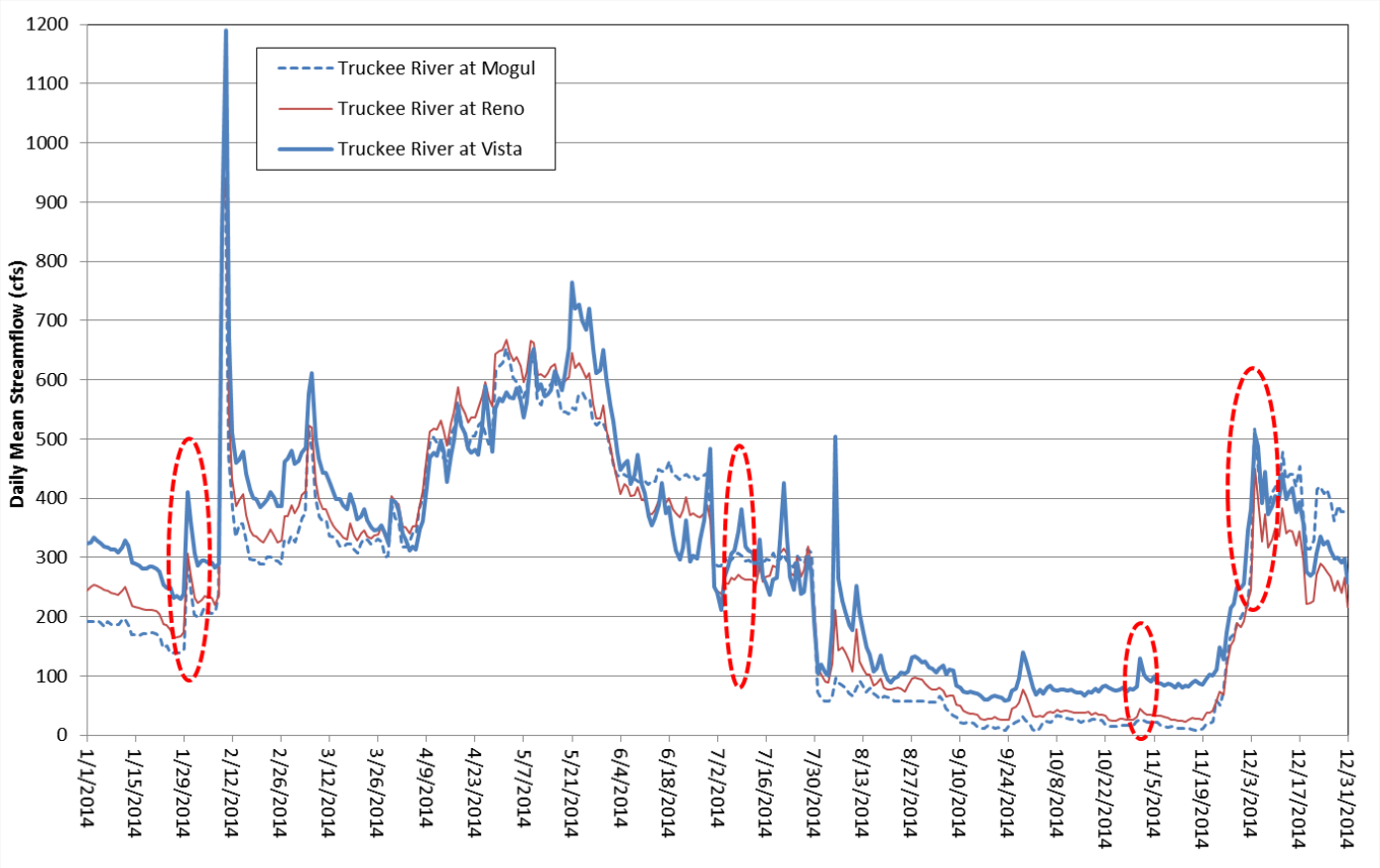

Figure 4-2: Daily mean streamflow, Truckee River at three stations, Truckee Meadows, Nevada, January 1 – December 31, 2014. As the Truckee River flows through the Cities of Reno and Sparks, it receives contributing flows from North Truckee Drain, Steamboat Creek and many other smaller tributaries and urban outfalls. Truckee River hydrologic response to 4 storms sampled in 2014 are circled.

Continuous streamflow or discharge from these smaller urban tributaries and urban outfalls are largely unmeasured; however, instantaneous measures of discharge upon sampling at the 19 monitoring stations are tabulated in **Table 4-3**. It is unlikely that manually measured discharges at non-instrumented stations represent peak flows, but they do provide some indication of additional discharge to the Truckee River.

Table 4-3: Measured and/or recorded discharge upon sampling at monitoring stations during storm events and baseflow conditions, Truckee Meadows, 2014

Monitoring Station Name	Storm Events				Baseflow	
	Jan 29-30, 2014	July 8, 2014	Nov 1, 2014	Dec 2, 2014	June 3 and 4, 2014	Dec 3 and 16, 2014
Tributaries	Measured Discharge					
	(cfs)	*(cfs)*	*(cfs)*	*(cfs)*	*(cfs)*	*(cfs)*
Chalk Creek at Chalk Bluff	NM	2.7	--	--	0.71	2.35
Alum Creek at Truckee River	NM	NR	--	0.09	0.34	--
Alum Creek at Steamboat Ditch	NR	NR	--	0.37	DRY	--
North Truckee Drain at Orr Ditch	*1.50*	*6.80*	--	--	1.77	0.97
North Truckee Drain at Kleppe Ln	*11.0*	*45.0*	--	--	9.60	3.63
Thomas Creek at Timberline Dr.	4.51	0.89	--	--	1.60	1.49
Thomas Creek at S. Meadows Pkwy	2.00	0.31	--	--	0.05	--
Whites Creek at Timberline Dr.	6.50	0.91	--	--	1.60	2.50
Whites Creek at Old Virginia Hwy	3.92	0.61	--	--	1.55	2.50
Steamboat Creek at Rhodes Road	2.7 - 4.9	--	*NR*	--	0.22	1.40
Steamboat Creek at Narrows	6.1 - 11.0	--	*5.20*	--	4.30	6.50
teamboat Creek at Clean Water Way	21.0 - 51.0	--	*24.0*	--	23.0	46.0
Urban Outfalls						
Arlington	NM	--	0.2 - 3.8	--	NM	NM
Fisherman's Park II	NM	--	0.2 - 30.4	--	NM	NM
Oxbow Nature Park	NM	--	0.5 - 3.8	--	NM	NM
Mary Wahl Ditch	--	4.8	--	--	NM	NM
Cottonwood Park	--	2.7	--	5.2	NM	NM
Greg Street	--	5.3	--	3.6	NM	NM
Paradise Park	--	NR	--	0.31	NM	NM

Notes:

NM = not measured (baseflow measurements from urban outfalls are not required; often dry during non-storm events)

NR = no response

Disharge values in *italics* are reported by the USGS

Samples were collected over a range of flows and composited at sites instrumented with automated samplers and area-velocity modules

Figure 4-3 shows 2014 daily mean streamflow for North Truckee Drain at both Orr Ditch and Kleppe Lane and highlights the two events when samples were collected. The North Truckee Drain collects runoff from agricultural return flows and tail water from Orr Ditch and then flows through the city of Sparks and receives additional flows from urban runoff and Sparks Marina, reflected by flow increases at Kleppe Lane.

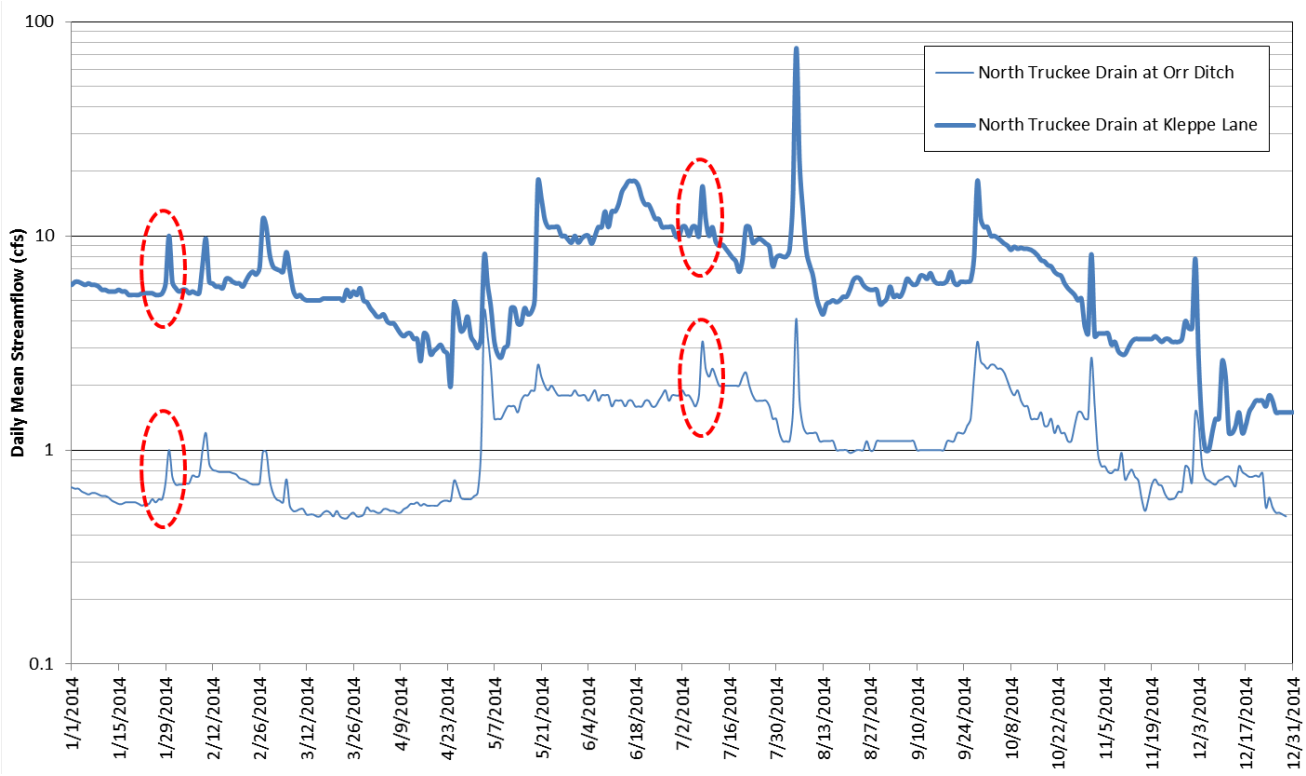

Figure 4-3: Daily mean streamflow, North Truckee Drain at Orr Ditch and Kleppe Lane, Truckee Meadows, Nevada, January 1 - December 31, 2014. North Truckee Drain hydrologic response to storms that were sampled in 2014 are highlighted.

2014 daily mean streamflow for three monitoring stations on Steamboat Creek with USGS streamflow gaging stations is shown in **Figure 4-4**. Steamboat Creek drains a large watershed (244 square miles) comprised of agriculture, rural residential, and urban areas including a significant portion of Reno-Sparks. In addition, geothermal activity and surface-groundwater exchange play an important role in the hydrology of Steamboat Creek. Washoe Lake provides some stormwater and flood detention in the upper watershed.

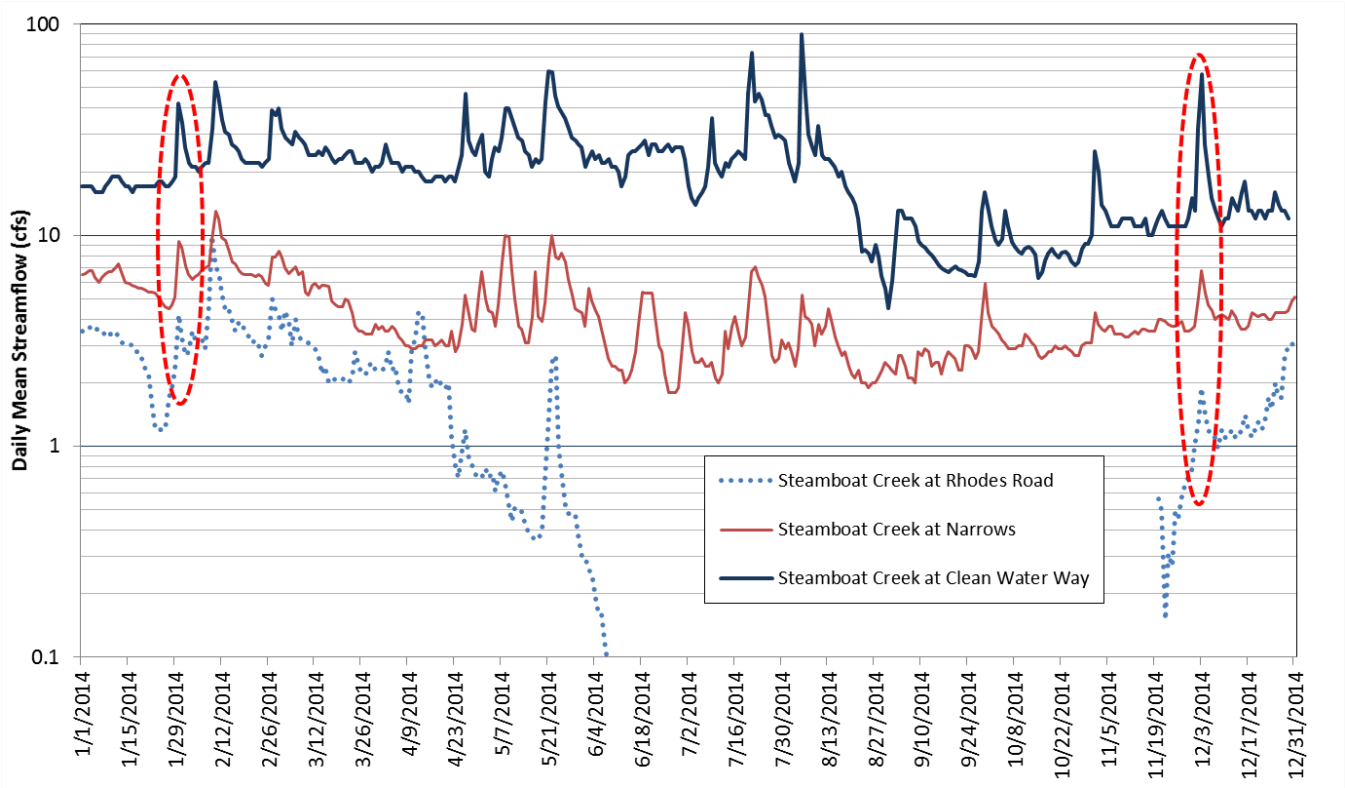

Figure 4-4: Daily mean streamflow, Steamboat Creek at three stations, Truckee Meadows, Nevada, January 1 - December 31, 2014. Steamboat Creek hydrologic response to storms that were sampled in 2014 are highlighted.

4.4 Stormwater Constituent Concentrations and Physical Parameters

In this section, we report constituent concentrations for grab and automated composited samples and compare concentrations across all sites and between baseflow and stormwater discharge. Results are then compared with existing water quality standards for the Truckee River and event mean and median concentration values reported for other semi-arid municipalities in the western United States. In most

instances, this program yields only 2 or 4 samples per site; therefore, identification of trends or effects of seasonality may not be appropriate.

The NDEP has established water quality standards (single value) for some constituents in the Truckee River at Lockwood (located downstream from Truckee Meadows). Direct comparisons to this standard should be made with caution, however, since concentrations can be reduced by dilution upon mixing with the Truckee River. The "Tributary Rule" does apply, however, which applies water quality standards or objectives to upstream or upgradient tributaries (NDEP, 2014).

4.4.1 Total Nitrogen, Nitrite, Nitrate, and Total Kjeldahl Nitrogen

Figure 4-5, **Figure 4-6**, and **Figure 4-7** compare Total-N, NO_3, and TKN across all sites for samples collected in 2014. Total-N ranged between ND (non-detect) and 4.5 mg/L with the highest tributary concentrations detected in Chalk Creek (4.4 mg/L) during the storm of July 8, 2014, North Truckee Drain at Orr Ditch (4.5 mg/L), and North Truckee Drain at Kleppe Lane (4.2 mg/L). Total-N was measured to be 4.0 mg/L in Steamboat Creek at Rhodes Road, but field observations indicated waters were stagnant with no flow at the USGS gage. In the tributaries, most values were higher than baseline concentrations with the exception of several samples collected in the January event. This may be the result of storm samples collected during the falling limb of the storm hydrograph when constituent concentrations were lower than during the first flush or rising limb. Total-N concentrations for surface waters in winter can also be low because nitrogen sources such as fertilizer applications are limited.

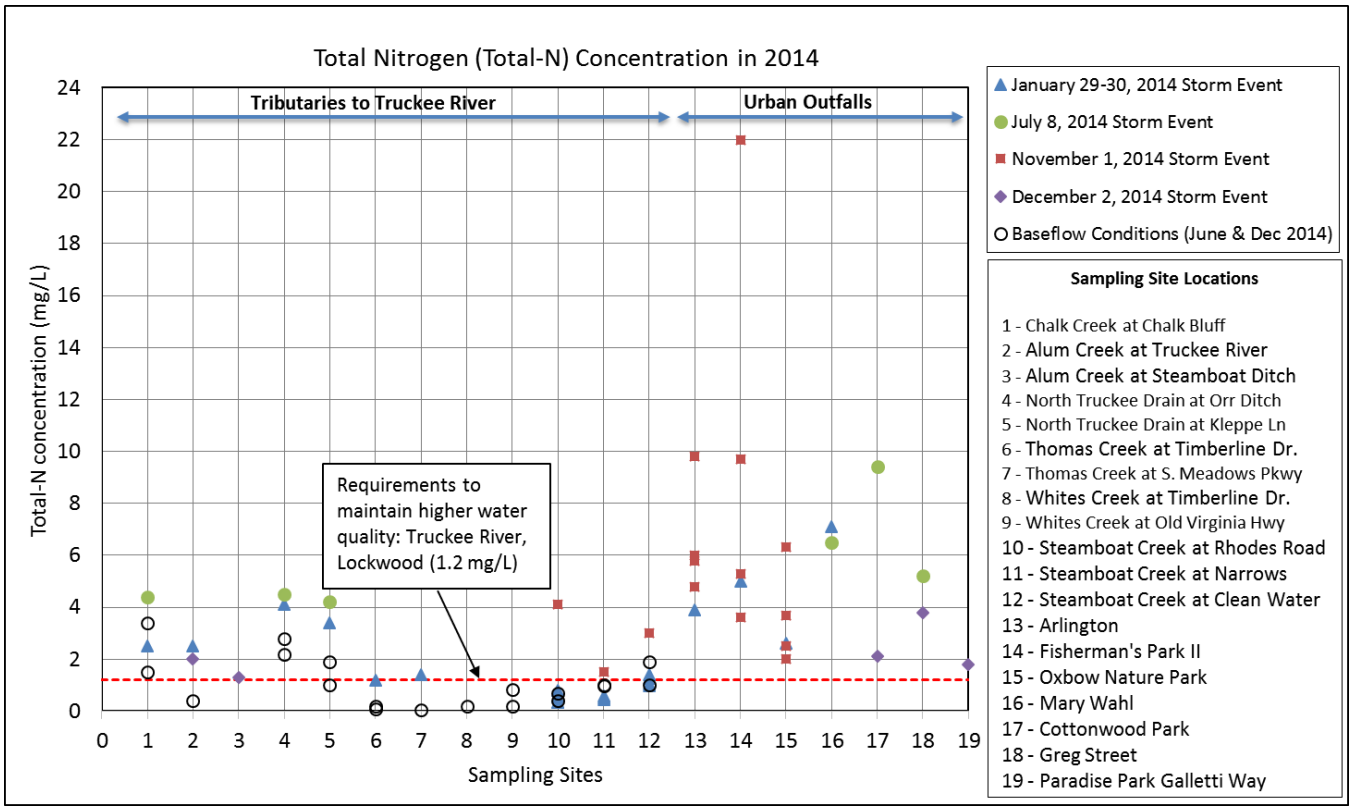

Figure 4-5 Total Nitrogen (Total-N) concentrations across all sites for samples collected in Truckee Meadows 2014

Urban outfalls exhibited a greater range of Total-N (ND to 22 mg/L) with the highest values recorded during the storm of November 1, 2014 at Arlington (9.8 mg/L), Fisherman's Park (22 mg/L), Oxbow Nature Park (6.3 mg/L), Mary Wahl (7.1 mg/L), and Cottonwood Park (9.4 mg/L). The NDEP has established a Total-N water quality standard (single value) of 1.2 mg/L in the Truckee River at Lockwood (located downstream from Truckee Meadows).

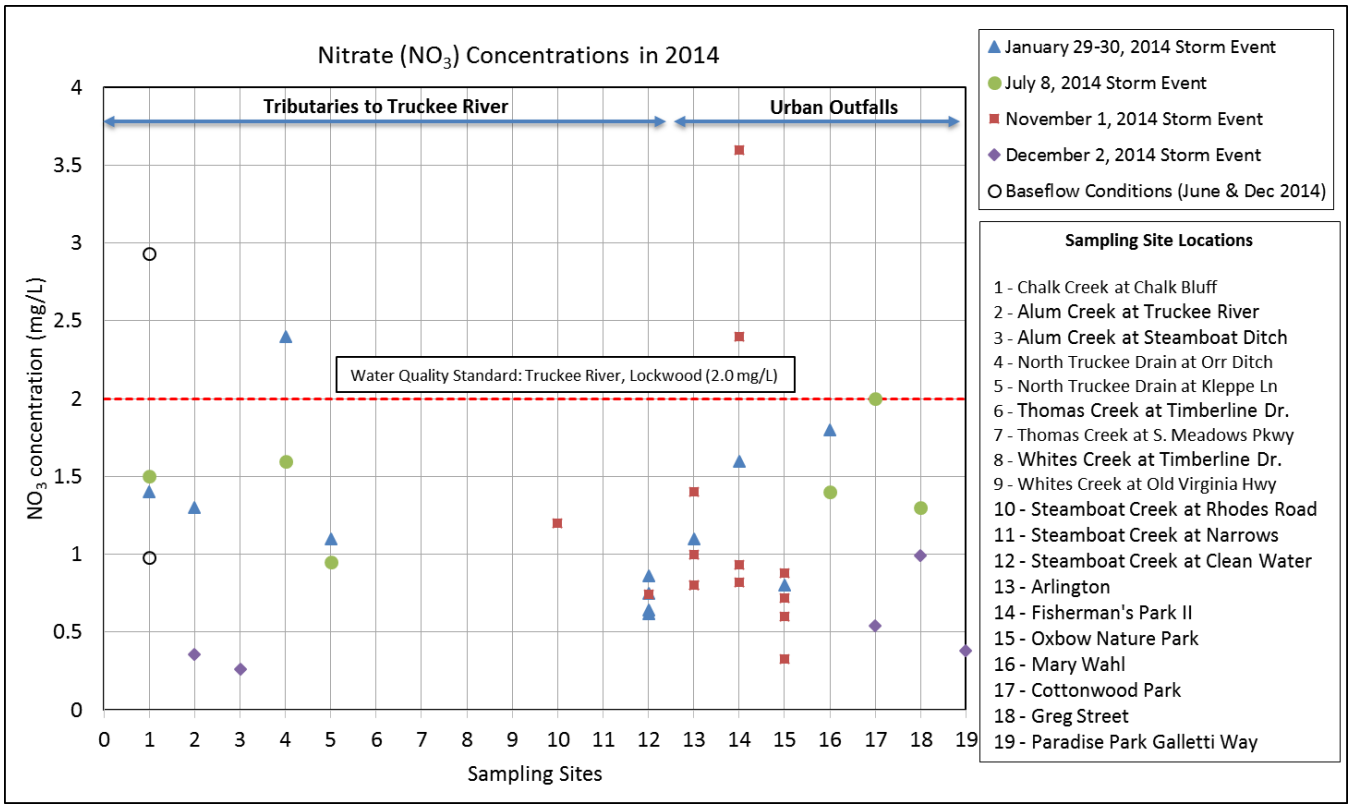

Figure 4-6: Total Nitrate (NO_3) concentrations across all sites for samples collected in Truckee Meadows 2014. Baseflow conditions were not measured in 2014 with the exception of Chalk Creek.

While NO_2 was analyzed for in all samples, its presence in stormwater is uncommon and was only detected in a single sample for Fisherman's Park (0.31 mg/L) as a first flush sample during the November 1, 2014 storm. The single-value water quality standard for NO_2 in the Truckee River at Lockwood is 0.04 mg/L. This standard is well below the laboratory reporting limit of 0.25 mg/L; therefore, it is possible that NO_2 is present in some of the sites above the standard, but below the reporting limit. Potential sources of NO_2 include runoff from fertilizer use, leaching from septic tanks, sewage, and erosion of natural deposits.

NO_3 concentrations were below water quality standards established for the Truckee River at Lockwood (2.0 mg/L) in all samples with the exception of North Truckee Drain at Orr Ditch (2.4 mg/L) and Fisherman's Park (2.4 mg/L and 3.6 mg/L). Samples collected at Cottonwood Park on July 8, 2014 had a NO_3 concentration of 2.0 mg/L. Baseflow NO_3 concentrations were not evaluated in June 2014 with the exception of Chalk Creek.

TKN may be a more important indicator of excessive nutrients since it includes both NO_3 and NH_3. TKN stormwater concentrations in tributaries and urban outfalls in the Truckee Meadows ranged from ND to 18 mg/L (see Figure 4-7). Highest values were identified in urban outfalls: Arlington (8.4 mg/L), Fisherman's Park (18 mg/L), Oxbow Nature Park (5.4 mg/L), Mary Wahl (5.3 mg/L), and Cottonwood Park (7.4 mg/L). There are no TKN standards established for the Truckee River. Baseflow TKN concentrations were not evaluated in June 2014.

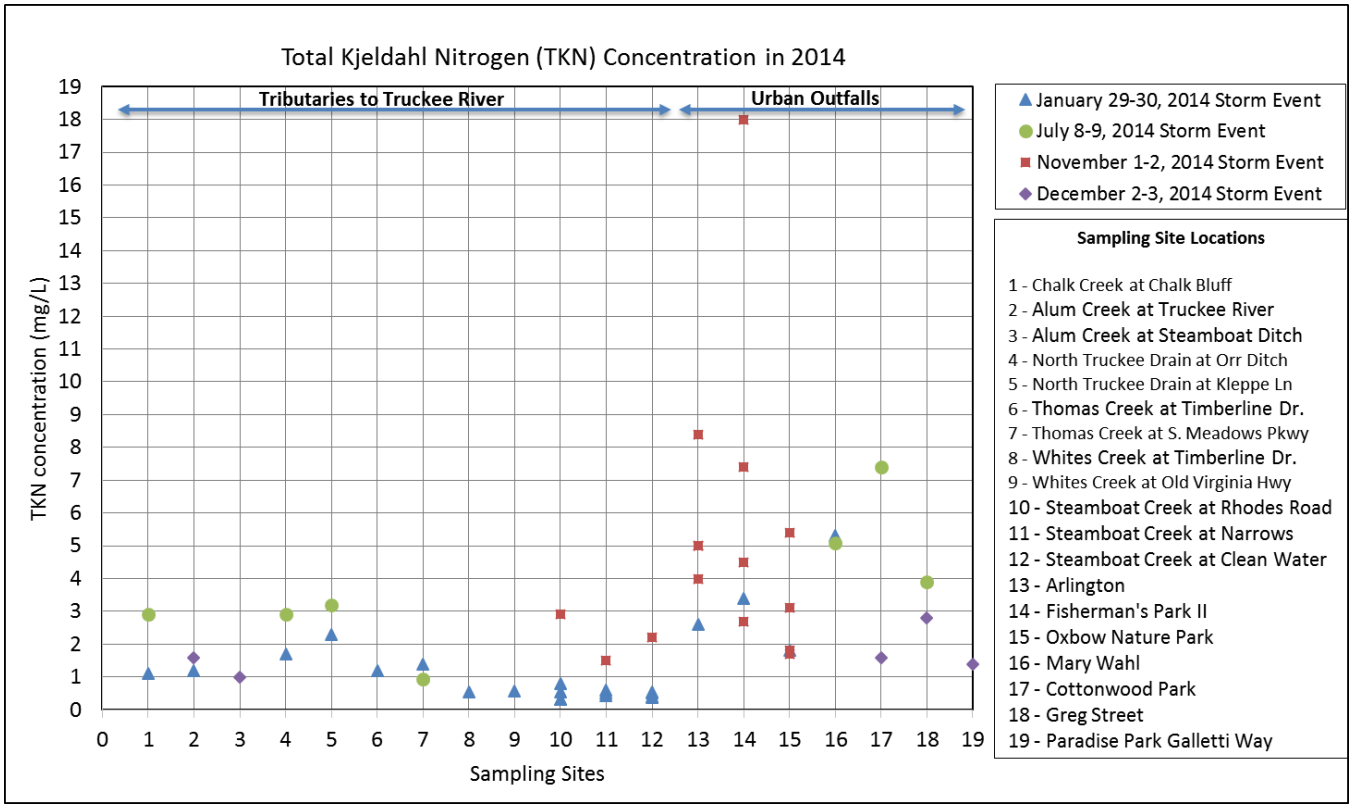

Figure 4-7: Total Kjeldahl Nitrogen (TKN) concentrations across all sites for samples collected in Truckee Meadows 2014

4.4.2 TOTAL PHOSPHORUS AND ORTHO PHOSPHATE

Figure 4-8 compares Total-P across all sites for samples collected in 2014. Total-P ranged between 0.05 mg/L to 1.6 mg/L with the highest values detected in Chalk Creek (0.86 mg/L), Steamboat Creek at Clean Water Way (1.1 mg/L), Arlington (1.3 mg/L, 1.4 mg/L, and 1.5 mg/L), Fishermans' Park (1.6 mg/L), Oxbow Nature Park (1.3 mg/L), Cottonwood Park (1.4 mg/L), and Greg Street (0.96 mg/L) (see Figure 4-8). In most cases, storm event concentrations were higher than baseflow concentrations.

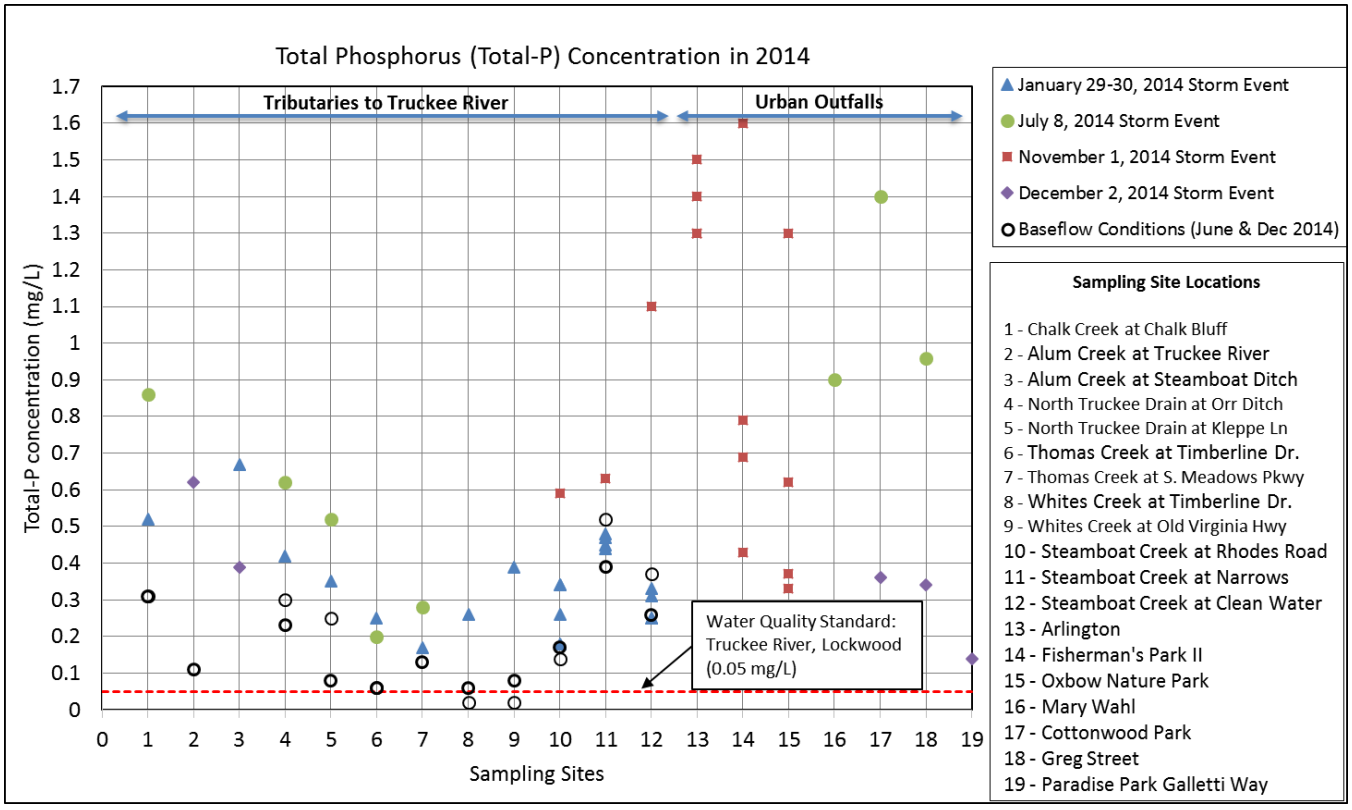

Figure 4-8: Comparison of Total Phosphorus (Total-P) concentrations across all sites for samples collected in Truckee Meadows, 2014

NDEP has established a Total-P water quality standard (annual average)[3] of 0.05 mg/L in the Truckee River at Lockwood. Concentrations in both baseflow and storm samples exceeded this standard, because they reflect single values and not annual averages.

[3] Annual average concentrations are measured as the mean of multiple samples collected across a given year and may differ from other standards such as a single value.

Figure 4-9 compares Ortho-P across all sites for samples collected in 2014. Ortho-P was not detected in most stormwater samples with the exception of Alum Creek at Truckee River (0.55 mg/L) on December 2, 2014, Steamboat Creek at Rhodes Road (1.2 mg/L), Arlington (1.1 mg/L, 1.3 mg/L, 1.4 mg/L, and 1.5 mg/L), Fisherman's Park (0.63 mg/L and 1.3 mg/L), Oxbow Nature Park (0.56 mg/L), and Cottonwood Park (0.53 mg/L) all on November 1, 2014. Ortho-P was detected in baseflow conditions in tributaries and ranged between 0.03 mg/L and 0.46 mg/L. Its presence in non-storm baseflow may be associated with applications of fertilizers during the spring and summer. There is currently no water quality standard for Ortho-P in the Truckee River.

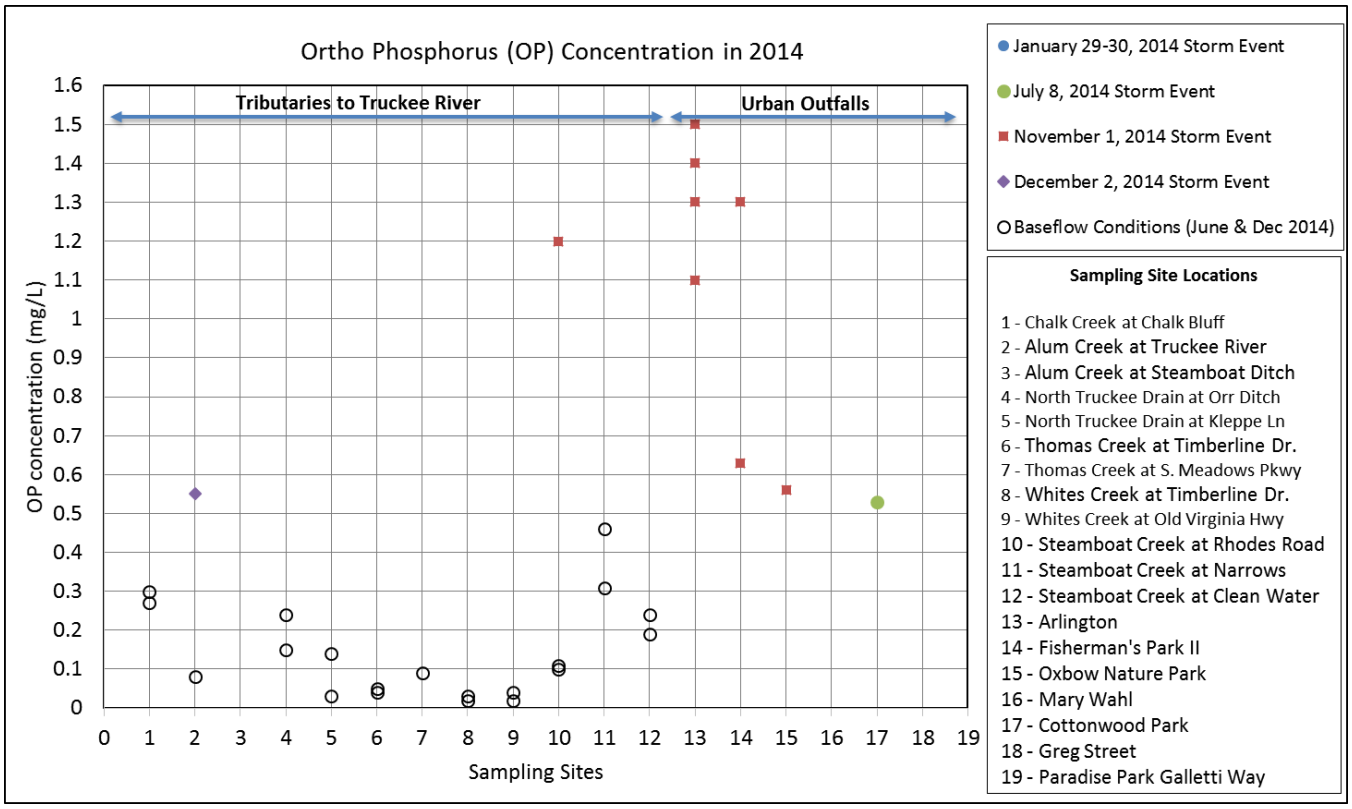

Figure 4-9: Comparison of Ortho Phosphorus (Ortho-P) concentrations across all sites for samples collected in Truckee Meadows, 2014

4.4.3 TOTAL DISSOLVED SOLIDS AND TOTAL SUSPENDED SOLIDS

Figure 4-10 compares TDS (TDS) across all sites for stormwater samples collected in 2014. NDEP has established a water quality standard for TDS of <500 mg/L in the Truckee River at Lockwood. Sampled tributaries and urban outfalls which exceeded this standard include: Chalk Creek (2,900 mg/L), North Truckee Drain at Orr Ditch (1,000 mg/L), North Truckee Drain at Kleppe (520 mg/L), Steamboat Creek at Narrows (>1,000 mg/L), Steamboat Creek at Clean Water Way (530 mg/L to 680 mg/L), Fisherman's Park (630 mg/L and 870 mg/L), Mary Wahl (590 mg/L) and Paradise Park (560 mg/L). Elevated TDS concentration in Chalk Creek (2,900 mg/L) is the likely result of high sulfides in soils and bedrock and are common for this watershed (JBR Environmental, 2010). Baseflow TDS concentrations were, in most cases, within the range or even higher than storm TDS concentrations in tributaries and may reflect effects of irrigation return flows or tailwaters during the summer irrigation season. For instance, North Truckee Drain at Orr Ditch receives return flows from irrigation ditches in Spanish Spring Valley; Thomas Creek at S. Meadows Pkwy receives tailwater from several ditches (see Table 2-1). These augmented baseflows can, at times, exceed stormwater flows and result in dilution of TDS.

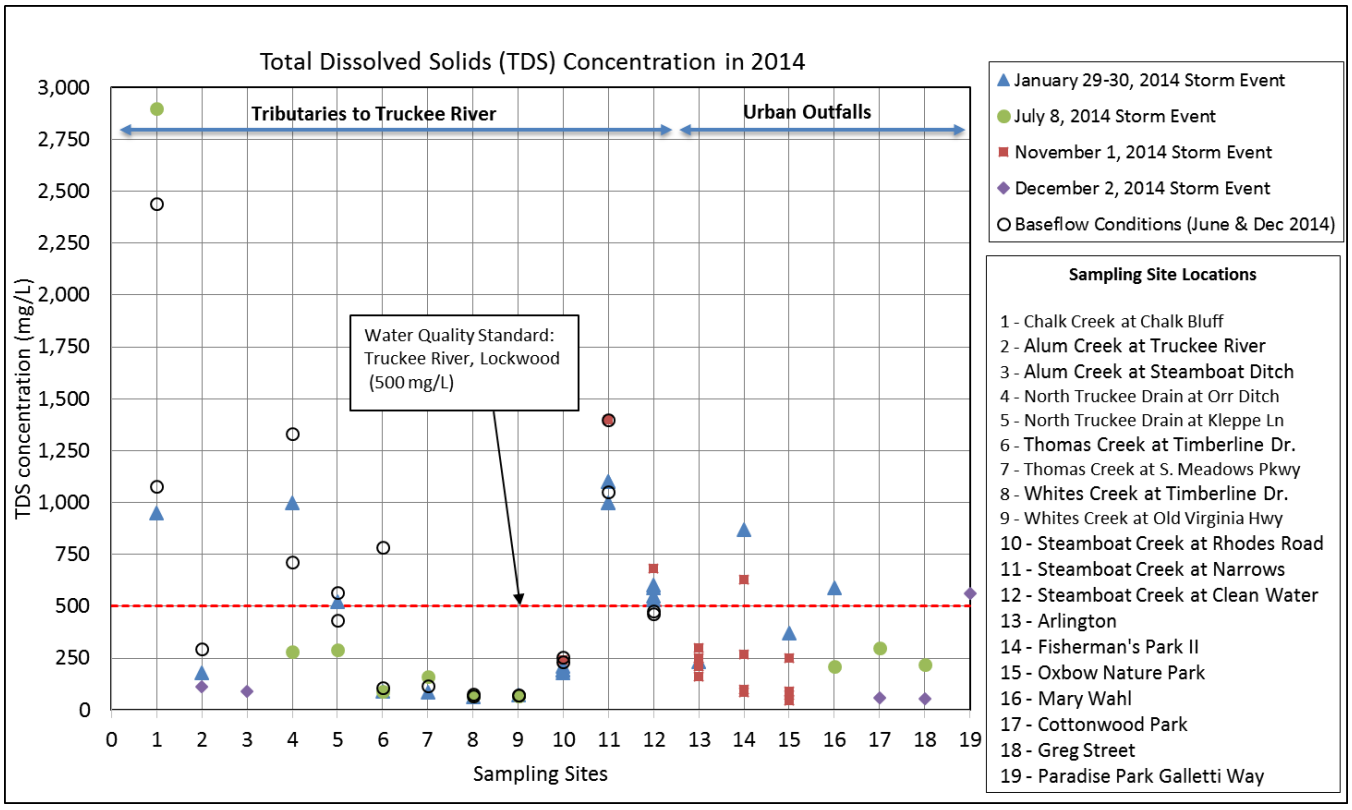

Figure 4-10: Comparison of Total Dissolved Solids (TDS) concentrations across all sites for samples collected in Truckee Meadows, 2014

Figure 4-11 compares total suspended solids (TSS) across all sites for stormwater samples collected in 2014. NDEP has established a water quality standard for TSS not to exceed 50 mg/L in the Truckee River at Lockwood. Most concentrations exceeded this value during storms, and ranged between 5 mg/L and 275 mg/L. Two urban outfalls exhibited even higher TSS values on three occasions: Fisherman's Park (375 mg/L and 1,100 mg/L), and Oxbow Nature Park (450 mg/L) (see Figure 4-11). Baseflow concentrations were all relatively low (less than or equal to 50 mg/L) across all tributaries and characterize baseflow conditions for comparison to TSS concentrations during storm events.

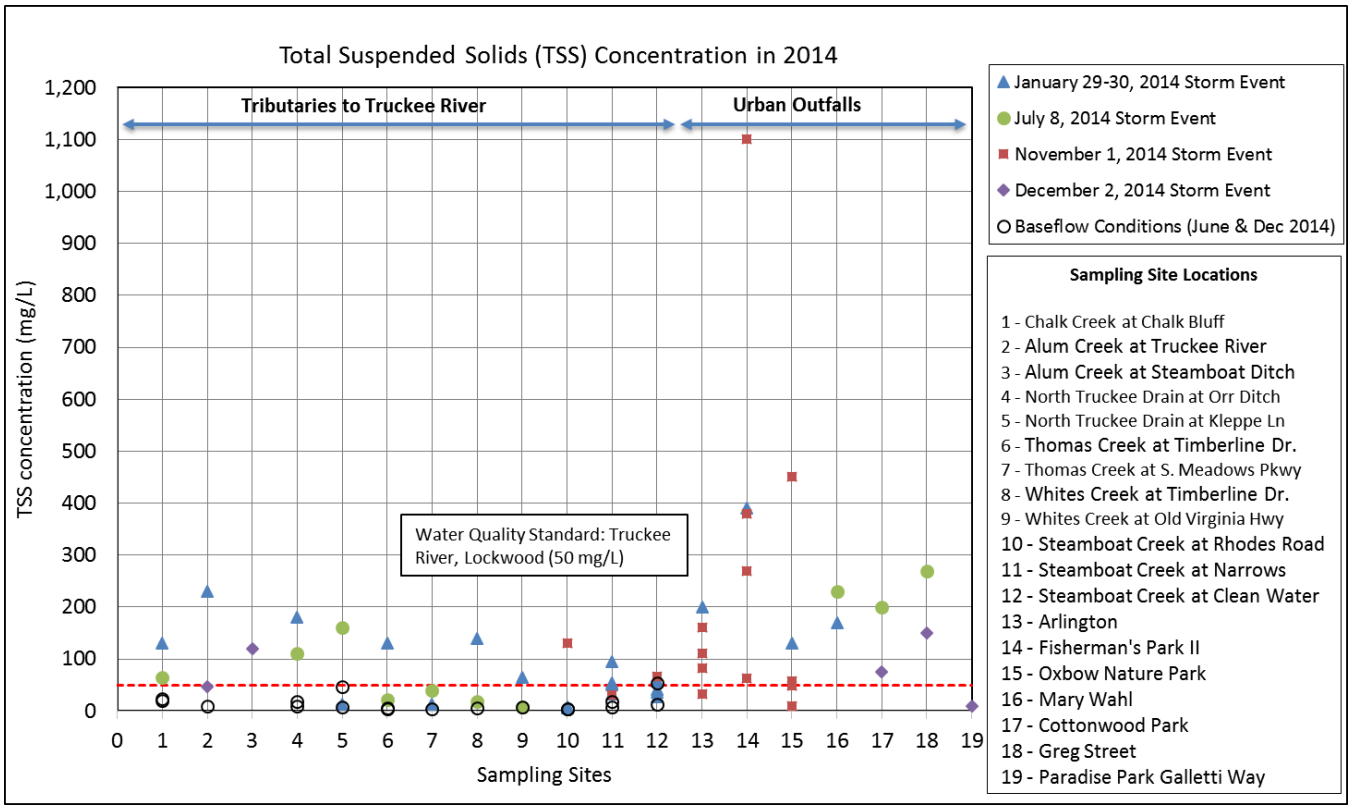

Figure 4-11: Comparison of Total Suspended Solids (TSS) concentrations across all sites for samples collected in Truckee Meadows, 2014

4.4.4 TOTAL COLIFORM AND ESCHERICHIA COLI

Figure 4-12 compares total coliform across all sites for stormwater samples collected in 2014. Total coliform was identified in all samples and exceeded 1,700 MPN/100 mL with the exception of Paradise Park (649 MPN/100 mL). Alum Creek at Truckee River, North Truckee Drain at Orr Ditch and Kleppe Lane, as well as most urban outfalls, exceeded 24,000 MPN/100 mL. Specialized analyses of samples from the November 1, 2014 storm event resulted in a total coliform count exceeding 241,000 MPN/100 mL in Steamboat Creek at Rhodes Road, Arlington, Fisherman's Park, and Oxbow Nature Park (see Figure 4-12). Total coliform is not sampled during baseflow.

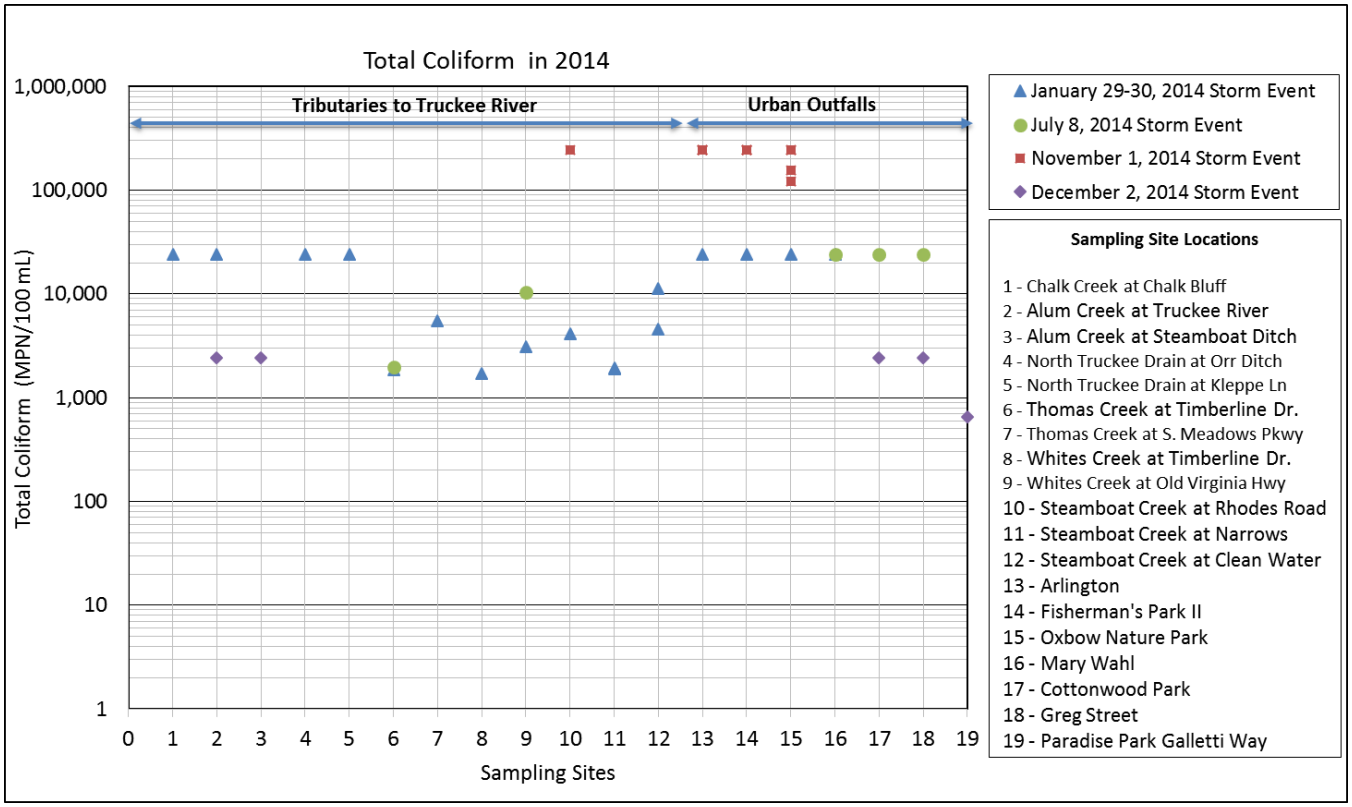

Figure 4-12: Comparison of Total Coliform across all sites for samples collected in Truckee Meadows, 2014

Figure 4-13 compares *E. coli* across all sites for samples collected in 2014. *E. coli* is a potentially better indicator for potential human health impacts from exposure to surface waters that contain excessive contamination from wildlife or human excrement and treated wastewater effluent, and was detected in all samples, across all storm events. NDEP has established a water quality standard of 410 MPN/100 mL in the Truckee River at Lockwood. Tributaries which exceeded this standard include: Chalk Creek (1,178 MPN/100 mL), Alum Creek at Truckee River (>24,192 MPN/100 mL), North Truckee Drain at

Kleppe Lane (15,531 MPN/100 mL), and Steamboat Creek at Rhodes Road (2,930 MPN/100 mL) (see Figure 4-13). Samples collected from urban outfalls exhibited consistently higher results with the highest identified at Arlington (>241,920 MPN/100 mL), Fisherman's Park (64,880 MPN/100 mL), and Oxbow Nature Park (57,940 MPN/100 mL) for the November 1, 2014 event; however, it should be noted that these analytical results reflect samples that exceeded the holding times for the events of July 8, 2014, and November 1, 2014, and may be elevated as a result.

A few tributaries were tested for *E. coli* during baseflow conditions and provide a baseline to compare influence of storms on increases in *E. coli* in stormwater. For example, Alum Creek at the Truckee River exhibited baseflow *E. coli* counts of 57 MPN/100 mL, but increased to greater than 24,000 MPN/100 mL in a storm event. On the other hand, Steamboat Creek showed decreases or declines in *E. coli* counts in a storm event as compared to baseflow and may be the result of irrigation tailwaters during baseflow.

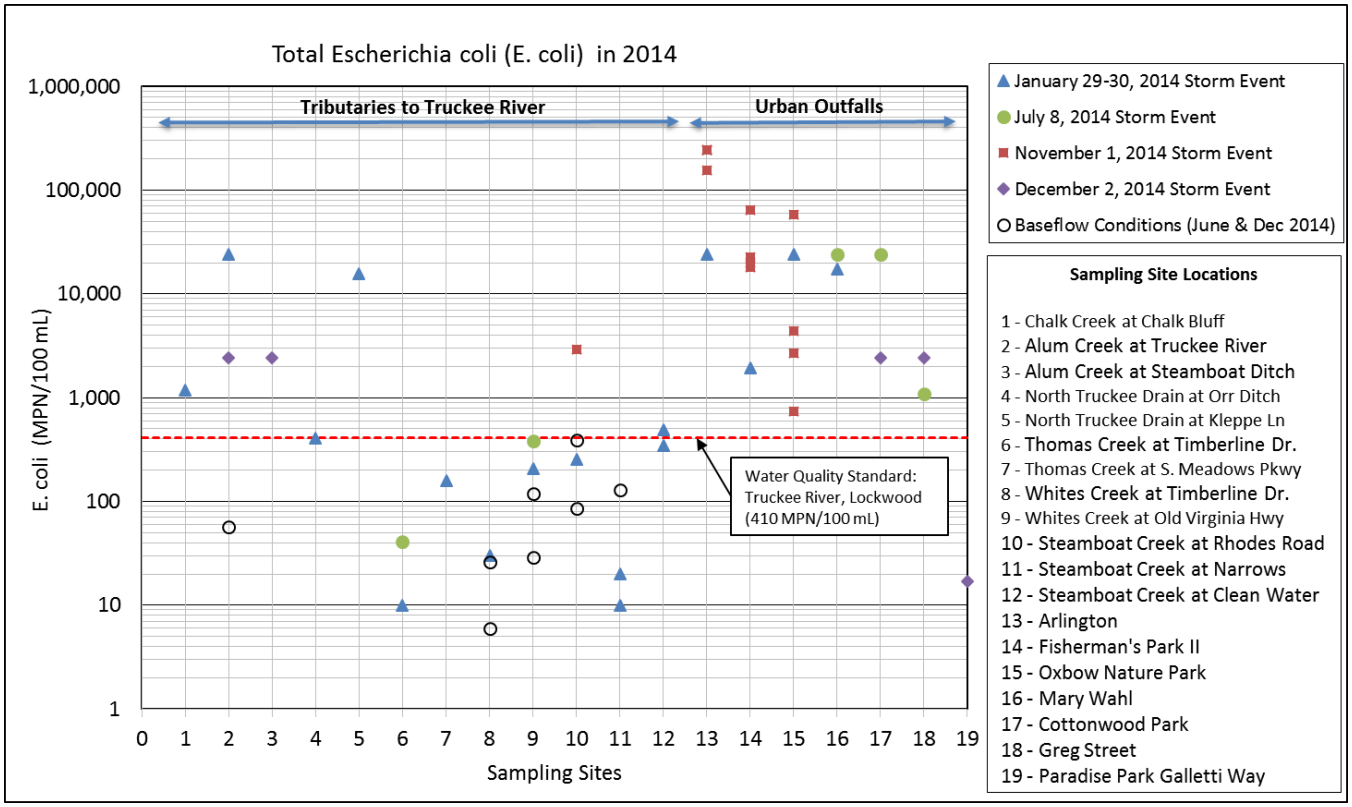

Figure 4-13: Comparison of Escherichia (E. coli) across all sites for samples collected in Truckee Meadows, 2014

4.4.5 PHYSICAL PARAMETERS: DISSOLVED OXYGEN, PH, SPECIFIC CONDUCTANCE AND TURBIDITY

Figure 4-14 compares dissolved oxygen (DO) across all sites for samples collected in 2014. Most freshwater fish begin to show initial distress symptoms in waters with dissolved oxygen levels less than 6.00 mg/L with critical conditions characterized at levels less than 4.25 mg/L (Bjornn and Reiser, 1991). Sites with values within or below this range included: Chalk Creek (5.3 mg/L), North Truckee Drain at Orr Ditch (3.2 mg/L), North Truckee Drain at Kleppe Lane (5.0 mg/L), Thomas Creek at S. Meadows Parkway (5.1 mg/L), and Mary Wahl (5.3 mg/L) (see Figure 4-14), all on the July 8, 2014 event; though it is important to note that urban outfalls (i.e., Mary Wahl) are not considered fish habitat. In tributaries, where baseflow DO was measured, concentrations ranged between 5.79 mg/L and 16.0 mg/L and were typically higher than storm concentrations with a few exceptions where DO was lower during baseflow conditions: Chalk Creek (9.29 mg/L), Alum Creek at Truckee River (8.19 mg/L), and Steamboat Creek at Rhodes Road (5.79 mg/L). While these DO concentrations are generally considered adequate for aquatic life, lower DO concentrations during baseflow conditions may be a result of extremely low flows or stagnant waters at these sites. Low flows tend to experience less circulation and if algae and bacteria are present, dissolved oxygen may decrease (MacDonald and others, 1991).

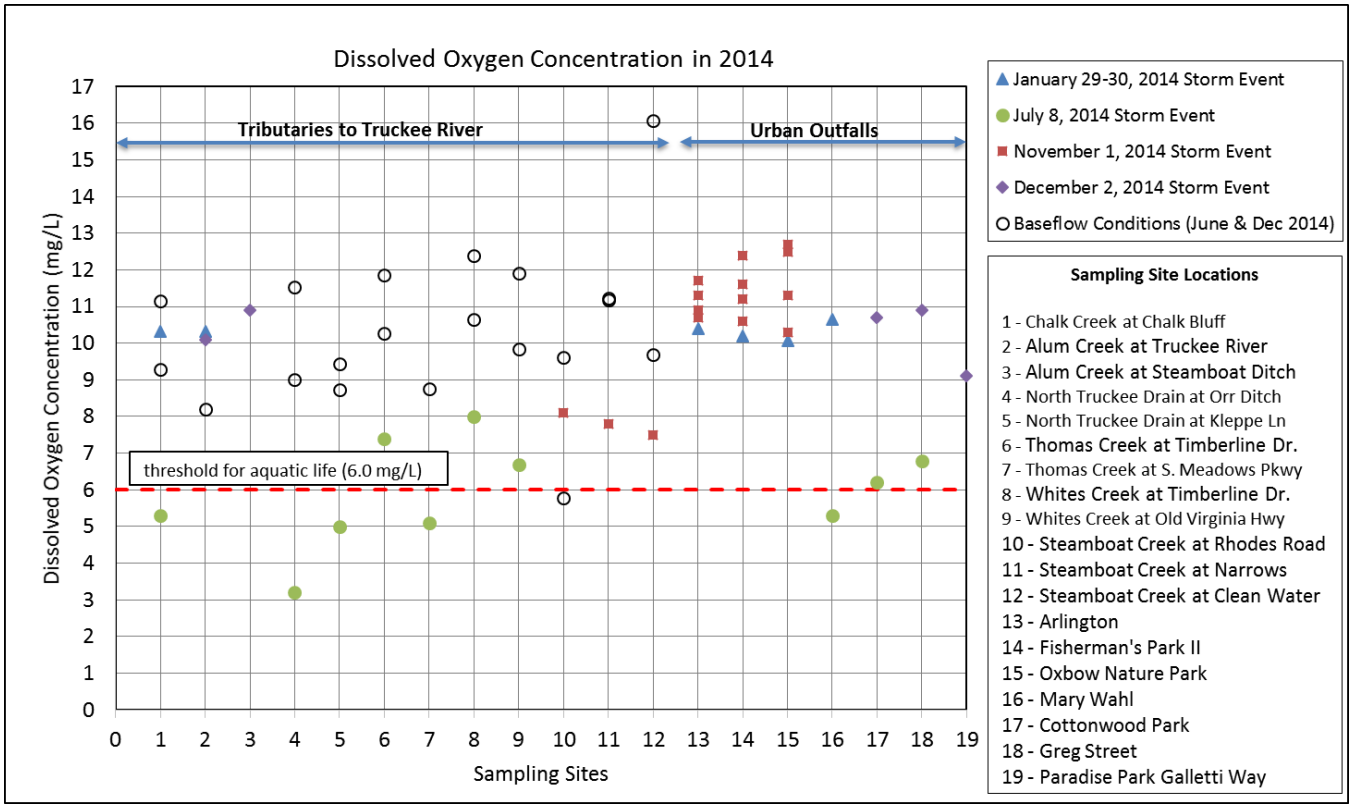

Figure 4-14: Comparison of Dissolved Oxygen across all sites for samples collected in Truckee Meadows, 2014

Figure 4-15 compares pH at all sites for samples collected in 2014. Both Tributaries and urban outfalls exhibited a pH with a range of 6.40 (Alum Creek at Steamboat Ditch) to 8.19 (Oxbow Nature Park) during storm events. Most sites had pH values between 7.00 and 8.00, as is typical for most surface waters (Hem, 1985) (see Figure 4-15). pH generally shows a weak inverse relationship to discharge, such that low or base flows incorporate more dissolved materials and tends to increase pH in natural channels (MacDonald and others, 1991) and is observed when non-storm (low flows) and storm runoff pH is compared (e.g., Chalk Creek, North Truckee Drain, Whites Creek). Stormwater in urban outfalls may reflect pH of the source of those waters including industrial wastewater, sewage, or contaminants flushed from impervious surfaces; but little information is available on the sources of waters measured from urban outfalls in the Truckee Meadows.

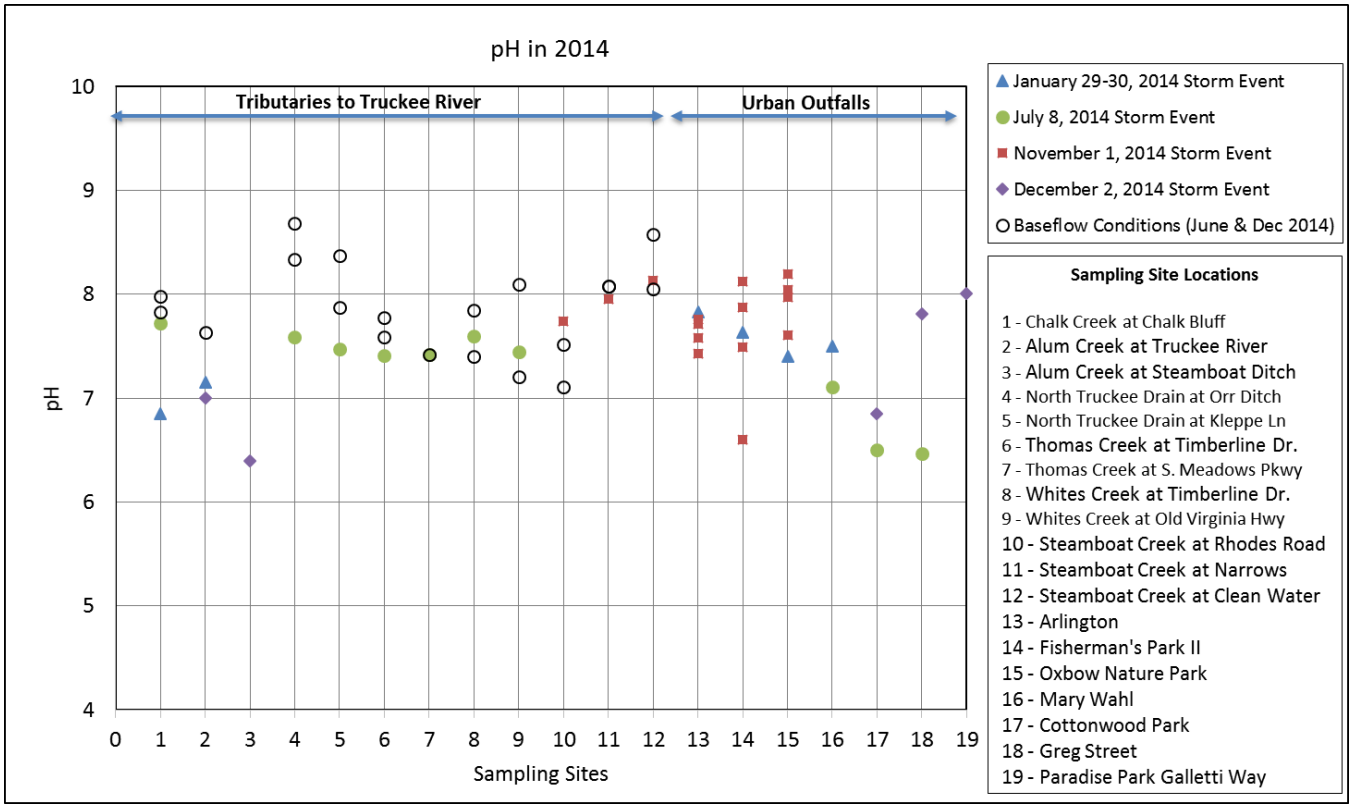

Figure 4-15: Comparison of pH across all sites for samples collected in Truckee Meadows, 2014

Figure 4-16 compares specific conductance (SC) across all sites for samples collected in 2014. SC is an indication of the amount of dissolved ions in the water. The acceptable range for potable water in the U.S. is between 30 to 1,500 µS (MacDonald and others, 1991). Most samples were measured to be less than 1,500 µS with the exception of Chalk Creek (5,407 µS), Steamboat Creek at the Narrows (2,392 µS), and Fisherman's Park (1,683 µS) (see Figure 4-16). Chalk Creek and Steamboat Creek drain watersheds comprised of geology and soils that can contribute to elevated specific conductance; therefore, these values are generally in the range expected for these creeks. On the other hand, Fisherman's Park urban outfall drains a highly urbanized area with highly connected impervious surfaces. Sources for high SC values are unknown however, when surface and groundwater mix during baseflow, SC can be higher than SC of elevated flow conditions during a storm. Groundwater generally has the opportunity to dissolve more ions and high SC values in baseflows can be an indicator of groundwater-supported perennial flow (e.g., Steamboat Creek at Narrows). Such may be the case in Steamboat Creek. Alternatively, irrigation return flows from the many ditches that discharge back to tributaries (i.e., North Truckee Drain, Whites Creek) may include an increase in the dissolved ions or salts and elevate SC in discharges to the Truckee River (e.g., North Truckee Drain at Orr Ditch).

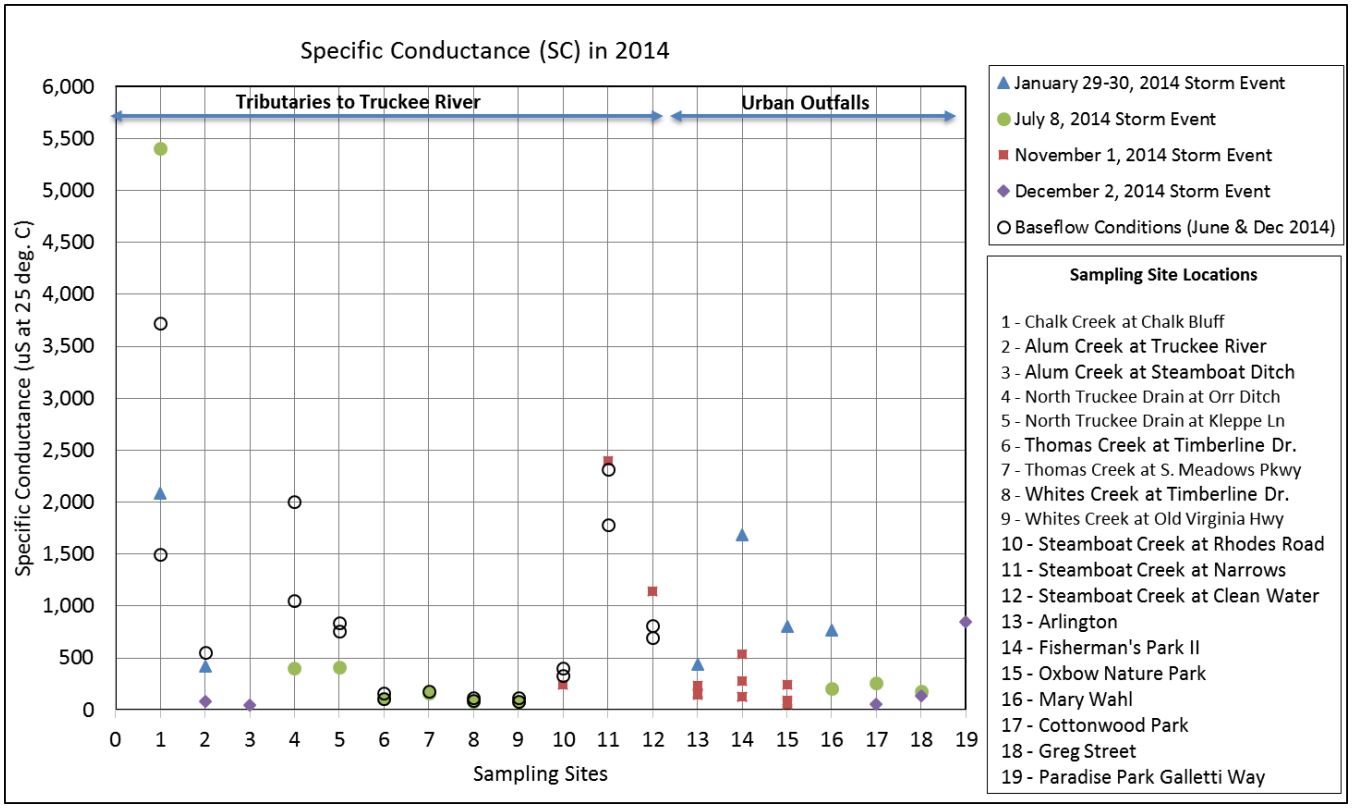

Figure 4-16: Comparison of Specific Conductance (SC) across all sites for samples collected in Truckee Meadows, 2014

Figure 4-17 compares turbidity across all sites for stormwater samples collected in 2014. Turbidity is a measure of water clarity and typically increases with an increase in total suspended solids or sediments. Therefore, turbidity generally increases during a storm event (see Figure 4-17). Turbidity during storm events in tributaries show increases that are double or up to 62-fold over baseflow conditions. Outfalls discharging stormwater exhibited turbidity values with a range between 12 NTU (Oxbow Nature Park) and 292 NTU (Fisherman's Park). While there is no standard for turbidity, values less than 10 NTU is desired for beneficial uses.

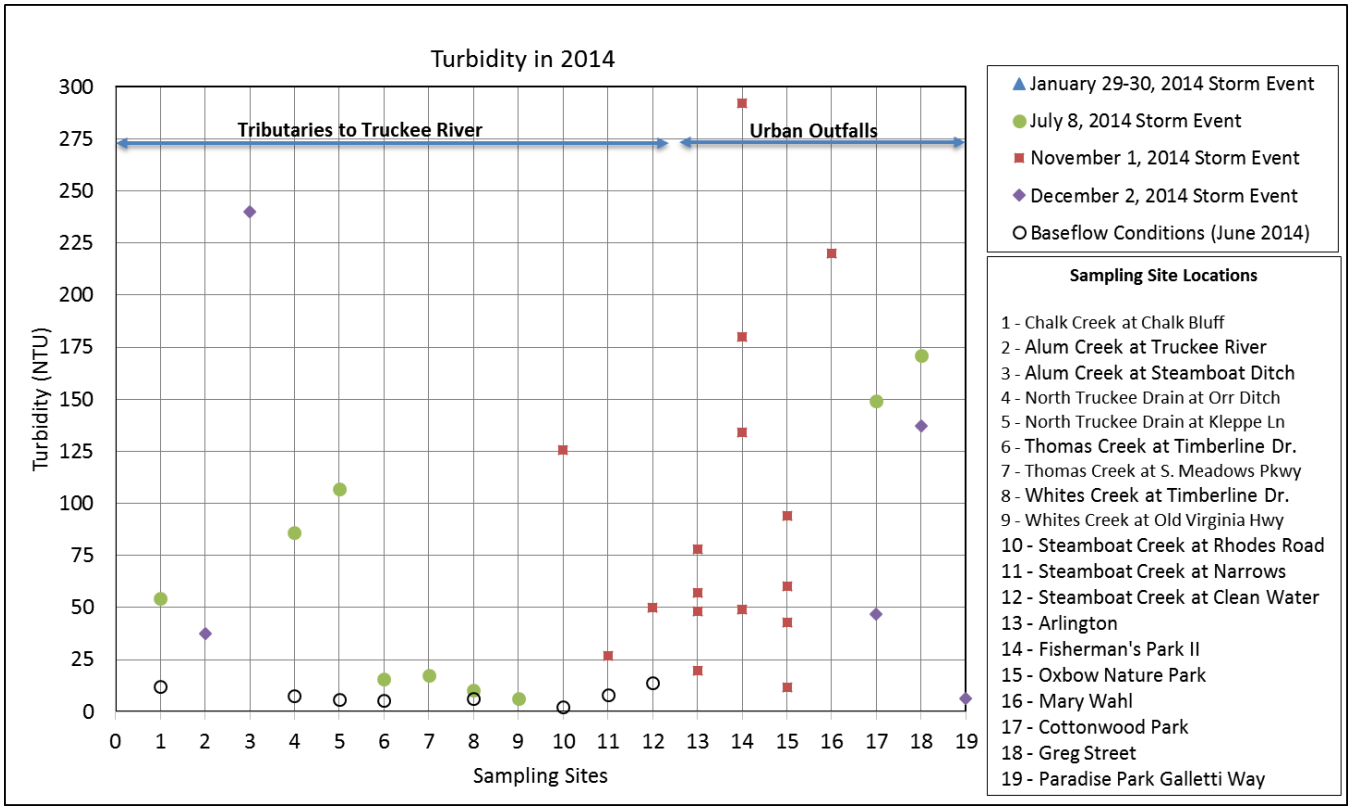

Figure 4-17: Comparison of Turbidity across all sites for samples collected in Truckee Meadows, 2014

4.4.6 2014 Constituent Concentrations as compared to other Arid and Semi-Arid Cities

In **Table 4-4** we compare average concentrations of several constituents measured in the Truckee Meadows in 2014 across 19 stations and 4 storm events in the Truckee Meadows with EMCs from other arid or semi-arid cities. While results from the Truckee Meadows are not EMCs, they provide for a general comparison. Total-N measured from grab samples in the Truckee Meadows averages about 3.77 mg/L and is within the range measured in other semi-arid cities (3.26 mg/L to 4.13 mg/L). Similarly, Total-P measured in

grab samples in the Truckee Meadows averages about 0.58 mg/L and is also within the range measured in other semi-arid cities (0.41 mg/L to 0.75 mg/L). Finally, Truckee Meadows grab samples exhibit a wide range of TSS across sites (3 mg/L to 1,100 mg/L), but when averaged (124 mg/L) is within the range observed in other semi-arid cities (116 mg/L to 330 mg/L). Higher concentrations of TSS measured in the Truckee Meadows are typically associated with urban outfalls.

Table 4-4: Mean stormwater constituent concentrations across 4 storms in the Truckee Meadows (2014) with comparisons to other arid and semi-arid cities in the western United States

	National	Phoenix, AZ	**Truckee Meadows, NV**	San Diego, CA	Boise, ID
Annual Rainfall (in)	n/a	7.1	**7.5**	10	11
Constituent			*mg/L*		
Total N	2.39	3.26	**3.77**	4.55	4.13
Total P	0.32	0.41	**0.58**	0.7	0.75
Number of events	3000	40	**4**	36	15
Number of samples	n/a	n/a	**48-54**	n/a	n/a

Notes:

1) Data for other cities represent the event mean concentration (EMC);
whereas, the values for Truckee Meadows represents the mean of grab samples across 4 events (2014)

2) Source: Center for Watershed Protection, 2003

Annual rainfall is the best predictor of constituent concentrations with higher concentrations in areas of low annual rainfall or arid to semi-arid areas (Center for Watershed Protection, 2003). Semi-arid areas, such as Truckee Meadows, have sparse vegetation and experience high intensity rainfall. Together, these characteristics can easily erode sediments and provide a source for pollutants or constituents to reach surface waters. The infrequency of rainfall in arid and semi-arid areas is also important since long, dry periods between storms can influence the accumulation of constituents on impervious surfaces that are subsequently available for wash-off during storm events. This is reflected in the difference between arid and semi-arid concentrations and those nationally.

4.5 Stormwater and Baseflow Constituent Instantaneous Loads

When constituent concentrations are paired with a measurement of streamflow or runoff collected at the same time of the sample, instantaneous loading rates, or 'instantaneous load' can be computed. Instantaneous loads are still a 'snapshot' in time, and while they cannot be compared to any established TMDLs, they can provide additional information when comparing across sites. For example, low concentrations in a tributary with high streamflow may result in higher loading rate than another tributary with high concentrations, but low runoff volume. In this section we compare instantaneous loads for a limited number of constituents (Total-N, Total-P, and TDS) across sites where grab samples and flow were measured simultaneously in both storm events and baseflow conditions. These comparisons allow for: 1) identification of sites with higher loading rates, and 2) illustrate relative increases in loading rates during storms. Standard reporting for instantaneous load is mass per time (e.g., lbs/day). We note that instantaneous loading rates for some sites are not shown because either constituents were not detected or total loads were measured and discussed in more detail in subsequent sections. We also note that constituent loading rates for baseflow conditions in urban outfalls are unavailable, because urban outfalls are dry in the absence of rainfall.

4.5.1 Total-N Instantaneous Loads

Figure 4-18 compares instantaneous loads for Total-N across sites where grab samples were collected and discharge was measured in 2014. In general, we see increases in instantaneous loads in storm runoff when compared to baseflow conditions, with the exception of cases which constituents were either non-detect or discharge was limited. Baseflow instantaneous load for North Truckee Drain at Kleppe Lane was 51.8 lbs/day whereas an instantaneous load of 1,019 lbs/day was measured for a storm on July 8, 2014. Similarly, baseflow instantaneous load for Steamboat Creek at Clean Water Way was 124 lbs/day whereas an instantaneous load of 388 lbs/day was measured during a storm on November 1, 2014. Figure 4-18 shows that Total-N loading during baseflow in Steamboat Creek at Clean Water Way (124 lbs/day and 471 lbs/day) can be higher than instantaneous loads measured in other tributaries or outfalls during a storm event, such as Chalk Creek (64 lbs/day) or Cottonwood Park (58.8 lbs/day). The higher value may be associated with the fact that baseflow samples were collected the day after a major storm (December 2, 2014). We caution against drawing conclusions from these comparisons, however, since it is unknown where samples were collected on the hydrograph.

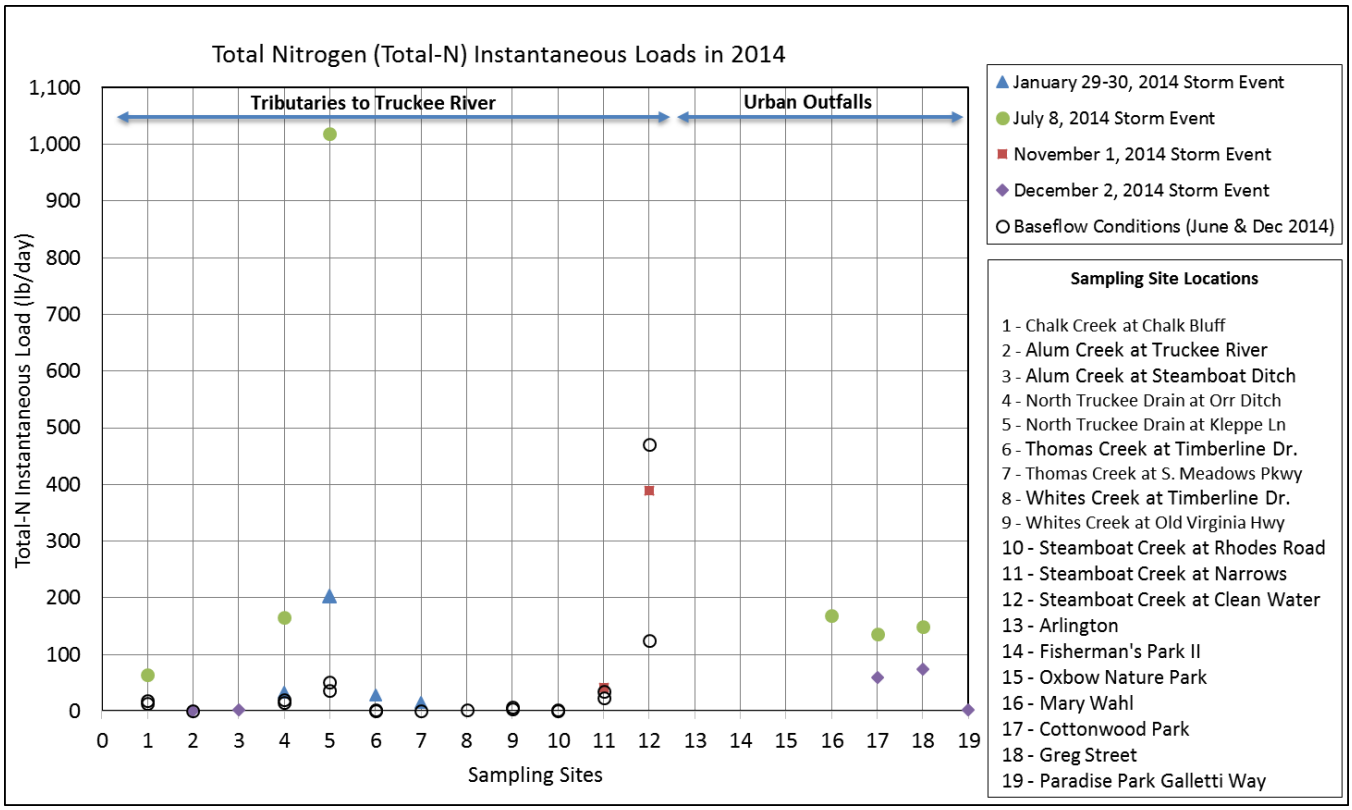

Figure 4-18: Comparison of Total Nitrogen (Total-N) instantaneous loads across sites in Truckee Meadows, 2014

4.5.2 TOTAL-P INSTANTANEOUS LOADS

Figure 4-19 compares instantaneous loads for Total-P across sites where grab samples were collected and discharge was measured in 2014. Two tributaries stand out as potential high Total-P loading sources: North Truckee Drain at Kleppe Lane (126 lbs/day) and Steamboat Creek at Clean Water Way (142 lbs/day). Other potentially moderate to high Total-P contributors include Chalk Creek, and most urban outfalls. Figure 4-19 also shows that baseflow Total-P loading in Steamboat Creek at Clean Water Way (32 lbs/day and 92 lbs/day) is generally higher than instantaneous loads measured in other tributaries or outfalls during a storm event. The higher value may be associated with the fact that baseflow samples were collected the day after a major storm (December 2, 2014). Again, we caution drawing conclusions on total daily or annual loading trends from these data since it is unknown whether samples represent highest concentrations and peak flows or adequately characterize average baseflow conditions.

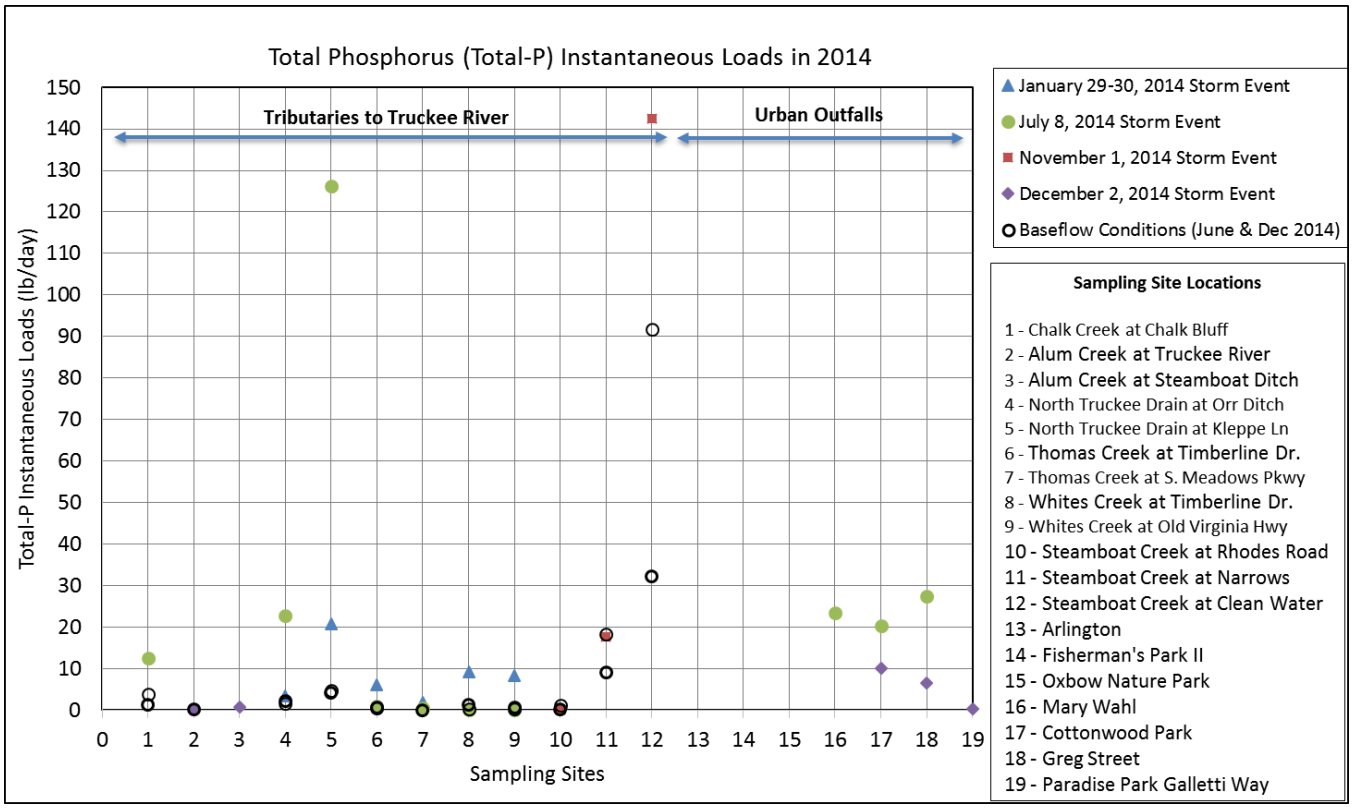

Figure 4-19: Comparison of Total Phosphorus (Total-P) instantaneous loads across sites in Truckee Meadows, 2014

4.5.3 TDS Instantaneous Loads

Figure 4-20 compares instantaneous loads for Total-P across all sites when grab samples were collected and discharge was measured in 2014. Measureable increases in TDS instantaneous loads during a storm are shown relative to baseflow instantaneous loads: Chalk Creek (42,388 lbs/day, an increase from 9,344 lbs/day); North Truckee Drain at Orr Ditch (10,269 lb/day, an increase from 6,797 lbs/day); North Truckee Drain at Kelppe Lane (70,387 lbs/day, an increase from 22,317 lbs/day). Alternatively, Steamboat Creek can show higher instantaneous loads during baseflows (49,082 lbs/day [baseflow] versus 39,266 lbs/day [storm] at the Narrows and 118,099 lbs/day [baseflow] versus 88,024 lbs/day [storm] at Clean Water Way). We have a limited understanding of water quality changes in Steamboat Creek, but changes may be associated with surface-groundwater interactions as well as influence of irrigation ditch tailwaters or return flows.

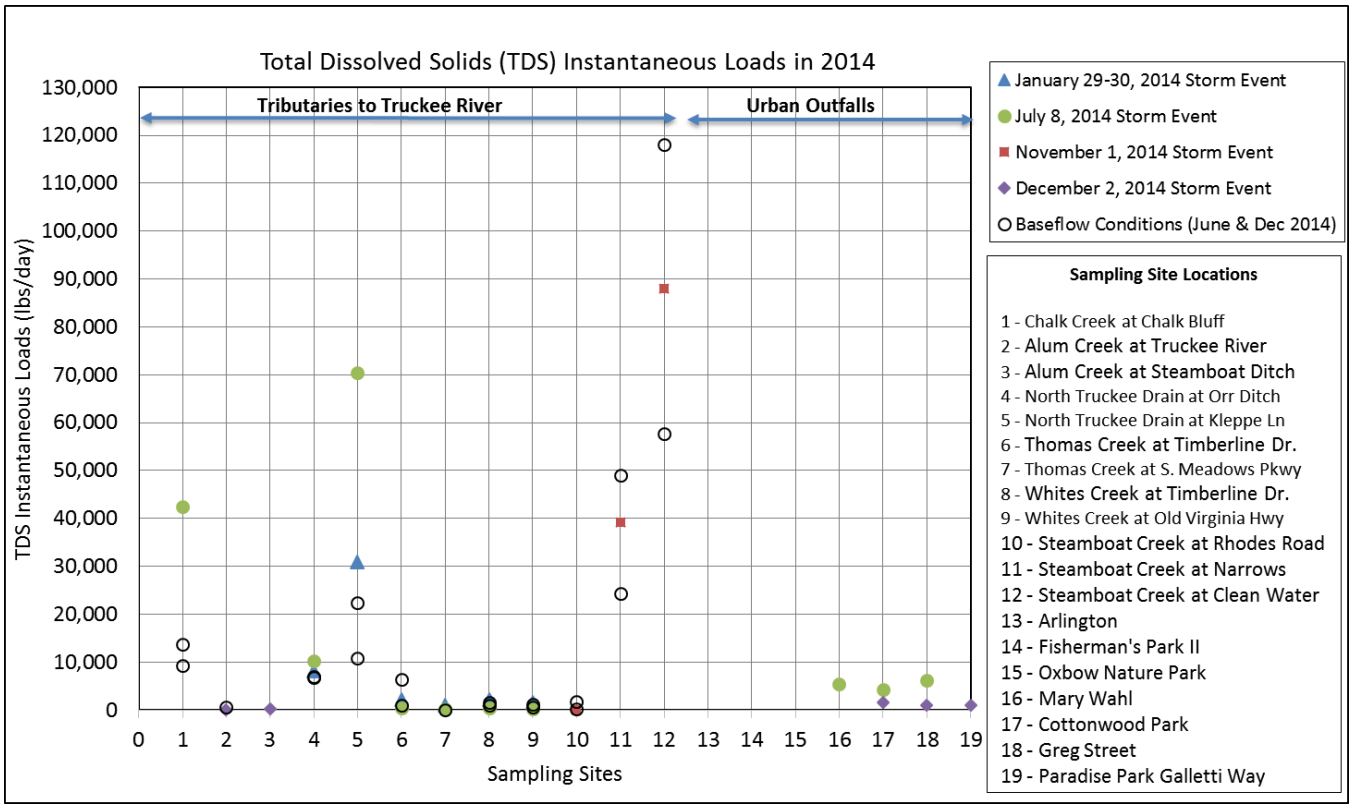

Figure 4-20: Comparison of Total Dissolved Solids (TDS) instantaneous loads across sites in Truckee Meadows, 2014

4.6 Stormwater Constituent Total Loads

In the following subsections, we report loads for constituents in Steamboat Creek from a winter storm on January 29-30, 2014, and three urban outfalls from an autumn storm on November 1, 2014.

4.6.1 Stormwater Constituent Loads from Steamboat Creek

On January 29-30, multiple samples were collected with automated samplers and composited to represent distinct segments of the storm hydrograph, and analyzed for the range of constituents identified in the 2012 SAP for three different locations on Steamboat Creek. Each station was co-located with a USGS streamflow gage and storm runoff volumes were computed from the USGS streamflow record. Constituent loads for distinct segments of the hydrograph and for the total storm runoff are compared in **Table 4-5** across all three Steamboat Creek stations.

Total loads for each constituent increased with distance downstream. In general, loading was highest on the falling limb of the storm hydrograph as the result of higher flows rates for a longer duration (i.e., high runoff volume). While no NO_3 loads were identified at Rhodes Road or the Narrows, 276 lbs of NO_3 were computed at Clean Water Way over the course of the storm event, suggesting that NO_3 sources may be isolated to the lowest portion of the watershed. TKN storm loads were calculated to be 16 lbs at Rhodes Road, increased to 46 lbs at the Narrows, and increased to 173 lbs at Clean Water Way. Total-N loads increased similarly with 16 lbs at Rhodes Road, 46 lbs at Narrows, and 450 lbs at Clean Water Way. Total-P loads at Rhodes Road (13 lbs), increased to 48 lbs at Narrows, and 117 lbs at Clean Water Way.

Evaluating nutrient loads at three separate locations within the watershed during the same event provides for a unique approach to identifying the sources of excessive nutrients by using a 'nested' calculation.

Figure 4-21 shows the sub watersheds that drain to each monitoring location on Steamboat Creek. Constituent loads (Total-N, Total-P, and TDS) at each station were subtracted from the loads at the station upstream to identify the load from each sub watershed, as shown in Figure 4-18. Finally, because the sub watersheds differ in area, sub watershed loads were normalized by area (i.e., "yield", lbs per square mile) for further comparison. The results shown in Figure 4-18 indicate that the lower portion of Steamboat Creek and its watershed (between the Narrows and Clean Water Way) is the primary source of excessive nutrients and TDS. Land-uses within this portion of the watershed include mid- and high-density residential, two golf courses, the Reno-Tahoe International Airport, floodplain agriculture, downtown Reno commercial and industrial areas, new construction, and the confounding effects of irrigation ditch returns.

Table 4-5: Storm loads and runoff volumes for Steamboat Creek at three stations for a storm event on January 29-30, 2014

Steamboat Creek at Rhodes Road							
		Storm Load					
Hydrograph	Storm Runoff Volume	Total-N	NO_3	TKN	Total-P	TDS	TSS
	(cubic feet)				*(lbs)*		
First Flush	18,360	0.4	0	0.4	0.2	218	5.6
Rising Limb	85,950	3.0	0	3.0	1.4	1,127	44
Peak	64,890	3.3	0	3.3	1.4	729	31
Falling Limb	449,460	9.3	0	9.3	9.5	5,331	143
Totals	**618,660**	**16**	**0**	**16**	**13**	**7,405**	**224**

Steamboat Creek at the Narrows (Short Lane)							
		Storm Load					
Hydrograph	Storm Runoff Volume	Total-N	NO_3	TKN	Total-P	TDS	TSS
	(cubic feet)				*(lbs)*		
First Flush	147,240	0.0	0	0.0	4.1	10,111	294
Rising Limb	201,870	6.4	0	6.4	5.9	13,862	630
Peak	269,100	9.9	0	9.9	8.1	16,799	1,596
Falling Limb	1,070,550	29	0	29	29	66,832	3,542
Totals	**1,688,760**	**46**	**0**	**46**	**48**	**107,604**	**6,062**

Steamboat Creek at Clean Water Way							
		Storm Load					
Hydrograph	Storm Runoff Volume	Total-N	NO_3	TKN	Total-P	TDS	TSS
	(cubic feet)				*(lbs)*		
First Flush	270,900	17	10	6.3	4.2	9,978	457
Rising Limb	936,900	88	56	32	18	32,168	3,392
Peak	1,607,400	126	75	51	25	53,183	4,114
Falling Limb	3,368,700	219	135	84	69	126,179	7,571
Totals	**6,183,900**	**450**	**276**	**173**	**117**	**221,509**	**15,534**

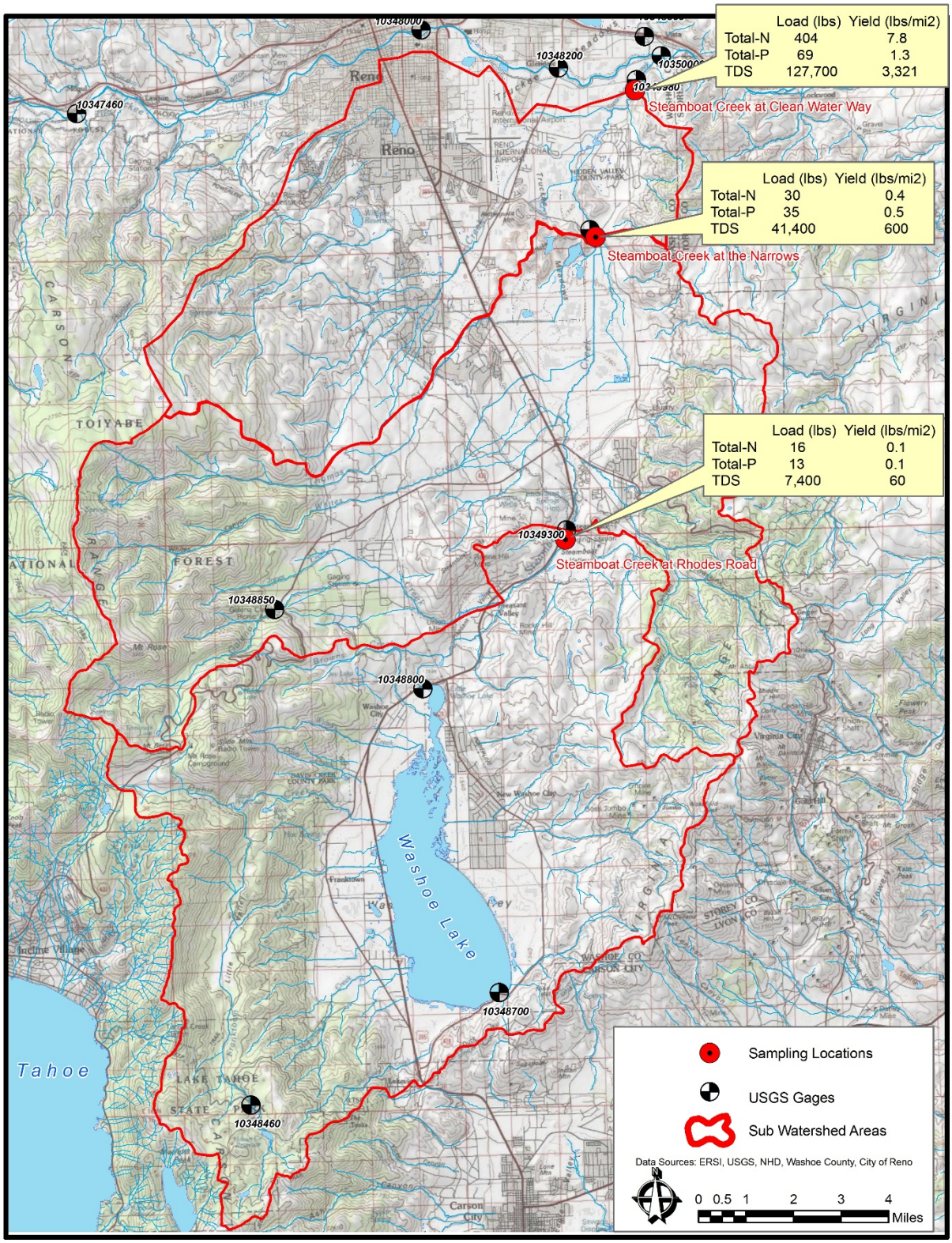

Figure 4-21: Nested loads and yields for nutrients and TDS, Steamboat Creek watershed, for the storm of January 29-30, 2014, Truckee Meadows.

Loads and yields shown in Figure 4-21 represent those that originate from within the subwatershed areas illustrated. Results help to identify the highest source area of excessive nutrients in the watershed. Based on an analysis of the 20-year record of annual peak flows on Steamboat Creek at Clean Water Way (**Table 4-6**), the January 30, 2014 peak flow of 51 cfs is considered to be a low-magnitude, high-frequency event, lower than the calculated 1-year flood of 122 cfs. The calculated constituent loading that took place during this event are therefore considered to be lower than what might occur during larger, but more infrequent events. Over the long term, however, loading from these types of high-frequency but low-magnitude events may provide a chronic delivery of pollutants to the Truckee River. Continued sampling and analysis over a range of storm types, including infrequent large storms, will facilitate a better understanding of Steamboat Creek as a source of pollutants.

Table 4-6: Flood-frequency table for Steamboat Creek at Clean Water Way, USGS 10349980

Computed Flood Magnitude	Percent Chance Exceedence	Recurrence	Confidence Limits	
			5%	95%
(cfs)	*%*	*Year*	*(cfs)*	*(cfs)*
5,194	1	100	14,020	2,847
3,408	2	50	7,979	2,018
1,911	5	20	3,712	1,249
1,206	10	10	2,041	843
737	20	5	1,101	540
346	50	2	468	249
122	99	1.0	177	70
January 29-30, 2014 peak flow				
51	--	< 1.0	--	--

Notes:
*Analysis completed using HEC-SSP (2.0), station skew, and Weibull plotting
*Annual peak flow series for a 20-year period of record at USGS 10349980

4.6.2 Stormwater Constituent Loads from Three Urban Outfalls

On November 1, 2014, multiple samples were collected with automated samplers and composited to represent distinct segments of the storm hydrograph and analyzed for the range of constituents identified in the 2012 SAP for three different urban outfalls that discharge to the Truckee River in Reno: Oxbow, Arlington, and Fisherman's Park. Each

station measured discharge depth and velocity and computed storm runoff volumes. Each station sampled stormwater runoff from small urban watersheds (0.32, 0.36, and 5.1 square miles). Constituent loads for distinct segments of the hydrograph and for the total storm runoff are compared in **Table 4-7** across all three stations.

Oxbow Nature Park (0.36 sq. miles) and Arlington (0.32 sq. miles) drain similar areas and tend to generate similar stormwater runoff volumes. Overall, Arlington exhibited higher storm loads than Oxbow and may reflect slightly different land-uses. For example, Arlington discharged 7.4 lbs of Total-N and 21 lbs of Total-P during the storm of November 1, 2014, while Oxbow discharged 3.3 lbs of Total-N and 0.5 lbs of Total-P. Similarly, Arlington discharged 284 lbs of TDS and 102 lbs of TSS loads, while Oxbow discharged 91 lbs of TDS and 54 lbs of TSS. The higher nutrient and TDS loads from Arlington could be associated with the residential land-uses characterized by single-family homes with irrigated and fertilized lawns. The neighborhood that drains to Arlington also is one of the oldest in Reno with aging infrastructure (Garfield, L., personal communication).

Fisherman's Park II showed considerably higher loads relative to Arlington and Oxbow and may be associated with both its larger drainage area (5.1 sq. miles), commercial-industrial land-uses, and direct connectivity of impervious surfaces, as shown by its storm runoff volume (see Table 4-7). As with total storm runoff volume, Total-N loads were more than 10 times greater (94 lbs) than measured at the other outfalls, while TDS loads (2,256 lbs) and TSS loads (5,881 lbs). Total-P (11 lbs), measured at Fisherman's Park II, however, was considerably less than Arlington and may also reflect the absence of residential land-use in this urban watershed.

Runoff recurrence intervals cannot be calculated for urban outfalls; however, storm rainfall depths can be used for evaluating relative storm size. The November 1, 2014 storm (0.24 inches) is considered a low to moderate event or 3 percent of the long-term average annual rainfall (7.5 inches). However, when loads from these three urban outfalls are combined they equal impressive loads to the Truckee River, measured in less than 24 hours from this single event. Measured Total-N loads equaled 104 lbs, Total-P loads equaled 33 lbs, and TDS loads equaled 2,631 lbs.

Table 4-7: Constituent loads and runoff volumes for three urban outfalls for a storm event on November 1, 2014, Truckee Meadows

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	670	0.3	0.04	0.2	0.1	0.02	10	19
Rising Limb	4,782	1.1	0.2	0.9	0.2	0.07	27	15
Peak	4,214	0.5	0.1	0.4	0.1	0.07	12	15
Falling Limb	9,162	1.4	0.4	1.0	0.2	0.1	41	5.3
Totals	**18,828**	**3.3**	**0.7**	**2.6**	**0.5**	**0.3**	**91**	**54**

Island at Arlington								
		Storm Loads						
Hydrograph	Storm Runoff Volume	Total-N	NO_3	TKN	Total-P	Ortho-P	TDS	TSS
	(cubic feet)	*(lbs)*						
First Flush	261	0.2	0.02	0.1	0.2	0.02	4.9	2.6
Rising Limb	8,826	3.3	0.6	2.8	8.9	0.6	116	61
Peak	4,549	1.6	0.2	1.4	3.6	0.4	45	24
Falling Limb	7,566	2.3	0.4	1.9	8.5	0.7	118	15
Totals	**21,202**	**7.4**	**1.2**	**6.2**	**21**	**1.7**	**284**	**102**

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	763	1.0	0.2	0.9	0.1	0.1	30	18
Rising Limb	59,652	36	8.9	28	1.6	2.3	1,005	4,096
Peak	70,450	23	3.6	20	3.5	1.1	440	1,187
Falling Limb	147,168	33	8.5	25	6.3	2.3	781	579
Totals	**278,033**	**94**	**21**	**73**	**11**	**6**	**2,256**	**5,881**

All 3 Total	**318,063**	**104**	**23**	**82**	**33**	**8**	**2,631**	**6,036**

4.6.3 STORMWATER LOADS COMPARED TO TOTAL MAXIMUM DAILY LOADS IN TRUCKEE RIVER

The loads measured on Steamboat Creek at Clean Water Way and the three urban outfalls can be most directly compared to regulatory standards in the Truckee River, given they are points of discharge to the Truckee River and located between 2.3 and 12.5 river miles upstream from the Truckee River at Lockwood, the location where water quality standards cited in this report are established. The loads from Steamboat Creek and the 3 outfalls were measured from two separate storm events, but their combined totals may be considered reasonable for a low-magnitude, high frequency, or chronic loading events. The January storm event resulted in a hydrologic response in Steamboat Creek with a duration of roughly 2 days. As such, we conservatively used half of the total storm load to estimate daily loads. In **Table 4-8** we compare storm loads to the load allocations under the Truckee River TMDL at Lockwood for three constituents: Total-N, Total-P, and TDS.

Table 4-8: Estimated daily loads for selected constituents in stormwater runoff, Steamboat Creek and three urban outfalls with comparison to constituent TMDLs for the Truckee River at Lockwood

Daily Loads			
Monitoring Station	Constituents		
	Total-N	Total-P	TDS
	(lbs/day)		
Steamboat Creek at Clean Water Way	225	58.5	110,750
Oxbow Nature Park	3.3	0.5	91
Arlington	7.4	21	284
Fisherman's Park II	94	11	2,256
Totals	**330**	**91**	**113,381**
Load Allocations, TMDL Truckee River at Lockwood	*500*	*80*	*780,360*
Daily Load, Percent of Load Allocation under TMDL	**66**	**114**	**15**

Notes:

Load values are lbs/day; Steamboat Creek storm hydrograph of January 29-30, 2014 was roughly 48 hours, therefore, daily storm loads shown in this table represent roughly half of the total storm load for comparison

Load values from all three urban outfalls are total storm loads, for a runoff response that last nearly 24 hours on November 1, 2014.

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 establish in 1994 (NDEP, 1994)

When daily loads from the three urban outfalls are added to the Steamboat Creek daily loads, we begin to see the effects of cumulative loading to the Truckee River from only a handful of non-point sources of stormwater to the Truckee Meadows. We should note that the loads computed for Steamboat Creek are upstream of the Truckee Meadows Water Reclamation Facility or wastewater treatment plant point of discharge.

Based on Table 4-8, Total-N daily load from all 4 measured sources equaled 330 lbs or 66 percent of the daily load allocation for the Truckee River at Lockwood. Total-P daily load from these 4 measured sources summed up to 91 lbs or 114 percent of the daily load allocation for the Truckee River at Lockwood. Finally, TDS daily load contributed by these 4 measured sources equaled 113,381 lbs or 15 percent of the daily load allocation. While these loads approach or even exceed the TMDLs established at Lockwood, we assume that nutrients such as nitrogen and phosphorus may be transformed, diluted, and/or partial removed by vegetation uptake between their discharge points and Lockwood. These values are a cautionary message given that they represent only a portion of the points of urban stormwater discharge to the Truckee River. While Steamboat Creek may be a major source of excessive nutrients to the Truckee River, loads for other major tributaries (e.g., North Truckee Drain, Chalk Creek, Alum Creek, etc.) or urban outfalls have not been quantified.

4.6.4 Baseflow Loads Compared to Total Maximum Daily Loads in Truckee River

Table 4-9 shows baseflow loads measured at Clean Water Way on January 29 and February 3, 2014 and compared to regulatory standards in the Truckee River at Lockwood for the three constituents that have TMDLs: Total-N, Total-P, and TDS. These data suggest that even under baseflow conditions (streamflows between 19 and 21 cfs), loadings of these three constituents can be relatively high and do, in fact, represent chronic sources of nutrients to the Truckee River. For example, daily baseflow Total-N loads of roughly 130 lbs/day are more than half the daily Total-N loads (225 lbs/day) measured at Steamboat Creek at Clean Water Way during the storm of January 29-30, 2014. Similarly, daily baseflow Total-P loads of roughly 25 lbs/day are almost half of the daily total-P loads (52 lbs/day measured during the same storm. Finally TDS loads during baseflow also are characterized as measurable when compared to daily storm loads. While additional sampling and analysis may be required to confirm these trends, the results may suggest excessive nutrients in Steamboat Creek are not limited to stormwater runoff. Other possible sources, such as return flows from irrigation and nuisance flows (e.g., car washing, illegal discharges, etc.), may represent a more chronic delivery mechanism for pollution discharging to the Truckee River.

Table 4-9: Estimated daily loads for selected constituents in baseflow, Steamboat Creek and three urban outfalls with comparison to constituent TMDLs for the Truckee River at Lockwood

Daily Loads: Baseflow Compared with Storm Loads (2014) Steamboat Creek at Clean Water Way				
		Constituents		
Streamflow Condition	Date	Total-N	Total-P	TDS
		(lbs/day)		
Storm Load	1/29-1/30	225	59	110,750
Pre-Storm Baseflow	1/29/2014	132	29	72,377
Post-Storm Baseflow	2/3/2014	129	22	60,845
Daily Load Allocations, TMDL Truckee River at Lockwood		*500*	*80*	*780,360*
Daily Storm Load, Percent of Load Allocation under TMDL		**45**	**73**	**14**
Daily Baseflow Load, Percent of Load Allocation under TMDL		**26**	**32**	**9**

Notes:

Loads represent lbs/day; Steamboat Creek daily load represent half of the total storm load measured over 2 days, January 29-30, 2014.

Baseflow loads are based on single grab samples (pre-storm and post-storm) and are considered to be representative of stable streamflow
(baseflows ranged between 19 cfs to 21 cfs)

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 establish in 1994 (NDEP, 1994)

5 CONCLUSIONS

Balance Hydrologics evaluated water quality from stormwater and baseflow conditions from 19 monitoring sites under the Truckee Meadows Regional Storm Water Quality Management Program in 2014. Monitoring included sampling both tributaries and urban outfalls within the Truckee Meadows. Additional automated samplers were deployed to begin a transition to quantifying constituent loads to the Truckee River from urban stormwater runoff as suggested or recommended by previous studies (McKay and others, 2013, Stantec, 2012, and Curtis, 2013).

Annual precipitation was highly variable across the Truckee Meadows in 2014 and ranged between 4.99 inches at the Reno-Tahoe International Airport and 10.82 inches in Mogul, less than the long-term annual average precipitation. Total annual precipitation was received over roughly 15 storm events, mostly as rainfall. Four storm events were sampled to characterize constituent concentrations, and in some cases, constituent loads, at 19 monitoring locations. Two of the four storm events (January 29-30 and December 2, 2014) were winter storms with a steady period of rainfall, one event was a summer thunderstorm (July 8) and a fourth storm characterized as a warm, fall frontal system (November 1). Average precipitation during sampled storm events ranged between 0.24 inches and 0.59 inches. Baseflow conditions in tributaries were also sampled and characterized in early June 2014 for a comparison to storm conditions. Similarly, pre- and post-storm baseflow was sampled from Steamboat Creek immediately before and after the January 29-30, 2014 storm.

Constituent concentrations were compared across all sites and all storm events to identify sites exhibiting the highest concentrations. We acknowledge that concentrations can vary widely across a single event for a single location, and data collected as grab samples only represent a snapshot in time and place. Results limited to one to six samples in a year may not characterize the range of concentrations in stormwater for a given location. Furthermore, while comparisons can only be made to existing water quality standards established for the Truckee River, exceedance of these standards do not necessarily identify the tributary or urban outfall as a violation of that standard. In fact, the urban stormwater system and its stormwater is not considered aquatic habitat and therefore is not regulated as such; however, cumulative poor water quality from numerous urban outfalls and tributaries can impair downstream water quality and affect beneficial uses of receiving waters, such as the Truckee River where many water quality standards do exist.

We identified relatively high concentrations of nutrients (total and species of both nitrogen and phosphorus) in both tributaries and outfalls when compared to regulatory water-quality standards established for the Truckee River at Lockwood. High levels of nutrients were identified in the following tributaries to the Truckee River: Chalk Creek, North Truckee Drain, and Steamboat Creek, and in the following urban outfalls: Oxbow Nature Park, Arlington, Fisherman's Park, Mary Wahl, Cottonwood Park and Greg Street.

High concentrations of TDS were identified in Chalk Creek, North Truckee Drain, Steamboat Creek, Fishermans' Park II outfall, Mary Wahl outfall, and Paradise Park outfall. TDS can also be elevated as the result of erosion of native soils and geology with high levels of sulfate. Such geology and soils exist in Chalk Creek and Steamboat Creek watersheds. Elevated concentrations of TSS were identified in Fisherman's Park II outfall and Arlington outfall.

Bacteria (total coliform and *E. coli*) were sampled from selected sites (identified in the SAP) during all four storm events and bacteria was identified in all samples and across all sites. Stringent hold times presented challenges for proper analysis of composite samples; however, data suggests bacteria is a concern at all monitoring locations but consistent with bacteria measured in urban stormwater as presented in the literature.

Constituent concentrations of stormwater measured in the Truckee Meadows are typical when compared to those measured in stormwater from other semi-arid and arid cities in the United States, such as Denver, Colorado; Boise, Idaho; and Phoenix, Arizona. However, the real concern is how these constituents may affect beneficial uses in the Truckee River. One way to measure possible impairment is to measure constituent loading and compare those loads to TMDLs established for the Truckee River. Under this monitoring program, initial trials for measuring loads were successfully implemented for a major tributary (i.e., Steamboat Creek) and three separate urban outfalls to the Truckee River.

Initial results from one storm event suggest daily-storm nutrient loads from four measured points of discharge to the Truckee River can amount to a large component or exceed the TMDLs established for the Truckee River at Lockwood, downstream. For example, 330 lbs/day of Total-N was measured from the sum of four points of discharge, as compared to the 500 lbs/day load allocation set under the Total-N TMDL. 91 lbs/day was measured from the sum of the four points of discharge which exceeds the 80 lbs/day load allocation established under the Total-P TMDL. These values are significant because these loads are

likely a small portion of the total loads discharged to the Truckee River in a single event. Additional storm loads will be quantified in 2015.

One common goal under the Truckee Meadows SWMP is to use the monitoring program to identify or narrow sources of excessive nutrients or pollutants to receiving waters or waters where beneficial uses are impaired. The approach of quantifying loads at multiple stations within a single watershed begins to address this goal. Initial results from a single event in Steamboat Creek, where three automated samplers were paired with USGS streamflow gaging stations, indicates that the majority of nutrient loading originates along the most downstream reach of Steamboat Creek, between the Narrows (a.k.a., Short Lane) and Clean Water Way, a watershed of roughly 52 square miles or 21 percent of the total Steamboat Creek watershed (244 square miles). Additional studies are necessary to further identify sources of excessive nutrients within this lower watershed.

6 RECOMMENDATIONS

Based on results and findings from the 2014 monitoring year, Balance has identified the following issues and/or suggested changes to the monitoring program for consideration by the Committee. Once these suggestions are reviewed and approved by the Committee, they can be incorporated into a revised SAP. A revised SAP will be completed summer 2015 and implemented in WY2016 (October 1, 2015).

Constituent concentrations in the absence of flow information has been determined by others (McKay and others, 2013, Stantec, 2012) as not optimal in characterizing stormwater quality. We know from automated sampling that constituent concentrations can change dramatically over the duration of a storm event. Therefore, if the streamflow or position on the hydrograph where sampling is collected is unknown, the constituent concentration is simply a snapshot in time and may not be representative of the event mean concentration (EMC), or useful for calculation of loading rates. As such, we suggest continued modification of the monitoring program continue towards collection of data for computing constituent loads over the duration of the storms of interest. Several approaches to modifying the monitoring program could help achieve this transition:

1. Reduce the number of monitoring locations to focus on sites with streamflow gages or automated samplers including: 1) Alum Creek above Steamboat Ditch, 2) Paradise Pond, 3) Greg Street, and 4) Cottonwood Park.

2. Install streamflow gaging stations on priority tributaries (i.e., tributaries listed as impaired under the Clean Water Act, 303(d) list or those with consistently elevated constituent concentrations (Priority sites include: 1) Chalk Creek, 2) Lower Alum Creek, and 3) Lower Thomas Creek.

3. Instrument existing streamflow gaging stations with automated samplers (e.g., North Truckee Drain, Steamboat Creek, Lower Whites Creek)

4. At stations (e.g., urban outfalls) where automated samplers are impractical, expensive to install, or unsafe to maintain, consider deployment of water depth probes during events to collect storm runoff depths. If the geometry and slope of the stormdrain is known, storm runoff volumes can be quantified or better estimated. Subsequently, nearby rainfall data can be used to construct rainfall-runoff curves for a given site. Once these curves are established, monitoring can focus on collection of several samples over the duration of the runoff event and loads can be estimated from the sample concentrations and runoff volume. This

approach does require additional time to establish rainfall-runoff curves and additional staff and field time to manually collect multiple samples in a single event.

5. If loading from other non-instrumented urban outfalls is desired, loads can be estimated from information gained at other instrumented urban outfalls. For instance, since watershed area, land-uses, and rainfall-runoff curves are known for 4 instrumented urban outfalls, relationships can be developed such that constituent yields (lbs/sq. mile) can be applied to other urban watersheds with similar land-uses. This approach would provide rough estimates of loading and may require periodic sampling to confirm constituent concentrations for comparison to other instrumented urban outfalls.

6. Finally, in order to put constituent loads from the Truckee Meadows Stormwater Monitoring Program in context of the MS4 permit, loads for 303(d) listed constituents in the Truckee River (i.e., Total Nitrogen, Total Phosphorus, TSS, TDS) require comparison to load allocations (LA) for established TMDLs. TMDLs for these constituents were established for the Truckee River at Lockwood in 1994. It's likely that loads in the Truckee River at Lockwood today differ from those measured or modeled in 1994. Efforts to measure current loads at the Lockwood station should be pursued by a consortium of NPDES permittees in the Truckee Meadows and include automated sampling during baseflow conditions and across a number of events to better evaluate current loads at this station.

Additional constraints were realized in 2014 with sampling and analysis for bacteria. Samples collected for Total coliform and *E. coli* bacteria has an 8 hour holding time. In most cases, samples collected in 2014 exceeded this holding time due to storm duration, logistics with delivery to the lab, and/or lab availability to receive the samples. Samples collected and successfully analyzed (within their holding times) for bacteria in 2014 and in previous years suggest bacteria is a problem in most areas draining urban land-uses, but typical of urban stormwater. In an effort to adhere to regulatory concerns with bacteria we recommend the following: 1) Limit bacteria sampling to water bodies listed as impaired for bacteria by NDEP (2014), and; 2) choose to sample for bacteria only if conditions favor meeting holding times for analytical testing. For instance, night time or weekend sampling would not be appropriate for bacteria sampling, given laboratory's inability to respond.

Additional suggestions and considerations will be presented in a separate memo at the appropriate time, for review by the Committee with inclusion of recommendations by others (McKay and others, 2013; Curtis, 2013).

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PLATES

Plate 1 Monitoring location desciptions, Truckee Meadows stormwater monitoring program, 2014

Monitoring Station Name	Station ID	Watershed	Watershed Area (mi^2)	Primary Land-Uses	303(d) listed constituents	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	OP, Total-P, NO_3, Temp., TDS, TSS, sulfates, Selenium	Adjustable weir, staff plate	Watershed includes geology of the Hunter Creek Formation: diatomaceous fine sandstone or "chalk" and lacustrine deposits which bear high concentrations of sulfates	JBR Environmental, 2010
Alum Creek at Truckee River	AC@TR	Tributary to Truckee River	4.9	Residential, commercial, open space	pH, Temp., TDS, TSS, OP, Total-P	Staff plate	Watershed geology includes Hunter Creek Formation, hydrous aluminum sulfates. 2007 Hawkin Fire burned 1,000 acres in upper watershed; artifical irrigation ponds provide some flood detention; Steamboat Ditch discharges to creek at times.	Fennema, 2013; Jesch, 2008 and 2011
Alum Creek at Steamboat Ditch	AC@SBD	Tributary to Truckee River	2.35	Open space	pH, Temp., TDS, TSS, OP, Total-P	Staff plate	see above	see above
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
North Truckee Drain at Kleppe Ln	NTD@KLP	Tributary to Truckee River	n/a	agriculture, residential, commercial, industrial, I-80	Total-P, Total-N, TDS (Sparks Marina)	USGS gaging station 10348300	Receives drainage from Sparks Marina which has experienced recent water quality issues and fish kills;	Jesch, 2005
Thomas Creek at Timberline Dr.	TC@TLD	Tributary to Steamboat Creek	7.5	Open space	arsenic and boron	Staff plate	Upper watershed includes Mt. Rose and wilderness (9,000 ft elev.) subject to snowpack and spring snowmelt runoff. Trails and unpaved roads have been identified as sediment sources	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	arsenic and boron	Staff plate	Lower portions of creek are conveyed via concrete or lined flood control channels, culverts and ditches;	Jesch, 2011, Curtis, 2013
Whites Creek at Timberline Dr.	WC@TLD	Tributary to Steamboat Creek	7.9	Residential, commercial, golf course, new construction, open space	pH, Total-P, *E. Coli*	Staff plate	Upper watershed includes Mt. Rose and wilderness (9,000 ft elev.) subject to snowpack and spring snowmelt runoff; active recreation area	Jesch, 2011
Whites Creek at Old Virginia Hwy	WC@OVH	Tributary to Steamboat Creek	18.5	Open space	pH, Total-P, *E. Coli*	Staff plate	Additional 303(d) listed constituents for downstream reaches; channel is actively eroding in segments and increasing with increased urbanization of watershed	Jesch, 2011
Steamboat Creek at Rhodes Road	SBC@RHR	Tributary to Truckee River	123	Rural residential; HWY 395, historic gold and silver mining; geothermal operations	*E. coli*	USGS gaging station 10349300	Washoe Lake located short distance upstream	Parametrix and Wenk Associates, 2007; Codega, 1998
Steamboat Creek at Narrows	SBC@NAR	Tributary to Truckee River	192	Mixed residential-commercial, HWY 395, agriculture, historic gold and silver mining; geothermal operations, new construction	*E. coli* , boron, arsenic, iron	USGS gaging station 10349849	Downstream from hot springs and geothermal operations; channel in poor condition	Parametrix and Wenk Associates, 2007; Codega, 1999
Steamboat Creek at Clean Water Way	SBC@CWW	Tributary to Truckee River	244	Mixed residential-commercial, HWY 395, agriculture, golf courses, historic mining; geothermal operations, new construction, Reno-Tahoe Airport	*E. coli* , boron, arsenic, iron	USGS gaging station 10349980	Construction (current) of new highway in lower watershed;	Parametrix and Wenk Associates, 2007; Codega, 2000
Urban Outfalls								
Arlington	H-19	Outfalls to Truckee River	0.32	Residential (single family), commercial with urban landscaping	n/a	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, I-80, I-580, UPRR and new construction	n/a	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	n/a	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 Ditch	SDOE-008936	Outfalls to Truckee River	n/a	Mixed residential, commercial, industrial and some agriculture, I-80, UPRR and new construction	n/a	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
Cottonwood Park	SDOE-008957	Outfalls to Truckee River	n/a	Mixed commercial-industrial	n/a	--	Drains an area nearly 90+ percent impervious; sampling location is a manhole roughly 250 feet from the outfall to the Truckee River	n/a
Greg Street	SDOE-008960	Outfalls to Truckee River	n/a	Mixed commercial-industrial	n/a	--	Sampling location is a manhole roughly 500 feet upstream of the outfall to the Truckee River	n/a
Paradise Park	C-15	Outfalls to Truckee River	n/a	mixed residential, commercial and industrial	n/a	--	Sampling location is the overflow point from several urban detention ponds; sampling location is approximately 0.75 miles upstream of the outfall to the Truckee River	n/a

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APPENDICES

APPENDIX A

Station Observer Logs

Preliminary and subject to revision

Station Observer Log:
Arlington Street (H-19)

Site Conditions				*Pipe or Streamflow*			*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Hydrograph	Flow	Streamflow Source	Estimated Accuracy	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)	*(R/F/S/B)*	*(cfs)*	*(M, R, E)*	*(e/g/f/p)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
5/15/2014 9:00	bkh, cs	Stormwater drain; no staff plate installed	--	dry	--	--								no	Initial site visit to evaluate sampling logistics and site conditions. No flow, pipe is dry. Outfall is active almost immediately during storm.
9/23/2014 8:30	bkh, rt		--	dry	--	--								no	Installed ISCO automated sampler at site; equipment secure and ready for sampling; river is very low, slightly turbid.
10/31/2014 17:00	bkh, mn		--	dry	--	--								no	Program ISCO for rainfall; Intake and AV sensor clear of debris
11/1/2014 9:15	bkh, mn		F	0.01	E	p	Water quality is measured from composited samples collected from automated sampler							yes	ISCO collected 10 samples between midnight and 3 am; Truckee river is not elevated and water is mostly clear; cold windy, rain ended near 2am; average flow: 0.4 cfs; max flow: 2.7 cfs

Observer Key: (ds) is David Shaw, (bkh) is Brian Hastings, (cs) is Collin Strasenburgh, (jo) is Jonathan Owens, (pk) is Peter Kulchawik, (mn) is Matt Nitz, (rt) is Raph Townsend, (kb) is Kerensa Brooks
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 Ditch (SDOE 008936)

Site Conditions				*Pipe or Streamflow*			*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Hydrograph	Flow	Streamflow Source	Estimated Accuracy	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)	*(R/F/S/B)*	*(cfs)*	*(M, R, E)*	*(e/g/f/p)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
5/15/2014 9:25	bkh, cs	Stormwater drain; no staff plate installed	U	0.2	E	p	--	--	--	--	--	--	--	no	Initial site visit to evaluate sampling logistics and site conditions. Very low slope and abundant vegetation in ditch; Ditch will be culverted in summer 2014
7/8/2014 16:45	bkh, pk		R	4.8	M	g	26	210	206	66	5.30	7.11	220	yes	Light to moderate rain; thunder + lightning; rising slowly, water very turbid with petroleum sheen; collected sample 16:40 integrated depth composite.

Observer Key: (ds) is David Shaw, (bkh) is Brian Hastings, (cs) is Collin Strasenburgh, (jo) is Jonathan Owens, (pk) is Peter Kulchawik, (mn) is Matt Nitz, (kb) is Kerensa Brooks
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:
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)*	
5/15/2014 0:00	bkh, cs	Stormwater drain; no staff plate installed	--	dry	--	--								no	Initial site visit to evaluate sampling logistics and site conditions. No flow, pipe is dry. High priority site that requires security to prevent vandelism of any instruments
9/23/2014 15:30	bkh, rt		--	dry	--	--								no	Installed ISCO automated sampler; secure and ready to go for next storm;
10/31/2014 16:20	bkh, mn		U	0.05	E	f								no	Program ISCO in preparation for rainfall (0.25"); Intake and AV sensor are clear of debris;
11/1/2014 11:20	bkh, mn		F	0.15	R	g	Water quality is measured from composited samples collected from automated sampler							yes	Cloudy, rainfall ended around 3am; additional light rain near sunrise; collect 24 sample bottles, average storm runoff flow: 3.5 cfs, max flow: 31.9 cfs; significant flow to Truckee River (baseflow near 30 cfs before storm); significant trash at entrance to river

Observer Key: (ds) is David Shaw, (bkh) is Brian Hastings, (cs) is Collin Strasenburgh, (jo) is Jonathan Owens, (pk) is Peter Kulchawik, (mn) is Matt Nitz, (kb) is Kerensa Brooks
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)*	
5/15/2014 0:00	bkh, cs	Stormwater drain; no staff plate installed	U	0.1	E	p								no	Initial site visit to evaluate sampling logistics and site conditions. Key entry at gate lock #0751, also requires 3/4" socket wrench to release manhole cover
9/17/2014 8:30	bkh, rt, lg		--	dry	--	--								no	Working with City of Reno Confined Space Team for installation of AV sensor and intake valve.
9/23/2014 11:30	bkh, rt		--	dry	--	--								no	Installed ISCO automated sampler; secure and ready for next event. During installation, a period of clear water discharge was observed (0.1 cfs) for 10 minutes with strong chlorine odor--possible pool draining to storm drain
10/31/2014 15:30	bkh, mn		--	dry	E	e								no	Program ISCO for storm; estimated 0.25" expected overnight; probe and intake cleaned
11/1/2014 12:05	bkh, mn		F	<0.01	E	g	Water quality is measured from composited samples collected from automated sampler							yes	Cloudy, rainfall ended near 3 am with some light rain around 7 am, 12 sample bottles captured storm hydrograph; average flow 0.43 cfs; max flow: 3.8 cfs, total volume: 15,470 cubic feet runoff; water quality parameters measured on samples

Observer Key: (ds) is David Shaw, (bkh) is Brian Hastings, (cs) is Collin Strasenburgh, (jo) is Jonathan Owens, (pk) is Peter Kulchawik, (mn) is Matt Nitz, (rt) is Raph Townsend, (kb) is Kerensa Brooks, (lg) is Lynell Garfield (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], 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:
Paradise Park (C-15)

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)*	
5/15/2014 9:55	bkh, cs	n/a	--	dry	--	--	--	--	--	--	--	--	--	no	Initial site visit to evaluate sampling logistics and site conditions. 4 large ponds upstream may generate a long lag to stormwater response due to retention
10/31/2014 17:00	bkh, mn	n/a	--	dry	--	--	--	--	--	--	--	--	--	no	Observed lake levels to evaluate if spilling is possible with this storm; water levels almost 10 inches below spillway to sampling location; unlikely to respond to this event
12/2/2014 16:50	ds, pk	n/a	R	0.31	M	p/f	6.7	542	851	75.0	9.10	8.01	6.1	yes	Pond is elevated; flow appears to be flowing into rocks through a subdrain and not down the concrete outlet. Flow was measured as best possible entering this subdrain

Observer Key: (ds) is David Shaw, (bkh) is Brian Hastings, (cs) is Collin Strasenburgh, (jo) is Jonathan Owens, (pk) is Peter Kulchawik, (mn) is Matt Nitz
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:
Greg Street (SDOE-008960)

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)*	
5/15/2014 9:30	bkh, cs	dry	dry	--	--	--	--	--	--	--	--	--	--	no	Initial site visit to evaluate sampling logistics and site conditions.
7/8/2014 17:45	bkh, pk	n/a	F	5.3	M	p	24.7	181	180	82.0	6.80	6.47	171.0	yes	Intermittent moderate rain; lightning; difficult to measure flow due to turbulence from another pipe outfalling into vault; measured velocity in main box culvert and estimated pipe flow; water very turbid; heavy traffic between sites (rush hour)
12/2/2014 16:00	ds, pk	n/a	U	3.6	M	f/p	6.1	86	137	88.0	10.90	7.81	97.7	yes	Flow in culvert is slightly turbed and 1.5 ft deep

Observer Key: (ds) is David Shaw, (bkh) is Brian Hastings, (cs) is Collin Strasenburgh, (jo) is Jonathan Owens, (pk) is Peter Kulchawik, (mn) is Matt Nitz
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:
Cottonwood Park (SDOE-008957)

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)*	
5/15/2014 9:45	bkh, cs	dry	dry	--	--	--	--	--	--	--	--	--	--	no	Initial site visit to evaluate sampling logistics and site conditions.
7/8/2014 17:15	bkh, pk	n/a	U	2.7	M	f/p	26.1	263	254	77.0	6.20	6.50	149.0	yes	Rain is light to moderate; street runoff visible; flow entering vault from 3-side pipes; vault is a 3-ft wide box-culvert; odorous, very turbid water, collected sample downpipe from 3 outfalls for mixing; collected composite sample (4x grab and combined) @ 17:20.
12/2/2014 15:30	ds, pk	n/a	U	5.2	M	f	6.6	36	56	88.0	10.70	6.85	47.0	yes	Good flow, leaves in flow, turbid, water depth in pipe is 2.9 feet, velocity measurements are difficult depending on location in vault

Observer Key: (ds) is David Shaw, (bkh) is Brian Hastings, (cs) is Collin Strasenburgh, (jo) is Jonathan Owens, (pk) is Peter Kulchawik, (mn) is Matt Nitz
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	Stage	Hydrograph	Streamflow	Streamflow Source	Estimated Accuracy	High-water Mark	HWM date?	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)	*(R/F/S/B)*	*(cfs)*	*(M, R)*	*(e/g/f/p)*	*(feet)*	*(M/D/YY)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
5/23/2014 12:55	bkh, cs, mn	0.87	S	7.41	M	g	--	--	15.7	107	132	90.0	8.85	--	--	no	Installed staff plate at old gaging location; water slightly turbid with brown tint;
7/8/2014 17:15	jo, mn	*-0.32*	R	0.31	M	f	--	--	22.6	153	159	60.0	5.10	7.42	17.4	yes	Stage was below bottom of staff plate; water is turbid, rain is intermittent; flows measured in May 2014 were likely result of irrigation return flows or water turned out to creek from Steamboat Ditch

Observer Key: (ds) is David Shaw, (bkh) is Brian Hastings, (cs) is Collin Strasenburgh, (jo) is Jonathan Owens, (pk) is Peter Kulchawik, (mn) is Matt N
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 [F
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 conductanc
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 Timberline Drive (TC@TLD)

Site Conditions				*Streamflow*					*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Hydrograph	Streamflow	Streamflow Source	Estimated Accuracy	High-water Mark	HWM date?	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)	*(R/F/S/B)*	*(cfs)*	*(M, R)*	*(e/g/f/p)*	*(feet)*	*(M/D/YY)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
5/23/2014 14:15	bkh, cs	7.16	S	3.02	M	g	--	--	11.7	74.0	101.5	95.0	10.2	--	--	no	Installed staff plate approx 60 ft downstream of bridge; This station is subject to vandalism and instream wood. Bridge to be replaced this summer.
7/8/2014 19:20	jo, mn	7.05	S	0.89	M	p	--	--	17.1	89.1	106.0	77.0	7.40	7.41	15.6	yes	Rain earlier; not much evidence of runoff; sample collected at 19:00

Observer Key: (ds) is David Shaw, (bkh) is Brian Hastings, (cs) is Collin Strasenburgh, (jo) is Jonathan Owens, (pk) is Peter Kulchawik, (mn) is Matt N
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 [F
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 conductanc
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 Timberline Drive (WC@TLD)

Site Conditions				*Streamflow*					*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Hydrograph	Streamflow	Streamflow Source	Estimated Accuracy	High-water Mark	HWM date?	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)	*(R/F/S/B)*	*(cfs)*	*(M, R)*	*(e/g/f/p)*	*(feet)*	*(M/D/YY)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
5/23/2014 15:00	bkh, cs	3.91	S	4.74	M	f	--	--	10.8	52.0	73.1	91.0	10.1	--	--	no	Installed staff plate approx 40 ft upstream of bridge in pool; good mature willows upstream act as a strainer for catching instream wood; County gage is operated upstream and should be used for comparison
7/8/2014 20:00	jo, mn	3.79	F	0.91	M	f/p	--	--	15.10	65.0	81.5	80.0	8.00	7.60	10.5	yes	Overcast, water generally clear; earlier storm cell over Thomas and Whites Creek watersheds; sample collected (integrated depth) @ 19:40 (higher flow)

Observer Key: (ds) is David Shaw, (bkh) is Brian Hastings, (cs) is Collin Strasenburgh, (jo) is Jonathan Owens, (pk) is Peter Kulchawik, (mn) is Matt N
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 [F
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 conductanc
Turbidity values are reported from the sample using a desktop turbidimeter and do not reflect laboratory analysis and results

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

Site Conditions				*Streamflow*					*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Hydrograph	Streamflow	Streamflow Source	Estimated Accuracy	High-water Mark	HWM date?	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(meters)	*(R/F/S/B)*	*(cfs)*	*(M, R)*	*(e/g/f/p)*	*(feet)*	*(M/D/YY)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
5/23/2014 13:15	bkh, cs, mn	0.19	S	4.89	M	g	--	--	14	71	93	95	9.82	--	--	no	Using existing DWR staff plate (metric) located on downstream wingwall of box culvert under Old Virginia Way. Water clear, The channel downstream will be modified with a weir or flume for streamflow gaging this summer.
7/8/2014 18:25	jo, mn	0.10	F	0.61	M	f/p	0.25	June?	20	78	86	74.0	6.70	7.45	6.1	yes	Raining; water clear upon arrival; collected sample at 18:00

Observer Key: (ds) is David Shaw, (bkh) is Brian Hastings, (cs) is Collin Strasenburgh, (jo) is Jonathan Owens, (pk) is Peter Kulchawik, (mn) is Matt Ni
Stage: Water level observed on staff plate, (staff plate is metric at this locatio
Hydrograph: Describes stream stage as rising (R), falling (F), steady (S), or baseflow (E
Streamflow Source: measured by a hydrologist (M), obtained from an existing rating curve or gaging station |
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 conducta
Turbidity values are reported from the sample using a desktop turbidimeter and do not reflect laboratory analysis and results

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

Site Conditions				*Streamflow*					*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Hydrograph	Streamflow	Streamflow Source	Estimated Accuracy	High-water Mark	HWM date?	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)	*(R/F/S/B)*	*(cfs)*	*(M, R)*	*(e/g/f/p)*	*(feet)*	*(M/D/YY)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
5/23/2014 11:30	bkh, cs, mn	0.44	B	0.40	M	g	--	--	16.7	430	517	75.6	7.54	--	--	no	Using existing staff plate (UNR); water clear, Truckee River is flowing turbid from recent rains on Hunter Creek fire. This site may be gaged in future with flume and automated sampler
7/8/2014 19:30	bkh, pk	0.43	B	--	--	--	--	--	--	--	--	--	--	--	--	no	No significant rain in this watershed; water slightly turbid. Runoff peak was likely small and shortlived. No samples or WQ parameters measured.
12/2/2014 13:25	ds, pk	--	R	0.09	M	f	--	--	5.8	52	84	82.0	10.10	7.00	37.5	yes	Arrived on-site as wetted front was approaching staff plate; collected first flush from this wetted front; water levels still below staff plate; left site before wetted front entered Truckee River

Observer Key: (ds) is David Shaw, (bkh) is Brian Hastings, (cs) is Collin Strasenburgh, (jo) is Jonathan Owens, (pk) is Peter Kulchawik, (mn) is Matt N
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 [F
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 conductanc
Turbidity values are reported from the sample using a desktop turbidimeter and do not reflect laboratory analysis and results

Station Observer Log:
Alum Creek above Steamboat Ditch (AC@SBD)

Site Conditions				*Streamflow*					*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Hydrograph	Streamflow	Streamflow Source	Estimated Accuracy	High-water Mark	HWM date?	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)	*(R/F/S/B)*	*(cfs)*	*(M, R)*	*(e/g/f/p)*	*(feet)*	*(M/D/YY)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
12/2/2014 14:50	pk, ds	0.20	R	0.37	M	g	--	--	4.9	26	43	86.0	10.90	6.40	240.0	yes	Water is turbid; water levels slightly lower than previous storm high-water mark, rain turning to snow

Observer Key: (ds) is David Shaw, (bkh) is Brian Hastings, (cs) is Collin Strasenburgh, (jo) is Jonathan Owens, (pk) is Peter Kulchawik, (mn) is Matt Nitz
Stage: Water level observed on staff plate,
Hydrograph: Describes stream stage as rising (R), falling (F), steady (S), or baseflow (B)
Streamflow Source: measured by a hydrologist (M), obtained from an existing rating curve or gaging station [R]
Specific conductance: Measured in micromhos/cm in field; then adjusted to 25degC by equation (1.8813774452 - [0.050433063928 * field temp] + [0.00058561144042 * field temp^2]) * Field specific conductance
Turbidity values are reported from the sample using a desktop turbidimeter and do not reflect laboratory analysis and results

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

Site Conditions					*Streamflow*					*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	V-notch or Broad Crested Weir?	Hydrograph	Streamflow	Streamflow Source	Estimated Accuracy	High-water Mark	HWM date?	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)		*(R/F/S/B)*	*(cfs)*	*(M, E)*	*(e/g/f/p)*	*(feet)*	*(M/D/YY)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
5/28/2014 10:15	bkh	2.76	V	S	0.35	E	g	--	--	12.4	2135	2874	--	--	--	--	no	Installed staff plate approx. 5-ft u/s from weir, near right bank. Removed V-notch weir plate to drop water surfaces and gage stage at bottom of "V" (2.30 ft on staff plate); Stage over broad crested weir 2.07 (weir invert ~ 1.945 ft); Water slightly turbid, brackish specific conductance readings
7/8/2014 20:20	bkh, pk	2.33	BC	F	0.52	E	g	3.64	7/8/2014	20.6	3159	5407	60.1	5.30	7.72	54.3	yes	Upon arrival, water was flowing over weir with V-notch plate installed; veg and black plastic bag caught in weir, HWM may be artificial; Rain ended over an hour ago; collected integrated depth sample; collected duplicate sample

Observer Key: (ds) is David Shaw, (bkh) is Brian Hastings, (cs) is Collin Strasenburgh, (jo) is Jonathan Owens, (pk) is Peter Kulchawik, (mn) is Matt
Stage: Water level observed on staff plate
Hydrograph: Describes stream stage as rising (R), falling (F), steady (S), or baseflow (
Streamflow Source: measured by a hydrologist (M), obtained from an existing rating curve or weir equation [E]; Rectangular weir equation used: Q = 2/3 C√2g)*H^1.5, where: C = (0.6035+0.0813(H/Y) + 0.000295/Y)*(1 + 0.00361/H)^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 conducta
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@RHR)

Site Conditions				*Streamflow*					*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Hydrograph	Streamflow	Streamflow Source	Estimated Accuracy	High-water Mark	HWM date?	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)	*(R/F/S/B)*	*(cfs)*	*(M, R)*	*(e/g/f/p)*	*(feet)*	*(M/D/YY)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
5/23/2014 15:40	bkh, cs	0.98	B	3.2	USGS	g	--	--	--	--	--	--	--	--	--	no	Initial site visit to evaluate sampling logistics and site conditions. Hot springs enter channel immediately downstream of USGS gage;
11/1/2014 8:20	bkh, mn	0.24	B	0.0	USGS	e	--	--	7.9	163	247	68.0	8.10	7.74	125.6	yes	Windy, cloudy, cold; not much evidence of runoff at this location; channel is not flowing; but gaging pool is elevated and turbid slight orange tint (possible tanins); culvert upstream still trickling into channel.

Observer Key: (ds) is David Shaw, (bkh) is Brian Hastings, (cs) is Collin Strasenburgh, (jo) is Jonathan Owens, (pk) is Peter Kulchawik, (mn) is Matt Nitz
Stage: Water level observed on staff plate,
Hydrograph: Describes stream stage as rising (R), falling (F), steady (S), or baseflow (B)
Streamflow Source: measured by a hydrologist (M), obtained from an existing rating curve or gaging station [R]
Specific conductance: Measured in micromhos/cm in field; then adjusted to 25degC by equation (1.8813774452 - [0.050433063928 * field temp] + [0.00058561144042 * field temp^2]) * Field specific conductance
Turbidity values are reported from the sample using a desktop turbidimeter and do not reflect laboratory analysis and results

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

Site Conditions				*Streamflow*					*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Hydrograph	Streamflow	Streamflow Source	Estimated Accuracy	High-water Mark	HWM date?	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)	*(R/F/S/B)*	*(cfs)*	*(M, R)*	*(e/g/f/p)*	*(feet)*	*(M/D/YY)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
5/23/2014 16:00	bkh, cs		B	7.5	USGS	g	--	--	23.0	1423	1467	43.0	3.80	--	--	no	Initial site visit to evaluate sampling logistics and site conditions. Water is slightly brown or turbid
11/1/2014 7:45	bkh, mn	1.66	R	5.2	USGS	g	--	--	10.0	1704	2446	70.0	7.80	7.95	26.7	yes	Rain just ending; water slightly turbid; roads still wet; collected field blank and samples, not much evidence of heavy runoff (DO values suspect)

Observer Key: (ds) is David Shaw, (bkh) is Brian Hastings, (cs) is Collin Strasenburgh, (jo) is Jonathan Owens, (pk) is Peter Kulchawik, (mn) is Matt Nitz
Stage: Water level observed on staff plate,
Hydrograph: Describes stream stage as rising (R), falling (F), steady (S), or baseflow (B)
Streamflow Source: measured by a hydrologist (M), obtained from an existing rating curve or gaging station [R]
Specific conductance: Measured in micromhos/cm in field; then adjusted to 25degC by equation (1.8813774452 - [0.050433063928 * field temp] + [0.00058561144042 * field temp^2]) * Field specific conductance
Turbidity values are reported from the sample using a desktop turbidimeter and do not reflect laboratory analysis and results

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

Site Conditions				*Streamflow*					*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Hydrograph	Streamflow	Streamflow Source	Estimated Accuracy	High-water Mark	HWM date?	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)	*(R/F/S/B)*	*(cfs)*	*(M, R)*	*(e/g/f/p)*	*(feet)*	*(M/D/YY)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
5/23/2014 17:15	bkh, cs		B	43	USGS	g	--	--	22.6	660	687	88	7.20	--	--	no	Initial site visit to evaluate sampling logistics and site conditions. Water is slightly brown or turbid and odorous; abundant gopher and rabbit droppings along bank
11/1/2014 7:20	bkh, mn	4.16	R	24	USGS	g	--	--	9.5	806	1173	66	7.50	8.13	50.0	yes	Rain ending; water slight turbid and stage is rising; significant horse droppings along bank of creek; sun just rising; cold and windy (DO measures are suspect)

Observer Key: (ds) is David Shaw, (bkh) is Brian Hastings, (cs) is Collin Strasenburgh, (jo) is Jonathan Owens, (pk) is Peter Kulchawik, (mn) is Matt N
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 [F
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 Kleppe Lane (NTD@KLP)

Site Conditions				*Streamflow*					*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Hydrograph	Streamflow	Streamflow Source	Estimated Accuracy	High-water Mark	HWM date?	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)	*(R/F/S/B)*	*(cfs)*	*(M, R)*	*(e/g/f/p)*	*(feet)*	*(M/D/YY)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
5/23/2014 17:30	bkh, cs	3.62	B	9.4	USGS	g	--	--	19.1	650	736	91.0	8.24	--	--	no	Initial site visit to evaluate sampling logistics and site conditions. Observed channel at Kleppe Lane and not at the USGS gage approx. 0.2 miles upstream; observed 16-inch fish. Personal safety is a possible concern here.
7/8/2014 18:15	bkh, pk	4.35	Peak	45	USGS	g	--	--	24.7	411	408	60.0	5.00	7.47	107	yes	Rain ended 30 minutes earlier, showers; Water muddy with oil sheen and debris; most rainfall appears to be over Spanish Springs and Sparks; collected grab sample from right bank.

Observer Key: (ds) is David Shaw, (bkh) is Brian Hastings, (cs) is Collin Strasenburgh, (jo) is Jonathan Owens, (pk) is Peter Kulchawik, (mn) is Matt Nitz
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:
North Truckee Drain at Orr Ditch (NTD@ORD); USGS 10348245

Site Conditions					*Streamflow*					*Water Quality Observations*								*Remarks*
Date/Time (observer time)	Observer	Stage	Hydrograph	Rainall	Streamflow	Streamflow Source	Estimated Accuracy	High-water Mark	HWM date?	Water Temperature	Field Specific Conductance	Adjusted Specific Conductance	Dissolved Oxygen	Dissolved Oxygen	pH	Turbidity	Samples collected?	
		(feet)	*(R/F/S/B)*	*(in.)*	*(cfs)*	*(M, R)*	*(e/g/f/p)*	*(feet)*	*(M/D/YY)*	*(oC)*	*(µmhos/cm)*	*(at 25 oC)*	*(%)*	*(mg/L)*		*(NTU)*	*(yes/no)*	
5/23/2014 18:30	bkh, cs	1.81	B	0.00	1.9	USGS	g	--	--	23.8	1086	1100	66.5	5.59	--	--	no	Initial site visit to evaluate sampling logistics and site conditions. Water mostly clear but with abundant bed algae
7/8/2014 18:50	bkh, pk	2.40	F	0.54	6.8	USGS	g	--	--	23.3	390	399	38.0	3.20	7.59	86.0	yes	Cloudy, drizzle, most rain ended, turbid flow, collected sample at USGS gage

Observer Key: (ds) is David Shaw, (bkh) is Brian Hastings, (cs) is Collin Strasenburgh, (jo) is Jonathan Owens, (pk) is Peter Kulchawik, (mn) is Matt N
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 [F
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 conductanc
Turbidity values are reported from the sample using a desktop turbidimeter and do not reflect laboratory analysis and results

Monitoring Station Name	Storm Events				Baseflow
	January 29-30, 2014	July 8, 2014	November 1, 2014	December 2, 2014	June 3,4, 2014
Tributaries	Measured Discharge				
	(cfs)	*(cfs)*	*(cfs)*	*(cfs)*	*(cfs)*
Chalk Creek at Chalk Bluff	NM	2.7	--	--	0.71
Alum Creek at Truckee River	NM	NR	--	0.09	0.34
Alum Creek at Steamboat Ditch	NR	NR	--	0.37	DRY
North Truckee Drain at Orr Ditch	*1.50*	*6.80*	--	--	1.77
North Truckee Drain at Kleppe Ln	*11.0*	*45.0*	--	--	9.60
Thomas Creek at Timberline Dr.	4.51	0.89	--	--	1.60
Thomas Creek at S. Meadows Pkwy	2.00	0.31	--	--	0.05
Whites Creek at Timberline Dr.	6.50	0.91	--	--	1.60
Whites Creek at Old Virginia Hwy	3.92	0.61	--	--	1.55
Steamboat Creek at Rhodes Road	2.7 - 4.9	--	*NR*	--	0.22
Steamboat Creek at Narrows	6.1 - 11.0	--	*5.20*	--	4.30
Steamboat Creek at Clean Water Way	21.0 - 51.0	--	*24.0*	--	23.0
Urban Outfalls					
Arlington	NM	--	0.2 - 3.8	--	NM
Fisherman's Park II	NM	--	0.2 - 30.4	--	NM
Oxbow Nature Park	NM	--	0.5 - 3.8	--	NM
Mary Wahl Ditch	--	4.8	--	--	NM
Cottonwood Park	--	2.7	--	5.2	NM
Greg Street	--	5.3	--	3.6	NM
Paradise Park	--	NR	--	0.31	NM

Notes:

NM = not measured (baseflow measurements from urban outfalls are not required; often dry during non-storm events)

NR = no response

Disharge values in *italics* are reported by the USGS

Samples were collected over a range of flows and composited at sites instrumented with automated samplers and area-velocity modules

APPENDIX B

Equipment Calibration Logs

Appendix B: calibration logs

Pre-Storm Calibration June 2014
Staff: Brian
Hastings
Unit: YSI ProPlus ID: Balance 1692

***** Calibrate:
pH

Date 14/06/13 YY/MM/DD
Time 11:04:05 24-hour
Buffer Value 4.000000
pH
Sensor Value: 168.500000 pH mV
Temperature 21.550013 °C

Buffer Value 10.000000 pH
Sensor Value: -182.600006 pH mV
Temperature 21.450006 °C

Slope 59.211755 mV/pH
Slope 99.844799 % of Ideal pH Value
Calibrate Status
Calibrated

***** Calibrate: Conductivity

Date 14/06/13 YY/MM/DD
Time 10:57:24 24-hour
Method Sp. Conductance
Cal Value: 5000.000000 SPC-
uS/cm
Sensor Value: 4868.000000 SPC-uS/cm
Temperature Ref. 25.000000 °C
Temperature Comp. 1.910000 %/C
TDS Constant 0.650000
Temperature 21.700001 °C
Cal Cell Constant: 5.088626
Calibrate Status
Calibrated

***** Calibrate: Conductivity

Date 14/06/13 YY/MM/DD
Time 10:55:12 24-hour
Method Sp. Conductance
Cal Value: 1000.000000 SPC-uS/cm
Sensor Value: 953.000000 SPC-uS/cm
Temperature Ref. 25.000000 °C
Temperature Comp. 1.910000 %/C
TDS Constant 0.650000
Temperature 21.900000 °C
Cal Cell Constant: 4.954287
Calibrate Status
Calibrated

***** Calibrate: Conductivity

Date 14/06/13 YY/MM/DD
Time 10:53:24 24-hour
Method Sp. Conductance
Cal Value: 500.000000 SPC-uS/cm
Sensor Value: 529.500000 SPC-uS/cm
Temperature Ref. 25.000000 °C
Temperature Comp. 1.910000 %/C
TDS Constant 0.650000
Temperature 21.700001 °C
Cal Cell Constant: 4.721435
Calibrate Status
Calibrated

***** Calibrate:
DO

Date 14/06/13 YY/MM/DD
Time 10:47:25 24-hour

Method DO Air Calibrate
Cal Value: 100.000000
%
Sensor Value: 4.514005
uA

Sensor Type Polarographic
Membrane Type 1.25 PE Yellow
Salinity Mode 4.514005 Auto
Temperature 22.299999 °C
Barometer 763.549438 mmHg
Calibrate Status
Calibrated

Pre-Storm Calibration June 2014
Staff: Brian Hastings
Unit: YSI ProPlus, Balance ID: 1693

***** Calibrate: pH

Date 14/06/13 YY/MM/DD
Time 11:04:05 24-hour
Buffer Value 4.000000 pH
Sensor Value: 168.500000 pH mV
Temperature 21.550013 °C

Buffer Value 10.000000 pH
Sensor Value: -182.600006 pH mV
Temperature 21.450006 °C

Slope 59.211755 mV/pH
Slope 99.844799 % of Ideal pH
Value
Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 14/06/13 YY/MM/DD
Time 10:57:24 24-hour
Method Sp. Conductance
Cal Value: 5000.000000 SPC-uS/cm
Sensor Value: 4868.000000 SPC-uS/cm
Temperature Ref. 25.000000 °C
Temperature Comp. 1.910000 %/C
TDS Constant 0.650000
Temperature 21.700001 °C
Cal Cell Constant: 5.088626

Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 14/06/13 YY/MM/DD
Time 10:55:12 24-hour
Method Sp. Conductance
Cal Value: 1000.000000 SPC-uS/cm
Sensor Value: 953.000000 SPC-uS/cm
Temperature Ref. 25.000000 °C
Temperature Comp. 1.910000 %/C
TDS Constant 0.650000
Temperature 21.900000 °C
Cal Cell Constant: 4.954287
Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 14/06/13 YY/MM/DD
Time 10:53:24 24-hour
Method Sp. Conductance
Cal Value: 500.000000 SPC-uS/cm
Sensor Value: 529.500000 SPC-uS/cm
Temperature Ref. 25.000000 °C
Temperature Comp. 1.910000 %/C
TDS Constant 0.650000
Temperature 21.700001 °C
Cal Cell Constant: 4.721435
Calibrate Status Calibrated

***** Calibrate: DO

Date 14/06/13 YY/MM/DD
Time 10:36:35 24-hour

Method DO Air Calibrate
Cal Value: 100.000000 %
Sensor Value: 4.474138 uA
Sensor Type Polarographic
Membrane Type 1.25 PE Yellow
Salinity Mode 4.474138 Auto
Temperature 22.200001 °C

Barometer 763.523987 mmHg
Calibrate Status Calibrated

Post Storm Calibration

Hastings, Brian 7/9/14

***** Calibrate: DO

Date 14/07/09 YY/MM/DD

Time 11:09:48 24-hour

User ID: BKH

Method DO Air Calibrate

Cal Value: 100.000000 %

Sensor Value: 4.853475 uA

Sensor Type Polarographic

Membrane Type 1.25 PE Yellow

Salinity Mode 4.853475 Auto

Temperature 24.000000 °C

Barometer 615.950012 mmHg

Calibrate Status Calibrated

***** Calibrate: pH

Date 14/07/09 YY/MM/DD

Time 11:02:14 24-hour

User ID: BKH

Buffer Value 4.004896 pH

Sensor Value: 166.100006 pH mV

Temperature 24.550013 °C

Buffer Value 7.003336 pH

Sensor Value: -8.400000 pH mV

Temperature 25.149988 °C

Buffer Value 10.004156 pH

Sensor Value: -187.199997 pH mV

Temperature 24.649988 °C

Slope 58.972470 mV/pH

Slope 99.750457 % of Ideal pH Value

Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 14/07/09 YY/MM/DD

Time 10:57:35 24-hour

User ID: BKH

Method Sp. Conductance

Cal Value: 5000.000000 SPC-uS/cm

Sensor Value: 5012.000000 SPC-uS/cm

Temperature Ref. 25.000000 °C

Temperature Comp. 1.910000 %/C

TDS Constant 0.650000

Temperature 24.900000 °C

Cal Cell Constant: 4.945597

Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 14/07/09 YY/MM/DD

Time 10:56:09 24-hour

User ID: BKH

Method Sp. Conductance

Cal Value: 1000.000000 SPC-uS/cm

Sensor Value: 926.000000 SPC-uS/cm

Temperature Ref. 25.000000 °C

Temperature Comp. 1.910000 %/C

TDS Constant 0.650000

Temperature 25.000000 °C

Cal Cell Constant: 4.957466

Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 14/07/09 YY/MM/DD

Time 10:54:31 24-hour

User ID: BKH

Method Sp. Conductance

Cal Value: 500.000000 SPC-uS/cm

Sensor Value: 550.000000 SPC-uS/cm

Temperature Ref. 25.000000 °C

Temperature Comp. 1.910000 %/C

TDS Constant 0.650000

Temperature 24.900000 °C

Cal Cell Constant: 4.590614

Calibrate Status Calibrated

***** Calibrate: DO

Date 14/06/19 YY/MM/DD

Time 09:22:49 24-hour

User ID: BKH

Method DO Air Calibrate

Cal Value: 100.000000 %

Sensor Value: 4.236985 uA

Sensor Type Polarographic

Membrane Type 1.25 PE Yellow

Salinity Mode 4.236985 Auto

Temperature 20.900000 °C

Barometer 615.822998 mmHg

Calibrate Status Calibrated

***** Calibrate: Barometer

Date 14/06/19 YY/MM/DD

Time 08:29:51 24-hour

Restore Calibration Default.

Offset 0.000000

***** Calibrate: pH

Date 14/06/12 YY/MM/DD

Time 17:18:50 24-hour

User ID: BKH

Buffer Value 10.000000 pH

Sensor Value: -186.899994 pH mV

Temperature 21.850000 °C

Buffer Value 4.002851 pH

Sensor Value: 169.899994 pH mV

Temperature 21.749994 °C

Slope 60.140403 mV/pH

Slope 98.274013 % of Ideal pH Value

Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 14/06/12 YY/MM/DD

Time 17:08:16 24-hour

User ID: BKH

Method Sp. Conductance

Cal Value: 5000.000000 SPC-uS/cm

Sensor Value: 4934.000000 SPC-uS/cm

Temperature Ref. 25.000000 °C

Temperature Comp. 1.910000 %/C

TDS Constant 0.650000

Temperature 23.000000 °C

Cal Cell Constant: 5.049674

Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 14/06/12 YY/MM/DD

Time 17:05:10 24-hour

User ID: BKH

Method Sp. Conductance

Cal Value: 1000.000000 SPC-uS/cm

Sensor Value: 952.000000 SPC-uS/cm

Temperature Ref. 25.000000 °C

Temperature Comp. 1.910000 %/C

TDS Constant 0.650000

Temperature 23.000000 °C

Cal Cell Constant: 4.983018

Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 14/06/12 YY/MM/DD

Time 17:01:30 24-hour

User ID: BKH

Method Sp. Conductance

Cal Value: 500.000000 SPC-uS/cm

Sensor Value: 527.000000 SPC-uS/cm

Temperature Ref. 25.000000 °C

Temperature Comp. 1.910000 %/C

TDS Constant 0.650000

Temperature 23.000000 °C

Cal Cell Constant: 4.743833

Calibrate Status Calibrated

***** Calibrate: Barometer

Date 14/06/12 YY/MM/DD

Time 16:50:30 24-hour

User ID: BKH

Barometer 101.760979 kPa

Calibrate Status Calibrated

***** Calibrate: DO

Date 14/06/12 YY/MM/DD

Time 16:25:18 24-hour

User ID: BKH

Method DO Air Calibrate

Cal Value: 100.000000 %

Sensor Value: 4.867993 uA

Sensor Type Polarographic

Membrane Type 1.25 PE Yellow

Salinity Mode 4.867993 Auto

Temperature 23.900000 °C

Barometer 612.400024 mmHg

Calibrate Status Calibrated

Post Storm Calibration

Hastings, Brian

Unit 1693

***** Calibrate: DO

Date 14/07/09 YY/MM/DD

Time 10:51:22 24-hour

Method DO Air Calibrate

Cal Value: 100.000000 %

Sensor Value: 4.598252 uA

Sensor Type Polarographic

Membrane Type 1.25 PE Yellow

Salinity Mode 4.598252 Auto

Temperature 22.799999 °C

Barometer 616.000793 mmHg

Calibrate Status Calibrated

***** Calibrate: pH

Date 14/07/09 YY/MM/DD

Time 10:38:28 24-hour

Buffer Value 4.005073 pH

Sensor Value: 164.500000 pH mV

Temperature 24.749994 °C

Buffer Value 7.003013 pH

Sensor Value: -9.100000 pH mV

Temperature 25.249994 °C

Buffer Value 9.997339 pH

Sensor Value: -185.899994 pH mV

Temperature 25.249994 °C

Slope 58.476937 mV/pH

Slope 98.912276 % of Ideal pH Value

Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 14/07/09 YY/MM/DD

Time 10:29:08 24-hour

Method Sp. Conductance

Cal Value: 500.000000 SPC-uS/cm

Sensor Value: 539.000000 SPC-uS/cm

Temperature Ref. 25.000000 °C

Temperature Comp. 1.910000 %/C

TDS Constant 0.650000

Temperature 25.000000 °C

Cal Cell Constant: 4.549319

Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 14/07/09 YY/MM/DD

Time 10:27:36 24-hour

Method Sp. Conductance

Cal Value: 1000.000000 SPC-uS/cm

Sensor Value: 1007.000000 SPC-uS/cm

Temperature Ref. 25.000000 °C

Temperature Comp. 1.910000 %/C

TDS Constant 0.650000

Temperature 25.100000 °C

Cal Cell Constant: 4.904166

Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 14/07/09 YY/MM/DD

Time 10:25:27 24-hour

Method Sp. Conductance

Cal Value: 5000.000000 SPC-uS/cm

Sensor Value: 5152.000000 SPC-uS/cm

Temperature Ref. 25.000000 °C

Temperature Comp. 1.910000 %/C

TDS Constant 0.650000

Temperature 25.000000 °C

Cal Cell Constant: 4.938495

Calibrate Status Calibrated

Storm calibration Unit 1692

Hastings, Brian

***** Calibrate: DO

Date 15/01/08 YY/MM/DD

Time 17:35:42 24-hour

User ID: BKH

Method DO Air Calibrate

Cal Value: 100.000000 %

Sensor Value: 3.657775 uA

Sensor Type Polarographic

Membrane Type 1.25 PE Yellow

Salinity Mode 3.657775 Auto

Temperature 19.200001 °C

Barometer 615.416626 mmHg

Calibrate Status Calibrated

***** Calibrate: DO

Date 14/10/30 YY/MM/DD

Time 16:25:13 24-hour

User ID: BKH

Method DO Air Calibrate

Cal Value: 100.000000 %

Sensor Value: 4.084950 uA

Sensor Type Polarographic

Membrane Type 1.25 PE Yellow

Salinity Mode 4.084950 Auto

Temperature 22.500000 °C

Barometer 612.724182 mmHg

Calibrate Status Calibrated

***** Calibrate: pH

Date 14/10/30 YY/MM/DD

Time 16:22:15 24-hour

User ID: BKH

Buffer Value 4.003604 pH

Sensor Value: 149.199997 pH mV

Temperature 22.850000 °C

Buffer Value 10.023794 pH

Sensor Value: -200.899994 pH mV

Temperature 22.950006 °C

Slope 58.566778 mV/pH

Slope 99.064238 % of Ideal pH Value

Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 14/10/30 YY/MM/DD

Time 16:17:20 24-hour

User ID: BKH

Method Conductance

Cal Value: 500.000000 C-uS/cm

Sensor Value: 513.000000 C-uS/cm

Temperature Ref. 25.000000 °C

Temperature Comp. 1.910000 %/C

TDS Constant 0.650000

Temperature 23.000000 °C

Cal Cell Constant: 5.010674

Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 14/10/30 YY/MM/DD

Time 16:14:20 24-hour

User ID: BKH

Method Conductance

Cal Value: 1000.000000 C-uS/cm

Sensor Value: 962.000000 C-uS/cm

Temperature Ref. 25.000000 °C

Temperature Comp. 1.910000 %/C

TDS Constant 0.650000

Temperature 22.900000 °C

Cal Cell Constant: 5.140951

Calibrate Status Calibrated

Storm calibrations

Unit 1693

Hastings, Brian

***** Calibrate: DO

Date 14/11/11 YY/MM/DD

Time 18:33:40 24-hour

Method DO Air Calibrate

Cal Value: 100.000000 %

Sensor Value: 4.695755 uA

Sensor Type Polarographic

Membrane Type 1.25 PE Yellow

Salinity Mode 4.695755 Auto

Temperature 23.299999 °C

Barometer 610.565186 mmHg

Calibrate Status Calibrated

***** Calibrate: DO

Date 14/10/30 YY/MM/DD

Time 16:33:29 24-hour

Method DO Air Calibrate

Cal Value: 100.000000 %

Sensor Value: 4.349879 uA

Sensor Type Polarographic

Membrane Type 1.25 PE Yellow

Salinity Mode 4.349879 Auto

Temperature 21.600000 °C

Barometer 612.597229 mmHg

Calibrate Status Calibrated

***** Calibrate: pH

Date 14/10/30 YY/MM/DD

Time 16:32:18 24-hour

Buffer Value 4.003678 pH

Sensor Value: 159.399994 pH mV

Temperature 22.950006 °C

Buffer Value 10.023794 pH

Sensor Value: -190.899994 pH mV

Temperature 22.950006 °C

Slope 58.591103 mV/pH

Slope 99.105383 % of Ideal pH Value

Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 14/10/30 YY/MM/DD

Time 16:21:09 24-hour

Method Conductance

Cal Value: 500.000000 C-uS/cm

Sensor Value: 511.000000 C-uS/cm

Temperature Ref. 25.000000 °C

Temperature Comp. 1.910000 %/C

TDS Constant 0.650000

Temperature 22.900000 °C

Cal Cell Constant: 4.979183

Calibrate Status Calibrated

***** Calibrate: Conductivity

Date 14/10/30 YY/MM/DD

Time 16:19:21 24-hour

Method Conductance

Cal Value: 1000.000000 C-uS/cm

Sensor Value: 894.000000 C-uS/cm

Temperature Ref. 25.000000 °C

Temperature Comp. 1.910000 %/C

TDS Constant 0.650000

Temperature 22.900000 °C

Cal Cell Constant: 5.088725

Calibrate Status Calibrated

***** Calibrate: DO

Date 14/07/09 YY/MM/DD

Time 10:51:22 24-hour

Method DO Air Calibrate

Cal Value: 100.000000 %

Sensor Value: 4.598252 uA

Sensor Type Polarographic

Membrane Type 1.25 PE Yellow

Salinity Mode	4.598252 Auto
Temperature	22.799999 °C
Barometer	616.000793 mmHg
Calibrate Status	Calibrated

APPENDIX C

Constituent Concentrations

Appendix C1. Summary of stormwater water quality results 2014,
Truckee Meadows, Cities of Reno and Sparks and Washoe County, Nevada.

Sampling Location	Storm Date	Observers	Total Phosphorus	Ortho-Phosphate	Nitrite-N	Nitrate-N	Kjeldahl nitrogen-N	Total Nitrogen (nitrate + TKN)	Total suspended solids	Total dissolved solids	Total Coliform Bacteria	E. Coli Bacteria	Conductance	Temperature	Specific Conductance	Dissolved Oxygen	pH	Turbidity
	Sample Conditions		**Nutrients**								**Bacteria**							
			(mg/L)	*(mg/L)*	*(mg/L)*	*(mg/L)*	*(mg/L)*	*(mg/L)*	*(mg/L)*	*(mg/L)*	*MPN/100 mL*	*MPN/100 mL*	*µS*	*°C*	*µS (at 25 C)*	*mg/L*		*NTU*
Laboratory Method (EPA unless noted)			*365.3*	*300.0*	*300.0*	*300.0*	*SM4500*	*calc.*	*SM2540D*	*SM2540C*	*SM9223B*	*SM9223B*						
Detection Limit for Reporting			*0.1*	*0.5*	*0.25*	*0.25*	*0.5*	*1.0*	*2.5*	*10*	*10*	*10*						
Water Quality Standards for Truckee River at Lockwood (2014)			*0.05*			*2.0*		*1.2*	*50*	*500*		*410*				*<6.0*		
Chalk Creek at Chalk Bluff																		
	January 29-30, 2014	City of Reno	**0.52**	ND	ND	1.4	1.1	**2.5**	**130**	**950**	>24,192	**1,178**			2,083	10.33	6.85	
	July 8, 2014	BKH, MN, PK, JO	**0.86**	ND	ND	1.5	2.9	**4.4**	**65**	**2,900**		**>2,240**	3,159	20.6	5,407	**5.30**	7.72	54.3
	November 1, 2014	BKH, MN																
	December 2, 2014	DS, PK																
Alum Creek at Truckee River																		
	January 29-30, 2014	City of Reno			ND	1.3	1.2	**2.5**	**230**	180	>24,192	**>24,192**			420	10.33	7.15	
	July 8, 2014	BKH, MN, PK, JO																
	November 1, 2014	BKH, MN		ND														
	December 2, 2014	DS, PK	**0.62**	0.55	ND	0.36	1.6	**2.0**	47	110	>2,240	**>2,240**	52	5.8	84	10.10	7.00	37.5
Alum Creek below Steamboat Ditch																		
	January 29-30, 2014	City of Reno	**0.67**															
	July 8, 2014	BKH, MN, PK, JO																
	November 1, 2014	BKH, MN																
	December 2, 2014	DS, PK	**0.39**	ND	ND	0.26	1	**1.3**	**120**	89	>2,240	**>2,240**	26	4.9	43	10.90	6.40	240
N Truckee Drain at Orr Ditch																		
	January 29-30, 2014	City of Reno	**0.42**	ND	ND	**2.4**	1.7	**4.1**	**180**	**1,000**	>24,192	404						
	July 8, 2014	BKH, MN, PK, JO	**0.62**	ND	ND	1.6	2.9	**4.5**	**110**	280			390	23.3	400	**3.20**	7.59	86
	November 1, 2014	BKH, MN																
	December 2, 2014	DS, PK																
N Truckee Drain at Kleppe Lane																		
	January 29-30, 2014	City of Reno	**0.35**	ND	ND	1.1	2.3	**3.4**	12	**520**	>24,192	**15,531**						
	July 8, 2014	BKH, MN, PK, JO	**0.52**	ND	ND	0.95	3.2	**4.2**	**160**	290			411	24.7	408	**5.00**	7.47	107
	November 1, 2014	BKH, MN																
	December 2, 2014	DS, PK																
Thomas Creek at Timberline Dr.																		
	January 29-30, 2014	City of Reno	**0.25**	ND	ND	ND	1.2	1.2	**130**	92	1,872	10						
	July 8, 2014	BKH, MN, PK, JO	**0.2**	ND	ND	ND	ND	ND	22	91	1,968	41	89.1	17.1	106	7.40	7.41	15.6
	November 1, 2014	BKH, MN																
	December 2, 2014	DS, PK																
Thomas Creek at S. Meadows Pwy.																		
	January 29-30, 2014	City of Reno	**0.17**	ND	ND	ND	1.4	**1.4**	13	87	5,475	160						
	July 8, 2014	BKH, MN, PK, JO	**0.28**	ND	ND	ND	0.95	0.95	39	160			153	22.6	159	**5.10**	7.42	17.4
	November 1, 2014	BKH, MN																
	December 2, 2014	DS, PK																
Whites Creek at Timberline Dr.																		
	January 29-30, 2014	City of Reno	**0.26**	ND	ND	ND	0.55	0.55	**140**	63	1,720	30						
	July 8, 2014	BKH, MN, PK, JO	ND	ND	ND	ND	ND	ND	19	68			65.0	15.1	82	8.00	7.60	10.5
	November 1, 2014	BKH, MN																
	December 2, 2014	DS, PK																
Whites Creek at Old Virginia Hwy.																		
	January 29-30, 2014	City of Reno	**0.39**	ND	ND	ND	0.58	0.58	**64**	70	3,130	206						
	July 8, 2014	BKH, MN, PK, JO	ND	ND	ND	ND	ND	ND	7	68	10,462	385	78	20	86	6.70	7.45	6.1
	November 1, 2014	BKH, MN																
	December 2, 2014	DS, PK																
Steamboat Creek at Rhodes Road																		
	January 29-30, 2014	City of Reno	See Appendix C2								4,106	256						
	July 8, 2014	BKH, MN, PK, JO																
	November 1, 2014	BKH, MN	**0.59**	1.2	ND	1.2	2.9	**4.1**	**130**	240	>241,920	**2,930**	163	7.9	242	8.10	7.74	125.6
	December 2, 2014	DS, PK																
Steamboat Creek at Narrows																		
	January 29-30, 2014	City of Reno	See Appendix C2								1,903	10						
	July 8, 2014	BKH, MN, PK, JO																
	November 1, 2014	BKH, MN	**0.63**		ND	ND	1.5	**1.5**	30	**1,400**			1,704	10.0	2,392	7.80	7.95	26.7
	December 2, 2014	DS, PK																
Steamboat Creek at Clean Water Way																		
	January 29-30, 2014	City of Reno	See Appendix C2								4,569	345						
	July 8, 2014	BKH, MN, PK, JO																
	November 1, 2014	BKH, MN	**1.1**		ND	0.74	2.2	**3.0**	67	**680**			806	9.5	1,144	7.50	8.13	50
	December 2, 2014	DS, PK																
Arlington																		
	January 29-30, 2014	City of Reno			ND	1.1	2.6	**3.9**	**200**	230	>24,192	**>24,192**			434	10.40	7.83	78
	July 8, 2014	BKH, MN, PK, JO																
	November 1, 2014	BKH, MN	See Appendix C3															
	December 2, 2014	DS, PK																
Fishermans Park II																		
	January 29-30, 2014	City of Reno			ND	1.6	3.4	**5**	**390**	**870**	>24,192	**1,935**			1,683	10.20	7.63	180
	July 8, 2014	BKH, MN, PK, JO																
	November 1, 2014	BKH, MN	See Appendix C3															
	December 2, 2014	DS, PK																
Oxbow Nature Park																		
	January 29-30, 2014	City of Reno			ND	0.8	1.8	**2.6**	**130**	370	>24,192	**>24,192**			805	10.08	7.40	94
	July 8, 2014	BKH, MN, PK, JO																
	November 1, 2014	BKH, MN	See Appendix C3															
	December 2, 2014	DS, PK																
Mary Wahl																		
	January 29-30, 2014	City of Reno			ND	1.8	5.3	**7.1**	**170**	**590**	>24,192	**17,329**			767	10.66	7.50	
	July 8, 2014	BKH, MN, PK, JO	**0.9**	ND	ND	1.4	5.1	**6.5**	**230**	210	>24,192	**>24,192**	210	26	206	**5.30**	7.11	
	November 1, 2014	BKH, MN																220
	December 2, 2014	DS, PK																
Cottonwood Park																		
	January 29-30, 2014	City of Reno																
	July 8, 2014	BKH, MN, PK, JO	**1.4**	0.53	ND	2.00	7.4	**9.4**	**200**	300	>24,192	**>24,192**	263	26.1	263	6.20	6.50	149
	November 1, 2014	BKH, MN																
	December 2, 2014	DS, PK	**0.36**	ND	ND	0.54	1.6	**2.1**	**75**	57	>2,240	**>2,240**	36	6.6	56	10.70	6.85	47
Greg Street																		
	January 29-30, 2014	City of Reno																
	July 8, 2014	BKH, MN, PK, JO	**0.96**	ND	ND	1.3	3.9	**5.2**	**270**	220	>24,192		181	24.7	180	6.80	6.47	171
	November 1, 2014	BKH, MN																
	December 2, 2014	DS, PK	**0.34**	ND	ND	0.99	2.8	**3.8**	**150**	53	>2,240	**>2,240**	86	6.1	137	10.90	7.81	137
Paradise Park																		
	January 29-30, 2014	City of Reno																
	July 8, 2014	BKH, MN, PK, JO																
	November 1, 2014	BKH, MN																
	December 2, 2014	DS, PK	**0.14**	ND	ND	0.38	1.4	**1.8**	9.8	**560**	648.8	17	542	6.7	851	9.10	8.01	6.1

Notes: ND = not detected, NM = not measured

All laboratory analyses performed by Alpha Analytical in Sparks, NV, except bacteria which is performed by Sierra Environmental and WetLab in Sparks, NV.

Water quality standards are established for Truckee River at Lockwood (NDEP, 2014); dissolved oxygen standard is a measure to protect aquatic life.

Bold values are greater than the Truckee River Standard, but may not represent values in the Truckee River.

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Appendix C2. Constituent concentrations and loadings, January 29-30, 2014 storm event at three automated samplers, Steamboat Creek, Truckee Meadows, City of Sparks, Nevada.

Sample Conditions		Nutrients										Other			
Sampling Location, Hydrograph	**Cumulative volume during sampling period**	**Phosphorus (total as P)**	**Loadings: Phosphorus (total as P)**	**Ortho-Phosphorus**	**Loadings: Ortho-P**	**Nitrate-N**	**Loadings: Nitrate-N**	**Kjeldahl nitrogen-N**	**Loadings: Kjeldahl nitrogen-N**	**Total Nitrogen (nitrate + TKN)**	**Loadings: Total Nitrogen (nitrate + TKN)**	**Total dissolved solids (TDS)**	**Loadings: Total dissolved solids**	**Total suspended solids (TSS)**	**Loadings: Total suspended solids**
	(cubic-feet)	*(mg/L)*	*(lbs)*	*(mg/L)*	*(lbs)*	*(mg/L)*	*(lbs)*	*(mg/L)*	*(lbs)*	*(mg/L)*	*(lbs)*	*(mg/L)*	*(lbs)*	*(mg/L)*	*(lbs)*
Laboratory Method (EPA unless noted)															
Detection Limit for Reporting		*0.1*		*0.5*		*0.25*		*0.5*		*1*		*10*		*2.5*	
WQ standard, Truckee River at Lockwood		*0.05*				*2.0*				*1.2*		*500*		*50*	
Steamboat Creek @ Rhodes Road															
First Flush	18,360	**0.18**	0.21	NM		ND	0.00	0.32	0.37	0.3	0.37	190	218	4.9	5.6
Rising Limb	85,950	**0.26**	1.40	NM		ND	0.00	0.55	2.95	0.6	2.95	210	1127	8.2	44.0
Peak Flow	64,890	**0.34**	1.38	NM		ND	0.00	0.81	3.28	0.8	3.28	180	729	7.6	30.8
Falling Limb	449,460	**0.34**	9.54	NM		ND	0.00	0.33	9.26	0.3	9.26	190	5,331	5.1	143
Totals	618,660		12.5				0.00		15.9		15.9		7,405		224
Steamboat Creek @ Narrows															
First Flush	147,240	**0.45**	4.14	NM		ND	0.00	ND	0.00	ND	0.00	**1100**	10,111	32	294
Rising Limb	201,870	**0.47**	5.92	NM		ND	0.00	0.51	6.43	0.5	6.43	**1100**	13,862	50	630
Peak Flow	269,100	**0.48**	8.06	NM		ND	0.00	0.59	9.91	0.6	9.91	**1100**	16,799	**95**	1,596
Falling Limb	1,070,550	**0.44**	29.41	NM		ND	0.00	0.44	29.41	0.4	29.41	**1100**	66,832	**53**	3,542
Totals	1,688,760		47.5				0.00		45.8		45.8		107,604		6,062
Steamboat Creek @ Clean Water Way															
First Flush	270,900	**0.25**	4.23	NM		0.62	10.5	0.37	6.26	1.0	16.7	**590**	9,978	27	457
Rising Limb	936,900	**0.31**	18.13	NM		1.0	56.1	0.54	31.6	**1.5**	87.7	**550**	32,168	**58**	3,392
Peak Flow	1,607,400	**0.25**	25.09	NM		0.75	75.3	0.51	51.2	**1.3**	126	**530**	53,183	41	4,114
Falling Limb	3,368,700	**0.33**	69.40	NM		0.64	135	0.40	84.1	1.0	219	**600**	168,326	36	7,571
Totals	6,183,900		117				276		173		450		263,655		15,534

Notes: ND = not detected, NM = not measured

All laboratory analyses performed by Alpha Analytical except bacteria which is performed by Sierra Environmental or WetLab in Sparks, NV.

Water quality standards are established for Truckee River at Lockwood (NDEP, 2014); dissolved oxygen standard is a measure to protect aquatic life.

Bold values are greater than the Truckee River Standard, but may not represent values in the Truckee River.

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Appendix C3. Constituent concentrations and loadings, November 1, 2014 storm event at three automated urban-outfalls to Truckee R

Truckee Meadows, City of Reno, Nevada.

Sample Conditions		Nutrients										Other			
Sampling Location, Hydrograph	**Cumulative volume during sampling period**	**Phosphorus (total as P)**	**Loadings: Phosphorus (total as P)**	**Ortho-Phosphorus**	**Loadings: Ortho-P**	**Nitrate-N**	**Loadings: Nitrate-N**	**Kjeldahl nitrogen-N**	**Loadings: Kjeldahl nitrogen-N**	**Total Nitrogen (nitrate + TKN)**	**Loadings: Total Nitrogen (nitrate + TKN)**	**Total dissolved solids (TDS)**	**Loadings: Total dissolved solids**	**Total suspended solids (TSS)**	**Loadings: Total suspended solids**
	(cubic-feet)	*(mg/L)*	*(lbs)*	*(mg/L)*	*(lbs)*	*(mg/L)*	*(lbs)*	*(mg/L)*	*(lbs)*	*(mg/L)*	*(lbs)*	*(mg/L)*	*(lbs)*	*(mg/L)*	*(lbs)*
Laboratory Method (EPA unless noted)															
Detection Limit for Reporting		*0.1*		*0.5*		*0.25*		*0.5*		*1*		*10*		*2.5*	
WQ standard, Truckee River at Lockwood		*0.05*				*2.0*				*1.2*		*500*		*50*	
Oxbow Nature Park															
First Flush	670	**1.3**	0.05	0.56	0.02	0.88	0.04	5.4	0.23	**6.3**	0.26	250	10.5	**450**	18.8
Rising Limb	4,782	**0.62**	0.19	ND	0.00	0.6	0.18	3.1	0.93	**3.7**	1.10	92	27.5	49	14.6
Peak Flow	4,214	**0.33**	0.09	ND	0.00	0.33	0.09	1.7	0.45	**2.0**	0.53	45	11.8	**57**	15.0
Falling Limb	9,162	**0.37**	0.21	ND	0.00	0.72	0.41	1.8	1.03	**2.5**	1.43	72	41.2	9	5.3
Totals	18,828		0.5		0.02		0.72		2.64		3.32		91.0		53.8
Island at Arlington															
First Flush	261	**1.4**	0.17	1.4	0.02	1.4	0.02	8.4	0.14	**9.8**	0.16	300	4.90	**160**	2.61
Rising Limb	8,826	**1.3**	8.94	1.1	0.61	1	0.55	5	2.75	**6.0**	3.31	210	116	**110**	60.6
Peak Flow	4,549	**1.3**	3.61	1.3	0.37	0.8	0.23	5	1.42	**5.8**	1.65	160	45.4	83	23.6
Falling Limb	7,566	**1.5**	8.54	1.5	0.71	0.8	0.38	4	1.89	**4.8**	2.27	250	118	32	15.1
Totals	21,202		21.3		1.71		1.18		6.20		7.38		284		102
Fishermans Park II															
First Flush	763	**1.60**	0.08	1.3	0.06	**3.6**	0.17	18	0.86	**22.0**	1.05	**630**	30	**380**	18
Rising Limb	59,652	**0.43**	1.60	0.63	2.35	**2.4**	8.94	7.4	27.6	**9.7**	36.1	270	1,005	**1,100**	4,096
Peak Flow	70,450	**0.79**	3.47	ND	1.10	0.82	3.61	4.5	19.8	**5.3**	23.3	100	440	**270**	1,187
Falling Limb	147,168	**0.69**	6.34	ND	2.30	0.93	8.54	2.70	24.8	**3.6**	33.1	85	781	**63**	579
Totals	278,033		11.5		5.81		21.26		73.0		93.6		2,256		5,881

Notes: ND = not detected, NM = not measured

All laboratory analyses performed by Alpha Analytical except bacteria which is performed by Sierra Environmental or WetLab in Sparks, NV.

Water quality standards are established for Truckee River at Lockwood (NDEP, 2014); dissolved oxygen standard is a measure to protect aquatic life.

Bold values are greater than the Truckee River Standard, but may not represent values in the Truckee River.

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APPENDIX D

Laboratory Reports

Laboratory Report
Report ID: 135922

Sierra Environmental Monitoring, Inc.

Alpha Analytical
Attn: Reyna Vallejo
255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 7/11/2014
Client: ALP-855
Taken by: B. Hastings
PO #:

Dear Reyna Vallejo,

It is the policy of Sierra Environmental Monitoring, Inc to strictly adhere to a comprehensive Quality Assurance Plan that insures the data presented in this report are both accurate and precise. Sierra Environmental Monitoring, Inc. maintains accreditation in the State of Nevada (NV-15 and NV-921) and the State of California (ELAP 2526).

The data presented in this report were obtained from the analysis of samples received under a chain of custody. Unless otherwise noted below, samples were received in good condition, properly preserved and within the hold time for the requested analyses. Any anomalies associated with the analysis of the samples have been flagged with appropriate explanation in the Analysis Report section of this Laboratory Report.

General Comments:

- There are no general comments for this report.

Individual Sample Comments:

- There are no specific comments that are associated with these samples.

Approved By: **Date:**

Sierra Environmental Monitoring, Inc. 7/11/2014

This report is applicable only to the sample received by the laboratory. The liability of the laboratory is limited to the amount paid for this report. This report is for the exclusive use of the client to whom it is addressed and upon the condition that the client assumes all liability for the further distribution of the report or its contents.

John Kobza, Ph.D
Laboratory Director

1135 Financial Blvd.
Reno, Nv 89502-2348
Phone (775) 857-2400
Fax (888) 398-7002
sem@sem-analytical.com

John C. Seher
Special Consultant
Quality Assurance Manager

Laboratory Report
Report ID: 135922

Sierra Environmental Monitoring, Inc.

Alpha Analytical
Attn: Reyna Vallejo
255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 7/11/2014
Client: ALP-855
Taken by: B. Hastings
PO #:

Analysis Report

Laboratory Accreditation Number: NV-0015

Laboratory Sample ID	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S201407-0461	BHD14070901-01 - SDOE 008957/140708:1720	7/8/2014	5:20 PM	7/9/2014

Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
E. coli Colilert Quanti-Tray	SM 9223 B	>24192	mpn/100ml	10	Kobza	7/9/2014	
Total Coliform Quanti-Tray	SM 9223 B	>24192	mpn/100ml	10	Kobza	7/9/2014	

Laboratory Accreditation Number: NV-0015

Laboratory Sample ID	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S201407-0462	BHD14070901-02 - SDOE 008936/140708:1445	7/8/2014	2:45 PM	7/9/2014

Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
E. coli Colilert Quanti-Tray	SM 9223 B	>24192	mpn/100ml	10	Kobza	7/9/2014	
Total Coliform Quanti-Tray	SM 9223 B	>24192	mpn/100ml	10	Kobza	7/9/2014	

Laboratory Accreditation Number: NV-0015

Laboratory Sample ID	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S201407-0463	BHD14070901-03 - SDOE 008960/140708:1855	7/8/2014	6:55 PM	7/9/2014

Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
E. coli Colilert Quanti-Tray	SM 9223 B	1100	mpn/100ml	10	Kobza	7/9/2014	
Total Coliform Quanti-Tray	SM 9223 B	>24192	mpn/100ml	10	Kobza	7/9/2014	

Laboratory Accreditation Number: NV-0015

Laboratory Sample ID	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S201407-0464	BHD14070901-04 - WC @ TLD/140708:1940	7/8/2014	7:40 PM	7/9/2014

Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
E. coli Colilert Quanti-Tray	SM 9223 B	41	mpn/100ml	10	Kobza	7/9/2014	
Total Coliform Quanti-Tray	SM 9223 B	1968	mpn/100ml	10	Kobza	7/9/2014	

John Kobza, Ph.D
Laboratory Director

1135 Financial Blvd.
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Phone (775) 857-2400
Fax (888) 398-7002
sem@sem-analytical.com

John C. Seher
Special Consultant
Quality Assurance Manager

Laboratory Report
Report ID: 135922

Sierra Environmental Monitoring, Inc.

Alpha Analytical
Attn: Reyna Vallejo
255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 7/11/2014
Client: ALP-855
Taken by: B. Hastings
PO #:

Analysis Report

Laboratory Accreditation Number: NV-0015

Laboratory Sample ID	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S201407-0465	BHD14070901-05 - WC @ OVW/140708:1800	7/8/2014	6:00 PM	7/9/2014

Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
E. coli Colilert Quanti-Tray	SM 9223 B	385	mpn/100ml	10	Kobza	7/9/2014	
Total Coliform Quanti-Tray	SM 9223 B	10462	mpn/100ml	10	Kobza	7/9/2014	

Data Flag Legend:

John Kobza, Ph.D
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John C. Seher
Special Consultant
Quality Assurance Manager

Laboratory Report
Report ID: 135922

Sierra Environmental Monitoring, Inc.

Alpha Analytical
Attn: Reyna Vallejo
255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 7/11/2014
Client: ALP-855
Taken by: B. Hastings
PO #:

Quality Control Report

Parameter	*LCS, % Recovery*	*MS, % Recovery*	*MSD, % Recovery*	*RPD, %*	*Method Blank*
Sierra Environmental Monitoring collected no QC data for report 135922.					

Legend: ***LCS- Laboratory Control Standard*** ***MS- Matrix Spike*** ***MSD- Matrix Spike Duplicate***
RPD- Relative Percent Difference

John Kobza, Ph.D
Laboratory Director

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Phone (775) 857-2400
Fax (888) 398-7002
sem@sem-analytical.com

John C. Seher
Special Consultant
Quality Assurance Manager

AMENDED 135922

Alpha Analytical, Inc.
255 Glendale Avenue
Suite 21
Sparks, Nevada 89431-5778
Phone: (775) 355-1044
Fax: (775) 355-0406

SUB CHAIN-OF-CUSTODY RECORD

Work Order : BHD14070901

***Please reference the Work Order number on all reports and invoices.**
***Also please include the dates of analysis and detection limits.**
Please send the report to Alpha Analytical (Sparks).
Attention To Reyna Vallejo (reyna@alpha-analytical.com).

Report Due By : 5:00 PM
On : 23-Jul-14

Required QC:
Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Subcontractor:
Sierra Environmental Monitoring
1135 Financial Blvd.
Reno, NV 89502

TEL: (775) 857-2400
FAX: (775) 857-2404
Acct #:

Sampled by : Brian Hastings
09-Jul-14

Alpha's Sample ID	Client's Sample ID	Matrix	Collection Date	Type (#) of Bottles Preserved	Other	Requested Tests SM9223B			Sample Comments
BHD14070901-01A	SDOE 008957/140708:1720	Aqueous	07/08/14 17:20	BACTI (1)		E. coli			
BHD14070901-02A	SDOE 008936/140708:1445	Aqueous	07/08/14 14:45	BACTI (1)		E. coli			
BHD14070901-03A	SDOE 008960/140708:1855	Aqueous	07/08/14 18:55	BACTI (1)		E. coli			
BHD14070901-04A	WC@ TLD/140708:1940	Aqueous	07/08/14 19:40	BACTI (1)		E. coli			
BHD14070901-05A	WC@ OVW/140708:1800	Aqueous	07/08/14 18:00	BACTI (1)		E. coli			

Comments: E. coli quantify limit 24,190 dilution.

	Date/Time		Date/Time
Relinquished by:		**Received by:**	
Relinquished by:		**Received by:**	

135922

Alpha Analytical, Inc.
255 Glendale Avenue
Suite 21
Sparks, Nevada 89431-5778
Phone: (775) 355-1044
Fax: (775) 355-0406

SUB CHAIN-OF-CUSTODY RECORD

Work Order : BHD14070901

***Please reference the Work Order number on all reports and invoices.**
***Also please include the dates of analysis and detection limits.**
Please send the report to Alpha Analytical (Sparks).
Attention To Reyna Vallejo (reyna@alpha-analytical.com).

Report Due By : 5:00 PM
On : 23-Jul-14

Required QC:
Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Subcontractor:
Sierra Environmental Monitoring
1135 Financial Blvd.
Reno, NV 89502

TEL: (775) 857-2400
FAX: (775) 857-2404
Acct #:

Sampled by : Brian Hastings

09-Jul-14

Alpha's Sample ID	Client's Sample ID	Matrix	Collection Date	Type (#) of Bottles Preserved	Other	Requested Tests SM9223B			Sample Comments
BHD14070901-01A	SDOE 008957 140708 1720		07/08/14 17:20	BACTI (1)		E. coli			
BHD14070901-02A	SDOE 008936 140708 1445		07/08/14 14:45	BACTI (1)		E. coli			
BHD14070901-03A	SDOE 008960 140708 1855		07/08/14 18:55	BACTI (1)		E. coli			
BHD14070901-04A	WC@ TLD 140708 1940		07/08/14 19:40	BACTI (1)		E. coli			
BHD14070901-05A	WC@ OVW 140708 1800		07/08/14 18:00	BACTI (1)		E. coli			

Comments: E. coli quantify limit 24,190 dilution

	Date/Time		Date/Time
Relinquished by:		**Received by:**	
Relinquished by:		**Received by:**	

Billing Information:

Company: Balance Hydrologics, Inc.
Attn: Rachel Bartano
Address: 800 Bancroft Way Suite 101
City, State, Zip: Berkeley, CA 94710
Phone Number: (510) 704-1000 Fax:

Alpha Analytical, Inc.

Main Laboratory: 255 Glendale Ave, Suite 21 Sparks, NV 89431 — Phone: 775-355-1044, Fax: 775-355-0406

Satellite Service Centers:

Northern CA: 9891 Horn Road, Suite C, Rancho Cordova, CA 95827 — Phone: 916-366-9089
Southern CA: 1007 E. Dominguez St., Suite O, Carson, CA 90746 — Phone: 714-386-2901
Northern NV: 1250 Lamoille Hwy., #310, Elko, NV 89801 — Phone: 775-388-7043
Southern NV: 6255 McLeod Ave, Suite 24, Las Vegas, NV 89120 — Phone: 702-281-4848

15409

Page # 1 of 1

Consultant/ Client Info:

Company: Balance Hydrologics
Address: PO Box 1077
City, State, Zip: Truckee, CA 96160

Job and Purchase Order Info:

Job #: 213136
Job Name: City of Reno
P.O. #:

Report Attention/Project Manager:

Name: Brian Hastings
Email Address: bhastings@balancehydro.com
Phone #: (530) 550-9776
Cell #: (415) 672-0976

QC Deliverable Info:

EDD Required? Yes / No
EDF Required? Yes / No
Global ID:
Data Validation Packages: III or IV

Samples Collected from which State? (circle one) AR CA KS NV OR WA DOD Site Other

Time Sampled (HHMM)	Date Sampled (MM/DD)	Matrix* (See Key Below)	Lab ID Number (For Lab Use Only)	Sample Description	TAT	# Containers** (See Key Below)	Field Filtered? Yes	Field Filtered? No	Ortho P	TSS	TDS	Total N	Total P	E. coli 9223B	NO_3					Remarks
1720	07/08	AQ		SDOE 005157/140708:1720		P		✓						✓						
1945	07/08	AQ		SDOE 005136/140708:1945		P		✓						✓						
1955	07/08	AQ		SDOE 005160/140708:1955		P		✓						✓						
1940	07/08	AQ		WCW TLD/140708:1940		P		✓						✓						
1800	07/08	AQ		WCW OVW/140708:1800		P		✓						✓						
		AQ				P		✓												
		AQ				P		✓												
		AQ				P		✓												
		AQ				P		✓												
		AQ				P		✓												
		AQ				P		✓												

ADDITIONAL INSTRUCTIONS: e.coli — quantif. limit 24,190 dilution

I (field sampler) attest to the validity and authenticity of this sample(s). I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. NAC 445.0636 (c) (2).

Sampled By: Brian Hastings

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
	7/8/14	21:45		7-8-14	21:45
	7/8/14	8:04am		7/9/14	8:04AM

* Key: AQ - Aqueous WA - Waste OT - Other So-Soil ** L - Liter V - VOA S-Soil Jar O - Orbo T - Tedlar B - Brass P - Plastic OT - Other

NOTE: Samples are discarded 60 days after sample receipt unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

Billing Information :

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

NV

WorkOrder : BHD14070901

Report Due By : 5:00 PM On : 23-Jul-14

Client:
Balance Hydrologics, Inc.
P.O. Box 1077

Truckee, CA 96160-1077

Report Attention	Phone Number	EMail Address
Brian Hastings	(530) 550-9776 x	bhastings@balancehydro.com

EDD Required : **No**

Sampled by : Brian Hastings

PO :

Client's COC # : 15409 Job : 213136/City of Reno

Cooler Temp	Samples Received	Date Printed
4 °C	08-Jul-14	09-Jul-14

QC Level : S3 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests COLIFORM_SUB								Sample Remarks
BHD14070901-01A	SDOE 008957/140708:1720	AQ	07/08/14 17:20	0	1	10	E. coli								
BHD14070901-02A	SDOE 008936/140708:1445	AQ	07/08/14 14:45	0	1	10	E. coli								
BHD14070901-03A	SDOE 008960/140708:1855	AQ	07/08/14 18:55	0	1	10	E. coli								
BHD14070901-04A	WC@ TLD/140708:1940	AQ	07/08/14 19:40	0	1	10	E. coli								
BHD14070901-05A	WC@ OVW/140708:1800	AQ	07/08/14 18:00	0	1	10	E. coli								

Comments: Samples picked up by Alpha employee on 7/8/14, kept cold and secure until login on 7/9/14. Blue ice. Samples picked up after the 16:00 cut off time, therefore one day added to TAT. E.coli by 9223B subbed to SEM. :

	Signature	Print Name	Company	Date/Time
Logged in by:	Morgan Lowery	Morgan Lowery	Alpha Analytical, Inc.	7-9-14 1313

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information:

Company: Balance Hydrologics, Inc.
Attn: Rachel Boitano
Address: 800 Bancroft Way Suite 101
City, State, Zip: Berkeley, CA 94710
Phone Number: (510) 704-1000 Fax:

Alpha Analytical, Inc.

Main Laboratory: 255 Glendale Ave, Suite 21 Sparks, NV 89431 — Phone: 775-355-1044, Fax: 775-355-0406

Satellite Service Centers:

Northern CA: 9891 Horn Road, Suite C, Rancho Cordova, CA 95827 — Phone: 916-366-9089
Southern CA: 1007 E. Dominguez St., Suite O, Carson, CA 90746 — Phone: 714-386-2901
Northern NV: 1250 Lamoille Hwy., #310, Elko, NV 89801 — Phone: 775-388-7043
Southern NV: 6255 McLeod Ave, Suite 24, Las Vegas, NV 89120 — Phone: 702-281-4848

15409

Page # 1 of 1

Consultant/ Client Info:

Company: Balance Hydrologics
Address: PO Box 1077
City, State, Zip: Truckee, CA 96160

Job and Purchase Order Info:

Job #: 213136
Job Name: City of Reno
P.O. #:

Report Attention/Project Manager:

Name: Brian Hastings
Email Address: bhastings@balancehydro.com
Phone #: (530) 550-9776
Cell #: (415) 672-0976

QC Deliverable Info:

EDD Required? Yes / No — EDF Required? Yes / No
Global ID:
Data Validation Packages: III or IV

Samples Collected from which State? (circle one) AR CA KS NV OR WA DOD Site Other

Time Sampled (HHMM)	Date Sampled (MM/DD)	Matrix* (See Key Below)	Lab ID Number (For Lab Use Only)	Sample Description	TAT	# Containers** (See Key Below)	Field Filtered? Yes	Field Filtered? No	Ortho P	TSS	TDS	Total N	Total P	E. Coli 9223B	NO_3				Remarks
1720	07/08	AQ	BHD1407090-01	SDOE 008957/140708:1720		P		✓						✓					
1445	07/08	AQ	02	SDOE 008936/140708:1445		P		✓						✓					
1855	07/08	AQ	03	SDOE 008960/140708:1855		P		✓						✓					
1440	07/08	AQ	04	WCQ TLD/140708:1440		P		✓						✓					
1800	07/08	AQ	05	WCQ OVW/140708:1800		P		✓						✓					
		AQ				P		✓											
		AQ				P		✓											
		AQ				P		✓											
		AQ				P		✓											
		AQ				P		✓											
		AQ				P		✓											

ADDITIONAL INSTRUCTIONS: e.coli — quantif. limit 24,190 dilution

I (field sampler) attest to the validity and authenticity of this sample(s). I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. NAC 445.0636 (c) (2).

Sampled By: Brian Hastings

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
	7/8/14	21:45		7-8-14	21:45
	7/9/14	8:04 AM		7/9/14	8:04 AM

* Key: AQ - Aqueous WA - Waste OT - Other So-Soil ** L - Liter V - VOA S-Soil Jar O - Orbo T - Tedlar B - Brass P - Plastic OT - Other

NOTE: Samples are discarded 60 days after sample receipt unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14070903-01A
Client I.D. Number: CC@ CB/140708:2000

Sampled: 07/08/14
Received: 07/09/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	07/09/14 15:00	07/09/14 23:42
Nitrate (NO3) - N	1.5	0.25		mg/L	07/09/14 15:00	07/09/14 23:42
Phosphate, ortho - P	ND	0.50		mg/L	07/09/14 15:00	07/09/14 23:42

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	2.9	0.50		mg/L	07/18/14	07/18/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	4.4	1.0		mg/L	07/18/14	07/18/14

ND = Not Detected

ACLASS ACCREDITED DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

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Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.
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NELAP ACCREDITED FULL LABORATORY

7/22/14
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

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P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14070903-02A
Client I.D. Number: DUP/140708:2000

Sampled: 07/08/14
Received: 07/09/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	07/09/14 15:00	07/10/14 00:01
Nitrate (NO3) - N	1.6	0.25		mg/L	07/09/14 15:00	07/10/14 00:01
Phosphate, ortho - P	ND	0.50		mg/L	07/09/14 15:00	07/10/14 00:01

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	3.0	0.50		mg/L	07/18/14	07/18/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	4.6	1.0		mg/L	07/18/14	07/18/14

ND = Not Detected

ACLASS ACCREDITED DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
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NELAP ACCREDITED TNI LABORATORY

7/22/14
Report Date

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ANALYTICAL REPORT

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P.O. Box 1077
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Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14070903-03A
Client I.D. Number: SDOE 008957/140708:1720

Sampled: 07/08/14
Received: 07/09/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	07/09/14 15:00	07/10/14 00:19
Nitrate (NO3) - N	2.0	0.25		mg/L	07/09/14 15:00	07/10/14 00:19
Phosphate, ortho - P	0.53	0.50		mg/L	07/09/14 15:00	07/10/14 00:19

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	7.4	0.50		mg/L	07/18/14	07/18/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	9.4	1.0		mg/L	07/18/14	07/18/14

ND = Not Detected

ACLASS ACCREDITED DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
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NELAP ACCREDITED LABORATORY

7/22/14
Report Date

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ANALYTICAL REPORT

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Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14070903-04A
Client I.D. Number: SDOE 008960/140708:1855

Sampled: 07/08/14
Received: 07/09/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	07/09/14 15:00	07/10/14 00:38
Nitrate (NO3) - N	1.3	0.25		mg/L	07/09/14 15:00	07/10/14 00:38
Phosphate, ortho - P	ND	0.50		mg/L	07/09/14 15:00	07/10/14 00:38

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	3.9	0.50		mg/L	07/18/14	07/18/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	5.2	1.0		mg/L	07/18/14	07/18/14

ND = Not Detected

ACLASS ACCREDITED DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
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NELAP ACCREDITED TNI LABORATORY

✓ 7/22/14
Report Date

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ANALYTICAL REPORT

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P.O. Box 1077
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Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14070903-05A
Client I.D. Number: NTD@ ORD/140708:1850

Sampled: 07/08/14
Received: 07/09/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	07/09/14 15:00	07/10/14 00:56
Nitrate (NO3) - N	1.6	0.25		mg/L	07/09/14 15:00	07/10/14 00:56
Phosphate, ortho - P	ND	0.50		mg/L	07/09/14 15:00	07/10/14 00:56

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	2.9	0.50		mg/L	07/18/14	07/18/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	4.5	1.0		mg/L	07/18/14	07/18/14

ND = Not Detected

ACLASS ACCREDITED DoD ELAP

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NELAP ACCREDITED TNI LABORATORY

7/22/14
Report Date

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ANALYTICAL REPORT

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Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14070903-06A
Client I.D. Number: SDOE 008936/140708:1645

Sampled: 07/08/14
Received: 07/09/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	07/09/14 15:00	07/10/14 01:15
Nitrate (NO3) - N	1.4	0.25		mg/L	07/09/14 15:00	07/10/14 01:15
Phosphate, ortho - P	ND	0.50		mg/L	07/09/14 15:00	07/10/14 01:15

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	5.1	0.50		mg/L	07/18/14	07/18/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	6.5	1.0		mg/L	07/18/14	07/18/14

ND = Not Detected

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NELAP ACCREDITED TNI LABORATORY

7/22/14
Report Date

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ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14070903-07A
Client I.D. Number: NTD@ KLP/140708:1820

Sampled: 07/08/14
Received: 07/09/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	07/09/14 15:00	07/10/14 01:33
Nitrate (NO3) - N	0.95	0.25		mg/L	07/09/14 15:00	07/10/14 01:33
Phosphate, ortho - P	ND	0.50		mg/L	07/09/14 15:00	07/10/14 01:33

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	3.2	0.50		mg/L	07/18/14	07/18/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	4.2	1.0		mg/L	07/18/14	07/18/14

ND = Not Detected

ACLASS ACCREDITED DoD ELAP

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7/22/14
Report Date

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ANALYTICAL REPORT

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P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14070903-08A
Client I.D. Number: TC@ SMP 140708:1656

Sampled: 07/08/14
Received: 07/09/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	07/09/14 15:00	07/10/14 02:47
Nitrate (NO3) - N	ND	0.25		mg/L	07/09/14 15:00	07/10/14 02:47
Phosphate, ortho - P	ND	0.50		mg/L	07/09/14 15:00	07/10/14 02:47

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	0.95	0.50		mg/L	07/18/14	07/18/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	ND	1.0		mg/L	07/18/14	07/18/14

ND = Not Detected

ACLASS ACCREDITED DoD ELAP

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Report Date

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ANALYTICAL REPORT

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P.O. Box 1077
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Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14070903-09A
Client I.D. Number: WC@ OVW 140708:1800

Sampled: 07/08/14
Received: 07/09/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	07/09/14 15:00	07/10/14 03:06
Nitrate (NO3) - N	ND	0.25		mg/L	07/09/14 15:00	07/10/14 03:06
Phosphate, ortho - P	ND	0.50		mg/L	07/09/14 15:00	07/10/14 03:06

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	ND	0.50		mg/L	07/18/14	07/18/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	ND	1.0		mg/L	07/18/14	07/18/14

ND = Not Detected

ACLASS ACCREDITED DoD ELAP

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ANALYTICAL REPORT

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Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14070903-10A
Client I.D. Number: TC@ TLD 140708:1900

Sampled: 07/08/14
Received: 07/09/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	07/09/14 15:00	07/10/14 03:24
Nitrate (NO3) - N	ND	0.25		mg/L	07/09/14 15:00	07/10/14 03:24
Phosphate, ortho - P	ND	0.50		mg/L	07/09/14 15:00	07/10/14 03:24

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	ND	0.50		mg/L	07/18/14	07/18/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	ND	1.0		mg/L	07/18/14	07/18/14

ND = Not Detected

ACLASS ACCREDITED DoD ELAP

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ANALYTICAL REPORT

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P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14070903-11A
Client I.D. Number: WC@ TLD 140708:1940

Sampled: 07/08/14
Received: 07/09/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	07/09/14 15:00	07/10/14 03:43
Nitrate (NO3) - N	ND	0.25		mg/L	07/09/14 15:00	07/10/14 03:43
Phosphate, ortho - P	ND	0.50		mg/L	07/09/14 15:00	07/10/14 03:43

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	ND	0.50		mg/L	07/18/14	07/18/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	ND	1.0		mg/L	07/18/14	07/18/14

ND = Not Detected

ACLASS ACCREDITED DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com
Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.
Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.
Alpha Analytical, Inc. currently holds appropriate and available NDEP certifications for the data reported - certification #NV00016.

NELAP ACCREDITED TNI LABORATORY

7/22/14
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:
Date Received : 07/09/14

Job: 213136/City of Reno

Phosphorus
EPA Method 365.3 / SM4500PE

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **CC@ CB/140708:2000** Lab ID : BHD14070903-01A Phosphorus, Total (As P) Date Sampled 07/08/14 20:00	0.86	0.10 mg/L	07/15/14	07/15/14
Client ID: **DUP/140708:2000** Lab ID : BHD14070903-02A Phosphorus, Total (As P) Date Sampled 07/08/14 20:00	0.87	0.10 mg/L	07/15/14	07/15/14
Client ID: **SDOE 008957/140708:1720** Lab ID : BHD14070903-03A Phosphorus, Total (As P) Date Sampled 07/08/14 17:20	1.4	0.10 mg/L	07/15/14	07/15/14
Client ID: **SDOE 008960/140708:1855** Lab ID : BHD14070903-04A Phosphorus, Total (As P) Date Sampled 07/08/14 18:55	0.96	0.10 mg/L	07/15/14	07/15/14
Client ID: **NTD@ ORD/140708:1850** Lab ID : BHD14070903-05A Phosphorus, Total (As P) Date Sampled 07/08/14 18:50	0.62	0.10 mg/L	07/15/14	07/15/14
Client ID: **SDOE 008936/140708:1645** Lab ID : BHD14070903-06A Phosphorus, Total (As P) Date Sampled 07/08/14 16:45	0.90	0.10 mg/L	07/15/14	07/15/14
Client ID: **NTD@ KLP/140708:1820** Lab ID : BHD14070903-07A Phosphorus, Total (As P) Date Sampled 07/08/14 18:20	0.52	0.10 mg/L	07/15/14	07/15/14
Client ID: **TC@ SMP 140708:1656** Lab ID : BHD14070903-08A Phosphorus, Total (As P) Date Sampled 07/08/14 16:56	0.28	0.10 mg/L	07/15/14	07/15/14
Client ID: **WC@ OVW 140708:1800** Lab ID : BHD14070903-09A Phosphorus, Total (As P) Date Sampled 07/08/14 18:00	ND	0.10 mg/L	07/15/14	07/15/14
Client ID: **TC@ TLD 140708:1900** Lab ID : BHD14070903-10A Phosphorus, Total (As P) Date Sampled 07/08/14 19:00	0.20	0.10 mg/L	07/15/14	07/15/14
Client ID: **WC@ TLD 140708:1940** Lab ID : BHD14070903-11A Phosphorus, Total (As P) Date Sampled 07/08/14 19:40	ND	0.10 mg/L	07/15/14	07/15/14

Alpha Analytical, Inc.

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ND = Not Detected

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
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ACLASS ACCREDITED DoD ELAP

NELAP ACCREDITED LABORATORY

7/22/14
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:
Date Received : 07/09/14

Job: 213136/City of Reno

Total Dissolved Solids (TDS)
SM2540C

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **CC@ CB/140708:2000** Lab ID : BHD14070903-01A Solids, Total Dissolved (TDS) Date Sampled 07/08/14 20:00	2,900	10 mg/L	07/14/14	07/14/14
Client ID: **DUP/140708:2000** Lab ID : BHD14070903-02A Solids, Total Dissolved (TDS) Date Sampled 07/08/14 20:00	2,900	10 mg/L	07/14/14	07/14/14
Client ID: **SDOE 008957/140708:1720** Lab ID : BHD14070903-03A Solids, Total Dissolved (TDS) Date Sampled 07/08/14 17:20	300	10 mg/L	07/11/14	07/11/14
Client ID: **SDOE 008960/140708:1855** Lab ID : BHD14070903-04A Solids, Total Dissolved (TDS) Date Sampled 07/08/14 18:55	220	10 mg/L	07/11/14	07/11/14
Client ID: **NTD@ ORD/140708:1850** Lab ID : BHD14070903-05A Solids, Total Dissolved (TDS) Date Sampled 07/08/14 18:50	280	10 mg/L	07/11/14	07/11/14
Client ID: **SDOE 008936/140708:1645** Lab ID : BHD14070903-06A Solids, Total Dissolved (TDS) Date Sampled 07/08/14 16:45	210	10 mg/L	07/11/14	07/11/14
Client ID: **NTD@ KLP/140708:1820** Lab ID : BHD14070903-07A Solids, Total Dissolved (TDS) Date Sampled 07/08/14 18:20	290	10 mg/L	07/11/14	07/11/14
Client ID: **TC@ SMP 140708:1656** Lab ID : BHD14070903-08A Solids, Total Dissolved (TDS) Date Sampled 07/08/14 16:56	160	10 mg/L	07/11/14	07/11/14
Client ID: **WC@ OVW 140708:1800** Lab ID : BHD14070903-09A Solids, Total Dissolved (TDS) Date Sampled 07/08/14 18:00	68	10 mg/L	07/11/14	07/11/14
Client ID: **TC@ TLD 140708:1900** Lab ID : BHD14070903-10A Solids, Total Dissolved (TDS) Date Sampled 07/08/14 19:00	91	10 mg/L	07/11/14	07/11/14
Client ID: **WC@ TLD 140708:1940** Lab ID : BHD14070903-11A Solids, Total Dissolved (TDS) Date Sampled 07/08/14 19:40	68	10 mg/L	07/11/14	07/11/14

Alpha Analytical, Inc.

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ACLASS ACCREDITED DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer

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7/22/14

Report Date

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ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:
Date Received : 07/09/14

Job: 213136/City of Reno

Total Suspended Solids
SM2540D

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **CC@ CB/140708:2000** Lab ID : BHD14070903-01A Solids, Total Suspended (TSS) Date Sampled 07/08/14 20:00	65	2.5 mg/L	07/11/14	07/11/14
Client ID: **DUP/140708:2000** Lab ID : BHD14070903-02A Solids, Total Suspended (TSS) Date Sampled 07/08/14 20:00	56	2.5 mg/L	07/11/14	07/11/14
Client ID: **SDOE 008957/140708:1720** Lab ID : BHD14070903-03A Solids, Total Suspended (TSS) Date Sampled 07/08/14 17:20	200	2.5 mg/L	07/11/14	07/11/14
Client ID: **SDOE 008960/140708:1855** Lab ID : BHD14070903-04A Solids, Total Suspended (TSS) Date Sampled 07/08/14 18:55	270	2.5 mg/L	07/11/14	07/11/14
Client ID: **NTD@ ORD/140708:1850** Lab ID : BHD14070903-05A Solids, Total Suspended (TSS) Date Sampled 07/08/14 18:50	110	2.5 mg/L	07/11/14	07/11/14
Client ID: **SDOE 008936/140708:1645** Lab ID : BHD14070903-06A Solids, Total Suspended (TSS) Date Sampled 07/08/14 16:45	230	2.5 mg/L	07/11/14	07/11/14
Client ID: **NTD@ KLP/140708:1820** Lab ID : BHD14070903-07A Solids, Total Suspended (TSS) Date Sampled 07/08/14 18:20	160	2.5 mg/L	07/11/14	07/11/14
Client ID: **TC@ SMP 140708:1656** Lab ID : BHD14070903-08A Solids, Total Suspended (TSS) Date Sampled 07/08/14 16:56	39	2.5 mg/L	07/11/14	07/11/14
Client ID: **WC@ OVW 140708:1800** Lab ID : BHD14070903-09A Solids, Total Suspended (TSS) Date Sampled 07/08/14 18:00	7.0	2.5 mg/L	07/11/14	07/11/14
Client ID: **TC@ TLD 140708:1900** Lab ID : BHD14070903-10A Solids, Total Suspended (TSS) Date Sampled 07/08/14 19:00	22	2.5 mg/L	07/11/14	07/11/14
Client ID: **WC@ TLD 140708:1940** Lab ID : BHD14070903-11A Solids, Total Suspended (TSS) Date Sampled 07/08/14 19:40	19	2.5 mg/L	07/11/14	07/11/14

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7/22/14

Report Date

Alpha Analytical, Inc.

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Date: *21-Jul-14*

QC Summary Report

Work Order: 14070903

Method Blank

Type **MBLK** Test Code: **EPA Method 300.0**

File ID: **16** Batch ID: **33205** Analysis Date: **07/09/2014 21:14**

Sample ID: **MB-33205** Units : **mg/L** Run ID: **MANUAL_140709G** Prep Date: **07/09/2014 15:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	ND	0.25								
Nitrate (NO3) - N	ND	0.25								
Phosphate, ortho - P	ND	0.5								

Laboratory Fortified Blank

Type **LFB** Test Code: **EPA Method 300.0**

File ID: **17** Batch ID: **33205** Analysis Date: **07/09/2014 21:33**

Sample ID: **LFB-33205** Units : **mg/L** Run ID: **MANUAL_140709G** Prep Date: **07/09/2014 15:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	4.97	0.25	5		99	90	110			
Nitrate (NO3) - N	4.92	0.25	5		98	90	110			
Phosphate, ortho - P	4.77	0.5	5		95	90	110			

Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 300.0**

File ID: **20** Batch ID: **33205** Analysis Date: **07/09/2014 22:28**

Sample ID: **14070804-04ALFM** Units : **mg/L** Run ID: **MANUAL_140709G** Prep Date: **07/09/2014 15:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	24.5	0.63	25	0	98	80	120			
Nitrate (NO3) - N	24.1	0.63	25	0	96	80	120			
Phosphate, ortho - P	26.2	1.3	25	0	105	80	120			

Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 300.0**

File ID: **21** Batch ID: **33205** Analysis Date: **07/09/2014 22:47**

Sample ID: **14070804-04ALFMD** Units : **mg/L** Run ID: **MANUAL_140709G** Prep Date: **07/09/2014 15:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	24.5	0.63	25	0	98	80	120	24.52	0.3(15)	
Nitrate (NO3) - N	23.8	0.63	25	0	95	80	120	24.07	0.9(15)	
Phosphate, ortho - P	25.7	1.3	25	0	103	80	120	26.22	2.0(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

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Date: *22-Jul-14*

QC Summary Report

Work Order: 14070903

Method Blank

Type **MBLK** Test Code: **SM4500-NORGC / SM4500NH3D**

File ID: Batch ID: **W0718TK** Analysis Date: **07/18/2014 14:11**

Sample ID: **MBLK-W0718TK** Units : **mg/L** Run ID: **WETLAB_140718A** Prep Date: **07/18/2014 14:11**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrogen, Kjeldahl, Total	ND	0.25								

Laboratory Control Spike

Type **LCS** Test Code: **SM4500-NORGC / SM4500NH3D**

File ID: Batch ID: **W0718TK** Analysis Date: **07/18/2014 14:15**

Sample ID: **LCS-W0718TK** Units : **mg/L** Run ID: **WETLAB_140718A** Prep Date: **07/18/2014 14:15**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrogen, Kjeldahl, Total	4.9	0.25	5		98	68	130			

Sample Matrix Spike

Type **MS** Test Code: **SM4500-NORGC / SM4500NH3D**

File ID: Batch ID: **W0718TK** Analysis Date: **07/18/2014 14:26**

Sample ID: **14070903-01AMS** Units : **mg/L** Run ID: **WETLAB_140718A** Prep Date: **07/18/2014 14:26**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrogen, Kjeldahl, Total	7.88	0.25	5	2.91	99	32	147			

Sample Matrix Spike Duplicate

Type **MSD** Test Code: **SM4500-NORGC / SM4500NH3D**

File ID: Batch ID: **W0718TK** Analysis Date: **07/18/2014 14:30**

Sample ID: **14070903-01AMSD** Units : **mg/L** Run ID: **WETLAB_140718A** Prep Date: **07/18/2014 14:30**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrogen, Kjeldahl, Total	7.57	0.25	5	2.91	93	32	147	7.88	4.0(30)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *16-Jul-14*

QC Summary Report

Work Order: 14070903

Method Blank

Type **MBLK** Test Code: **EPA Method 365.3 / SM4500PE**

File ID: Batch ID: **W0715TP** Analysis Date: **07/15/2014 00:00**

Sample ID: **MBLK-W0715TP** Units : **mg/L** Run ID: **WETLAB_140715A** Prep Date: **07/15/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Phosphorus, Total (As P)	ND	0.1								

Laboratory Control Spike

Type **LCS** Test Code: **EPA Method 365.3 / SM4500PE**

File ID: Batch ID: **W0715TP** Analysis Date: **07/15/2014 00:00**

Sample ID: **LCS-W0715TP** Units : **mg/L** Run ID: **WETLAB_140715A** Prep Date: **07/15/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Phosphorus, Total (As P)	0.886	0.1	1		89	70	130			

Sample Matrix Spike

Type **MS** Test Code: **EPA Method 365.3 / SM4500PE**

File ID: Batch ID: **W0715TP** Analysis Date: **07/15/2014 00:00**

Sample ID: **14071125-02AMS** Units : **mg/L** Run ID: **WETLAB_140715A** Prep Date: **07/15/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Phosphorus, Total (As P)	1.03	0.1	1	0	103	67	130			

Sample Matrix Spike Duplicate

Type **MSD** Test Code: **EPA Method 365.3 / SM4500PE**

File ID: Batch ID: **W0715TP** Analysis Date: **07/15/2014 00:00**

Sample ID: **14071125-02AMSD** Units : **mg/L** Run ID: **WETLAB_140715A** Prep Date: **07/15/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Phosphorus, Total (As P)	0.317	0.1	1	0	32	67	130	1.025	106.0(20)	M2 R58

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

M2 = Matrix spike recovery was low, the method control sample recovery was acceptable.

R58 = MS/MSD RPD exceeded the laboratory control limit.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *16-Jul-14*

QC Summary Report

Work Order: 14070903

Method Blank

Type **MBLK** Test Code: **SM2540C**

File ID: **1** Batch ID: **W0710DS** Analysis Date: **07/11/2014 00:00**

Sample ID: **MBLK** Units : **mg/L** Run ID: **MANUAL_140710E** Prep Date: **07/11/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	ND	10								

Laboratory Control Spike

Type **LCS** Test Code: **SM2540C**

File ID: **2** Batch ID: **W0710DS** Analysis Date: **07/11/2014 00:00**

Sample ID: **WC140513-01** Units : **mg/L** Run ID: **MANUAL_140710E** Prep Date: **07/11/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	93	10	100		93	73	130			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

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Date: *16-Jul-14*

QC Summary Report

Work Order: 14070903

Method Blank

Type **MBLK** Test Code: **SM2540D**

File ID: Batch ID: **W0710SS** Analysis Date: **07/11/2014 00:00**

Sample ID: **MBLK-W0710SS** Units : **mg/L** Run ID: **WETLAB_140710D** Prep Date: **07/11/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Suspended (TSS)	ND	2.5								

Laboratory Control Spike

Type **LCS** Test Code: **SM2540D**

File ID: Batch ID: **W0710SS** Analysis Date: **07/11/2014 00:00**

Sample ID: **LCS-W0710SS** Units : **mg/L** Run ID: **WETLAB_140710D** Prep Date: **07/11/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Suspended (TSS)	68	2.5	100		68	55	130			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Billing Information :

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

NV

WorkOrder : BHD14070903

Report Due By : 5:00 PM On : 23-Jul-14

Client:
Balance Hydrologics, Inc.
P.O. Box 1077

Truckee, CA 96160-1077

Report Attention	Phone Number	EMail Address
Brian Hastings	(530) 550-9776 x	bhastings@balancehydro.com

EDD Required : **No**

Sampled by : Brian Hastings, Jonathan Owens

PO :

Client's COC # : 15412, 15410, 15411, 1515 Job : 213136/City of Reno

Cooler Temp	Samples Received	Date Printed
6 °C	09-Jul-14	09-Jul-14

QC Level : S3 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	N_TKN_W	N_TOTAL_W	PHOSPHORUS_W	TDS_W	TSS_W			Sample Remarks
BHD14070903-01A	CC@ CB/140708:2000	AQ	07/08/14 20:00	3	0	10	PO4, N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS			
BHD14070903-02A	DUP/140708:2000	AQ	07/08/14 20:00	3	0	10	PO4, N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS			
BHD14070903-03A	SDOE 008957/140708:1720	AQ	07/08/14 17:20	3	0	10	PO4, N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS			
BHD14070903-04A	SDOE 008960/140708:1855	AQ	07/08/14 18:55	3	0	10	PO4, N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS			
BHD14070903-05A	NTD@ ORD/140708:1850	AQ	07/08/14 18:50	3	0	10	PO4, N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS			
BHD14070903-06A	SDOE 008936/140708:1645	AQ	07/08/14 16:45	3	0	10	PO4, N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS			

Comments: Samples brought in by client. Blue ice. :

	Signature	Print Name	Company	Date/Time
Logged in by:	Morgan Lowery	Morgan Lowery	Alpha Analytical, Inc.	7-9-14 1420

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information :

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

NV

WorkOrder : BHD14070903

Report Due By : 5:00 PM On : 23-Jul-14

Client:
Balance Hydrologics, Inc.
P.O. Box 1077

Truckee, CA 96160-1077

Report Attention	Phone Number	EMail Address
Brian Hastings	(530) 550-9776 x	bhastings@balancehydro.com

EDD Required : **No**

Sampled by : Brian Hastings, Jonathan Owens

PO :

Client's COC # : 15412, 15410, 15411, 1515 Job : 213136/City of Reno

Cooler Temp	Samples Received	Date Printed
6 °C	09-Jul-14	**09-Jul-14**

QC Level : S3 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	N_TKN_W	N_TOTAL_W	PHOSPHORUS_W	TDS_W	TSS_W			Sample Remarks
BHD14070903-07A	NTD@ KLP/140708:1820	AQ	07/08/14 18:20	3	0	10	PO4, N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS			
BHD14070903-08A	TC@ SMP 140708:1656	AQ	07/08/14 16:56	3	0	10	PO4, N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS			
BHD14070903-09A	WC@ OVW 140708:1800	AQ	07/08/14 18:00	3	0	10	PO4, N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS			
BHD14070903-10A	TC@ TLD 140708:1900	AQ	07/08/14 19:00	3	0	10	PO4, N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS			
BHD14070903-11A	WC@ TLD 140708:1940	AQ	07/08/14 19:40	3	0	10	PO4, N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS			

Comments: Samples brought in by client. Blue ice. :

	Signature	Print Name	Company	Date/Time
Logged in by:	Morgan Lowery	Morgan Lowery	Alpha Analytical, Inc.	7-9.14 1420

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information:

Company: Balance Hydrologics, Inc.
Attn: Rachel Baitano
Address: 800 Bancroft Way St. 101
City, State, Zip: Berkeley, CA 94710
Phone Number: (510) 704-1000 Fax:

Alpha Analytical, Inc.

Main Laboratory: 255 Glendale Ave, Suite 21 Sparks, NV 89431 — Phone: 775-355-1044, Fax: 775-355-0406

Satellite Service Centers:

Northern CA: 9891 Hom Road, Suite C, Rancho Cordova, CA 95827 — Phone: 916-366-9089
Southern CA: 1007 E. Dominguez St., Suite O, Carson, CA 90746 — Phone: 714-386-2901
Northern NV: 1250 Lamoille Hwy., #310, Elko, NV 89801 — Phone: 775-388-7043
Southern NV: 6255 McLeod Ave, Suite 24, Las Vegas, NV 89120 — Phone: 702-281-4848

15412

Page # 1 of 4

Consultant/ Client Info:

Company: Balance Hydrologics
Address: PO Box 1077
City, State, Zip: Truckee, CA 96160

Job and Purchase Order Info:

Job #: 213136
Job Name: City of Reno
P.O. #:

Report Attention/Project Manager:

Name: Brian Hastings
Email Address: bhastings@balancehydro.com
Phone #: (530) 550-9776
Cell #: (415) 672-0976

QC Deliverable Info:

EDD Required? Yes / No
EDF Required? Yes / No
Global ID:
Data Validation Packages: III or IV

Samples Collected from which State? (circle one) AR CA KS (NV) OR WA DOD Site Other

Time Sampled (HHMM)	Date Sampled (MM/DD)	Matrix* (See Key Below)	Lab ID Number (For Lab Use Only)	Sample Description	TAT	#Containers** (See Key Below)	Field Filtered? Yes	Field Filtered? No	Ortho P	TSS	TDS	Total N	Total P	E. coli 9223B Kim	NO_3				Remarks
2000	07/08	AQ	BHS1407090 3-01A	CC@CB/140708:2000	ST	P		✓	X	X	X								1L bottle
"	"	AQ		"		P		✓	X	X	X								250mL bottle
"	"	AQ	↓	"		P		✓				X	X		X				250mL, H_2SO_4
"	"	AQ	02A	DUP/140708:2000		P		✓	X	X	X								1L
"	"	AQ	↓	"		P		✓	X	X	X								250mL
"	"	AQ	↓	"		P		✓				X	X		X				250mL, H_2SO_4
1720	"	AQ	03A	SDOE0089957/140708:1720		P		✓	X	X	X								1L
"	"	AQ	↓	"		P		✓	X	X	X								250mL
"	"	AQ	↓	"		P		✓				X	X		X				250mL, H_2SO_4
1855	"	AQ	04A	SDOE0089700/140708:1855		P		✓	X	X	X								1L
"	"	AQ	↓	"	↓	P		✓	X	X	X								250mL

ADDITIONAL INSTRUCTIONS: e. coli — quantification limit 24,190 dilution run

I (field sampler) attest to the validity and authenticity of this sample(s). I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. NAC 445.0636 (c) (2).

Sampled By: Brian Hastings

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Brian Hastings	7/9/14	12:25	K Murray/AAI ML	7/9/14	1225

* Key: AQ - Aqueous WA - Waste OT - Other So-Soil ** L - Liter V - VOA S-Soil Jar O - Orbo T - Tedlar B - Brass P - Plastic OT - Other

NOTE: Samples are discarded 60 days after sample receipt unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

Billing Information:

Company: Balance Hydrologics
Attn: Rachel Boitano
Address: 800 Bancroft Way St. 101
City, State, Zip: Berkeley, CA 94710
Phone Number: (510) 704-1000 Fax:

Alpha Analytical, Inc.
Main Laboratory: 255 Glendale Ave, Suite 21 Sparks, NV 89431 — Phone: 775-355-1044, Fax: 775-355-0406

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Northern CA: 9891 Horn Road, Suite C, Rancho Cordova, CA 95827 — Phone: 916-366-9089
Southern CA: 1007 E. Dominguez St., Suite O, Carson, CA 90746 — Phone: 714-386-2901
Northern NV: 1250 Lamoille Hwy., #310, Elko, NV 89801 — Phone: 775-388-7043
Southern NV: 6255 McLeod Ave, Suite 24, Las Vegas, NV 89120 — Phone: 702-281-4848

15410

Page # 2 of 4

Consultant/ Client Info:
Company: Balance Hydrologics
Address: PO Box 1077
City, State, Zip: Truckee, CA 96160

Job and Purchase Order Info:
Job #: 213136
Job Name: City of Reno
P.O. #:

Report Attention/Project Manager:
Name: Brian Hastings
Email Address: bhastings@balancehydro.com
Phone #: (530) 550-9776
Cell #: (415) 672-0976

QC Deliverable Info:
EDD Required? Yes / No — EDF Required? Yes / No
Global ID:
Data Validation Packages: III or IV

Samples Collected from which State? (circle one) AR CA KS NV OR WA DOD Site Other

Time Sampled (HHMM)	Date Sampled (MM/DD)	Matrix* (See Key Below)	Lab ID Number (For Lab Use Only)	Sample Description	TAT	# Containers** (See Key Below)	Field Filtered? Yes	Field Filtered? No	Ortho P	TSS	TDS	Total N	Total P	~~E. Coli 1223B~~ KM	NO_3				Remarks
1855	07/08	AQ	04A	SDOE008960/140708:1855	ST	P		✓				X	X		X				250mL, H_2SO_4
1850	07/08	AQ	05A	NTD@ORD/140708:1850		P		✓	X	X	X								1L
"	"	AQ		"		P		✓	X	X	X								250mL
"	"	AQ		"		P		✓				X	X						250mL, H_2SO_4
1645	"	AQ	06A	SDOE008936/140708:1645		P		✓	X	X	X								1L
"	"	AQ		"		P		✓	X	X	X								250mL
"	"	AQ		"		P		✓				X	X		X				250mL, H_2SO_4
1820	"	AQ	07A	NTD@KLP/140708:1820		P		✓	X	X	X								1L
"	"	AQ		"		P		✓	X	X	X								250mL
"	"	AQ		"		P		✓				X	X						250mL, H_2SO_4
		AQ				P		✓											

ADDITIONAL INSTRUCTIONS: ~~E. coli~~ — quantit. limit ~~[illegible]~~: 24,190 dilution KM

I (field sampler) attest to the validity and authenticity of this sample(s). I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. NAC 445.0636 (c) (2).

Sampled By: Brian Hastings

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
[signature]	7/9/14	12:25	K Murray / AAI ML	7/9/14	1225

* Key: AQ - Aqueous WA - Waste OT - Other So-Soil ** L - Liter V - VOA S-Soil Jar O - Orbo T - Tedlar B - Brass P - Plastic OT - Other

NOTE: Samples are discarded 60 days after sample receipt unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

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Attn: Rachel Boitano
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City, State, Zip: Berkeley, CA 94710
Phone Number: (510) 704-1000 Fax:

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Southern CA: 1007 E. Dominguez St., Suite O, Carson, CA 90746 — Phone: 714-386-2901
Northern NV: 1250 Lamoille Hwy., #310, Elko, NV 89801 — Phone: 775-388-7043
Southern NV: 6255 McLeod Ave, Suite 24, Las Vegas, NV 89120 — Phone: 702-281-4848

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Page # 3 of 4

Consultant/ Client Info:
Company: Balance Hydrologics
Address: PO Box 1077
City, State, Zip: Truckee, CA 96160

Job and Purchase Order Info:
Job #: 213136
Job Name: City of Reno
P.O. #:

Report Attention/Project Manager:
Name: Brian Hastings
Email Address: bhastings@balancehydro.com
Phone #: (530) 550-9776
Cell #: (415) 672-0976

QC Deliverable Info:
EDD Required? Yes / No — EDF Required? Yes / No
Global ID:
Data Validation Packages: III or IV

Samples Collected from which State? (circle one) AR CA KS (NV) OR WA DOD Site Other

Time Sampled (HHMM)	Date Sampled (MM/DD)	Matrix* (See Key Below)	Lab ID Number (For Lab Use Only)	Sample Description	TAT	# Containers** (See Key Below)	Field Filtered? Yes	Field Filtered? No	Ortho P	TSS	TDS	Total N	Total P	~~e. coli 9223B~~ KM	NO_3				Remarks
1656	07/08	AQ	08A	TC@SMP 140708:1656	ST	P		✓	✓	✓	✓								1 liter
1656	07/08	AQ	↓	TC@SMP 140708:1656	↓	P		✓				✓	✓						250 ml H_2SO_4
1656	07/08	AQ	↓	TC@SMP 140708:1656	↓	P		✓	✓	✓	✓								250 ml
1800	07/08	AQ	09A	WC@OVW 140708:1800	↓	P		✓	✓	✓	✓								1000 ml
1800	07/08	AQ	↓	WC@OVW 140708:1800	↓	P		✓	✓	✓	✓								250 ml
1800	07/08	AQ	↓	WC@OVW 140708:1800	↓	P		✓				✓	✓						250 ml H_2SO_4
1900	07/08	AQ	10A	TC@TLD 140708:1900	↓	P		✓	✓	✓	✓								1000 ml
1900	07/08	AQ	↓	TC@TLD 140708:1900	↓	P		✓	✓	✓	✓								250 ml
1900	07/08	AQ	↓	TC@TLD 140708:1900	↓	P		✓				✓	✓						250 ml H_2SO_4
1940	07/08	AQ	11A	WC@TLD 140708:1940	↓	P		✓	✓	✓	✓								1000 ml
1940	07/08	AQ	↓	WC@TLD 140708:1940	↓	P		✓	✓	✓	✓								250 ml

ADDITIONAL INSTRUCTIONS: ~~e. coli — quantif. limit — 24,190 dilution~~ KM

I (field sampler) attest to the validity and authenticity of this sample(s). I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. NAC 445.0636 (c) (2).

Sampled By: Jonathan Owens

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
[signature]	7/9/14	12:25	K Murray/AAIVL	7/9/14	1225

* Key: AQ - Aqueous WA - Waste OT - Other So-Soil ** L - Liter V - VOA S-Soil Jar O - Orbo T - Tedlar B - Brass P - Plastic OT - Other

NOTE: Samples are discarded 60 days after sample receipt unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

Billing Information:

Company: Balance Hydrologics, Inc
Attn: Rachel Boitano
Address: 800 Bancroft Way Suite 101
City, State, Zip: Berkeley, CA 94710
Phone Number: (510) 704-1000 Fax:

Alpha Analytical, Inc.

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Southern CA: 1007 E. Dominguez St., Suite O, Carson, CA 90746 Phone: 714-386-2901
Northern NV: 1250 Lamoille Hwy., #310, Elko, NV 89801 Phone: 775-388-7043
Southern NV: 6255 McLeod Ave, Suite 24, Las Vegas, NV 89120 Phone: 702-281-4848

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Page # 4 of 4

Consultant/ Client Info:

Company: Balance Hydrologics, Inc
Address: PO Box 1077
City, State, Zip: Truckee, CA 96160

Job and Purchase Order Info:

Job #: 213136
Job Name: City of Reno
P.O. #:

Report Attention/Project Manager:

Name: Brian Hastings
Email Address: bhastings@balancehydro.com
Phone #: (530) 550-9776
Cell #: (415) 672-0976

QC Deliverable Info:

EDD Required? Yes / No EDF Required? Yes / No
Global ID:
Data Validation Packages: III or IV

Samples Collected from which State? (circle one) AR CA KS (NV) OR WA DOD Site Other

Time Sampled (HHMM)	Date Sampled (MM/DD)	Matrix* (See Key Below)	Lab ID Number (For Lab Use Only)	Sample Description	TAT	#Containers** (See Key Below)	Field Filtered? Yes	Field Filtered? No	Ortho P	TSS	TDS	Total N	Total P	E.coli 9223B	NO_3				Remarks
1940	07/08	AQ	11A	WC@TLD 140708:1940	5T	P		✓				✓	✓						250 ml H_2SO_4
		AQ				P		✓											
		AQ				P		✓											
		AQ				P		✓											
		AQ				P		✓											
		AQ				P		✓											
		AQ				P		✓											
		AQ				P		✓											
		AQ				P		✓											
		AQ				P		✓											
		AQ				P		✓											

ADDITIONAL INSTRUCTIONS: e.coli – quantif. limit 24,190 dilution run

I (field sampler) attest to the validity and authenticity of this sample(s). I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. NAC 445.0636 (c) (2).

Sampled By: Jonathan Owens

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
[signature]	7/9/14	12:25	K Murray/AAL	7/9/14	1225

* Key: AQ - Aqueous WA - Waste OT - Other So-Soil ** L - Liter V - VOA S-Soil Jar O - Orbo T - Tedlar B - Brass P - Plastic OT - Other

NOTE: Samples are discarded 60 days after sample receipt unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14110302-01A
Client I.D. Number: SBC@NAR

Sampled: 11/01/14
Received: 11/01/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	11/01/14 09:54	11/01/14 20:07
Nitrate (NO3) - N	ND	0.25		mg/L	11/01/14 09:54	11/01/14 20:07
Phosphate, ortho - P	ND	0.50		mg/L	11/01/14 09:54	11/01/14 20:07

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	1.5	1.0		mg/L	11/07/14	11/07/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	1.5	1.0		mg/L	11/07/14	11/07/14

ND = Not Detected

ACLASS ACCREDITED DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.
Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.
Alpha Analytical, Inc. currently holds appropriate and available NDEP certifications for the data reported - certification #NV00016.

11/14/14
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14110302-02A
Client I.D. Number: SBC@CWW

Sampled: 11/01/14
Received: 11/01/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	11/01/14 09:54	11/01/14 20:25
Nitrate (NO3) - N	0.74	0.25		mg/L	11/01/14 09:54	11/01/14 20:25
Phosphate, ortho - P	ND	0.50		mg/L	11/01/14 09:54	11/01/14 20:25

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	2.2	1.0		mg/L	11/07/14	11/07/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	3.0	1.0		mg/L	11/07/14	11/07/14

ND = Not Detected

ACLASS ACCREDITED DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.
Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.
Alpha Analytical, Inc. currently holds appropriate and available NDEP certifications for the data reported - certification #NV00016.

11/14/14
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14110302-03A
Client I.D. Number: SBC@RHR

Sampled: 11/01/14
Received: 11/01/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	11/01/14 09:54	11/01/14 20:44
Nitrate (NO3) - N	1.2	0.25		mg/L	11/01/14 09:54	11/01/14 20:44
Phosphate, ortho - P	1.2	0.50		mg/L	11/01/14 09:54	11/01/14 20:44

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	2.9	1.0		mg/L	11/07/14	11/07/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	4.1	1.0		mg/L	11/07/14	11/07/14

ND = Not Detected

ACLASS ACCREDITED DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com
Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.
Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.
Alpha Analytical, Inc. currently holds appropriate and available NDEP certifications for the data reported - certification #NV00016.

11/14/14
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14110302-04A
Client I.D. Number: SBC @NAR

Sampled: 11/01/14
Received: 11/01/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	11/01/14 09:54	11/01/14 21:02
Nitrate (NO3) - N	ND	0.25		mg/L	11/01/14 09:54	11/01/14 21:02
Phosphate, ortho - P	ND	0.50		mg/L	11/01/14 09:54	11/01/14 21:02

ND = Not Detected

ACLASS ACCREDITED DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

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11/14/14
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:
Date Received : 11/01/14

Job: 213136/City of Reno

Phosphorus
EPA Method 365.3 / SM4500PE

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **SBC@NAR**				
Lab ID : BHD14110302-01A Phosphorus, Total (As P)	0.63	0.10 mg/L	11/12/14	11/12/14
Date Sampled 11/01/14 07:20				
Client ID: **SBC@CWW**				
Lab ID : BHD14110302-02A Phosphorus, Total (As P)	1.1	0.10 mg/L	11/12/14	11/12/14
Date Sampled 11/01/14 07:45				
Client ID: **SBC@RHR**				
Lab ID : BHD14110302-03A Phosphorus, Total (As P)	0.59	0.10 mg/L	11/12/14	11/12/14
Date Sampled 11/01/14 08:20				

ACLASS ACCREDITED DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
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11/14/14
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:
Date Received : 11/01/14

Job: 213136/City of Reno

Total Dissolved Solids (TDS)
SM2540C

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **SBC@NAR**				
Lab ID : BHD14110302-01A Solids, Total Dissolved (TDS)	1,400	10 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 07:20				
Client ID: **SBC@CWW**				
Lab ID : BHD14110302-02A Solids, Total Dissolved (TDS)	680	10 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 07:45				
Client ID: **SBC@RHR**				
Lab ID : BHD14110302-03A Solids, Total Dissolved (TDS)	240	10 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 08:20				
Client ID: **SBC @NAR**				
Lab ID : BHD14110302-04A Solids, Total Dissolved (TDS)	ND	10 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 07:48				

ND = Not Detected

ACLASS ACCREDITED DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
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11/14/14
Report Date

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ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:
Date Received : 11/01/14

Job: 213136/City of Reno

Total Suspended Solids
SM2540D

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **SBC@NAR**				
Lab ID : BHD14110302-01A Solids, Total Suspended (TSS)	30	2.5 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 07:20				
Client ID: **SBC@CWW**				
Lab ID : BHD14110302-02A Solids, Total Suspended (TSS)	67	2.5 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 07:45				
Client ID: **SBC@RHR**				
Lab ID : BHD14110302-03A Solids, Total Suspended (TSS)	130	2.5 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 08:20				
Client ID: **SBC @NAR**				
Lab ID : BHD14110302-04A Solids, Total Suspended (TSS)	ND	2.5 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 07:48				

ND = Not Detected

ACLASS ACCREDITED DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
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11/14/14
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *14-Nov-14*

QC Summary Report

Work Order: 14110302

Method Blank

Type **MBLK** Test Code: **EPA Method 300.0**
File ID: **16** Batch ID: **33788** Analysis Date: **11/01/2014 14:15**
Sample ID: **MB-33788** Units : **mg/L** Run ID: **MANUAL_141101D** Prep Date: **11/01/2014 09:54**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	ND	0.25								
Nitrate (NO3) - N	ND	0.25								
Phosphate, ortho - P	ND	0.5								

Laboratory Fortified Blank

Type **LFB** Test Code: **EPA Method 300.0**
File ID: **17** Batch ID: **33788** Analysis Date: **11/01/2014 14:34**
Sample ID: **LFB-33788** Units : **mg/L** Run ID: **MANUAL_141101D** Prep Date: **11/01/2014 09:54**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	5.03	0.25	5		101	90	110			
Nitrate (NO3) - N	4.96	0.25	5		99	90	110			
Phosphate, ortho - P	5.07	0.5	5		101	90	110			

Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 300.0**
File ID: **20** Batch ID: **33788** Analysis Date: **11/01/2014 15:29**
Sample ID: **14110320-16ALFM** Units : **mg/L** Run ID: **MANUAL_141101D** Prep Date: **11/01/2014 09:54**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	26.3	0.63	25	0	105	80	120			
Nitrate (NO3) - N	24.9	0.63	25	0	99	80	120			
Phosphate, ortho - P	27.4	1.3	25	0	110	80	120			

Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 300.0**
File ID: **21** Batch ID: **33788** Analysis Date: **11/01/2014 15:48**
Sample ID: **14110320-16ALFMD** Units : **mg/L** Run ID: **MANUAL_141101D** Prep Date: **11/01/2014 09:54**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	26.1	0.63	25	0	104	80	120	26.27	0.6(15)	
Nitrate (NO3) - N	24.7	0.63	25	0	99	80	120	24.86	0.7(15)	
Phosphate, ortho - P	26.9	1.3	25	0	108	80	120	27.41	1.7(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *10-Nov-14*

QC Summary Report

Work Order: 14110302

Method Blank

Type **MBLK** Test Code: **SM4500-NORGC / SM4500NH3D**

File ID: Batch ID: **W1107TK** Analysis Date: **11/07/2014 14:04**

Sample ID: **MBLK-W1107TK** Units : **mg/L** Run ID: **WETLAB_141107A** Prep Date: **11/07/2014 14:04**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrogen, Kjeldahl, Total	ND	0.25								

Laboratory Control Spike

Type **LCS** Test Code: **SM4500-NORGC / SM4500NH3D**

File ID: Batch ID: **W1107TK** Analysis Date: **11/07/2014 14:07**

Sample ID: **LCS-WC141104-01** Units : **mg/L** Run ID: **WETLAB_141107A** Prep Date: **11/07/2014 14:07**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrogen, Kjeldahl, Total	4.89	1	5		98	68	130			

Sample Matrix Spike

Type **MS** Test Code: **SM4500-NORGC / SM4500NH3D**

File ID: Batch ID: **W1107TK** Analysis Date: **11/07/2014 14:17**

Sample ID: **14103141-01AMS** Units : **mg/L** Run ID: **WETLAB_141107A** Prep Date: **11/07/2014 14:17**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrogen, Kjeldahl, Total	4.97	1	5	0	99	32	147			

Sample Matrix Spike Duplicate

Type **MSD** Test Code: **SM4500-NORGC / SM4500NH3D**

File ID: Batch ID: **W1107TK** Analysis Date: **11/07/2014 14:20**

Sample ID: **14103141-01AMSD** Units : **mg/L** Run ID: **WETLAB_141107A** Prep Date: **11/07/2014 14:20**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrogen, Kjeldahl, Total	4.84	1	5	0	97	32	147	4.97	2.7(30)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

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Date: *12-Nov-14*

QC Summary Report

Work Order: 14110302

Method Blank

Type **MBLK** Test Code: **EPA Method 365.3 / SM4500PE**

File ID: **2** Batch ID: **W1112TP** Analysis Date: **11/12/2014 00:00**

Sample ID: **W1112TP** Units : **mg/L** Run ID: **MANUAL_141112A** Prep Date: **11/12/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Phosphorus, Total (As P)	ND	0.1								

Laboratory Control Spike

Type **LCS** Test Code: **EPA Method 365.3 / SM4500PE**

File ID: **1** Batch ID: **W1112TP** Analysis Date: **11/12/2014 00:00**

Sample ID: **WC141112-02** Units : **mg/L** Run ID: **MANUAL_141112A** Prep Date: **11/12/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Phosphorus, Total (As P)	1.08	0.1	1		108	70	130			

Sample Matrix Spike

Type **MS** Test Code: **EPA Method 365.3 / SM4500PE**

File ID: **4** Batch ID: **W1112TP** Analysis Date: **11/12/2014 00:00**

Sample ID: **14110632-01AMS** Units : **mg/L** Run ID: **MANUAL_141112A** Prep Date: **11/12/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Phosphorus, Total (As P)	1.56	0.1	1	0.7479	81	67	130			

Sample Matrix Spike Duplicate

Type **MSD** Test Code: **EPA Method 365.3 / SM4500PE**

File ID: **5** Batch ID: **W1112TP** Analysis Date: **11/12/2014 00:00**

Sample ID: **14110632-01AMSD** Units : **mg/L** Run ID: **MANUAL_141112A** Prep Date: **11/12/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Phosphorus, Total (As P)	1.69	0.1	1	0.7479	94	67	130	1.558	8.1(20)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

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Date: *14-Nov-14*

QC Summary Report

Work Order: 14110302

Method Blank

Type **MBLK** Test Code: **SM2540C**

File ID: **1** Batch ID: **W1106DS** Analysis Date: **11/07/2014 00:00**

Sample ID: **MBLK** Units : **mg/L** Run ID: **MANUAL_141106P** Prep Date: **11/07/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	ND	10								

Laboratory Control Spike

Type **LCS** Test Code: **SM2540C**

File ID: **2** Batch ID: **W1106DS** Analysis Date: **11/07/2014 00:00**

Sample ID: **WC140804-08** Units : **mg/L** Run ID: **MANUAL_141106P** Prep Date: **11/07/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	98	10	100		98	73	130			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

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Date: *10-Nov-14*

QC Summary Report

Work Order: 14110302

Method Blank

Type **MBLK** Test Code: **SM2540D**

File ID: Batch ID: **W1106SS** Analysis Date: **11/07/2014 00:00**

Sample ID: **MBLK-W1106SS** Units : **mg/L** Run ID: **WETLAB_141106A** Prep Date: **11/07/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Suspended (TSS)	ND	2.5								

Laboratory Control Spike

Type **LCS** Test Code: **SM2540D**

File ID: Batch ID: **W1106SS** Analysis Date: **11/07/2014 00:00**

Sample ID: **LCSWC140804-08** Units : **mg/L** Run ID: **WETLAB_141106A** Prep Date: **11/07/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Suspended (TSS)	64	2.5	100		64	55	130			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Laboratory Report
Report ID: 138148

Sierra Environmental Monitoring, Inc.

Alpha Analytical	**Date:**	11/7/2014
Attn: Reyna Vallejo	**Client:**	ALP-855
255 Glendale Avenue Suite 21	**Taken by:**	B. Hastings
Sparks, NV 89431	**PO #:**	BHD14110302

Dear Reyna Vallejo,

It is the policy of Sierra Environmental Monitoring, Inc to strictly adhere to a comprehensive Quality Assurance Plan that insures the data presented in this report are both accurate and precise. Sierra Environmental Monitoring, Inc. maintains accreditation in the State of Nevada (NV-15 and NV-921) and the State of California (ELAP 2526).

The data presented in this report were obtained from the analysis of samples received under a chain of custody. Unless otherwise noted below, samples were received in good condition, properly preserved and within the hold time for the requested analyses. Any anomalies associated with the analysis of the samples have been flagged with appropriate explanation in the Analysis Report section of this Laboratory Report.

General Comments:

- There are no general comments for this report.

Individual Sample Comments:

- There are no specific comments that are associated with these samples.

Approved By: **Date:**

Sierra Environmental Monitoring, Inc. 11/7/2014

This report is applicable only to the sample received by the laboratory. The liability of the laboratory is limited to the amount paid for this report. This report is for the exclusive use of the client to whom it is addressed and upon the condition that the client assumes all liability for the further distribution of the report or its contents.

John Kobza, Ph.D
Laboratory Director

1135 Financial Blvd.
Reno, Nv 89502-2348
Phone (775) 857-2400 Fax
(888) 398-7002
jnava@sem-analytical.com

John Faulstich
Quality Assurance Manager

Laboratory Report
Report ID: 138148

Sierra Environmental Monitoring, Inc.

Alpha Analytical
Attn: Reyna Vallejo
255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 11/7/2014
Client: ALP-855
Taken by: B. Hastings
PO #: BHD14110302

Analysis Report

Laboratory Accreditation Number: NV-0015

Laboratory Sample ID	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S201411-0001	BHD14110302-03A - SBC@RHR	11/1/2014	8:20 AM	11/3/2014

Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
E. coli Colilert Quanti-Tray	SM 9223 B	2930	mpn/100ml	1	Mott	11/3/2014	Hr
Total Coliform Quanti-Tray	SM 9223 B	>241920	mpn/100ml	1	Mott	11/3/2014	Hr

Data Flag Legend:
Hr - Sample was received beyond holding time for this parameter and analyzed per client's request.

John Kobza, Ph.D
Laboratory Director

1135 Financial Blvd.
Reno, Nv 89502-2348
Phone (775) 857-2400 Fax
(888) 398-7002
jnava@sem-analytical.com

John Faulstich
Quality Assurance Manager

Laboratory Report
Report ID: 138148

Sierra Environmental Monitoring, Inc.

Alpha Analytical
Attn: Reyna Vallejo
255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 11/7/2014
Client: ALP-855
Taken by: B. Hastings
PO #: BHD14110302

Quality Control Report

Parameter	*LCS, % Recovery*	*MS, % Recovery*	*MSD, % Recovery*	*RPD, %*	*Method Blank*
Sierra Environmental Monitoring collected no QC data for report 138148.					

Legend: ***LCS- Laboratory Control Standard*** ***MS- Matrix Spike*** ***MSD- Matrix Spike Duplicate***
RPD- Relative Percent Difference

John Kobza, Ph.D
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Quality Assurance Manager

138148

Page 1 of 1

Alpha Analytical, Inc.
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Fax: (775) 355-0406

SUB CHAIN-OF-CUSTODY RECORD

Work Order : BHD14110302

***Please reference the Work Order number on all reports and invoices.**
***Also please include the dates of analysis and detection limits.**
Please send the report to Alpha Analytical (Sparks).
Attention To Reyna Vallejo (reyna@alpha-analytical.com).

Report Due By : 5:00 PM
On : 17-Nov-14

Required QC:
Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Subcontractor:
Sierra Environmental Monitoring
1135 Financial Blvd.
Reno, NV 89502

TEL: (775) 857-2400
FAX: (775) 857-2404
Acct #:

Sampled by : Brian Hastings
03-Nov-14

Alpha's Sample ID	Client's Sample ID	Matrix	Collection Date	Type (#) of Bottles Preserved	Other	Requested Tests SM9223B			Sample Comments
BHD14110302-03A	SBC@RHR	Aqueous	11/01/14 08:20	BACTI (1)		E. coli			

Comments: Refer to SEM #135922. OK to analyze outside of holding time.

	Date/Time		Date/Time
Relinquished by:	11.3.14 8:22	**Received by:**	11/3/14 8:22
Relinquished by:		**Received by:**	

Billing Information :

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

NV

WorkOrder : BHD14110302

Report Due By : 5:00 PM On : 17-Nov-14

Client:
Balance Hydrologics, Inc.
P.O. Box 1077

Truckee, CA 96160-1077

Report Attention	Phone Number	EMail Address
Brian Hastings	(530) 550-9776 x	bhastings@balancehydro.com

EDD Required : No

Sampled by : Brian Hastings

PO :

Client's COC # : 14464 Job : 213136/City of Reno

Cooler Temp	Samples Received	Date Printed
4 °C	01-Nov-14	03-Nov-14

QC Level : S3 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	COLIFORM_SUB	N_TKN_W	N_TOTAL_W	PHOSPHORUS_W	TDS_W	TSS_W		Sample Remarks
BHD14110302-01A	SBC@NAR	AQ	11/01/14 07:20	3	0	10	PO4, N-Total =(NO2+NO3 +TKN)		N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS		Sampling time on bottles labeled as 7:45, logged in per COC.
BHD14110302-02A	SBC@CWW	AQ	11/01/14 07:45	3	0	10	PO4, N-Total =(NO2+NO3 +TKN)		N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS		Sampling time on bottles labeled as 7:20, logged in per COC.
BHD14110302-03A	SBC@RHR	AQ	11/01/14 08:20	3	1	10	PO4, N-Total =(NO2+NO3 +TKN)	E. Coli	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS		
BHD14110302-04A	SBC @NAR	AQ	11/01/14 07:48	1	0	10	PO4, NO2, NO3					TDS/TSS	TDS/TSS		(1) 1L unpreserved bottle provided.

Comments: Samples picked up by Alpha employee on 11/1/14, kept cold and secure until login on 11/3/14. Frozen ice. E.coli by 9223B subbed to SEM. TKN and Total Phosphorus cancelled for Sample 04A per Brian, due to no H2SO4 bottle provided. :

	Signature	Print Name	Company	Date/Time
Logged in by:	Morgan Lowery	Morgan Lowery	Alpha Analytical, Inc.	11/3/14 0959

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information:
Company: Balance Hydrologics, Inc
Attn: Rachel Boitano
Address: 800 Bancroft way St 101
City, State, Zip: Berkeley CA 94710
Phone Number: 510-704-1000 Fax:

Alpha Analytical, Inc.
Main Laboratory: 255 Glendale Ave, Suite 21 Sparks, NV 89431 Phone: 775-355-1044 Fax: 775-355-0406

Satellite Service Centers:
Northern CA: 9891 Horn Road, Suite C, Rancho Cordova, CA 95827 Phone: 916-366-9089
Southern CA: 1007 E. Dominguez St., Suite O, Carson, CA 90746 Phone: 714-386-2901
Northern NV: 1250 Lamoille Hwy., #310, Elko, NV 89801 Phone: 775-388-7043
Southern NV: 6255 McLeod Ave, Suite 24, Las Vegas, NV 89120 Phone: 702-281-4848

14464

Page # _____ of _____

Consultant/ Client Info:
Company: Balance Hydrologics
Address: PO box 1077
City, State, Zip: Truckee CA 96160

Job and Purchase Order Info:
Job #: 213136
Job Name: City of Reno
P.O. #:

Report Attention/Project Manager:
Name: Brian Hastings
Email Address: bhastings@balancehydro.com
Phone #: 530-550-9776
Cell #: 415-672-0976

QC Deliverable Info:
EDD Required? Yes / No
EDF Required? Yes / No
Global ID:
Data Validation Packages: III or IV

Samples Collected from which State? (circle one) AR CA KS NV OR WA DOD Site Other

Time Sampled (HHMM)	Date Sampled (MM/DD)	Matrix* (See Key Below)	Lab ID Number (For Lab Use Only)	Sample Description	TAT	#Containers** (See Key Below)	Field Filtered? Yes	Field Filtered? No	Analysis Requested: * ortho P	* TSS	* TDS	# Total N	# Total P	# N03	E. coli: 9223B				Remarks: * 1L - ** 500 ml - # 250 ml - 100 ml - ecoli
0720	11/01	AQ	BHD1411302-01A	SBC@NAR	ST	P		✓	✓	✓	✓	✓	✓						
0745	11/01	AQ	02A	SBC@CWW	ST	P		✓	✓	✓	✓	✓	✓						
0820	11/01	AQ	03A	SBC@RHR	ST	P		✓	✓	✓	✓	✓	✓		✓				
0748	11/01	AQ	04A	SBC@NAR	ST	P		✓	✓	✓	✓	✓	✓						

ADDITIONAL INSTRUCTIONS:

I (field sampler) attest to the validity and authenticity of this sample(s). I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. NAC 445.0636 (c) (2).

Sampled By:

Relinquished by: (Signature/Affiliation)	Date:	Time:	Received by: (Signature/Affiliation)	Date:	Time:
	11/1/14	17:30		11/1/14	17:30

* Key: AQ - Aqueous WA - Waste OT - Other So-Soil ** L - Liter V - VOA S-Soil Jar O - Orbo T - Tedlar B - Brass P - Plastic OT - Other

NOTE: Samples are discarded 60 days after sample receipt unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14110301-01A
Client I.D. Number: H-19(1)

Sampled: 11/01/14
Received: 11/01/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	11/01/14 09:54	11/01/14 17:57
Nitrate (NO3) - N	1.4	0.25		mg/L	11/01/14 09:54	11/01/14 17:57
Phosphate, ortho - P	1.4	0.50		mg/L	11/01/14 09:54	11/01/14 17:57

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	8.4	1.0		mg/L	11/13/14	11/13/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	9.8	1.0		mg/L	11/13/14	11/13/14

ND = Not Detected

ACLASS ACCREDITED DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.
Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.
Alpha Analytical, Inc. currently holds appropriate and available NDEP certifications for the data reported - certification #NV00016.

NELAP ACCREDITED LABORATORY

11/14/14
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14110301-02A
Client I.D. Number: H-19(2)

Sampled: 11/01/14
Received: 11/01/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	11/01/14 09:54	11/01/14 18:16
Nitrate (NO3) - N	1.0	0.25		mg/L	11/01/14 09:54	11/01/14 18:16
Phosphate, ortho - P	1.1	0.50		mg/L	11/01/14 09:54	11/01/14 18:16

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	5.0	1.0		mg/L	11/13/14	11/13/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	6.0	1.0		mg/L	11/13/14	11/13/14

ND = Not Detected

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Roger Scholl Randy Gardner Walter Hinchman

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NELAP ACCREDITED TNI LABORATORY

11/14/14
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14110301-03A
Client I.D. Number: H-19(3)

Sampled: 11/01/14
Received: 11/01/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	11/01/14 09:54	11/01/14 18:34
Nitrate (NO3) - N	0.80	0.25		mg/L	11/01/14 09:54	11/01/14 18:34
Phosphate, ortho - P	1.3	0.50		mg/L	11/01/14 09:54	11/01/14 18:34

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	5.0	1.0		mg/L	11/13/14	11/13/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	5.8	1.0		mg/L	11/13/14	11/13/14

ND = Not Detected

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Roger Scholl Randy Gardner Walter Hinchman

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NELAP ACCREDITED LABORATORY

11/14/14
Report Date

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ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14110301-04A
Client I.D. Number: H-19(4)

Sampled: 11/01/14
Received: 11/01/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	11/01/14 09:54	11/01/14 19:48
Nitrate (NO3) - N	0.80	0.25		mg/L	11/01/14 09:54	11/01/14 19:48
Phosphate, ortho - P	1.5	0.50		mg/L	11/01/14 09:54	11/01/14 19:48

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	4.0	1.0		mg/L	11/13/14	11/13/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	4.8	1.0		mg/L	11/13/14	11/13/14

ND = Not Detected

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Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
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NELAP ACCREDITED TNI LABORATORY

✓ 11/14/14
Report Date

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ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:
Date Received : 11/01/14

Job: 213136/City of Reno

Phosphorus
EPA Method 365.3 / SM4500PE

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **H-19(1)**				
Lab ID : BHD14110301-01A Phosphorus, Total (As P)	1.4	0.10 mg/L	11/12/14	11/12/14
Date Sampled 11/01/14 00:00				
Client ID: **H-19(2)**				
Lab ID : BHD14110301-02A Phosphorus, Total (As P)	1.3	0.10 mg/L	11/12/14	11/12/14
Date Sampled 11/01/14 00:00				
Client ID: **H-19(3)**				
Lab ID : BHD14110301-03A Phosphorus, Total (As P)	1.3	0.10 mg/L	11/12/14	11/12/14
Date Sampled 11/01/14 00:00				
Client ID: **H-19(4)**				
Lab ID : BHD14110301-04A Phosphorus, Total (As P)	1.5	0.10 mg/L	11/12/14	11/12/14
Date Sampled 11/01/14 00:00				

ACCREDITED DoD ELAP

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Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com
Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.
Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.
Alpha Analytical, Inc. currently holds appropriate and available NDEP certifications for the data reported - certification #NV00016.

11/14/14
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:
Date Received : 11/01/14

Job: 213136/City of Reno

Total Dissolved Solids (TDS)
SM2540C

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **H-19(1)**				
Lab ID : BHD14110301-01A Solids, Total Dissolved (TDS)	300	10 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 00:00				
Client ID: **H-19(2)**				
Lab ID : BHD14110301-02A Solids, Total Dissolved (TDS)	210	10 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 00:00				
Client ID: **H-19(3)**				
Lab ID : BHD14110301-03A Solids, Total Dissolved (TDS)	160	10 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 00:00				
Client ID: **H-19(4)**				
Lab ID : BHD14110301-04A Solids, Total Dissolved (TDS)	250	10 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 00:00				

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Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com
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11/14/14
Report Date

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:
Date Received : 11/01/14

Job: 213136/City of Reno

Total Suspended Solids
SM2540D

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **H-19(1)**				
Lab ID : BHD14110301-01A Solids, Total Suspended (TSS)	160	2.5 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 00:00				
Client ID: **H-19(2)**				
Lab ID : BHD14110301-02A Solids, Total Suspended (TSS)	110	2.5 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 00:00				
Client ID: **H-19(3)**				
Lab ID : BHD14110301-03A Solids, Total Suspended (TSS)	83	2.5 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 00:00				
Client ID: **H-19(4)**				
Lab ID : BHD14110301-04A Solids, Total Suspended (TSS)	32	2.5 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 00:00				

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Roger Scholl Randy Gardner Walter Hinchman

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V
11/14/14
Report Date

Alpha Analytical, Inc.

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(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *14-Nov-14*

QC Summary Report

Work Order: 14110301

Method Blank

Type **MBLK** Test Code: **EPA Method 300.0**

File ID: **16** Batch ID: **33788** Analysis Date: **11/01/2014 14:15**

Sample ID: **MB-33788** Units : **mg/L** Run ID: **MANUAL_141101D** Prep Date: **11/01/2014 09:54**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	ND	0.25								
Nitrate (NO3) - N	ND	0.25								
Phosphate, ortho - P	ND	0.5								

Laboratory Fortified Blank

Type **LFB** Test Code: **EPA Method 300.0**

File ID: **17** Batch ID: **33788** Analysis Date: **11/01/2014 14:34**

Sample ID: **LFB-33788** Units : **mg/L** Run ID: **MANUAL_141101D** Prep Date: **11/01/2014 09:54**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	5.03	0.25	5		101	90	110			
Nitrate (NO3) - N	4.96	0.25	5		99	90	110			
Phosphate, ortho - P	5.07	0.5	5		101	90	110			

Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 300.0**

File ID: **20** Batch ID: **33788** Analysis Date: **11/01/2014 15:29**

Sample ID: **14110320-16ALFM** Units : **mg/L** Run ID: **MANUAL_141101D** Prep Date: **11/01/2014 09:54**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	26.3	0.63	25	0	105	80	120			
Nitrate (NO3) - N	24.9	0.63	25	0	99	80	120			
Phosphate, ortho - P	27.4	1.3	25	0	110	80	120			

Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 300.0**

File ID: **21** Batch ID: **33788** Analysis Date: **11/01/2014 15:48**

Sample ID: **14110320-16ALFMD** Units : **mg/L** Run ID: **MANUAL_141101D** Prep Date: **11/01/2014 09:54**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	26.1	0.63	25	0	104	80	120	26.27	0.6(15)	
Nitrate (NO3) - N	24.7	0.63	25	0	99	80	120	24.86	0.7(15)	
Phosphate, ortho - P	26.9	1.3	25	0	108	80	120	27.41	1.7(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *14-Nov-14*

QC Summary Report

Work Order: 14110301

Method Blank

Type **MBLK** Test Code: **SM4500-NORGC / SM4500NH3D**

File ID: Batch ID: **W1113TK** Analysis Date: **11/13/2014 12:59**

Sample ID: **MBLK-W1113TK** Units : **mg/L** Run ID: **WETLAB_141113E** Prep Date: **11/13/2014 12:59**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrogen, Kjeldahl, Total	ND	0.25								

Laboratory Control Spike

Type **LCS** Test Code: **SM4500-NORGC / SM4500NH3D**

File ID: Batch ID: **W1113TK** Analysis Date: **11/13/2014 13:07**

Sample ID: **LCS-W1113TK** Units : **mg/L** Run ID: **WETLAB_141113E** Prep Date: **11/13/2014 13:07**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrogen, Kjeldahl, Total	4.73	1	5		95	68	130			

Sample Matrix Spike

Type **MS** Test Code: **SM4500-NORGC / SM4500NH3D**

File ID: Batch ID: **W1113TK** Analysis Date: **11/13/2014 13:15**

Sample ID: **14110632-01AMS** Units : **mg/L** Run ID: **WETLAB_141113E** Prep Date: **11/13/2014 13:15**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrogen, Kjeldahl, Total	6.3	1	5	1.66	93	32	147			

Sample Matrix Spike Duplicate

Type **MSD** Test Code: **SM4500-NORGC / SM4500NH3D**

File ID: Batch ID: **W1113TK** Analysis Date: **11/13/2014 13:18**

Sample ID: **14110632-01AMSD** Units : **mg/L** Run ID: **WETLAB_141113E** Prep Date: **11/13/2014 13:18**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrogen, Kjeldahl, Total	6.49	1	5	1.66	97	32	147	6.3	3.0(30)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *12-Nov-14*

QC Summary Report

Work Order: 14110301

Method Blank

Type **MBLK** Test Code: **EPA Method 365.3 / SM4500PE**

File ID: **2** Batch ID: **W1112TP** Analysis Date: **11/12/2014 00:00**

Sample ID: **W1112TP** Units : **mg/L** Run ID: **MANUAL_141112A** Prep Date: **11/12/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Phosphorus, Total (As P)	ND	0.1								

Laboratory Control Spike

Type **LCS** Test Code: **EPA Method 365.3 / SM4500PE**

File ID: **1** Batch ID: **W1112TP** Analysis Date: **11/12/2014 00:00**

Sample ID: **WC141112-02** Units : **mg/L** Run ID: **MANUAL_141112A** Prep Date: **11/12/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Phosphorus, Total (As P)	1.08	0.1	1		108	70	130			

Sample Matrix Spike

Type **MS** Test Code: **EPA Method 365.3 / SM4500PE**

File ID: **4** Batch ID: **W1112TP** Analysis Date: **11/12/2014 00:00**

Sample ID: **14110632-01AMS** Units : **mg/L** Run ID: **MANUAL_141112A** Prep Date: **11/12/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Phosphorus, Total (As P)	1.56	0.1	1	0.7479	81	67	130			

Sample Matrix Spike Duplicate

Type **MSD** Test Code: **EPA Method 365.3 / SM4500PE**

File ID: **5** Batch ID: **W1112TP** Analysis Date: **11/12/2014 00:00**

Sample ID: **14110632-01AMSD** Units : **mg/L** Run ID: **MANUAL_141112A** Prep Date: **11/12/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Phosphorus, Total (As P)	1.69	0.1	1	0.7479	94	67	130	1.558	8.1(20)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

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Date: *14-Nov-14*

QC Summary Report

Work Order: 14110301

Method Blank

Type **MBLK** Test Code: **SM2540C**

File ID: **1** Batch ID: **W1106DS** Analysis Date: **11/07/2014 00:00**

Sample ID: **MBLK** Units : **mg/L** Run ID: **MANUAL_141106P** Prep Date: **11/07/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	ND	10								

Laboratory Control Spike

Type **LCS** Test Code: **SM2540C**

File ID: **2** Batch ID: **W1106DS** Analysis Date: **11/07/2014 00:00**

Sample ID: **WC140804-08** Units : **mg/L** Run ID: **MANUAL_141106P** Prep Date: **11/07/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	98	10	100	98		73	130			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

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Date: *10-Nov-14*

QC Summary Report

Work Order: 14110301

Method Blank

Type **MBLK** Test Code: **SM2540D**

File ID: Batch ID: **W1106SS** Analysis Date: **11/07/2014 00:00**

Sample ID: **MBLK-W1106SS** Units : **mg/L** Run ID: **WETLAB_141106A** Prep Date: **11/07/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Suspended (TSS)	ND	2.5								

Laboratory Control Spike

Type **LCS** Test Code: **SM2540D**

File ID: Batch ID: **W1106SS** Analysis Date: **11/07/2014 00:00**

Sample ID: **LCSWC140804-08** Units : **mg/L** Run ID: **WETLAB_141106A** Prep Date: **11/07/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Suspended (TSS)	64	2.5	100		64	55	130			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Laboratory Report
Report ID: 138149

Sierra Environmental Monitoring, Inc.

Alpha Analytical	**Date:**	11/7/2014
Attn: Reyna Vallejo	**Client:**	ALP-855
255 Glendale Avenue Suite 21	**Taken by:**	B. Hastings
Sparks, NV 89431	**PO #:**	BHD14110301

Dear Reyna Vallejo,

It is the policy of Sierra Environmental Monitoring, Inc to strictly adhere to a comprehensive Quality Assurance Plan that insures the data presented in this report are both accurate and precise. Sierra Environmental Monitoring, Inc. maintains accreditation in the State of Nevada (NV-15 and NV-921) and the State of California (ELAP 2526).

The data presented in this report were obtained from the analysis of samples received under a chain of custody. Unless otherwise noted below, samples were received in good condition, properly preserved and within the hold time for the requested analyses. Any anomalies associated with the analysis of the samples have been flagged with appropriate explanation in the Analysis Report section of this Laboratory Report.

General Comments:

- There are no general comments for this report.

Individual Sample Comments:

- There are no specific comments that are associated with these samples.

Approved By: **Date:**

Sierra Environmental Monitoring, Inc. 11/7/2014

This report is applicable only to the sample received by the laboratory. The liability of the laboratory is limited to the amount paid for this report. This report is for the exclusive use of the client to whom it is addressed and upon the condition that the client assumes all liability for the further distribution of the report or its contents.

John Kobza, Ph.D
Laboratory Director

1135 Financial Blvd.
Reno, Nv 89502-2348
Phone (775) 857-2400 Fax
(888) 398-7002
jnava@sem-analytical.com

John Faulstich
Quality Assurance Manager

Laboratory Report
Report ID: 138149

Sierra Environmental Monitoring, Inc.

Alpha Analytical
Attn: Reyna Vallejo
255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 11/7/2014
Client: ALP-855
Taken by: B. Hastings
PO #: BHD14110301

Analysis Report

Laboratory Accreditation Number: NV-0015

Laboratory Sample ID	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S201411-0002	BHD14110301-01A - H-19(1)	11/1/2014		11/3/2014

Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
E. coli Colilert Quanti-Tray	SM 9223 B	>241920	mpn/100ml	1	Mott	11/3/2014	Hr
Total Coliform Quanti-Tray	SM 9223 B	>241920	mpn/100ml	1	Mott	11/3/2014	Hr

Laboratory Accreditation Number: NV-0015

Laboratory Sample ID	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S201411-0003	BHD14110301-02A - H-19(2)	11/1/2014		11/3/2014

Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
E. coli Colilert Quanti-Tray	SM 9223 B	>241920	mpn/100ml	1	Mott	11/3/2014	Hr
Total Coliform Quanti-Tray	SM 9223 B	>241920	mpn/100ml	1	Mott	11/3/2014	Hr

Laboratory Accreditation Number: NV-0015

Laboratory Sample ID	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S201411-0004	BHD14110301-03A - H-19(3)	11/1/2014		11/3/2014

Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
E. coli Colilert Quanti-Tray	SM 9223 B	241920	mpn/100ml	1	Mott	11/3/2014	Hr
Total Coliform Quanti-Tray	SM 9223 B	>241920	mpn/100ml	1	Mott	11/3/2014	Hr

Laboratory Accreditation Number: NV-0015

Laboratory Sample ID	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S201411-0005	BHD14110301-04A - H-19(4)	11/1/2014		11/3/2014

Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
E. coli Colilert Quanti-Tray	SM 9223 B	155310	mpn/100ml	1	Mott	11/3/2014	Hr
Total Coliform Quanti-Tray	SM 9223 B	>241920	mpn/100ml	1	Mott	11/3/2014	Hr

Data Flag Legend:
Hr - Sample was received beyond holding time for this parameter and analyzed per client's request.

John Kobza, Ph.D
Laboratory Director

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Reno, Nv 89502-2348
Phone (775) 857-2400 Fax
(888) 398-7002
jnava@sem-analytical.com

John Faulstich
Quality Assurance Manager

Laboratory Report
Report ID: 138149

Sierra Environmental Monitoring, Inc.

Alpha Analytical
Attn: Reyna Vallejo
255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 11/7/2014
Client: ALP-855
Taken by: B. Hastings
PO #: BHD14110301

Quality Control Report

Parameter	*LCS, % Recovery*	*MS, % Recovery*	*MSD, % Recovery*	*RPD, %*	*Method Blank*
Sierra Environmental Monitoring collected no QC data for report 138149.					

Legend: *LCS- Laboratory Control Standard* *MS- Matrix Spike* *MSD- Matrix Spike Duplicate*
RPD- Relative Percent Difference

John Kobza, Ph.D
Laboratory Director

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John Faulstich
Quality Assurance Manager

138149

Alpha Analytical, Inc.
255 Glendale Avenue
Suite 21
Sparks, Nevada 89431-5778
Phone: (775) 355-1044
Fax: (775) 355-0406

SUB CHAIN-OF-CUSTODY RECORD

Work Order : BHD14110301

***Please reference the Work Order number on all reports and invoices.**
***Also please include the dates of analysis and detection limits.**
Please send the report to Alpha Analytical (Sparks).
Attention To Reyna Vallejo (reyna@alpha-analytical.com).

Report Due By : 5:00 PM
On : 17-Nov-14

Required QC:
Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Subcontractor:
Sierra Environmental Monitoring
1135 Financial Blvd.
Reno, NV 89502

TEL: (775) 857-2400
FAX: (775) 857-2404
Acct #:

Sampled by : Brian Hastings

03-Nov-14

Alpha's Sample ID	Client's Sample ID	Matrix	Collection Date	Type (#) of Bottles Preserved	Other	Requested Tests SM9223B			Sample Comments
BHD14110301-01A	H-19(1)	Aqueous	11/01/14 00:00	BACTI (1)		E. coli			
BHD14110301-02A	H-19(2)	Aqueous	11/01/14 00:00	BACTI (1)		E. coli			
BHD14110301-03A	H-19(3)	Aqueous	11/01/14 00:00	BACTI (1)		E. coli			
BHD14110301-04A	H-19(4)	Aqueous	11/01/14 00:00	BACTI (1)		E. coli			

Comments: Refer to SEM #135922. OK to analyze outside of holding time.

	Date/Time		Date/Time
Relinquished by:	11.3.14 8:22	**Received by:**	11/3/14 8:22
Relinquished by:		**Received by:**	

Billing Information :

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

NV

WorkOrder : BHD14110301

Report Due By : 5:00 PM On : 17-Nov-14

Report Attention	Phone Number	EMail Address
Brian Hastings	(530) 550-9776 x	bhastings@balancehydro.com

Client:
Balance Hydrologics, Inc.
P.O. Box 1077

Truckee, CA 96160-1077

EDD Required : No

Sampled by : Brian Hastings

PO :

Client's COC # : 15413 Job : 213136/City of Reno

Cooler Temp	Samples Received	Date Printed
4 °C	01-Nov-14	03-Nov-14

QC Level : S3 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	COLIFORM_SUB	N_TKN_W	N_TOTAL_W	PHOSPHORUS_W	TDS_W	TSS_W		Sample Remarks
BHD14110301-01A	H-19(1)	AQ	11/01/14 00:00	3	1	10	PO4, N-Total =(NO2+NO3 +TKN)	E. coli	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS		
BHD14110301-02A	H-19(2)	AQ	11/01/14 00:00	3	1	10	PO4, N-Total =(NO2+NO3 +TKN)	E. coli	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS		
BHD14110301-03A	H-19(3)	AQ	11/01/14 00:00	3	1	10	PO4, N-Total =(NO2+NO3 +TKN)	E. coli	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS		
BHD14110301-04A	H-19(4)	AQ	11/01/14 00:00	3	1	10	PO4, N-Total =(NO2+NO3 +TKN)	E. coli	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS		Sample ID on bottles labeled as H-19. Matched by process of elimination and logged in per COC.

Comments: Samples picked up by Alpha employee on 11/1/14, kept cold and secure until login on 11/3/14. Frozen ice. E.coli by 9223B subbed to SEM. No sampling times provided. :

	Signature	Print Name	Company	Date/Time
Logged in by:	Morgan Lowery	Morgan Lowery	Alpha Analytical, Inc.	11/3/14 0927

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information:

Company: Balance Hydrologics
Attn: Rachel Bottaro
Address: 800 Bancroft Way St 101
City, State, Zip: Berkeley, CA 94710
Phone Number: 510-704-1000 Fax:

Alpha Analytical, Inc.

Main Laboratory: 255 Glendale Ave, Suite 21 Sparks, NV 89431 Phone: 775-355-1044 Fax: 775-355-0406

Satellite Service Centers:

Northern CA: 9891 Horn Road, Suite C, Rancho Cordova, CA 95827 Phone: 916-366-9089
Southern CA: 1007 E. Dominguez St., Suite O, Carson, CA 90746 Phone: 714-386-2901
Northern NV: 1250 Lamoille Hwy., #310, Elko, NV 89801 Phone: 775-388-7043
Southern NV: 6255 McLeod Ave, Suite 24, Las Vegas, NV 89120 Phone: 702-281-4848

15413

Page # 1 of 1

Consultant/ Client Info:

Company: Balance Hydrologics
Address: PO Box 1077
City, State, Zip: Truckee, CA 96160

Job and Purchase Order Info:

Job #: 213136
Job Name: City of Reno
P.O. #:

Report Attention/Project Manager:

Name: Brian Hastings
Email Address: bhastings@balancehydro.com
Phone #: 530-550-9776
Cell #: 415-672-0976

QC Deliverable Info:

EDD Required? Yes / No EDF Required? Yes / No
Global ID:
Data Validation Packages: III or IV

Samples Collected from which State? (circle one) AR CA KS NV OR WA DOD Site Other

Time Sampled (HHMM)	Date Sampled (MM/DD)	Matrix* (See Key Below)	Lab ID Number (For Lab Use Only)	Sample Description	TAT	# Containers** (See Key Below)	Field Filtered? Yes	Field Filtered? No	Ortho P	TSS	TDS	Total N	Total P	NH3NO3	E. Coli 9223				Remarks
0:00	11/01		BHS1411030-01A	H-19 (1)					✓	✓	✓	✓	✓	✓	✓				
0:00	11/01		02A	H-19 (2)					✓	✓	✓	✓	✓	✓	✓				
0:00	11/01		03A	H-19 (3)					✓	✓	✓	✓	✓	✓	✓				
0:00	11/01		04A	H-19 (4)					✓	✓	✓	✓	✓	✓	✓				

ADDITIONAL INSTRUCTIONS:

I (field sampler) attest to the validity and authenticity of this sample(s). I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. NAC 445.0636 (c) (2).

Sampled By: Brian Hastings

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Brian Hastings	11/1/14	17:30	Alpha Analytical	11/1/14	17:30
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

* Key: AQ - Aqueous WA - Waste OT - Other So-Soil ** L - Liter V - VOA S-Soil Jar O - Orbo T - Tedlar B - Brass P - Plastic OT - Other

NOTE: Samples are discarded 60 days after sample receipt unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14110303-01A
Client I.D. Number: C-24(1)

Sampled: 11/01/14
Received: 11/01/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	11/01/14 09:54	11/01/14 22:35
Nitrate (NO3) - N	0.88	0.25		mg/L	11/01/14 09:54	11/01/14 22:35
Phosphate, ortho - P	0.56	0.50		mg/L	11/01/14 09:54	11/01/14 22:35

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	5.4	1.0		mg/L	11/13/14	11/13/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	6.3	1.0		mg/L	11/13/14	11/13/14

ND = Not Detected

ACLASS ACCREDITED DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.
Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.
Alpha Analytical, Inc. currently holds appropriate and available NDEP certifications for the data reported - certification #NV00016.

NELAP ACCREDITED TNI LABORATORY

11/14/14
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14110303-02A
Client I.D. Number: C-24(2)

Sampled: 11/01/14
Received: 11/01/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	11/01/14 18:02	11/02/14 01:03
Nitrate (NO3) - N	0.60	0.25		mg/L	11/01/14 18:02	11/02/14 01:03
Phosphate, ortho - P	ND	0.50		mg/L	11/01/14 18:02	11/02/14 01:03

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	3.1	1.0		mg/L	11/13/14	11/13/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	3.7	1.0		mg/L	11/13/14	11/13/14

ND = Not Detected

ACLASS ACCREDITED DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.
Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.
Alpha Analytical, Inc. currently holds appropriate and available NDEP certifications for the data reported - certification #NV00016.

NELAP ACCREDITED LABORATORY

11/14/14
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14110303-03A
Client I.D. Number: C-24(3)

Sampled: 11/01/14
Received: 11/01/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	11/01/14 18:02	11/02/14 01:58
Nitrate (NO3) - N	0.33	0.25		mg/L	11/01/14 18:02	11/02/14 01:58
Phosphate, ortho - P	ND	0.50		mg/L	11/01/14 18:02	11/02/14 01:58

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	1.7	1.0		mg/L	11/13/14	11/13/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	2.0	1.0		mg/L	11/13/14	11/13/14

ND = Not Detected

ACLASS ACCREDITED DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com
Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.
Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.
Alpha Analytical, Inc. currently holds appropriate and available NDEP certifications for the data reported - certification #NV00016.

NELAP ACCREDITED TNI LABORATORY

11/14/14
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14110303-04A
Client I.D. Number: C-24(4)

Sampled: 11/01/14
Received: 11/01/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	11/01/14 18:02	11/02/14 01:17
Nitrate (NO3) - N	0.72	0.25		mg/L	11/01/14 18:02	11/02/14 01:17
Phosphate, ortho - P	ND	0.50		mg/L	11/01/14 18:02	11/02/14 01:17

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	1.8	1.0		mg/L	11/13/14	11/13/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	2.5	1.0		mg/L	11/13/14	11/13/14

ND = Not Detected

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NELAP ACCREDITED TNI LABORATORY

11/14/14
Report Date

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ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:
Date Received : 11/01/14

Job: 213136/City of Reno

Phosphorus
EPA Method 365.3 / SM4500PE

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **C-24(1)**				
Lab ID : BHD14110303-01A Phosphorus, Total (As P)	1.3	0.10 mg/L	11/12/14	11/12/14
Date Sampled 11/01/14 00:00				
Client ID: **C-24(2)**				
Lab ID : BHD14110303-02A Phosphorus, Total (As P)	0.62	0.10 mg/L	11/12/14	11/12/14
Date Sampled 11/01/14 00:00				
Client ID: **C-24(3)**				
Lab ID : BHD14110303-03A Phosphorus, Total (As P)	0.33	0.10 mg/L	11/12/14	11/12/14
Date Sampled 11/01/14 00:00				
Client ID: **C-24(4)**				
Lab ID : BHD14110303-04A Phosphorus, Total (As P)	0.37	0.10 mg/L	11/12/14	11/12/14
Date Sampled 11/01/14 00:00				

ACLASS ACCREDITED DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

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NELAC ACCREDITED LABORATORY

11/14/14
Report Date

Alpha Analytical, Inc.

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ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:
Date Received : 11/01/14

Job: 213136/City of Reno

Total Dissolved Solids (TDS)
SM2540C

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **C-24(1)**				
Lab ID : BHD14110303-01A Solids, Total Dissolved (TDS)	250	10 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 00:00				
Client ID: **C-24(2)**				
Lab ID : BHD14110303-02A Solids, Total Dissolved (TDS)	92	10 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 00:00				
Client ID: **C-24(3)**				
Lab ID : BHD14110303-03A Solids, Total Dissolved (TDS)	45	10 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 00:00				
Client ID: **C-24(4)**				
Lab ID : BHD14110303-04A Solids, Total Dissolved (TDS)	72	10 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 00:00				

ACLASS ACCREDITED DoD ELAP

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11/14/14
Report Date

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ANALYTICAL REPORT

Balance Hydrologics, Inc.
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Truckee, CA 961601077

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:
Date Received : 11/01/14

Job: 213136/City of Reno

Total Suspended Solids
SM2540D

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **C-24(1)**				
Lab ID : BHD14110303-01A Solids, Total Suspended (TSS)	450	3.5 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 00:00				
Client ID: **C-24(2)**				
Lab ID : BHD14110303-02A Solids, Total Suspended (TSS)	49	2.5 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 00:00				
Client ID: **C-24(3)**				
Lab ID : BHD14110303-03A Solids, Total Suspended (TSS)	57	2.5 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 00:00				
Client ID: **C-24(4)**				
Lab ID : BHD14110303-04A Solids, Total Suspended (TSS)	9.3	2.5 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 00:00				

ACCREDITED
DoD ELAP

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11/14/14
Report Date

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Date: *14-Nov-14*

QC Summary Report

Work Order: 14110303

Method Blank

Type **MBLK** Test Code: **EPA Method 300.0**

File ID: **16** Batch ID: **33788** Analysis Date: **11/01/2014 14:15**

Sample ID: **MB-33788** Units : **mg/L** Run ID: **MANUAL_141101D** Prep Date: **11/01/2014 09:54**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	ND	0.25								
Nitrate (NO3) - N	ND	0.25								
Phosphate, ortho - P	ND	0.5								

Laboratory Fortified Blank

Type **LFB** Test Code: **EPA Method 300.0**

File ID: **17** Batch ID: **33788** Analysis Date: **11/01/2014 14:34**

Sample ID: **LFB-33788** Units : **mg/L** Run ID: **MANUAL_141101D** Prep Date: **11/01/2014 09:54**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	5.03	0.25	5		101	90	110			
Nitrate (NO3) - N	4.96	0.25	5		99	90	110			
Phosphate, ortho - P	5.07	0.5	5		101	90	110			

Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 300.0**

File ID: **20** Batch ID: **33788** Analysis Date: **11/01/2014 15:29**

Sample ID: **14110320-16ALFM** Units : **mg/L** Run ID: **MANUAL_141101D** Prep Date: **11/01/2014 09:54**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	26.3	0.63	25	0	105	80	120			
Nitrate (NO3) - N	24.9	0.63	25	0	99	80	120			
Phosphate, ortho - P	27.4	1.3	25	0	110	80	120			

Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 300.0**

File ID: **21** Batch ID: **33788** Analysis Date: **11/01/2014 15:48**

Sample ID: **14110320-16ALFMD** Units : **mg/L** Run ID: **MANUAL_141101D** Prep Date: **11/01/2014 09:54**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	26.1	0.63	25	0	104	80	120	26.27	0.6(15)	
Nitrate (NO3) - N	24.7	0.63	25	0	99	80	120	24.86	0.7(15)	
Phosphate, ortho - P	26.9	1.3	25	0	108	80	120	27.41	1.7(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *14-Nov-14*

QC Summary Report

Work Order: 14110303

Method Blank

Type **MBLK** Test Code: **SM4500-NORGC / SM4500NH3D**

File ID: Batch ID: **W1107TK** Analysis Date: **11/07/2014 14:04**

Sample ID: **MBLK-W1107TK** Units : **mg/L** Run ID: **WETLAB_141107A** Prep Date: **11/07/2014 14:04**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrogen, Kjeldahl, Total	ND	0.25								

Laboratory Control Spike

Type **LCS** Test Code: **SM4500-NORGC / SM4500NH3D**

File ID: Batch ID: **W1107TK** Analysis Date: **11/07/2014 14:07**

Sample ID: **LCS-WC141104-01** Units : **mg/L** Run ID: **WETLAB_141107A** Prep Date: **11/07/2014 14:07**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrogen, Kjeldahl, Total	4.89	1	5		98	68	130			

Sample Matrix Spike

Type **MS** Test Code: **SM4500-NORGC / SM4500NH3D**

File ID: Batch ID: **W1107TK** Analysis Date: **11/07/2014 14:17**

Sample ID: **14103141-01AMS** Units : **mg/L** Run ID: **WETLAB_141107A** Prep Date: **11/07/2014 14:17**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrogen, Kjeldahl, Total	4.97	1	5	0	99	32	147			

Sample Matrix Spike Duplicate

Type **MSD** Test Code: **SM4500-NORGC / SM4500NH3D**

File ID: Batch ID: **W1107TK** Analysis Date: **11/07/2014 14:20**

Sample ID: **14103141-01AMSD** Units : **mg/L** Run ID: **WETLAB_141107A** Prep Date: **11/07/2014 14:20**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrogen, Kjeldahl, Total	4.84	1	5	0	97	32	147	4.97	2.7(30)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

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Date: *12-Nov-14*

QC Summary Report

Work Order: 14110303

Method Blank

Type **MBLK** Test Code: **EPA Method 365.3 / SM4500PE**

File ID: **2** Batch ID: **W1112TP** Analysis Date: **11/12/2014 00:00**

Sample ID: **W1112TP** Units : **mg/L** Run ID: **MANUAL_141112A** Prep Date: **11/12/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Phosphorus, Total (As P)	ND	0.1								

Laboratory Control Spike

Type **LCS** Test Code: **EPA Method 365.3 / SM4500PE**

File ID: **1** Batch ID: **W1112TP** Analysis Date: **11/12/2014 00:00**

Sample ID: **WC141112-02** Units : **mg/L** Run ID: **MANUAL_141112A** Prep Date: **11/12/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Phosphorus, Total (As P)	1.08	0.1	1		108	70	130			

Sample Matrix Spike

Type **MS** Test Code: **EPA Method 365.3 / SM4500PE**

File ID: **4** Batch ID: **W1112TP** Analysis Date: **11/12/2014 00:00**

Sample ID: **14110632-01AMS** Units : **mg/L** Run ID: **MANUAL_141112A** Prep Date: **11/12/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Phosphorus, Total (As P)	1.56	0.1	1	0.7479	81	67	130			

Sample Matrix Spike Duplicate

Type **MSD** Test Code: **EPA Method 365.3 / SM4500PE**

File ID: **5** Batch ID: **W1112TP** Analysis Date: **11/12/2014 00:00**

Sample ID: **14110632-01AMSD** Units : **mg/L** Run ID: **MANUAL_141112A** Prep Date: **11/12/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Phosphorus, Total (As P)	1.69	0.1	1	0.7479	94	67	130	1.558	8.1(20)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *14-Nov-14*

QC Summary Report

Work Order: 14110302

Method Blank

Type **MBLK** Test Code: **SM2540C**

File ID: **1** Batch ID: **W1106DS** Analysis Date: **11/07/2014 00:00**

Sample ID: **MBLK** Units : **mg/L** Run ID: **MANUAL_141106P** Prep Date: **11/07/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	ND	10								

Laboratory Control Spike

Type **LCS** Test Code: **SM2540C**

File ID: **2** Batch ID: **W1106DS** Analysis Date: **11/07/2014 00:00**

Sample ID: **WC140804-08** Units : **mg/L** Run ID: **MANUAL_141106P** Prep Date: **11/07/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	98	10	100		98	73	130			

Comments:

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Date: *10-Nov-14*

QC Summary Report

Work Order: 14110303

Method Blank Type **MBLK** Test Code: **SM2540D**

File ID: Batch ID: **W1106SS** Analysis Date: **11/07/2014 00:00**

Sample ID: **MBLK-W1106SS** Units : **mg/L** Run ID: **WETLAB_141106A** Prep Date: **11/07/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Suspended (TSS)	ND	2.5								

Laboratory Control Spike Type **LCS** Test Code: **SM2540D**

File ID: Batch ID: **W1106SS** Analysis Date: **11/07/2014 00:00**

Sample ID: **LCSWC140804-08** Units : **mg/L** Run ID: **WETLAB_141106A** Prep Date: **11/07/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Suspended (TSS)	64	2.5	100		64	55	130			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Laboratory Report
Report ID: 138150

Sierra Environmental Monitoring, Inc.

Alpha Analytical		**Date:**	11/7/2014
Attn: Reyna Vallejo		**Client:**	ALP-855
255 Glendale Avenue Suite 21		**Taken by:**	B. Hastings
Sparks, NV 89431		**PO #:**	BHD14110303

Dear Reyna Vallejo,

It is the policy of Sierra Environmental Monitoring, Inc to strictly adhere to a comprehensive Quality Assurance Plan that insures the data presented in this report are both accurate and precise. Sierra Environmental Monitoring, Inc. maintains accreditation in the State of Nevada (NV-15 and NV-921) and the State of California (ELAP 2526).

The data presented in this report were obtained from the analysis of samples received under a chain of custody. Unless otherwise noted below, samples were received in good condition, properly preserved and within the hold time for the requested analyses. Any anomalies associated with the analysis of the samples have been flagged with appropriate explanation in the Analysis Report section of this Laboratory Report.

General Comments:

- There are no general comments for this report.

Individual Sample Comments:

- There are no specific comments that are associated with these samples.

Approved By: **Date:**

Sierra Environmental Monitoring, Inc. 11/7/2014

This report is applicable only to the sample received by the laboratory. The liability of the laboratory is limited to the amount paid for this report. This report is for the exclusive use of the client to whom it is addressed and upon the condition that the client assumes all liability for the further distribution of the report or its contents.

John Kobza, Ph.D
Laboratory Director

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John Faulstich
Quality Assurance Manager

Laboratory Report
Report ID: 138150

Sierra Environmental Monitoring, Inc.

Alpha Analytical
Attn: Reyna Vallejo
255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 11/7/2014
Client: ALP-855
Taken by: B. Hastings
PO #: BHD14110303

Analysis Report

Laboratory Accreditation Number: NV-0015

Laboratory Sample ID	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S201411-0006	BHD14110303-01A - C-24(1)	11/1/2014		11/3/2014

Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
E. coli Colilert Quanti-Tray	SM 9223 B	57940	mpn/100ml	1	Mott	11/3/2014	Hr
Total Coliform Quanti-Tray	SM 9223 B	>241920	mpn/100ml	1	Mott	11/3/2014	Hr

Laboratory Accreditation Number: NV-0015

Laboratory Sample ID	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S201411-0007	BHD14110303-02A - C-24(2)	11/1/2014		11/3/2014

Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
E. coli Colilert Quanti-Tray	SM 9223 B	4350	mpn/100ml	1	Mott	11/3/2014	Hr
Total Coliform Quanti-Tray	SM 9223 B	>241920	mpn/100ml	1	Mott	11/3/2014	Hr

Laboratory Accreditation Number: NV-0015

Laboratory Sample ID	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S201411-0008	BHD14110303-03A - C-24(3)	11/1/2014		11/3/2014

Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
E. coli Colilert Quanti-Tray	SM 9223 B	2660	mpn/100ml	1	Mott	11/3/2014	Hr
Total Coliform Quanti-Tray	SM 9223 B	155310	mpn/100ml	1	Mott	11/3/2014	Hr

Laboratory Accreditation Number: NV-0015

Laboratory Sample ID	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S201411-0009	BHD14110303-04A - C-24(4)	11/1/2014		11/3/2014

Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
E. coli Colilert Quanti-Tray	SM 9223 B	740	mpn/100ml	1	Mott	11/3/2014	Hr
Total Coliform Quanti-Tray	SM 9223 B	120330	mpn/100ml	1	Mott	11/3/2014	Hr

Data Flag Legend:
Hr - Sample was received beyond holding time for this parameter and analyzed per client's request.

John Kobza, Ph.D
Laboratory Director

1135 Financial Blvd.
Reno, Nv 89502-2348
Phone (775) 857-2400 Fax
(888) 398-7002
jnava@sem-analytical.com

John Faulstich
Quality Assurance Manager

Laboratory Report
Report ID: 138150

Sierra Environmental Monitoring, Inc.

Alpha Analytical
Attn: Reyna Vallejo
255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 11/7/2014
Client: ALP-855
Taken by: B. Hastings
PO #: BHD14110303

Quality Control Report

Parameter	*LCS, % Recovery*	*MS, % Recovery*	*MSD, % Recovery*	*RPD, %*	*Method Blank*
Sierra Environmental Monitoring collected no QC data for report 138150.					

Legend: ***LCS- Laboratory Control Standard*** ***MS- Matrix Spike*** ***MSD- Matrix Spike Duplicate***
RPD- Relative Percent Difference

John Kobza, Ph.D
Laboratory Director

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John Faulstich
Quality Assurance Manager

138150 Page 1 of 1

Alpha Analytical, Inc.
255 Glendale Avenue
Suite 21
Sparks, Nevada 89431-5778
Phone: (775) 355-1044
Fax: (775) 355-0406

SUB CHAIN-OF-CUSTODY RECORD

Work Order : BHD14110303

***Please reference the Work Order number on all reports and invoices.**
***Also please include the dates of analysis and detection limits.**
Please send the report to Alpha Analytical (Sparks).
Attention To Reyna Vallejo (reyna@alpha-analytical.com).

Report Due By : 5:00 PM
On : 17-Nov-14

Required QC:
Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Subcontractor:
Sierra Environmental Monitoring
1135 Financial Blvd.
Reno, NV 89502

TEL: (775) 857-2400
FAX: (775) 857-2404
Acct #:

Sampled by : Brian Hastings

03-Nov-14

Alpha's Sample ID	Client's Sample ID	Matrix	Collection Date	Type (#) of Bottles Preserved	Other	Requested Tests SM9223B			Sample Comments
BHD14110303-01A	C-24(1)	Aqueous	11/01/14 00:00	BACTI (1)		E. coli			
BHD14110303-02A	C-24(2)	Aqueous	11/01/14 00:00	BACTI (1)		E. coli			
BHD14110303-03A	C-24(3)	Aqueous	11/01/14 00:00	BACTI (1)		E. coli			
BHD14110303-04A	C-24(4)	Aqueous	11/01/14 00:00	BACTI (1)		E. coli			

Comments: Refer to SEM #135922. OK to analyze outside of holding time.

	Date/Time		Date/Time
Relinquished by:	11.3.14. 8:23	**Received by:**	11/3/14 8:23
Relinquished by:		**Received by:**	

Billing Information :

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

NV

WorkOrder : BHD14110303

Report Due By : 5:00 PM On : 17-Nov-14

Client:
Balance Hydrologics, Inc.
P.O. Box 1077

Truckee, CA 96160-1077

PO :

Client's COC # : 14461 Job : 213136/City of Reno

Report Attention	Phone Number	EMail Address
Brian Hastings	(530) 550-9776 x	bhastings@balancehydro.com

EDD Required : **No**

Sampled by : Brian Hastings

Cooler Temp	Samples Received	Date Printed
4 °C	01-Nov-14	03-Nov-14

QC Level : S3 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	COLIFORM_SUB	N_TKN_W	N_TOTAL_W	PHOSPHORUS_W	TDS_W	TSS_W		Sample Remarks
BHD14110303-01A	C-24(1)	AQ	11/01/14 00:00	3	1	10	PO4, N-Total =(NO2+NO3 +TKN)	E. coli	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS		
BHD14110303-02A	C-24(2)	AQ	11/01/14 00:00	3	1	10	PO4, N-Total =(NO2+NO3 +TKN)	E. coli	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS		
BHD14110303-03A	C-24(3)	AQ	11/01/14 00:00	3	1	10	PO4, N-Total =(NO2+NO3 +TKN)	E. coli	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS		
BHD14110303-04A	C-24(4)	AQ	11/01/14 00:00	3	1	10	PO4, N-Total =(NO2+NO3 +TKN)	E. coli	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS		

Comments: Samples picked up by Alpha employee on 11/1/14, kept cold and secure until login on 11/3/14. Frozen ice. E.coli by 9223B subbed to SEM. No sampling times provided. :

	Signature	Print Name	Company	Date/Time
Logged in by:	Morgan Lowery	Morgan Lowery	Alpha Analytical, Inc.	11/3/14 1029

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information:

Company: Balance Hydrologics inc
Attn: Rachel Baitaso
Address: 800 Bancroft Way ST 101
City, State, Zip: Berkeley CA 94710
Phone Number: 510-704-1060 Fax: _____

Alpha Analytical, Inc.

Main Laboratory: 255 Glendale Ave, Suite 21 Sparks, NV 89431 Phone: 775-355-1044 Fax: 775-355-0406

Satellite Service Centers:

Northern CA: 9891 Horn Road, Suite C, Rancho Cordova, CA 95827 Phone: 916-366-9089
Southern CA: 1007 E. Dominguez St., Suite O, Carson, CA 90746 Phone: 714-386-2901
Northern NV: 1250 Lamoille Hwy., #310, Elko, NV 89801 Phone: 775-388-7043
Southern NV: 6255 McLeod Ave, Suite 24, Las Vegas, NV 89120 Phone: 702-281-4848

14461

Page # _____ of _____

Consultant/ Client Info:

Company: BALANCE Hydrologics
Address: Po box 1077
City, State, Zip: Truckee CA 96160

Job and Purchase Order Info:

Job #: 213136
Job Name: City of Reno
P.O. #: _____

Report Attention/Project Manager:

Name: Brian Hastings
Email Address: bhastings@balancehydro.com
Phone #: 530 - 550 - 9976
Cell #: 415 - 672 - 8976

QC Deliverable Info:

EDD Required? Yes / No EDF Required? Yes / No
Global ID: _____
Data Validation Packages: III or IV

Samples Collected from which State? (circle one) AR CA KS NV OR WA DOD Site Other

Time Sampled (HHMM)	Date Sampled (MM/DD)	Matrix* (See Key Below)	Lab ID Number (For Lab Use Only)	Sample Description	TAT	# Containers** (See Key Below)	Field Filtered? Yes	Field Filtered? No	Analysis Requested: ortho P	TSS	TDS	Total N	Total P	NO3	E.coli 9223B				Remarks
0:00	11/01	AQ	BHD1411030 3-01A	C-24 (1)	ST	P		✓	✓	✓	✓	✓	✓	✓	✓				
0:00	11/01	AQ	-02A	C-24 (2)	ST	P		✓	✓	✓	✓	✓	✓	✓	✓				
0:00	11/01	AQ	-03A	C-24 (3)	ST	P		✓	✓	✓	✓	✓	✓	✓	✓				
			-04A	C-24 (4)	ST	P		✓	✓	✓	✓	✓	✓	✓	✓				

ADDITIONAL INSTRUCTIONS:

I (field sampler) attest to the validity and authenticity of this sample(s). I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. NAC 445.0636 (c) (2).

Sampled By: _____

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
_____	11/1/14	17:30	_____ Alpha Analytical Inc	11/1/14	17:30
Relinquished by: (Signature/Affiliation):	Date:	Time:	Received by: (Signature/Affiliation):	Date:	Time:
Relinquished by: (Signature/Affiliation):	Date:	Time:	Received by: (Signature/Affiliation):	Date:	Time:

* Key: AQ - Aqueous WA - Waste OT - Other So-Soil ** L - Liter V - VOA S-Soil Jar O - Orbo T - Tedlar B - Brass P - Plastic OT - Other

NOTE: Samples are discarded 60 days after sample receipt unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14110304-01A
Client I.D. Number: D-16(1)

Sampled: 11/01/14
Received: 11/01/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	0.31	0.25		mg/L	11/01/14 09:54	11/01/14 21:21
Nitrate (NO3) - N	3.6	0.25		mg/L	11/01/14 09:54	11/01/14 21:21
Phosphate, ortho - P	1.3	0.50		mg/L	11/01/14 09:54	11/01/14 21:21

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	18	1.0		mg/L	11/13/14	11/13/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	22	1.0		mg/L	11/13/14	11/13/14

ND = Not Detected

ACLASS ACCREDITED DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com
Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.
Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.
Alpha Analytical, Inc. currently holds appropriate and available NDEP certifications for the data reported - certification #NV00016.

NELAP ACCREDITED LABORATORY

11/14/14
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
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ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14110304-02A
Client I.D. Number: D-16(2)

Sampled: 11/01/14
Received: 11/01/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	11/01/14 09:54	11/01/14 21:39
Nitrate (NO3) - N	2.4	0.25		mg/L	11/01/14 09:54	11/01/14 21:39
Phosphate, ortho - P	0.63	0.50		mg/L	11/01/14 09:54	11/01/14 21:39

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	7.4	1.0		mg/L	11/13/14	11/13/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	9.7	1.0		mg/L	11/13/14	11/13/14

ND = Not Detected

ACLASS ACCREDITED DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

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11/14/14
Report Date

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ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14110304-03A
Client I.D. Number: D-16(3)

Sampled: 11/01/14
Received: 11/01/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	11/01/14 09:54	11/01/14 21:58
Nitrate (NO3) - N	0.82	0.25		mg/L	11/01/14 09:54	11/01/14 21:58
Phosphate, ortho - P	ND	0.50		mg/L	11/01/14 09:54	11/01/14 21:58

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	4.5	1.0		mg/L	11/13/14	11/13/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	5.3	1.0		mg/L	11/13/14	11/13/14

ND = Not Detected

ACLASS ACCREDITED DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

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NELAP ACCREDITED LABORATORY

11/14/14
Report Date

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ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14110304-04A
Client I.D. Number: D-16(4)

Sampled: 11/01/14
Received: 11/01/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	11/01/14 09:54	11/01/14 22:16
Nitrate (NO3) - N	0.93	0.25		mg/L	11/01/14 09:54	11/01/14 22:16
Phosphate, ortho - P	ND	0.50		mg/L	11/01/14 09:54	11/01/14 22:16

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	2.7	1.0		mg/L	11/13/14	11/13/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	3.6	1.0		mg/L	11/13/14	11/13/14

ND = Not Detected

ACLASS ACCREDITED DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com

Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.
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NELAP ACCREDITED TNI LABORATORY

11/14/14
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:
Date Received : 11/01/14

Job: 213136/City of Reno

Phosphorus
EPA Method 365.3 / SM4500PE

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **D-16(1)**				
Lab ID : BHD14110304-01A Phosphorus, Total (As P)	1.6	0.10 mg/L	11/12/14	11/12/14
Date Sampled 11/01/14 00:00				
Client ID: **D-16(2)**				
Lab ID : BHD14110304-02A Phosphorus, Total (As P)	0.43	0.10 mg/L	11/12/14	11/12/14
Date Sampled 11/01/14 00:00				
Client ID: **D-16(3)**				
Lab ID : BHD14110304-03A Phosphorus, Total (As P)	0.79	0.10 mg/L	11/12/14	11/12/14
Date Sampled 11/01/14 00:00				
Client ID: **D-16(4)**				
Lab ID : BHD14110304-04A Phosphorus, Total (As P)	0.69	0.10 mg/L	11/12/14	11/12/14
Date Sampled 11/01/14 00:00				

ACLASS ACCREDITED DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com
Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.
Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.
Alpha Analytical, Inc. currently holds appropriate and available NDEP certifications for the data reported - certification #NV00016.

NELAC ACCREDITED LABORATORY

11/14/14
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:
Date Received : 11/01/14

Job: 213136/City of Reno

Total Dissolved Solids (TDS)
SM2540C

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **D-16(1)**				
Lab ID : BHD14110304-01A Solids, Total Dissolved (TDS)	630	10 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 00:00				
Client ID: **D-16(2)**				
Lab ID : BHD14110304-02A Solids, Total Dissolved (TDS)	270	10 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 00:00				
Client ID: **D-16(3)**				
Lab ID : BHD14110304-03A Solids, Total Dissolved (TDS)	100	10 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 00:00				
Client ID: **D-16(4)**				
Lab ID : BHD14110304-04A Solids, Total Dissolved (TDS)	85	10 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 00:00				

ACLASS ACCREDITED DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 281-4848 / Carson, CA • (714) 386-2901 / info@alpha-analytical.com
Alpha Analytical, Inc. certifies that the test results meet all requirements of NELAC unless footnoted otherwise.
Statement of Data Authenticity : Alpha Analytical, Inc. attests that the data reported has not been altered an any way.
Alpha Analytical, Inc. currently holds appropriate and available NDEP certifications for the data reported - certification #NV00016.

11/14/14
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:
Date Received : 11/01/14

Job: 213136/City of Reno

Total Suspended Solids
SM2540D

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **D-16(1)**				
Lab ID : BHD14110304-01A Solids, Total Suspended (TSS)	380	3.6 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 00:00				
Client ID: **D-16(2)**				
Lab ID : BHD14110304-02A Solids, Total Suspended (TSS)	1,100	6.3 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 00:00				
Client ID: **D-16(3)**				
Lab ID : BHD14110304-03A Solids, Total Suspended (TSS)	270	2.5 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 00:00				
Client ID: **D-16(4)**				
Lab ID : BHD14110304-04A Solids, Total Suspended (TSS)	63	2.5 mg/L	11/07/14	11/07/14
Date Sampled 11/01/14 00:00				

ACLASS ACCREDITED DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
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11/14/14
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *14-Nov-14*

QC Summary Report

Work Order: 14110304

Method Blank

Type **MBLK** Test Code: **EPA Method 300.0**

File ID: **16** Batch ID: **33788** Analysis Date: **11/01/2014 14:15**

Sample ID: **MB-33788** Units : **mg/L** Run ID: **MANUAL_141101D** Prep Date: **11/01/2014 09:54**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	ND	0.25								
Nitrate (NO3) - N	ND	0.25								
Phosphate, ortho - P	ND	0.5								

Laboratory Fortified Blank

Type **LFB** Test Code: **EPA Method 300.0**

File ID: **17** Batch ID: **33788** Analysis Date: **11/01/2014 14:34**

Sample ID: **LFB-33788** Units : **mg/L** Run ID: **MANUAL_141101D** Prep Date: **11/01/2014 09:54**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	5.03	0.25	5		101	90	110			
Nitrate (NO3) - N	4.96	0.25	5		99	90	110			
Phosphate, ortho - P	5.07	0.5	5		101	90	110			

Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 300.0**

File ID: **20** Batch ID: **33788** Analysis Date: **11/01/2014 15:29**

Sample ID: **14110320-16ALFM** Units : **mg/L** Run ID: **MANUAL_141101D** Prep Date: **11/01/2014 09:54**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	26.3	0.63	25	0	105	80	120			
Nitrate (NO3) - N	24.9	0.63	25	0	99	80	120			
Phosphate, ortho - P	27.4	1.3	25	0	110	80	120			

Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 300.0**

File ID: **21** Batch ID: **33788** Analysis Date: **11/01/2014 15:48**

Sample ID: **14110320-16ALFMD** Units : **mg/L** Run ID: **MANUAL_141101D** Prep Date: **11/01/2014 09:54**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	26.1	0.63	25	0	104	80	120	26.27	0.6(15)	
Nitrate (NO3) - N	24.7	0.63	25	0	99	80	120	24.86	0.7(15)	
Phosphate, ortho - P	26.9	1.3	25	0	108	80	120	27.41	1.7(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *14-Nov-14*

QC Summary Report

Work Order: 14110304

Method Blank

Type **MBLK** Test Code: **SM4500-NORGC / SM4500NH3D**

File ID: Batch ID: **W1107TK** Analysis Date: **11/07/2014 14:04**

Sample ID: **MBLK-W1107TK** Units : **mg/L** Run ID: **WETLAB_141107A** Prep Date: **11/07/2014 14:04**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrogen, Kjeldahl, Total	ND	0.25								

Laboratory Control Spike

Type **LCS** Test Code: **SM4500-NORGC / SM4500NH3D**

File ID: Batch ID: **W1107TK** Analysis Date: **11/07/2014 14:07**

Sample ID: **LCS-WC141104-01** Units : **mg/L** Run ID: **WETLAB_141107A** Prep Date: **11/07/2014 14:07**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrogen, Kjeldahl, Total	4.89	1	5		98	68	130			

Sample Matrix Spike

Type **MS** Test Code: **SM4500-NORGC / SM4500NH3D**

File ID: Batch ID: **W1107TK** Analysis Date: **11/07/2014 14:17**

Sample ID: **14103141-01AMS** Units : **mg/L** Run ID: **WETLAB_141107A** Prep Date: **11/07/2014 14:17**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrogen, Kjeldahl, Total	4.97	1	5	0	99	32	147			

Sample Matrix Spike Duplicate

Type **MSD** Test Code: **SM4500-NORGC / SM4500NH3D**

File ID: Batch ID: **W1107TK** Analysis Date: **11/07/2014 14:20**

Sample ID: **14103141-01AMSD** Units : **mg/L** Run ID: **WETLAB_141107A** Prep Date: **11/07/2014 14:20**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrogen, Kjeldahl, Total	4.84	1	5	0	97	32	147	4.97	2.7(30)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *12-Nov-14*

QC Summary Report

Work Order: 14110304

Method Blank

Type **MBLK** Test Code: **EPA Method 365.3 / SM4500PE**

File ID: **2** Batch ID: **W1112TP** Analysis Date: **11/12/2014 00:00**

Sample ID: **W1112TP** Units : **mg/L** Run ID: **MANUAL_141112A** Prep Date: **11/12/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Phosphorus, Total (As P)	ND	0.1								

Laboratory Control Spike

Type **LCS** Test Code: **EPA Method 365.3 / SM4500PE**

File ID: **1** Batch ID: **W1112TP** Analysis Date: **11/12/2014 00:00**

Sample ID: **WC141112-02** Units : **mg/L** Run ID: **MANUAL_141112A** Prep Date: **11/12/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Phosphorus, Total (As P)	1.08	0.1	1		108	70	130			

Sample Matrix Spike

Type **MS** Test Code: **EPA Method 365.3 / SM4500PE**

File ID: **4** Batch ID: **W1112TP** Analysis Date: **11/12/2014 00:00**

Sample ID: **14110632-01AMS** Units : **mg/L** Run ID: **MANUAL_141112A** Prep Date: **11/12/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Phosphorus, Total (As P)	1.56	0.1	1	0.7479	81	67	130			

Sample Matrix Spike Duplicate

Type **MSD** Test Code: **EPA Method 365.3 / SM4500PE**

File ID: **5** Batch ID: **W1112TP** Analysis Date: **11/12/2014 00:00**

Sample ID: **14110632-01AMSD** Units : **mg/L** Run ID: **MANUAL_141112A** Prep Date: **11/12/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Phosphorus, Total (As P)	1.69	0.1	1	0.7479	94	67	130	1.558	8.1(20)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

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Date: *14-Nov-14*

QC Summary Report

Work Order: 14110304

Method Blank

Type **MBLK** Test Code: **SM2540C**

File ID: **1** Batch ID: **W1106DS** Analysis Date: **11/07/2014 00:00**

Sample ID: **MBLK** Units : **mg/L** Run ID: **MANUAL_141106P** Prep Date: **11/07/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	ND	10								

Laboratory Control Spike

Type **LCS** Test Code: **SM2540C**

File ID: **2** Batch ID: **W1106DS** Analysis Date: **11/07/2014 00:00**

Sample ID: **WC140804-08** Units : **mg/L** Run ID: **MANUAL_141106P** Prep Date: **11/07/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	98	10	100		98	73	130			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

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Date: *10-Nov-14*

QC Summary Report

Work Order: 14110304

Method Blank Type **MBLK** Test Code: **SM2540D**

File ID: Batch ID: **W1106SS** Analysis Date: **11/07/2014 00:00**

Sample ID: **MBLK-W1106SS** Units : **mg/L** Run ID: **WETLAB_141106A** Prep Date: **11/07/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Suspended (TSS)	ND	2.5								

Laboratory Control Spike Type **LCS** Test Code: **SM2540D**

File ID: Batch ID: **W1106SS** Analysis Date: **11/07/2014 00:00**

Sample ID: **LCSWC140804-08** Units : **mg/L** Run ID: **WETLAB_141106A** Prep Date: **11/07/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Suspended (TSS)	64	2.5	100		64	55	130			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Laboratory Report
Report ID: 138151

Sierra Environmental Monitoring, Inc.

Alpha Analytical	**Date:**	11/7/2014
Attn: Reyna Vallejo	**Client:**	ALP-855
255 Glendale Avenue Suite 21	**Taken by:**	B. Hastings
Sparks, NV 89431	**PO #:**	BHD14110304

Dear Reyna Vallejo,

It is the policy of Sierra Environmental Monitoring, Inc to strictly adhere to a comprehensive Quality Assurance Plan that insures the data presented in this report are both accurate and precise. Sierra Environmental Monitoring, Inc. maintains accreditation in the State of Nevada (NV-15 and NV-921) and the State of California (ELAP 2526).

The data presented in this report were obtained from the analysis of samples received under a chain of custody. Unless otherwise noted below, samples were received in good condition, properly preserved and within the hold time for the requested analyses. Any anomalies associated with the analysis of the samples have been flagged with appropriate explanation in the Analysis Report section of this Laboratory Report.

General Comments:

- There are no general comments for this report.

Individual Sample Comments:

- There are no specific comments that are associated with these samples.

Approved By: **Date:**

Sierra Environmental Monitoring, Inc. 11/7/2014

This report is applicable only to the sample received by the laboratory. The liability of the laboratory is limited to the amount paid for this report. This report is for the exclusive use of the client to whom it is addressed and upon the condition that the client assumes all liability for the further distribution of the report or its contents.

John Kobza, Ph.D
Laboratory Director

1135 Financial Blvd.
Reno, Nv 89502-2348
Phone (775) 857-2400 Fax
(888) 398-7002
jnava@sem-analytical.com

John Faulstich
Quality Assurance Manager

Laboratory Report
Report ID: 138151

Sierra Environmental Monitoring, Inc.

Alpha Analytical
Attn: Reyna Vallejo
255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 11/7/2014
Client: ALP-855
Taken by: B. Hastings
PO #: BHD14110304

Analysis Report

Laboratory Accreditation Number: NV-0015

Laboratory Sample ID	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S201411-0010	BHD14110304-01A - D-16(1)	11/1/2014		11/3/2014

Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
E. coli Colilert Quanti-Tray	SM 9223 B	20140	mpn/100ml	1	Mott	11/3/2014	Hr
Total Coliform Quanti-Tray	SM 9223 B	>241920	mpn/100ml	1	Mott	11/3/2014	Hr

Laboratory Accreditation Number: NV-0015

Laboratory Sample ID	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S201411-0011	BHD14110304-02A - D-16(2)	11/1/2014		11/3/2014

Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
E. coli Colilert Quanti-Tray	SM 9223 B	64880	mpn/100ml	1	Mott	11/3/2014	Hr
Total Coliform Quanti-Tray	SM 9223 B	>241920	mpn/100ml	1	Mott	11/3/2014	Hr

Laboratory Accreditation Number: NV-0015

Laboratory Sample ID	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S201411-0012	BHD14110304-03A - D-16(3)	11/1/2014		11/3/2014

Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
E. coli Colilert Quanti-Tray	SM 9223 B	17890	mpn/100ml	1	Mott	11/3/2014	Hr
Total Coliform Quanti-Tray	SM 9223 B	>241920	mpn/100ml	1	Mott	11/3/2014	Hr

Laboratory Accreditation Number: NV-0015

Laboratory Sample ID	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S201411-0013	BHD14110304-04A - D-16(4)	11/1/2014		11/3/2014

Parameter	Method	Result	Units	Reporting Limit	Analyst	Date Analyzed	Data Flag
E. coli Colilert Quanti-Tray	SM 9223 B	22470	mpn/100ml	1	Mott	11/3/2014	Hr
Total Coliform Quanti-Tray	SM 9223 B	>241920	mpn/100ml	1	Mott	11/3/2014	Hr

Data Flag Legend:
Hr - Sample was received beyond holding time for this parameter and analyzed per client's request.

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Laboratory Director

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(888) 398-7002
jnava@sem-analytical.com

John Faulstich
Quality Assurance Manager

Laboratory Report
Report ID: 138151

Sierra Environmental Monitoring, Inc.

Alpha Analytical
Attn: Reyna Vallejo
255 Glendale Avenue Suite 21
Sparks, NV 89431

Date: 11/7/2014
Client: ALP-855
Taken by: B. Hastings
PO #: BHD14110304

Quality Control Report

Parameter	*LCS, % Recovery*	*MS, % Recovery*	*MSD, % Recovery*	*RPD, %*	*Method Blank*
Sierra Environmental Monitoring collected no QC data for report 138151.					

Legend: ***LCS- Laboratory Control Standard*** ***MS- Matrix Spike*** ***MSD- Matrix Spike Duplicate***
RPD- Relative Percent Difference

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Laboratory Director

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John Faulstich
Quality Assurance Manager

138151

Alpha Analytical, Inc.
255 Glendale Avenue
Suite 21
Sparks, Nevada 89431-5778
Phone: (775) 355-1044
Fax: (775) 355-0406

SUB CHAIN-OF-CUSTODY RECORD

Work Order : BHD14110304

***Please reference the Work Order number on all reports and invoices.**
***Also please include the dates of analysis and detection limits.**
Please send the report to Alpha Analytical (Sparks).
Attention To Reyna Vallejo (reyna@alpha-analytical.com).

Report Due By : 5:00 PM
On : 17-Nov-14

Required QC:
Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Subcontractor:
Sierra Environmental Monitoring
1135 Financial Blvd.
Reno, NV 89502

TEL: (775) 857-2400
FAX: (775) 857-2404
Acct #:

Sampled by : Brian Hastings

03-Nov-14

Alpha's Sample ID	Client's Sample ID	Matrix	Collection Date	Type (#) of Bottles Preserved	Other	Requested Tests SM9223B			Sample Comments
BHD14110304-01A	D-16(1)	Aqueous	11/01/14 00:00	BACTI (1)		E. coli			
BHD14110304-02A	D-16(2)	Aqueous	11/01/14 00:00	BACTI (1)		E. coli			
BHD14110304-03A	D-16(3)	Aqueous	11/01/14 00:00	BACTI (1)		E. coli			
BHD14110304-04A	D-16(4)	Aqueous	11/01/14 00:00	BACTI (1)		E. coli			

Comments: Refer to SEM #135922. OK to analyze outside of holding time.

	Date/Time		Date/Time
Relinquished by:	11.3.14 5:23	**Received by:**	11/3/14 8.23
Relinquished by:		**Received by:**	

Billing Information :

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

NV

WorkOrder : BHD14110304

Report Due By : 5:00 PM On : 17-Nov-14

Report Attention	Phone Number	EMail Address
Brian Hastings	(530) 550-9776 x	bhastings@balancehydro.com

Client:
Balance Hydrologics, Inc.
P.O. Box 1077

Truckee, CA 96160-1077

PO :

Client's COC # : 15910 Job : 213136/City of Reno

EDD Required : **No**

Sampled by : Brian Hastings

Cooler Temp	Samples Received	Date Printed
4 °C	01-Nov-14	03-Nov-14

QC Level : S3 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	COLIFORM_SUB	N_TKN_W	N_TOTAL_W	PHOSPHORUS_W	TDS_W	TSS_W		Sample Remarks
BHD14110304-01A	D-16(1)	AQ	11/01/14 00:00	3	1	10	PO4, N-Total =(NO2+NO3 +TKN)	E. coli	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS		
BHD14110304-02A	D-16(2)	AQ	11/01/14 00:00	3	1	10	PO4, N-Total =(NO2+NO3 +TKN)	E. coli	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS		
BHD14110304-03A	D-16(3)	AQ	11/01/14 00:00	3	1	10	PO4, N-Total =(NO2+NO3 +TKN)	E. coli	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS		
BHD14110304-04A	D-16(4)	AQ	11/01/14 00:00	3	1	10	PO4, N-Total =(NO2+NO3 +TKN)	E. coli	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS		

Comments: Samples picked up by Alpha employee on 11/1/14, kept cold and secure until login on 11/3/14. Frozen ice. E.coli by 9223B subbed to SEM. No sampling times provided. :

	Signature	Print Name	Company	Date/Time
Logged in by:	Morgan Lowery	Morgan Lowery	Alpha Analytical, Inc.	11/3/14 1050

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information:

Company: Balance Hydrologics, Inc.
Attn: Rachel Baitano
Address: 800 bancroft way, St 101
City, State, Zip: Berkeley CA 94710
Phone Number: 510-704-1050 Fax:

Alpha Analytical, Inc. Environmental Lab

Alpha Analytical, Inc.

Main Laboratory: 255 Glendale Ave, Suite 21 Sparks, NV 89431 Phone: 775-355-1044
Fax: 775-355-0406

Satellite Service Centers:

Northern CA: 9891 Horn Road, Suite C, Rancho Cordova, CA 95827 Phone: 916-366-9089
Southern CA: 1007 E. Dominguez St., Suite O, Carson, CA 90746 Phone: 714-386-2901
Northern NV: 1250 Lamoille Hwy., #310, Elko, NV 89801 Phone: 775-388-7043
Southern NV: 6255 McLeod Ave, Suite 24, Las Vegas, NV 89120 Phone: 702-281-4848

15910

Page # _____ of _____

Consultant/ Client Info:

Company: Balance Hydrologics
Address: PO box 1077
City, State, Zip: Truckee CA 96160

Job and Purchase Order Info:

Job #: 213136
Job Name: City of Reno
P.O. #:

Report Attention/Project Manager:

Name: Brian Hastings
Email Address: bhastings@balancehydro.com
Phone #: 530-550-9276
Cell #: 415-672-0876

QC Deliverable Info:

EDD Required? Yes / No EDF Required? Yes / No
Global ID:
Data Validation Packages: III or IV

Samples Collected from which State? (circle one) AR CA KS NV OR WA DOD Site Other

Time Sampled (HHMM)	Date Sampled (MM/DD)	Matrix* (See Key Below)	Lab ID Number (For Lab Use Only)	Sample Description	TAT	# Containers** (See Key Below)	Field Filtered? Yes	Field Filtered? No	* Ortho P	* TSS	* TDS	# Total N	# Total P	# NO3	# Ecoli - 9223B				Remarks
08:00	11/01	AQ	BHD1411030401A	[redacted] D-16 (1)	ST	P	[redacted]	✓	✓	✓	✓	✓	✓	✓	✓				* 1L - 500 ml - # 250 ml - Ecoli 100 ml
0:00	11/01	AQ	02A	D-16 (2)	ST	P		✓	✓	✓	✓	✓	✓	✓	✓				
0:00	11/01	AQ	03A	D-16 (3)	ST	P		✓	✓	✓	✓	✓	✓	✓	✓				
0:00	11/01	AQ	04A	D-16 (4)	ST	P		✓	✓	✓	✓	✓	✓	✓	✓				

ADDITIONAL INSTRUCTIONS:

I (field sampler) attest to the validity and authenticity of this sample(s). I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. NAC 445.0636 (c) (2).

Sampled By:

	Date	Time		Date	Time
Relinquished by: (Signature/Affiliation):	11/1/14	17:30	Received by: (Signature/Affiliation): Alpha Analytical Lab	11/1/14	17:30
Relinquished by: (Signature/Affiliation):			Received by: (Signature/Affiliation):		
Relinquished by: (Signature/Affiliation):			Received by: (Signature/Affiliation):		

* Key: AQ - Aqueous WA - Waste OT - Other So-Soil ** L - Liter V - VOA S-Soil Jar O - Orbo T - Tedlar B - Brass P - Plastic OT - Other

NOTE: Samples are discarded 60 days after sample receipt unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14120301-01A
Client I.D. Number: AC@DD

Sampled: 12/02/14
Received: 12/02/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	12/03/14 09:36	12/03/14 11:41
Nitrate (NO3) - N	0.36	0.25		mg/L	12/03/14 09:36	12/03/14 11:41
Phosphate, ortho - P	0.54	0.50		mg/L	12/03/14 09:36	12/03/14 11:41

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	1.7	0.50		mg/L	12/04/14	12/04/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	2.1	1.0		mg/L	12/04/14	12/04/14

ND = Not Detected

ACLASS ACCREDITED DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer
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NELAP ACCREDITED TNI LABORATORY

U

12/16/14
Report Date

Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778
(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14120301-02A
Client I.D. Number: AC@TR

Sampled: 12/02/14
Received: 12/02/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	12/03/14 09:36	12/03/14 11:59
Nitrate (NO3) - N	0.36	0.25		mg/L	12/03/14 09:36	12/03/14 11:59
Phosphate, ortho - P	0.55	0.50		mg/L	12/03/14 09:36	12/03/14 11:59

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	1.6	0.50		mg/L	12/04/14	12/04/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	2.0	1.0		mg/L	12/04/14	12/04/14

ND = Not Detected

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Report Date

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ANALYTICAL REPORT

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P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14120301-03A
Client I.D. Number: AC@SBD

Sampled: 12/02/14
Received: 12/02/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	12/03/14 09:36	12/03/14 12:18
Nitrate (NO3) - N	0.26	0.25		mg/L	12/03/14 09:36	12/03/14 12:18
Phosphate, ortho - P	ND	0.50		mg/L	12/03/14 09:36	12/03/14 12:18

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	1.0	0.50		mg/L	12/04/14	12/04/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	1.3	1.0		mg/L	12/04/14	12/04/14

ND = Not Detected

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NELAP ACCREDITED LABORATORY TNI

12/16/14
Report Date

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ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14120301-04A
Client I.D. Number: C-15

Sampled: 12/02/14
Received: 12/02/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	12/03/14 09:36	12/03/14 13:13
Nitrate (NO3) - N	0.38	0.25		mg/L	12/03/14 09:36	12/03/14 13:13
Phosphate, ortho - P	ND	0.50		mg/L	12/03/14 09:36	12/03/14 13:13

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	1.4	0.50		mg/L	12/08/14	12/08/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	1.8	1.0		mg/L	12/08/14	12/08/14

ND = Not Detected

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ANALYTICAL REPORT

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P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14120301-05A
Client I.D. Number: SDOE-008957

Sampled: 12/02/14
Received: 12/02/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	12/03/14 09:36	12/03/14 13:32
Nitrate (NO3) - N	0.54	0.25		mg/L	12/03/14 09:36	12/03/14 13:32
Phosphate, ortho - P	ND	0.50		mg/L	12/03/14 09:36	12/03/14 13:32

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	1.6	0.50		mg/L	12/08/14	12/08/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	2.1	1.0		mg/L	12/08/14	12/08/14

ND = Not Detected

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ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077
Job: 213136/City of Reno

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:

Alpha Analytical Number: BHD14120301-06A
Client I.D. Number: SDOE-008960

Sampled: 12/02/14
Received: 12/02/14

Method Reference : EPA Method 300.0

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrite (NO2) - N	ND	0.25		mg/L	12/03/14 09:36	12/03/14 13:50
Nitrate (NO3) - N	0.99	0.25		mg/L	12/03/14 09:36	12/03/14 13:50
Phosphate, ortho - P	ND	0.50		mg/L	12/03/14 09:36	12/03/14 13:50

Method Reference : SM4500NORGC / SM4500-NH3D

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Nitrogen, Kjeldahl, Total	2.8	0.50		mg/L	12/08/14	12/08/14

Method Reference : Total by Calculation

Analyte	Result	Reporting Limit	Qual	Units	Date Extracted	Date Analyzed
Total Nitrogen as N	3.8	1.0		mg/L	12/08/14	12/08/14

ND = Not Detected

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ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:
Date Received : 12/02/14

Job: 213136/City of Reno

Phosphorus
EPA Method 365.3 / SM4500PE

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **AC@DD**				
Lab ID : BHD14120301-01A Phosphorus, Total (As P)	0.64	0.10 mg/L	12/03/14	12/03/14
Date Sampled 12/02/14 13:50				
Client ID: **AC@TR**				
Lab ID : BHD14120301-02A Phosphorus, Total (As P)	0.62	0.10 mg/L	12/03/14	12/03/14
Date Sampled 12/02/14 13:42				
Client ID: **AC@SBD**				
Lab ID : BHD14120301-03A Phosphorus, Total (As P)	0.39	0.10 mg/L	12/03/14	12/03/14
Date Sampled 12/02/14 14:40				
Client ID: **C-15**				
Lab ID : BHD14120301-04A Phosphorus, Total (As P)	0.14	0.10 mg/L	12/03/14	12/03/14
Date Sampled 12/02/14 16:50				
Client ID: **SDOE-008957**				
Lab ID : BHD14120301-05A Phosphorus, Total (As P)	0.36	0.10 mg/L	12/03/14	12/03/14
Date Sampled 12/02/14 15:30				
Client ID: **SDOE-008960**				
Lab ID : BHD14120301-06A Phosphorus, Total (As P)	0.34	0.10 mg/L	12/03/14	12/03/14
Date Sampled 12/02/14 16:00				

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12/16/14
Report Date

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ANALYTICAL REPORT

Balance Hydrologics, Inc.
P.O. Box 1077
Truckee, CA 961601077

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:
Date Received : 12/02/14

Job: 213136/City of Reno

Total Dissolved Solids (TDS)
SM2540C

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **AC@DD**				
Lab ID : BHD14120301-01A Solids, Total Dissolved (TDS)	94	10 mg/L	12/09/14	12/09/14
Date Sampled 12/02/14 13:50				
Client ID: **AC@TR**				
Lab ID : BHD14120301-02A Solids, Total Dissolved (TDS)	110	10 mg/L	12/09/14	12/09/14
Date Sampled 12/02/14 13:42				
Client ID: **AC@SBD**				
Lab ID : BHD14120301-03A Solids, Total Dissolved (TDS)	89	10 mg/L	12/09/14	12/09/14
Date Sampled 12/02/14 14:40				
Client ID: **C-15**				
Lab ID : BHD14120301-04A Solids, Total Dissolved (TDS)	560	10 mg/L	12/09/14	12/09/14
Date Sampled 12/02/14 16:50				
Client ID: **SDOE-008957**				
Lab ID : BHD14120301-05A Solids, Total Dissolved (TDS)	57	10 mg/L	12/09/14	12/09/14
Date Sampled 12/02/14 15:30				
Client ID: **SDOE-008960**				
Lab ID : BHD14120301-06A Solids, Total Dissolved (TDS)	53	10 mg/L	12/09/14	12/09/14
Date Sampled 12/02/14 16:00				

ACCREDITED
DoD ELAP

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Truckee, CA 961601077

Attn: Brian Hastings
Phone: (530) 550-9776
Fax:
Date Received : 12/02/14

Job: 213136/City of Reno

Total Suspended Solids
SM2540D

Parameter	Concentration	Reporting Limit	Date Extracted	Date Analyzed
Client ID: **AC@DD**				
Lab ID : BHD14120301-01A Solids, Total Suspended (TSS)	37	2.5 mg/L	12/09/14	12/09/14
Date Sampled 12/02/14 13:50				
Client ID: **AC@TR**				
Lab ID : BHD14120301-02A Solids, Total Suspended (TSS)	47	2.5 mg/L	12/09/14	12/09/14
Date Sampled 12/02/14 13:42				
Client ID: **AC@SBD**				
Lab ID : BHD14120301-03A Solids, Total Suspended (TSS)	120	2.5 mg/L	12/09/14	12/09/14
Date Sampled 12/02/14 14:40				
Client ID: **C-15**				
Lab ID : BHD14120301-04A Solids, Total Suspended (TSS)	9.8	2.5 mg/L	12/09/14	12/09/14
Date Sampled 12/02/14 16:50				
Client ID: **SDOE-008957**				
Lab ID : BHD14120301-05A Solids, Total Suspended (TSS)	75	2.5 mg/L	12/09/14	12/09/14
Date Sampled 12/02/14 15:30				
Client ID: **SDOE-008960**				
Lab ID : BHD14120301-06A Solids, Total Suspended (TSS)	150	2.5 mg/L	12/09/14	12/09/14
Date Sampled 12/02/14 16:00				

ACCREDITED
DoD ELAP

Roger Scholl Randy Gardner Walter Hinchman

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Report Date

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Date: *09-Dec-14*

QC Summary Report

Work Order: 14120301

Method Blank

Type **MBLK** Test Code: **EPA Method 300.0**

File ID: **1** Batch ID: **33959** Analysis Date: **12/03/2014 10:45**

Sample ID: **MB-33959** Units : **mg/L** Run ID: **MANUAL_141203D** Prep Date: **12/03/2014 09:36**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	ND	0.25								
Nitrate (NO3) - N	ND	0.25								
Phosphate, ortho - P	ND	0.5								

Laboratory Fortified Blank

Type **LFB** Test Code: **EPA Method 300.0**

File ID: **2** Batch ID: **33959** Analysis Date: **12/03/2014 11:04**

Sample ID: **LFB-33959** Units : **mg/L** Run ID: **MANUAL_141203D** Prep Date: **12/03/2014 09:36**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	5.2	0.25	5		104	90	110			
Nitrate (NO3) - N	5.31	0.25	5		106	90	110			
Phosphate, ortho - P	5.12	0.5	5		102	90	110			

Sample Matrix Spike

Type **LFM** Test Code: **EPA Method 300.0**

File ID: **7** Batch ID: **33959** Analysis Date: **12/03/2014 12:36**

Sample ID: **14120301-03ALFM** Units : **mg/L** Run ID: **MANUAL_141203D** Prep Date: **12/03/2014 09:36**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	4.72	0.25	5	0	94	80	120			
Nitrate (NO3) - N	5.25	0.25	5	0.2606	99.8	80	120			
Phosphate, ortho - P	5.25	0.5	5	0	105	80	120			

Sample Matrix Spike Duplicate

Type **LFMD** Test Code: **EPA Method 300.0**

File ID: **8** Batch ID: **33959** Analysis Date: **12/03/2014 12:55**

Sample ID: **14120301-03ALFMD** Units : **mg/L** Run ID: **MANUAL_141203D** Prep Date: **12/03/2014 09:36**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrite (NO2) - N	5.18	0.25	5	0	104	80	120	4.716	9.4(15)	
Nitrate (NO3) - N	5.29	0.25	5	0.2606	101	80	120	5.253	0.8(15)	
Phosphate, ortho - P	5.17	0.5	5	0	103	80	120	5.253	1.6(15)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

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Date: *09-Dec-14*

QC Summary Report

Work Order: 14120301

Method Blank

Type **MBLK** Test Code: **SM4500-NORGC / SM4500NH3D**

File ID: Batch ID: **W1203TK** Analysis Date: **12/03/2014 13:36**

Sample ID: **MBLK-W1203TK** Units : **mg/L** Run ID: **WETLAB_141203A** Prep Date: **12/03/2014 13:36**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrogen, Kjeldahl, Total	ND	0.5								

Laboratory Control Spike

Type **LCS** Test Code: **SM4500-NORGC / SM4500NH3D**

File ID: Batch ID: **W1203TK** Analysis Date: **12/03/2014 13:38**

Sample ID: **LCS-WC141203-04** Units : **mg/L** Run ID: **WETLAB_141203A** Prep Date: **12/03/2014 13:38**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrogen, Kjeldahl, Total	4.78	1	5		96	68	130			

Sample Matrix Spike

Type **MS** Test Code: **SM4500-NORGC / SM4500NH3D**

File ID: Batch ID: **W1203TK** Analysis Date: **12/03/2014 13:43**

Sample ID: **14112540-01AMS** Units : **mg/L** Run ID: **WETLAB_141203A** Prep Date: **12/03/2014 13:43**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrogen, Kjeldahl, Total	4.43	1	5	0	89	32	147			

Sample Matrix Spike Duplicate

Type **MSD** Test Code: **SM4500-NORGC / SM4500NH3D**

File ID: Batch ID: **W1203TK** Analysis Date: **12/03/2014 13:47**

Sample ID: **14112540-01AMSD** Units : **mg/L** Run ID: **WETLAB_141203A** Prep Date: **12/03/2014 13:47**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Nitrogen, Kjeldahl, Total	4.61	1	5	0	92	32	147	4.43	4.0(30)	

Comments:

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Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778

(775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

Date: *08-Dec-14*

QC Summary Report

Work Order: 14120301

Method Blank

Type **MBLK** Test Code: **EPA Method 365.3 / SM4500PE**

File ID: **2** Batch ID: **W1203TP** Analysis Date: **12/03/2014 00:00**

Sample ID: **W1203TP** Units : **mg/L** Run ID: **MANUAL_141203C** Prep Date: **12/03/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Phosphorus, Total (As P)	ND	0.1								

Laboratory Control Spike

Type **LCS** Test Code: **EPA Method 365.3 / SM4500PE**

File ID: **1** Batch ID: **W1203TP** Analysis Date: **12/03/2014 00:00**

Sample ID: **WC141203-01** Units : **mg/L** Run ID: **MANUAL_141203C** Prep Date: **12/03/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Phosphorus, Total (As P)	0.879	0.1	1		88	70	130			

Sample Matrix Spike

Type **MS** Test Code: **EPA Method 365.3 / SM4500PE**

File ID: **4** Batch ID: **W1203TP** Analysis Date: **12/03/2014 00:00**

Sample ID: **14112630-01AMS** Units : **mg/L** Run ID: **MANUAL_141203C** Prep Date: **12/03/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Phosphorus, Total (As P)	0.988	0.1	1	0	99	67	130			

Sample Matrix Spike Duplicate

Type **MSD** Test Code: **EPA Method 365.3 / SM4500PE**

File ID: **5** Batch ID: **W1203TP** Analysis Date: **12/03/2014 00:00**

Sample ID: **14112630-01AMSD** Units : **mg/L** Run ID: **MANUAL_141203C** Prep Date: **12/03/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Phosphorus, Total (As P)	1.05	0.1	1	0	105	67	130	0.9875	6.2(20)	

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

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Date: *10-Dec-14*

QC Summary Report

Work Order: 14120301

Method Blank

Type **MBLK** Test Code: **SM2540C**

File ID: **1** Batch ID: **W1208DS** Analysis Date: **12/09/2014 00:00**

Sample ID: **MBLK** Units : **mg/L** Run ID: **MANUAL_141208H** Prep Date: **12/09/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	ND	10								

Laboratory Control Spike

Type **LCS** Test Code: **SM2540C**

File ID: **2** Batch ID: **W1208DS** Analysis Date: **12/09/2014 00:00**

Sample ID: **WC141114-01** Units : **mg/L** Run ID: **MANUAL_141208H** Prep Date: **12/09/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Dissolved (TDS)	97	10	100		97	73	130			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Alpha Analytical, Inc.

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Date: *10-Dec-14*

QC Summary Report

Work Order: 14120301

Method Blank

Type **MBLK** Test Code: **SM2540D**

File ID: Batch ID: **W1201SS** Analysis Date: **12/02/2014 00:00**

Sample ID: **MBLK-W1201SS** Units : **mg/L** Run ID: **WETLAB_141201D** Prep Date: **12/02/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Suspended (TSS)	ND	2.5								

Laboratory Control Spike

Type **LCS** Test Code: **SM2540D**

File ID: Batch ID: **W1201SS** Analysis Date: **12/02/2014 00:00**

Sample ID: **LCS-W1201SS** Units : **mg/L** Run ID: **WETLAB_141201D** Prep Date: **12/02/2014 00:00**

Analyte	Result	PQL	SpkVal	SpkRefVal	%REC	LCL(ME)	UCL(ME)	RPDRefVal	%RPD(Limit)	Qual
Solids, Total Suspended (TSS)	75	2.5	100		75	55	130			

Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

12/8/2014

Alpha Analytical Inc.
255 Glendale Ave., Suite 21
Sparks, NV 89431-5778
Attn: Reyna Vallejo

OrderID: *1412078*

Dear: Reyna Vallejo

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 12/2/2014. Additional comments are located on page 2 of this report.

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

Sincerely,

Andy Smith
QA Manager

SPARKS
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Sparks, Nevada 89431
tel (775) 355-0202
fax (775) 355-0817
EPA LAB ID: NV00925 - ELAP No: 2523

ELKO
1084 Lamoille Hwy
Elko, Nevada 89801
tel (775) 777-9933
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EPA LAB ID: NV00926

LAS VEGAS
3230 Polaris Ave. Suite 4
Las Vegas, Nevada 89102
tel (702) 475-8899
fax (702) 622-2868
EPA LAB ID: NV00932

Western Environmental Testing Laboratory
Report Comments

Alpha Analytical Inc. - 1412078

General Comments

None

Specific Comments

None

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

Report Legend

B	--	Blank contamination; Analyte detected above the method reporting limit in an associated blank
HT	--	Sample analyzed beyond the accepted holding time
J	--	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
M	--	Reported value is estimated; The sample matrix interfered with the analysis
N	--	There was insufficient sample available to perform a spike and/or duplicate on this analytical batch.
NC	--	Not calculated due to matrix interference
Q	--	Reported value is estimated; The value failed to meet QC criteria for either precision or accuracy
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

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EPA LAB ID: NV00932

Western Environmental Testing Laboratory
Analytical Report

Alpha Analytical Inc.
255 Glendale Ave., Suite 21
Sparks, NV 89431-5778
Attn: Reyna Vallejo
Phone: (775) 355-1044 **Fax:** (775) 355-0406

Date Printed: 12/8/2014
OrderID: *1412078*

Customer Sample ID: AC @ DD
WETLAB Sample ID: 1412078-001
Collect Date/Time: 12/2/2014 13:50
Receive Date: 12/2/2014 18:00

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
Microbiological Analyses							
Total Coliform (MPN)	SM 9223B (Quantitray)	>2419.6	/100 mL	1	1.0	12/2/2014	NV00925
Escherichia Coli (MPN)	SM 9223B (Quantitray)	>2419.6	/100 mL	1	1.0	12/2/2014	NV00925

Customer Sample ID: AC @ TR
WETLAB Sample ID: 1412078-002
Collect Date/Time: 12/2/2014 13:42
Receive Date: 12/2/2014 18:00

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
Microbiological Analyses							
Total Coliform (MPN)	SM 9223B (Quantitray)	>2419.6	/100 mL	1	1.0	12/2/2014	NV00925
Escherichia Coli (MPN)	SM 9223B (Quantitray)	>2419.6	/100 mL	1	1.0	12/2/2014	NV00925

Customer Sample ID: AC @ SBD
WETLAB Sample ID: 1412078-003
Collect Date/Time: 12/2/2014 14:40
Receive Date: 12/2/2014 18:00

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
Microbiological Analyses							
Total Coliform (MPN)	SM 9223B (Quantitray)	>2419.6	/100 mL	1	1.0	12/2/2014	NV00925
Escherichia Coli (MPN)	SM 9223B (Quantitray)	>2419.6	/100 mL	1	1.0	12/2/2014	NV00925

Customer Sample ID: C-15
WETLAB Sample ID: 1412078-004
Collect Date/Time: 12/2/2014 16:50
Receive Date: 12/2/2014 18:00

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
Microbiological Analyses							
Total Coliform (MPN)	SM 9223B (Quantitray)	648.8	/100 mL	1	1.0	12/2/2014	NV00925
Escherichia Coli (MPN)	SM 9223B (Quantitray)	17.1	/100 mL	1	1.0	12/2/2014	NV00925

Customer Sample ID: SDOE-008957
WETLAB Sample ID: 1412078-005
Collect Date/Time: 12/2/2014 15:30
Receive Date: 12/2/2014 18:00

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
Microbiological Analyses							
Total Coliform (MPN)	SM 9223B (Quantitray)	>2419.6	/100 mL	1	1.0	12/2/2014	NV00925

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

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LAS VEGAS
3230 Polaris Ave. Suite 4
Las Vegas, Nevada 89102
tel (702) 475-8899
fax (702) 622-2868
EPA LAB ID: NV00938

Customer Sample ID: SDOE-008957 **Collect Date/Time:** 12/2/2014 15:30

WETLAB Sample ID: 1412078-005 **Receive Date:** 12/2/2014 18:00

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
Escherichia Coli (MPN)	SM 9223B (Quantitray)	>2419.6	/100 mL	1	1.0	12/2/2014	NV00925

Customer Sample ID: SDOE-008960 **Collect Date/Time:** 12/2/2014 16:00

WETLAB Sample ID: 1412078-006 **Receive Date:** 12/2/2014 18:00

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
Microbiological Analyses							
Total Coliform (MPN)	SM 9223B (Quantitray)	>2419.6	/100 mL	1	1.0	12/2/2014	NV00925
Escherichia Coli (MPN)	SM 9223B (Quantitray)	>2419.6	/100 mL	1	1.0	12/2/2014	NV00925

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

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EPA LAB ID: NV00932

Western Environmental Testing Laboratory
QC Report

QCBatchID	QCType	Parameter	Method	Result	Units
QC14120235	Blank 1	Total Coliform (MPN)	SM 9223B	ND	/100 mL
		Escherichia Coli (MPN)	SM 9223B	ND	/100 mL

QCBatchID	QCType	Parameter	Method	Duplicate Sample	Sample Result	Duplicate Result		Units	RPD
QC14120235	Duplicate	Total Coliform (MPN)	SM 9223B	1412067-004	1.00	ND	Q	/100 mL	200 %
		Escherichia Coli (MPN)	SM 9223B	1412067-004	ND	ND		/100 mL	<1%

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

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

475 E. Greg Street #119 | Sparks, Nevada 89431 | www.WETLaboratory.com
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WETLAB Order ID. 1412078
Sparks Control #
Elko Control #
LV Control #
Report Due Date 12/9/14
Page 1 of 1

Client: Alpha Analytical
Address: ON FILE
City, State & Zip:
Contact: RANDY
Phone:
Collector's Name: Client
Fax:
PWS/Project Name:
P.O. Number:
PWS/Project Number:
Email:

Turnaround Time Requirements
Standard X
5 Day* (25%) ___ 3 Day* (50%) ___
48 Hour* (100%) ___ 24 Hour* (100%) ___
*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
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	SAMPLE TYPE	NO. OF CONTAINERS	QUANT	Spl. No.	LQ
AC @ TR	12/2/14	1342		1	X	~~1~~	2
~~WC @ OVR~~ AC @ DD		1350		1	X	~~2~~	1
AC @ SBD		1440		1	X	~~3~~	3
SDOE [illegible]-008957		1530		1	X	~~4~~	5
SDOE [illegible]-008960		1600		1	X	~~5~~	6
C-15		1650		1	X	~~6~~	4

Instructions/Comments/Special Requirements: COC generated 12/2/14 prior to receiving official SC paperwork (due to HOLD TIMES). Corrections made 12/3/14. LQ

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

SAMPLE RECEIPT

Temp	Custody Seal	# of Containers	DATE	TIME	Samples Relinquished By	Samples Received By
4.8°C	Y N None	6	12/2/14	1800	[signature]	[signature]
°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).
To the maximum extent permitted by law, the Client agrees to limit the liability of WETLAB for the Client's damages to the total compensation received, unless other agreements are made in writing. This limitation shall apply regardless of the cause of action or legal theory pled or asserted.

301.2E

Billing Information :

CHAIN-OF-CUSTODY RECORD

Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778
TEL: (775) 355-1044 FAX: (775) 355-0406

NV

WorkOrder : BHD14120301

Report Due By : 5:00 PM On : 17-Dec-14

Client:
Balance Hydrologics, Inc.
P.O. Box 1077

Truckee, CA 96160-1077

Report Attention	Phone Number	EMail Address
Brian Hastings	(530) 550-9776 x	bhastings@balancehydro.com

EDD Required : **No**

Sampled by : Client

PO :

Client's COC # : 14463 Job : 213136/City of Reno

Cooler Temp	Samples Received	Date Printed
4 °C	02-Dec-14	03-Dec-14

QC Level : S3 = Final Rpt, MBLK, LCS, MS/MSD With Surrogates

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	COLIFORM_SUB	N_TKN_W	N_TOTAL_W	PHOSPHORUS_W	TDS_W	TSS_W		Sample Remarks
BHD14120301-01A	AC@DD	AQ	12/02/14 13:50	3	1	10	PO4, N-Total =(NO2+NO3 +TKN)	E. Coli	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS		
BHD14120301-02A	AC@TR	AQ	12/02/14 13:42	3	1	10	PO4, N-Total =(NO2+NO3 +TKN)	E. Coli	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS		
BHD14120301-03A	AC@SBD	AQ	12/02/14 14:40	3	1	10	PO4, N-Total =(NO2+NO3 +TKN)	E. Coli	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS		
BHD14120301-04A	C-15	AQ	12/02/14 16:50	3	1	10	PO4, N-Total =(NO2+NO3 +TKN)	E. Coli	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS		
BHD14120301-05A	SDOE-008957	AQ	12/02/14 15:30	3	1	10	PO4, N-Total =(NO2+NO3 +TKN)	E. Coli	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS		
BHD14120301-06A	SDOE-008960	AQ	12/02/14 16:00	3	1	10	PO4, N-Total =(NO2+NO3 +TKN)	E. Coli	N-Total =(NO2+NO3 +TKN)	N-Total =(NO2+NO3 +TKN)	Total	TDS/TSS	TDS/TSS		

Comments: Samples brought in by client on 12/2/14, kept cold and secure until login on 12/3/14. Frozen ice. Samples received after the 16:00 cut off time, therefore one day added to TAT. E.coli by 9223B subbed to Wetlab. :

	Signature	Print Name	Company	Date/Time
Logged in by:	Morgan Lowery	Morgan Lowery	Alpha Analytical, Inc.	12/3/14 0935

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.
The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.
Matrix Type : AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Billing Information:

Company: Balance hydrologics, inc.
Attn: Rachel Boitano
Address: 900 Bancroft way, St 101
City, State, Zip: Berkeley, CA 94710
Phone Number: (510) 704-1000 Fax:

Alpha Analytical, Inc.

Main Laboratory: 255 Glendale Ave, Suite 21 Sparks, NV 89431 Phone: 775-355-1044 Fax: 775-355-0406

Satellite Service Centers:

Northern CA: 9891 Horn Road, Suite C, Rancho Cordova, CA 95827 Phone: 916-366-9089
Southern CA: 1007 E. Dominguez St., Suite O, Carson, CA 90746 Phone: 714-386-2901
Northern NV: 1250 Lamoille Hwy., #310, Elko, NV 89801 Phone: 775-388-7043
Southern NV: 6255 McLeod Ave, Suite 24, Las Vegas, NV 89120 Phone: 702-281-4848

14463

Page # _____ of _____

Consultant/ Client Info:

Company: Balance Hydrologics
Address: PO box 1077
City, State, Zip: Truckee CA 96160

Job and Purchase Order Info:

Job #: 213136
Job Name: City of Reno
P.O. #:

Report Attention/Project Manager:

Name: Brian Hastings
Email Address: bhastings@balancehydro.com
Phone #: (530) 550-9776
Cell #: (415) 672-0976

QC Deliverable Info:

EDD Required? Yes / No EDF Required? Yes / No
Global ID:
Data Validation Packages: III or IV

Samples Collected from which State? (circle one) AR CA KS NV OR WA DOD Site Other

Time Sampled (HHMM)	Date Sampled (MM/DD)	Matrix* (See Key Below)	Lab ID Number (For Lab Use Only)	Sample Description	TAT	#Containers** (See Key Below)	Field Filtered? Yes	Field Filtered? No	* Ortho P	* TSS	* TDS	# Total N	# Total P	# NO_3	E.coli: 92238	Remarks
																* - 1 L; * - 500 mL; # - 250 ml; 100 ml - ecoli
1350	12/02	AQ	BHS1412030I-01A	~~WC @ OVH~~ DD	ST	P		✓	✓	✓	✓	✓	✓	✓	✓	
1342	12/02	AQ	02A	~~FC @ SMP~~ AC@TR		P		✓	✓	✓	✓	✓	✓	✓	✓	
1440	12/02	AQ	03A	~~NDD @ ORD~~ AC@SBD		P		✓	✓	✓	✓	✓	✓		✓	
1650	12/02	AQ	04A	~~NDD @ KLP~~ C-15		P		✓	✓	✓	✓	✓	✓	✓	✓	
1530	12/02	AQ	05A	SDE-008957		P		✓	✓	✓	✓	✓	✓	✓	✓	
1600	12/02	AQ	06A	SDE-008960		P		✓	✓	✓	✓	✓	✓	✓	✓	

ADDITIONAL INSTRUCTIONS:

I (field sampler) attest to the validity and authenticity of this sample(s). I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. NAC 445.0636 (c) (2).

Sampled By:

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
JSL / Balance Hydro	12/2/14	6:05 pm	[signature] ML	12-2-14	6:05 pm
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

* Key: AQ - Aqueous WA - Waste OT - Other So-Soil ** L - Liter V - VOA S-Soil Jar O - Orbo T - Tedlar B - Brass P - Plastic OT - Other

NOTE: Samples are discarded 60 days after sample receipt unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.

Alpha Analytical, Inc.

Phone : (775) 355-1044 FAX : (775) 355-0406

Sample Receipt Checklist

Date Report is due to Client : 12/17/2014 Date of Notice : 12/3/2014 9:37:28 AM

Please take note of any NO check marks. If we receive no response concerning these items within 24 hours of the date of this notice, all of the samples will be analyzed as requested.

Client Name: **Balance Hydrologics, Inc.**	Project ID : **213136/City of Reno**	
Project Manager: **Brian Hastings**	Client's EMail: **bhastings@balancehydro.com**	
	Client's Phone: **(530) 550-9776**	Client's FAX:
Work Order Number: **BHD14120301**	Date Received: **12/2/2014**	Received by: Morgan Lowery

Chain of Custody (COC) Information

Carrier name Client

Chain of custody present ?	Yes ☑	No ☐	
Custody seals intact on shippping container/cooler ?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles ?	Yes ☐	No ☐	Not Present ☑
Chain of custody signed when relinquished and received ?	Yes ☑	No ☐	
Chain of custody agrees with sample labels ?	Yes ☑	No ☐	
Sample ID noted by Client on COC ?	Yes ☑	No ☐	
Date and time of collection noted by Client on COC ?	Yes ☑	No ☐	
Samplers's name noted on COC ?	Yes ☐	No ☑	
Internal Chain of Custody (COC) requested ?	Yes ☐	No ☑	
Sub Contract Lab Used :	None ☐	See Comments ☑	

Sample Receipt Information

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐		Cooler Temperature
Container/Temp Blank temperature in compliance (0-6°C)?	Yes ☑	No ☐		4 °C
Samples arrived in a timely manner?	Yes ☑	No ☐		
Client attempted to be contacted?	Yes ☐	No ☑	If YES : see Comments	
Water - VOA vials have zero headspace / no bubbles?	Yes ☐	No ☐	N/A ☐	No VOA vials submitted ☑
Sample labels checked for correct preservation?	Yes ☑	No ☐		
TOC Water - pH acceptable upon receipt (H2SO4 pH<2)?	Yes ☐	No ☐	N/A ☑	
Are NV non-SDWA 314 samples field filtered (0.2µ)?	Yes ☐	No ☐	N/A ☑	

Analytical Requirement Information

Are non-Standard or Modified methods requested ?	Yes ☐	No ☑	
Are there client specific Project requirements ?	Yes ☐	No ☑	If YES : see the Chain of Custody (COC)
Is this a Drinking Water regulatory sample ?	Yes ☐	No ☑	

Comments : Samples brought in by client on 12/2/14, kept cold and secure until login on 12/3/14. Samples received after the 16:00 cut off time, therefore one day added to TAT. E.coli by 9223B subbed to Wetlab.

Billing Information:

Company: Balance hydrologics, inc.
Attn: Rachel Boitano
Address: 800 Bancroft way, St 101
City, State, Zip: Berkeley, CA 94710
Phone Number: (510) 704 - 1000 Fax:

Alpha Analytical, Inc.

Main Laboratory: 255 Glendale Ave, Suite 21 Sparks, NV 89431 Phone: 775-355-1044 Fax: 775-355-0406

Satellite Service Centers:

Northern CA: 9891 Horn Road, Suite C, Rancho Cordova, CA 95827 Phone: 916-366-9089
Southern CA: 1007 E. Dominguez St., Suite O, Carson, CA 90746 Phone: 714-386-2901
Northern NV: 1250 Lamoille Hwy., #310, Elko, NV 89801 Phone: 775-388-7043
Southern NV: 6255 McLeod Ave, Suite 24, Las Vegas, NV 89120 Phone: 702-281-4848

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Consultant/ Client Info:

Company: Balance Hydrologics
Address: 90 box 1077
City, State, Zip: Truckee CA 96160

Job and Purchase Order Info:

Job # 213136
Job Name: City of Reno
P.O. #:

Report Attention/Project Manager:

Name: Brian Hastings
Email Address: bhastings@balancehydro.com
Phone #: (530) 550-9776
Cell #: (415) 672-0976

QC Deliverable Info:

EDD Required? Yes / No EDF Required? Yes / No
Global ID:
Data Validation Packages: III or IV

Samples Collected from which State? (circle one) AR CA KS NV OR WA DOD Site Other

Time Sampled (HHMM)	Date Sampled (MM/DD)	Matrix* (See Key Below)	Lab ID Number (For Lab Use Only)	Sample Description AC@	TAT	# Containers** (See Key Below)	Field Filtered? Yes	Field Filtered? No	Ortho P *	TSS *	TDS *	Total N #	Total P #	NO3 #	E. Coli: 9223B				Remarks: 1 L - * 500 mL - * 250 ml - # 100 ml - ecoli
1350	12/02	AQ	BHD 14120301-01A	~~WC @ OVH~~ DD	ST	P		✓	✓	✓	✓	✓	✓	✓	✓				
1342	12/02	AQ	02A	~~TC @ SMP~~ AC@TR		P		✓	✓	✓	✓	✓	✓	✓	✓				
1440	12/02	AQ	03A	~~NTD @ ORD~~ AC@SBD		P		✓	✓	✓	✓	✓	✓		✓				
1650	12/02	AQ	04A	~~NTD @ KLP~~ C-15		P		✓	✓	✓	✓	✓	✓	✓	✓				
1530	12/02	AQ	05A	SDOE-008957		P		✓	✓	✓	✓	✓	✓	✓	✓				
1600	12/02	AQ	06A	SDOE-008960		P		✓	✓	✓	✓	✓	✓	✓	✓				

ADDITIONAL INSTRUCTIONS:

I (field sampler) attest to the validity and authenticity of this sample(s). I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. NAC 445.0636 (c) (2).

Sampled By:

Relinquished by: (Signature/Affiliation)	Date:	Time:	Received by: (Signature/Affiliation)	Date:	Time:
[signature] / Balance Hydro	12/2/14	6:05 pm	[signature] ML	12-2-14	6:05 pm

* Key: AQ - Aqueous WA - Waste OT - Other So-Soil ** L - Liter V - VOA S-Soil Jar O - Orbo T - Tedlar B - Brass P - Plastic OT - Other

NOTE: Samples are discarded 60 days after sample receipt unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report.