REDMOND PAIRED WATERSHED STUDY

WATER YEAR 2021 DATA SUMMARY REPORT

Prepared for
City of Redmond

Prepared by
Herrera Environmental Consultants, Inc.

HERRERA

Note:
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REDMOND PAIRED WATERSHED STUDY

WATER YEAR 2021 DATA SUMMARY REPORT

Prepared for
City of Redmond
15670 Northeast 85th Street
Redmond, Washington 98052

Prepared by
Herrera Environmental Consultants, Inc.
2200 Sixth Avenue, Suite 1100
Seattle, Washington 98121
Telephone: 206-441-9080

February 13, 2023

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INTRODUCTION

The Redmond Paired Watershed Study (RPWS) is one of several effectiveness monitoring studies that was selected for implementation starting in 2014 for the Stormwater Action Monitoring (SAM) program for Puget Sound. The goal of effectiveness monitoring under the SAM program is to provide widely applicable information for improving stormwater management in the region. Phase I and Phase II Municipal Stormwater Permittees in the Puget Sound Region contribute to a Pooled Stormwater Resources Fund that supports the SAM program and associated effectiveness monitoring studies. Selection of the RPWS for implementation under the SAM program was made based on a monitoring proposal that was presented to permittee representatives at workshops that were held on March 20, 2014, and May 6, 2014. The specific study question to be addressed through the RPWS is as follows:

> *How effective are watershed rehabilitation efforts at improving receiving water conditions at the watershed scale?*

To address this study question, a conceptual experimental design for the RPWS was subsequently developed and summarized in the *Redmond Paired Watershed Study Experimental Design Report* (Herrera 2015a). This conceptual experimental design was informed by a literature review (Herrera 2015b) that was conducted to identify lessons learned from past studies that have been implemented to achieve similar objectives. The conceptual experimental design was also developed based on input from a technical advisory committee (TAC) that was formed for the study. This TAC currently includes representation from the following jurisdictions and agencies:

City of Redmond

City of Kirkland

City of Seattle

King County

US Geological Survey

Washington State Department of Ecology (Ecology)

Building on this previous work, a Quality Assurance Project Plan (QAPP) was developed to guide the implementation of all subsequent phases of the RPWS (Herrera 2015c). This QAPP documents the experimental design and procedures that will be used during data collection, processing, and analysis to ensure all results obtained for the RPWS are scientifically defensible.

Monitoring pursuant to this QAPP initiated in 2016 and is anticipated to continue for a 10-year time frame. Data summary reports will be prepared on an annual basis over this period to summarize compiled monitoring data collected through each of the major components of the RPWS. These reports will also document any quality assurance issues associated with these data and resultant limitations (if any) on their use or interpretation. Finally, these reports will document all rehabilitation efforts that have been implemented by the City of Redmond (City) or King County (County) over the previous year. Included will be detailed information on the design and operational status of structural stormwater controls and the frequency and geographic extent of nonstructural stormwater control implementation. Each annual data summary report will document this information based on monitoring that was conducted over the previous water year (i.e., October through September). Data summary reports (Herrera 2017, 2018, 2019, 2020a, 2021a) were prepared previously for data collected over water years 2016, 2017, 2018, 2019, and 2020 (WY2016, WY2017, WY2018, WY2019, WY2020), respectively.

In years 4, 8, and 10 of the RPWS' implementation, trend analyses reports will also be prepared as companion documents to the data summary reports described above (note WY2021 represents year 6 of the RPWS' implementation). These reports will summarize the results of statistical analyses that will be performed on the compiled data from all previous years of monitoring to detect potential relationships between rehabilitation efforts and improved receiving water conditions. Each report will also present major conclusions from these analyses. A trend analysis report (Herrera 2020b) was prepared following year 4 of the RPWS' implementation.

This document represents the data summary report for monitoring that occurred over water year 2021 (WY2021) for the RPWS. It is organized to include the following sections:

- **Background:** An explanation of why the project is needed
- **Experimental Design:** The sampling process design for the study, including sample types, monitoring locations, and sampling frequency
- **Monitoring Procedures:** A description of any major deviations from the monitoring procedures that were identified in the QAPP for the study (Herrera 2015c).
- **Rehabilitation Effort Summary:** A description of all watershed rehabilitation efforts that were implemented by the City or County over the preceding water year.
- **Monitoring Results Summary:** A summary of compiled monitoring data collected through each of the major components of the study over the preceding water year.

BACKGROUND

Municipal Stormwater Permits are issued by Ecology to regulate discharges from separated storm sewers owned or operated by Phase I and Phase II cities and counties. The Municipal Stormwater Permits establish the minimum requirements for permittees to address existing and future impacts to receiving waters from urbanization. Municipal Stormwater Permits require cities and counties to execute programmatic (nonstructural) activities and establish design standards for stormwater structural controls triggered by development and redevelopment (onsite stormwater management, runoff treatment, and flow control facilities). Ideally, if all developed land in a watershed is equipped with nonstructural and structural stormwater controls, the receiving water would be protected from hydrologic and water quality impacts caused by urbanization. However, while the effectiveness of nonstructural and structural controls has been well documented at the site and parcel scale, limited data exists on the effectiveness of these controls in aggregate for improving conditions in receiving waters at the watershed scale (Herrera 2015b).

In February 2014, Ecology approved a Citywide Watershed Management Plan (WMP) (Herrera 2013) for the City that coordinates stormwater management efforts from the Municipal Stormwater Permit, Section 303(d) of the Clean Water Act, and salmon recovery to allow use of a watershed approach for improving receiving water conditions. Through the implementation of this WMP, the City will focus stormwater best management practices (BMPs) in a subset of priority watersheds that are moderately impacted by urbanization and therefore expected to respond more quickly to rehabilitation efforts. This provides a unique opportunity to study the effectiveness of stormwater BMPs for improving receiving water conditions on an accelerated time frame and at a watershed scale. Recognizing this opportunity, the City is implementing the RPWS to quantify improvements in receiving water conditions with support from the SAM program.

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EXPERIMENTAL DESIGN

As described in the *Introduction* to this report, the specific study question to be addressed through the RPWS is as follows:

> *How effective are watershed rehabilitation efforts at improving receiving water conditions at the watershed scale?*

In this context, rehabilitation efforts could include any of the following practices:

- Stormwater management retrofits in upland areas that could include facilities for onsite stormwater management (e.g., low impact development [LID] practices, runoff treatment, and flow control)
- Onsite stormwater management facilities required due to Municipal Stormwater Permit requirements for development and redevelopment
- Riparian and in-stream habitat improvements
- Programmatic practices for stormwater management

To answer the study question identified above, the experimental design for the RPWS has two primary components:

- **Status and Trends Monitoring:** Routine and continuous measurements of various hydrologic, chemical, physical habitat, and biological indicators of stream health over an extended time frame to quantify improvements in receiving water conditions in response to watershed rehabilitation efforts.
- **Effectiveness Monitoring:** Measurements of hydrologic and chemical parameters over a relatively short time frame to document the effectiveness of specific structural stormwater controls that have been constructed to improve receiving water conditions.

The Status and Trends Monitoring utilizes a "paired watershed" experimental design that involves collecting these measurements in seven watersheds categorized as follows:

- Three "Application" watersheds with wadeable lowland streams that are moderately impacted by urbanization and prioritized for rehabilitation efforts.
- Two "Reference" watersheds with relatively pristine wadeable lowland streams that do not require rehabilitation.

- Two "Control" watersheds with wadeable lowland streams that are significantly impacted by urbanization and not currently prioritized for rehabilitation.

Table 1 identifies the name, predominant land use/cover, and size of each watershed; the location of all the watersheds is shown in Figure 1. A detailed summary of conditions within each watershed is also provided in the QAPP that was prepared for the study (Herrera 2015c) with information on planned rehabilitation efforts in the Application watersheds as applicable.

Table 1. Application, Reference, and Control Watersheds for the Redmond Paired Watershed Study.

Watershed Name	Watershed Type	Dominant Land Use/Cover	Watershed Total Area (acres)	Watershed Area Inside Redmond (acres)
Evans Creek Tributary 108	Application	Residential	397	0[a]
Monticello Creek	Application	Residential/Commercial	345	264
Tosh Creek	Application	Residential/Commercial	299	276
Colin Creek[a]	Reference	Forest	1,990	90
Seidel Creek[a]	Reference	Forest	1,188	615
Country Creek	Control	Residential/Commercial	212	212
Tyler's Creek	Control	Residential/Commercial	168	167

[a] Watershed is in unincorporated King County.

Fixed monitoring stations were established in each watershed for monitoring various indicators of stream health. Due to the scale of the RPWS and the anticipated lag between applying stormwater controls and resultant improvements in receiving water conditions, quantifying a cause and effect relationship between these events may take many years. Therefore, monitoring at the fixed monitoring stations will occur over an anticipated 10-year time frame. Furthermore, because the effectiveness of watershed rehabilitation practices (e.g., stormwater retrofits, in-stream habitat improvements, and programmatic practices) may vary for different types of receiving water impairments, a broad suite of indicators for assessing potential improvements are being monitored within the following categories: hydrologic, water quality, physical habitat, sediment quality, and biological. The pattern of interest will be evidence that receiving water conditions are improving based on one or more of these indicators in the Application watersheds while conditions in the Reference and Control watersheds remain relatively static.

The following subsections provide more detailed information on the Status and Trends Monitoring and Effectiveness Monitoring, respectively, including the monitoring stations, measurement frequency, indicators, and data analysis methods where applicable.

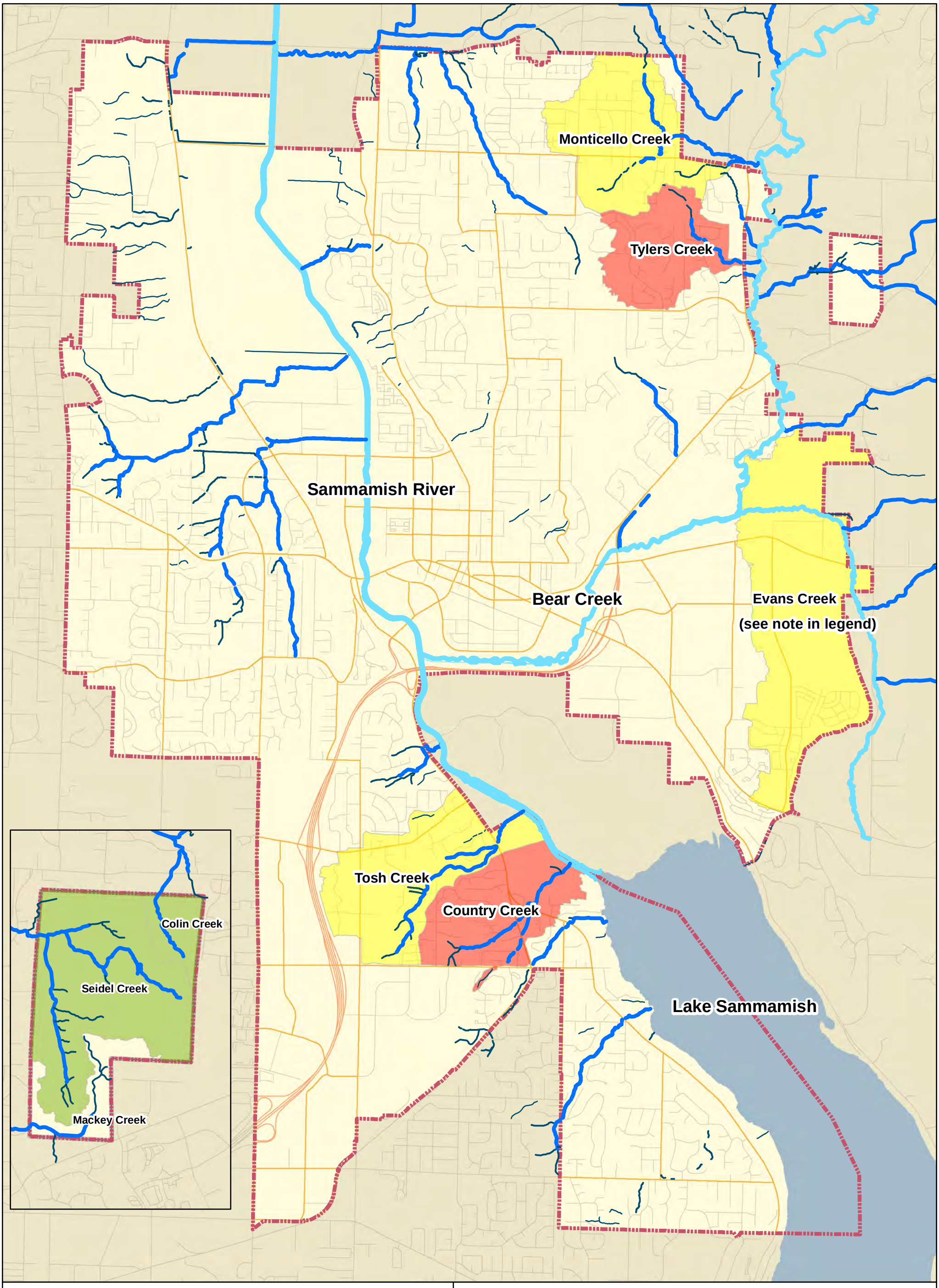

Figure 1. Application, Reference, and Control Watersheds.

City of Redmond, Washington
06/18/2015

CityofRedmond
WASHINGTON

N

0 0.25 0.5 1 1.5 Miles

Disclaimer: This map is created and maintained by the Natural Resources Division of the City of Redmond, Washington, for reference purposes only. The City makes no guarantee as to the accuracy or completeness of the features shown on this map.

Legend

- Class I Stream
- Class II Stream
- Class III Stream
- Class IV Stream
- City Limits
- Reference Watersheds
- Application Watersheds
- Control Watersheds

This figure shows Evans Creek watershed within Redmond. Evans 108 is east of Redmond and illustrated in Figure 2.

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STATUS AND TRENDS MONITORING

This section describes the monitoring stations, measurement frequency, indicators, and data analysis methods that will be used for the Status and Trends Monitoring component of the RPWS. This information is organized under separate subsections for the following monitoring categories: hydrologic, water quality, physical habitat, sediment quality, and biological. The specific indicators of stream health that will be evaluated in these categories are also summarized in Table 2 with their associated measurement frequency.

Table 2. Indicators of Stream Health for the Redmond Paired Watershed Study.

Indicator	Measurement Frequency
Hydrology Monitoring	
Flow	Continuous
High pulse count High pulse duration High pulse range Low pulse count Low pulse duration Low pulse range Flow reversal Richards-Baker (RB) flashiness index Flashiness ($T_{Q\ Mean}$) Storm flow volume Base flow volume Total flow volume	Post-processed from continuous flow measurements
Water Quality Monitoring	
Total suspended solids Turbidity Conductivity Hardness Dissolved organic carbon Fecal coliform bacteria Total phosphorus Total nitrogen Copper, total and dissolved Zinc, total and dissolved	Twelve grab samples collected annually during storm events (three each quarter) Four grab samples collected annually during base flow (one each quarter)
Temperature Conductivity	Continuous

Table 2 (continued). Indicators of Stream Health for the Redmond Paired Watershed Study.	
Indicator	**Measurement Frequency**
Physical Habitat Monitoring	
Bed stability Channel dimensions Fish cover Habitat dimensions Habitat unit extents Large woody debris Riparian cover Riparian Disturbance Riparian vegetation structure Sinuosity Substrate	Annually
Sediment Quality Monitoring	
Total organic carbon; sieved, 2 mm Copper; sieved, 63 µm Zinc; sieved, 63 µm Polycyclic aromatic hydrocarbons; sieved, 2 mm Phthalates; sieved, 2 mm	Annually
Biological Monitoring	
Benthic macroinvertebrates	Annually
Benthic Index of Biotic Integrity Taxa Richness Ephemeroptera Richness Plecoptera Richness Trichoptera Richness Clinger Percent Long-Lived Richness Intolerant Richness Percent Dominant Predator Percent Tolerant Percent	Post-processed from benthic macroinvertebrate data

Hydrologic Monitoring

A total of 14 fixed monitoring stations were established to facilitate hydrologic monitoring in each of the study watersheds. As noted in the literature review (Herrera 2015b) that was performed to inform the experimental design for the RPWS, numerous studies have been conducted with similar goals, but they have generally been conducted at the subbasin scale. In these studies, a hydrologic monitoring station was typically located at the outlet of the study subbasin. Therefore, efforts were made to establish hydrologic monitoring stations at the outlet

of each of the study watersheds. However, because the watersheds are relatively large and because much of the rehabilitation will occur in the upper reaches of the Application watersheds, efforts were made to establish hydrologic monitoring stations at a mid-point location in each of the study watersheds as well. This goal could not be achieved for all study watersheds due to issues relating to their size and drainage patterns. The following deviations are specifically noted:

- Monticello Creek has two major tributaries that will be the target of rehabilitation efforts; therefore, three hydrologic monitoring stations were established in the watershed at the outlet and on each of the tributaries.

- The relatively pristine reach of Colin Creek that was identified for monitoring is confined to the Redmond Watershed Preserve Park. Because the watershed area within this park is relatively small, only one hydrologic monitoring station was established in this watershed.

- The relatively pristine reach of Seidel Creek that was identified for monitoring is confined to the Redmond Watershed Preserve Park. Within this area, two major tributaries of the creek flow into a large wetland complex near the border of the park. To avoid confounding hydrologic and water quality influences from this wetland, hydrologic monitoring stations were established on each tributary; and no outlet station was identified.

In addition to these considerations, the specific location of each monitoring station was also influenced by safety and property access issues. The monitoring stations established in each of the study watersheds are as follows:

Application Watersheds

- Evans Creek Tributary 108: Two stations designated Lower Stream Station (EVALSS) and Midstream Station (EVAMS), respectively (see locations in Figure 2).

- Monticello Creek: One station at the mouth designated Mont-Mouth (MONM); one station at the approximate midpoint of the watershed on the north tributary designated Mont–Mid-N (MONMN); and one station at the approximate midpoint of the watershed on the south tributary designated Mont–Mid-S (MONMS) (see locations in Figure 3).

- Tosh Creek: One station at the mouth designated Tosh-Mouth (TOSMO); and one station at the approximate midpoint of the watershed designated Tosh-Mid (TOSMI) (see locations in Figure 4).

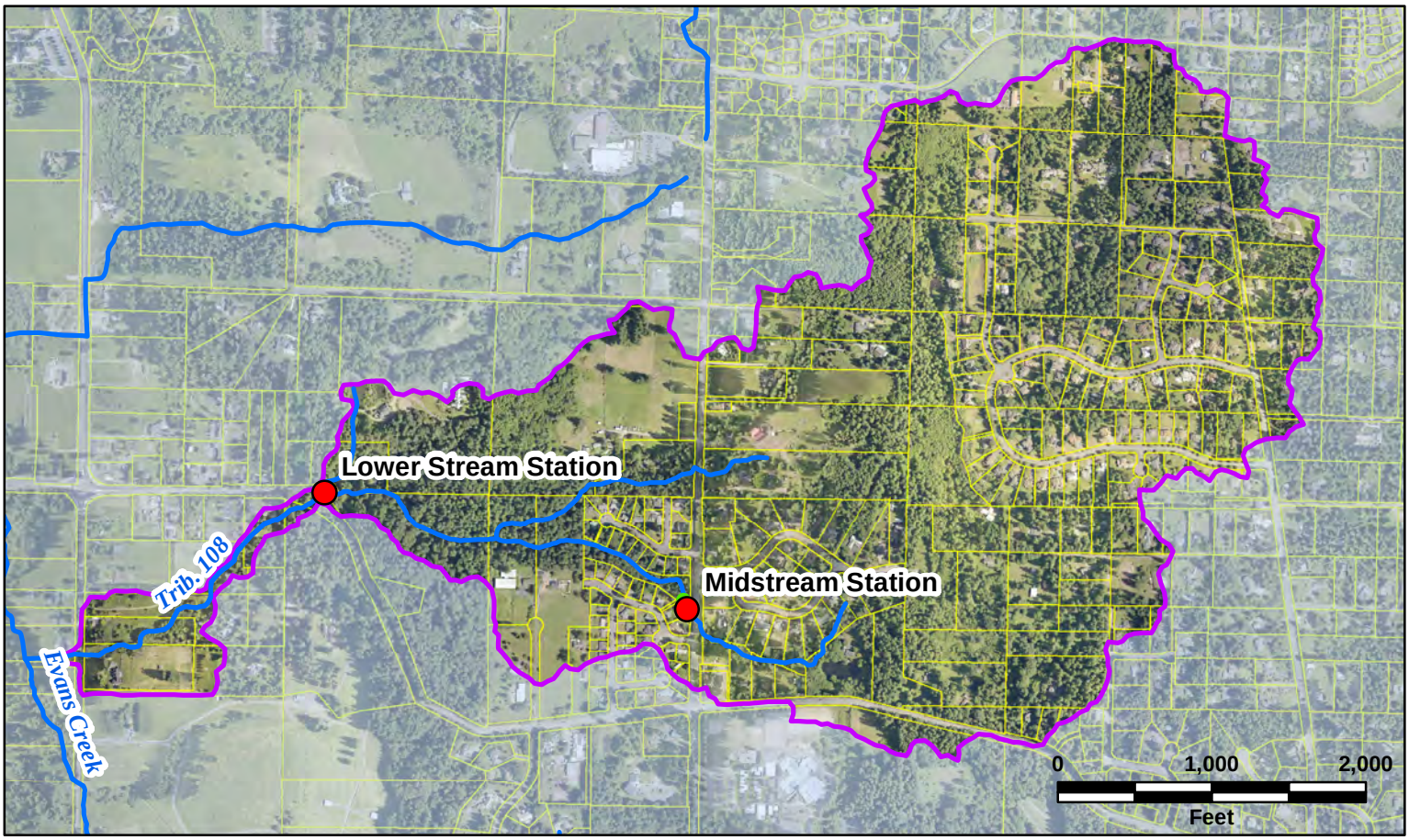

Figure 2. Evans Trib. 108 Paired Watershed Study Monitoring Locations.

King County, Washington

Dec. 17, 2015

Flow and WQ Monitoring

Habitat, Biological, and Sediment Monitoring

Streams and Rivers

King County Parcels

Basin Boundary

King County
Department of Natural Resources and Parks
Water and Land Resources Division

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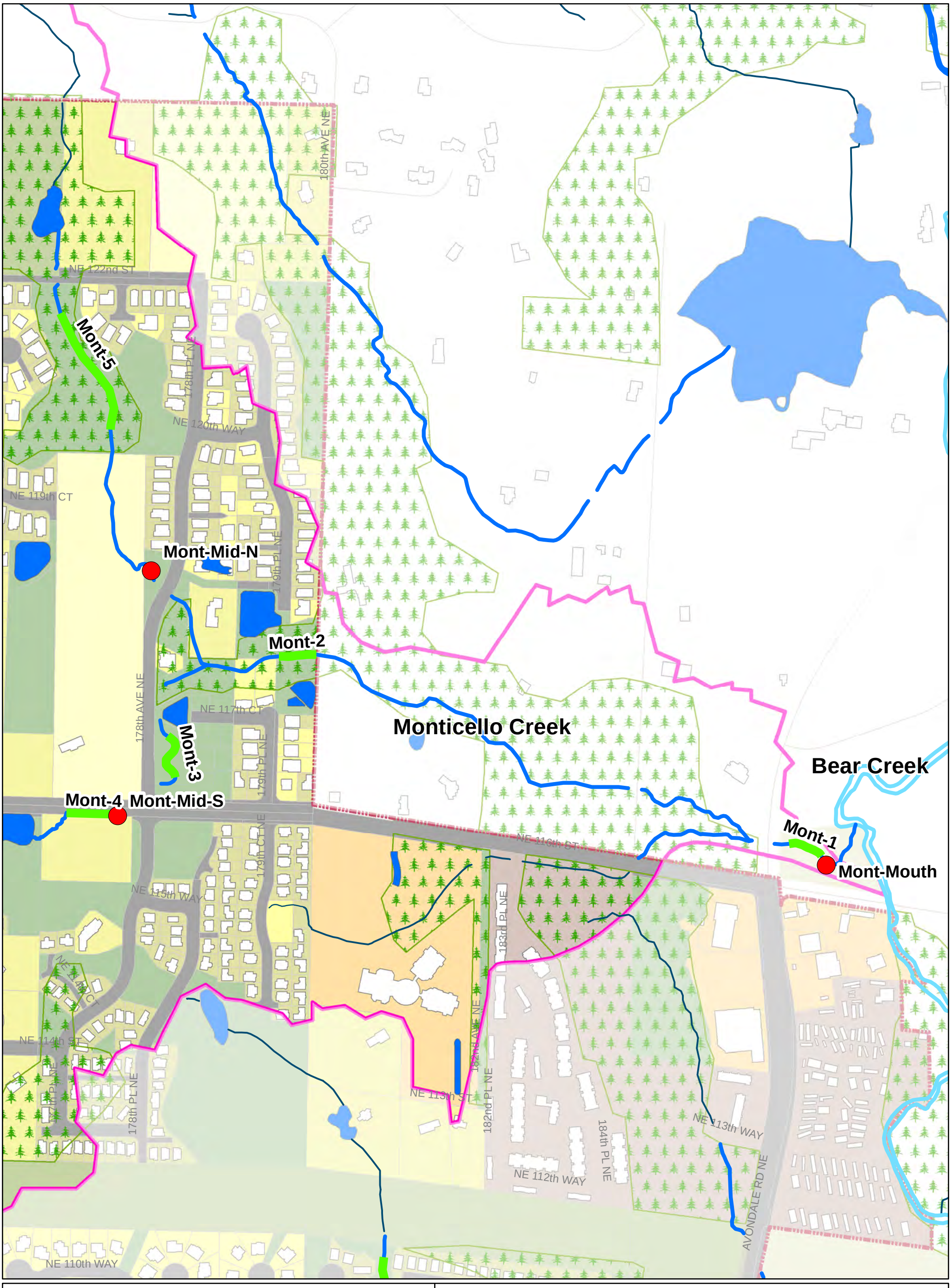

Figure 3. Monticello Creek Paired Watershed Study Monitoring Locations.

City of Redmond, Washington

6/25/2015

N

0 0.0375 0.075 0.15 Miles

CityofRedmond WASHINGTON

Disclaimer: This map is created and maintained by the Natural Resources Division of the City of Redmond, Washington, for reference purposes only. The City makes no guarantee as to the accuracy or completeness of the features shown on this map.

Legend

- Class I Stream
- Class II Stream
- Class III Stream
- Class IV Stream
- Ponds
- City Limits
- Watershed Boundary
- Commercial
- Industrial
- Multifamily
- Park / Undeveloped
- Public ROW
- Single Family HighDensity
- Single Family Low Density
- Single Family Medium Density
- Single Family Rural Density
- Flow & WQ Monitoring
- Habitat, Sediment & Biological Monitoring

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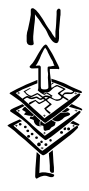
Figure 4. Tosh Creek Paired Watershed Study Monitoring Locations.

City of Redmond, Washington

11/22/2013



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- Industrial
- Multifamily
- Park / Undeveloped
- Public ROW
- Single Family HighDensity
- Single Family Low Density
- Single Family Medium Density
- Single Family Rural Density
- Hydrology & WQ Monitoring
- Physical Habitat, sediment & B-IBI Monitoring

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Reference Watersheds

- Colin Creek: One station at the approximate midpoint of the watershed designated Colin-Mid (COLM) (see locations in Figure 5).

- Seidel Creek: One station at the approximate midpoint of the watershed on the north tributary designated Seidel-Mid-N (SEIMN); one station at the approximate midpoint of the watershed on the south tributary designated Seidel-Mid-S (SEIMS) (see locations in Figure 6).

Control Watersheds

- Country Creek: One station at the mouth designated Country-Mouth (COUMO); and one station at the approximate midpoint of the watershed designated Country-Mid (COUMI) (see locations in Figure 7).

- Tyler's Creek: One station at the mouth designated Tylers-Mouth (TYLMO); and one station at the approximate midpoint of the watershed designated Tylers-Mid (TYLMI) (see locations in Figure 8).

Continuous flow monitoring will occur at all 14 monitoring stations for the duration of the RPWS. Data from the continuous flow monitoring will be processed to calculate the following indicators for evaluating hydrologic impacts from urban development as described in DeGasperi et al. (2009):

- **High flow pulse:** Occurrence of daily average flows that are equal to or greater than a threshold set at twice (two times) the long-term daily average flow rate.
    - *High pulse count*: Number of days each water year that discrete high flow pulses occur.
    - *High pulse duration*: Annual average duration (in days) of high flow pulses during a water year.
    - *High pulse range*: Range in days between the start of the first high flow pulse and the end of the last high flow pulse during a water year.
- **Low flow pulse:** Occurrence of daily average flows that are equal to or less than a threshold set at 50 percent of the long-term daily average flow rate.
    - *Low pulse count*: Number of times each calendar year that discrete low flow pulses occurred.
    - *Low pulse duration*: Annual average duration (in days) of low flow pulses during a calendar year.
    - *Low pulse range*: Range in days between the start of the first low flow pulse and the end of the last low flow pulse during a calendar year.

- **Flow Reversal:** The number of times that the flow rate changed from an increase to a decrease or vice versa during a water year. Flow changes of less than 2 percent are not considered.

- **Richards-Baker (RB) flashiness index:** A dimensionless index of flow oscillations relative to total flow based on daily average discharge measured during a water year.

- **Flashiness ($T_{Q\ Mean}$):** The fraction of a year that mean daily discharge exceeds annual mean discharge.

- **Storm flow volume:** Total discharge volume during storm events over a water year.

- **Base flow volume:** Total discharge volume during base flow over a water year.

- **Total flow volume:** Total discharge volume over a water year.

Trends over time at each monitoring station will be evaluated using parametric (Pearson's r) and nonparametric (Kendall's tau or Spearman's rho) tests of correlation between these indicators and time. Statistical significance of the correlation coefficients will be evaluated based on an α-level of 0.05 for a one-tailed test. The pattern of interest will be evidence that receiving water conditions are improving based on the detection of statistically significant trends in the data for one or more of these indicators in the Application watersheds while these same trends are not detected in the data for the same indicators in the Reference and Control watersheds.

Colin Creek

Colin-1

Colin-Mid

Redmond Watershed Preserve Park

Figure 5. Colin Creek Paired Watershed Study Monitoring Locations.

City of Redmond, Washington

6/25/2015

N

0 0.0325 0.065 0.13 Miles

CityofRedmond
WASHINGTON

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- Park / Undeveloped
- Public ROW
- Single Family HighDensity
- Single Family Low Density
- Single Family Medium Density
- Single Family Rural Density
- Flow & WQ Monitoring
- Habitat, sediment & Biological Monitoring

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Seidel-1

Seidel-2

Seidel-Mid-N

Seidel Creek

Redmond Watershed Preserve Park

Seidel-3

Seidel-Mid-S

Figure 6. Seidel Creek Paired Watershed Study Monitoring Locations.

City of Redmond, Washington

11/22/2013

N

CityofRedmond
WASHINGTON

0 0.05 0.1 0.2 Miles

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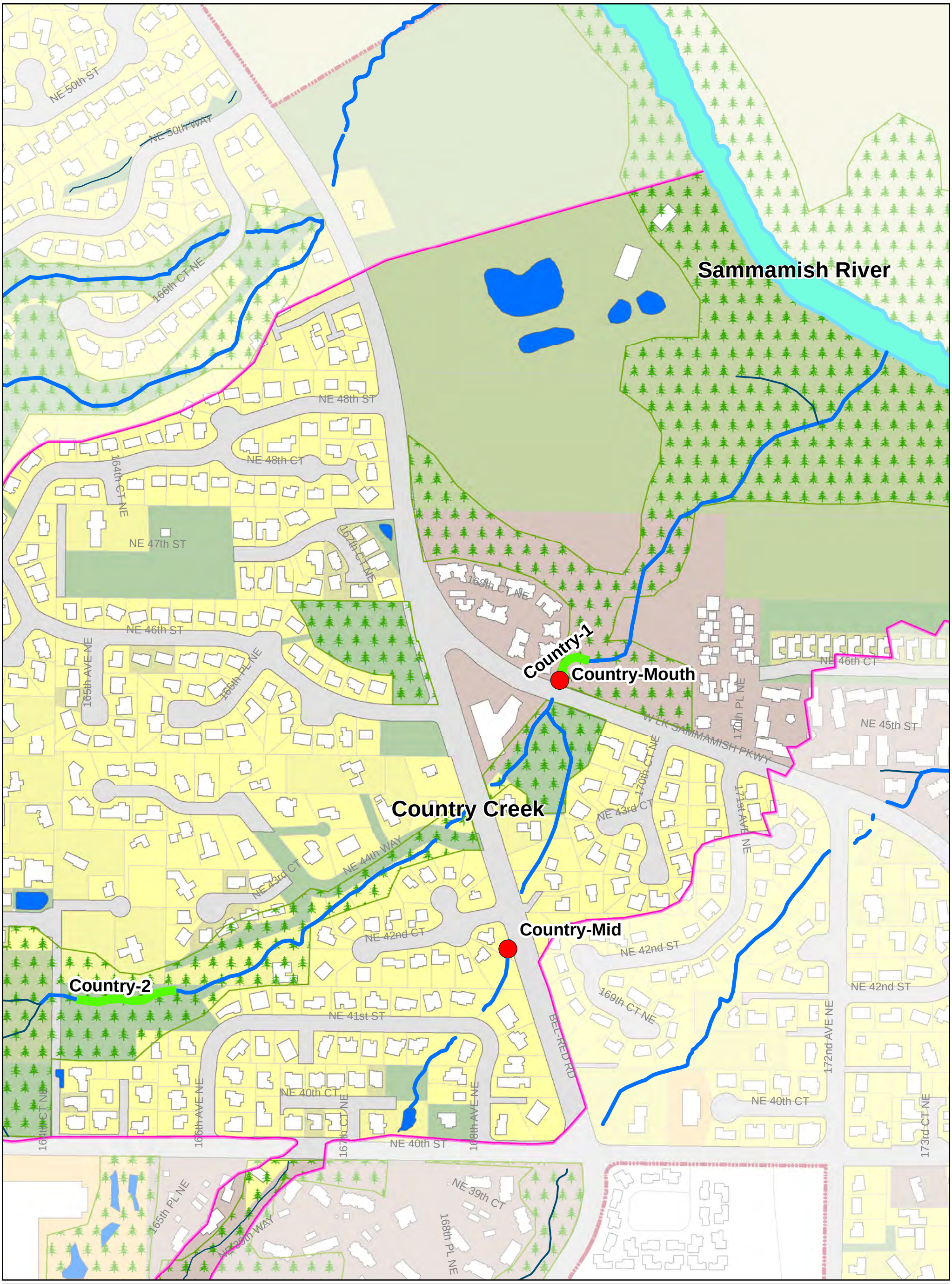

Figure 7. Country Creek Paired Watershed Study Monitoring Locations.

City of Redmond, Washington

6/25/2015

N

0 0.0325 0.065 0.13 Miles

CityofRedmond

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- Single Family Rural Density
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- Habitat, Sediment, & Biological Monitoring

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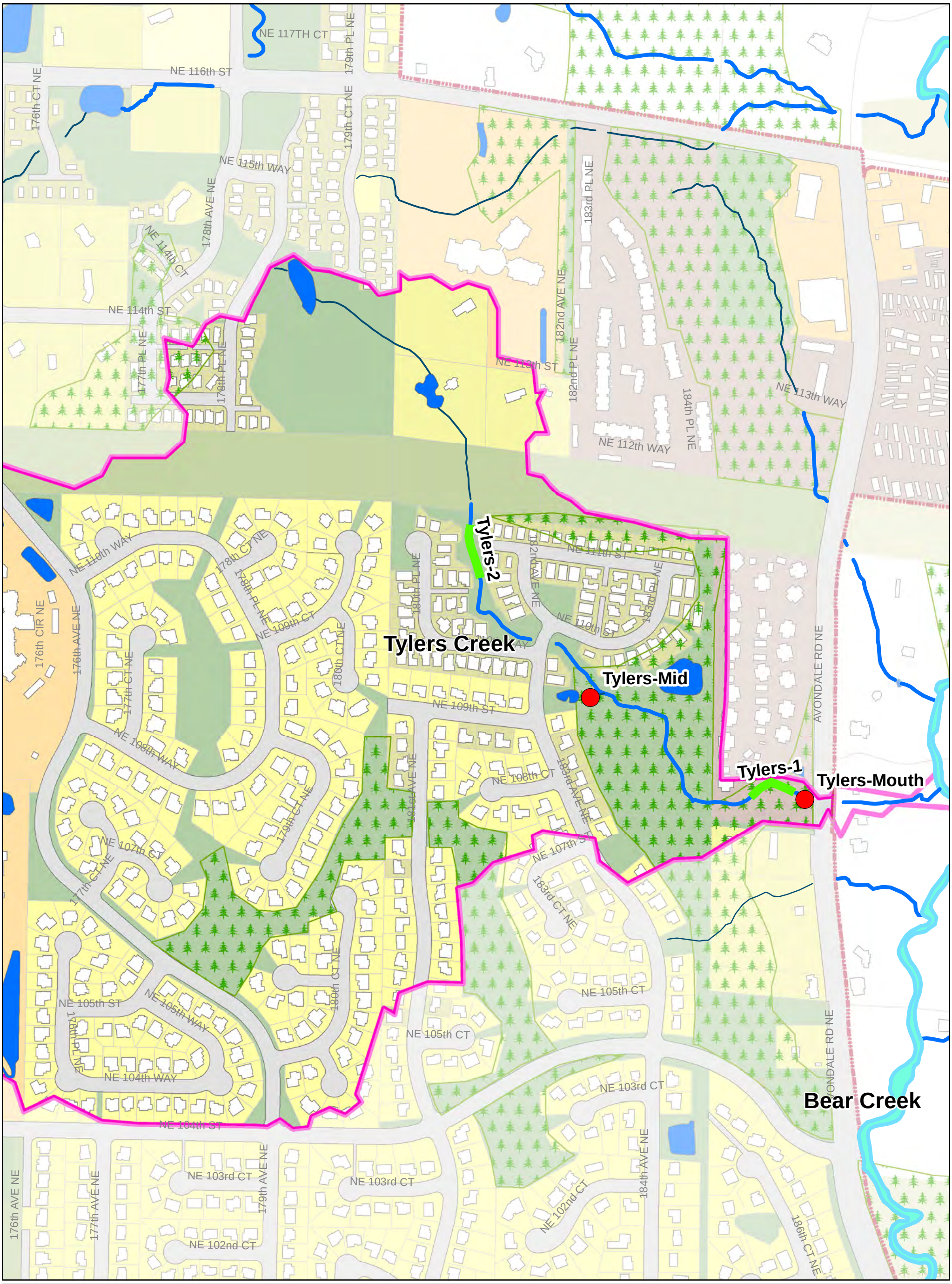

Figure 8. Tyler's Creek Paired Watershed Study Monitoring Locations.

City of Redmond, Washington

6/25/2015

N

0 0.0375 0.075 0.15 Miles

CityofRedmond WASHINGTON

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- Single Family HighDensity
- Single Family Low Density
- Single Family Medium Density
- Single Family Rural Density
- Flow & WQ Monitoring
- Habitat, Sediment & Biological Monitoring

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Water Quality Monitoring

A total of 14 fixed monitoring stations were established to facilitate water quality monitoring in each of the study watersheds. These stations were co-located with the monitoring stations described above for hydrologic monitoring (see Figures 2 through 8). Twelve grab samples will be collected annually during storm events (three each quarter) at each of the 14 monitoring stations for the duration of the RPWS. In addition, four grab samples will also be collected annually during base flow (one each quarter) at these stations. Each sample will be analyzed for the following indicators for evaluating water quality impacts from urban development:

- Total suspended solids
- Turbidity
- Conductivity
- Hardness
- Dissolved organic carbon
- Fecal coliform bacteria
- Total phosphorus
- Total nitrogen
- Copper, total and dissolved
- Zinc, total and dissolved

In addition, *in situ* probes will be used to continuously measure temperature at each station and conductivity at the following subset of stations: EVALSS, EVAMS, MONM, MONMS, TOSMO, SEIMN, SEIMS, COUMO, and TYLMO.

Trends over time at each monitoring station will be evaluated using parametric (Pearson's r) and nonparametric (Kendall's tau or Spearman's rho) tests of correlation between these indicators and time. Where possible, variation in the indicator data related to changes in stream flow will be removed prior to performing the correlation analyses using methods described in Helsel and Hirsch (2002). Use of these methods is generally applicable for indicators that tend to increase (or decrease) as a function of flow (e.g., total suspended solids). By removing this variation, trends in the indicator data can be more readily detected in the correlation analyses. In all cases, statistical significance of the correlation coefficients will be evaluated based on an α-level of 0.05 for a one-tailed test.

The sample frequency identified above for water quality monitoring was evaluated using power tests that were performed for totals suspended solids and total zinc. Power tests are used to determine the probability of detecting a trend given: 1) sample size, 2) the desired α-level, 3) magnitude of the trend, and 4) amount of variation within the data. With 16 samples collected annually (12 samples during storm events and 4 samples during base flow) over a 10-year period and a desired α-level of 0.05, results from these tests showed there was a 66 to 100 percent probability of detecting a 4 milligram per liter (mg/L) decrease in total suspended solids concentrations depending on the variability that is assumed for the data and characteristics of the trend over time (i.e., linear or non-linear). These same tests showed there is a 38 to 100 percent probability of detecting a 2 microgram per liter (µg/L) decrease in total zinc concentrations. Results from these tests are documented in the QAPP that was prepared for the study (Herrera 2015c).

Annual mass load estimates will also be derived for the following subset of indicators using the nonparametric "smearing" approach described in Helsel and Hirsch (2002): total suspended solids, total phosphorus, total nitrogen, total copper, and total zinc. Trends over time at each monitoring station will again be evaluated using parametric (Pearson's r) and nonparametric (Kendall's tau or Spearman's rho) tests of correlation between these mass load estimates and time. Statistical significance of the correlation coefficients will be evaluated based on an α-level of 0.05 for a one-tailed test. These analyses will be used to detect potential improvements in receiving water conditions from the combined effects of improved water quality and reduced stormwater runoff.

In all cases, the pattern of interest will be evidence that receiving water conditions are improving based on the detection of statistically significant trends in the data for one or more of these indicators in the Application watersheds while the same trends are not detected in the data for the same indicators in the Reference and Control watersheds.

Physical Habitat Monitoring

A total of 19 fixed monitoring stations were established to facilitate physical habitat monitoring in each of the study watersheds. As described in the literature review (Herrera 2015b) that was performed to inform the experimental design for the RPWS, most past studies that have been performed to assess physical habitat response to watershed rehabilitation were conducted in reaches where channel rehabilitation measures were directly applied. Consequently, they were designed to only assess the localized effects of these efforts. The RPWS involves both localized channel rehabilitation and watershed scale rehabilitation through the application of structural and programmatic practices for stormwater management. Therefore, a synoptic approach was applied for establishing monitoring stations for physical habitat monitoring where stations were established in the Application watersheds in reaches that will be restored and in reaches where no physical alterations to the channel are planned. In this way, the RPWS can assess physical habitat response to both localized and basin-wide rehabilitation efforts. In addition to these considerations, the specific location of each monitoring station was also influenced by safety

and property access issues. The monitoring stations established in each of the study watersheds are as follows:

Application Watersheds

- Evans Creek Tributary 108: Two stations designated Lower Stream Station (EVALSS) and Midstream Station (EVAMS), respectively (see locations in Figure 2).
- Monticello Creek: Five stations designated MONT-1, MONT-2, MONT-3, MONT-4, and MONT-5, respectively (see locations in Figure 3).
- Tosh Creek: Four stations designated TOSH-1, TOSH-2, TOSH-3, and TOSH-4, respectively (see locations in Figure 4).

Reference Watersheds

- Colin Creek: One designated COLIN-1 (see locations in Figure 5).
- Seidel Creek: Three stations designated Seidel-1, Seidel-2, and Seidel-3, respectively (see locations in Figure 6).

Control Watersheds

- Country Creek: Two stations designated Country-1 and Country-2, respectively (see locations in Figure 7).
- Tyler's Creek: Two stations designated Tylers-1 and Tylers-2, respectively (see locations in Figure 8).

The following monitoring stations were specifically selected to measure the localized physical habitat response in reaches that have either been recently restored or are likely to be restored in the future:

- MONT-3
- MONT-4
- MONT-5
- TOSH-1
- TOSH-3
- TOSH-4

Physical habitat monitoring will be conducted annually at each monitoring station for the duration of the RPWS. The characteristic bed-form type will be recorded at each monitoring station, and physical habitat quality indicators will be measured at 11 cross-sections (transects) and thalweg (line of steepest descent along the streambed) profile for each habitat monitoring station.

The following indicators will be measured at each transect:

- Bankfull width, wetted width, and cumulative bar width
- Bankfull depth, wetted depth, substrate class and embeddedness at 11 or more stations across the section
- Fish cover
- Human influence
- Riparian shading
- Riparian vegetation structure
- Presence of desirable/undesirable plant species

The following indicators will be measured along the thalweg profile:

- Thalweg depth and the presence of bars and/or edge pools
- Large woody debris and habit unit descriptions
- Side-channel descriptions
- Main channel slope and bearing
- Presence, source, size, of culvert or pipes draining to creek

Post-processing of recorded physical habitat indicators will allow monitoring of:

- Channel incision or aggradation
- Channel widening, narrowing, or migration
- Changes in channel slope, sinuosity, and/or bed-form type

The pattern of interest will be evidence that receiving water conditions are improving based on the detection of trends in the data for one or more of these indicators in the Application watersheds while the same trends are not detected in the data for the same indicators in the Reference and Control watersheds.

Sediment Quality Monitoring

A total of 19 fixed monitoring stations were established to facilitate sediment quality monitoring in each of the study watersheds. These stations were co-located with the monitoring stations described above for physical habitat monitoring (see Figures 2 through 8). Sediment samples will be collected annually at all 19 monitoring stations for the duration of the RPWS. Each sample will be analyzed for the following indicators for evaluating sediment quality impacts from urban development:

- Total organic carbon
- Copper
- Zinc
- Polycyclic aromatic hydrocarbons
- Phthalates

Trends over time at each monitoring station will be evaluated using parametric (Pearson's r) and nonparametric (Kendall's tau or Spearman's rho) tests of correlation between these indicators and time. Statistical significance of the correlation coefficients will be evaluated based on an α-level of 0.05 for a one-tailed test. The pattern of interest will be evidence that receiving water conditions are improving based on the detection of statistically significant trends in the data for one or more of these indicators in the Application watersheds while the same trends are not detected in the data for the same indicators in the Reference and Control watersheds.

Biological Monitoring

A total of 19 fixed monitoring stations were established to facilitate biological monitoring in each of the study watersheds. These stations were co-located with the monitoring stations described above for physical habitat monitoring (see Figures 2 through 8). Benthic macroinvertebrate samples will be collected annually at each monitoring station for the duration of the RPWS. Each sample will be processed to calculate the following indicators for use in evaluating stream health:

- Benthic Index of Biotic Integrity (B-IBI)
- Taxa Richness
- Ephemeroptera Richness
- Plecoptera Richness
- Trichoptera Richness
- Clinger Percent

- Long-Lived Richness
- Intolerant Richness
- Percent Dominant
- Predator Percent
- Tolerant Percent

Trends over time at each monitoring station will be evaluated using parametric (Pearson's r) and nonparametric (Kendall's tau or Spearman's rho) tests of correlation between these indicators and time. Statistical significance of the correlation coefficients will be evaluated based on an α-level of 0.1 for a one-tailed test. The pattern of interest will be evidence that receiving water conditions are improving based on the detection of statistically significant trends in the data for one or more of these indicators in the Application watersheds while the same trends are not detected in the data for the same indicators in the Reference and Control watersheds.

The sampling frequency identified above for biological monitoring was evaluated using the power tests described above in the *Water Quality Monitoring* subsection. With samples collected annually over a 10-year period and a desired α-level of 0.05, results from these tests showed there was a 63 to 96 percent probability of detecting a 9-unit increase in B-IBI scores (equivalent to a change from "fair" to "good" in biological condition) depending on the variability that is assumed for the data and characteristics of the trend over time (i.e., linear or non-linear). Results from these tests are documented in the QAPP that was prepared for the study (Herrera 2015c).

Effectiveness Monitoring

As described in the introduction to this section (see page 5), roving stations will be established for the Effectiveness Monitoring component of the RPWS to verify specific structural or programmatic stormwater controls are constructed properly, performing as designed, or providing meaningful benefit. The roving stations will be moved from one year to the next once a facility's effectiveness has been verified and new facilities come online. The specific types of monitoring to be performed at each roving station will depend on the type of structural stormwater control that is being evaluated. For example, it is anticipated that only hydrologic monitoring would be performed at roving stations for facilities that are only designed for flow control (e.g., vaults). In these cases, a facility's performance would be verified based on comparisons of measured flow from the roving station to the facility's predicted flow from models used in its design. For facilities that are designed for runoff treatment, monitoring will follow guidelines from Ecology's Technology Assessment Protocol-Ecology (TAPE) (Ecology 2018) and include both hydrologic (e.g., influent and effluent flow) and water quality monitoring. In these cases, a facility's performance would be verified based on comparisons of its measured pollutant removal efficiency relative to targets that are identified in TAPE for specific treatment categories.

In April 2021, the City retrofitted two existing stormwater detention ponds in the Monticello Creek watershed with a continuous monitoring and adaptive control (CMAC) system to improve their performance for managing peak flows during storm events. The CMAC system is designed to optimize the performance of existing stormwater detention facilities by leveraging forecast information with onsite sensors, allowing adaptive use of the full storage volume available to more closely approximate flow patterns that existed prior to land development. CMAC system design details for the retrofitted stormwater detention ponds in the Monticello Creek watershed are provided in Appendix A.

A proposal (Herrera 2021b) to conduct Effectiveness Monitoring on these ponds using funding from the SAM program was approved by Ecology on December 30, 2021. This monitoring was scheduled to initiate at the start of water year 2022 (WY2022); however, the CMAC systems were not fully operational through much of WY2022 due to technical issues. These technical issues are being addressed and appear to be largely resolved; therefore, it is anticipated that the effectiveness monitoring will initiate at the start of water year 2023 (WY2023).

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REHABILITATION EFFORT SUMMARY

As noted in the previous section, the pattern of interest for this study will be evidence that receiving water conditions are improving based on one or more indicators in the Application watersheds while conditions in the Reference and Control watersheds remain relatively static. To increase the likelihood of detecting this trend, conditions in the Application watersheds were characterized over a "baseline" period prior to the implementation of any rehabilitation efforts that generally spanned WY2016. Rehabilitation efforts that have subsequently been implemented by the City or County in each of the Application watersheds are described below under the following categories: structural retrofits, programmatic controls, and habitat enhancements.

Evans Creek Tributary 108:

- Structural Retrofits
    - In WY2017, the County constructed two stormwater detention vaults within the Evans Creek Tributary 108 watershed; one was in front of addresses 20620 and 20626 NE 76th Place, and the other was in front of address 20508 NE 78th Street.

Monticello Creek:

- Structural Retrofits
    - In April 2021, the City retrofitted two existing stormwater detention ponds in the Monticello Creek watershed with a CMAC system to improve their performance for managing peak flows during storm events (see more detailed description in the previous section). However, the CMAC systems were not fully operational through much of WY2021 and WY2022 due to technical issues. Therefore, the potential benefits of these system may not be realized until WY2023.
- Programmatic Controls
    - Using funding from a King County WaterWorks grant, the City initiated a street sweeping project in the Monticello Creek watershed:
    - Street sweeping increased from quarterly to monthly in August of WY2017 and continued throughout WY2018. The street sweeping occurred on all public roads in the watershed.
    - Beginning in October of WY2019, the frequency of street sweeping increased from once per month to twice per month. This street sweeping was implemented to meet

the specific goal of improving water quality in the creek and conducted in addition to street sweeping that occurs in the watershed for other operational reasons, such as collecting leaves in fall. A more detailed summary of the street sweeping is provided in Table 3.

- *Note: Trend analyses performed by Herrera (2020b, 2020c) documented a consistent and statistically significant decrease in total suspended solids and total copper concentrations in Monticello Creek that appeared to be related to the increase in street sweeping frequency. These results are also consistent with a street sweeping study that was implemented by the City of Seattle (SPU 2018).*

- Habitat Enhancements

  - In WY2017, large woody debris was installed on an approximately 400-foot-long reach of Monticello Creek that extends downstream from Northeast 122nd Street. Approximately 400 feet of additional large woody debris was installed in July of WY2018 on the downstream end of the installation from WY2017.

  - In WY2019, invasive species removal and supplemental planting was completed in an approximately 2,000-square-foot project area located at the Fischer Village Native Growth Protection Easement downstream of 178th Avenue Northeast. Fifty-five trees and 15 shrubs were planted. Himalayan blackberry (*Rubus armeniacus*) was removed from the project area.

  - In WY2021, three separate plantings within the riparian zone of Monticello Creek were completed by the City:

    - Approximately 0.5 acre within the Fischer Village Native Growth Protective Easement (Monticello main stem, downstream of Northeast 122nd Street) was cleared of Himalayan blackberry. Two hundred trees and 200 shrubs were planted within the project area in March 2021.

    - Approximately 0.75 acre within the Ray Meadows Native Growth Protective Easement (Monticello main stem, downstream of the Fischer Village Native Growth Protective Easement) was cleared of Himalayan blackberry in March 2021. Six hundred trees were planted in the project area in October 2021.

    - Approximately 0.68 acre within the Cameron Place Native Growth Protective Easement and City-owned land (Monticello Creek—west fork, south of Northeast 116th Street) was cleared of Himalayan blackberry and reed canarygrass in January 2021. Three hundred trees and 600 shrubs were planted in the project area during March 2021.

Tosh Creek:

- Structural Controls
    - The high flow bypass pipe weir for the Tosh Creek watershed was adjusted in July of WY2017 to divert more high flow stormwater from Tosh Creek.
- Habitat Enhancements
    - Large woody debris was installed on an approximately 300-foot-long reach of Tosh Creek in WY2017, downstream of West Lake Sammamish Parkway. In July of WY2018, adjustments were made to this large woody debris and minor slash was added to the reach.
    - In WY2019, a planting was conducted in an approximately 40,000-square-foot project area located in the lower section of Tosh Creek, between West Lake Sammamish Parkway and the Sammamish River. Sixty-five shrubs and 627 trees were planted. Normal maintenance was performed at the site, including removal of the invasive species Himalayan blackberries and bittersweet nightshade (*Solanum dulcamara*).
    - In WY2021 ongoing maintenance of the planting that occurred in WY2019 was conducted. This included planting 15 spruce trees, mulching plants, spot treating knotweed and grubbing Himalayan blackberries.

Table 3. Summary of Street Sweeping in the Monticello Creek Watershed.

Type of sweeper:	Regenerative
Percent of road cover within the basin: 83%	83% (the City did not sweep the 1.24 miles of private roads within watershed due to access issues)
Type of public roads and percent of each:	• Principal Arterial: 4% • Collector Arterial: 9% • Connector Streets: 4% • Local Access: 83%
Miles swept per year:	• Monthly: July 2017–August 2018. A total of 83.44 miles were swept during these 14 months. • Twice Monthly: September 2018–August 2019. A total of 143.04 miles were swept during these 12 months.
Average passes per year:	• Monthly: July 2017–August 2018. The watershed was swept 14 times during this time period. The biweekly sweeping was supposed to start in July 2018; however, due to an error, the contractor continued monthly sweeping until August 2018. This was addressed by adding 2 months of sweeping twice per month to the end of the contract. • Twice Monthly: September 2018–August 2019. The watershed was swept 24 times during this time period. No months were missed.

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MONITORING PROCEDURES

The QAPP that was prepared for the RPWS (Herrera 2015c) provides detailed information on the monitoring procedures that are being used for each of the following categories: hydrologic, water quality, physical habitat, sediment quality, and biological. The following deviations from these monitoring procedures are noted for monitoring that took place in WY2021:

- The YSI Pro Model 2030 that was used to make discrete *in situ* measurements of water temperature and conductivity was calibrated using a 1,000 µS standard instead of a 100 µS standard as specified in the QAPP. This change was made based on manufacturer recommendations for meter calibration. Given this change, the calibration of the meter was subsequently checked before and after each sampling event using both the 100 and 1,000 µS standards to confirm the method quality objective identified in the QAPP for meter accuracy (±5 percent) was met. Results from these calibration checks were documented on standardized field forms.

- Guidelines in the QAPP indicated storm sampling should occur after a period of at least 24 hours preceding the event with less than 0.04 inch of precipitation. However, this guideline was deemed too restrictive following monitoring that occurred over WY2016. Hence, this criterion was changed to allow storm event sampling after a period of at least 12 hours preceding the event with less than 0.04 inch of precipitation.

In addition, the following deviations are noted for monitoring that will occur in subsequent water years:

- The QAPP for the RPWS indicates trend analyses reports should be prepared following 4, 6, 8, and 10 years of study implementation. These reports summarize the results of statistical analyses that are described in the QAPP to identify relationships between rehabilitation efforts and improving receiving water conditions. A trend analysis report (Herrera 2020b) was prepared following year 4 of the RPWS's implementation. To reduce the overall budget for the study while allowing for a longer period of data collection before conducting analyses to identify relationships between rehabilitation efforts and improving receiving water conditions, a trend analysis report following 6 years of study implementation will not be prepared. It is anticipated that trend analysis reports would still be prepared following 8 and 10 years of study implementation.

- The Evans Creek watershed is identified as an Application Watershed in the QAPP for the RPWS because it was prioritized by the County for rehabilitation efforts at the onset of the study; specifically, the County constructed two stormwater detention ponds within the watershed in WY2017. Monitoring has subsequently occurred at individual stations within this watershed over the period extending from WY2016 through WY2021. The

performance of these ponds for improving receiving water conditions was analyzed in the trend analysis report that was prepared after 4 years of study implementation. Results from this analysis indicated the ponds are generally providing no measurable benefit to the creek. Because the County is not planning to implement any additional rehabilitation efforts within the Evans Creek watershed in the short-term, monitoring at all stations within this watershed has been suspended.

- The QAPP for the RPWS indicates physical habitat and sediment quality monitoring should occur every year through the anticipated 10-year time frame for study implementation. To reduce the overall budget, a decision was made to implement this monitoring every other year after WY2021. This change was deemed to be acceptable because large, year-to-year changes are not anticipated for these categories of monitoring.

The deviations identified above were made with concurrence from the SAM program coordinator and the TAC for the RPWS.

MONITORING RESULTS SUMMARY

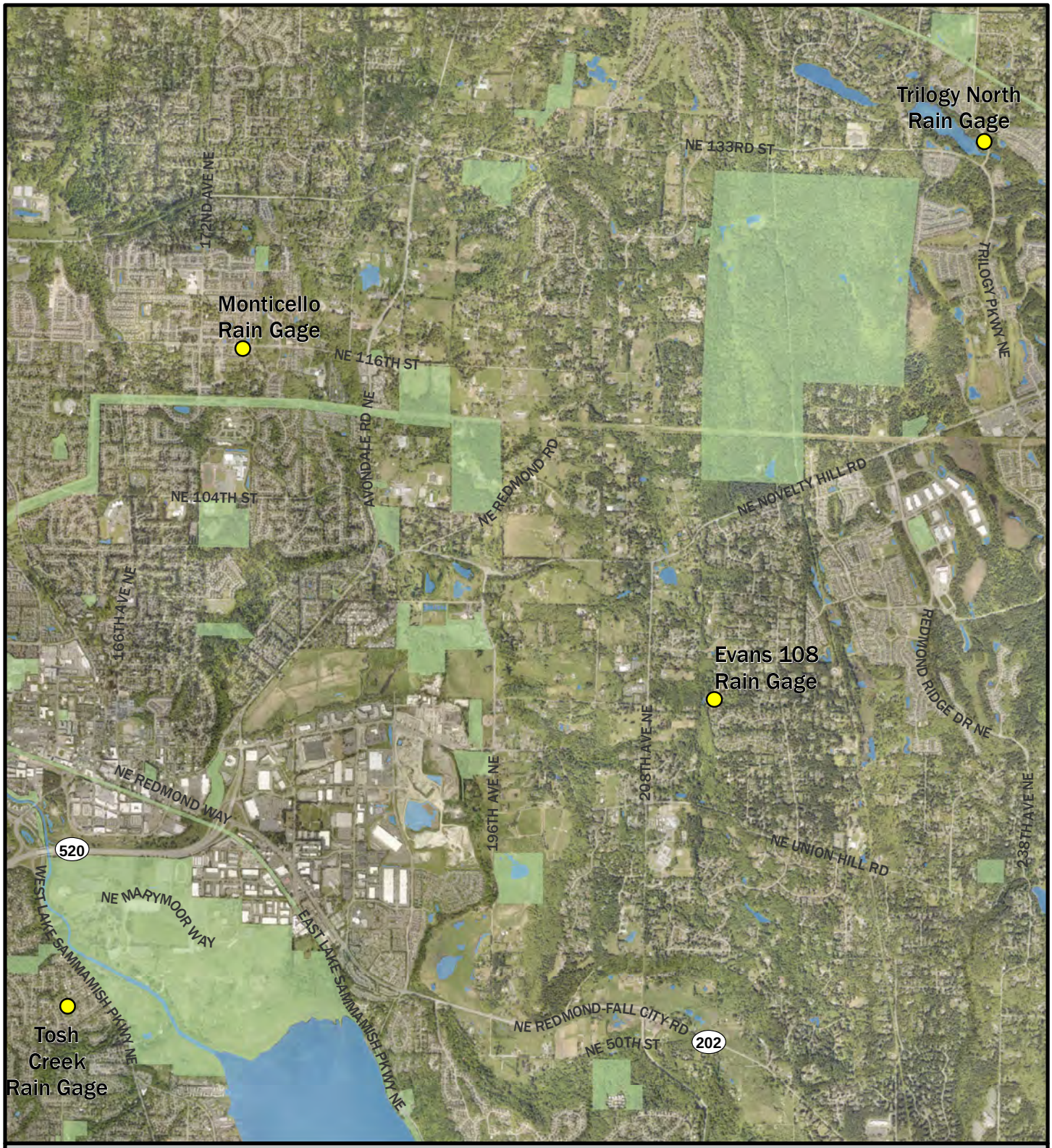
This section summarizes results for the Status and Trends Monitoring component of the RPWS from monitoring that was conducted over WY2021; as noted previously, no monitoring for the Effectiveness Monitoring component of the study occurred over this period. The presentation of these results is organized under separate subsections for the following monitoring categories: hydrologic, water quality, physical habitat, sediment quality, and biological. As noted in the *Introduction* section of this document, trend analyses reports will be prepared to summarize the results of statistical analyses that will be performed on the compiled data from all previous years of monitoring to detect potential relationships between rehabilitation efforts and improved receiving water conditions. Therefore, this data summary report does not provide detailed analyses of the monitoring results from WY2021. A trend analysis report (Herrera 2020b) was prepared following year 4 of the RPWS's implementation. It is anticipated that additional trend analysis reports will be prepared following years 8 and 10 of the RPWS' implementation.

HYDROLOGIC MONITORING

Hydrologic monitoring for WY2021 initiated on October 1, 2020, at the 14 fixed monitoring stations that are identified in the *Experimental Design* section of this document and continued through September 30, 2021. In addition, continuous precipitation monitoring occurred over the same period at four separate precipitation monitoring stations: three stations were established for the RPWS – Tosh, Monticello, and Evans; and one station is maintained by the County for other purposes – Trilogy (Figure 9). Each station is used for measuring precipitation in the watershed for a specific creek as follows:

- Tosh station: Tosh Creek and Country Creek
- Monticello station: Tyler Creek and Monticello Creek
- Evans station: Evans Creek
- Trilogy station: Seidel Creek and Colin Creek

Line plots showing the continuous flow and precipitation data collected at each station are provided in Appendix B. The quality assurance review memorandum for these data is provided in Appendix C, while Appendix D documents the discharge rating tables that were used to estimate flow at each station. The quality assurance review memorandum summarizes the results of the quality assurance review of hydrologic data collected for the WY2021 and through the end of the 2021 calendar year (December 31, 2021). As documented in the quality assurance review memorandum, the continuous flow data at each station was rated as either "fair" or "good."



Legend

- Precipitation Monitoring Stations
- Water body
- Park

Figure 9.
Redmond Paired Watershed Study
Precipitation Monitoring Locations.

N

0 1,825 3,650 7,300 Feet

HERRERA

King County Aerial (2019)

K:\Projects\Y2014\14-05806-000\Project\Report\Figure9_PrecMonitorLoc_RPWP.mxd (5/4/2020)

Two stations had significant gaps in the continuous flow data record (Table 4). The COLM station had a gap extending approximately 3 months during a period of no flow when the creek was dry. To fill this gap, missing values were replaced with 0 cubic feet per second (cfs). The SEIMS station had a gap of approximately 1 month due to a probe malfunction. This gap was filled using data from a backup probe that was installed by the County at this station.

Table 4. Gaps in Continuous Flow Data.[a]

Station	Gap Start Date, Time[b]	Gap Stop Date, Time[b]	Gap Duration in Hours	Flow Estimation Method
COLM[a]	7/11/21, 00:00	10/9/21, 00:00	2,160	No flow estimation method applicable. Period of no flow.
SEIMS	12/24/20, 00:00	1/30/21, 10:00	898	Gap filled with readings from backup U20 probe.

[a] Gaps in data reported for the water year (October 1, 2020, through September 30, 2021).

[b] All times are reported as Pacific Standard Time.

Once a complete data record was available for all the stations using either estimated or measured flow, the continuous flow data from each station and the applicable precipitation data were post-processed using a custom program written in Visual Basic that delineates the start and stop time of individual storm events based on user selectable storm criteria (e.g., antecedent dry period, minimum rainfall, interevent dry period, etc.). The program then computes the following suite of summary statistics for each storm event:

- Precipitation start and stop times
- Precipitation duration
- Precipitation depth
- Precipitation average intensity
- Precipitation maximum intensity
- Precipitation antecedent dry period
- Flow start and stop times
- Flow duration
- Average flow rate
- Maximum flow rate
- Flow volume

Appendix E provides these summary statistics for the individual storm events that were delineated based on the continuous flow data from each station. Summary statistics computed across all the events for each station are provided in Table 5 to facilitate comparisons of flows across both stations and watersheds. The data from Appendix E are also used to evaluate criteria from the QAPP that serve as guidelines for defining the acceptability of specific storm events for sampling (see description section below).

Table 5. Summary Statistics for Storm Events by Monitoring Station.

Station	Watershed Type	Median Average Flow Rate (cfs)	Maximum Flow Rate (cfs)	Median Flow Volume (cf)	Maximum Flow Volume (cf)
EVALSS	A	1.75	25.12	121,706	1,124,816
EVAMS	A	0.70	8.03	43,695	391,029
MONM	A	1.27	37.00	79,410	1,307,162
MONMN	A	0.42	22.72	25,527	568,353
MONMS	A	0.14	4.45	8,334	161,886
TOSMO	A	0.78	26.68	49,560	694,297
TOSMI	A	0.55	10.93	33,234	449,490
COLM	R	0.65	13.26	44,448	1,721,071
SEIMN	R	0.37	3.39	24,186	386,411
SEIMS	R	0.50	6.60	34,266	521,533
COUMO	C	0.41	24.50	26,266	660,946
COUMI	C	0.15	6.16	9,069	172,737
TYLMO	C	0.41	13.99	25,215	607,782
TYLMI	C	0.11	2.99	7,131	182,564

cfs = cubic feet per second; cf = cubic feet

A = Application; R = Reference; C = Control

As described in the *Experimental Design* section of this document, data from the continuous flow monitoring will be processed to calculate a suite of 12 indicators for evaluating hydrologic impacts from urban development (see Table 2). Because many of the indicators are derived using the long-term daily average flow rate, these calculations will be performed in conjunction with the preparation of the trend analyses reports that are described in the *Introduction* section of this document.

WATER QUALITY MONITORING

Pursuant to the QAPP that was prepared for the study (Herrera 2015c), 12 grab samples are to be collected during storm events (three each quarter) at the 14 fixed monitoring stations that are identified in the *Experimental Design* section of this document for water quality monitoring. In the case of events missed due to extended dry periods, the SAM program coordinator and the TAC approved making up storms in future years. In addition, four grab samples are to be collected during base flow (one each quarter) at these same stations. The dates when samples

were collected during storm events are identified in Table 6. Four events were sampled in the first quarter of WY2021 to make up for events that were missed in previous water years due to dry conditions. Only two storm events were sampled in the third quarter of WY2021, and one storm event was sampled in the fourth quarter due to dry conditions. To the extent possible, additional storm events will be sampled in subsequent water years to make up for these missed events.

The following modified criteria from the QAPP (see the *Monitoring Procedures* section) serve as guidelines for defining the acceptability of specific storm events for sampling:

- **Target precipitation depth:** A minimum of 0.25 inch of precipitation over a 24-hour period

- **Antecedent conditions:** A period of at least 12 hours preceding the event with less than 0.04 inch of precipitation

Table 6 compares these criteria to data collected in WY2020 during each sampled storm event from the precipitation monitoring stations described in the previous section (Tosh, Monticello, Evans, and Trilogy). As shown, these criteria were met for all storm events sampled over WY2021 with the following exceptions:

- March 18, 2021, event; the precipitation depth ranged from 0.17 to 0.21 inch across all stations. Though below the target of 0.25 inch, this range was deemed close enough to include the data from this event in the final dataset. Furthermore, an appreciable rise in the hydrograph was also documented during the sampling for this event (see description of Appendix F hydrograph analysis in paragraph below).

- June 13, 2021, event; antecedent dry period ranged from 9.4 to 9.5 hours across all stations. Though below the target of 12 hours, this range was deemed close enough to include the data from this event in the final dataset. As documented in Appendix E, the preceding storm event produced approximately 0.24 inch of precipitation over a 3-hour period.

To provide additional information for assessing the acceptability of sampled storm events, line plots showing the actual time samples were collected at each station relative to the storm event hydrograph are provided in Appendix F. These plots show that 49 percent of the samples were collected on the rising limb of the hydrograph; 44 percent were collected at the peak; and 7 percent were collected on the falling limb.

As described in the QAPP for the RPWS (Herrera 2015c), base flow samples should be collected following a period of at least 48 hours without rain. Table 6 shows the dates when samples were collected during base flow with a comparison to this criterion using data from the precipitation monitoring stations described in the previous section. This comparison shows the criterion was met during all base flow sampling with one exception; the antecedent dry period for sampling on January 22, 2021, ranged from 26.9 to 32.5 hours across all stations. This range was deemed

close enough to include the data from this event in the final dataset. As documented in Appendix E, the preceding storm event produced approximately 0.06 inch of precipitation over a 5-hour period.

Field data collection forms, chain-of-custody records, laboratory reports, and data quality audit forms from the storm event and base flow sampling during WY2021 are provided in Appendix G. The memorandum documenting results from the quality assurance review that was performed on these data is provided in Appendix H. Based on this review, 97 values were qualified as estimates as documented in Table 7, and no values were rejected. The majority of the qualified values (84) were related to filtration holding times that exceeded the criteria established in the QAPP (Herrera 2015a) from the sampling events on May 27, 2021, and June 13, 2021. These exceedances were unavoidable due to COVID-19 related supply-chain disruptions that made it impossible to purchase filters required for field filtering; therefore, samples were instead filtered by the laboratory. Estimated values will be used with caution in subsequent trend analyses that will be performed for the study.

Appendix I presents tables with the following summary statistics for pollutant concentrations measured in storm event and base flow samples over WY2021:

- N (sample size)
- Minimum
- 25th Percentile
- Median
- 75th Percentile
- Maximum
- Interquartile range
- Percent detected
- Percent exceeding the water quality standard for surface waters of the state of Washington (Ecology 2022), where applicable

In addition, Appendix J presents box and whisker plots that were developed from these same data that show the minimum and maximum values (lower and upper whiskers, respectively), 25th and 75th percentile values (lower and upper box edges, respectively), and median value (line in box). When nondetect values were present in the data, a value of one-half the detection limit was used in the computation of summary statistics.

In addition to the collection of grab samples during storm events and base flow, continuous monitoring of temperature was performed at all 14 of the fixed monitoring stations that are identified in the *Experimental Design* section of this document for water quality monitoring. Continuous monitoring of conductivity was also performed at the following subset of stations: EVALSS, EVAMS, MONM, MONMS, TOSMO, SEIMN, SEIMS, COUMO, and TYLMO. Line plots showing the continuous temperature and conductivity data collected at each of these stations are provided in Appendices K and L, respectively. The line plots for the continuous temperature data also show the 7-day average of the daily maximum temperatures (7-DAYMAX) relative to the applicable aquatic life temperature criterion for surface waters of the state of Washington (Ecology 2022).

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Table 6. Sampling Dates and Comparison to Criteria for Storm Event and Base Flow Sampling.

Water Year Quarter 2020	Event Type	Event Date	Tosh Station[a]			Monticello Station[b]			Evans Station[c]			Trilogy Station[d]		
			Precipitation Duration (hour)	Precipitation Depth[e] (inch)	Antecedent Dry Period[f] (hour)	Precipitation Duration (hour)	Precipitation Depth[e] (inch)	Antecedent Dry Period[f] (hour)	Precipitation Duration (hour)	Precipitation Depth[e] (inch)	Antecedent Dry Period[f] (hour)	Precipitation Duration (hour)	Precipitation Depth[e] (inch)	Antecedent Dry Period[f] (hour)
1	Base	10/7/2020	–	–	73.3	–	–	74.3	–	–	70.9	–	–	72.3
1	Storm	10/13/2020	6.2	0.54	16.6	6.8	0.46	15.4	6.3	0.54	16.9	6.4	0.41	15.9
1	Storm	11/3/2020	8.8	0.98	123.1	7.8	0.78	94.2	27.8	1.09	94.2	7.6	0.71	94.3
1	Storm	12/8/2020	30.5	0.91	186.2	30.5	0.82	186.6	29.4	1.05	187.6	29.3	0.93	187.9
1	Storm	12/21/2020	28.1	2.14	28.2	27.3	2.19	28.2	28.8	2.15	28.3	36.5	2.08	28.1
2	Storm	1/5/2021	16.0	0.94	21.7	16.0	0.93	22.0	16.0	0.84	21.2	20.7	0.95	**9.6**
2	Base	1/22/2021	–	–	**27.4**	–	–	**32.5**	–	–	**27.6**	–	–	**26.9**
2	Storm	3/18/2021	3.3	**0.17**	93.3	6.6	**0.17**	93.8	5.0	**0.20**	93.2	3.9	**0.21**	93.0
2	Storm	3/24/2021	17.4	0.71	54.1	17.7	0.61	53.6	24.2	1.05	52.5	23.8	0.96	46.0
3	Base	4/22/2021	–	–	287.8	–	–	289.8	–	–	288.7	–	–	290.2
3	Storm	5/27/2021	8.2	0.30	63.7	7.8	0.29	68.2	7.8	0.33	63.4	7.9	0.29	63.1
3	Storm	6/13/2021	10.9	0.66	**9.5**	10.8	0.59	**9.5**	10.7	0.73	**9.4**	10.7	0.61	**9.5**
4	Base	7/8/2021	–	–	575.2	–	–	223.8	–	–	578.0	–	–	554.3
4	Storm	9/30/2021	13.8	0.49	46.8	13.8	0.61	39.0	13.7	0.69	40.3	13.8	0.67	**9.9**

[a] Station is used for measuring precipitation in the watersheds for Tosh Creek and Country Creek.

[b] Station is used for measuring precipitation in the watersheds for Tyler Creek and Monticello Creek.

[c] Station is used for measuring precipitation in the watershed for Evans Creek.

[d] Station is used for measuring precipitation in the watersheds for Seidel Creek and Colin Creek.

[e] Criteria for precipitation total is ≥0.25 inch in 12 hours for storm event sampling.

[f] Criteria for antecedent dry period is ≥12 hours with <0.04 inch of rain for storm event sampling and ≥48 hours with no rain for base flow sampling.

NA = not applicable

Bold values indicate events that did not meet criteria for storm event or base flow sampling.

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Table 7. Qualified Results from Discrete Water Quality Sampling.				
Event Date	**Station**	**Water Quality Indicator**	**Reason for Qualification**	**Data Flag**
5/27/21	All locations	Dissolved Organic Carbon Dissolved copper Dissolved zinc	Filtration holding time exceeded	J
6/13/21	All locations	Dissolved Organic Carbon Dissolved copper Dissolved zinc	Filtration holding time exceeded	J
10/07/20	EVAMS	Turbidity fecal coliform	Field duplicate exceedance	J
10/13/20	TOSMI	Fecal coliform	Field duplicate exceedance	J
11/03/20	COLM	Fecal coliform	Field duplicate exceedance	J
12/08/20	MONMN	Fecal coliform	Field duplicate exceedance	J
12/21/20	MONMS	Total phosphorus	Field duplicate exceedance	J
1/05/21	TOSMO	Fecal coliform	Field duplicate exceedance	J
4/22/21	COUMO	TSS Total phosphorus Fecal coliform	Field duplicate exceedance	J
6/13/21	SEIMS	Fecal coliform	Field duplicate exceedance	J
7/08/21	COUMI	Total phosphorus	Field duplicate exceedance	J
9/30/21	MONM	TKN	Field duplicate exceedance	J

J = Value qualified as an estimate based on quality assurance review.

TSS = total suspended solids

As documented in the quality assurance review memorandum (Appendix C), the continuous temperature and conductivity data at each station was rated as either "fair" or "good" with the following exceptions:

- SEIMN: Fair to poor record for conductivity.
- SEIMS: Fair to poor record for conductivity.

In addition, the following substantial gap in the continuous temperature data was noted:

- No data are available for the MONMS station over the period from August 30, 2021, through December 8, 2022.

Finally, the following substantial gaps in the continuous conductivity data were also noted:

- No data are available for the MONMS station over the period from January 22, 2021, through April 16, 2022, and from August 31, 2021, through December 12, 2021.
- No data are available for the SEIMS station over the period from May 27, 2021, through August 27, 2021.
- No data are available for the TYLMO station over the period from November 16, 2020, through September 30, 2021.

PHYSICAL HABITAT MONITORING

Physical habitat monitoring for WY2021 was completed at 17 of the 19 fixed monitoring stations that are identified in the *Experimental Design* section of this document. Monitoring did not occur at two stations (MONT-5 and COLIN-1) because of the creek bed was dry. The sampling dates for the remaining stations are as follows:

- EVALSS 7/22/2021
- EVAMS 7/13/2021
- MONT-1 7/13/2021
- MONT-2 8/27/2021
- MONT-3 8/26/2021
- MONT-4 7/7/2021
- MONT-5 Not Sampled
- TOSH-1 8/31/2021
- TOSH-2 8/5/2021
- TOSH-3 7/29/2021
- TOSH-4 8/11/2021
- COLIN-1 Not Sampled
- SIDL-1 8/11/2021
- SIDL-2 7/27/2021
- SIDL-3 8/10/2021
- CTRY-1 8/4/2021
- CTRY-2 8/30/2021
- TYLR-1 7/21/2021
- TYLR-2 8/23/2021

Compiled field data from this monitoring are presented in Appendix M and the computed indicators for evaluating physical habitat quality are presented in Appendix N. Finally, Appendix O provides tables with summary statistics for the indicators that are organized in the following categories:

- Bed stability (Table O-1)
- Channel dimensions (Table O-2)
- Fish cover (Table O-3)
- Habitat unit dimensions (Table O-4)
- Habitat unit extents (Table O-5)
- Large woody debris (Table O-6)
- Riparian cover (Table O-7)
- Riparian disturbance (Table O-8)
- Riparian vegetation structure (Table O-9)
- Sinuosity (Table O-10)
- Substrate (Table O-11)

SEDIMENT QUALITY MONITORING

Sediment quality monitoring for WY2021 was completed at 17 of the 19 fixed monitoring stations that are identified in the *Experimental Design* section of this document. Two stations (MONT-5 and COLIN-1) could not be sampled because the creek bed was dry. The sampling dates for the remaining stations are as follows:

- EVALSS 7/22/2020
- EVAMS 7/13/2021
- MONT-1 7/13/2021
- MONT-2 8/27/2021
- MONT-3 8/26/2021
- MONT-4 7/7/2021

- MONT-5 Not Sampled
- TOSH-1 8/30/2021
- TOSH-2 8/5/2021
- TOSH-3 7/29/2021
- TOSH-4 8/11/2021
- COLIN-1 Not Sampled
- SIDL-1 8/11/2021
- SIDL-2 7/27/2020
- SIDL-3 8/2/2021
- CTRY-1 8/4/2021
- CTRY-2 8/30/2021
- TYLR-1 7/21/2021
- TYLR-2 8/17/2021

Field data laboratory reports and data quality audit forms from sediment quality sampling in WY2021 are provided in Appendix P. The memorandum documenting results from the quality assurance review that was performed on these data is provided in Appendix Q. Based on this review, one value (total organic carbon for the TOSH-1 station) was qualified as an estimate; and no values were rejected.

Total organic carbon, zinc, and copper concentrations measured in sediment samples are presented in Table 8. Concentrations of PAHs and phthalates are presented in Tables 9 and 10, respectively.

Table 8. Concentrations of Total Organic Carbon, Copper, and Zinc Measured in Sediment Samples.[a]

Station	Watershed Type	Total Organic Carbon (percent)	Copper (mg/Kg)	Zinc (mg/Kg)
EVALSS	A	2.5	29	93
EVAMS	A	5	21	110
MONT-1	A	1.3	37	540
MONT-2	A	1.4	45	1000
MONT-3	A	12	63	1400
MONT-4	A	0.5	54	270
TOSH-1	A	4.1	38	780
TOSH-2	A	3.4	48	1200
TOSH-3	A	2.5	50	1300
TOSH-4	A	3.1	60	1800
SIDL-1	R	1.9	35	94
SIDL-2	R	0.82	36	70
SIDL-3	R	4.7	21	93
CTRY-1	C	3.2	58	890
CTRY-2	C	6.5	32	790
TYLR-1	C	1.6	70	720
TYLR-2	C	3.8	100	940

[a] Samples were processed (sieved) in the field to make two unique samples. The first sample was sieved to less than 2.0 mm and analyzed for multiple organic compounds (PAHs and phthalates) and total-organic carbon. The second sample was sieved to less than 63 µm and analyzed for metals (copper and zinc).

mg/Kg = milligram/kilogram

A = Application

R = Reference

C = Control

BIOLOGICAL MONITORING

Biological monitoring for WY2021 was completed at the 17 of the 19 fixed monitoring stations that are identified in the *Experimental Design* section of this document. Two stations (MONT-5 and COLIN-1) could not be sampled because the creek bed was dry. The sampling dates for the remaining stations are as follows:

- EVALSS 7/22/2021
- EVAMS 7/15/2021
- MONT-1 7/13/2021
- MONT-2 8/27/2021

- MONT-3 8/26/2021
- MONT-4 7/7/2021
- MONT-5 Not Sampled
- TOSH-1 8/30/2021
- TOSH-2 8/5/2021
- TOSH-3 7/29/2021
- TOSH-4 8/11/2021
- COLIN-1 Not Sampled
- SIDL-1 8/11/2021
- SIDL-2 7/27/2021
- SIDL-3 8/2/2021
- CTRY-1 8/4/2021
- CTRY-2 8/30/2021
- TYLR-1 7/21/2021
- TYLR-2 8/17/2021

The laboratory report for biological monitoring in WY2021 is provided in Appendix R. Quality assurance review documentation for these data is provided in Appendix S. Results from this review indicated there were no significant quality assurance issues that would limit the use of the data. The indicators computed from these data for use in evaluating stream health are summarized in Table 11.

Table 9. Concentrations of Polycyclic Aromatic Hydrocarbons Measured in Sediment Samples.[a]

Station	Watershed Type	1-Methyl-naphthalene (mg/Kg)	2-Methyl-naphthalene (mg/Kg)	Ace-naphthene (mg/Kg)	Ace-naphthylene (mg/Kg)	Anthracene (mg/Kg)	Benzo[a]-anthracene (mg/Kg)	Benzo(a)-pyrene (mg/Kg)	Benzo(b)-fluoranthene (mg/Kg)	Benzo(ghi)-perylene (mg/Kg)	Benzo(j,k)-fluoranthene (mg/Kg)	Chrysene (mg/Kg)	Dibenzo(a,h)-anthracene (mg/Kg)	Fluoran-thene (mg/Kg)	Fluorene (mg/Kg)	Indeno-(1,2,3cd)-pyrene (mg/Kg)	Naph-thalene (mg/Kg)	Phenan-threne (mg/Kg)	Pyrene (mg/Kg)	Total PAHs (mg/Kg)
EVALSS	A	0.0071 U	0.0071 U	0.0071 U	0.0071 U	0.0071 U	0.036	0.041	0.057	0.016	0.015	0.04	0.0071 U	0.035	0.0071 U	0.02	0.0071 U	0.0071 U	0.045	0.305
EVAMS	A	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.009	0.0081	0.013	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.018	0.0079 U	0.0079 U	0.0079 U	0.0086	0.016	0.0727
MONT-1	A	0.0066 U	0.0066 U	0.0066 U	0.0066 U	0.0066 U	0.0066 U	0.0066 U	0.0066 U	0.0066 U	0.0066 U	0.0066 U	0.0066 U	0.0066 U	0.0066 U	0.0066 U	0.0066 U	0.0066 U	0.0066 U	0.0066 U
MONT-2	A	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U
MONT-3	A	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.022	0.034	0.025	0.02 U	0.027	0.02 U	0.035	0.02 U	0.02 U	0.02 U	0.02 U	0.033	0.176
MONT-4	A	0.0063 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U
TOSH-1	A	0.0091 U	0.0091 U	0.0091 U	0.0091 U	0.0091 U	0.021	0.028	0.038	0.02	0.014	0.028	0.0091 U	0.053	0.0091 U	0.017	0.0091 U	0.027	0.052	0.298
TOSH-2	A	0.0077 U	0.0077 U	0.0077 U	0.0077 U	0.01	0.046	0.055	0.078	0.037	0.029	0.056	0.0077 U	0.13	0.0077 U	0.037	0.0077 U	0.062	0.1	0.64
TOSH-3	A	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0072	0.032	0.042	0.059	0.032	0.021	0.046	0.0068	0.088	0.0067 U	0.03	0.0067 U	0.047	0.078	0.489
TOSH-4	A	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.0094	0.0095	0.0076 U	0.008	0.0076 U	0.0081	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.009	0.044
SIDL-1	R	0.0083 U	0.0083 U	0.0083 U	0.011	0.012	0.02	0.026	0.022	0.012	0.0083 U	0.021	0.0083 U	0.021	0.0083 U	0.012	0.0083 U	0.013	0.031	0.201
SIDL-2	R	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U
SIDL-3	R	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
CTRY-1	C	0.0071 U	0.0071 U	0.0071 U	0.0071 U	0.025	0.11	0.13	0.17	0.086	0.059	0.13	0.017	0.27	0.0071 U	0.087	0.0071 U	0.13	0.25	1.464
CTRY-2	C	0.0092 U	0.0092 U	0.0092 U	0.0092 U	0.0092 U	0.0092 U	0.0092 U	0.0092 U	0.0092 U	0.0092 U	0.0092 U	0.0092 U	0.0092 U	0.0092 U	0.0092 U	0.0092 U	0.0092 U	0.0092 U	0.0092 U
TYLR-1	C	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U	0.0064 U
TYLR-2	C	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U

[a] Samples were processed (sieved) in the field to make two unique samples. The first sample was sieved to less than 2.0 mm and analyzed for multiple organic compounds (PAHs and phthalates) and total-organic carbon. The second sample was sieved to less than 63 µm and analyzed for metals (copper and zinc).

mg/Kg = milligram/kilogram

A = Application

R = Reference

C = Control

U = Undetected at the detection limit noted

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Table 10. Concentrations of Phthalates Measured in Sediment Samples.[a]							
Station	Watershed Type	bis(2-Ethylhexyl)-phthalate (mg/Kg)	Butylbenzyl-phthalate (mg/Kg)	Diethyl-phthalate (mg/Kg)	Dimethyl-phthalate (mg/Kg)	Di-n-butylphthalate (mg/Kg)	Di-n-octylphthalate (mg/Kg)
EVALSS	A	0.038	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U
EVAMS	A	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U
MONT-1	A	0.12	0.033 U	0.033 U	0.033 U	0.033 U	0.033 U
MONT-2	A	0.14	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
MONT-3	A	1.3	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
MONT-4	A	0.044	0.031 U	0.031 U	0.031 U	0.031 U	0.031 U
TOSH-1	A	0.063	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U
TOSH-2	A	0.25	0.077 U	0.077 U	0.077 U	0.077 U	0.077 U
TOSH-3	A	0.38	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U
TOSH-4	A	1.3	0.076 U	0.076 U	0.076 U	0.076 U	0.076 U
SIDL-1	R	1.3	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U
SIDL-2	R	0.04	0.032 U	0.032 U	0.032 U	0.032 U	0.032 U
SIDL-3	R	0.16	0.057 U	0.057 U	0.057 U	0.057 U	0.057 U
CTRY-1	C	0.25	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
CTRY-2	C	0.12	0.046 U	0.046 U	0.046 U	0.046 U	0.046 U
TYLR-1	C	0.087	0.032 U	0.032 U	0.032 U	0.032 U	0.032 U
TYLR-2	C	0.38	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U

[a] Samples were processed (sieved) in the field to make two unique samples. The first sample was sieved to less than 2.0 mm and analyzed for multiple organic compounds (PAHs and phthalates) and total-organic carbon. The second sample was sieved to less than 63 µm and analyzed for metals (copper and zinc).

mg/Kg = milligram/kilogram

A = Application

R = Reference

C = Control

U = Undetected at the detection limit noted.

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Table 11. Computed Biological Indicators for Evaluating Stream Health.

Station	Watershed Type	Overall Condition	Benthic Index of Biotic Integrity[a]	Total Taxa Richness	Ephemeroptera Richness	Plecoptera Richness	Trichoptera Richness	Clinger Taxa Richness	Long-Lived Taxa Richness	Intolerant Taxa Richness	Percent Dominant (top 3)	Percent Predator Individuals	Percent Tolerant Individuals
EVALSS	A	Good	61.9	36	3	5	8	18	10	5	52.6%	10.0%	4.5%
EVAMS	A	Good	64.2	37	3	7	5	11	10	3	28.9%	20.6%	9.3%
MONT-1	A	Fair	53.1	46	3	7	8	15	6	0	44.0%	8.6%	16.8%
MONT-2	A	Fair	48.6	36	3	3	5	13	6	0	34.0%	19.1%	9.9%
MONT-3	A	Poor	22.5	35	2	3	5	11	4	0	66.1%	3.6%	27.9%
MONT-4	A	Poor	31.9	51	2	2	3	12	5	0	47.1%	10.8%	39.9%
TOSH-1	A	Poor	26.3	26	2	3	3	11	6	0	48.5%	2.9%	18.7%
TOSH-2	A	Poor	27.2	31	2	4	3	9	5	0	51.4%	10.7%	29.7%
TOSH-3	A	Very Poor	8.3	31	2	2	2	6	4	0	69.8%	1.6%	56.8%
TOSH-4	A	Very Poor	11.3	17	1	3	1	3	1	0	68.0%	0.0%	8.0%
SIDL-1	R	Fair	40.8	33	5	2	5	13	4	2	50.5%	8.0%	3.5%
SIDL-2	R	Poor	35.3	14	3	3	2	6	3	3	47.4%	34.2%	13.2%
SIDL-3	R	Fair	40.0	18	3	4	3	10	7	3	53.3%	37.3%	26.7%
CTRY-1	C	Very Poor	7.8	16	1	2	1	2	2	0	79.8%	0.2%	15.4%
CTRY-2	C	Poor	34.8	32	4	5	4	8	3	1	38.1%	4.0%	16.5%
TYL-1	C	Poor	26.5	32	3	3	3	11	5	0	46.1%	7.3%	38.0%
TYL-2	C	Very Poor	8.1	23	1	1	0	3	1	0	58.6%	0.2%	20.2%

[a] Benthic Index of Biotic Integrity scores are on a scale of 0 to 100.

A = Application
R = Reference
C = Control

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APPENDIX A

CMAC System Design Details for Stormwater Detention Ponds in the Monticello Creek Watershed

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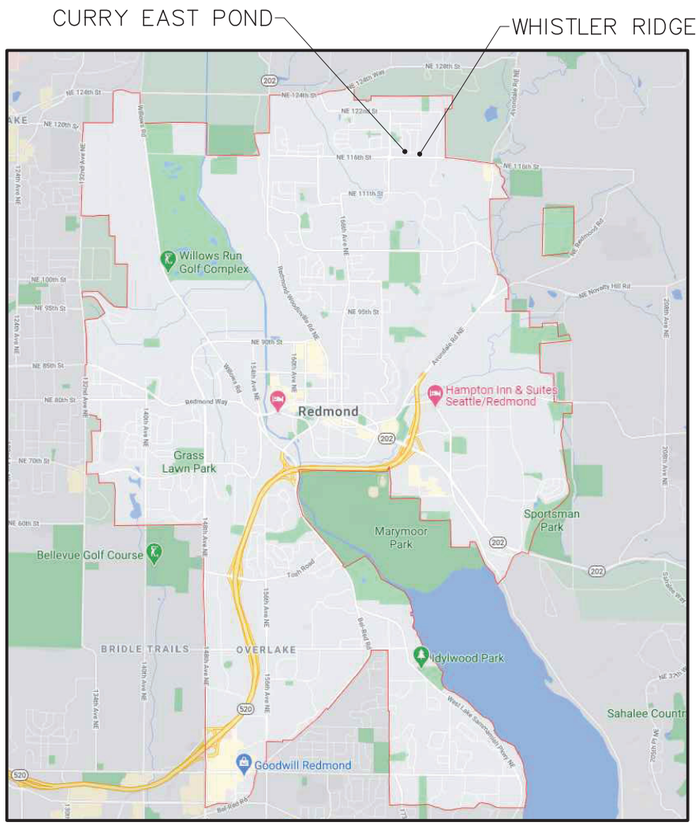
CITY OF REDMOND
CMAC PILOT PROJECT RECONFIGURATION
PROJECT NUMBER 2002.1511.04.101.03



CITY OF REDMOND:
PROJECT MANAGER
PETER HOLTE, 425-556-2822
EMAIL: PHOLTE@REDMOND.GOV

ENGINEERING:
OSBORN CONSULTING, INC.
JOSH VAN WIE, PE
1800 112TH AVE. NE, SUITE 220E
BELLEVUE, WA 98004
(425) 451-4009

VICINITY MAP
N.T.S.

SHEET INDEX

SHEET #	SHEET TITLE
1	COVER SHEET
2	NOTES AND LEGEND
3	SITE PLAN – WHISTLER RIDGE POND
4	SITE PLAN – CURRY EAST POND
5	DETAILS – 1
6	DETAILS – 2

APPROVED FOR CONSTRUCTION

STEVE FLUDE, P.E. DATE
CITY ENGINEER

811 Know what's **below.** Call before you dig.

JOSHUA VAN WIE — STATE OF WASHINGTON — 53254 — REGISTERED PROFESSIONAL ENGINEER — 9/23/2022

DESIGNED BY JVW	Osborn Consulting, Inc.		CMAC PILOT PROJECT RECONFIGURATION
DRAWN BY JAR	Bellevue | Seattle | Spokane		COVER SHEET
CHECKED BY KNJ	www.osbornconsulting.com		JOB# / DWG 10–200002 · DATE SEPT 2022 · SCALE H: N/A V: N/A · SHEET 1 of 6

NO.	DATE	REVISION	BY

FILE NAME: P:\10-200002 CITY OF REDMOND STORMWATER ON-CALL (2021-2023)\TO#05 CMAC PILOT PROJECT PHASE 2\3 CADD\SHEETS\P_10-200002_CVR.DWG
PLOT TIME: 9/23/2022 4:34 PM
USER NAME:RONNIE PIECHOWSKI

GENERAL NOTES:

1. CALL FOR UTILITY LOCATES 1-800-424-5555.
2. SUBMIT A TRAFFIC CONTROL PLAN FOR REVIEW AND APPROVAL PER CITY OF REDMOND STANDARD SPECIFICATIONS.
3. EXISTING UTILITIES WITHIN PROPOSED EXCAVATION LIMITS ARE REQUIRED TO BE "POTHOLED" PRIOR TO CONSTRUCTION. ALL OPEN-CUT STREET SURFACES AND HARD SURFACE AREAS SHALL BE BACKFILLED PER CITY OF REDMOND STANDARD SPECIFICATIONS & STANDARD DETAIL DRAWING. MIXED DESIGNS SHALL BE SUBMITTED FOR REVIEW & APPROVAL.
4. ALL CITY UTILITIES HAVE PRIORITY. REFERENCE PLACEMENT VERTICALLY AND HORIZONTALLY.
5. TRENCH SHORING IS TO MEET MINIMUM SAFETY STANDARDS SET BY THE STATE OF WASHINGTON DEPARTMENT OF LABOR AND INDUSTRIES. [CHAPTER 296-155 WAC.]
6. SEDIMENT AND EROSION CONTROL SHALL MEET THE REQUIREMENTS OF THE REDMOND 2019 STORMWATER TECHNICAL NOTEBOOK. CONTRACTOR IS REQUIRED TO PROVIDE PROTECTION OF THE CITY STORM DRAIN SYSTEM.
7. RESTORATION SHALL MEET THE REQUIREMENT OF CITY OF REDMOND STANDARD SPECIFICATIONS. ROADWAY RESTORATION SHALL INCLUDE STREETS, SIDEWALKS, DRIVEWAYS, CURB & GUTTER, TRAFFIC SIGNS AND MARKINGS, LANDSCAPING, AND IRRIGATION SYSTEMS.
8. THE CONTRACTOR SHALL PREPARE AND SUBMIT FOR APPROVAL THE WORK ACCESS PLAN.
9. HOURS OF WORK PER CITY OF REDMOND STANDARD SPECIFICATIONS

STANDARD CLEARING, GRADING AND TEMPORARY EROSION CONTROL PLAN NOTES:

1. ALL WORK AND MATERIALS TO BE PER CITY OF REDMOND STANDARDS.
2. KEEP OFF-SITE STREETS CLEAN AT ALL TIMES.
3. ADDITIONAL EROSION/SEDIMENT CONTROL MEASURES MAY BE REQUIRED BY CITY INSPECTOR.
4. LOCATIONS SHOWN OF EXISTING UTILITIES ARE APPROXIMATE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE CORRECT LOCATIONS TO AVOID DAMAGE OR DISTURBANCE.
5. ALL GROUND COVER IS TO REMAIN UNDISTURBED OUTSIDE OF CLEARING AREAS.
6. THE TEMPORARY EROSION/SEDIMENT CONTROLS SHALL BE INSTALLED, INSPECTED, AND OPERATING BEFORE ANY GRADING OR LAND CLEARING. THESE CONTROLS MUST BE SATISFACTORILY MAINTAINED UNTIL CONSTRUCTION AND LANDSCAPING ARE COMPLETE.
7. A PRE-CONSTRUCTION MEETING WITH THE CONSTRUCTION DIVISION AND ALL PERMITS MUST BE COMPLETED BEFORE START OF CONSTRUCTION.
8. CLEARING LIMITS SHALL BE APPROVED BY THE CITY ARBORIST PRIOR TO CLEARING.
9. TESC SHOWN ON THE PLANS REPRESENT POTENTIAL LOCATIONS AND IS A DRAFT. CONTRACTOR TO VERIFY SITE CONDITIONS AND COORDINATE WITH CITY IF ANY CHANGES ARE REQUIRED.
10. APPROVAL OF THIS TEMPORARY EROSION/SEDIMENTATION CONTROL (TESC) PLAN DOES NOT CONSTITUTE AN APPROVAL OF PERMANENT ROAD OR DRAINAGE DESIGN.
11. REMOVE ALL TESC MEASURES ONCE ALL WORK IS COMPLETED AND SITE IS PERMANENTLY STABILIZED.

SURVEY NOTES:

VERTICAL DATUM: NAVD 88

ALL DISTANCES SHOWN ARE GROUND DISTANCES UNLESS OTHERWISE NOTED.

ALL TOPOGRAPHIC CONTOURS, UTILITIES, AND OTHER EXISTING FEATURES SHOWN ON THESE PLANS ARE BASED ON RECORD DRAWINGS AND GIS DATA. A TOPOGRAPHIC SURVEY WAS NOT COMPLETED FOR THIS PROJECT. CONTRACTOR SHALL VERIFY SIZE AND LOCATION OF UTILITIES AS NECESSARY DURING CONSTRUCTION.

UTILITY LOCATION SERVICE: 811

ABBREVIATIONS:

ADT	AVERAGE DAILY TRAFFIC
APPROX.	APPROXIMATE, APPROXIMATELY
BMP	BEST MANAGEMENT PRACTICE
BW	BOTTOM OF WALL
CFS	CUBIC FEET PER SECOND
CHNL	CHANNEL
CL	CENTERLINE
CONC	CONCRETE
CMP	CORRUGATED METAL PIPE
CTR	CENTER
CY	CUBIC YARDS
DI	DUCTILE IRON
DIA	DIAMETER
E	EAST, EASTING
ELEV	ELEVATION
FLEX	FLEXIBLE
FT	FOOT, FEET
HPA	HYDRAULIC APPROVAL
HVF	HIGH VISIBILITY FENCE
IE	INVERT ELEVATION
LCL	LOCAL LOW POINT
MAX	MAXIMUM
MPH	MILES PER HOUR
MON	MONUMENT
N	NORTH, NORTHING
N.T.S.	NOT TO SCALE
OHWM	ORDINARY HIGH WATER MARK
RJ	RESTRAINED JOINT
ROW	RIGHT OF WAY
RXR	RAILROAD
S	SOUTH
SF	SQUARE FEET
STA.	STATION
SSMH	SANITARY SEWER MANHOLE
TBM	TEMPORARY BENCHMARK
TW	TOP OF WALL
TYP	TYPICAL
UG	UNDERGROUND
W	WEST
XFMR	TRANSFORMER

LEGEND

PROPOSED

- CG — CLEARING AND GRUBBING LIMITS
- P — RIGID POWER CONDUIT, TRENCHED
- COMM — RIGID COMM CONDUIT, TRENCHED
- ACTUATED VALVE

EXISTING

- ROAD CENTER LINES
- PROPERTY LINES
- SD — STORM DRAIN LINE
- W — WATER LINE
- P — POWER LINE
- COMM — COMM LINE
- SS — SANITARY SEWER LINE
- X — X — FENCE
- 220 — CONTOUR LINE
- FLOW DIRECTION
- LS — STRUT-MOUNTED LEVEL SENSOR (LS)
- PRE-MOUNTED CONTROL PANEL AND SOLAR KIT
- ACTUATED VALVE

JOSHUA VAN WIE
STATE OF WASHINGTON
53254
REGISTERED
PROFESSIONAL ENGINEER
9/23/2022

FILE NAME: P:\10-200002 CITY OF REDMOND STORMWATER ON-CALL (2021-2023)\TO#05 CMAC PILOT PROJECT PHASE 2\3 CADD\SHEETS\P_10-200002_NOTES.DWG
PLOT TIME: 9/23/2022 4:35 PM
USER NAME:RONNIE PIECHOWSKI

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DRAWN BY	JVW						
CHECKED BY	DATE						
KNJ		NO.	DATE	REVISION		BY	

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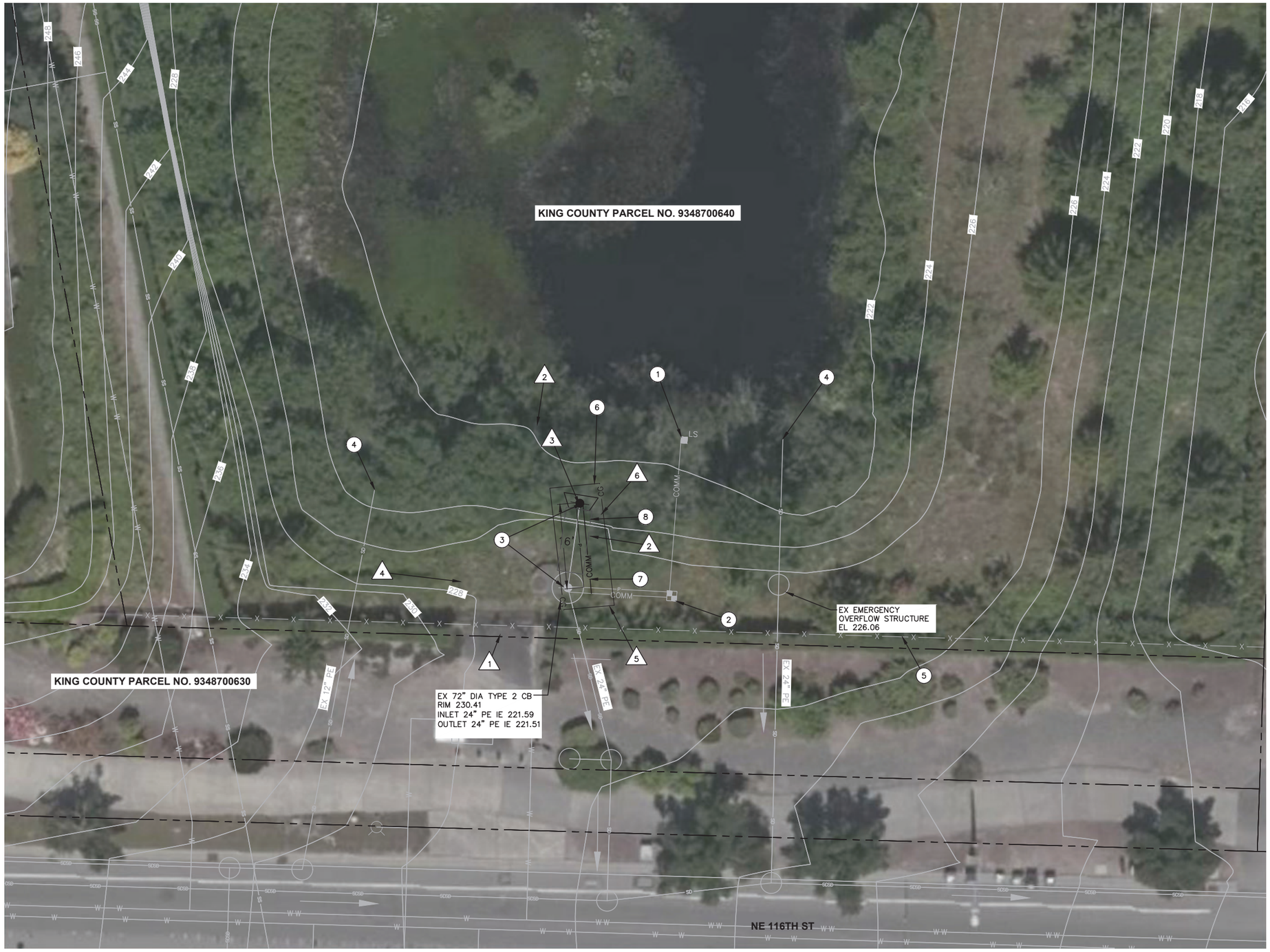
CityofRedmond WASHINGTON

CMAC PILOT PROJECT RECONFIGURATION

NOTES AND LEGEND

JOB# / DWG	10-200002
DATE	SEPT 2022
SCALE	H: N/A V: N/A
SHEET	2 of 6



SITE PREPARATION AND TESC NOTES:

1. EXISTING GATE TO BE USED FOR CONSTRUCTION ACCESS.
2. EXISTING TREES/VEGETATION TO REMAIN PER REDMOND ZONING CODE 21.72.070. TREE LIMBS LESS THAN 1-INCH DIAMETER CAN BE REMOVED WITH APPROVAL FROM THE CITY OF REDMOND. TREE BRANCHES MAY BE TRIMMED AS NEEDED. TREES ADJACENT TO CONDUIT TRENCHING SHALL BE PROTECTED PER CITY OF REDMOND STANDARD DETAIL 507 TREE PROTECTION FENCE DETAIL.
3. DEWATER POND OR USE GRAVEL BAGS TO CUT OFF FLOW DURING CONSTRUCTION. USE SEDIMENT TRAP AS NEEDED TO PREVENT ANY SEDIMENT FROM ENTERING PIPE TO CONTROL STRUCTURE. IN CASE OF RAIN EVENT, CONTRACTOR TO PREPARE AND IMPLEMENT WET WEATHER PLAN PER SPECIFICATIONS.
4. APPROXIMATE LOCATION FOR MATERIALS STAGING. RESTORE STAGING AREA TO EXISTING CONDITION OR BETTER.
5. RESTORE DISTURBED AREAS TO EXISTING CONDITION OR BETTER.
6. TREE REMOVAL IS NOT EXPECTED TO BE REQUIRED AT WHISTLER RIDGE SITE. CONTRACTOR SHALL COORDINATE WITH CITY ARBORIST IF TREE REMOVAL APPEARS NECESSARY.

(##) CONSTRUCTION NOTES:

1. EXISTING WATER LEVEL SENSOR TO REMAIN AS-IS.
2. EXISTING CONTROL PANEL TO REMAIN AS-IS.
3. INSTALL HEADWALL AND WING WALLS PER DETAIL 4 ON SHEET 5. REMOVE ACTUATED VALVE FROM EXISTING CONTROL STRUCTURE AND INSTALL ON EXISTING POND OUTLET AND PROPOSED HEADWALL PER DETAIL 1 ON SHEET 5. INSTALL TRASH RACK PER DETAIL 1 ON SHEET 5. PATCH THE HOLE OF THE EXISTING CONTROL STRUCTURE.
4. EXISTING PIPE INLET TO REMAIN AS-IS.
5. EXISTING FENCE TO REMAIN AS-IS.
6. CLEARING LIMITS. TOTAL AREA OF CLEARING AND GRADING IS 400 SQUARE FEET FOR WHISTLER RIDGE POND.
7. INSTALL NEW POWER AND COMMUNICATION CONDUITS AND FITTINGS TO CONNECT TO EXISTING CONDUITS. INSTALL NEW WIRE FOR POWER AND COMMUNICATION FROM CONTROL PANEL TO ACTUATED VALVE. CONTRACTOR MAY ADJUST CONDUIT ROUTE IN FIELD AS NEEDED TO AVOID INSTALLING WITHIN TREE DRIP LINES.
8. PROVIDE MINIMUM 5-FT-WIDE PATHWAY FOR VALVE MAINTENANCE ACCESS. PATHWAY SHOULD BE CLEAR OF VEGETATION AND DEBRIS.

N

SCALE: 1" = 10'
0 10 20 30

JOSHUA VAN WIE
STATE OF WASHINGTON
53254
REGISTERED
PROFESSIONAL ENGINEER
9/23/2022

FILE NAME: P:\10-200002 CITY OF REDMOND STORMWATER ON-CALL (2021-2023)\TO#05 CMAC PILOT PROJECT PHASE 2\3 CADD\SHEETS\P_10-200002_SITE -1.DWG
PLOT TIME: 9/23/2022 4:35 PM
USER NAME:RONNIE PIECHOWSKI

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CityofRedmond WASHINGTON

CMAC PILOT PROJECT RECONFIGURATION
NE 116TH STREET AND 176TH AVENUE NE
SITE PLAN - WHISTLER RIDGE POND

JOB# / DWG	DATE
10-200002	SEPT 2022
SCALE: H: 1"=10' V: N/A	SHEET: 3 of 6

SITE PREPARATION AND TESC NOTES:

1. EXISTING GATE TO BE USED FOR CONSTRUCTION ACCESS.
2. EXISTING TREES/VEGETATION TO REMAIN PER REDMOND ZONING CODE 21.72.070. TREE LIMBS LESS THAN 1–INCH DIAMETER CAN BE REMOVED WITH APPROVAL FROM THE CITY OF REDMOND. TREE BRANCHES MAY BE TRIMMED AS NEEDED. TREES ADJACENT TO CONDUIT TRENCHING SHALL BE PROTECTED PER CITY OF REDMOND STANDARD DETAIL 507 TREE PROTECTION FENCE DETAIL..
3. DEWATER POND OR USE GRAVEL BAGS TO CUT OFF FLOW DURING CONSTRUCTION. USE SEDIMENT TRAP AS NEEDED TO PREVENT ANY SEDIMENT FROM ENTERING PIPE TO CONTROL STRUCTURE. IN CASE OF RAIN EVENT, CONTRACTOR TO PREPARE AND IMPLEMENT WET WEATHER PLAN PER SPECIFICATIONS.
4. APPROXIMATE LOCATION FOR MATERIALS STAGING. RESTORE STAGING AREA TO EXISTING CONDITION OR BETTER.
5. RESTORE DISTURBED AREAS TO EXISTING CONDITION OR BETTER.
6. REMOVAL OF ALDER TREES (WITH DIAMETERS LESS THAN 6–INCHES AT 4.5–FOOT HEIGHT) IS EXPECTED TO BE REQUIRED FOR TRENCH EXCAVATION WITHIN THE CLEARING LIMITS. CONTRACTOR SHALL COORDINATE WITH CITY ARBORIST PRIOR TO TREE REMOVAL TO IDENTIFY TREES TO BE REMOVED. IF DIRECTED BY THE ENGINEER, TRENCH EXCAVATION WITHIN THE DRIPLINE OF ANY TREES TO BE PROTECTED SHALL BE COMPLETED VIA HAND LABOR PER THE SPECIFICATIONS.

CONSTRUCTION NOTES:

1. EXISTING WATER LEVEL SENSOR TO REMAIN AS–IS.
2. EXISTING CONTROL PANEL TO REMAIN AS–IS.
3. INSTALL HEADWALL AND WING WALLS PER DETAIL 4 ON SHEET 5. REMOVE ACTUATED VALVE FROM EXISTING CONTROL STRUCTURE AND INSTALL ON EXISTING POND OUTLET AND PROPOSED HEADWALL PER DETAIL 1 ON SHEET 5. INSTALL TRASH RACK PER DETAIL 1 ON SHEET 5. PATCH THE HOLE OF THE EXISTING CONTROL STRUCTURE.
4. EXISTING PIPE INLET TO REMAIN AS–IS.
5. EXISTING FENCE TO REMAIN AS–IS.
6. CLEARING LIMITS. TOTAL AREA OF CLEARING AND GRADING IS 1,375 SQUARE FEET FOR WHISTLER RIDGE POND.
7. PROPOSED CONDUIT TO PASS OVER EXISTING STORM DRAIN PIPES. APPROXIMATE DEPTH TO TOP OF STORM PIPES IS 5 FEET. MAINTAIN MINIMUM OF 12–INCH SEPARATION BETWEEN CONDUIT AND STORM DRAIN.
8. INSTALL NEW POWER AND COMMUNICATION CONDUITS AND FITTINGS TO CONNECT TO THE EXISTING CONDUITS. INSTALL NEW WIRES FOR POWER AND COMMUNICATION FROM CONTROL PANEL TO ACTUATED VALVE. CONTRACTOR MAY ADJUST CONDUIT ROUTE IN FIELD AS NEEDED TO AVOID INSTALLING WITHIN TREE DRIP LINES.
9. REMOVE WIRES FROM EXISTING CONDUITS AND ABANDON CIRCUITS.
10. PROVIDE MINIMUM 5–FT–WIDE PATHWAY FOR VALVE MAINTENANCE ACCESS. PLACE APPROXIMATELY 35 CY OF FILL PER APPROXIMATE PLAN EXTENTS AND DETAIL 1 ON SHEET 5.
11. AREA TO BE REGRADED AT 3:1 SLOPE.

N

SCALE: 1" = 10'
0 10 20 30

JOSHUA VAN WIE
STATE OF WASHINGTON
53254
REGISTERED
PROFESSIONAL ENGINEER
9/23/2022

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PLOT TIME: 9/23/2022 4:36 PM
USER NAME:RONNIE PIECHOWSKI

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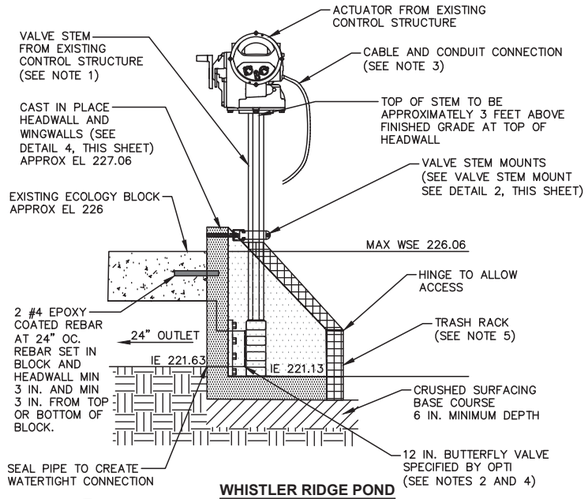
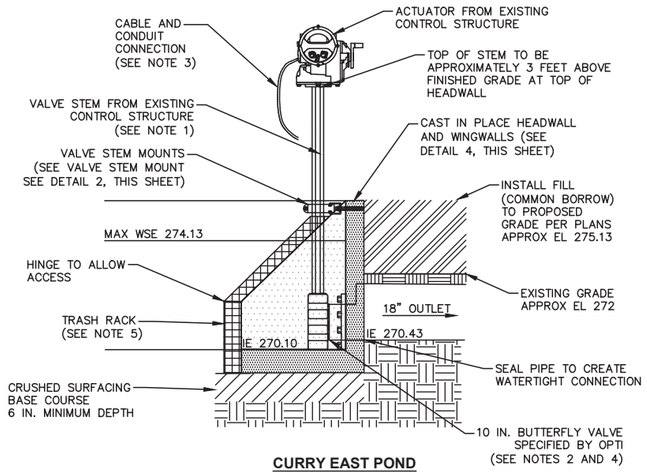
CMAC PILOT PROJECT RECONFIGURATION
174TH PLACE NE NORTH OF NE 116TH STREET
SITE PLAN - CURRY EAST POND

JOB# / DWG	10–200002
DATE	SEPT 2022
SCALE	H: 1"=10' V: N/A
SHEET	4 of 6



WHISTLER RIDGE POND



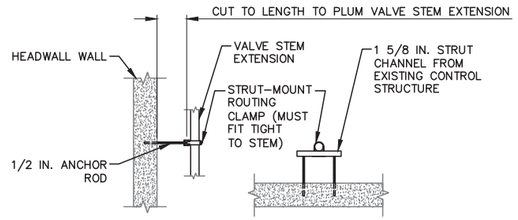
CURRY EAST POND

1/5 ACTUATED VALVE DETAILS

N.T.S.

NOTES:

1. VALVE STEMS TO BE REUSED FROM EXISTING CONTROL STRUCTURES. CONTRACTOR TO SHORTEN STEMS AS NEEDED BY CUTTING AND WELDING FLANGE BACK ONTO SHORTENED STEM. STEMS MAY BE SWITCHED BETWEEN THE TWO SITES IF NEEDED.
2. VALVES SHALL REST ON HEADWALL/WINGWALL CONCRETE PAD. CONTRACTOR TO TRENCH CONCRETE PAD AS NEEDED TO ALLOW FLANGE CLEARANCE AND PROVIDE VALVE SUPPORT
3. IP68 CORD GRIP REQUIRED FOR CONNECTION BETWEEN WIRE AND EXISTING WIRE TO CONTROL PANEL. ALL CONDUIT CONNECTIONS TO BE IP68 RATED AND SEALED WITH POLYWATER FOAM DUCT SEALANT. CONDUIT SIZES TO MATCH EXISTING. ACTUATOR CONDUIT PORT IS ¾ IN. INTERNAL THREADED, DOWNSIZE CONDUIT IF NEEDED.
4. FLANGE TO VALVE CONNECTION: 12 x 7/8 – 9 UNC FLANGE CONNECTOR BOLTS SHALL BE TIGHTENED TO 238 – 354 LB–IN TORQUE. ALL HARDWARE TO BE #304 SS.
5. TRASH RACK TO BE STAINLESS STEEL. MAY EITHER BE A MANUFACTURED TRASH RACK OR WELDED BY THE CONTRACTOR. HORIZONTAL SPACE BETWEEN BARS SHOULD BE 4 INCHES. MUST INCLUDE HINGES TO ALLOW FOR ACCESS TO VALVE.



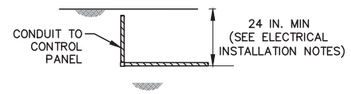
PROFILE VIEW **PLAN VIEW**

2/5 VALVE STEM MOUNT DETAIL

N.T.S.

NOTES:

1. ALL BRACKET MATERIALS MUST BE #304 STAINLESS STEEL.
2. ½ IN. ANCHOR ROD TO BE SET USING INJECTABLE ADHESIVE ANCHOR WITH AUTO CLEANING DRILL BIT OR CLEAN HOLE THOROUGHLY WITH COMPRESSED AIR. USE QUIKRETE HIGH STRENGTH ANCHORING EPOXY (PRODUCT #8620–31) OR EQUIVALENT. ROD SET IN CONCRETE MIN 3 IN AND MIN 3 IN BELOW TOP OF HEADWALL.



3/5 CONDUIT BURIAL DETAIL

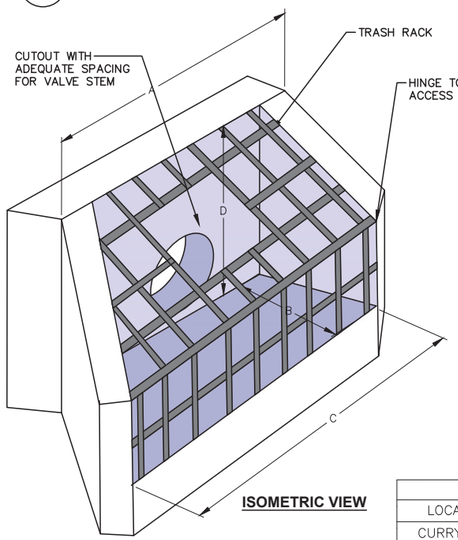
N.T.S.

NOTES:

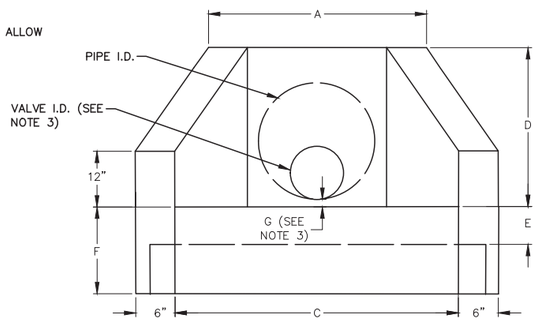
1. ALL BURIED CONDUIT SHALL BE SPECIFIED ACCORDING TO ELECTRICAL INSTALLATION NOTE 6 ON PAGE 7.
2. ALL CONDUIT PENETRATIONS ARE TO BE IP68 RATED.
3. REPLACED SOIL SHALL BE COMPACTED TO AT LEAST 95% OF ASTM D698. BACKFILL SHALL BE FREE OF ROCKS LARGER THAN 8 INCHES IN DIAMETER.

4/5 CAST IN PLACE HEADWALL AND WINGWALL

N.T.S.

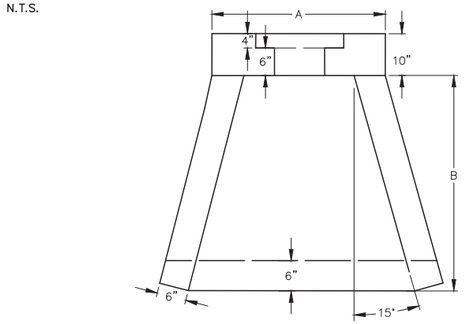


ISOMETRIC VIEW

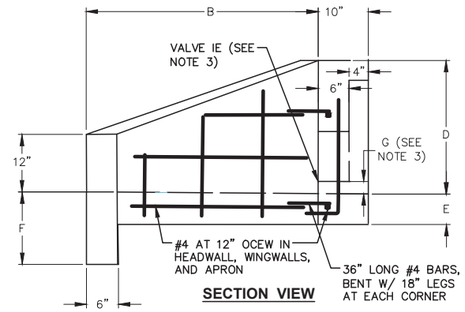


FRONT VIEW

HEADWALL AND WING WALL WITH APRON									
LOCATION	PIPE I.D.	VALVE I.D.	A	B	C	D	E	F	G
CURRY EAST	18"	10"	35"	66"	57"	82"	7"	18"	3.25"
WHISTLER RIDGE	24"	12"	42"	78"	70"	93"	8"	18"	3.5"



PLAN VIEW



SECTION VIEW

SPECIFICATIONS:

1. CONCRETE: CLASS "C" WITH DESIGN STRENGTH OF 4000 PSI.
2. STEEL REINFORCEMENT: ASTM A–615,GRADE 60 WITH MINIMUM 2" CLEARANCE FROM EDGE OF CONCRETE.
3. HEADWALL AND WINGWALL TO BE INSTALLED SO ACTUATED VALVE INVERT ELEVATION MATCHES OUTLET PIPE INVERT ELEVATION. ACTUATED VALVE SHALL BE SUPPORTED BY HEADWALL/WINGWALL CONCRETE PAD. CONTRACTOR TO MEASURE ACTUATED VALVE TO FIELD VERIFY DIMENSION "G" PRIOR TO CONSTRUCTION.
4. ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4".
5. HEADWALL/WINGWALL DIMENSIONS MAY BE FIELD ADJUSTED AS NEEDED TO MATCH EXISTING CONDITIONS IF APPROVED BY THE ENGINEER.
6. HEADWALL WINGWALL FOUNDATION TO BE PREPARED ACCORDING TO THE SPECIFICATIONS.
7. PIPE SHALL BE GROUTED INTO HEADWALL WITH CEMENTITIOUS MATERIAL.

JOSHUA VAN WEY — STATE OF WASHINGTON — 53254 — REGISTERED PROFESSIONAL ENGINEER — 9/23/2022

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DRAWN BY JAR			**CMAC PILOT PROJECT RECONFIGURATION**
CHECKED BY KNJ			**DETAILS - 1**

NO.	DATE	REVISION	BY

JOB# / DWG	DATE
10–200002	SEPT 2022
SCALE H: N/A V: N/A	SHEET 5 of 6

FILE NAME: P:\10–200002 CITY OF REDMOND STORMWATER ON–CALL (2021–2023)\TO#05 CMAC PILOT PROJECT PHASE 2\3 CADD\SHEETS\P_10–200002_DETLS –1.DWG
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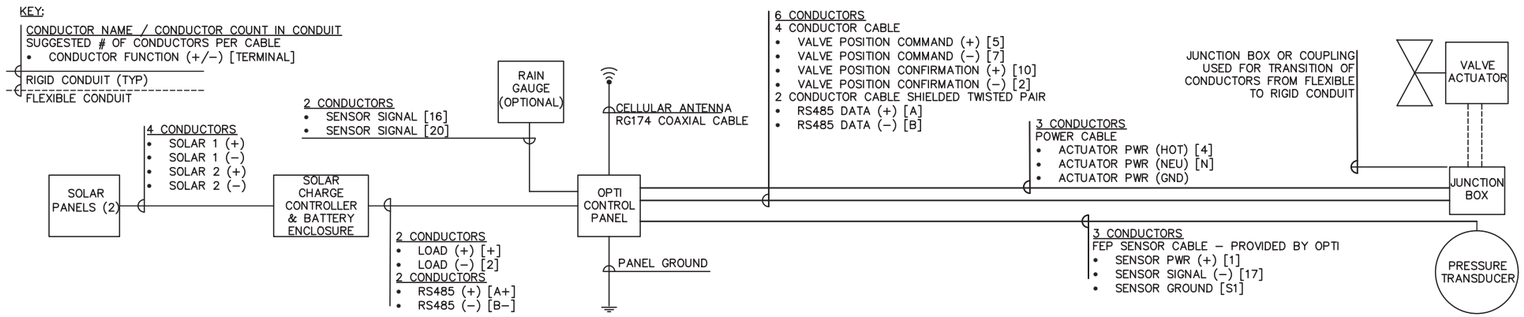

24VDC WIRING GUIDE - V 2.0.4

CONTROL PANEL TERMINAL	EXTERNAL DEVICE TERMINAL	WIRE COLOR/CABLE LOCATION	PURPOSE	PROCURED BY
SOLAR LOAD CONNECTION				
+	L+	RED (+), LOAD WIRE FROM CHARGE CONTROLLER	SOLAR BATTERY POSITIVE (+) POWER	OTHER
2	L–	BLACK (–), LOAD WIRE FROM CHARGE CONTROLLER	SOLAR BATTERY NEGATIVE (–) POWER	OTHER
A+	A	2 CONDUCTOR CABLE, TWISTED PAIR	SOLAR CHARGE CONTROLLER DATA (+)	INSTALLER
B–	B	2 CONDUCTOR CABLE, TWISTED PAIR	SOLAR CHARGE CONTROLLER DATA (–)	INSTALLER
ACTUATOR - ROTORK IQT & IQD SERIES (IQT: 303M2000, IQD: 143M2000)				
4	1	3 CONDUCTOR CABLE	ACTUATOR POWER (+)	INSTALLER
2	2	3 CONDUCTOR CABLE	ACTUATOR POWER (–)	INSTALLER
GROUND LUG	GND SYMBOL	3 CONDUCTOR CABLE	ACTUATOR GROUND	INSTALLER
5	16	4 CONDUCTOR CABLE	VALVE POSITION COMMAND SIGNAL (+)	INSTALLER
7	17	4 CONDUCTOR CABLE	VALVE POSITION COMMAND SIGNAL (–)	INSTALLER
10	15	4 CONDUCTOR CABLE	VALVE POSITION CONFIRMATION SIGNAL (+)	INSTALLER
2	14	4 CONDUCTOR CABLE	VALVE POSITION CONFIRMATION SIGNAL (–)	INSTALLER
A +	27	2 CONDUCTOR CABLE, SHIELDED TWISTED PAIR	RS485 DATA (+)	INSTALLER
B –	28	2 CONDUCTOR CABLE, SHIELDED TWISTED PAIR	RS485 DATA (–)	INSTALLER
PRESSURE TRANSDUCER (4-20mA) - PMC VL2000 SERIES				
1	----------	RED (+), PMC	PRESSURE TRANSDUCER, POWER	OTHER
17	----------	BLACK (–), PMC	PRESSURE TRANSDUCER, SIGNAL	OTHER
S1	----------	GREEN (GND), PMC	PRESSURE TRANSDUCER, GROUNDING	OTHER
RAIN GAUGE - DAVIS				
16	----------	RED	RAIN GAUGE SWITCH	OTHER
20	----------	GREEN	RAIN GAUGE SWITCH	OTHER

ACTUATOR POWER CABLE AWG SPECIFICATIONS

ROTORK IQT500	
WIRE GAUGE	MAX. LENGTH (FT)
8	147
10	92
12	58
14	37
16	23
18	14

MINIMUM CONDUIT SIZE SPECIFICATIONS

NO. CONDUCTORS	MIN. CONDUIT SIZE (IN)
2	1/2
3–6	3/4
7–9	1
10–12	1–1/4

ELECTRICAL INSTALLATION NOTES:

1. DETERMINE IF THERE ARE UNDERGROUND UTILITIES IN THE WORK AREA PRIOR TO EXCAVATION, BY CALLING DIG SAFE AT LEAST 48 HOURS PRIOR TO STARTING WORK. CONTRACTOR SHALL BE LIABLE FOR ANY DAMAGE TO UNDERGROUND UTILITIES CAUSED BY TRENCHING OR EXCAVATION.
2. INSTALLATION OF THE CONTROL PANEL AND ASSOCIATED COMPONENTS (E.G., CABLING, CONDUIT, SENSORS) MUST BE PERFORMED BY A LICENSED ELECTRICIAN. ELECTRICIAN SHALL BE RESPONSIBLE FOR ENSURING THAT THE CONTROL PANEL AND ASSOCIATED COMPONENTS ARE PROPERLY CONNECTED TO THE SOLAR POWER SYSTEM AND THAT CONDUIT AND CABLING IS SIZED AND INSTALLED PER THE NEC.
3. ALL CONDUCTORS SHALL BE IDENTIFIED AT EACH END (LABELED OR COLOR CODED) AND THE IDENTIFIED CONDUCTORS DOCUMENTED IN THE SITE LAYOUT MAP.
4. PENETRATIONS INTO CONTROL PANEL AND BATTERY ENCLOSURE MUST BE IP68 RATED (NO WATER SHALL PENETRATE ANY SEALS). SUBSURFACE TERMINATIONS SHALL BE SEALED WITH POLYWATER CLOSED–CELL FOAM DUCT SEALANT (PROCURED THROUGH OPTI WITH CONTROL PANEL).
5. REFERENCE "ACTUATOR POWER CABLE AWG SPECIFICATIONS" TABLE FOR THE CORRECT CONDUCTOR GAUGE FOR ACTUATOR POWER CONNECTIONS. ALL OTHER CONDUCTORS MUST BE AT LEAST 16AWG.
6. ALL BURIED CONDUIT RUNS SHALL BE RIGID SCH 40 PVC CONDUIT. ALL EXPOSED CONDUIT SHALL BE RIGID SCH 40 PVC OR FLEXIBLE TYPE–UA PVC. BURIED RIGID SCHEDULE 40 CONDUIT SHALL BE INSTALLED WITH A MINIMUM COVER OF AT LEAST 24" IN TRENCH BACKFILL SHALL BE COMPACTED TO 85% MAXIMUM DENSITY PER ASTM D1557, WITH MINIMUM 12" LIFTS.
7. CONDUIT SHALL BE SIZED PER THE NEC TO HAVE AN ADEQUATE CROSS–SECTIONAL AREA FOR INSTALLED CABLES. REFERENCE OPTI PROVIDED TABLE FOR MINIMUM CONDUIT SIZE. ACTUATOR HAS ¾" PORTS FOR CONDUIT, USE REDUCING FITTING IF NEEDED.
8. LEAVE A MINIMUM OF 1 FOOT SPARE CABLING NEATLY COILED IN CONTROL PANEL FOR FUTURE MAINTENANCE OR SYSTEM MODIFICATIONS.
9. LEAVE A MINIMUM 3 FEET LOOP OF FLEXIBLE CONDUIT IN OUTLET STRUCTURE FOR EASE OF FUTURE MAINTENANCE. FLEXIBLE CONDUIT SHALL RUN FROM ACTUATOR TO JUNCTION BOX LOCATED IN OUTLET STRUCTURE. RIGID CONDUIT SHALL RUN FROM JUNCTION BOX TO OPTI CONTROL PANEL.
10. ALL SUBMERGED/SATURATED METAL HARDWARE SHALL BE STAINLESS STEEL. GALVANIZED STEEL MAY BE USED ABOVEGROUND OR IN DRY LOCATIONS.
11. AFTER INSTALLATION, COMPLETE CONTRACTOR INSTALLATION CHECKLIST PROVIDED BY OPTI AND PROVIDE PHOTOS OF ALL INSTALLED EQUIPMENT. SEND SIGNED CHECKLIST AND PHOTOS TO OPTI.
12. CONTRACTOR WILL COMPLETE CONSTRUCTION VERIFICATION AND COMMISSIONING CHECKLIST WITH OPTI REMOTE SUPPORT PRIOR TO ENERGIZING THE SYSTEM. FINAL COMPLETION SHALL BE REACHED WHEN: (1) CONSTRUCTION OF THE SYSTEM PER THE PLANS IS COMPLETE; (2) THE ENGINEER OF RECORD HAS COMPLETED FINAL INSPECTION OF WORK AND ALL NOTED DEFICIENCIES HAVE BEEN CORRECTED TO THE SATISFACTION OF THE ENGINEER OF RECORD, OPTI, AND THE SITE OWNER; AND (3) AN AS–BUILT SKETCH HAS BEEN PROVIDED OF ALL INSTALLED COMPONENTS IF FINAL INSTALL LOCATIONS HAVE VARIED FROM PLANSET.

JOSHUA VAN WIE — STATE OF WASHINGTON — 53254 — REGISTERED PROFESSIONAL ENGINEER — 9/23/2022

DESIGNED BY	JVW	OSBORN CONSULTING INCORPORATED	Osborn Consulting, Inc.
DRAWN BY	JAR		Bellevue | Seattle | Spokane
CHECKED BY	KNJ		www.osbornconsulting.com

NO.	DATE	REVISION	BY

CityofRedmond WASHINGTON

CMAC PILOT PROJECT RECONFIGURATION

DETAILS - 2

JOB# / DWG	DATE
10–200002	SEPT 2022
SCALE: H: N/A V: N/A	SHEET: 6 of 6

FILE NAME: P:\10-200002 CITY OF REDMOND STORMWATER ON-CALL (2021-2023)\TO#05 CMAC PILOT PROJECT PHASE 2\3 CADD\SHEETS\P_10-200002_DETLS -3.DWG
PLOT TIME: 9/23/2022 4:36 PM
USER NAME:RONNIE PIECHOWSKI

APPENDIX B

Line Plots Showing Continuous Flow Data by Watershed

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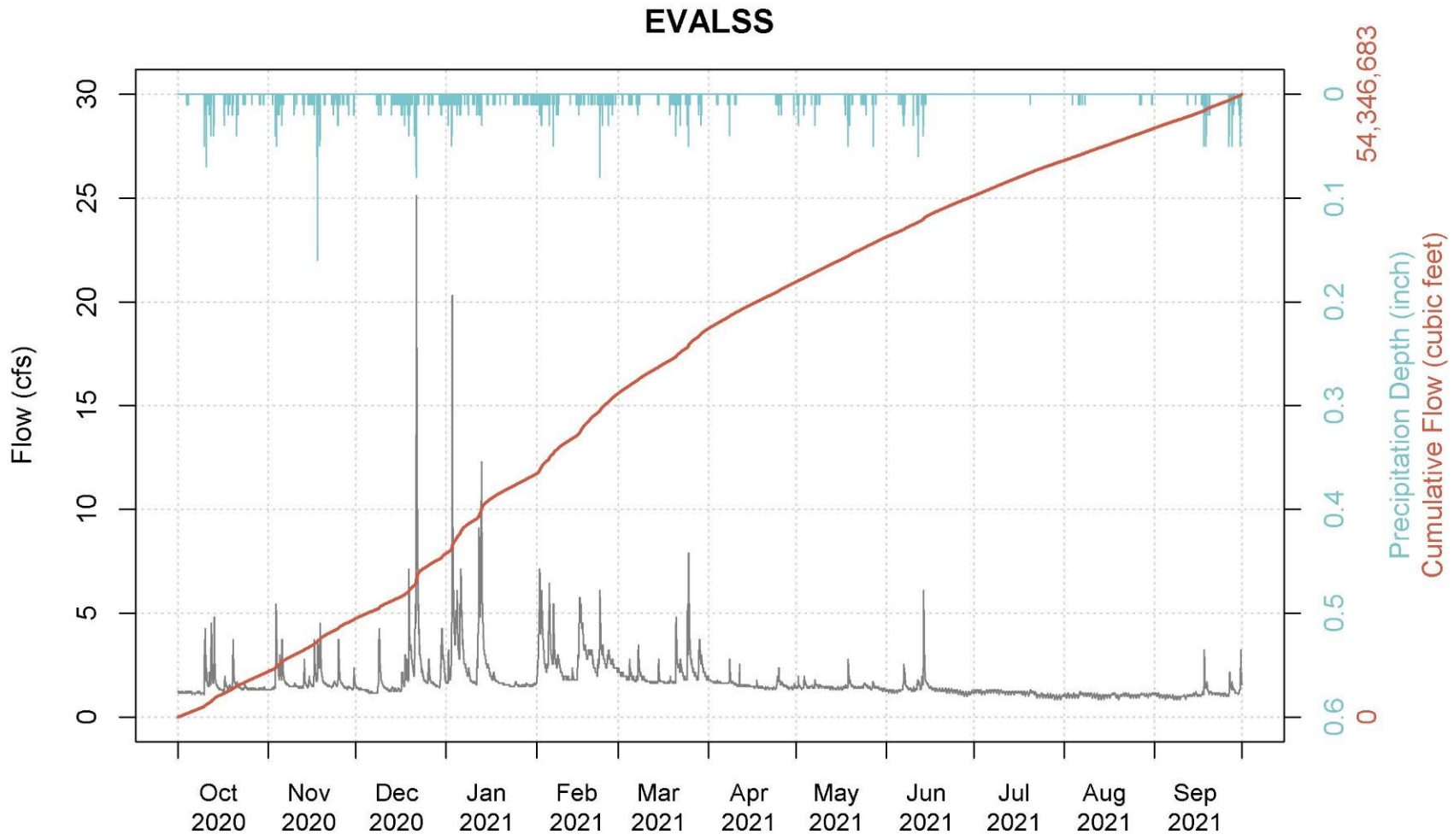

Figure B-1. Continuous Flow, Cumulative Flow, and Precipitation Depth Measured at the EVALSS Station.

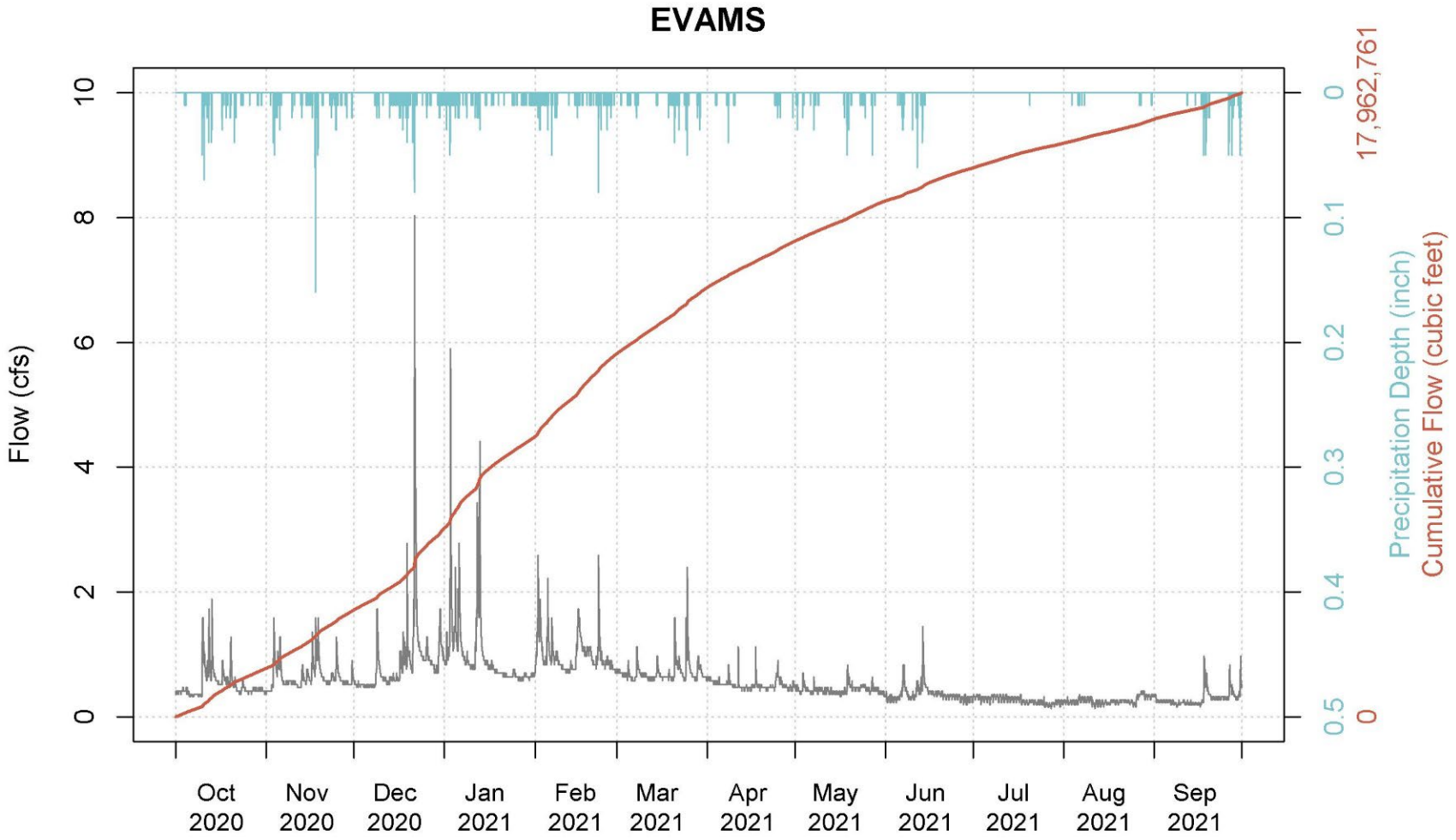

Figure B-2. Continuous Flow, Cumulative Flow, and Precipitation Depth Measured at the EVAMS Station.

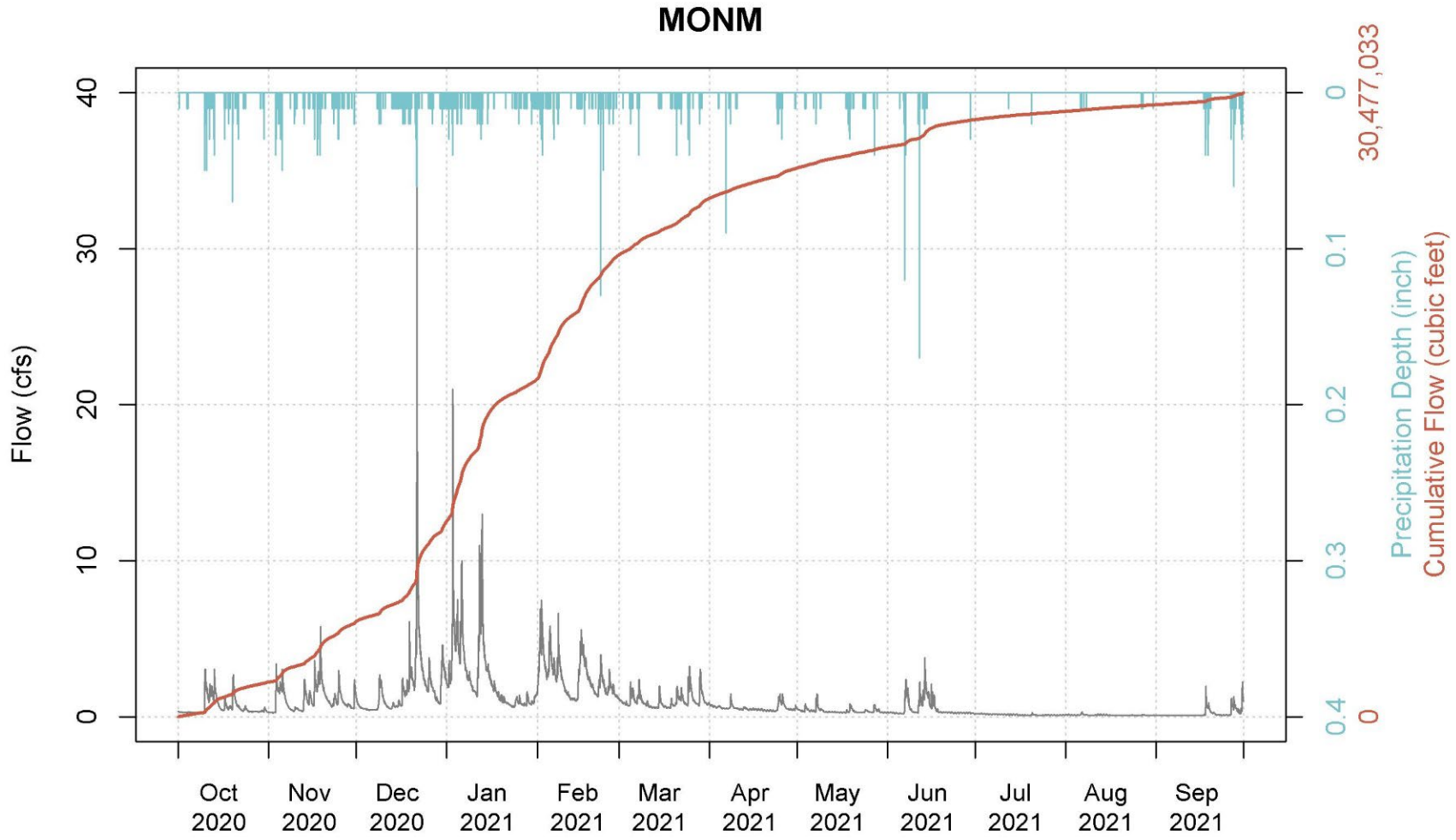

Figure B-3. Continuous Flow, Cumulative Flow, and Precipitation Depth Measured at the MONM Station.

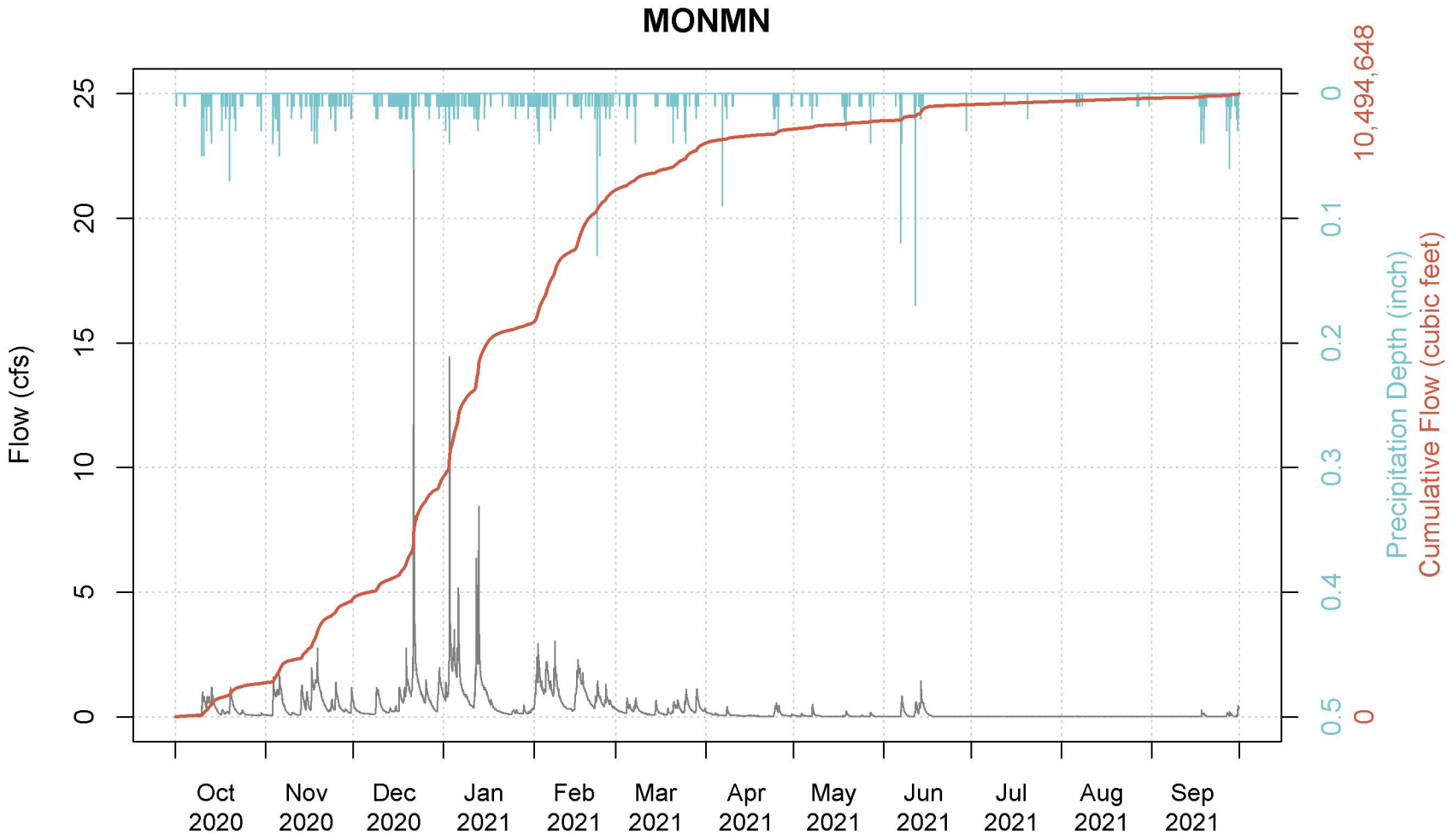

Figure B-4. Continuous Flow, Cumulative Flow, and Precipitation Depth Measured at the MONMN Station.

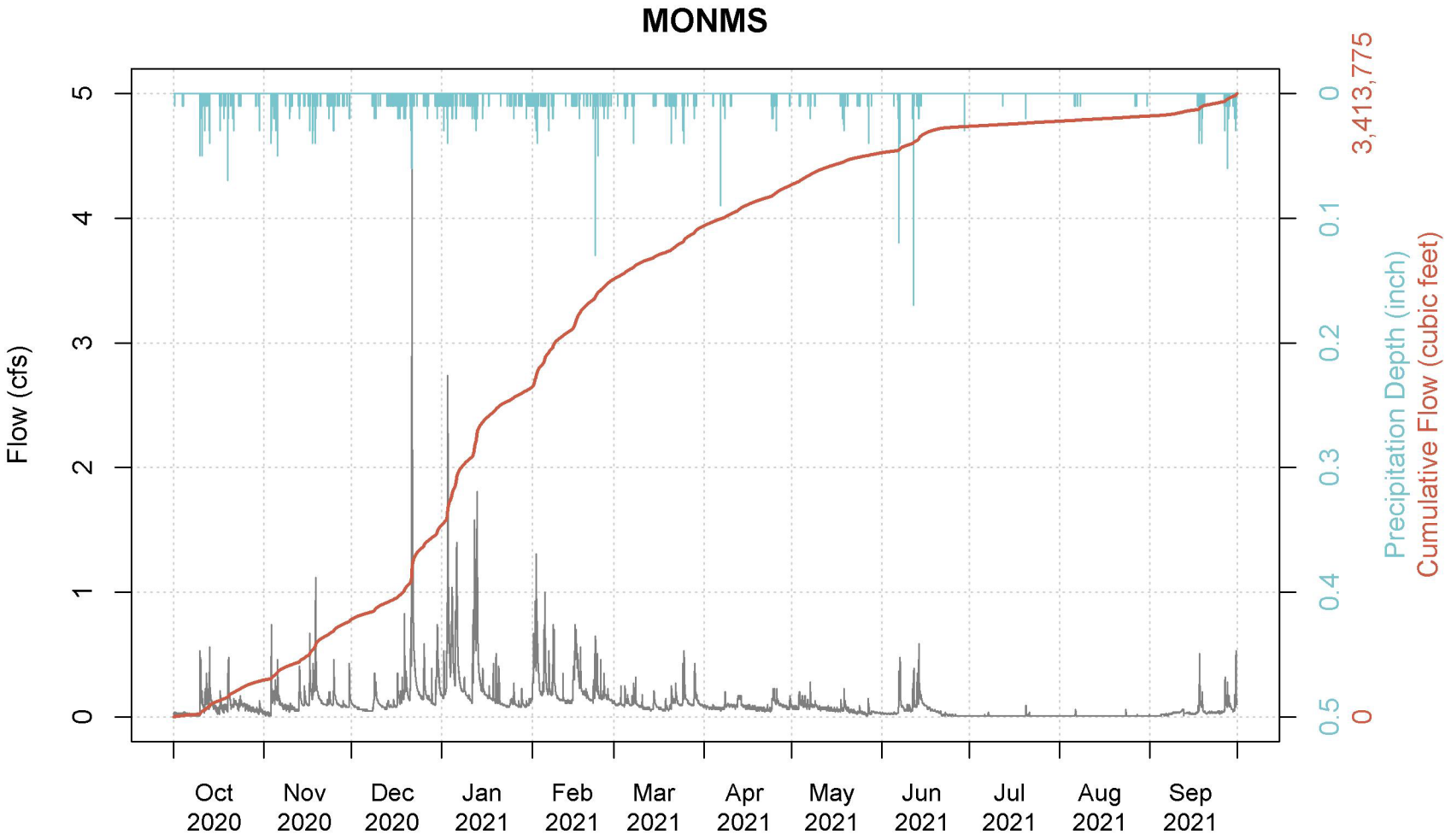

Figure B-5. Continuous Flow, Cumulative Flow, and Precipitation Depth Measured at the MONMS Station.

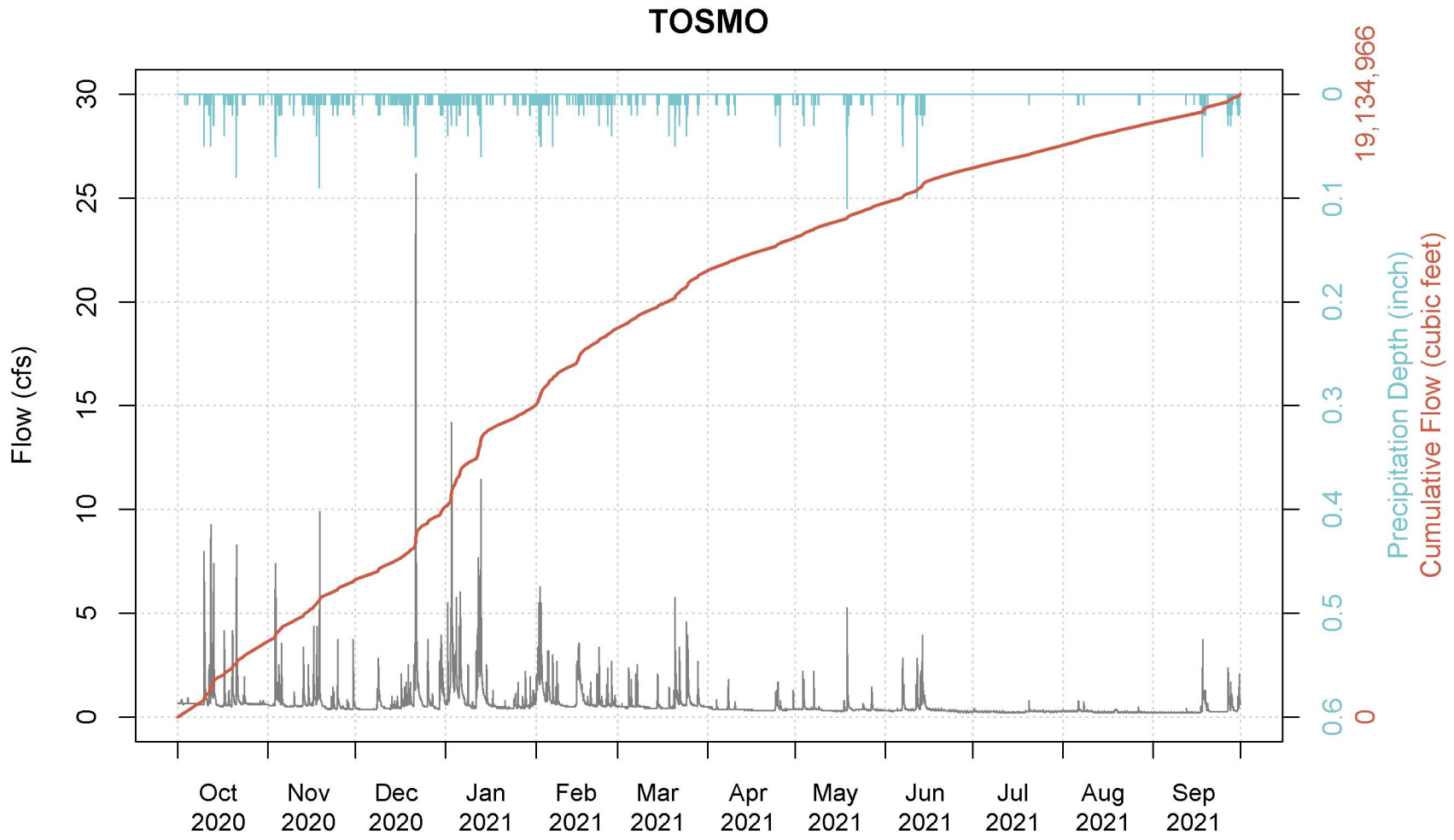

Figure B-6. Continuous Flow, Cumulative Flow, and Precipitation Depth Measured at the TOSMO Station.

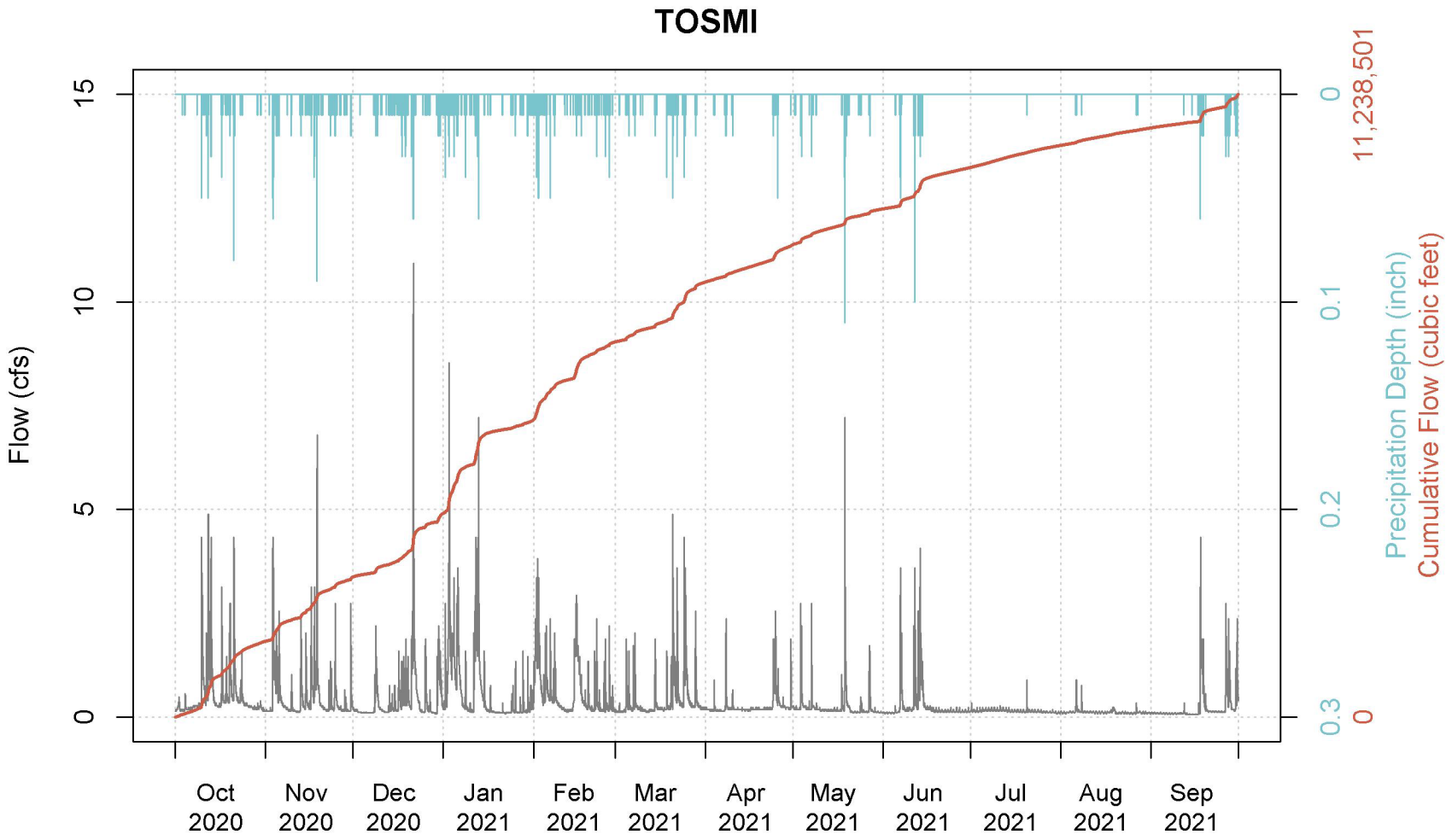

Figure B-7. Continuous Flow, Cumulative Flow, and Precipitation Depth Measured at the TOSMI Station.

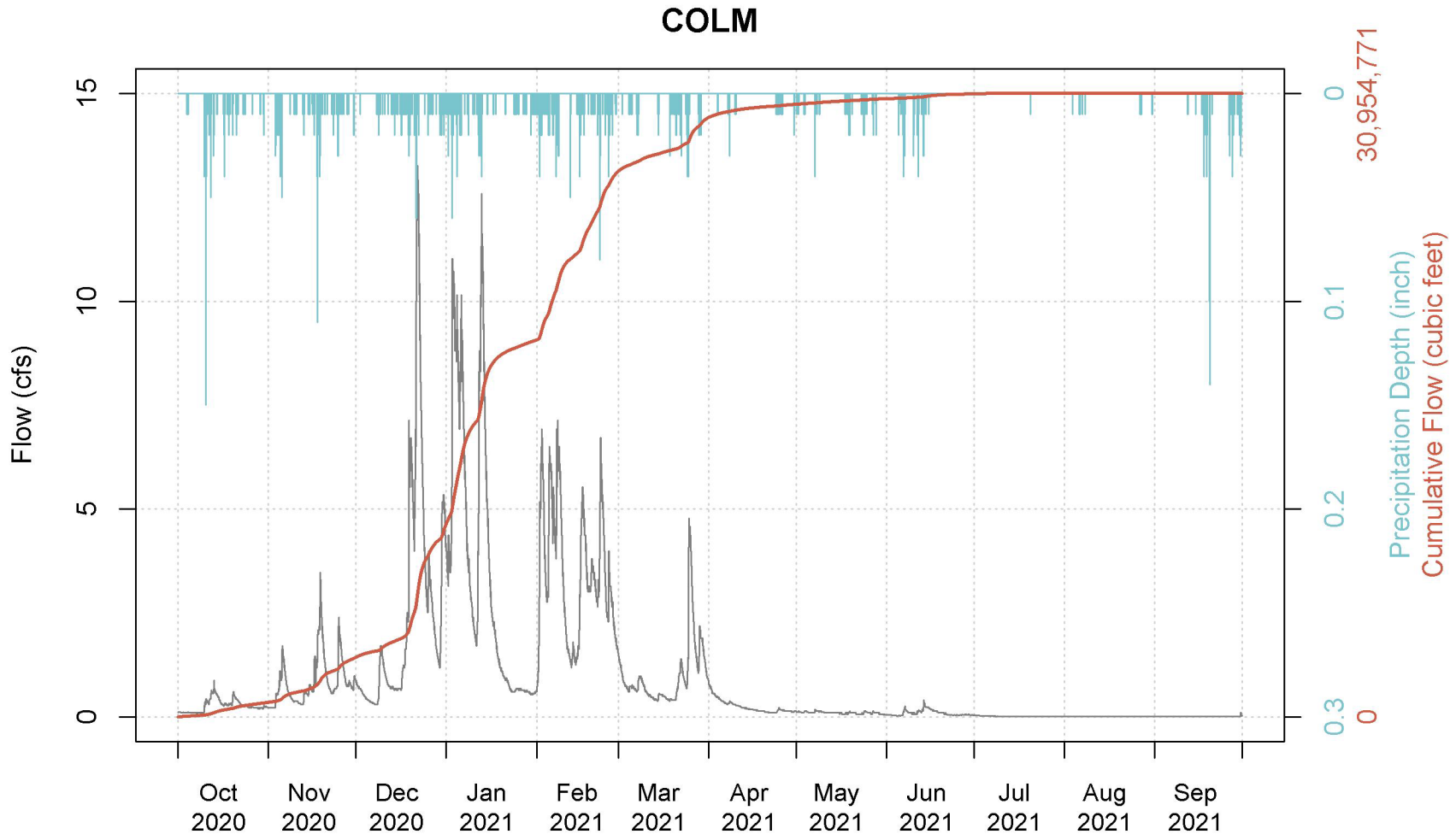

Figure B-8. Continuous Flow, Cumulative Flow, and Precipitation Depth Measured at the COLM Station.

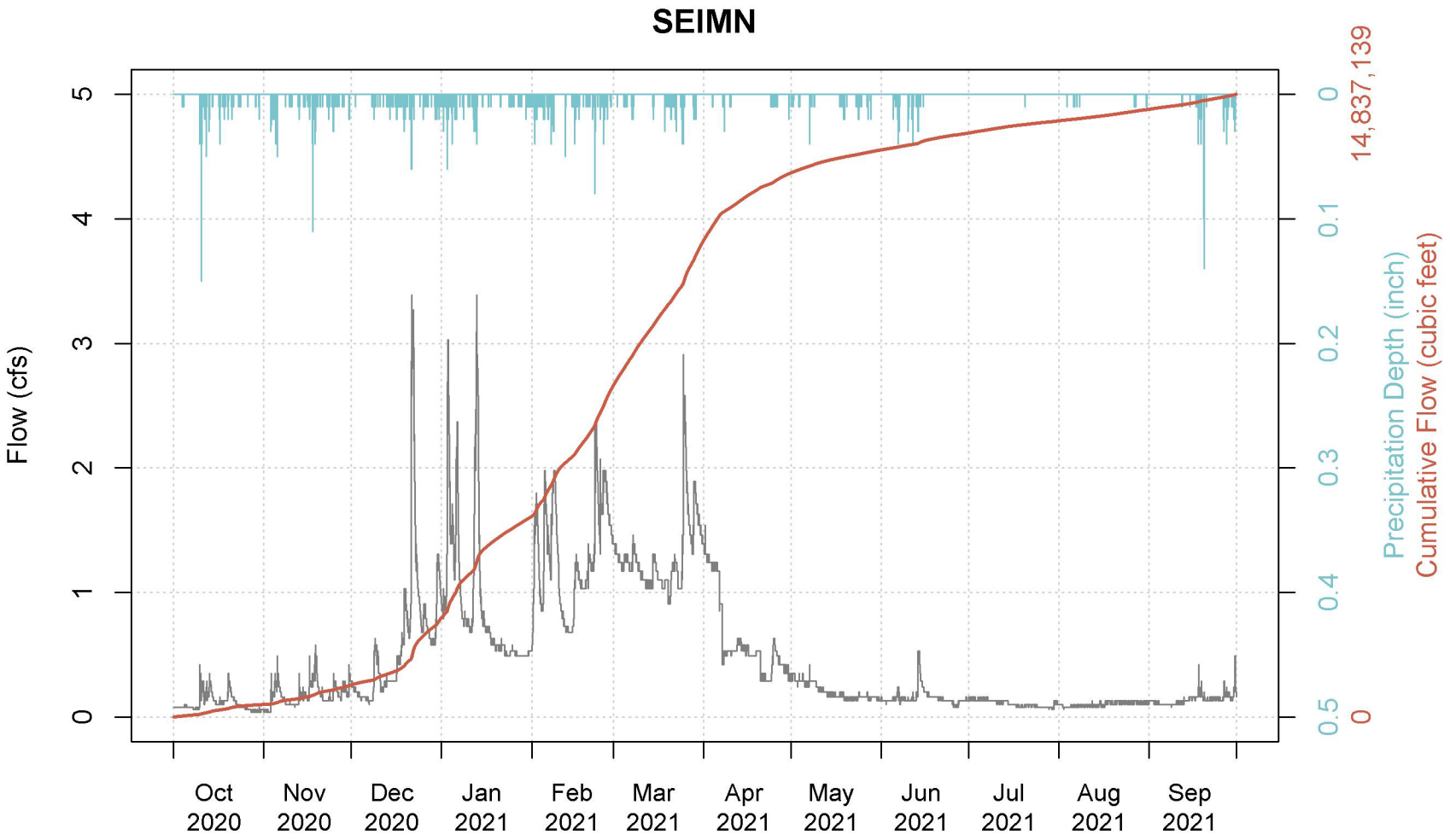

Figure B-9. Continuous Flow, Cumulative Flow, and Precipitation Depth Measured at the SEIMN Station.

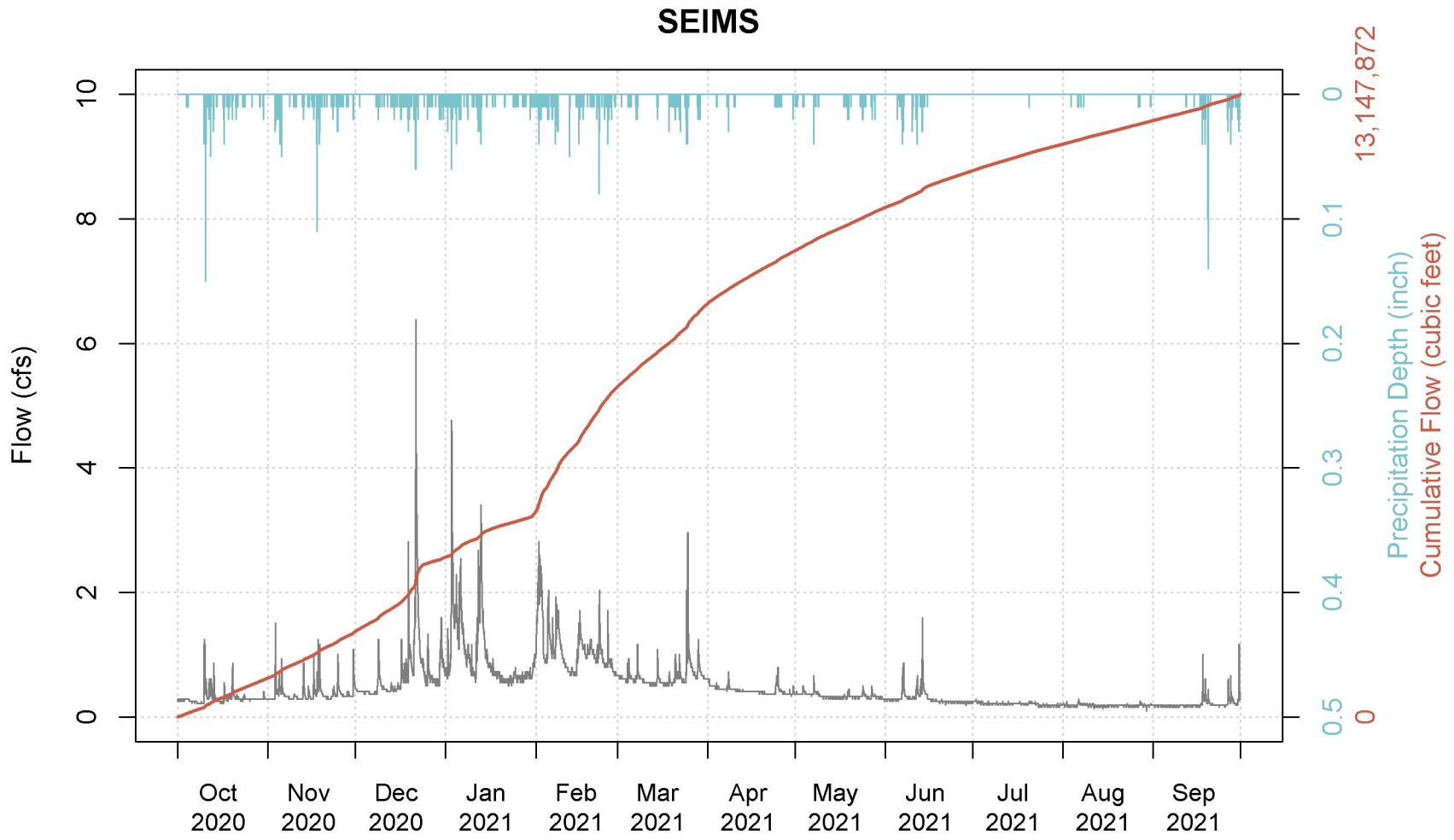

Figure B-10. Continuous Flow, Cumulative Flow, and Precipitation Depth Measured at the SEIMS Station.

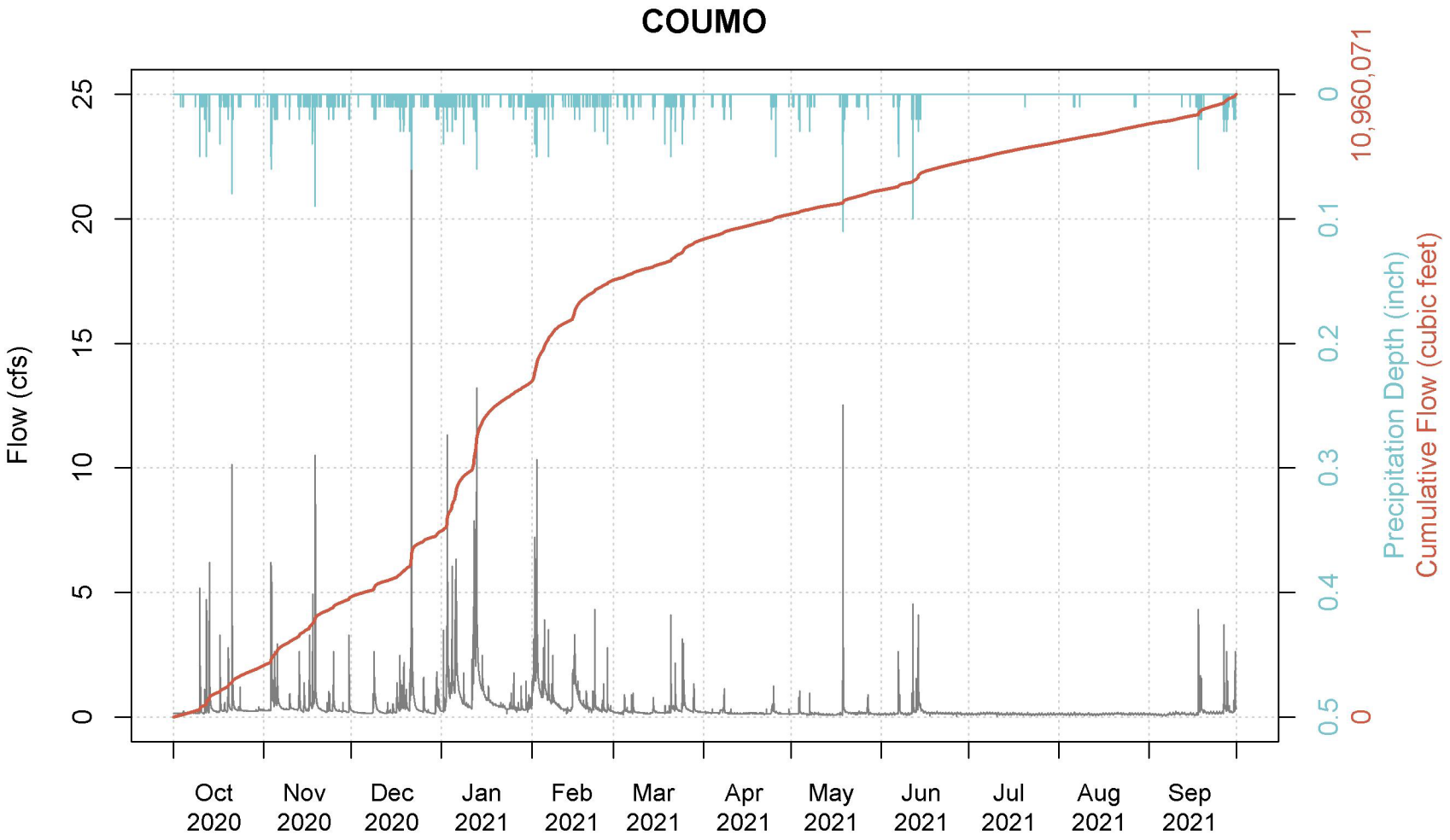

Figure B-11. Continuous Flow, Cumulative Flow, and Precipitation Depth Measured at the COUMO Station.

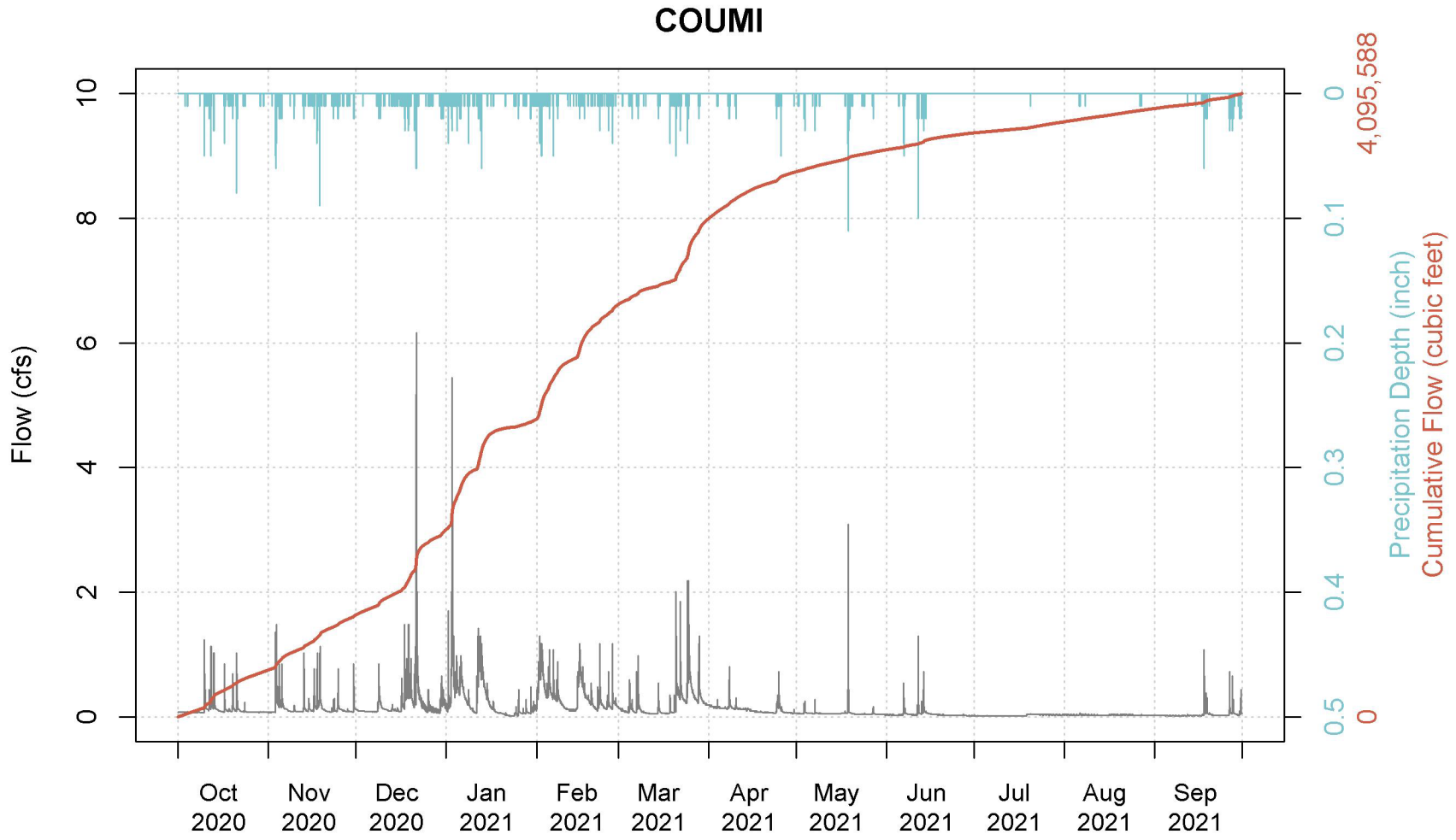

Figure B-12. Continuous Flow, Cumulative Flow, and Precipitation Depth Measured at the COUMI Station.

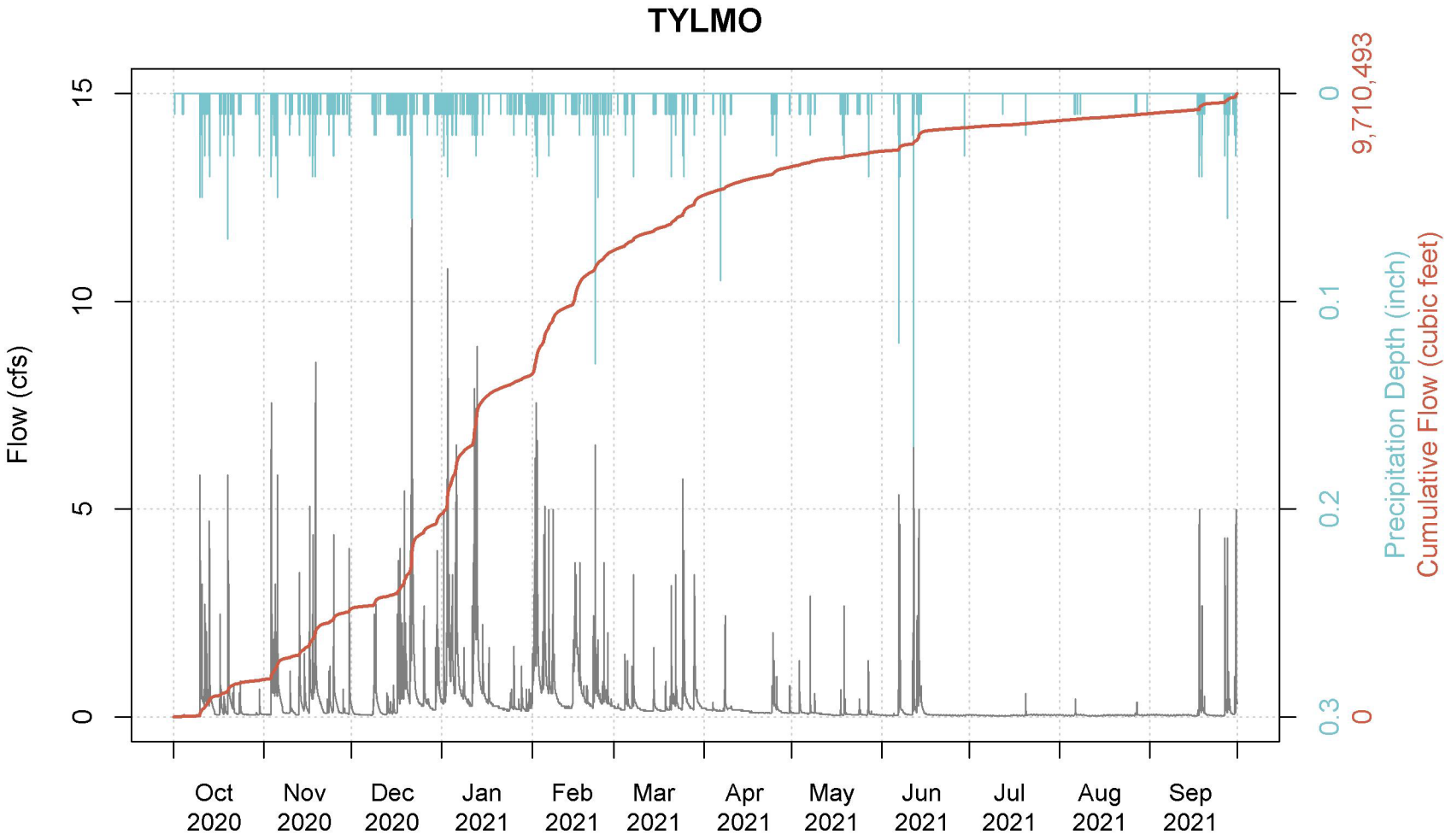

Figure B-13. Continuous Flow, Cumulative Flow, and Precipitation Depth Measured at the TYLMO Station.

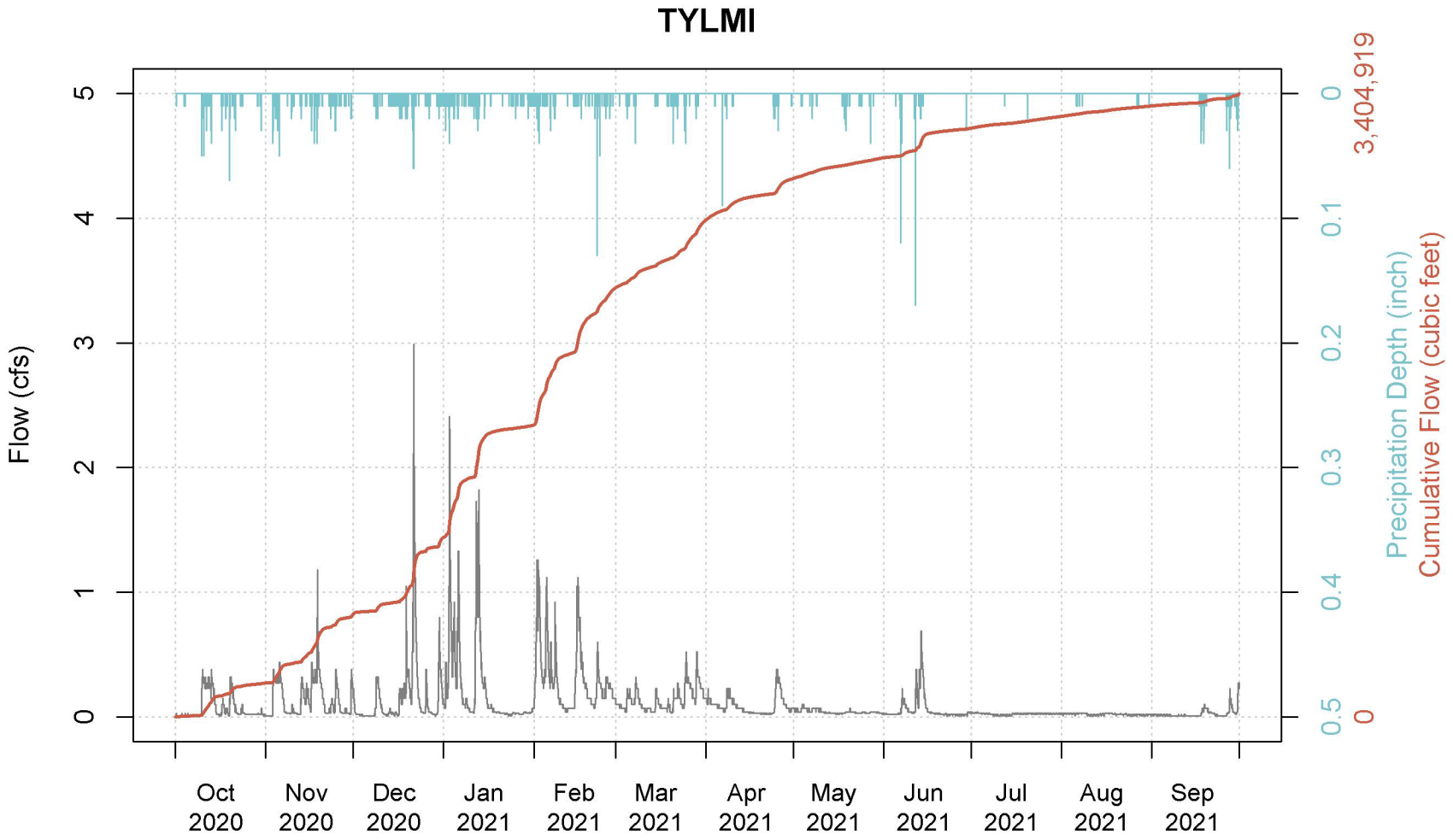

Figure B-14. Continuous Flow, Cumulative Flow, and Precipitation Depth Measured at the TYLMI Station.

APPENDIX C

Data Quality Assurance Review Memorandum for Hydrologic Monitoring

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Water and Land Resources Division
Department of Natural Resources and Parks
King Street Center
201 South Jackson Street, Suite 5600
Seattle, WA 98104-3855
206-477-4800 Fax 206-296-0192
TTY Relay: 711

TECHNICAL MEMORANDUM

June 2, 2022

TO: Dylan Ahearn, Associate Practice Director, Herrera

FM: Kyle Bliss, Science and Technical Support Section, Water and Land Resources Division, Department of Natural Resources and Parks

RE: RPWS Hydrologic Data QA Memo

Introduction

This memo summarizes the results of the quality assurance review of hydrologic data collected by King County Department of Natural Resources (KCDNRP), Water and Land Resources Division (WLRD), Hydrologic Monitoring Program for the Redmond Paired Watershed Study (RPWS). The periods of record covered under this memo begins at the 2021 water year (10/1/2020) and ends at end of the 2021 calendar year (12/31/2021).

Stream discharge was determined at 14 sites for the study. Water temperature was recorded at 14 sites and conductivity loggers were deployed at eight. Precipitation, air temperature, and barometric pressure were recorded at three sites. Instruments used to collect these parameters are listed in Table 1. See Figure 1 in Appendix A for station locations.

Table 1. Instruments used to measure continuous rainfall, water level (pressure), conductivity, and water temperature for the RPWS from October 1, 2020 to December 31, 2021.

Parameter	Manufacturer	Model	Link
Rainfall	Hydrological Services America	TB6	https://www.hydrologicalusa.com/products/meteorology/tipping-bucket-rain-gauges/tb6-tipping-bucket-rain-gauge/
Pressure	Campbell Scientific	CS451	https://www.campbellsci.com/cs451
Pressure and temperature	Onset	U20	https://www.onsetcomp.com/products/data-loggers/u20-001-04/
Temperature	Campbell Scientific	109	https://www.campbellsci.com/109
Temperature	Onset	U22	https://www.onsetcomp.com/products/data-loggers/u22-001/
Temperature and conductivity	Onset	U24	https://www.onsetcomp.com/products/data-loggers/u24-001/

Quality Assurance Review of Data

Specific Conductivity

Continuous specific conductivity was measured and recorded with an Onset U24 conductivity probe. Field observations of specific conductivity were made with a YSI Pro 30 handheld water quality instrument. Instrument readings of specific conductivity from the U24 were corrected to field observation unless noted.

I left in all short-lived spikes and drops of specific conductivity at various sites. I removed spikes at SEIMS and SEIMN from salt-tracer injection as part of a separate King County study.

See Table 2 below for a summary of data quality and gaps in specific conductivity data.

Table 2. Notes on specific conductivity records for the RPWS from October 1, 2020 to December 31, 2020.

Site Code	Data Rated	Gaps*	Notes*
COUMO	Fair/Good	none	
EVALSS	Fair/Good	none	
EVAMS	**Good** – good agreement between instrument readings and YSI observations. A few periods with noisy instrument readings	none	
MONMO	Good	none	▪ February 1st to April 6th data appears to be lower then trend for site, and comparison sites. Data range does not appear to be tied to observations
MONMS	Fair/Good – data gaps	▪ 1/22/2021 – 4/16/2021 ▪ 8/31/2021 – 12/31/2021	
SEIMN	Poor/Fair – noise in record, suspected shifts	none	▪ 3/7/2020 – 12/23/2020 – record good in this period. ▪ 12/23/2020 @ 00:00 – odd looking record. Poor agreement between YSI and U24 instrument reading on 1/22/2021. ▪ Removed spikes from salt tracer injections from CAO study
SEIMS	Poor/Fair – noise in record, suspected shifts, data gaps	5/27/2021 – 8/27/2021	▪ Removed spikes from salt tracer injections from CAO study
TOSMO	**Good** – good agreement between instrument readings and YSI observations. Very little noise in record	none	▪ Large spike left in record, matches TYLMO

Site Code	Data Rated	Gaps*	Notes*
TYLMO	**Good** – generally good agreement between instrument readings and YSI observations. Record mostly clean with little noise except where noted	none	▪ Large spike left in record matches TOSMO

* All times listed are in Pacific Daylight Savings Time (GMT -07:00)

Water Temperature

Continuous water temperature was generally measured with a Campbell Scientific 109UL temperature probe. Alternative instruments were used in situations where the primary 109UL malfunctioned, was buried, or went dry. Field observations of water temperature were made with a YSI Pro 30 handheld water quality instrument. If consistent differences were observed, shifts in the continuous temperature record were made to better match YSI observations. Table 3 summarizes information about water temperature data quality and data gaps.

Table 3. Notes on water temperature records for the RPWS from October 1, 2020 to December 31, 2020.

Site Code	Data Rated	Gaps*	Notes*
COLM	Good	none	
COUMI	Good	None	
COUMO	Good	None	
EVALSS	Good	None	
EVAMS	Good	None	
MONMN	Good	none	
MONMO	Good	none	
MONMS	Fair – data gap	▪ 8/30/2021 – 12/8/2021	
SEIMN	Good	None	
SEIMS	Good	None	
TOSMI	Good	None	
TOSMO	Good	None	
TYLMI	Good	None	
TYLMO	Good	none	

* All times listed are in Pacific Daylight Savings Time (GMT - 07:00)

Precipitation

Precipitation was measured using Hydrological Services TB6 tipping bucket rain gages. Rain gages were visited throughout the year (generally four times per year, seasonally) to ensure that they were free of debris and functionally correctly and their calibration checked (at least once per year). At the end of the calendar year, 5-minute rainfall data was compared to adjacent rain gages in the King County network to assess variability in the timing and magnitude of precipitation.

Precipitation falling as snow or hail was recorded at the time of melting (as opposed to at the time of falling) as the cones of the tipping bucket rain gages in this study were unheated.

See Table 4 below for comment on data quality and gaps in specific precipitation data. See Figure 2 in Appendix A for comparison to adjacent rain gages.

Table 4. Precipitation data recorded for the RPWS from October 1, 2020 to December 31, 2020.

Site	Data Quality	Missing Data
RG_02vn (Trilogy)	Good record	No gaps
RG_EVA	Good record	No gaps
RG_MON	Good record	Gap from 9/26/2021 to 10/31/2021 due to instrument fouling: Data filled from RG_MARY
RG_TOS	Good record	No gaps

Discharge

Continuous stream discharge was calculated for each stream gage using a multi-step process. First, water level (stage) at the stream gage was measured continuously using a Campbell Scientific CS451 vented pressure transducer. This continuous stage record was then converted to volumetric stream discharge using a rating curve developed through a series of simultaneous measurements of stage and discharge. Discharge measurements in the field were taken using the velocity-area method (Herschy 1993), with a HACH FH950 velocity meter.

After ratings were established, small shifts were applied to the rating to account for small changes to the stage/discharge relationship. In the event of a dramatic change to the stage/discharge relationship, new ratings were developed through additional field measurements.

QA Review Methods

While all 14 project discharge gages were updated via telemetry, ultimately the final continuous hydrologic data was input into the King County Hydrologic database with a supervised process using a desktop computer application. The technician worked from a plot (printed chart created in a spreadsheet) of the continuous values for a set period, usually four to eight weeks and bracketed by field observations. For discharge data, the water level corrections, rating table and shifts used were noted on the plot, along with explanatory notes. The plot was stored in the

project file for the gage along with field notes and other materials. Rating curve development and gage problem solving occurred in a collegial environment with the team staff. Recorded data and field measurements were reviewed throughout the year to identify problems and target necessary measurements.

Annual review of the water year was performed after the final supervised workup. Data are typically reviewed by a different team member than who performed the initial workup, but due to time and staffing constraints, review of discharge data was performed by the field technician. A spreadsheet template was used with daily mean, max and min values, rainfall, comparison gages, field observations, and a QC checklist to structure the review. The review process is described in the STREAM GAGE DATA WORKUP QA/QC section in Appendix B.

RPWS 10/1/2020 to 12/31/2021

Rainfall totals were slightly below average at the NOVH rain gage (by water year, data from 2000–2022) in the Redmond, WA area due to a relatively dry summer (see Figure 1), however several large rain events occurred in the fall and early winter of 2021 (see Table 5).

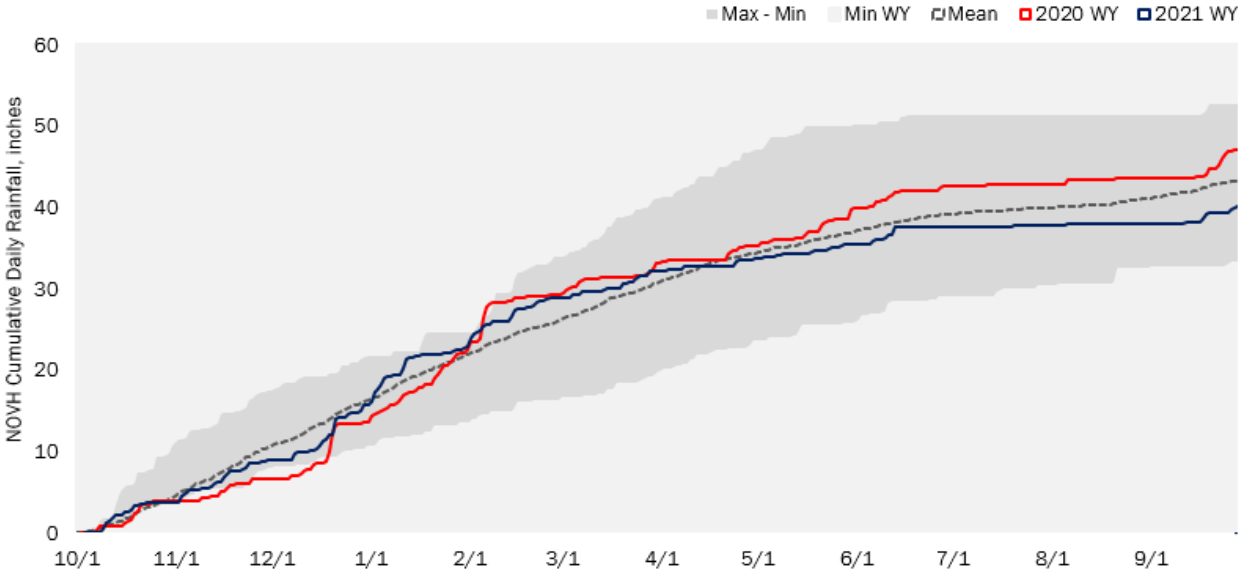

Figure 1. Cumulative rainfall at NOVH rain gage (in Redmond, WA) by water year (10/1 to 9/30). Includes data from 2000 to 2022. 2020 and 2021 water years are shown in red and blue, respectively. Average cumulative rainfall is shown in a gray dashed line. The range between the wettest and driest water years is shaded in dark gray.

The ten largest rainfall events over a 24-hour period between 10/1/2020 and 12/31/2021 are presented in Table 5 below. The largest event totaled 2.46” on 10/29/2020 which is 0.5” below the approximate 25- year 24-hour precipitation total (King County 2016). Discharge was measured on five of the ten largest rainfall events, including the three largest.

Table 5. The ten largest 24-hour rainfall totals recorded at the Monticello rain gage (RG_MON) from October 1, 2020, to December 31, 2021. Dates where discharge measurements took place are shaded in blue.

Ending Date	24-hr. total (in)
10/29/2021	2.46
12/22/2020	2.04
1/3/2021	1.52
1/12/2021	1.48
11/12/2021	1.39
11/4/2021	1.14
10/10/2020	1.10
2/2/2021	1.05
6/7/2021	1.01
1/6/2021	0.93

Missing Data

Missing 5-minute discharge data may be the result of technical issues with the gage (e.g., power failure, sensor failure) or dramatic changes to the stage/discharge relationship that cannot be accounted for with an adjustment to the discharge rating curve. In the case of technical issues, 15-minute data from non-vented U20 pressure transducers were used to fill gaps where possible. See Table 6 below for a summary of missing discharge data by station.

Table 6. Periods of missing discharge data for the RPWS from October 1, 2020, to December 31, 2021.

Site	Notes*
COLM	▪Periods of no flow from 7/11/2021 to 10/9/2021.
COUMO	None
EVALSS	None
EVAMS	None
MONMN	None
MONMO	None
MONMS	None
SEIMN	None
SEIMS	▪Data from 12/24/2020 00:00 to 1/30/2021 10:00 in 15-minute interval – readings from U20 probe due to malfunction of CS451 probe.
TOSMI	None
TOSMO	None
TYLMI	None
TYLMO	None

* All times listed are in Pacific Daylight Savings Time (GMT – 07:00)

Uncertain Data

Given the indirect nature of discharge data development, there are many sources of uncertainty in this process, including:

- inaccuracy of field measurements of stage and discharge
- inaccuracy of continuous stage measurements
- a rating table that poorly represents the stage/discharge relationship at the full range of stream discharge that a given stream conveys in a given time period
- changes to the stage/discharge relationship, including:
    - scour and/or fill of the stream bed during storm events
    - vegetation growth on banks or in channel
    - debris accumulating in the section of the stream channel that controls water level at the stream gage

The most common cause of uncertain flow data was instability of section controls (i.e., objects in a stream channel that control the water level at the stream gage) for stations with non-engineered hydraulics. These stations include COUMI, EVAMS, MONMN, and TYLMI. See Table 7 for a summary of data uncertainties.

Table 7. Summary of data with notable uncertainty for the RPWS from October 1, 2020, to December 31, 2020.

Site	Notes*
COLM	▪Some uncertainty around larger storm peaks – more recent high flow measurement needed.
COUMI	▪ Minor to moderate periodic shifts applied according to changes in channel control
COUMO	▪ Big rating shift to the right on rising limb of 12/21/2020 storm to meet M#59 and account for baseflow change afterward. May have created too large of a peak.
EVALSS	▪Moderate shift applied from 1/4/2021 to 3/4/2021 to match field measurements.
EVAMS	▪Didn't shift rating to measurements #48 or #55. Velocimeter malfunctioned during #48. #55 plotted way to right of rating #06 – no apparent scour in record or photos, possible just a bad measurement.
MONMN	▪Some uncertainty around largest storm flows on 12/21/2020 and 2021 baseflows.
MONMO	None
MONMS	▪Data from 04/2021 to to 05/2021 from U20 and/or MX2001 due to datalogger malfunction.
SEIMN	▪Warning flag placed on data from 11/27/2020 14:00 to 12/9/2020 15:25 – big rating shift to correct for sticks lodged in weir. ▪Data from 12/9/2020 to big drop in stage data 4/6/2021 potentially overestimated. Drop not corrected for as not attributable to County staff field activities.
SEIMS	None
TOSMI	▪ Baseflow relationship with TOSMO a little too close at times in past water years but appears to be improving with rating curve development at both sites.

Site	Notes*
TOSMO	▪Moderate shift applied from storm peak on 12/21/2020 to 1/22/2021 to account for buildup and removal of debris on weir. ▪ Baseflow relationship with TOSMI a little too close at times in past water years but appears to be improving with rating curve development at both sites.
TYLMI	▪ Section control is very wide creating poor resolution in low end of ratings. Poor relationship between baseflows at TYLMI and TYLMO noted in past has improved but will continue to monitor.
TYLMO	▪Some moderate shifts in winter of 2020/2021 to match measured flows. Continue to watch comps with TYLMI.

* All times listed are in Pacific Daylight Savings Time (GMT – 07:00)

Data Rating

Continuous discharge data from each station was given a rating, from poor to good, for the period beginning on October 1, 2020, and ending on December 31, 2021. See Table 8 for a summary of data quality ratings. Good data had a complete record through the period, a good number (8 – 10) of field observations at both low and high discharge conditions, and a consistent stage/discharge relationship due to a very stable or engineered control. Poor data were usually characterized a very unstable control that caused numerous rating shifts to accommodate. Extended periods where debris such as leaves, algae, or wood accumulated on controls also negatively affected the data rating as did the lack of a recent high flow or summer low flow measurement (see Table C in Appendix A for a table comparing measured vs. calculated discharge values for each station).

Table 8. Summary of discharge data quality rating from October 1, 2020, to December 31, 2021.

Site	Notes
COLM	**Fair to good record**. Channel relatively stable. Mostly small rating shifts to match flow measurements.
COUMI	Record fair and improving. Instruments moved ~20' downstream on 4/29/21 due to issues caused by proximity of former location to culvert outlet. Control much more stable at new location.
COUMO	**Fair record**. Moderate rating shifts to account for changes to section control. Some scour/fill apparent but not major.
EVALSS	**Good record**. A bit of channel instability around high flow events but captured with discharge measurements. Good range of flow measurements on ratings.
EVAMS	**Fair to good record**. Good range of flow measurements, control relatively stable over timeframe.
MONMN	**Fair record.** Good coverage of rating with flow measurements but some channel instability, especially around large storm flows on 12/21/2020. New ratings 10 and 10r developed to refine high end, need additional measurements to confirm.
MONMO	**Good record.** Engineered control is stable and clear of debris. Measured flow about 50% of rated flow.
MONMS	**Good record.** Engineered control with little debris.
SEIMN	**Fair Record**. Gravel frequently builds up on weir – Rating for good when weir ramp clear of gravel however moderate (but consistent) shifts needed to correct when buildup occurs.
SEIMS	**Good Record.** Engineered control is stable, very little debris buildup.
TOSMI	**Fair to good record**. Good coverage of flow measurements and no major changes to channel. Section control prone to debris. Relationship between TOSMI and TOSMO still questionable but improving.
TOSMO	**Good record.** Stable, engineered control. Minimal debris in weir.

Site	Notes
TYLMI	**Record fair to good**. Section control unstable and prone to debris. Lower end of rating improved with baseflow measurements this session – comparing better to TYLMO.
TYLMO	**Fair record.** Good coverage with flow measurements. Some channel instability around larger storm events. Lower end of rating improved with baseflow measurements this session.

REFERENCES

Herschy, R.W. 1993. The velocity–area method, Flow Meas. Instrum., 4(1), 7–10.

King County. 2016. King County Surface Water Design Manual. King County Department of Natural Resources and Parks. Seattle, Washington.

APPENDIX A: ADDITIONAL TABLES AND FIGURES

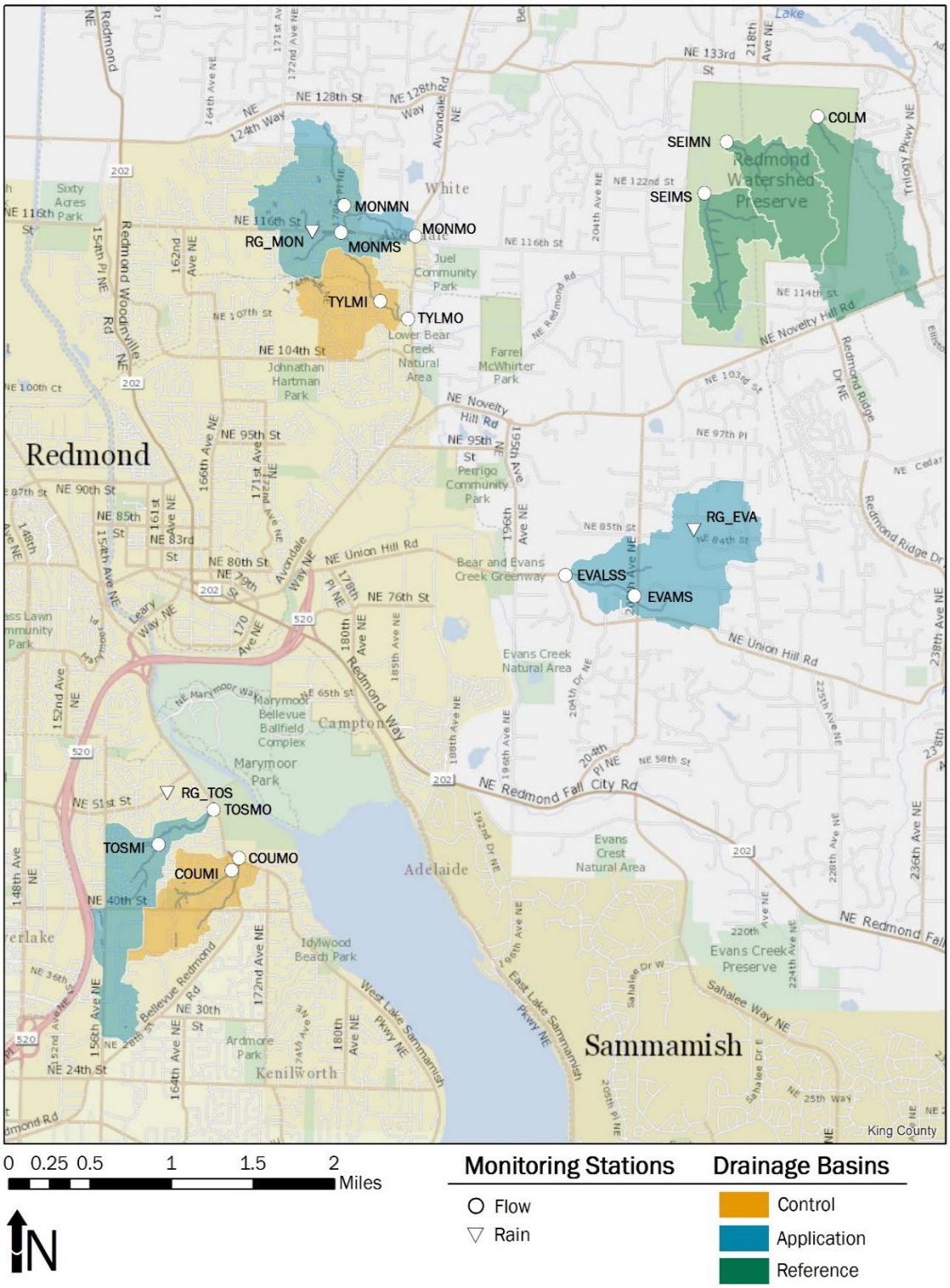

Figure A. A map of RPWS hydrologic monitoring sites.

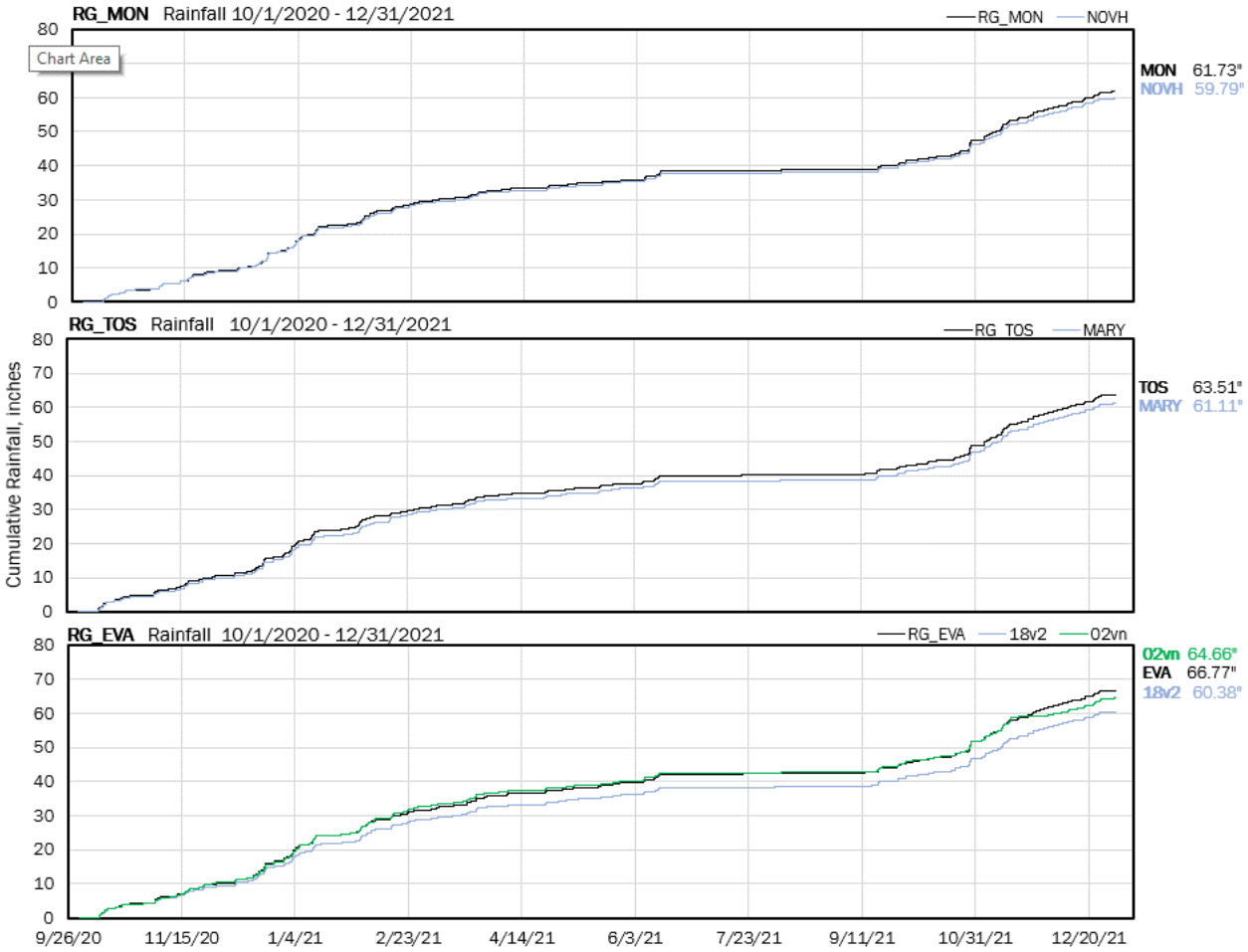

Figure B. Comparison of RPWS rain gages to nearby rain gages in King County's hydrologic monitoring program.

Site	Max Discharge Measurement	Max Discharge Measurement	Max Discharge Record in Session
	7/1/2019 – 2/5/2022*	9/1/2015 – 2/5/2022**	10/1/2020 – 12/31/2021
	cubic feet per second (cfs)		
COLM	4.7	16.2	13.3
COUMI	5.4	5.7	6.2
COUMO	1.8	15.4	24.5
EVALSS	6.0	22.8	25.1
EVAMS	4.5	7.1	8.0
MONMN	2.0	16.3	22.7
MONMO	0.8	28.3	37.0
MONMS	0.6	3.6	4.5
SEIMN	0.6	6.3	3.4
SEIMS	0.9	8.6	6.4
TOSMI	1.6	13.8	10.9
TOSMO	0.2	14.0	26.2
TYLMI	0.9	4.7	3.0
TYLMO	6.4	10.9	14.0

* time period where flow measurements were taken to develop ratings used to develop data from 10/1/2020 to 12/31/2021
**length of time from start of RPWS project to most recent measurements

Table C. Table of maximum discharge measurements (for differing time periods) and maximum calculated discharge record. Maximum calculated discharge record in session values is highlighted in yellow if they are more than two times the maximum volume measured in the field during the time period used to develop the current stage/discharge ratings and highlighted in red if the values is double the volume ever measured in the field during the entirety of the RPWS project. Note that SEIMN and SEIMS both have engineered controls and older high flow measurements are still valuable.

APPENDIX B: STREAM GAGE DATA WORKUP QA/QC DESCRIPTION

A streamflow data workup should be checked by another technician before approving the data for publication. This is not a rote process or simple checklist. It requires an understanding of the basic elements of a data workup as well as a questioning attitude. The check can go pretty quickly if the person doing the original workup has taken good notes, kept the file in good order, made the necessary graphs and reports, and did not make any mistakes. The QA/QC check should be performed by someone other than the person who did the original workup. This ensures that we get a realistic assessment of the coherence and legibility of the workup and documentation. We want to be able to return to the file at a later date and figure out how the flow data were derived from the primary data. We also want to make sure that the data make sense and contain no errors. Of course we will never know if our flow data are accurate, but we can know that they are the best numbers possible if rating tables are well developed and the rating properly applied to a carefully corrected stage record. The following steps are outlined in the order they should occur.

Three Objectives

1. Well documented work, so in the future we can figure out what was done and why. If the file and notes are a mess and don't make sense, you give it back and tell them to get it together.
2. Careful work, i.e., no stupid or gross mistakes. No gaps, no big jumps in discharge when there shouldn't be, flow in data table matches the discharge measurement made at that time, sensor garbage is cleaned up. Stupid mistake example: the flow record changes 15% in one log between sessions because the initial sensor correction was set incorrectly.
3. Technically defensible work, no errors in judgment. Rating curves make sense, stage corrections are reasonable, rating shifts applied appropriately, estimated periods make sense.

QA/QC steps to checking flow records

Documentation

There may be some minor problems with the file organization that did not affect the workup quality. These the checker can fix. Make sure that:

- The paper file is organized correctly
- There is a workup cover sheet with session-by-session notes
- Workup charts are all there and gaps noted, workup detail is written on the chart
- Discharge Measurement Summary form is up to date
- Flows are correctly plotted on rating curve
- Data input files are stored correctly
- Water year QA spreadsheet is complete (use StreamGage_WaterYear_Report.xlsx template). Charts titles should be correct, rain gage and comparison gage data included, also any continuous water temperature or other water quality data if applicable.

Look for mistakes

- Is water year complete? Complete 15-minute years have 35,040 records, leap years 35,136 (5 minute have 105,120). Missing data will reduce that number. The logs for the year are displayed on the workup screen. Also, missing data will be held with asterisks in the 15-minute report. Dump the report into excel and sort by value.
- Compare the graph of the daily mean and max flow to that of an equivalent gage. You're looking at the timing and relative magnitude of peaks and low flow periods.
- Examine daily mean and min flows chart. You're looking for periods where the flow drops unrealistically, usually due to sensor problems, a negative value, or a mistaken filled value.
- Check the data table at date and time of discharge measurements. The record should match the flow or there should be a good reason why in the notes.
- Check the plotting of each flow measurement on the rating curve. Sometimes the offset is incorrectly added or just it's just put in the wrong place. It can look right and be wrong, so check.
- Give flow measurements a once over to make sure they are sensible, V*A = Q, the calculated width seems right given the start and end of the cross section. Pay special attention to high flow measurements or any flow that shifts off the normal rating.
- Does the flow record connect well? No unjustified jumps in the discharge between sessions, stage corrections or other events.
- Are estimate periods flagged correctly

Technical quality

- Can you understand what rating curves were used, and what they are based on? What defines the high end?
- If the high end depends on a curve extension, are there indirect discharge calculations made to justify the peak flow estimate? Do you agree? This is a highly subjective area that bears careful examination. We expect, of course, that consultation was done during the initial workup, so there will be no big surprises.
- Are base flows accurate? It may be more accurate to estimate low flow periods or fill the stage record than use stage record with known error.
- Check how daily flow estimates to fill gaps were made.
- Compare mean daily discharge with an appropriate nearby station for timing and magnitude of peaks, baseflow etc.

Final approval

If everything is in order, or after corrections have been made, complete QC checklist sheet in the Water Year spreadsheet. Printout checklist for the paper file. Include name and date.

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APPENDIX D

Discharge Rating Tables

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Table D-1. Rating Tables Used to Estimate Discharge at EVALSS.

EVALSS Rating Table 04	
Water Level (ft)	Discharge (cfs)
0.12	0.6
0.13	0.71
0.14	0.82
0.15	0.95
0.16	1.08
0.17	1.22
0.18	1.38
0.19	1.54
0.2	1.71
0.21	1.89
0.22	2.08
0.23	2.27
0.24	2.48
0.25	2.7
0.26	2.92
0.27	3.16
0.28	3.4
0.29	3.65
0.3	3.91
0.31	4.17
0.32	4.45
0.33	4.73
0.34	5.03
0.35	5.33
0.36	5.64
0.37	5.96
0.38	6.29
0.39	6.63
0.4	6.98
0.41	7.33
0.42	7.7
0.43	8.07
0.44	8.45
0.45	8.84

Table D-1. Rating Tables Used to Estimate Discharge at EVALSS.

EVALSS Rating Table 04	
Water Level (ft)	Discharge (cfs)
0.46	9.24
0.47	9.65
0.48	10.07
0.49	10.5
0.5	10.93
0.51	11.38
0.52	11.83
0.53	12.3
0.54	12.77
0.55	13.25
0.56	13.74
0.57	14.24
0.58	14.74
0.59	15.26
0.6	15.79
0.61	16.32
0.62	16.87
0.63	17.42
0.64	17.98
0.65	18.55
0.66	19.13
0.67	19.72
0.68	20.31
0.69	20.92
0.7	21.54
0.71	22.16
0.72	22.79
0.73	23.44
0.74	24.09
0.75	24.75
0.76	25.42
0.77	26.1
0.78	26.78
0.79	27.48
0.8	28.18
0.81	28.9
0.82	29.62
0.83	30.35
0.84	31.1
0.85	31.85

Table D-1. Rating Tables Used to Estimate Discharge at EVALSS.

EVALSS Rating Table 04	
Water Level (ft)	Discharge (cfs)
0.86	32.6
0.87	33.37
0.88	34.15
0.89	34.94
0.9	35.73
0.91	36.54
0.92	37.35
0.93	38.17
0.94	39
0.95	39.84
0.96	40.69
0.97	41.55
0.98	42.42
0.99	43.3
1	44.18
1.01	45.08
1.02	45.98
1.03	46.89
1.04	47.81
1.05	48.75
1.06	49.68
1.07	50.63
1.08	51.59
1.09	52.56
1.1	53.53
1.11	54.52
1.12	55.51
1.13	56.52
1.14	57.53
1.15	58.55
1.16	59.58
1.17	60.62
1.18	61.67
1.19	62.73
1.2	63.79
1.21	64.87
1.22	65.95
1.23	67.05
1.24	68.15
1.25	69.26

Table D-1. Rating Tables Used to Estimate Discharge at EVALSS.

EVALSS Rating Table 04	
Water Level (ft)	Discharge (cfs)
1.26	70.38
1.27	71.51
1.28	72.65
1.29	73.8
1.3	74.95
1.31	76.12
1.32	77.3
1.33	78.48
1.34	79.67
1.35	80.88
1.36	82.09
1.37	83.31
1.38	84.54
1.39	85.78
1.4	87.02
1.41	88.28
1.42	89.55
1.43	90.82
1.44	92.11
1.45	93.4
1.46	94.7
1.47	96.01
1.48	97.33
1.49	98.66
1.5	100

Table D-1. Rating Tables Used to Estimate Discharge at EVALSS.

EVALSS Rating Table 05	
Water Level (ft)	Discharge (cfs)
0.05	0.38
0.06	0.46
0.07	0.54
0.08	0.61
0.09	0.69
0.1	0.77
0.11	0.85
0.12	0.93
0.13	1.01
0.14	1.09
0.15	1.16
0.16	1.24
0.17	1.32
0.18	1.4
0.19	1.48
0.2	1.56
0.21	1.64
0.22	1.72
0.23	1.8
0.24	1.98
0.25	2.16
0.26	2.36
0.27	2.56
0.28	2.78
0.29	3
0.3	3.23
0.31	3.48
0.32	3.73
0.33	3.99
0.34	4.26
0.35	4.54
0.36	4.83
0.37	5.14
0.38	5.45

Table D-1. Rating Tables Used to Estimate Discharge at EVALSS.

EVALSS Rating Table 05	
Water Level (ft)	Discharge (cfs)
0.39	5.77
0.4	6.1
0.41	6.44
0.42	6.79
0.43	7.15
0.44	7.53
0.45	7.91
0.46	8.3
0.47	8.7
0.48	9.12
0.49	9.54
0.5	9.98
0.51	10.42
0.52	10.88
0.53	11.34
0.54	11.82
0.55	12.31
0.56	12.81
0.57	13.32
0.58	13.84
0.59	14.37
0.6	14.91
0.61	15.47
0.62	16.03
0.63	16.61
0.64	17.19
0.65	17.79
0.66	18.4
0.67	19.02
0.68	19.65
0.69	20.3
0.7	20.95
0.71	21.62
0.72	22.29
0.73	22.98
0.74	23.68
0.75	24.39
0.76	25.12
0.77	25.85
0.78	26.6

Table D-1. Rating Tables Used to Estimate Discharge at EVALSS.

EVALSS Rating Table 05	
Water Level (ft)	Discharge (cfs)
0.79	27.35
0.8	28.12
0.81	28.9
0.82	29.7
0.83	30.5
0.84	31.32
0.85	32.15
0.86	32.99
0.87	33.84
0.88	34.7
0.89	35.58
0.9	36.46
0.91	37.36
0.92	38.27
0.93	39.2
0.94	40.13
0.95	41.08
0.96	42.04
0.97	43.01
0.98	44
0.99	44.99
1	46

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Table D-2. Rating Tables Used to Estimate Discharge at EVAMS.

EVAMS Rating Table 05	
Water Level (ft)	Discharge (cfs)
0.1	0.1
0.11	0.13
0.12	0.15
0.13	0.19
0.14	0.22
0.15	0.26
0.16	0.31
0.17	0.35
0.18	0.4
0.19	0.46
0.2	0.52
0.21	0.58
0.22	0.65
0.23	0.72
0.24	0.8
0.25	0.88
0.26	0.97
0.27	1.06
0.28	1.16
0.29	1.26
0.3	1.36
0.31	1.47
0.32	1.59
0.33	1.71
0.34	1.83
0.35	1.96
0.36	2.1
0.37	2.24
0.38	2.39
0.39	2.54
0.4	2.7
0.41	2.86
0.42	3.03
0.43	3.2
0.44	3.38
0.45	3.57
0.46	3.76

Table D-2. Rating Tables Used to Estimate Discharge at EVAMS.

EVAMS Rating Table 05	
Water Level (ft)	Discharge (cfs)
0.47	3.96
0.48	4.16
0.49	4.37
0.5	4.58
0.51	4.8
0.52	5.03
0.53	5.26
0.54	5.5
0.55	5.75
0.56	6
0.57	6.26
0.58	6.52
0.59	6.79
0.6	7.07
0.61	7.35
0.62	7.64
0.63	7.94
0.64	8.24
0.65	8.55
0.66	8.86
0.67	9.19
0.68	9.51
0.69	9.85
0.7	10.19
0.71	10.54
0.72	10.9
0.73	11.26
0.74	11.63
0.75	12.01
0.76	12.39
0.77	12.78
0.78	13.18
0.79	13.59
0.8	14

Table D-2. Rating Tables Used to Estimate Discharge at EVAMS.

EVAMS Rating Table 06	
Water Level (ft)	Discharge (cfs)
0.05	0.07
0.06	0.1
0.07	0.13
0.08	0.16
0.09	0.19
0.1	0.23
0.11	0.27
0.12	0.32
0.13	0.36
0.14	0.41
0.15	0.47
0.16	0.52
0.17	0.58
0.18	0.64
0.19	0.7
0.2	0.76
0.21	0.83
0.22	0.9
0.23	0.97
0.24	1.05
0.25	1.12
0.26	1.2
0.27	1.28
0.28	1.36
0.29	1.45
0.3	1.59
0.31	1.73
0.32	1.89
0.33	2.05
0.34	2.22
0.35	2.4
0.36	2.59
0.37	2.78
0.38	2.99
0.39	3.2
0.4	3.43
0.41	3.66

Table D-2. Rating Tables Used to Estimate Discharge at EVAMS.

EVAMS Rating Table 06	
Water Level (ft)	Discharge (cfs)
0.42	3.91
0.43	4.16
0.44	4.42
0.45	4.7
0.46	4.98
0.47	5.28
0.48	5.58
0.49	5.9
0.5	6.23
0.51	6.57
0.52	6.92
0.53	7.28
0.54	7.65
0.55	8.03
0.56	8.43
0.57	8.84
0.58	9.26
0.59	9.69
0.6	10.14
0.61	10.6
0.62	11.07
0.63	11.55
0.64	12.05
0.65	12.56
0.66	13.09
0.67	13.62
0.68	14.17
0.69	14.74
0.7	15.32
0.71	15.91
0.72	16.51
0.73	17.14
0.74	17.77
0.75	18.42
0.76	19.08
0.77	19.76
0.78	20.46

Table D-2. Rating Tables Used to Estimate Discharge at EVAMS.

EVAMS Rating Table 06	
Water Level (ft)	Discharge (cfs)
0.79	21.17
0.8	21.89
0.81	22.63
0.82	23.39
0.83	24.16
0.84	24.94
0.85	25.75
0.86	26.56
0.87	27.4
0.88	28.25
0.89	29.12
0.9	30

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Table D-3. Rating Tables Used to Estimate Discharge at MONM.

MONM Rating Table 04	
Water Level (ft)	Discharge (cfs)
0.01	0.01
0.02	0.02
0.03	0.03
0.04	0.04
0.05	0.04
0.06	0.05
0.07	0.06
0.08	0.07
0.09	0.08
0.1	0.08
0.11	0.09
0.12	0.1
0.13	0.12
0.14	0.15
0.15	0.18
0.16	0.21
0.17	0.24
0.18	0.28
0.19	0.32
0.2	0.36
0.21	0.41
0.22	0.46
0.23	0.51
0.24	0.57
0.25	0.63
0.26	0.7
0.27	0.77
0.28	0.84
0.29	0.92
0.3	1
0.31	1.09
0.32	1.18
0.33	1.28
0.34	1.39
0.35	1.49
0.36	1.61
0.37	1.73
0.38	1.85

Table D-3. Rating Tables Used to Estimate Discharge at MONM.

MONM Rating Table 04	
Water Level (ft)	Discharge (cfs)
0.39	1.98
0.4	2.12
0.41	2.26
0.42	2.4
0.43	2.55
0.44	2.71
0.45	2.87
0.46	3.04
0.47	3.22
0.48	3.4
0.49	3.59
0.5	3.78
0.51	3.98
0.52	4.19
0.53	4.4
0.54	4.62
0.55	4.85
0.56	5.08
0.57	5.32
0.58	5.57
0.59	5.82
0.6	6.08
0.61	6.35
0.62	6.62
0.63	6.91
0.64	7.19
0.65	7.49
0.66	7.79
0.67	8.11
0.68	8.42
0.69	8.75
0.7	9.09
0.71	9.43
0.72	9.78
0.73	10.13
0.74	10.5
0.75	10.81
0.76	11.13

Table D-3. Rating Tables Used to Estimate Discharge at MONM.

MONM Rating Table 04	
Water Level (ft)	Discharge (cfs)
0.77	11.45
0.78	11.78
0.79	12.12
0.8	12.45
0.81	12.8
0.82	13.15
0.83	13.5
0.84	13.83
0.85	14.16
0.86	14.49
0.87	14.83
0.88	15.17
0.89	15.52
0.9	15.87
0.91	16.22
0.92	16.58
0.93	16.94
0.94	17.3
0.95	17.67
0.96	18.05
0.97	18.42
0.98	18.8
0.99	19.19
1	19.58
1.01	19.97
1.02	20.37
1.03	20.77
1.04	21.17
1.05	21.58
1.06	21.99
1.07	22.41
1.08	22.83
1.09	23.25
1.1	23.68
1.11	24.11
1.12	24.54
1.13	24.98
1.14	25.43

Table D-3. Rating Tables Used to Estimate Discharge at MONM.

MONM Rating Table 04	
Water Level (ft)	Discharge (cfs)
1.15	25.87
1.16	26.32
1.17	26.78
1.18	27.24
1.19	27.7
1.2	28.17
1.21	28.64
1.22	29.11
1.23	29.59
1.24	30.07
1.25	30.56
1.26	31.05
1.27	31.54
1.28	32.04
1.29	32.54
1.3	33.04
1.31	33.55
1.32	34.06
1.33	34.58
1.34	35.1
1.35	35.63
1.36	36.15
1.37	36.69
1.38	37.22
1.39	37.76
1.4	38.31
1.41	38.86
1.42	39.41
1.43	39.96
1.44	40.52
1.45	41.08
1.46	41.65
1.47	42.22
1.48	42.8
1.49	43.38
1.5	43.96
1.51	44.55
1.52	45.14

Table D-3. Rating Tables Used to Estimate Discharge at MONM.

MONM Rating Table 04	
Water Level (ft)	Discharge (cfs)
1.53	45.73
1.54	46.33
1.55	46.93
1.56	47.54
1.57	48.15
1.58	48.76
1.59	49.38
1.6	50

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Table D-4. Rating Tables Used to Estimate Discharge at MONMN.

MONMN Rating Table 09T	
Water Level (ft)	Discharge (cfs)
0.01	0
0.02	0
0.03	0
0.04	0
0.05	0
0.06	0
0.07	0
0.08	0
0.09	0
0.1	0
0.11	0
0.12	0
0.13	0
0.14	0
0.15	0.01
0.16	0.01
0.17	0.01
0.18	0.01
0.19	0.02
0.2	0.02
0.21	0.02
0.22	0.02
0.23	0.03
0.24	0.03
0.25	0.05
0.26	0.06
0.27	0.07
0.28	0.09
0.29	0.12
0.3	0.15
0.31	0.18
0.32	0.22
0.33	0.25
0.34	0.28

Table D-4. Rating Tables Used to Estimate Discharge at MONMN.

MONMN Rating Table 09T	
Water Level (ft)	Discharge (cfs)
0.35	0.32
0.36	0.36
0.37	0.41
0.38	0.45
0.39	0.51
0.4	0.56
0.41	0.62
0.42	0.69
0.43	0.76
0.44	0.84
0.45	0.92
0.46	1.01
0.47	1.11
0.48	1.21
0.49	1.32
0.5	1.44
0.51	1.57
0.52	1.7
0.53	1.78
0.54	1.86
0.55	1.95
0.56	2.04
0.57	2.13
0.58	2.22
0.59	2.31
0.6	2.41
0.61	2.51
0.62	2.61
0.63	2.71
0.64	2.82
0.65	2.93
0.66	3.04
0.67	3.15
0.68	3.27
0.69	3.39
0.7	3.51
0.71	3.63
0.72	3.76
0.73	3.93
0.74	4.1

Table D-4. Rating Tables Used to Estimate Discharge at MONMN.

MONMN Rating Table 09T	
Water Level (ft)	Discharge (cfs)
0.75	4.27
0.76	4.45
0.77	4.64
0.78	4.83
0.79	5.03
0.8	5.23
0.81	5.44
0.82	5.65
0.83	5.87
0.84	6.1
0.85	6.33
0.86	6.56
0.87	6.81
0.88	7.06
0.89	7.31
0.9	7.57
0.91	7.84
0.92	8.11
0.93	8.39
0.94	8.68
0.95	8.97
0.96	9.27
0.97	9.57
0.98	9.89
0.99	10.21
1	10.53
1.01	10.87
1.02	11.21
1.03	11.56
1.04	11.91
1.05	12.28
1.06	12.65
1.07	13.02
1.08	13.41
1.09	13.8
1.1	14.2
1.11	14.61
1.12	15.03
1.13	15.46
1.14	15.89

Table D-4. Rating Tables Used to Estimate Discharge at MONMN.

MONMN Rating Table 09T	
Water Level (ft)	Discharge (cfs)
1.15	16.33
1.16	16.78
1.17	17.24
1.18	17.7
1.19	18.18
1.2	18.66
1.21	19.15
1.22	19.65
1.23	20.16
1.24	20.68
1.25	21.21
1.26	21.75
1.27	22.29
1.28	22.85
1.29	23.41
1.3	23.99
1.31	24.57
1.32	25.16
1.33	25.77
1.34	26.38
1.35	27

Table D-4. Rating Tables Used to Estimate Discharge at MONMN.

MONMN Rating Table 10	
Water Level (ft)	Discharge (cfs)
0.18	0.02
0.19	0.03
0.2	0.03
0.21	0.04
0.22	0.05
0.23	0.06
0.24	0.08
0.25	0.09
0.26	0.11
0.27	0.13
0.28	0.15
0.29	0.18
0.3	0.21
0.31	0.25
0.32	0.28
0.33	0.33
0.34	0.38
0.35	0.43
0.36	0.49
0.37	0.56
0.38	0.63
0.39	0.71
0.4	0.8
0.41	0.89
0.42	1
0.43	1.09
0.44	1.18
0.45	1.28
0.46	1.38
0.47	1.49
0.48	1.6
0.49	1.72
0.5	1.85
0.51	1.99

Table D-4. Rating Tables Used to Estimate Discharge at MONMN.

MONMN Rating Table 10	
Water Level (ft)	Discharge (cfs)
0.52	2.13
0.53	2.27
0.54	2.43
0.55	2.59
0.56	2.76
0.57	2.94
0.58	3.13
0.59	3.32
0.6	3.53
0.61	3.74
0.62	3.96
0.63	4.19
0.64	4.43
0.65	4.68
0.66	4.94
0.67	5.21
0.68	5.49
0.69	5.78
0.7	6.08
0.71	6.39
0.72	6.71
0.73	7.05
0.74	7.4
0.75	7.75
0.76	8.13
0.77	8.51
0.78	8.91
0.79	9.32
0.8	9.74
0.81	10.18
0.82	10.63
0.83	11.09
0.84	11.57
0.85	12.07
0.86	12.58
0.87	13.1
0.88	13.64
0.89	14.19
0.9	14.77
0.91	15.35

Table D-4. Rating Tables Used to Estimate Discharge at MONMN.

MONMN Rating Table 10	
Water Level (ft)	Discharge (cfs)
0.92	15.96
0.93	16.58
0.94	17.22
0.95	17.87
0.96	18.55
0.97	19.24
0.98	19.95
0.99	20.68
1	21.42
1.01	22.19
1.02	22.98
1.03	23.78
1.04	24.61
1.05	25.45
1.06	26.32
1.07	27.21
1.08	28.12
1.09	29.05
1.1	30

Table D-4. Rating Tables Used to Estimate Discharge at MONMN.

MONMN Rating Table 10R	
Water Level (ft)	Discharge (cfs)
0.18	0.02
0.19	0.03
0.2	0.03
0.21	0.04
0.22	0.05
0.23	0.06
0.24	0.08
0.25	0.09
0.26	0.11
0.27	0.13
0.28	0.15
0.29	0.18
0.3	0.21
0.31	0.25
0.32	0.28
0.33	0.33
0.34	0.38
0.35	0.43
0.36	0.49
0.37	0.56
0.38	0.63
0.39	0.71
0.4	0.8
0.41	0.89
0.42	1
0.43	1.09
0.44	1.18
0.45	1.28
0.46	1.38
0.47	1.49
0.48	1.6
0.49	1.72
0.5	1.85
0.51	1.98

Table D-4. Rating Tables Used to Estimate Discharge at MONMN.

MONMN Rating Table 10R	
Water Level (ft)	Discharge (cfs)
0.52	2.12
0.53	2.27
0.54	2.42
0.55	2.59
0.56	2.76
0.57	2.93
0.58	3.12
0.59	3.31
0.6	3.51
0.61	3.72
0.62	3.94
0.63	4.17
0.64	4.41
0.65	4.66
0.66	4.92
0.67	5.18
0.68	5.46
0.69	5.75
0.7	6.05
0.71	6.36
0.72	6.68
0.73	7.01
0.74	7.36
0.75	7.71
0.76	8.08
0.77	8.46
0.78	8.86
0.79	9.26
0.8	9.68
0.81	10.12
0.82	10.56
0.83	11.02
0.84	11.5
0.85	11.72
0.86	11.94
0.87	12.16
0.88	12.38
0.89	12.61
0.9	12.83
0.91	13.06

Table D-4. Rating Tables Used to Estimate Discharge at MONMN.

MONMN Rating Table 10R	
Water Level (ft)	Discharge (cfs)
0.92	13.29
0.93	13.52
0.94	13.75
0.95	13.98
0.96	14.21
0.97	14.45
0.98	14.69
0.99	14.93
1	15.17
1.01	15.41
1.02	15.65
1.03	15.89
1.04	16.14
1.05	16.39
1.06	16.64
1.07	16.89
1.08	17.14
1.09	17.39
1.1	17.64
1.11	17.9
1.12	18.16
1.13	18.41
1.14	18.67
1.15	18.93
1.16	19.19
1.17	19.46
1.18	19.72
1.19	19.99
1.2	20.26
1.21	20.52
1.22	20.79
1.23	21.07
1.24	21.34
1.25	21.61
1.26	21.89
1.27	22.16
1.28	22.44
1.29	22.72
1.3	23

Table D-5. Rating Tables Used to Estimate Discharge at MONMS.

MONMS Rating Table 04	
Water Level (ft)	Discharge (cfs)
0.09	0.01
0.1	0.01
0.11	0.02
0.12	0.03
0.13	0.04
0.14	0.05
0.15	0.06
0.16	0.08
0.17	0.09
0.18	0.1
0.19	0.11
0.2	0.13
0.21	0.14
0.22	0.15
0.23	0.17
0.24	0.18
0.25	0.2
0.26	0.21
0.27	0.23
0.28	0.25
0.29	0.27
0.3	0.28
0.31	0.3
0.32	0.32
0.33	0.35
0.34	0.37
0.35	0.39
0.36	0.41
0.37	0.43
0.38	0.46
0.39	0.48
0.4	0.51
0.41	0.53
0.42	0.56
0.43	0.59
0.44	0.62
0.45	0.65
0.46	0.67

Table D-5. Rating Tables Used to Estimate Discharge at MONMS.

MONMS Rating Table 04	
Water Level (ft)	Discharge (cfs)
0.47	0.7
0.48	0.74
0.49	0.77
0.5	0.8
0.51	0.83
0.52	0.86
0.53	0.9
0.54	0.93
0.55	0.97
0.56	1
0.57	1.04
0.58	1.08
0.59	1.12
0.6	1.15
0.61	1.19
0.62	1.23
0.63	1.27
0.64	1.31
0.65	1.36
0.66	1.4
0.67	1.44
0.68	1.49
0.69	1.53
0.7	1.58
0.71	1.62
0.72	1.67
0.73	1.72
0.74	1.76
0.75	1.81
0.76	1.86
0.77	1.91
0.78	1.96
0.79	2.01
0.8	2.06
0.81	2.12
0.82	2.17
0.83	2.22
0.84	2.28

Table D-5. Rating Tables Used to Estimate Discharge at MONMS.

MONMS Rating Table 04	
Water Level (ft)	Discharge (cfs)
0.85	2.33
0.86	2.39
0.87	2.44
0.88	2.5
0.89	2.56
0.9	2.62
0.91	2.68
0.92	2.74
0.93	2.8
0.94	2.86
0.95	2.92
0.96	2.98
0.97	3.04
0.98	3.11
0.99	3.17
1	3.24
1.01	3.3
1.02	3.37
1.03	3.44
1.04	3.5
1.05	3.57
1.06	3.64
1.07	3.71
1.08	3.78
1.09	3.85
1.1	3.93
1.11	4
1.12	4.07
1.13	4.14
1.14	4.22
1.15	4.29
1.16	4.37
1.17	4.45
1.18	4.52
1.19	4.6
1.2	4.68
1.21	4.76
1.22	4.84

Table D-5. Rating Tables Used to Estimate Discharge at MONMS.

MONMS Rating Table 04	
Water Level (ft)	Discharge (cfs)
1.23	4.92
1.24	5
1.25	5.08
1.26	5.16
1.27	5.25
1.28	5.33
1.29	5.41
1.3	5.5

Table D-6. Rating Tables Used to Estimate Discharge at TOSMO.

TOSMO Rating Table 02	
Water Level (ft)	Discharge (cfs)
0.1	0.14
0.11	0.18
0.12	0.22
0.13	0.26
0.14	0.31
0.15	0.37
0.16	0.43
0.17	0.5
0.18	0.55
0.19	0.61
0.2	0.67
0.21	0.73
0.22	0.79
0.23	0.85
0.24	0.92
0.25	0.99
0.26	1.06
0.27	1.14
0.28	1.21
0.29	1.29
0.3	1.37
0.31	1.45
0.32	1.57
0.33	1.69
0.34	1.81
0.35	1.94
0.36	2.08
0.37	2.22
0.38	2.37
0.39	2.52
0.4	2.68
0.41	2.84
0.42	3.01
0.43	3.19
0.44	3.37
0.45	3.55
0.46	3.75
0.47	3.95

Table D-6. Rating Tables Used to Estimate Discharge at TOSMO.

TOSMO Rating Table 02	
Water Level (ft)	Discharge (cfs)
0.48	4.15
0.49	4.36
0.5	4.58
0.51	4.8
0.52	5.03
0.53	5.27
0.54	5.51
0.55	5.76
0.56	6.02
0.57	6.28
0.58	6.55
0.59	6.82
0.6	7.1
0.61	7.39
0.62	7.69
0.63	7.99
0.64	8.3
0.65	8.61
0.66	8.93
0.67	9.26
0.68	9.6
0.69	9.9
0.7	10.2
0.71	10.5
0.72	10.82
0.73	11.13
0.74	11.45
0.75	11.78
0.76	12.11
0.77	12.44
0.78	12.78
0.79	13.13
0.8	13.47
0.81	13.83
0.82	14.19
0.83	14.55
0.84	14.92
0.85	15.29

Table D-6. Rating Tables Used to Estimate Discharge at TOSMO.

TOSMO Rating Table 02	
Water Level (ft)	Discharge (cfs)
0.86	15.67
0.87	16.05
0.88	16.44
0.89	16.83
0.9	17.23
0.91	17.63
0.92	18.03
0.93	18.45
0.94	18.86
0.95	19.28
0.96	19.71
0.97	20.14
0.98	20.58
0.99	21.02
1	21.46
1.01	21.91
1.02	22.37
1.03	22.83
1.04	23.29
1.05	23.76
1.06	24.23
1.07	24.71
1.08	25.2
1.09	25.69
1.1	26.18
1.11	26.68
1.12	27.18
1.13	27.69
1.14	28.21
1.15	28.73
1.16	29.25
1.17	29.78
1.18	30.31
1.19	30.85
1.2	31.39
1.21	31.94
1.22	32.49
1.23	33.05

Table D-6. Rating Tables Used to Estimate Discharge at TOSMO.

TOSMO Rating Table 02	
Water Level (ft)	Discharge (cfs)
1.24	33.61
1.25	34.18
1.26	34.76
1.27	35.33
1.28	35.92
1.29	36.5
1.3	37.1
1.31	37.69
1.32	38.3
1.33	38.9
1.34	39.52
1.35	40.13
1.36	40.76
1.37	41.39
1.38	42.02
1.39	42.66
1.4	43.3
1.41	43.95
1.42	44.6
1.43	45.26
1.44	45.92
1.45	46.59
1.46	47.26
1.47	47.94
1.48	48.62
1.49	49.31
1.5	50

Table D-7. Rating Tables Used to Estimate Discharge at TOSMI.

TOSMI Rating Table 04	
Water Level (ft)	Discharge (cfs)
0.08	0.06
0.09	0.08
0.1	0.1
0.11	0.12
0.12	0.15
0.13	0.18
0.14	0.21
0.15	0.24
0.16	0.28
0.17	0.32
0.18	0.36
0.19	0.4
0.2	0.45
0.21	0.5
0.22	0.56
0.23	0.61
0.24	0.67
0.25	0.73
0.26	0.8
0.27	0.89
0.28	0.99
0.29	1.1
0.3	1.21
0.31	1.33
0.32	1.46
0.33	1.6
0.34	1.74
0.35	1.9
0.36	2.06
0.37	2.23
0.38	2.41
0.39	2.6
0.4	2.8
0.41	3.01
0.42	3.22

Table D-7. Rating Tables Used to Estimate Discharge at TOSMI.

TOSMI Rating Table 04	
Water Level (ft)	Discharge (cfs)
0.43	3.45
0.44	3.69
0.45	3.94
0.46	4.2
0.47	4.47
0.48	4.75
0.49	5.05
0.5	5.35
0.51	5.67
0.52	6
0.53	6.2
0.54	6.41
0.55	6.62
0.56	6.83
0.57	7.05
0.58	7.27
0.59	7.49
0.6	7.71
0.61	7.94
0.62	8.17
0.63	8.4
0.64	8.64
0.65	8.88
0.66	9.12
0.67	9.36
0.68	9.61
0.69	9.86
0.7	10.11
0.71	10.37
0.72	10.63
0.73	10.89
0.74	11.15
0.75	11.42
0.76	11.69
0.77	11.96
0.78	12.23
0.79	12.51

Table D-7. Rating Tables Used to Estimate Discharge at TOSMI.

TOSMI Rating Table 04	
Water Level (ft)	Discharge (cfs)
0.8	12.79
0.81	13.07
0.82	13.35
0.83	13.64
0.84	13.93
0.85	14.22
0.86	14.52
0.87	14.82
0.88	15.12
0.89	15.42
0.9	15.73
0.91	16.03
0.92	16.34
0.93	16.66
0.94	16.97
0.95	17.29
0.96	17.61
0.97	17.94
0.98	18.26
0.99	18.59
1	18.92
1.01	19.26
1.02	19.59
1.03	19.93
1.04	20.27
1.05	20.62
1.06	20.96
1.07	21.31
1.08	21.66
1.09	22.02
1.1	22.37
1.11	22.73
1.12	23.09
1.13	23.45
1.14	23.82
1.15	24.19
1.16	24.56

Table D-7. Rating Tables Used to Estimate Discharge at TOSMI.

TOSMI Rating Table 04	
Water Level (ft)	Discharge (cfs)
1.17	24.93
1.18	25.31
1.19	25.68
1.2	26.07
1.21	26.45
1.22	26.83
1.23	27.22
1.24	27.61
1.25	28
1.26	28.4
1.27	28.79
1.28	29.19
1.29	29.6
1.3	30

Table D-7. Rating Tables Used to Estimate Discharge at TOSMI.

TOSMI Rating Table 05	
Water Level (ft)	Discharge (cfs)
0.17	0.06
0.18	0.08
0.19	0.1
0.2	0.12
0.21	0.15
0.22	0.19
0.23	0.23
0.24	0.28
0.25	0.34
0.26	0.4
0.27	0.48
0.28	0.56
0.29	0.66
0.3	0.76
0.31	0.89
0.32	1.02
0.33	1.17
0.34	1.34
0.35	1.46
0.36	1.59
0.37	1.73
0.38	1.88
0.39	2.03
0.4	2.2
0.41	2.37
0.42	2.55
0.43	2.74
0.44	2.94
0.45	3.14
0.46	3.36
0.47	3.59
0.48	3.82
0.49	4.07
0.5	4.33
0.51	4.6

Table D-7. Rating Tables Used to Estimate Discharge at TOSMI.

TOSMI Rating Table 05	
Water Level (ft)	Discharge (cfs)
0.52	4.88
0.53	5.17
0.54	5.47
0.55	5.79
0.56	6.11
0.57	6.45
0.58	6.8
0.59	7.01
0.6	7.22
0.61	7.43
0.62	7.65
0.63	7.86
0.64	8.08
0.65	8.31
0.66	8.53
0.67	8.76
0.68	8.99
0.69	9.23
0.7	9.46
0.71	9.7
0.72	9.94
0.73	10.19
0.74	10.43
0.75	10.68
0.76	10.93
0.77	11.19
0.78	11.44
0.79	11.7
0.8	11.96
0.81	12.23
0.82	12.49
0.83	12.76
0.84	13.03
0.85	13.31
0.86	13.59
0.87	13.86
0.88	14.14

Table D-7. Rating Tables Used to Estimate Discharge at TOSMI.

TOSMI Rating Table 05	
Water Level (ft)	Discharge (cfs)
0.89	14.43
0.9	14.71
0.91	15
0.92	15.29
0.93	15.59
0.94	15.88
0.95	16.18
0.96	16.48
0.97	16.78
0.98	17.09
0.99	17.4
1	17.71
1.01	18.02
1.02	18.33
1.03	18.65
1.04	18.97
1.05	19.29
1.06	19.62
1.07	19.94
1.08	20.27
1.09	20.6
1.1	20.93
1.11	21.27
1.12	21.61
1.13	21.95
1.14	22.29
1.15	22.63
1.16	22.98
1.17	23.33
1.18	23.68
1.19	24.04
1.2	24.39
1.21	24.75
1.22	25.11
1.23	25.47
1.24	25.84
1.25	26.21

Table D-7. Rating Tables Used to Estimate Discharge at TOSMI.

TOSMI Rating Table 05	
Water Level (ft)	Discharge (cfs)
1.26	26.58
1.27	26.95
1.28	27.32
1.29	27.7
1.3	28.08
1.31	28.46
1.32	28.84
1.33	29.22
1.34	29.61
1.35	30

Table D-8. Rating Tables Used to Estimate Discharge at COLM.

COLM Rating Table 04	
Water Level (ft)	Discharge (cfs)
0.37	0
0.38	0
0.39	0
0.4	0.01
0.41	0.01
0.42	0.02
0.43	0.02
0.44	0.07
0.45	0.22
0.46	0.24
0.47	0.26
0.48	0.28
0.49	0.3
0.5	0.33
0.51	0.35
0.52	0.38
0.53	0.41
0.54	0.44
0.55	0.47
0.56	0.5
0.57	0.54
0.58	0.57
0.59	0.61
0.6	0.65
0.61	0.69
0.62	0.74
0.63	0.78
0.64	0.83
0.65	0.88
0.66	0.94
0.67	0.99
0.68	1.05
0.69	1.11
0.7	1.18
0.71	1.25
0.72	1.32
0.73	1.39

Table D-8. Rating Tables Used to Estimate Discharge at COLM.

COLM Rating Table 04	
Water Level (ft)	Discharge (cfs)
0.74	1.46
0.75	1.54
0.76	1.63
0.77	1.71
0.78	1.8
0.79	1.89
0.8	1.99
0.81	2.09
0.82	2.19
0.83	2.29
0.84	2.4
0.85	2.52
0.86	2.64
0.87	2.76
0.88	2.88
0.89	3.02
0.9	3.15
0.91	3.31
0.92	3.47
0.93	3.64
0.94	3.81
0.95	3.99
0.96	4.18
0.97	4.37
0.98	4.58
0.99	4.78
1	5
1.01	5.17
1.02	5.35
1.03	5.53
1.04	5.72
1.05	5.91
1.06	6.1
1.07	6.3
1.08	6.5
1.09	6.71
1.1	6.93

Table D-8. Rating Tables Used to Estimate Discharge at COLM.

COLM Rating Table 04	
Water Level (ft)	Discharge (cfs)
1.11	7.14
1.12	7.37
1.13	7.59
1.14	7.83
1.15	8.06
1.16	8.31
1.17	8.55
1.18	8.81
1.19	9.06
1.2	9.33
1.21	9.59
1.22	9.87
1.23	10.15
1.24	10.43
1.25	10.72
1.26	11.02
1.27	11.32
1.28	11.63
1.29	11.94
1.3	12.26
1.31	12.59
1.32	12.92
1.33	13.26
1.34	13.6
1.35	13.95
1.36	14.31
1.37	14.67
1.38	15.04
1.39	15.41
1.4	15.8
1.41	16.19
1.42	16.58
1.43	16.99
1.44	17.39
1.45	17.81
1.46	18.23
1.47	18.67

Table D-8. Rating Tables Used to Estimate Discharge at COLM.

COLM Rating Table 04	
Water Level (ft)	Discharge (cfs)
1.48	19.1
1.49	19.55
1.5	20
1.51	20.46
1.52	20.92
1.53	21.39
1.54	21.86
1.55	22.35
1.56	22.84
1.57	23.34
1.58	23.85
1.59	24.36
1.6	24.89
1.61	25.42
1.62	25.96
1.63	26.5
1.64	27.06
1.65	27.62
1.66	28.19
1.67	28.77
1.68	29.36
1.69	29.96
1.7	30.56
1.71	31.17
1.72	31.8
1.73	32.43
1.74	33.07
1.75	33.71
1.76	34.37
1.77	35.04
1.78	35.71
1.79	36.4
1.8	37.09
1.81	37.79
1.82	38.51
1.83	39.23
1.84	39.96

Table D-8. Rating Tables Used to Estimate Discharge at COLM.

COLM Rating Table 04	
Water Level (ft)	Discharge (cfs)
1.85	40.7
1.86	41.45
1.87	42.21
1.88	42.98
1.89	43.76
1.9	44.55
1.91	45.35
1.92	46.15
1.93	46.97
1.94	47.8
1.95	48.64
1.96	49.49
1.97	50.35
1.98	51.23
1.99	52.11
2	53

Table D-8. Rating Tables Used to Estimate Discharge at COLM.

COLM Rating Table 05	
Water Level (ft)	Discharge (cfs)
0.27	0
0.28	0
0.29	0
0.3	0.01
0.31	0.01
0.32	0.02
0.33	0.03
0.34	0.04
0.35	0.05
0.36	0.07
0.37	0.1
0.38	0.11
0.39	0.12
0.4	0.14
0.41	0.15
0.42	0.17
0.43	0.18
0.44	0.2
0.45	0.22
0.46	0.24
0.47	0.26
0.48	0.28
0.49	0.3
0.5	0.33
0.51	0.35
0.52	0.38
0.53	0.41
0.54	0.44
0.55	0.47
0.56	0.5
0.57	0.54
0.58	0.57
0.59	0.61
0.6	0.65
0.61	0.69
0.62	0.74
0.63	0.78

Table D-8. Rating Tables Used to Estimate Discharge at COLM.

COLM Rating Table 05	
Water Level (ft)	Discharge (cfs)
0.64	0.83
0.65	0.88
0.66	0.94
0.67	0.99
0.68	1.05
0.69	1.11
0.7	1.18
0.71	1.25
0.72	1.32
0.73	1.39
0.74	1.46
0.75	1.54
0.76	1.63
0.77	1.71
0.78	1.8
0.79	1.89
0.8	1.99
0.81	2.09
0.82	2.19
0.83	2.29
0.84	2.4
0.85	2.52
0.86	2.64
0.87	2.76
0.88	2.88
0.89	3.02
0.9	3.15
0.91	3.31
0.92	3.47
0.93	3.64
0.94	3.81
0.95	3.99
0.96	4.18
0.97	4.37
0.98	4.58
0.99	4.78
1	5

Table D-8. Rating Tables Used to Estimate Discharge at COLM.

COLM Rating Table 05	
Water Level (ft)	Discharge (cfs)
1.01	5.17
1.02	5.35
1.03	5.53
1.04	5.72
1.05	5.91
1.06	6.1
1.07	6.3
1.08	6.5
1.09	6.71
1.1	6.93
1.11	7.14
1.12	7.37
1.13	7.59
1.14	7.83
1.15	8.06
1.16	8.31
1.17	8.55
1.18	8.81
1.19	9.06
1.2	9.33
1.21	9.59
1.22	9.87
1.23	10.15
1.24	10.43
1.25	10.72
1.26	11.02
1.27	11.32
1.28	11.63
1.29	11.94
1.3	12.26
1.31	12.59
1.32	12.92
1.33	13.26
1.34	13.6
1.35	13.95
1.36	14.31
1.37	14.67

Table D-8. Rating Tables Used to Estimate Discharge at COLM.

COLM Rating Table 05	
Water Level (ft)	Discharge (cfs)
1.38	15.04
1.39	15.41
1.4	15.8
1.41	16.19
1.42	16.58
1.43	16.99
1.44	17.39
1.45	17.81
1.46	18.23
1.47	18.67
1.48	19.1
1.49	19.55
1.5	20
1.51	20.46
1.52	20.92
1.53	21.39
1.54	21.86
1.55	22.35
1.56	22.84
1.57	23.34
1.58	23.85
1.59	24.36
1.6	24.89
1.61	25.42
1.62	25.96
1.63	26.5
1.64	27.06
1.65	27.62
1.66	28.19
1.67	28.77
1.68	29.36
1.69	29.96
1.7	30.56
1.71	31.17
1.72	31.8
1.73	32.43
1.74	33.07

Table D-8. Rating Tables Used to Estimate Discharge at COLM.

COLM Rating Table 05	
Water Level (ft)	Discharge (cfs)
1.75	33.71
1.76	34.37
1.77	35.04
1.78	35.71
1.79	36.4
1.8	37.09
1.81	37.79
1.82	38.51
1.83	39.23
1.84	39.96
1.85	40.7
1.86	41.45
1.87	42.21
1.88	42.98
1.89	43.76
1.9	44.55
1.91	45.35
1.92	46.15
1.93	46.97
1.94	47.8
1.95	48.64
1.96	49.49
1.97	50.35
1.98	51.23
1.99	52.11
2	53

Table D-9. Rating Tables Used to Estimate Discharge at SEIMN.

SEIMN Rating Table 07X	
Water Level (ft)	Discharge (cfs)
0.1	0.01
0.11	0.02
0.12	0.02
0.13	0.03
0.14	0.04
0.15	0.06
0.16	0.08
0.17	0.1
0.18	0.13
0.19	0.16
0.2	0.2
0.21	0.24
0.22	0.29
0.23	0.35
0.24	0.42
0.25	0.49
0.26	0.53
0.27	0.58
0.28	0.63
0.29	0.68
0.3	0.73
0.31	0.79
0.32	0.85
0.33	0.91
0.34	0.97
0.35	1.03
0.36	1.1
0.37	1.17
0.38	1.24
0.39	1.31
0.4	1.39
0.41	1.46
0.42	1.54
0.43	1.63
0.44	1.71
0.45	1.8
0.46	1.89
0.47	1.98

Table D-9. Rating Tables Used to Estimate Discharge at SEIMN.

SEIMN Rating Table 07X	
Water Level (ft)	Discharge (cfs)
0.48	2.07
0.49	2.17
0.5	2.27
0.51	2.37
0.52	2.47
0.53	2.58
0.54	2.69
0.55	2.8
0.56	2.91
0.57	3.03
0.58	3.15
0.59	3.27
0.6	3.39
0.61	3.52
0.62	3.65
0.63	3.78
0.64	3.91
0.65	4.05
0.66	4.19
0.67	4.33
0.68	4.48
0.69	4.62
0.7	4.77
0.71	4.92
0.72	5.08
0.73	5.24
0.74	5.4
0.75	5.56
0.76	5.72
0.77	5.89
0.78	6.06
0.79	6.24
0.8	6.41
0.81	6.59
0.82	6.77
0.83	6.95
0.84	7.14
0.85	7.33

Table D-9. Rating Tables Used to Estimate Discharge at SEIMN.

SEIMN Rating Table 07X	
Water Level (ft)	Discharge (cfs)
0.86	7.52
0.87	7.72
0.88	7.92
0.89	8.12
0.9	8.32
0.91	8.52
0.92	8.73
0.93	8.94
0.94	9.16
0.95	9.37
0.96	9.59
0.97	9.82
0.98	10.04
0.99	10.27
1	10.5
1.01	10.74
1.02	10.98
1.03	11.22
1.04	11.46
1.05	11.71
1.06	11.96
1.07	12.22
1.08	12.48
1.09	12.74
1.1	13

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Table D-10. Rating Tables Used to Estimate Discharge at SEIMS.

SEIMS Rating Table 03X	
Water Level (ft)	Discharge (cfs)
0.06	0.08
0.07	0.1
0.08	0.13
0.09	0.16
0.1	0.19
0.11	0.22
0.12	0.25
0.13	0.29
0.14	0.33
0.15	0.37
0.16	0.41
0.17	0.45
0.18	0.5
0.19	0.55
0.2	0.61
0.21	0.67
0.22	0.73
0.23	0.8
0.24	0.87
0.25	0.94
0.26	1.01
0.27	1.09
0.28	1.17
0.29	1.25
0.3	1.33
0.31	1.42
0.32	1.51
0.33	1.6
0.34	1.71
0.35	1.81
0.36	1.93
0.37	2.04
0.38	2.16
0.39	2.29
0.4	2.42
0.41	2.55
0.42	2.68
0.43	2.82

Table D-10. Rating Tables Used to Estimate Discharge at SEIMS.

SEIMS Rating Table 03X	
Water Level (ft)	Discharge (cfs)
0.44	2.96
0.45	3.11
0.46	3.26
0.47	3.41
0.48	3.57
0.49	3.73
0.5	3.89
0.51	4.06
0.52	4.23
0.53	4.41
0.54	4.59
0.55	4.77
0.56	4.96
0.57	5.15
0.58	5.35
0.59	5.55
0.6	5.75
0.61	5.96
0.62	6.17
0.63	6.38
0.64	6.6
0.65	6.83
0.66	7.05
0.67	7.28
0.68	7.52
0.69	7.76
0.7	8
0.71	8.24
0.72	8.49
0.73	8.74
0.74	9
0.75	9.26
0.76	9.52
0.77	9.79
0.78	10.06
0.79	10.33
0.8	10.61
0.81	10.89

Table D-10. Rating Tables Used to Estimate Discharge at SEIMS.

SEIMS Rating Table 03X	
Water Level (ft)	Discharge (cfs)
0.82	11.18
0.83	11.47
0.84	11.76
0.85	12.06
0.86	12.36
0.87	12.67
0.88	12.98
0.89	13.29
0.9	13.61
0.91	13.93
0.92	14.25
0.93	14.58
0.94	14.92
0.95	15.25
0.96	15.59
0.97	15.94
0.98	16.29
0.99	16.64
1	17

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Table D-11. Rating Tables Used to Estimate Discharge at COUMO.

COUMO Rating Table 06	
Water Level (ft)	Discharge (cfs)
0.16	0.03
0.17	0.04
0.18	0.05
0.19	0.06
0.2	0.07
0.21	0.09
0.22	0.11
0.23	0.13
0.24	0.15
0.25	0.18
0.26	0.2
0.27	0.24
0.28	0.27
0.29	0.31
0.3	0.36
0.31	0.41
0.32	0.46
0.33	0.52
0.34	0.59
0.35	0.66
0.36	0.74
0.37	0.81
0.38	0.88
0.39	0.95
0.4	1.03
0.41	1.11
0.42	1.2
0.43	1.29
0.44	1.39
0.45	1.49
0.46	1.6
0.47	1.71
0.48	1.82
0.49	1.94
0.5	2.07
0.51	2.2
0.52	2.34

Table D-11. Rating Tables Used to Estimate Discharge at COUMO.

COUMO Rating Table 06	
Water Level (ft)	Discharge (cfs)
0.53	2.49
0.54	2.64
0.55	2.79
0.56	2.95
0.57	3.12
0.58	3.3
0.59	3.48
0.6	3.67
0.61	3.86
0.62	4.06
0.63	4.27
0.64	4.49
0.65	4.71
0.66	4.94
0.67	5.18
0.68	5.43
0.69	5.68
0.7	5.94
0.71	6.21
0.72	6.49
0.73	6.78
0.74	7.08
0.75	7.38
0.76	7.69
0.77	8.01
0.78	8.34
0.79	8.68
0.8	9.03
0.81	9.39
0.82	9.76
0.83	10.14
0.84	10.52
0.85	10.92
0.86	11.33
0.87	11.75
0.88	12.18
0.89	12.62

Table D-11. Rating Tables Used to Estimate Discharge at COUMO.

COUMO Rating Table 06	
Water Level (ft)	Discharge (cfs)
0.9	13.06
0.91	13.52
0.92	14
0.93	14.48
0.94	14.97
0.95	15.48
0.96	15.99
0.97	16.52
0.98	17.06
0.99	17.61
1	18.17
1.01	18.75
1.02	19.34
1.03	19.94
1.04	20.55
1.05	21.18
1.06	21.82
1.07	22.47
1.08	23.13
1.09	23.81
1.1	24.5

Table D-11. Rating Tables Used to Estimate Discharge at COUMO.

COUMO Rating Table 07	
Water Level (ft)	Discharge (cfs)
0.14	0.01
0.15	0.02
0.16	0.03
0.17	0.04
0.18	0.06
0.19	0.08
0.2	0.09
0.21	0.12
0.22	0.14
0.23	0.17
0.24	0.2
0.25	0.24
0.26	0.29
0.27	0.33
0.28	0.39
0.29	0.45
0.3	0.52
0.31	0.6
0.32	0.69
0.33	0.78
0.34	0.89
0.35	0.97
0.36	1.05
0.37	1.14
0.38	1.24
0.39	1.34
0.4	1.44
0.41	1.55
0.42	1.66
0.43	1.78
0.44	1.91
0.45	2.04
0.46	2.18
0.47	2.32
0.48	2.47
0.49	2.63
0.5	2.79

Table D-11. Rating Tables Used to Estimate Discharge at COUMO.

COUMO Rating Table 07	
Water Level (ft)	Discharge (cfs)
0.51	2.96
0.52	3.13
0.53	3.31
0.54	3.5
0.55	3.7
0.56	3.9
0.57	4.11
0.58	4.33
0.59	4.55
0.6	4.78
0.61	5.02
0.62	5.27
0.63	5.53
0.64	5.79
0.65	6.06
0.66	6.34
0.67	6.63
0.68	6.93
0.69	7.23
0.7	7.55
0.71	7.87
0.72	8.21
0.73	8.55
0.74	8.9
0.75	9.18
0.76	9.46
0.77	9.74
0.78	10.03
0.79	10.33
0.8	10.63
0.81	10.93
0.82	11.24
0.83	11.56
0.84	11.88
0.85	12.2
0.86	12.53
0.87	12.87

Table D-11. Rating Tables Used to Estimate Discharge at COUMO.

COUMO Rating Table 07	
Water Level (ft)	Discharge (cfs)
0.88	13.21
0.89	13.55
0.9	13.9
0.91	14.25
0.92	14.61
0.93	14.98
0.94	15.35
0.95	15.72
0.96	16.1
0.97	16.49
0.98	16.87
0.99	17.27
1	17.67
1.01	18.07
1.02	18.48
1.03	18.9
1.04	19.32
1.05	19.75
1.06	20.18
1.07	20.61
1.08	21.05
1.09	21.5
1.1	21.95
1.11	22.41
1.12	22.87
1.13	23.34
1.14	23.81
1.15	24.29
1.16	24.78
1.17	25.27
1.18	25.76
1.19	26.26
1.2	26.76
1.21	27.28
1.22	27.79
1.23	28.31
1.24	28.84

Table D-11. Rating Tables Used to Estimate Discharge at COUMO.

COUMO Rating Table 07	
Water Level (ft)	Discharge (cfs)
1.25	29.37
1.26	29.91
1.27	30.45
1.28	31
1.29	31.56
1.3	32.12
1.31	32.68
1.32	33.25
1.33	33.83
1.34	34.41
1.35	35

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Table D-12. Rating Tables Used to Estimate Discharge at COUMI.

COUMI Rating Table DS 01	
Water Level (ft)	Discharge (cfs)
0.34	0.01
0.35	0.01
0.36	0.02
0.37	0.02
0.38	0.02
0.39	0.03
0.4	0.04
0.41	0.05
0.42	0.06
0.43	0.07
0.44	0.08
0.45	0.1
0.46	0.12
0.47	0.14
0.48	0.17
0.49	0.19
0.5	0.22
0.51	0.25
0.52	0.28
0.53	0.31
0.54	0.35
0.55	0.39
0.56	0.44
0.57	0.48
0.58	0.54
0.59	0.6
0.6	0.66
0.61	0.73
0.62	0.81
0.63	0.89
0.64	0.98
0.65	1.08
0.66	1.18
0.67	1.3
0.68	1.42
0.69	1.55
0.7	1.7

Table D-12. Rating Tables Used to Estimate Discharge at COUMI.

COUMI Rating Table DS 01	
Water Level (ft)	Discharge (cfs)
0.71	1.85
0.72	2.01
0.73	2.19
0.74	2.38
0.75	2.58
0.76	2.8
0.77	2.89
0.78	2.99
0.79	3.09
0.8	3.19
0.81	3.29
0.82	3.39
0.83	3.49
0.84	3.6
0.85	3.71
0.86	3.82
0.87	3.93
0.88	4.05
0.89	4.16
0.9	4.28
0.91	4.4
0.92	4.53
0.93	4.65
0.94	4.78
0.95	4.91
0.96	5.04
0.97	5.17
0.98	5.3
0.99	5.44
1	5.58
1.01	5.72
1.02	5.87
1.03	6.01
1.04	6.16
1.05	6.31
1.06	6.46
1.07	6.62

Table D-12. Rating Tables Used to Estimate Discharge at COUMI.

COUMI Rating Table DS 01	
Water Level (ft)	Discharge (cfs)
1.08	6.77
1.09	6.93
1.1	7.09
1.11	7.25
1.12	7.42
1.13	7.59
1.14	7.76
1.15	7.93
1.16	8.1
1.17	8.28
1.18	8.46
1.19	8.64
1.2	8.82
1.21	9.01
1.22	9.2
1.23	9.39
1.24	9.58
1.25	9.78
1.26	9.98
1.27	10.18
1.28	10.38
1.29	10.58
1.3	10.79
1.31	11
1.32	11.21
1.33	11.43
1.34	11.64
1.35	11.86
1.36	12.09
1.37	12.31
1.38	12.54
1.39	12.77
1.4	13

Table D-12. Rating Tables Used to Estimate Discharge at COUMI.

COUMI Rating Table 09	
Water Level (ft)	Discharge (cfs)
0.02	0.03
0.03	0.04
0.04	0.05
0.05	0.06
0.06	0.06
0.07	0.07
0.08	0.08
0.09	0.08
0.1	0.09
0.11	0.09
0.12	0.1
0.13	0.1
0.14	0.11
0.15	0.12
0.16	0.12
0.17	0.13
0.18	0.13
0.19	0.15
0.2	0.16
0.21	0.18
0.22	0.2
0.23	0.22
0.24	0.24
0.25	0.26
0.26	0.28
0.27	0.3
0.28	0.34
0.29	0.39
0.3	0.44
0.31	0.49
0.32	0.55
0.33	0.62
0.34	0.69
0.35	0.77
0.36	0.85
0.37	0.94
0.38	1.03

Table D-12. Rating Tables Used to Estimate Discharge at COUMI.

COUMI Rating Table 09	
Water Level (ft)	Discharge (cfs)
0.39	1.13
0.4	1.24
0.41	1.36
0.42	1.48
0.43	1.61
0.44	1.75
0.45	1.9
0.46	2.06
0.47	2.23
0.48	2.4
0.49	2.59
0.5	2.79
0.51	2.99
0.52	3.21
0.53	3.44
0.54	3.68
0.55	3.93
0.56	4.2
0.57	4.47
0.58	4.76
0.59	5.07
0.6	5.39
0.61	5.72
0.62	6.06
0.63	6.43
0.64	6.8
0.65	7.19
0.66	7.6
0.67	8.03
0.68	8.47
0.69	8.93
0.7	9.41
0.71	9.9
0.72	10.42
0.73	10.95
0.74	11.5

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Table D-13. Rating Tables Used to Estimate Discharge at TYLMO.

TYLMO Rating Table 04X	
Water Level (ft)	Discharge (cfs)
0.01	0.01
0.02	0.02
0.03	0.04
0.04	0.05
0.05	0.08
0.06	0.11
0.07	0.14
0.08	0.18
0.09	0.23
0.1	0.28
0.11	0.33
0.12	0.39
0.13	0.46
0.14	0.53
0.15	0.6
0.16	0.69
0.17	0.78
0.18	0.88
0.19	0.99
0.2	1.11
0.21	1.23
0.22	1.35
0.23	1.49
0.24	1.63
0.25	1.78
0.26	1.93
0.27	2.09
0.28	2.26
0.29	2.44
0.3	2.62
0.31	2.81
0.32	3.01

Table D-13. Rating Tables Used to Estimate Discharge at TYLMO.

TYLMO Rating Table 04X	
Water Level (ft)	Discharge (cfs)
0.33	3.21
0.34	3.42
0.35	3.64
0.36	3.86
0.37	4.09
0.38	4.33
0.39	4.58
0.4	4.83
0.41	5.09
0.42	5.36
0.43	5.64
0.44	5.92
0.45	6.21
0.46	6.51
0.47	6.81
0.48	7.12
0.49	7.44
0.5	7.77
0.51	8.1
0.52	8.44
0.53	8.79
0.54	9.15
0.55	9.51
0.56	9.88
0.57	10.26
0.58	10.65
0.59	11.04
0.6	11.45
0.61	11.86
0.62	12.27
0.63	12.7
0.64	13.13

Table D-13. Rating Tables Used to Estimate Discharge at TYLMO.

TYLMO Rating Table 04X	
Water Level (ft)	Discharge (cfs)
0.65	13.57
0.66	14.02
0.67	14.47
0.68	14.94
0.69	15.41
0.7	15.89
0.71	16.37
0.72	16.87
0.73	17.37
0.74	17.88
0.75	18.4
0.76	18.93
0.77	19.46
0.78	20

Table D-13. Rating Tables Used to Estimate Discharge at TYLMO.

TYLMO Rating Table 05	
Water Level (ft)	Discharge (cfs)
0.06	0.01
0.07	0.02
0.08	0.02
0.09	0.04
0.1	0.05
0.11	0.07
0.12	0.09
0.13	0.11
0.14	0.14
0.15	0.18
0.16	0.21
0.17	0.26
0.18	0.31
0.19	0.37
0.2	0.43
0.21	0.5
0.22	0.58
0.23	0.67
0.24	0.76
0.25	0.87
0.26	0.98
0.27	1.1
0.28	1.23
0.29	1.38
0.3	1.53
0.31	1.7
0.32	1.87
0.33	2.06
0.34	2.26
0.35	2.48
0.36	2.71
0.37	2.95

Table D-13. Rating Tables Used to Estimate Discharge at TYLMO.

TYLMO Rating Table 05	
Water Level (ft)	Discharge (cfs)
0.38	3.2
0.39	3.48
0.4	3.76
0.41	4.06
0.42	4.38
0.43	4.72
0.44	5.07
0.45	5.44
0.46	5.82
0.47	6.23
0.48	6.65
0.49	7.09
0.5	7.56
0.51	8.04
0.52	8.54
0.53	9.07
0.54	9.61
0.55	10.18
0.56	10.77
0.57	11.38
0.58	12.02
0.59	12.68
0.6	13.36
0.61	14.07
0.62	14.8
0.63	15.56
0.64	16.35
0.65	17.16
0.66	18

Table D-13. Rating Tables Used to Estimate Discharge at TYLMO.

TYLMO Rating Table 06	
Water Level (ft)	Discharge (cfs)
0.06	0.01
0.07	0.02
0.08	0.02
0.09	0.04
0.1	0.05
0.11	0.07
0.12	0.09
0.13	0.11
0.14	0.14
0.15	0.17
0.16	0.21
0.17	0.26
0.18	0.31
0.19	0.36
0.2	0.43
0.21	0.5
0.22	0.57
0.23	0.66
0.24	0.75
0.25	0.86
0.26	0.97
0.27	1.09
0.28	1.22
0.29	1.36
0.3	1.51
0.31	1.67
0.32	1.85
0.33	2.03
0.34	2.23
0.35	2.44
0.36	2.67
0.37	2.91

Table D-13. Rating Tables Used to Estimate Discharge at TYLMO.

TYLMO Rating Table 06	
Water Level (ft)	Discharge (cfs)
0.38	3.16
0.39	3.42
0.4	3.71
0.41	4
0.42	4.31
0.43	4.64
0.44	4.99
0.45	5.35
0.46	5.73
0.47	6.13
0.48	6.54
0.49	6.98
0.5	7.43
0.51	7.9
0.52	8.4
0.53	8.91
0.54	9.44
0.55	10
0.56	10.2
0.57	10.39
0.58	10.59
0.59	10.79
0.6	10.99
0.61	11.19
0.62	11.38
0.63	11.58
0.64	11.78
0.65	11.98
0.66	12.18
0.67	12.38
0.68	12.58
0.69	12.78

Table D-13. Rating Tables Used to Estimate Discharge at TYLMO.

TYLMO Rating Table 06	
Water Level (ft)	Discharge (cfs)
0.7	12.98
0.71	13.18
0.72	13.38
0.73	13.58
0.74	13.79
0.75	13.99
0.76	14.19
0.77	14.39
0.78	14.59
0.79	14.8
0.8	15

Table D-14. Rating Tables Used to Estimate Discharge at TYLMI.

TYLMI Rating Table 07X	
Water Level (ft)	Discharge (cfs)
0.07	0.01
0.08	0.02
0.09	0.02
0.1	0.03
0.11	0.04
0.12	0.06
0.13	0.07
0.14	0.1
0.15	0.12
0.16	0.15
0.17	0.19
0.18	0.23
0.19	0.28
0.2	0.33
0.21	0.4
0.22	0.47
0.23	0.54
0.24	0.63
0.25	0.68
0.26	0.74
0.27	0.8
0.28	0.86
0.29	0.92
0.3	0.99
0.31	1.05
0.32	1.12
0.33	1.19
0.34	1.27
0.35	1.34
0.36	1.42
0.37	1.5
0.38	1.58
0.39	1.67
0.4	1.76
0.41	1.85

Table D-14. Rating Tables Used to Estimate Discharge at TYLMI.

TYLMI Rating Table 07X	
Water Level (ft)	Discharge (cfs)
0.42	1.94
0.43	2.03
0.44	2.13
0.45	2.22
0.46	2.33
0.47	2.43
0.48	2.53
0.49	2.64
0.5	2.75
0.51	2.86
0.52	2.97
0.53	3.09
0.54	3.21
0.55	3.33
0.56	3.45
0.57	3.58
0.58	3.7
0.59	3.83
0.6	3.96
0.61	4.1
0.62	4.23
0.63	4.37
0.64	4.51
0.65	4.65
0.66	4.8
0.67	4.95
0.68	5.09
0.69	5.25
0.7	5.4
0.71	5.56
0.72	5.73
0.73	5.9
0.74	6.08
0.75	6.25
0.76	6.43

Table D-14. Rating Tables Used to Estimate Discharge at TYLMI.

TYLMI Rating Table 07X	
Water Level (ft)	Discharge (cfs)
0.77	6.61
0.78	6.79
0.79	6.98
0.8	7.17
0.81	7.36
0.82	7.55
0.83	7.75
0.84	7.95
0.85	8.15
0.86	8.35
0.87	8.56
0.88	8.77
0.89	8.98
0.9	9.2

Table D-14. Rating Tables Used to Estimate Discharge at TYLMI.

TYLMI Rating Table 08	
Water Level (ft)	Discharge (cfs)
0.24	0.01
0.25	0.02
0.26	0.03
0.27	0.04
0.28	0.07
0.29	0.1
0.3	0.15
0.31	0.23
0.32	0.27
0.33	0.32
0.34	0.38
0.35	0.44
0.36	0.52
0.37	0.6
0.38	0.69
0.39	0.8
0.4	0.92
0.41	1.05
0.42	1.12
0.43	1.18
0.44	1.26
0.45	1.33
0.46	1.4
0.47	1.48
0.48	1.56
0.49	1.65
0.5	1.73
0.51	1.82
0.52	1.91
0.53	2.01
0.54	2.11
0.55	2.21
0.56	2.31
0.57	2.41
0.58	2.52

Table D-14. Rating Tables Used to Estimate Discharge at TYLMI.

TYLMI Rating Table 08	
Water Level (ft)	Discharge (cfs)
0.59	2.63
0.6	2.75
0.61	2.87
0.62	2.99
0.63	3.11
0.64	3.24
0.65	3.37
0.66	3.5
0.67	3.63
0.68	3.77
0.69	3.91
0.7	4.06
0.71	4.21
0.72	4.36
0.73	4.51
0.74	4.67
0.75	4.83
0.76	5
0.77	5.16
0.78	5.34
0.79	5.51
0.8	5.69
0.81	5.87
0.82	6.06
0.83	6.24
0.84	6.44
0.85	6.63
0.86	6.83
0.87	7.03
0.88	7.24
0.89	7.45
0.9	7.66
0.91	7.88
0.92	8.1
0.93	8.32

Table D-14. Rating Tables Used to Estimate Discharge at TYLMI.

TYLMI Rating Table 08	
Water Level (ft)	Discharge (cfs)
0.94	8.55
0.95	8.78
0.96	9.02
0.97	9.26
0.98	9.5
0.99	9.75
1	10

Table D-14. Rating Tables Used to Estimate Discharge at TYLMI.

TYLMI Rating Table 08X	
Water Level (ft)	Discharge (cfs)
0.12	0.01
0.13	0.01
0.14	0.01
0.15	0.01
0.16	0.01
0.17	0.01
0.18	0.01
0.19	0.01
0.2	0.01
0.21	0.01
0.22	0.01
0.23	0.01
0.24	0.01
0.25	0.02
0.26	0.03
0.27	0.04
0.28	0.07
0.29	0.1
0.3	0.15
0.31	0.23
0.32	0.27
0.33	0.32
0.34	0.38
0.35	0.44
0.36	0.52
0.37	0.6
0.38	0.69
0.39	0.8
0.4	0.92
0.41	1.05
0.42	1.12
0.43	1.18
0.44	1.26
0.45	1.33
0.46	1.4

Table D-14. Rating Tables Used to Estimate Discharge at TYLMI.

TYLMI Rating Table 08X	
Water Level (ft)	Discharge (cfs)
0.47	1.48
0.48	1.56
0.49	1.65
0.5	1.73
0.51	1.82
0.52	1.91
0.53	2.01
0.54	2.11
0.55	2.21
0.56	2.31
0.57	2.41
0.58	2.52
0.59	2.63
0.6	2.75
0.61	2.87
0.62	2.99
0.63	3.11
0.64	3.24
0.65	3.37
0.66	3.5
0.67	3.63
0.68	3.77
0.69	3.91
0.7	4.06
0.71	4.21
0.72	4.36
0.73	4.51
0.74	4.67
0.75	4.83
0.76	5
0.77	5.16
0.78	5.34
0.79	5.51
0.8	5.69
0.81	5.87

Table D-14. Rating Tables Used to Estimate Discharge at TYLMI.

TYLMI Rating Table 08X	
Water Level (ft)	Discharge (cfs)
0.82	6.06
0.83	6.24
0.84	6.44
0.85	6.63
0.86	6.83
0.87	7.03
0.88	7.24
0.89	7.45
0.9	7.66
0.91	7.88
0.92	8.1
0.93	8.32
0.94	8.55
0.95	8.78
0.96	9.02
0.97	9.26
0.98	9.5
0.99	9.75
1	10

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APPENDIX E

Summary Statistics for Individual Storm Events by Monitoring Station

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Table E-1. Summary Statistics for Individual Storm Events at the EVALSS Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
10/4/2020 3:15	10/4/2020 10:05	6.8	0.06	0.01	0.12	0.0	10/4/2020 3:10	10/4/2020 22:05	19.0	1.24	1.24	84,552
10/9/2020 21:05	10/10/2020 8:05	11.0	1.05	0.10	0.60	134.1	10/9/2020 21:00	10/10/2020 13:40	16.8	2.92	4.26	175,968
10/10/2020 13:45	10/10/2020 15:55	2.2	0.19	0.09	0.84	7.8	10/10/2020 13:40	10/11/2020 3:55	14.3	1.83	2.36	94,458
10/11/2020 10:35	10/11/2020 19:35	9.0	0.33	0.04	0.24	18.9	10/11/2020 10:30	10/12/2020 3:10	16.8	1.79	2.16	108,006
10/12/2020 3:10	10/12/2020 9:15	6.1	0.55	0.09	0.48	10.7	10/12/2020 3:10	10/12/2020 21:10	18.1	2.85	4.54	185,634
10/13/2020 1:00	10/13/2020 7:15	6.3	0.54	0.09	0.48	16.9	10/13/2020 0:55	10/13/2020 19:15	18.4	2.79	4.83	184,941
10/16/2020 14:20	10/17/2020 4:50	14.5	0.45	0.03	0.36	79.5	10/16/2020 14:20	10/17/2020 16:50	26.6	1.57	1.98	150,168
10/18/2020 1:35	10/18/2020 17:05	15.5	0.19	0.01	0.24	22.4	10/18/2020 1:30	10/19/2020 5:00	27.6	1.45	1.56	144,180
10/19/2020 9:40	10/19/2020 20:00	10.3	0.54	0.05	0.24	21.1	10/19/2020 9:40	10/20/2020 8:00	22.4	2.17	3.73	175,191
10/21/2020 1:35	10/21/2020 3:55	2.3	0.12	0.05	0.48	31.2	10/21/2020 1:30	10/21/2020 11:25	10.0	1.60	1.72	57,552
10/21/2020 11:25	10/21/2020 11:30	0.1	0.03	0.36	0.24	9.5	10/21/2020 11:25	10/21/2020 23:30	12.2	1.51	1.56	66,120
10/23/2020 6:10	10/23/2020 8:45	2.6	0.08	0.03	0.12	52.2	10/23/2020 6:10	10/23/2020 17:25	11.3	1.39	1.40	56,520
10/23/2020 17:25	10/23/2020 23:50	6.4	0.13	0.02	0.12	9.5	10/23/2020 17:25	10/24/2020 11:50	18.5	1.47	1.56	97,632
10/28/2020 23:05	10/29/2020 6:30	7.4	0.05	0.01	0.12	123.9	10/28/2020 23:05	10/29/2020 18:30	19.5	1.39	1.40	97,848
10/30/2020 4:25	10/30/2020 9:30	5.1	0.10	0.02	0.12	25.9	10/30/2020 4:25	10/30/2020 21:30	17.2	1.38	1.48	85,296
11/3/2020 7:20	11/4/2020 11:05	27.8	1.09	0.04	0.60	94.2	11/3/2020 7:15	11/4/2020 15:55	32.8	2.91	5.45	343,344
11/4/2020 15:55	11/5/2020 0:15	8.3	0.30	0.04	0.24	9.1	11/4/2020 15:55	11/5/2020 7:05	15.3	2.43	3.00	133,446
11/5/2020 7:05	11/5/2020 15:10	8.1	0.36	0.04	0.36	8.2	11/5/2020 7:05	11/6/2020 3:10	20.2	2.57	3.73	186,795
11/9/2020 18:05	11/9/2020 22:45	4.7	0.14	0.03	0.24	99.4	11/9/2020 18:00	11/10/2020 10:40	16.8	1.54	1.64	93,132
11/12/2020 18:25	11/13/2020 6:00	11.6	0.46	0.04	0.24	68.8	11/12/2020 18:20	11/13/2020 17:55	23.7	1.85	2.78	157,722
11/14/2020 15:20	11/14/2020 23:25	8.1	0.32	0.04	0.12	33.8	11/14/2020 15:20	11/15/2020 11:25	20.2	1.73	1.98	125,232
11/16/2020 8:50	11/16/2020 19:00	10.2	0.49	0.05	0.24	35.8	11/16/2020 8:50	11/17/2020 6:55	22.2	2.43	3.73	193,890
11/17/2020 12:30	11/18/2020 15:30	27.0	1.03	0.04	1.92	19.0	11/17/2020 12:30	11/19/2020 3:30	39.1	2.86	4.54	402,765
11/22/2020 15:10	11/22/2020 23:15	8.1	0.12	0.01	0.12	96.2	11/22/2020 15:10	11/23/2020 4:40	13.6	1.48	1.56	72,468
11/23/2020 4:45	11/23/2020 13:35	8.8	0.23	0.03	0.24	7.8	11/23/2020 4:40	11/24/2020 1:30	20.9	1.64	1.72	123,636
11/24/2020 14:25	11/25/2020 3:25	13.0	0.55	0.04	0.36	25.3	11/24/2020 14:25	11/25/2020 15:20	25.0	2.41	3.73	217,224
11/27/2020 23:00	11/28/2020 1:50	2.8	0.10	0.04	0.12	71.1	11/27/2020 23:00	11/28/2020 11:00	12.1	1.43	1.48	62,220
11/28/2020 11:00	11/28/2020 12:25	1.4	0.08	0.06	0.24	9.9	11/28/2020 11:00	11/29/2020 0:20	13.4	1.46	1.48	70,476
11/30/2020 2:00	11/30/2020 7:10	5.2	0.33	0.06	0.24	38.2	11/30/2020 2:00	11/30/2020 19:05	17.2	1.76	2.36	108,498
12/8/2020 2:10	12/9/2020 7:35	29.4	1.05	0.04	0.24	187.6	12/8/2020 2:10	12/9/2020 13:25	35.3	2.26	4.26	287,250
12/9/2020 13:30	12/9/2020 13:50	0.3	0.04	0.12	0.24	6.3	12/9/2020 13:25	12/10/2020 1:50	12.5	1.74	1.98	78,288
12/13/2020 2:20	12/13/2020 18:20	16.0	0.24	0.02	0.24	84.8	12/13/2020 2:15	12/14/2020 1:50	23.7	1.36	1.48	116,160
12/14/2020 1:50	12/14/2020 11:20	9.5	0.13	0.01	0.12	15.5	12/14/2020 1:50	12/14/2020 23:15	21.5	1.31	1.40	101,376
12/15/2020 0:25	12/15/2020 11:05	10.7	0.14	0.01	0.12	17.2	12/15/2020 0:20	12/15/2020 23:00	22.8	1.32	1.40	107,964
12/16/2020 13:15	12/17/2020 4:00	14.8	0.51	0.03	0.24	28.3	12/16/2020 13:15	12/17/2020 14:15	25.1	1.75	2.16	158,196
12/17/2020 14:20	12/17/2020 19:20	5.0	0.33	0.07	0.36	14.4	12/17/2020 14:15	12/18/2020 1:50	11.7	2.27	3.00	95,412
12/18/2020 1:55	12/18/2020 9:25	7.5	0.27	0.04	0.12	6.8	12/18/2020 1:50	12/18/2020 17:55	16.2	2.22	2.78	129,330
12/18/2020 17:55	12/19/2020 2:25	8.5	0.63	0.07	0.48	8.9	12/18/2020 17:55	12/19/2020 12:30	18.7	3.64	7.15	244,353
12/19/2020 12:30	12/19/2020 20:55	8.4	0.23	0.03	0.24	10.3	12/19/2020 12:30	12/20/2020 8:55	20.5	3.12	3.48	230,380
12/20/2020 23:55	12/22/2020 4:45	28.8	2.15	0.07	0.96	28.3	12/20/2020 23:55	12/22/2020 10:45	34.9	8.53	25.12	1,072,585
12/22/2020 10:45	12/22/2020 11:55	1.2	0.10	0.09	0.12	8.5	12/22/2020 10:45	12/22/2020 23:55	13.3	3.69	5.14	176,037
12/25/2020 15:20	12/25/2020 23:10	7.8	0.43	0.05	0.24	75.8	12/25/2020 15:20	12/26/2020 11:10	19.9	2.21	2.78	158,790
12/26/2020 23:35	12/27/2020 0:20	0.8	0.03	0.04	0.12	25.1	12/26/2020 23:35	12/27/2020 6:50	7.3	1.64	1.64	43,296
12/27/2020 6:50	12/27/2020 10:25	3.6	0.04	0.01	0.12	32.3	12/27/2020 6:50	12/27/2020 22:25	15.7	1.64	1.72	92,328
12/29/2020 17:05	12/31/2020 8:15	39.2	1.11	0.03	0.24	58.2	12/29/2020 17:00	12/31/2020 20:10	51.3	2.61	4.26	481,100
12/31/2020 22:25	1/1/2021 1:35	3.2	0.03	0.01	0.12	22.8	12/31/2020 22:25	1/1/2021 5:10	6.8	1.68	1.72	41,232
1/1/2021 5:15	1/1/2021 7:30	2.3	0.03	0.01	0.12	29.7	1/1/2021 5:10	1/1/2021 14:10	9.1	1.66	1.72	54,372
1/1/2021 14:15	1/1/2021 20:35	6.3	0.30	0.05	0.36	12.7	1/1/2021 14:10	1/2/2021 4:40	14.6	2.33	3.23	122,241

Table E-1. Summary Statistics for Individual Storm Events at the EVALSS Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
1/2/2021 4:45	1/3/2021 7:05	26.3	1.64	0.06	0.60	11.9	1/2/2021 4:40	1/3/2021 9:00	28.4	6.45	20.30	659,466
1/3/2021 9:05	1/3/2021 11:15	2.2	0.08	0.04	0.12	8.4	1/3/2021 9:00	1/3/2021 17:50	8.9	5.16	6.10	165,753
1/3/2021 17:50	1/4/2021 15:00	21.2	0.70	0.03	0.24	8.1	1/3/2021 17:50	1/5/2021 2:55	33.2	4.42	6.10	528,096
1/5/2021 11:55	1/6/2021 3:55	16.0	0.84	0.05	0.24	21.2	1/5/2021 11:55	1/6/2021 15:55	28.1	4.97	7.15	502,245
1/7/2021 5:50	1/7/2021 7:55	2.1	0.05	0.02	0.12	28.8	1/7/2021 5:45	1/7/2021 19:50	14.2	2.47	2.56	126,120
1/8/2021 3:15	1/8/2021 15:40	12.4	0.19	0.02	0.24	20.2	1/8/2021 3:10	1/9/2021 3:40	24.6	2.09	2.36	184,920
1/10/2021 2:10	1/10/2021 6:15	4.1	0.06	0.01	0.12	34.9	1/10/2021 2:10	1/10/2021 15:55	13.8	1.72	1.72	85,560
1/10/2021 15:55	1/10/2021 16:30	0.6	0.03	0.05	0.12	13.0	1/10/2021 15:55	1/11/2021 4:30	12.7	1.67	1.72	76,128
1/11/2021 8:40	1/13/2021 0:35	39.9	2.31	0.06	0.36	29.8	1/11/2021 8:35	1/13/2021 12:30	52.0	5.99	12.31	1,122,171
1/14/2021 23:15	1/15/2021 9:40	10.4	0.12	0.01	0.12	47.0	1/14/2021 23:10	1/15/2021 21:40	22.6	2.37	2.56	192,953
1/17/2021 0:30	1/17/2021 4:45	4.3	0.15	0.04	0.12	43.3	1/17/2021 0:30	1/17/2021 16:40	16.3	1.99	2.16	116,262
1/24/2021 3:30	1/24/2021 21:50	18.3	0.28	0.02	0.12	168.7	1/24/2021 3:30	1/25/2021 9:50	30.4	1.61	1.72	175,932
1/25/2021 17:35	1/25/2021 18:45	1.2	0.03	0.03	0.12	21.5	1/25/2021 17:35	1/26/2021 6:40	13.2	1.51	1.56	71,760
1/27/2021 7:30	1/27/2021 9:10	1.7	0.07	0.04	0.12	59.4	1/27/2021 7:25	1/27/2021 21:10	13.8	1.55	1.56	77,352
1/28/2021 4:50	1/28/2021 12:50	8.0	0.13	0.02	0.12	20.5	1/28/2021 4:50	1/29/2021 0:45	20.0	1.60	1.64	115,056
1/29/2021 21:25	1/30/2021 11:20	13.9	0.10	0.01	0.12	35.6	1/29/2021 21:20	1/30/2021 18:20	21.1	1.54	1.56	117,204
1/30/2021 18:25	2/3/2021 6:10	83.8	2.07	0.02	0.36	21.0	1/30/2021 18:20	2/3/2021 18:10	95.9	3.26	7.15	1,124,816
2/4/2021 7:00	2/5/2021 13:50	30.8	0.86	0.03	0.36	29.2	2/4/2021 6:55	2/6/2021 1:50	43.0	3.48	6.44	538,869
2/6/2021 13:45	2/6/2021 18:05	4.3	0.52	0.12	0.60	27.9	2/6/2021 13:45	2/7/2021 6:00	16.3	4.02	5.45	236,337
2/7/2021 17:30	2/7/2021 18:45	1.3	0.11	0.09	0.24	23.6	2/7/2021 17:25	2/8/2021 1:15	7.9	2.66	2.78	75,804
2/8/2021 1:15	2/8/2021 11:25	10.2	0.24	0.02	0.24	6.8	2/8/2021 1:15	2/8/2021 23:25	22.3	2.68	3.00	214,632
2/12/2021 11:45	2/12/2021 12:10	0.4	0.03	0.07	0.12	96.8	2/12/2021 11:45	2/13/2021 0:10	12.5	1.80	1.80	81,000
2/14/2021 15:15	2/16/2021 7:00	39.8	1.21	0.03	0.24	148.2	2/14/2021 15:10	2/16/2021 18:55	51.8	3.90	5.77	727,243
2/17/2021 6:00	2/17/2021 6:50	0.8	0.06	0.07	0.12	25.8	2/17/2021 6:00	2/17/2021 18:45	12.8	3.43	3.48	158,301
2/18/2021 16:40	2/18/2021 17:10	0.5	0.03	0.06	0.12	34.2	2/18/2021 16:40	2/19/2021 5:10	12.6	3.23	3.23	146,250
2/19/2021 16:30	2/19/2021 22:00	5.5	0.14	0.03	0.12	58.0	2/19/2021 16:25	2/20/2021 9:55	17.6	2.93	3.23	185,157
2/21/2021 21:40	2/21/2021 23:25	1.8	0.17	0.10	0.12	48.3	2/21/2021 21:40	2/22/2021 6:30	8.9	2.52	2.78	80,946
2/22/2021 6:35	2/22/2021 20:25	13.8	0.51	0.04	0.96	7.5	2/22/2021 6:30	2/23/2021 8:25	26.0	3.70	6.10	346,602
2/23/2021 13:35	2/23/2021 14:20	0.8	0.14	0.19	0.36	17.6	2/23/2021 13:35	2/24/2021 2:15	12.8	3.12	3.48	143,043
2/25/2021 2:00	2/25/2021 7:15	5.3	0.13	0.02	0.12	35.9	2/25/2021 2:00	2/25/2021 14:40	12.8	2.79	3.00	127,920
2/25/2021 14:40	2/25/2021 16:30	1.8	0.12	0.07	0.36	9.3	2/25/2021 14:40	2/26/2021 2:10	11.6	2.93	3.23	121,971
2/26/2021 2:15	2/26/2021 6:40	4.4	0.05	0.01	0.12	10.8	2/26/2021 2:10	2/26/2021 15:00	12.9	2.69	2.78	125,112
2/26/2021 15:05	2/26/2021 21:45	6.7	0.10	0.02	0.24	12.5	2/26/2021 15:00	2/27/2021 9:40	18.8	2.60	2.78	175,584
2/28/2021 0:30	2/28/2021 2:55	2.4	0.04	0.02	0.12	27.2	2/28/2021 0:30	2/28/2021 14:55	14.5	2.36	2.36	123,192
3/2/2021 7:55	3/2/2021 10:30	2.6	0.04	0.02	0.12	55.4	3/2/2021 7:50	3/2/2021 22:25	14.7	2.01	2.16	106,164
3/4/2021 16:00	3/4/2021 21:15	5.3	0.29	0.06	0.12	56.1	3/4/2021 15:55	3/5/2021 9:10	17.3	2.25	2.78	140,652
3/5/2021 9:35	3/5/2021 11:20	1.8	0.03	0.02	0.12	13.1	3/5/2021 9:30	3/5/2021 23:20	13.9	1.98	2.16	99,090
3/7/2021 3:20	3/7/2021 20:55	17.6	0.54	0.03	0.24	54.8	3/7/2021 3:20	3/8/2021 8:55	29.7	2.32	3.48	247,431
3/14/2021 11:25	3/14/2021 20:45	9.3	0.39	0.04	0.12	159.1	3/14/2021 11:25	3/15/2021 8:45	21.4	2.02	2.78	155,568
3/18/2021 16:10	3/18/2021 21:10	5.0	0.20	0.04	0.24	93.2	3/18/2021 16:05	3/19/2021 9:10	17.2	1.79	1.98	110,820
3/19/2021 23:35	3/20/2021 9:25	9.8	0.10	0.01	0.12	29.2	3/19/2021 23:35	3/20/2021 16:40	17.2	1.70	1.72	105,288
3/20/2021 16:40	3/21/2021 4:35	11.9	0.58	0.05	0.48	9.8	3/20/2021 16:40	3/21/2021 10:00	17.4	3.35	4.83	209,877
3/21/2021 10:00	3/21/2021 18:40	8.7	0.13	0.02	0.12	10.3	3/21/2021 10:00	3/22/2021 3:20	17.4	2.47	2.56	154,572
3/22/2021 3:20	3/22/2021 12:05	8.8	0.21	0.02	0.36	12.8	3/22/2021 3:20	3/23/2021 0:00	20.8	2.46	2.78	183,911
3/24/2021 12:40	3/25/2021 12:50	24.2	1.05	0.04	0.60	52.5	3/24/2021 12:40	3/26/2021 0:45	36.2	4.01	7.91	522,141
3/28/2021 9:55	3/29/2021 1:45	15.8	0.40	0.03	0.24	75.1	3/28/2021 9:55	3/29/2021 8:30	22.7	2.94	3.73	239,577
3/29/2021 8:30	3/29/2021 11:15	2.8	0.29	0.11	0.36	16.2	3/29/2021 8:30	3/29/2021 23:10	14.8	2.63	3.00	139,794
4/3/2021 21:00	4/4/2021 4:40	7.7	0.11	0.01	0.12	129.9	4/3/2021 20:55	4/4/2021 16:40	19.8	1.70	1.80	121,440
4/7/2021 11:50	4/7/2021 19:45	7.9	0.08	0.01	0.12	84.2	4/7/2021 11:45	4/7/2021 22:40	11.0	1.64	1.64	64,944

Table E-1. Summary Statistics for Individual Storm Events at the EVALSS Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
4/7/2021 22:40	4/8/2021 5:05	6.4	0.37	0.06	0.48	10.5	4/7/2021 22:40	4/8/2021 17:05	18.5	2.11	2.78	140,388
4/10/2021 5:40	4/10/2021 9:05	3.4	0.03	0.01	0.12	48.8	4/10/2021 5:35	4/10/2021 21:00	15.5	1.57	1.64	87,336
4/23/2021 23:55	4/25/2021 8:10	32.3	0.76	0.02	0.24	379.1	4/23/2021 23:55	4/25/2021 20:10	44.3	1.74	2.36	277,199
4/25/2021 20:10	4/26/2021 0:15	4.1	0.11	0.03	0.24	18.5	4/25/2021 20:10	4/26/2021 12:10	16.1	1.63	1.72	94,116
4/30/2021 5:50	4/30/2021 8:20	2.5	0.15	0.06	0.24	101.8	4/30/2021 5:45	4/30/2021 20:15	14.6	1.50	1.64	78,948
5/1/2021 10:20	5/1/2021 21:00	10.7	0.12	0.01	0.36	26.7	5/1/2021 10:15	5/2/2021 8:55	22.8	1.50	1.98	122,994
5/3/2021 15:00	5/4/2021 0:00	9.0	0.32	0.04	0.24	46.5	5/3/2021 14:55	5/4/2021 11:55	21.1	1.67	1.98	126,582
5/7/2021 8:30	5/7/2021 13:10	4.7	0.24	0.05	0.36	82.5	5/7/2021 8:25	5/7/2021 17:55	9.6	1.69	1.80	58,188
5/7/2021 17:55	5/7/2021 18:10	0.3	0.03	0.12	0.12	7.6	5/7/2021 17:55	5/8/2021 6:10	12.3	1.56	1.56	69,264
5/8/2021 22:15	5/9/2021 2:00	3.8	0.07	0.02	0.12	33.1	5/8/2021 22:15	5/9/2021 14:00	15.8	1.53	1.56	87,312
5/17/2021 18:30	5/17/2021 22:15	3.8	0.10	0.03	0.24	211.6	5/17/2021 18:30	5/18/2021 10:15	15.8	1.47	1.56	83,832
5/18/2021 16:10	5/19/2021 0:20	8.2	0.51	0.06	0.60	19.0	5/18/2021 16:05	5/19/2021 8:10	16.2	1.98	2.78	115,422
5/19/2021 8:15	5/19/2021 11:20	3.1	0.13	0.04	0.36	8.8	5/19/2021 8:10	5/19/2021 23:15	15.2	1.66	1.80	90,480
5/23/2021 9:45	5/23/2021 11:40	1.9	0.04	0.02	0.12	94.8	5/23/2021 9:40	5/23/2021 23:40	14.1	1.44	1.48	73,164
5/24/2021 1:40	5/24/2021 13:15	11.6	0.23	0.02	0.12	15.9	5/24/2021 1:40	5/25/2021 1:15	23.7	1.56	1.64	132,912
5/25/2021 3:10	5/25/2021 3:20	0.2	0.03	0.18	0.24	15.0	5/25/2021 3:10	5/25/2021 15:20	12.3	1.53	1.56	67,308
5/27/2021 3:35	5/27/2021 11:25	7.8	0.33	0.04	0.60	63.4	5/27/2021 3:30	5/27/2021 23:25	20.0	1.56	1.72	112,392
5/28/2021 6:55	5/28/2021 9:35	2.7	0.04	0.02	0.12	19.8	5/28/2021 6:55	5/28/2021 21:30	14.7	1.43	1.48	75,624
6/5/2021 19:05	6/5/2021 19:30	0.4	0.04	0.10	0.12	204.2	6/5/2021 19:05	6/6/2021 7:30	12.5	1.31	1.32	59,160
6/6/2021 10:10	6/7/2021 10:10	24.0	0.80	0.03	0.36	15.1	6/6/2021 10:05	6/7/2021 22:05	36.1	1.73	2.56	224,694
6/10/2021 6:30	6/10/2021 6:45	0.3	0.07	0.28	0.36	71.6	6/10/2021 6:30	6/10/2021 18:40	12.3	1.33	1.48	58,812
6/11/2021 10:20	6/11/2021 22:35	12.3	0.33	0.03	0.24	27.7	6/11/2021 10:15	6/11/2021 22:40	12.5	1.59	1.80	71,352
6/11/2021 22:40	6/12/2021 1:30	2.8	0.14	0.05	0.72	7.9	6/11/2021 22:40	6/12/2021 13:30	14.9	1.60	1.80	86,124
6/12/2021 22:20	6/13/2021 9:10	10.8	0.33	0.03	0.12	21.2	6/12/2021 22:15	6/13/2021 13:05	14.9	1.67	1.98	89,754
6/13/2021 13:10	6/13/2021 23:50	10.7	0.73	0.07	0.48	9.4	6/13/2021 13:05	6/14/2021 11:50	22.8	2.97	6.10	244,182
7/20/2021 7:50	7/20/2021 9:40	1.8	0.09	0.05	0.12	875.8	7/20/2021 7:50	7/20/2021 21:40	13.9	1.26	1.32	63,060
8/5/2021 23:05	8/6/2021 9:20	10.3	0.14	0.01	0.12	398.3	8/5/2021 23:00	8/6/2021 21:20	22.4	1.14	1.24	92,043
8/26/2021 20:45	8/27/2021 2:50	6.1	0.05	0.01	0.12	493.9	8/26/2021 20:45	8/27/2021 12:00	15.3	1.08	1.09	59,544
8/27/2021 12:00	8/27/2021 13:00	1.0	0.05	0.05	0.12	14.5	8/27/2021 12:00	8/28/2021 1:00	13.1	1.11	1.16	52,074
9/12/2021 6:30	9/12/2021 8:25	1.9	0.05	0.03	0.12	378.2	9/12/2021 6:30	9/12/2021 20:25	14.0	1.04	1.09	52,416
9/15/2021 2:15	9/15/2021 3:00	0.8	0.04	0.05	0.12	67.6	9/15/2021 2:10	9/15/2021 14:55	12.8	1.15	1.24	53,049
9/17/2021 4:15	9/17/2021 10:55	6.7	0.12	0.02	0.12	50.0	9/17/2021 4:15	9/17/2021 21:30	17.3	1.13	1.24	70,308
9/17/2021 21:30	9/18/2021 4:20	6.8	0.75	0.11	0.60	12.3	9/17/2021 21:30	9/18/2021 11:15	13.8	1.96	3.23	97,695
9/18/2021 11:20	9/18/2021 22:55	11.6	0.40	0.03	0.60	8.1	9/18/2021 11:15	9/19/2021 10:50	23.7	1.47	1.72	125,448
9/19/2021 16:40	9/19/2021 20:25	3.8	0.09	0.02	0.24	18.8	9/19/2021 16:40	9/20/2021 8:25	15.8	1.20	1.24	68,511
9/26/2021 13:30	9/27/2021 4:25	14.9	0.66	0.04	0.60	161.2	9/26/2021 13:25	9/27/2021 13:10	23.8	1.52	2.16	130,734
9/27/2021 13:10	9/27/2021 18:05	4.9	0.17	0.03	0.60	10.5	9/27/2021 13:10	9/27/2021 22:15	9.2	1.47	1.72	48,648
9/27/2021 22:15	9/28/2021 10:10	11.9	0.12	0.01	0.24	7.7	9/27/2021 22:15	9/28/2021 22:05	23.9	1.28	1.40	109,788
9/29/2021 23:40	9/30/2021 13:20	13.7	0.69	0.05	0.60	40.3	9/29/2021 23:35	10/1/2021 1:15	25.8	1.73	3.23	160,749

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Table E-2. Summary Statistics for Individual Storm Events at the EVAMS Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
10/4/2020 3:15	10/4/2020 10:05	6.8	0.06	0.01	0.12	0.0	10/4/2020 3:10	10/4/2020 22:05	19.0	0.42	0.47	28,830
10/9/2020 21:05	10/10/2020 8:05	11.0	1.05	0.10	0.60	134.1	10/9/2020 21:00	10/10/2020 13:40	16.8	1.12	1.59	67,797
10/10/2020 13:45	10/10/2020 15:55	2.2	0.19	0.09	0.84	7.8	10/10/2020 13:40	10/11/2020 3:55	14.3	0.85	1.05	43,680
10/11/2020 10:35	10/11/2020 19:35	9.0	0.33	0.04	0.24	18.9	10/11/2020 10:30	10/12/2020 3:10	16.8	0.74	0.90	44,538
10/12/2020 3:10	10/12/2020 9:15	6.1	0.55	0.09	0.48	10.7	10/12/2020 3:10	10/12/2020 21:10	18.1	1.05	1.73	68,040
10/13/2020 1:00	10/13/2020 7:15	6.3	0.54	0.09	0.48	16.9	10/13/2020 0:55	10/13/2020 19:15	18.4	1.04	1.89	68,853
10/16/2020 14:20	10/17/2020 4:50	14.5	0.45	0.03	0.36	79.5	10/16/2020 14:20	10/17/2020 16:50	26.6	0.69	0.90	66,504
10/18/2020 1:35	10/18/2020 17:05	15.5	0.19	0.01	0.24	22.4	10/18/2020 1:30	10/19/2020 5:00	27.6	0.57	0.64	56,604
10/19/2020 9:40	10/19/2020 20:00	10.3	0.54	0.05	0.24	21.1	10/19/2020 9:40	10/20/2020 8:00	22.4	0.78	1.28	62,748
10/21/2020 1:35	10/21/2020 3:55	2.3	0.12	0.05	0.48	31.2	10/21/2020 1:30	10/21/2020 11:25	10.0	0.56	0.64	20,295
10/21/2020 11:25	10/21/2020 11:30	0.1	0.03	0.36	0.24	9.5	10/21/2020 11:25	10/21/2020 23:30	12.2	0.45	0.52	19,626
10/23/2020 6:10	10/23/2020 8:45	2.6	0.08	0.03	0.12	52.2	10/23/2020 6:10	10/23/2020 17:25	11.3	0.45	0.47	18,474
10/23/2020 17:25	10/23/2020 23:50	6.4	0.13	0.02	0.12	9.5	10/23/2020 17:25	10/24/2020 11:50	18.5	0.49	0.58	32,733
10/28/2020 23:05	10/29/2020 6:30	7.4	0.05	0.01	0.12	123.9	10/28/2020 23:05	10/29/2020 18:30	19.5	0.43	0.47	29,916
10/30/2020 4:25	10/30/2020 9:30	5.1	0.10	0.02	0.12	25.9	10/30/2020 4:25	10/30/2020 21:30	17.2	0.44	0.47	27,354
11/3/2020 7:20	11/4/2020 11:05	27.8	1.09	0.04	0.60	94.2	11/3/2020 7:15	11/4/2020 15:55	32.8	0.93	1.59	109,470
11/4/2020 15:55	11/5/2020 0:15	8.3	0.30	0.04	0.24	9.1	11/4/2020 15:55	11/5/2020 7:05	15.3	0.86	1.05	46,962
11/5/2020 7:05	11/5/2020 15:10	8.1	0.36	0.04	0.36	8.2	11/5/2020 7:05	11/6/2020 3:10	20.2	0.89	1.28	64,914
11/9/2020 18:05	11/9/2020 22:45	4.7	0.14	0.03	0.24	99.4	11/9/2020 18:00	11/10/2020 10:40	16.8	0.56	0.58	33,534
11/12/2020 18:25	11/13/2020 6:00	11.6	0.46	0.04	0.24	68.8	11/12/2020 18:20	11/13/2020 17:55	23.7	0.65	0.83	55,677
11/14/2020 15:20	11/14/2020 23:25	8.1	0.32	0.04	0.12	33.8	11/14/2020 15:20	11/15/2020 11:25	20.2	0.69	0.76	49,902
11/16/2020 8:50	11/16/2020 19:00	10.2	0.49	0.05	0.24	35.8	11/16/2020 8:50	11/17/2020 6:55	22.2	0.92	1.36	73,311
11/17/2020 12:30	11/18/2020 15:30	27.0	1.03	0.04	1.92	19.0	11/17/2020 12:30	11/19/2020 3:30	39.1	1.05	1.59	147,693
11/22/2020 15:10	11/22/2020 23:15	8.1	0.12	0.01	0.12	96.2	11/22/2020 15:10	11/23/2020 4:40	13.6	0.58	0.58	28,128
11/23/2020 4:45	11/23/2020 13:35	8.8	0.23	0.03	0.24	7.8	11/23/2020 4:40	11/24/2020 1:30	20.9	0.66	0.70	49,740
11/24/2020 14:25	11/25/2020 3:25	13.0	0.55	0.04	0.36	25.3	11/24/2020 14:25	11/25/2020 15:20	25.0	0.88	1.28	78,750
11/27/2020 23:00	11/28/2020 1:50	2.8	0.10	0.04	0.12	71.1	11/27/2020 23:00	11/28/2020 11:00	12.1	0.56	0.58	24,492
11/28/2020 11:00	11/28/2020 12:25	1.4	0.08	0.06	0.24	9.9	11/28/2020 11:00	11/29/2020 0:20	13.4	0.56	0.58	27,006
11/30/2020 2:00	11/30/2020 7:10	5.2	0.33	0.06	0.24	38.2	11/30/2020 2:00	11/30/2020 19:05	17.2	0.69	0.90	42,759
12/8/2020 2:10	12/9/2020 7:35	29.4	1.05	0.04	0.24	187.6	12/8/2020 2:10	12/9/2020 13:25	35.3	0.94	1.73	119,817
12/9/2020 13:30	12/9/2020 13:50	0.3	0.04	0.12	0.24	6.3	12/9/2020 13:25	12/10/2020 1:50	12.5	0.76	0.83	34,011
12/13/2020 2:20	12/13/2020 18:20	16.0	0.24	0.02	0.24	84.8	12/13/2020 2:15	12/14/2020 1:50	23.7	0.62	0.64	52,710
12/14/2020 1:50	12/14/2020 11:20	9.5	0.13	0.01	0.12	15.5	12/14/2020 1:50	12/14/2020 23:15	21.5	0.61	0.70	46,926
12/15/2020 0:25	12/15/2020 11:05	10.7	0.14	0.01	0.12	17.2	12/15/2020 0:20	12/15/2020 23:00	22.8	0.61	0.70	49,896
12/16/2020 13:15	12/17/2020 4:00	14.8	0.51	0.03	0.24	28.3	12/16/2020 13:15	12/17/2020 14:15	25.1	0.85	1.05	76,938
12/17/2020 14:20	12/17/2020 19:20	5.0	0.33	0.07	0.36	14.4	12/17/2020 14:15	12/18/2020 1:50	11.7	1.04	1.36	43,710
12/18/2020 1:55	12/18/2020 9:25	7.5	0.27	0.04	0.12	6.8	12/18/2020 1:50	12/18/2020 17:55	16.2	0.95	1.20	55,530
12/18/2020 17:55	12/19/2020 2:25	8.5	0.63	0.07	0.48	8.9	12/18/2020 17:55	12/19/2020 12:30	18.7	1.31	2.78	87,714
12/19/2020 12:30	12/19/2020 20:55	8.4	0.23	0.03	0.24	10.3	12/19/2020 12:30	12/20/2020 8:55	20.5	0.96	1.05	70,569
12/20/2020 23:55	12/22/2020 4:45	28.8	2.15	0.07	0.96	28.3	12/20/2020 23:55	12/22/2020 10:45	34.9	2.90	8.03	364,812
12/22/2020 10:45	12/22/2020 11:55	1.2	0.10	0.09	0.12	8.5	12/22/2020 10:45	12/22/2020 23:55	13.3	1.40	1.73	66,606
12/25/2020 15:20	12/25/2020 23:10	7.8	0.43	0.05	0.24	75.8	12/25/2020 15:20	12/26/2020 11:10	19.9	1.10	1.28	79,065
12/26/2020 23:35	12/27/2020 0:20	0.8	0.03	0.04	0.12	25.1	12/26/2020 23:35	12/27/2020 6:50	7.3	0.88	0.90	23,130
12/27/2020 6:50	12/27/2020 10:25	3.6	0.04	0.01	0.12	32.3	12/27/2020 6:50	12/27/2020 22:25	15.7	0.84	0.90	47,295
12/29/2020 17:05	12/31/2020 8:15	39.2	1.11	0.03	0.24	58.2	12/29/2020 17:00	12/31/2020 20:10	51.3	1.14	1.73	211,008

Table E-2. Summary Statistics for Individual Storm Events at the EVAMS Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
12/31/2020 22:25	1/1/2021 1:35	3.2	0.03	0.01	0.12	22.8	12/31/2020 22:25	1/1/2021 5:10	6.8	0.88	0.90	21,594
1/1/2021 5:15	1/1/2021 7:30	2.3	0.03	0.01	0.12	29.7	1/1/2021 5:10	1/1/2021 14:10	9.1	0.83	0.90	27,225
1/1/2021 14:15	1/1/2021 20:35	6.3	0.30	0.05	0.36	12.7	1/1/2021 14:10	1/2/2021 4:40	14.6	1.08	1.36	56,805
1/2/2021 4:45	1/3/2021 7:05	26.3	1.64	0.06	0.60	11.9	1/2/2021 4:40	1/3/2021 9:00	28.4	2.17	5.90	221,517
1/3/2021 9:05	1/3/2021 11:15	2.2	0.08	0.04	0.12	8.4	1/3/2021 9:00	1/3/2021 17:50	8.9	1.47	1.73	47,262
1/3/2021 17:50	1/4/2021 15:00	21.2	0.70	0.03	0.24	8.1	1/3/2021 17:50	1/5/2021 2:55	33.2	1.42	2.40	169,089
1/5/2021 11:55	1/6/2021 3:55	16.0	0.84	0.05	0.24	21.2	1/5/2021 11:55	1/6/2021 15:55	28.1	1.69	2.78	171,006
1/7/2021 5:50	1/7/2021 7:55	2.1	0.05	0.02	0.12	28.8	1/7/2021 5:45	1/7/2021 19:50	14.2	0.95	1.05	48,507
1/8/2021 3:15	1/8/2021 15:40	12.4	0.19	0.02	0.24	20.2	1/8/2021 3:10	1/9/2021 3:40	24.6	0.91	1.05	80,412
1/10/2021 2:10	1/10/2021 6:15	4.1	0.06	0.01	0.12	34.9	1/10/2021 2:10	1/10/2021 15:55	13.8	0.81	0.83	40,389
1/10/2021 15:55	1/10/2021 16:30	0.6	0.03	0.05	0.12	13.0	1/10/2021 15:55	1/11/2021 4:30	12.7	0.78	0.83	35,433
1/11/2021 8:40	1/13/2021 0:35	39.9	2.31	0.06	0.36	29.8	1/11/2021 8:35	1/13/2021 12:30	52.0	2.09	4.42	391,029
1/14/2021 23:15	1/15/2021 9:40	10.4	0.12	0.01	0.12	47.0	1/14/2021 23:10	1/15/2021 21:40	22.6	0.87	0.90	70,608
1/17/2021 0:30	1/17/2021 4:45	4.3	0.15	0.04	0.12	43.3	1/17/2021 0:30	1/17/2021 16:40	16.3	0.81	0.90	47,610
1/24/2021 3:30	1/24/2021 21:50	18.3	0.28	0.02	0.12	168.7	1/24/2021 3:30	1/25/2021 9:50	30.4	0.70	0.76	76,110
1/25/2021 17:35	1/25/2021 18:45	1.2	0.03	0.03	0.12	21.5	1/25/2021 17:35	1/26/2021 6:40	13.2	0.64	0.64	30,228
1/27/2021 7:30	1/27/2021 9:10	1.7	0.07	0.04	0.12	59.4	1/27/2021 7:25	1/27/2021 21:10	13.8	0.62	0.64	30,954
1/28/2021 4:50	1/28/2021 12:50	8.0	0.13	0.02	0.12	20.5	1/28/2021 4:50	1/29/2021 0:45	20.0	0.68	0.70	48,708
1/29/2021 21:25	1/30/2021 11:20	13.9	0.10	0.01	0.12	35.6	1/29/2021 21:20	1/30/2021 18:20	21.1	0.64	0.64	48,558
1/30/2021 18:25	2/3/2021 6:10	83.8	2.07	0.02	0.36	21.0	1/30/2021 18:20	2/3/2021 18:10	95.9	1.10	2.59	380,428
2/4/2021 7:00	2/5/2021 13:50	30.8	0.86	0.03	0.36	29.2	2/4/2021 6:55	2/6/2021 1:50	43.0	1.13	2.22	175,362
2/6/2021 13:45	2/6/2021 18:05	4.3	0.52	0.12	0.60	27.9	2/6/2021 13:45	2/7/2021 6:00	16.3	1.22	1.59	71,964
2/7/2021 17:30	2/7/2021 18:45	1.3	0.11	0.09	0.24	23.6	2/7/2021 17:25	2/8/2021 1:15	7.9	0.93	0.97	26,595
2/8/2021 1:15	2/8/2021 11:25	10.2	0.24	0.02	0.24	6.8	2/8/2021 1:15	2/8/2021 23:25	22.3	0.96	1.05	76,617
2/12/2021 11:45	2/12/2021 12:10	0.4	0.03	0.07	0.12	96.8	2/12/2021 11:45	2/13/2021 0:10	12.5	0.73	0.76	32,940
2/14/2021 15:15	2/16/2021 7:00	39.8	1.21	0.03	0.24	148.2	2/14/2021 15:10	2/16/2021 18:55	51.8	1.24	1.73	231,352
2/17/2021 6:00	2/17/2021 6:50	0.8	0.06	0.07	0.12	25.8	2/17/2021 6:00	2/17/2021 18:45	12.8	1.10	1.12	51,030
2/18/2021 16:40	2/18/2021 17:10	0.5	0.03	0.06	0.12	34.2	2/18/2021 16:40	2/19/2021 5:10	12.6	1.07	1.12	48,615
2/19/2021 16:30	2/19/2021 22:00	5.5	0.14	0.03	0.12	58.0	2/19/2021 16:25	2/20/2021 9:55	17.6	1.04	1.12	66,078
2/21/2021 21:40	2/21/2021 23:25	1.8	0.17	0.10	0.12	48.3	2/21/2021 21:40	2/22/2021 6:30	8.9	0.91	0.97	29,100
2/22/2021 6:35	2/22/2021 20:25	13.8	0.51	0.04	0.96	7.5	2/22/2021 6:30	2/23/2021 8:25	26.0	1.33	2.59	124,467
2/23/2021 13:35	2/23/2021 14:20	0.8	0.14	0.19	0.36	17.6	2/23/2021 13:35	2/24/2021 2:15	12.8	0.93	1.05	42,666
2/25/2021 2:00	2/25/2021 7:15	5.3	0.13	0.02	0.12	35.9	2/25/2021 2:00	2/25/2021 14:40	12.8	0.88	0.90	40,239
2/25/2021 14:40	2/25/2021 16:30	1.8	0.12	0.07	0.36	9.3	2/25/2021 14:40	2/26/2021 2:10	11.6	0.89	0.97	37,278
2/26/2021 2:15	2/26/2021 6:40	4.4	0.05	0.01	0.12	10.8	2/26/2021 2:10	2/26/2021 15:00	12.9	0.84	0.90	39,015
2/26/2021 15:05	2/26/2021 21:45	6.7	0.10	0.02	0.24	12.5	2/26/2021 15:00	2/27/2021 9:40	18.8	0.84	0.90	56,802
2/28/2021 0:30	2/28/2021 2:55	2.4	0.04	0.02	0.12	27.2	2/28/2021 0:30	2/28/2021 14:55	14.5	0.76	0.76	39,528
3/2/2021 7:55	3/2/2021 10:30	2.6	0.04	0.02	0.12	55.4	3/2/2021 7:50	3/2/2021 22:25	14.7	0.70	0.70	36,906
3/4/2021 16:00	3/4/2021 21:15	5.3	0.29	0.06	0.12	56.1	3/4/2021 15:55	3/5/2021 9:10	17.3	0.72	0.90	44,925
3/5/2021 9:35	3/5/2021 11:20	1.8	0.03	0.02	0.12	13.1	3/5/2021 9:30	3/5/2021 23:20	13.9	0.64	0.64	31,866
3/7/2021 3:20	3/7/2021 20:55	17.6	0.54	0.03	0.24	54.8	3/7/2021 3:20	3/8/2021 8:55	29.7	0.77	1.12	82,683
3/14/2021 11:25	3/14/2021 20:45	9.3	0.39	0.04	0.12	159.1	3/14/2021 11:25	3/15/2021 8:45	21.4	0.78	0.97	60,252
3/18/2021 16:10	3/18/2021 21:10	5.0	0.20	0.04	0.24	93.2	3/18/2021 16:05	3/19/2021 9:10	17.2	0.67	0.76	41,262
3/19/2021 23:35	3/20/2021 9:25	9.8	0.10	0.01	0.12	29.2	3/19/2021 23:35	3/20/2021 16:40	17.2	0.62	0.64	38,274
3/20/2021 16:40	3/21/2021 4:35	11.9	0.58	0.05	0.48	9.8	3/20/2021 16:40	3/21/2021 10:00	17.4	1.12	1.59	70,302
3/21/2021 10:00	3/21/2021 18:40	8.7	0.13	0.02	0.12	10.3	3/21/2021 10:00	3/22/2021 3:20	17.4	0.82	0.90	51,705

Table E-2. Summary Statistics for Individual Storm Events at the EVAMS Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
3/22/2021 3:20	3/22/2021 12:05	8.8	0.21	0.02	0.36	12.8	3/22/2021 3:20	3/23/2021 0:00	20.8	0.81	0.97	60,189
3/24/2021 12:40	3/25/2021 12:50	24.2	1.05	0.04	0.60	52.5	3/24/2021 12:40	3/26/2021 0:45	36.2	1.11	2.40	144,978
3/28/2021 9:55	3/29/2021 1:45	15.8	0.40	0.03	0.24	75.1	3/28/2021 9:55	3/29/2021 8:30	22.7	0.82	0.97	66,594
3/29/2021 8:30	3/29/2021 11:15	2.8	0.29	0.11	0.36	16.2	3/29/2021 8:30	3/29/2021 23:10	14.8	0.78	0.83	41,346
4/3/2021 21:00	4/4/2021 4:40	7.7	0.11	0.01	0.12	129.9	4/3/2021 20:55	4/4/2021 16:40	19.8	0.55	0.58	39,000
4/7/2021 11:50	4/7/2021 19:45	7.9	0.08	0.01	0.12	84.2	4/7/2021 11:45	4/7/2021 22:40	11.0	0.52	0.58	20,628
4/7/2021 22:40	4/8/2021 5:05	6.4	0.37	0.06	0.48	10.5	4/7/2021 22:40	4/8/2021 17:05	18.5	0.67	0.83	44,460
4/10/2021 5:40	4/10/2021 9:05	3.4	0.03	0.01	0.12	48.8	4/10/2021 5:35	4/10/2021 21:00	15.5	0.47	0.52	26,286
4/23/2021 23:55	4/25/2021 8:10	32.3	0.76	0.02	0.24	379.1	4/23/2021 23:55	4/25/2021 20:10	44.3	0.61	0.90	98,094
4/25/2021 20:10	4/26/2021 0:15	4.1	0.11	0.03	0.24	18.5	4/25/2021 20:10	4/26/2021 12:10	16.1	0.56	0.64	32,574
4/30/2021 5:50	4/30/2021 8:20	2.5	0.15	0.06	0.24	101.8	4/30/2021 5:45	4/30/2021 20:15	14.6	0.51	0.58	26,625
5/1/2021 10:20	5/1/2021 21:00	10.7	0.12	0.01	0.36	26.7	5/1/2021 10:15	5/2/2021 8:55	22.8	0.44	0.52	35,901
5/3/2021 15:00	5/4/2021 0:00	9.0	0.32	0.04	0.24	46.5	5/3/2021 14:55	5/4/2021 11:55	21.1	0.54	0.70	41,220
5/7/2021 8:30	5/7/2021 13:10	4.7	0.24	0.05	0.36	82.5	5/7/2021 8:25	5/7/2021 17:55	9.6	0.51	0.64	17,628
5/7/2021 17:55	5/7/2021 18:10	0.3	0.03	0.12	0.12	7.6	5/7/2021 17:55	5/8/2021 6:10	12.3	0.42	0.47	18,780
5/8/2021 22:15	5/9/2021 2:00	3.8	0.07	0.02	0.12	33.1	5/8/2021 22:15	5/9/2021 14:00	15.8	0.43	0.47	24,261
5/17/2021 18:30	5/17/2021 22:15	3.8	0.10	0.03	0.24	211.6	5/17/2021 18:30	5/18/2021 10:15	15.8	0.41	0.47	23,559
5/18/2021 16:10	5/19/2021 0:20	8.2	0.51	0.06	0.60	19.0	5/18/2021 16:05	5/19/2021 8:10	16.2	0.65	0.83	37,566
5/19/2021 8:15	5/19/2021 11:20	3.1	0.13	0.04	0.36	8.8	5/19/2021 8:10	5/19/2021 23:15	15.2	0.55	0.64	29,982
5/23/2021 9:45	5/23/2021 11:40	1.9	0.04	0.02	0.12	94.8	5/23/2021 9:40	5/23/2021 23:40	14.1	0.48	0.52	24,204
5/24/2021 1:40	5/24/2021 13:15	11.6	0.23	0.02	0.12	15.9	5/24/2021 1:40	5/25/2021 1:15	23.7	0.50	0.52	42,174
5/25/2021 3:10	5/25/2021 3:20	0.2	0.03	0.18	0.24	15.0	5/25/2021 3:10	5/25/2021 15:20	12.3	0.45	0.47	19,647
5/27/2021 3:35	5/27/2021 11:25	7.8	0.33	0.04	0.60	63.4	5/27/2021 3:30	5/27/2021 23:25	20.0	0.50	0.64	35,967
5/28/2021 6:55	5/28/2021 9:35	2.7	0.04	0.02	0.12	19.8	5/28/2021 6:55	5/28/2021 21:30	14.7	0.43	0.47	22,926
6/5/2021 19:05	6/5/2021 19:30	0.4	0.04	0.10	0.12	204.2	6/5/2021 19:05	6/6/2021 7:30	12.5	0.34	0.41	15,171
6/6/2021 10:10	6/7/2021 10:10	24.0	0.80	0.03	0.36	15.1	6/6/2021 10:05	6/7/2021 22:05	36.1	0.54	0.83	70,128
6/10/2021 6:30	6/10/2021 6:45	0.3	0.07	0.28	0.36	71.6	6/10/2021 6:30	6/10/2021 18:40	12.3	0.34	0.41	14,922
6/11/2021 10:20	6/11/2021 22:35	12.3	0.33	0.03	0.24	27.7	6/11/2021 10:15	6/11/2021 22:40	12.5	0.46	0.58	20,478
6/11/2021 22:40	6/12/2021 1:30	2.8	0.14	0.05	0.72	7.9	6/11/2021 22:40	6/12/2021 13:30	14.9	0.47	0.58	25,482
6/12/2021 22:20	6/13/2021 9:10	10.8	0.33	0.03	0.12	21.2	6/12/2021 22:15	6/13/2021 13:05	14.9	0.50	0.64	26,832
6/13/2021 13:10	6/13/2021 23:50	10.7	0.73	0.07	0.48	9.4	6/13/2021 13:05	6/14/2021 11:50	22.8	0.81	1.45	66,237
7/20/2021 7:50	7/20/2021 9:40	1.8	0.09	0.05	0.12	875.8	7/20/2021 7:50	7/20/2021 21:40	13.9	0.25	0.27	12,531
8/5/2021 23:05	8/6/2021 9:20	10.3	0.14	0.01	0.12	398.3	8/5/2021 23:00	8/6/2021 21:20	22.4	0.29	0.36	23,349
8/26/2021 20:45	8/27/2021 2:50	6.1	0.05	0.01	0.12	493.9	8/26/2021 20:45	8/27/2021 12:00	15.3	0.36	0.41	19,938
8/27/2021 12:00	8/27/2021 13:00	1.0	0.05	0.05	0.12	14.5	8/27/2021 12:00	8/28/2021 1:00	13.1	0.40	0.41	19,041
9/12/2021 6:30	9/12/2021 8:25	1.9	0.05	0.03	0.12	378.2	9/12/2021 6:30	9/12/2021 20:25	14.0	0.21	0.27	10,644
9/15/2021 2:15	9/15/2021 3:00	0.8	0.04	0.05	0.12	67.6	9/15/2021 2:10	9/15/2021 14:55	12.8	0.22	0.23	10,206
9/17/2021 4:15	9/17/2021 10:55	6.7	0.12	0.02	0.12	50.0	9/17/2021 4:15	9/17/2021 21:30	17.3	0.24	0.27	15,252
9/17/2021 21:30	9/18/2021 4:20	6.8	0.75	0.11	0.60	12.3	9/17/2021 21:30	9/18/2021 11:15	13.8	0.60	0.97	30,051
9/18/2021 11:20	9/18/2021 22:55	11.6	0.40	0.03	0.60	8.1	9/18/2021 11:15	9/19/2021 10:50	23.7	0.54	0.76	45,621
9/19/2021 16:40	9/19/2021 20:25	3.8	0.09	0.02	0.24	18.8	9/19/2021 16:40	9/20/2021 8:25	15.8	0.36	0.36	20,256
9/26/2021 13:30	9/27/2021 4:25	14.9	0.66	0.04	0.60	161.2	9/26/2021 13:25	9/27/2021 13:10	23.8	0.52	0.83	44,991
9/27/2021 13:10	9/27/2021 18:05	4.9	0.17	0.03	0.60	10.5	9/27/2021 13:10	9/27/2021 22:15	9.2	0.43	0.52	14,145
9/27/2021 22:15	9/28/2021 10:10	11.9	0.12	0.01	0.24	7.7	9/27/2021 22:15	9/28/2021 22:05	23.9	0.35	0.41	29,739
9/29/2021 23:40	9/30/2021 13:20	13.7	0.69	0.05	0.60	40.3	9/29/2021 23:35	10/1/2021 1:15	25.8	0.50	0.97	45,966

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Table E-3. Summary Statistics for Individual Storm Events at the MONM Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
10/4/2020 6:45	10/4/2020 9:00	2.3	0.03	0.01	0.12	175.2	10/4/2020 6:40	10/4/2020 20:55	14.3	0.32	0.32	16,512
10/9/2020 20:25	10/10/2020 8:05	11.7	0.99	0.08	0.60	0.0	10/9/2020 20:25	10/10/2020 15:20	19.0	2.01	3.04	137,229
10/10/2020 15:20	10/10/2020 15:40	0.3	0.11	0.33	0.60	9.7	10/10/2020 15:20	10/11/2020 3:40	12.4	1.58	1.98	70,827
10/11/2020 10:30	10/11/2020 17:50	7.3	0.35	0.05	0.36	19.0	10/11/2020 10:30	10/12/2020 2:55	16.5	1.50	2.12	89,151
10/12/2020 2:55	10/12/2020 9:15	6.3	0.31	0.05	0.12	10.2	10/12/2020 2:55	10/12/2020 21:10	18.3	1.65	1.98	108,942
10/13/2020 0:10	10/13/2020 7:00	6.8	0.46	0.07	0.48	15.4	10/13/2020 0:10	10/13/2020 18:55	18.8	1.85	3.04	125,094
10/16/2020 14:50	10/17/2020 4:40	13.8	0.30	0.02	0.36	80.3	10/16/2020 14:50	10/17/2020 16:40	25.9	0.75	1.18	70,221
10/18/2020 1:50	10/18/2020 15:50	14.0	0.16	0.01	0.24	23.5	10/18/2020 1:50	10/19/2020 3:50	26.1	0.61	0.70	57,060
10/19/2020 10:30	10/19/2020 18:25	7.9	0.56	0.07	0.84	20.4	10/19/2020 10:25	10/20/2020 6:20	20.0	1.69	2.71	121,560
10/21/2020 1:40	10/21/2020 9:30	7.8	0.06	0.01	0.24	31.6	10/21/2020 1:40	10/21/2020 11:15	9.7	0.68	0.77	23,793
10/21/2020 11:20	10/21/2020 11:25	0.1	0.05	0.60	0.36	7.7	10/21/2020 11:15	10/21/2020 23:25	12.3	0.64	0.77	28,425
10/23/2020 6:20	10/23/2020 8:50	2.5	0.08	0.03	0.12	43.0	10/23/2020 6:20	10/23/2020 17:25	11.2	0.45	0.51	18,192
10/23/2020 17:25	10/23/2020 23:20	5.9	0.09	0.02	0.12	9.5	10/23/2020 17:25	10/24/2020 11:15	17.9	0.56	0.70	36,348
10/29/2020 2:50	10/29/2020 6:10	3.3	0.04	0.01	0.12	128.8	10/29/2020 2:45	10/29/2020 18:10	15.5	0.37	0.41	20,808
10/30/2020 4:55	10/30/2020 9:15	4.3	0.09	0.02	0.36	26.1	10/30/2020 4:50	10/30/2020 21:10	16.4	0.46	0.63	27,024
11/3/2020 7:10	11/3/2020 14:55	7.8	0.78	0.10	0.48	94.2	11/3/2020 7:05	11/3/2020 22:15	15.3	2.04	3.40	112,155
11/3/2020 22:15	11/4/2020 9:10	10.9	0.18	0.02	0.24	7.9	11/3/2020 22:15	11/4/2020 15:40	17.5	1.69	1.85	106,578
11/4/2020 15:45	11/5/2020 15:25	23.7	0.65	0.03	0.60	9.1	11/4/2020 15:40	11/6/2020 3:25	35.8	2.03	3.04	262,185
11/9/2020 18:10	11/9/2020 22:35	4.4	0.12	0.03	0.24	99.5	11/9/2020 18:10	11/10/2020 8:10	14.1	0.56	0.63	28,455
11/10/2020 8:10	11/10/2020 13:40	5.5	0.04	0.01	0.12	10.9	11/10/2020 8:10	11/11/2020 1:40	17.6	0.54	0.57	33,897
11/12/2020 18:45	11/13/2020 6:05	11.3	0.57	0.05	0.24	58.6	11/12/2020 18:40	11/13/2020 18:00	23.4	1.56	2.40	131,496
11/14/2020 15:15	11/14/2020 23:30	8.3	0.28	0.03	0.12	33.5	11/14/2020 15:10	11/15/2020 11:25	20.3	1.32	1.70	96,936
11/16/2020 4:55	11/16/2020 18:20	13.4	0.58	0.04	0.36	31.8	11/16/2020 4:50	11/17/2020 6:20	25.6	1.95	3.60	179,463
11/17/2020 12:30	11/18/2020 15:30	27.0	1.00	0.04	0.48	18.9	11/17/2020 12:30	11/19/2020 3:30	39.1	2.69	5.80	377,879
11/20/2020 5:05	11/20/2020 7:40	2.6	0.03	0.01	0.12	38.3	11/20/2020 5:00	11/20/2020 19:40	14.8	1.30	1.50	69,120
11/22/2020 15:10	11/22/2020 22:25	7.3	0.09	0.01	0.12	96.4	11/22/2020 15:10	11/23/2020 4:40	13.6	0.75	0.84	36,792
11/23/2020 4:40	11/23/2020 13:10	8.5	0.24	0.03	0.24	12.2	11/23/2020 4:40	11/24/2020 1:05	20.5	1.18	1.50	86,976
11/24/2020 9:00	11/24/2020 23:20	14.3	0.46	0.03	0.36	20.7	11/24/2020 8:55	11/25/2020 11:15	26.4	1.67	3.00	158,757
11/27/2020 23:25	11/28/2020 4:45	5.3	0.08	0.02	0.12	73.7	11/27/2020 23:25	11/28/2020 16:40	17.3	0.78	0.84	48,825
11/30/2020 2:50	11/30/2020 7:15	4.4	0.41	0.09	0.24	49.4	11/30/2020 2:45	11/30/2020 19:15	16.6	1.67	2.40	99,954
12/8/2020 1:15	12/9/2020 7:45	30.5	0.82	0.03	0.24	186.6	12/8/2020 1:15	12/9/2020 19:40	42.5	1.53	2.70	234,579
12/13/2020 2:15	12/13/2020 16:40	14.4	0.17	0.01	0.12	91.0	12/13/2020 2:10	12/14/2020 0:00	21.9	0.74	0.92	58,665
12/14/2020 0:05	12/14/2020 10:30	10.4	0.06	0.01	0.12	13.2	12/14/2020 0:00	12/14/2020 22:25	22.5	0.68	0.70	54,831
12/15/2020 4:45	12/15/2020 11:10	6.4	0.12	0.02	0.12	22.8	12/15/2020 4:40	12/15/2020 23:10	18.6	0.87	1.10	58,365
12/16/2020 13:15	12/17/2020 4:30	15.3	0.43	0.03	0.24	28.7	12/16/2020 13:15	12/17/2020 15:45	26.6	1.71	2.50	163,494
12/17/2020 15:50	12/17/2020 18:45	2.9	0.13	0.04	0.24	15.3	12/17/2020 15:45	12/18/2020 1:45	10.1	1.54	1.70	55,770
12/18/2020 1:45	12/18/2020 9:15	7.5	0.23	0.03	0.12	8.0	12/18/2020 1:45	12/18/2020 17:45	16.1	1.78	2.40	103,050
12/18/2020 17:50	12/19/2020 2:45	8.9	0.51	0.06	0.24	9.1	12/18/2020 17:45	12/19/2020 12:20	18.7	3.04	6.10	204,000
12/19/2020 12:25	12/19/2020 21:00	8.6	0.26	0.03	0.24	9.9	12/19/2020 12:20	12/20/2020 8:55	20.7	2.79	3.20	207,780
12/20/2020 23:55	12/22/2020 3:10	27.3	2.19	0.08	0.72	28.2	12/20/2020 23:55	12/22/2020 11:00	35.2	8.87	37.00	1,122,511
12/22/2020 11:05	12/22/2020 12:00	0.9	0.05	0.05	0.12	8.8	12/22/2020 11:00	12/22/2020 23:55	13.0	4.76	5.60	222,630
12/25/2020 15:15	12/25/2020 23:05	7.8	0.45	0.06	0.12	75.7	12/25/2020 15:15	12/26/2020 11:00	19.8	2.77	3.80	197,940
12/26/2020 23:35	12/27/2020 1:25	1.8	0.04	0.02	0.24	25.3	12/26/2020 23:35	12/27/2020 6:55	7.4	1.86	1.90	49,650
12/27/2020 6:55	12/27/2020 10:50	3.9	0.05	0.01	0.12	7.3	12/27/2020 6:55	12/27/2020 22:50	16.0	1.61	1.70	92,910
12/29/2020 17:00	12/31/2020 8:10	39.2	1.01	0.03	0.24	57.6	12/29/2020 17:00	12/31/2020 20:10	51.3	2.86	4.60	528,036
12/31/2020 22:25	1/1/2021 3:25	5.0	0.03	0.01	0.12	23.2	12/31/2020 22:25	1/1/2021 14:10	15.8	2.02	2.30	115,290

Table E-3. Summary Statistics for Individual Storm Events at the MONM Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
1/1/2021 14:10	1/1/2021 22:10	8.0	0.27	0.03	0.36	39.0	1/1/2021 14:10	1/2/2021 5:00	14.9	2.71	3.60	145,530
1/2/2021 5:00	1/3/2021 1:25	20.4	1.52	0.07	0.48	12.5	1/2/2021 5:00	1/3/2021 8:55	28.0	6.88	21.00	693,930
1/3/2021 8:55	1/3/2021 10:15	1.3	0.09	0.07	0.12	8.2	1/3/2021 8:55	1/3/2021 22:15	13.4	5.26	6.30	254,130
1/3/2021 23:00	1/4/2021 14:25	15.4	0.66	0.04	0.24	13.2	1/3/2021 23:00	1/5/2021 2:25	27.5	5.48	7.50	542,340
1/5/2021 12:00	1/6/2021 4:00	16.0	0.93	0.06	0.24	22.0	1/5/2021 11:55	1/6/2021 15:55	28.1	6.30	10.00	636,541
1/8/2021 1:40	1/8/2021 15:30	13.8	0.18	0.01	0.12	47.9	1/8/2021 1:40	1/9/2021 3:30	25.9	2.45	2.90	228,630
1/10/2021 2:10	1/10/2021 8:15	6.1	0.05	0.01	0.12	35.2	1/10/2021 2:10	1/10/2021 20:10	18.1	1.64	1.70	106,650
1/11/2021 9:05	1/13/2021 4:50	43.8	2.30	0.05	0.36	30.4	1/11/2021 9:00	1/13/2021 16:50	55.9	6.49	13.00	1,307,162
1/14/2021 23:10	1/15/2021 5:30	6.3	0.15	0.02	0.24	46.9	1/14/2021 23:10	1/15/2021 17:25	18.3	2.88	3.40	189,810
1/16/2021 23:30	1/17/2021 4:40	5.2	0.12	0.02	0.12	46.6	1/16/2021 23:25	1/17/2021 16:40	17.3	1.89	2.30	117,780
1/24/2021 3:35	1/24/2021 23:50	20.3	0.26	0.01	0.12	168.9	1/24/2021 3:30	1/25/2021 11:45	32.3	1.01	1.28	117,507
1/25/2021 17:20	1/25/2021 18:45	1.4	0.09	0.06	0.24	21.2	1/25/2021 17:15	1/26/2021 6:40	13.5	1.10	1.39	53,442
1/27/2021 7:10	1/27/2021 9:35	2.4	0.06	0.02	0.12	37.5	1/27/2021 7:05	1/27/2021 21:35	14.6	0.82	0.92	42,861
1/28/2021 4:40	1/28/2021 12:30	7.8	0.22	0.03	0.12	20.6	1/28/2021 4:40	1/29/2021 0:30	19.9	1.25	1.61	89,670
1/29/2021 21:20	1/30/2021 8:50	11.5	0.11	0.01	0.24	36.8	1/29/2021 21:20	1/30/2021 18:15	21.0	0.92	1.00	69,837
1/30/2021 18:15	2/3/2021 2:45	80.5	2.01	0.03	0.48	15.2	1/30/2021 18:15	2/3/2021 14:45	92.6	3.28	7.49	1,094,632
2/4/2021 6:00	2/5/2021 13:20	31.3	0.81	0.03	0.12	28.6	2/4/2021 5:55	2/6/2021 1:15	43.4	3.73	5.82	582,305
2/6/2021 13:45	2/6/2021 18:05	4.3	0.25	0.06	0.36	29.0	2/6/2021 13:45	2/7/2021 6:05	16.4	3.10	3.78	183,201
2/7/2021 16:00	2/8/2021 10:10	18.2	0.55	0.03	0.24	22.2	2/7/2021 15:55	2/8/2021 22:05	30.3	3.70	6.62	402,609
2/12/2021 11:45	2/12/2021 12:20	0.6	0.06	0.10	0.12	98.1	2/12/2021 11:45	2/13/2021 0:20	12.7	1.15	1.18	52,566
2/14/2021 12:00	2/16/2021 6:40	42.7	1.14	0.03	0.12	47.9	2/14/2021 11:55	2/16/2021 18:40	54.8	3.29	5.57	649,672
2/17/2021 6:30	2/17/2021 6:45	0.3	0.07	0.28	0.24	27.7	2/17/2021 6:30	2/17/2021 18:40	12.3	3.38	3.78	149,211
2/18/2021 16:35	2/18/2021 16:55	0.3	0.03	0.09	0.12	34.0	2/18/2021 16:30	2/19/2021 4:50	12.4	2.38	2.55	106,374
2/19/2021 14:00	2/20/2021 0:40	10.7	0.10	0.01	0.12	55.4	2/19/2021 14:00	2/20/2021 12:40	22.8	1.85	2.12	151,431
2/21/2021 21:35	2/22/2021 3:30	5.9	0.19	0.03	0.24	50.8	2/21/2021 21:30	2/22/2021 7:30	10.1	1.99	2.40	72,294
2/22/2021 7:35	2/22/2021 21:50	14.3	0.46	0.03	1.56	8.4	2/22/2021 7:30	2/23/2021 9:45	26.3	2.80	3.98	265,317
2/23/2021 14:05	2/23/2021 14:15	0.2	0.06	0.36	0.60	19.1	2/23/2021 14:00	2/24/2021 2:10	12.3	2.07	2.40	91,122
2/24/2021 8:25	2/24/2021 8:55	0.5	0.04	0.08	0.12	18.3	2/24/2021 8:25	2/24/2021 20:55	12.6	1.57	1.85	71,115
2/25/2021 1:30	2/25/2021 10:30	9.0	0.16	0.02	0.12	17.1	2/25/2021 1:25	2/25/2021 14:00	12.7	1.74	1.98	79,410
2/25/2021 14:00	2/25/2021 16:45	2.8	0.14	0.05	0.24	8.3	2/25/2021 14:00	2/26/2021 2:10	12.3	2.35	3.04	103,737
2/26/2021 2:10	2/26/2021 6:45	4.6	0.05	0.01	0.12	10.9	2/26/2021 2:10	2/26/2021 18:40	16.6	1.84	2.12	109,743
2/26/2021 21:05	2/26/2021 22:40	1.6	0.11	0.07	0.24	18.7	2/26/2021 21:00	2/27/2021 10:40	13.8	1.76	2.12	87,117
2/28/2021 1:15	2/28/2021 2:50	1.6	0.03	0.02	0.12	26.8	2/28/2021 1:15	2/28/2021 14:50	13.7	1.27	1.39	62,679
3/2/2021 8:35	3/2/2021 10:00	1.4	0.03	0.02	0.12	82.2	3/2/2021 8:35	3/2/2021 21:55	13.4	0.90	0.92	43,308
3/4/2021 15:35	3/4/2021 21:15	5.7	0.30	0.05	0.24	137.2	3/4/2021 15:30	3/5/2021 9:15	17.8	1.54	2.26	98,559
3/5/2021 9:40	3/5/2021 17:20	7.7	0.12	0.02	0.12	12.8	3/5/2021 9:40	3/6/2021 5:15	19.7	1.44	1.85	102,045
3/7/2021 3:15	3/7/2021 12:25	9.2	0.16	0.02	0.12	34.4	3/7/2021 3:15	3/7/2021 16:15	13.1	1.18	1.39	55,344
3/7/2021 16:20	3/8/2021 0:50	8.5	0.21	0.02	0.48	6.8	3/7/2021 16:15	3/8/2021 12:45	20.6	1.57	2.40	116,205
3/14/2021 10:40	3/14/2021 20:25	9.8	0.35	0.04	0.12	159.5	3/14/2021 10:40	3/15/2021 8:25	21.8	1.25	1.98	98,088
3/18/2021 16:05	3/18/2021 22:40	6.6	0.17	0.03	0.12	93.8	3/18/2021 16:05	3/19/2021 10:40	18.7	0.90	1.18	60,612
3/19/2021 22:15	3/20/2021 10:30	12.3	0.12	0.01	0.12	27.9	3/19/2021 22:15	3/20/2021 16:50	18.7	0.80	0.92	53,673
3/20/2021 16:50	3/21/2021 4:00	11.2	0.30	0.03	0.48	10.1	3/20/2021 16:50	3/21/2021 9:55	17.2	1.50	1.98	93,003
3/21/2021 9:55	3/21/2021 18:35	8.7	0.11	0.01	0.12	11.4	3/21/2021 9:55	3/22/2021 2:45	16.9	1.21	1.28	73,482
3/22/2021 2:45	3/22/2021 11:55	9.2	0.19	0.02	0.24	10.8	3/22/2021 2:45	3/22/2021 23:55	21.3	1.42	1.85	108,750
3/24/2021 12:25	3/25/2021 6:05	17.7	0.61	0.03	0.48	53.6	3/24/2021 12:20	3/25/2021 18:05	29.8	2.04	3.22	219,240
3/28/2021 9:55	3/29/2021 1:00	15.1	0.59	0.04	0.24	77.7	3/28/2021 9:55	3/29/2021 12:55	27.1	1.95	3.04	189,684

Table E-3. Summary Statistics for Individual Storm Events at the MONM Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
4/3/2021 22:10	4/4/2021 4:55	6.8	0.08	0.01	0.12	142.6	4/3/2021 22:05	4/4/2021 16:50	18.8	0.69	0.70	46,515
4/6/2021 16:10	4/6/2021 16:20	0.2	0.18	1.08	1.08	64.8	4/6/2021 16:10	4/7/2021 4:15	12.2	0.56	0.57	24,372
4/7/2021 11:50	4/7/2021 15:15	3.4	0.04	0.01	0.12	19.5	4/7/2021 11:45	4/7/2021 22:40	11.0	0.55	0.57	21,816
4/7/2021 22:40	4/8/2021 5:00	6.3	0.25	0.04	0.24	10.8	4/7/2021 22:40	4/8/2021 17:00	18.4	0.98	1.49	65,091
4/10/2021 4:50	4/10/2021 8:45	3.9	0.03	0.01	0.12	48.2	4/10/2021 4:50	4/10/2021 20:45	16.0	0.54	0.57	31,374
4/24/2021 0:15	4/25/2021 6:55	30.7	0.65	0.02	0.24	379.6	4/24/2021 0:10	4/25/2021 18:55	42.8	0.90	1.49	138,213
4/25/2021 19:20	4/25/2021 22:00	2.7	0.18	0.07	0.36	17.1	4/25/2021 19:15	4/26/2021 9:55	14.8	1.11	1.49	58,935
4/30/2021 6:20	4/30/2021 9:05	2.8	0.13	0.05	0.12	105.0	4/30/2021 6:20	4/30/2021 21:05	14.8	0.61	0.77	32,385
5/3/2021 14:55	5/3/2021 23:15	8.3	0.20	0.02	0.12	78.9	5/3/2021 14:55	5/4/2021 11:10	20.3	0.60	0.84	44,169
5/7/2021 8:05	5/7/2021 14:50	6.8	0.26	0.04	0.24	82.8	5/7/2021 8:00	5/8/2021 2:45	18.8	0.87	1.49	58,896
5/8/2021 22:30	5/9/2021 0:30	2.0	0.07	0.04	0.12	36.6	5/8/2021 22:25	5/9/2021 12:30	14.2	0.47	0.51	23,925
5/17/2021 18:10	5/17/2021 22:10	4.0	0.13	0.03	0.12	211.3	5/17/2021 18:10	5/18/2021 10:05	16.0	0.36	0.46	20,505
5/18/2021 13:30	5/18/2021 17:40	4.2	0.05	0.01	0.24	15.6	5/18/2021 13:25	5/18/2021 21:55	8.6	0.31	0.32	9,612
5/18/2021 21:55	5/19/2021 0:35	2.7	0.20	0.08	0.36	8.3	5/18/2021 21:55	5/19/2021 8:05	10.3	0.61	0.84	22,551
5/19/2021 8:05	5/19/2021 10:45	2.7	0.06	0.02	0.12	9.1	5/19/2021 8:05	5/19/2021 22:45	14.8	0.59	0.77	31,344
5/24/2021 1:40	5/24/2021 12:15	10.6	0.15	0.01	0.12	112.8	5/24/2021 1:40	5/25/2021 0:15	22.7	0.41	0.46	33,513
5/27/2021 3:25	5/27/2021 11:15	7.8	0.29	0.04	0.48	68.2	5/27/2021 3:25	5/27/2021 23:10	19.8	0.60	0.77	43,005
6/5/2021 2:30	6/5/2021 2:40	0.2	0.03	0.18	0.12	207.5	6/5/2021 2:25	6/5/2021 14:40	12.3	0.23	0.24	10,170
6/6/2021 12:50	6/7/2021 6:05	17.3	1.01	0.06	1.44	241.8	6/6/2021 12:45	6/7/2021 18:00	29.3	1.25	2.40	132,036
6/11/2021 10:35	6/12/2021 1:40	15.1	0.59	0.04	2.04	100.8	6/11/2021 10:30	6/12/2021 13:40	27.3	1.06	2.26	103,881
6/12/2021 22:15	6/13/2021 6:50	8.6	0.32	0.04	0.12	21.9	6/12/2021 22:15	6/13/2021 12:55	14.8	1.27	1.73	67,191
6/13/2021 12:55	6/13/2021 23:45	10.8	0.59	0.05	0.24	9.5	6/13/2021 12:55	6/14/2021 10:25	21.6	2.19	3.78	170,337
6/14/2021 10:30	6/14/2021 12:35	2.1	0.05	0.02	0.12	11.1	6/14/2021 10:25	6/15/2021 0:30	14.2	1.40	1.61	71,535
6/29/2021 6:00	6/29/2021 6:00	0.0	0.03	0.00	0.36	355.3	6/29/2021 5:55	6/29/2021 17:55	12.1	0.22	0.28	9,639
7/20/2021 7:45	7/20/2021 9:35	1.8	0.08	0.04	0.24	861.1	7/20/2021 7:45	7/20/2021 21:30	13.8	0.18	0.28	8,760
8/5/2021 23:55	8/6/2021 10:50	10.9	0.18	0.02	0.12	398.8	8/5/2021 23:55	8/6/2021 22:50	23.0	0.20	0.32	16,743
8/26/2021 21:10	8/27/2021 2:05	4.9	0.04	0.01	0.12	491.2	8/26/2021 21:10	8/27/2021 10:25	13.3	0.13	0.15	6,426
8/27/2021 10:30	8/27/2021 12:40	2.2	0.05	0.02	0.12	13.3	8/27/2021 10:25	8/28/2021 0:40	14.3	0.14	0.15	7,470
8/31/2021 2:25	8/31/2021 2:40	0.3	0.03	0.12	0.12	86.8	8/31/2021 2:25	8/31/2021 14:35	12.3	0.11	0.15	5,031
9/17/2021 9:15	9/17/2021 10:45	1.5	0.03	0.02	0.12	501.7	9/17/2021 9:10	9/17/2021 16:40	7.6	0.15	0.18	4,113
9/17/2021 16:40	9/18/2021 4:20	11.7	0.76	0.07	0.48	509.1	9/17/2021 16:40	9/18/2021 13:25	20.8	0.75	1.98	56,115
9/18/2021 13:25	9/18/2021 22:50	9.4	0.22	0.02	0.48	9.6	9/18/2021 13:25	9/19/2021 10:50	21.5	0.59	0.92	45,837
9/19/2021 16:25	9/19/2021 16:40	0.3	0.04	0.16	0.12	18.6	9/19/2021 16:25	9/20/2021 4:40	12.3	0.30	0.32	13,248
9/26/2021 13:35	9/27/2021 3:55	14.3	0.57	0.04	0.36	165.2	9/26/2021 13:30	9/27/2021 13:50	24.4	0.66	1.18	57,630
9/27/2021 13:55	9/27/2021 14:55	1.0	0.23	0.23	0.72	13.5	9/27/2021 13:50	9/27/2021 22:15	8.5	0.89	1.28	27,249
9/27/2021 22:20	9/28/2021 10:00	11.7	0.17	0.01	0.24	7.8	9/27/2021 22:15	9/28/2021 21:55	23.8	0.55	0.77	46,890
9/29/2021 23:35	9/30/2021 13:20	13.8	0.61	0.04	0.36	39.0	9/29/2021 23:35	10/1/2021 1:15	25.8	0.92	2.26	85,221

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Table E-4. Summary Statistics for Individual Storm Events at the MONMN Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
10/4/2020 6:45	10/4/2020 9:00	2.3	0.03	0.01	0.12	175.2	10/4/2020 6:40	10/4/2020 20:55	14.3	0.04	0.04	2,064
10/9/2020 20:25	10/10/2020 8:05	11.7	0.99	0.08	0.60	0.0	10/9/2020 20:25	10/10/2020 15:20	19.0	0.61	1.00	41,433
10/10/2020 15:20	10/10/2020 15:40	0.3	0.11	0.33	0.60	9.7	10/10/2020 15:20	10/11/2020 3:40	12.4	0.65	0.80	28,833
10/11/2020 10:30	10/11/2020 17:50	7.3	0.35	0.05	0.36	19.0	10/11/2020 10:25	10/12/2020 2:55	16.6	0.59	0.80	34,926
10/12/2020 2:55	10/12/2020 9:15	6.3	0.31	0.05	0.12	10.2	10/12/2020 2:55	10/12/2020 21:10	18.3	0.67	0.80	44,166
10/13/2020 0:10	10/13/2020 7:00	6.8	0.46	0.07	0.48	15.4	10/13/2020 0:10	10/13/2020 19:00	18.9	0.79	1.18	53,913
10/16/2020 14:50	10/17/2020 4:40	13.8	0.30	0.02	0.36	80.3	10/16/2020 14:50	10/17/2020 16:40	25.9	0.22	0.28	20,265
10/18/2020 1:50	10/18/2020 15:50	14.0	0.16	0.01	0.24	23.5	10/18/2020 1:50	10/19/2020 3:45	26.0	0.18	0.21	17,019
10/19/2020 10:30	10/19/2020 18:25	7.9	0.56	0.07	0.84	20.4	10/19/2020 10:25	10/20/2020 6:20	20.0	0.80	1.18	57,243
10/21/2020 1:40	10/21/2020 9:30	7.8	0.06	0.01	0.24	31.6	10/21/2020 1:40	10/21/2020 11:15	9.7	0.35	0.38	12,249
10/21/2020 11:20	10/21/2020 11:25	0.1	0.05	0.60	0.36	7.7	10/21/2020 11:15	10/21/2020 23:25	12.3	0.29	0.33	12,627
10/23/2020 6:20	10/23/2020 8:50	2.5	0.08	0.03	0.12	43.0	10/23/2020 6:20	10/23/2020 17:25	11.2	0.14	0.18	5,730
10/23/2020 17:25	10/23/2020 23:20	5.9	0.09	0.02	0.12	9.5	10/23/2020 17:25	10/24/2020 11:15	17.9	0.22	0.28	14,415
10/29/2020 2:50	10/29/2020 6:10	3.3	0.04	0.01	0.12	128.8	10/29/2020 2:50	10/29/2020 18:10	15.4	0.06	0.08	3,366
10/30/2020 4:55	10/30/2020 9:15	4.3	0.09	0.02	0.36	26.1	10/30/2020 4:50	10/30/2020 21:10	16.4	0.11	0.18	6,573
11/3/2020 7:10	11/3/2020 14:55	7.8	0.78	0.10	0.48	94.2	11/3/2020 7:05	11/3/2020 22:15	15.3	0.97	1.60	53,043
11/3/2020 22:15	11/4/2020 9:10	10.9	0.18	0.02	0.24	7.9	11/3/2020 22:15	11/4/2020 15:40	17.5	0.89	1.00	55,758
11/4/2020 15:45	11/5/2020 15:25	23.7	0.65	0.03	0.60	9.1	11/4/2020 15:40	11/6/2020 3:20	35.8	1.13	1.72	144,963
11/9/2020 18:10	11/9/2020 22:35	4.4	0.12	0.03	0.24	99.5	11/9/2020 18:10	11/10/2020 8:10	14.1	0.16	0.18	8,016
11/10/2020 8:10	11/10/2020 13:40	5.5	0.04	0.01	0.12	10.9	11/10/2020 8:10	11/11/2020 1:40	17.6	0.15	0.18	9,261
11/12/2020 18:45	11/13/2020 6:05	11.3	0.57	0.05	0.24	58.6	11/12/2020 18:40	11/13/2020 18:00	23.4	0.80	1.28	67,362
11/14/2020 15:15	11/14/2020 23:30	8.3	0.28	0.03	0.12	33.5	11/14/2020 15:10	11/15/2020 11:25	20.3	0.70	1.00	51,306
11/16/2020 4:55	11/16/2020 18:20	13.4	0.58	0.04	0.36	31.8	11/16/2020 4:50	11/17/2020 6:20	25.6	1.06	1.99	97,239
11/17/2020 12:30	11/18/2020 15:30	27.0	1.00	0.04	0.48	18.9	11/17/2020 12:30	11/19/2020 3:30	39.1	1.47	2.76	206,718
11/20/2020 5:05	11/20/2020 7:40	2.6	0.03	0.01	0.12	38.3	11/20/2020 5:00	11/20/2020 19:40	14.8	0.59	0.71	31,404
11/22/2020 15:10	11/22/2020 22:25	7.3	0.09	0.01	0.12	96.4	11/22/2020 15:10	11/23/2020 4:40	13.6	0.23	0.25	11,025
11/23/2020 4:40	11/23/2020 13:10	8.5	0.24	0.03	0.24	12.2	11/23/2020 4:40	11/24/2020 1:05	20.5	0.45	0.63	33,096
11/24/2020 9:00	11/24/2020 23:20	14.3	0.46	0.03	0.36	20.7	11/24/2020 8:55	11/25/2020 11:15	26.4	0.69	1.28	66,057
11/27/2020 23:25	11/28/2020 4:45	5.3	0.08	0.02	0.12	73.7	11/27/2020 23:25	11/28/2020 16:40	17.3	0.24	0.28	14,982
11/30/2020 2:50	11/30/2020 7:15	4.4	0.41	0.09	0.24	49.4	11/30/2020 2:45	11/30/2020 19:15	16.6	0.73	1.09	43,479
12/8/2020 1:15	12/9/2020 7:45	30.5	0.82	0.03	0.24	186.6	12/8/2020 1:15	12/9/2020 19:40	42.5	0.58	1.09	87,993
12/13/2020 2:15	12/13/2020 16:40	14.4	0.17	0.01	0.12	91.0	12/13/2020 2:10	12/14/2020 0:00	21.9	0.23	0.33	18,348
12/14/2020 0:05	12/14/2020 10:30	10.4	0.06	0.01	0.12	13.2	12/14/2020 0:00	12/14/2020 22:25	22.5	0.20	0.21	15,966
12/15/2020 4:45	12/15/2020 11:10	6.4	0.12	0.02	0.12	22.8	12/15/2020 4:40	12/15/2020 23:10	18.6	0.28	0.38	18,735
12/16/2020 13:15	12/17/2020 4:30	15.3	0.43	0.03	0.24	28.7	12/16/2020 13:15	12/17/2020 15:50	26.7	0.75	1.09	72,012
12/17/2020 15:50	12/17/2020 18:45	2.9	0.13	0.04	0.24	15.3	12/17/2020 15:50	12/18/2020 1:40	9.9	0.60	0.63	21,525
12/18/2020 1:45	12/18/2020 9:15	7.5	0.23	0.03	0.12	8.0	12/18/2020 1:40	12/18/2020 17:50	16.3	0.76	1.09	44,574
12/18/2020 17:50	12/19/2020 2:45	8.9	0.51	0.06	0.24	9.1	12/18/2020 17:50	12/19/2020 12:20	18.6	1.31	2.59	87,507
12/19/2020 12:25	12/19/2020 21:00	8.6	0.26	0.03	0.24	9.9	12/19/2020 12:20	12/20/2020 8:55	20.7	1.26	1.38	93,579
12/20/2020 23:55	12/22/2020 3:10	27.3	2.19	0.08	0.72	28.2	12/20/2020 23:55	12/22/2020 11:00	35.2	4.25	22.72	538,399
12/22/2020 11:05	12/22/2020 12:00	0.9	0.05	0.05	0.12	8.8	12/22/2020 11:00	12/22/2020 23:55	13.0	1.79	1.98	83,919
12/25/2020 15:15	12/25/2020 23:05	7.8	0.45	0.06	0.12	75.7	12/25/2020 15:10	12/26/2020 11:00	19.9	1.06	1.49	75,978
12/26/2020 23:35	12/27/2020 1:25	1.8	0.04	0.02	0.24	25.3	12/26/2020 23:35	12/27/2020 6:55	7.4	0.69	0.71	18,381
12/27/2020 6:55	12/27/2020 10:50	3.9	0.05	0.01	0.12	7.3	12/27/2020 6:55	12/27/2020 22:50	16.0	0.57	0.63	32,949
12/29/2020 17:00	12/31/2020 8:10	39.2	1.01	0.03	0.24	57.6	12/29/2020 17:00	12/31/2020 20:10	51.3	1.12	1.98	207,244

Table E-4. Summary Statistics for Individual Storm Events at the MONMN Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
12/31/2020 22:25	1/1/2021 3:25	5.0	0.03	0.01	0.12	23.2	12/31/2020 22:25	1/1/2021 14:10	15.8	0.75	0.80	42,738
1/1/2021 14:10	1/1/2021 22:10	8.0	0.27	0.03	0.36	39.0	1/1/2021 14:10	1/2/2021 5:00	14.9	0.96	1.38	51,714
1/2/2021 5:00	1/3/2021 1:25	20.4	1.52	0.07	0.48	12.5	1/2/2021 5:00	1/3/2021 8:55	28.0	3.49	14.45	352,182
1/3/2021 8:55	1/3/2021 10:15	1.3	0.09	0.07	0.12	8.2	1/3/2021 8:55	1/3/2021 22:15	13.4	2.36	2.93	113,934
1/3/2021 23:00	1/4/2021 14:25	15.4	0.66	0.04	0.24	13.2	1/3/2021 23:00	1/5/2021 2:25	27.5	2.41	3.51	238,263
1/5/2021 12:00	1/6/2021 4:00	16.0	0.93	0.06	0.24	22.0	1/5/2021 12:00	1/6/2021 16:00	28.1	2.73	5.18	276,375
1/8/2021 1:40	1/8/2021 15:30	13.8	0.18	0.01	0.12	47.9	1/8/2021 1:40	1/9/2021 3:30	25.9	0.84	0.89	78,231
1/10/2021 2:10	1/10/2021 8:15	6.1	0.05	0.01	0.12	35.2	1/10/2021 2:10	1/10/2021 20:10	18.1	0.46	0.49	30,027
1/11/2021 9:05	1/13/2021 4:50	43.8	2.30	0.05	0.36	30.4	1/11/2021 9:00	1/13/2021 16:50	55.9	2.82	8.46	568,353
1/14/2021 23:10	1/15/2021 5:30	6.3	0.15	0.02	0.24	46.9	1/14/2021 23:10	1/15/2021 17:25	18.3	1.08	1.18	70,968
1/16/2021 23:30	1/17/2021 4:40	5.2	0.12	0.02	0.12	46.6	1/16/2021 23:25	1/17/2021 16:40	17.3	0.58	0.71	36,009
1/24/2021 3:35	1/24/2021 23:50	20.3	0.26	0.01	0.12	168.9	1/24/2021 3:30	1/25/2021 11:45	32.3	0.20	0.28	22,701
1/25/2021 17:20	1/25/2021 18:45	1.4	0.09	0.06	0.24	21.2	1/25/2021 17:15	1/26/2021 6:40	13.5	0.22	0.28	10,632
1/27/2021 7:10	1/27/2021 9:35	2.4	0.06	0.02	0.12	37.5	1/27/2021 7:10	1/27/2021 21:30	14.4	0.14	0.15	7,287
1/28/2021 4:40	1/28/2021 12:30	7.8	0.22	0.03	0.12	20.6	1/28/2021 4:40	1/29/2021 0:30	19.9	0.29	0.49	20,787
1/29/2021 21:20	1/30/2021 8:50	11.5	0.11	0.01	0.24	36.8	1/29/2021 21:20	1/30/2021 18:10	20.9	0.19	0.21	13,929
1/30/2021 18:15	2/3/2021 2:45	80.5	2.01	0.03	0.48	15.2	1/30/2021 18:10	2/3/2021 14:45	92.7	1.08	2.93	360,660
2/4/2021 6:00	2/5/2021 13:20	31.3	0.81	0.03	0.12	28.6	2/4/2021 5:55	2/6/2021 1:15	43.4	1.50	2.22	233,689
2/6/2021 13:45	2/6/2021 18:05	4.3	0.25	0.06	0.36	29.0	2/6/2021 13:45	2/7/2021 6:00	16.3	1.16	1.44	68,076
2/7/2021 16:00	2/8/2021 10:10	18.2	0.55	0.03	0.24	22.2	2/7/2021 15:55	2/8/2021 22:05	30.3	1.68	3.04	183,246
2/12/2021 11:45	2/12/2021 12:20	0.6	0.06	0.10	0.12	98.1	2/12/2021 11:45	2/13/2021 0:20	12.7	0.32	0.32	14,592
2/14/2021 12:00	2/16/2021 6:40	42.7	1.14	0.03	0.12	47.9	2/14/2021 11:55	2/16/2021 18:40	54.8	1.23	2.31	242,811
2/17/2021 6:30	2/17/2021 6:45	0.3	0.07	0.28	0.24	27.7	2/17/2021 6:30	2/17/2021 18:40	12.3	1.39	1.78	61,281
2/18/2021 16:35	2/18/2021 16:55	0.3	0.03	0.09	0.12	34.0	2/18/2021 16:30	2/19/2021 4:50	12.4	0.94	1.01	42,189
2/19/2021 14:00	2/20/2021 0:40	10.7	0.10	0.01	0.12	55.4	2/19/2021 14:00	2/20/2021 12:40	22.8	0.63	0.69	51,690
2/21/2021 21:35	2/22/2021 3:30	5.9	0.19	0.03	0.24	50.8	2/21/2021 21:30	2/22/2021 7:30	10.1	0.64	0.84	23,112
2/22/2021 7:35	2/22/2021 21:50	14.3	0.46	0.03	1.56	8.4	2/22/2021 7:30	2/23/2021 9:50	26.4	0.96	1.44	91,701
2/23/2021 14:05	2/23/2021 14:15	0.2	0.06	0.36	0.60	19.1	2/23/2021 14:00	2/24/2021 2:10	12.3	0.72	0.84	31,536
2/24/2021 8:25	2/24/2021 8:55	0.5	0.04	0.08	0.12	18.3	2/24/2021 8:25	2/24/2021 20:55	12.6	0.48	0.56	21,876
2/25/2021 1:30	2/25/2021 10:30	9.0	0.16	0.02	0.12	17.1	2/25/2021 1:25	2/25/2021 14:00	12.7	0.58	0.69	26,421
2/25/2021 14:00	2/25/2021 16:45	2.8	0.14	0.05	0.24	8.3	2/25/2021 14:00	2/26/2021 2:10	12.3	0.87	1.32	38,301
2/26/2021 2:10	2/26/2021 6:45	4.6	0.05	0.01	0.12	10.9	2/26/2021 2:10	2/26/2021 18:40	16.6	0.65	0.76	38,565
2/26/2021 21:05	2/26/2021 22:40	1.6	0.11	0.07	0.24	18.7	2/26/2021 21:00	2/27/2021 10:40	13.8	0.59	0.69	29,427
2/28/2021 1:15	2/28/2021 2:50	1.6	0.03	0.02	0.12	26.8	2/28/2021 1:15	2/28/2021 14:45	13.6	0.39	0.41	19,044
3/2/2021 8:35	3/2/2021 10:00	1.4	0.03	0.02	0.12	82.2	3/2/2021 8:35	3/2/2021 22:00	13.5	0.22	0.25	10,728
3/4/2021 15:35	3/4/2021 21:15	5.7	0.30	0.05	0.24	137.2	3/4/2021 15:35	3/5/2021 9:10	17.7	0.50	0.76	31,572
3/5/2021 9:40	3/5/2021 17:20	7.7	0.12	0.02	0.12	12.8	3/5/2021 9:40	3/6/2021 5:20	19.8	0.41	0.51	29,118
3/7/2021 3:15	3/7/2021 12:25	9.2	0.16	0.02	0.12	34.4	3/7/2021 3:10	3/7/2021 16:20	13.3	0.37	0.45	17,745
3/7/2021 16:20	3/8/2021 0:50	8.5	0.21	0.02	0.48	6.8	3/7/2021 16:20	3/8/2021 12:45	20.5	0.52	0.76	38,136
3/14/2021 10:40	3/14/2021 20:25	9.8	0.35	0.04	0.12	159.5	3/14/2021 10:40	3/15/2021 8:25	21.8	0.39	0.69	30,609
3/18/2021 16:05	3/18/2021 22:40	6.6	0.17	0.03	0.12	93.8	3/18/2021 16:05	3/19/2021 10:40	18.7	0.23	0.36	15,564
3/19/2021 22:15	3/20/2021 10:30	12.3	0.12	0.01	0.12	27.9	3/19/2021 22:15	3/20/2021 16:50	18.7	0.18	0.25	12,297
3/20/2021 16:50	3/21/2021 4:00	11.2	0.30	0.03	0.48	10.1	3/20/2021 16:50	3/21/2021 9:55	17.2	0.51	0.62	31,302
3/21/2021 9:55	3/21/2021 18:35	8.7	0.11	0.01	0.12	11.4	3/21/2021 9:55	3/22/2021 2:45	16.9	0.42	0.45	25,527
3/22/2021 2:45	3/22/2021 11:55	9.2	0.19	0.02	0.24	10.8	3/22/2021 2:45	3/22/2021 23:55	21.3	0.50	0.69	38,568
3/24/2021 12:25	3/25/2021 6:05	17.7	0.61	0.03	0.48	53.6	3/24/2021 12:25	3/25/2021 18:00	29.7	0.69	1.11	73,569

Table E-4. Summary Statistics for Individual Storm Events at the MONMN Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
3/28/2021 9:55	3/29/2021 1:00	15.1	0.59	0.04	0.24	77.7	3/28/2021 9:55	3/29/2021 12:55	27.1	0.70	1.11	68,604
4/3/2021 22:10	4/4/2021 4:55	6.8	0.08	0.01	0.12	142.6	4/3/2021 22:10	4/4/2021 16:50	18.8	0.12	0.15	8,145
4/6/2021 16:10	4/6/2021 16:20	0.2	0.18	1.08	1.08	64.8	4/6/2021 16:10	4/7/2021 4:15	12.2	0.06	0.07	2,751
4/7/2021 11:50	4/7/2021 15:15	3.4	0.04	0.01	0.12	19.5	4/7/2021 11:45	4/7/2021 22:40	11.0	0.07	0.07	2,742
4/7/2021 22:40	4/8/2021 5:00	6.3	0.25	0.04	0.24	10.8	4/7/2021 22:40	4/8/2021 17:00	18.4	0.23	0.41	15,561
4/10/2021 4:50	4/10/2021 8:45	3.9	0.03	0.01	0.12	48.2	4/10/2021 4:50	4/10/2021 20:45	16.0	0.07	0.09	3,978
4/24/2021 0:15	4/25/2021 6:55	30.7	0.65	0.02	0.24	379.6	4/24/2021 0:10	4/25/2021 18:55	42.8	0.26	0.56	40,548
4/25/2021 19:20	4/25/2021 22:00	2.7	0.18	0.07	0.36	17.1	4/25/2021 19:15	4/26/2021 9:55	14.8	0.32	0.45	17,013
4/30/2021 6:20	4/30/2021 9:05	2.8	0.13	0.05	0.12	105.0	4/30/2021 6:20	4/30/2021 21:00	14.8	0.08	0.12	4,188
5/3/2021 14:55	5/3/2021 23:15	8.3	0.20	0.02	0.12	78.9	5/3/2021 14:55	5/4/2021 11:10	20.3	0.09	0.12	6,387
5/7/2021 8:05	5/7/2021 14:50	6.8	0.26	0.04	0.24	82.8	5/7/2021 8:00	5/8/2021 2:45	18.8	0.27	0.51	18,507
5/8/2021 22:30	5/9/2021 0:30	2.0	0.07	0.04	0.12	36.6	5/8/2021 22:25	5/9/2021 12:30	14.2	0.06	0.07	3,270
5/17/2021 18:10	5/17/2021 22:10	4.0	0.13	0.03	0.12	211.3	5/17/2021 18:10	5/18/2021 10:05	16.0	0.04	0.07	2,115
5/18/2021 13:30	5/18/2021 17:40	4.2	0.05	0.01	0.24	15.6	5/18/2021 13:25	5/18/2021 21:55	8.6	0.05	0.06	1,512
5/18/2021 21:55	5/19/2021 0:35	2.7	0.20	0.08	0.36	8.3	5/18/2021 21:55	5/19/2021 8:00	10.2	0.19	0.25	7,017
5/19/2021 8:05	5/19/2021 10:45	2.7	0.06	0.02	0.12	9.1	5/19/2021 8:00	5/19/2021 22:40	14.8	0.12	0.18	6,243
5/24/2021 1:40	5/24/2021 12:15	10.6	0.15	0.01	0.12	112.8	5/24/2021 1:40	5/25/2021 0:10	22.6	0.05	0.07	4,401
5/27/2021 3:25	5/27/2021 11:15	7.8	0.29	0.04	0.48	68.2	5/27/2021 3:20	5/27/2021 23:10	19.9	0.12	0.18	8,646
6/5/2021 2:30	6/5/2021 2:40	0.2	0.03	0.18	0.12	207.5	6/5/2021 2:25	6/5/2021 14:35	12.3	0.02	0.02	882
6/6/2021 12:50	6/7/2021 6:05	17.3	1.01	0.06	1.44	241.8	6/6/2021 12:45	6/7/2021 18:00	29.3	0.38	0.84	40,587
6/11/2021 10:35	6/12/2021 1:40	15.1	0.59	0.04	2.04	100.8	6/11/2021 10:30	6/12/2021 13:40	27.3	0.32	0.62	31,353
6/12/2021 22:15	6/13/2021 6:50	8.6	0.32	0.04	0.12	21.9	6/12/2021 22:15	6/13/2021 12:55	14.8	0.38	0.56	20,412
6/13/2021 12:55	6/13/2021 23:45	10.8	0.59	0.05	0.24	9.5	6/13/2021 12:55	6/14/2021 10:25	21.6	0.74	1.44	57,777
6/14/2021 10:30	6/14/2021 12:35	2.1	0.05	0.02	0.12	11.1	6/14/2021 10:25	6/15/2021 0:30	14.2	0.45	0.56	22,953
6/29/2021 6:00	6/29/2021 6:00	0.0	0.03	0.00	0.36	355.3	6/29/2021 5:55	6/29/2021 17:55	12.1	0.02	0.02	870
7/20/2021 7:45	7/20/2021 9:35	1.8	0.08	0.04	0.24	861.1	7/20/2021 7:40	7/20/2021 21:30	13.9	0.02	0.03	1,095
8/5/2021 23:55	8/6/2021 10:50	10.9	0.18	0.02	0.12	398.8	8/5/2021 23:55	8/6/2021 22:50	23.0	0.02	0.05	1,827
8/26/2021 21:10	8/27/2021 2:05	4.9	0.04	0.01	0.12	491.2	8/26/2021 21:10	8/27/2021 10:25	13.3	0.02	0.02	960
8/27/2021 10:30	8/27/2021 12:40	2.2	0.05	0.02	0.12	13.3	8/27/2021 10:25	8/28/2021 0:40	14.3	0.02	0.02	1,032
8/31/2021 2:25	8/31/2021 2:40	0.3	0.03	0.12	0.12	86.8	8/31/2021 2:25	8/31/2021 14:35	12.3	0.02	0.02	840
9/17/2021 9:15	9/17/2021 10:45	1.5	0.03	0.02	0.12	501.7	9/17/2021 9:10	9/17/2021 16:40	7.6	0.01	0.01	273
9/17/2021 16:40	9/18/2021 4:20	11.7	0.76	0.07	0.48	509.1	9/17/2021 16:40	9/18/2021 13:25	20.8	0.12	0.28	8,865
9/18/2021 13:25	9/18/2021 22:50	9.4	0.22	0.02	0.48	9.6	9/18/2021 13:25	9/19/2021 10:50	21.5	0.10	0.15	7,677
9/19/2021 16:25	9/19/2021 16:40	0.3	0.04	0.16	0.12	18.6	9/19/2021 16:25	9/20/2021 4:40	12.3	0.02	0.03	1,107
9/26/2021 13:35	9/27/2021 3:55	14.3	0.57	0.04	0.36	165.2	9/26/2021 13:30	9/27/2021 13:50	24.4	0.09	0.18	8,211
9/27/2021 13:55	9/27/2021 14:55	1.0	0.23	0.23	0.72	13.5	9/27/2021 13:50	9/27/2021 22:15	8.5	0.14	0.22	4,410
9/27/2021 22:20	9/28/2021 10:00	11.7	0.17	0.01	0.24	7.8	9/27/2021 22:15	9/28/2021 22:00	23.8	0.08	0.15	7,230
9/29/2021 23:35	9/30/2021 13:20	13.8	0.61	0.04	0.36	39.0	9/29/2021 23:35	10/1/2021 1:15	25.8	0.21	0.45	19,668

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Table E-5. Summary Statistics for Individual Storm Events at the MONMS Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
10/4/2020 6:45	10/4/2020 9:00	2.3	0.03	0.01	0.12	175.2	10/4/2020 6:40	10/4/2020 20:55	14.3	0.03	0.04	1,470
10/9/2020 20:25	10/10/2020 8:05	11.7	0.99	0.08	0.60	0.0	10/9/2020 20:25	10/10/2020 15:20	19.0	0.23	0.53	15,822
10/10/2020 15:20	10/10/2020 15:40	0.3	0.11	0.33	0.60	9.7	10/10/2020 15:20	10/11/2020 3:40	12.4	0.11	0.21	5,043
10/11/2020 10:30	10/11/2020 17:50	7.3	0.35	0.05	0.36	19.0	10/11/2020 10:25	10/12/2020 2:55	16.6	0.14	0.23	8,088
10/12/2020 2:55	10/12/2020 9:15	6.3	0.31	0.05	0.12	10.2	10/12/2020 2:55	10/12/2020 21:10	18.3	0.16	0.35	10,704
10/13/2020 0:10	10/13/2020 7:00	6.8	0.46	0.07	0.48	15.4	10/13/2020 0:10	10/13/2020 19:00	18.9	0.21	0.56	13,968
10/16/2020 14:50	10/17/2020 4:40	13.8	0.30	0.02	0.36	80.3	10/16/2020 14:50	10/17/2020 16:40	25.9	0.10	0.21	9,048
10/18/2020 1:50	10/18/2020 15:50	14.0	0.16	0.01	0.24	23.5	10/18/2020 1:50	10/19/2020 3:45	26.0	0.08	0.10	7,485
10/19/2020 10:30	10/19/2020 18:25	7.9	0.56	0.07	0.84	20.4	10/19/2020 10:25	10/20/2020 6:20	20.0	0.22	0.48	15,885
10/21/2020 1:40	10/21/2020 9:30	7.8	0.06	0.01	0.24	31.6	10/21/2020 1:40	10/21/2020 11:15	9.7	0.09	0.11	3,189
10/21/2020 11:20	10/21/2020 11:25	0.1	0.05	0.60	0.36	7.7	10/21/2020 11:15	10/21/2020 23:25	12.3	0.12	0.15	5,319
10/23/2020 6:20	10/23/2020 8:50	2.5	0.08	0.03	0.12	43.0	10/23/2020 6:20	10/23/2020 17:25	11.2	0.10	0.14	3,942
10/23/2020 17:25	10/23/2020 23:20	5.9	0.09	0.02	0.12	9.5	10/23/2020 17:25	10/24/2020 11:15	17.9	0.11	0.17	7,191
10/29/2020 2:50	10/29/2020 6:10	3.3	0.04	0.01	0.12	128.8	10/29/2020 2:50	10/29/2020 18:10	15.4	0.05	0.08	2,865
10/30/2020 4:55	10/30/2020 9:15	4.3	0.09	0.02	0.36	26.1	10/30/2020 4:50	10/30/2020 21:10	16.4	0.06	0.13	3,759
11/3/2020 7:10	11/3/2020 14:55	7.8	0.78	0.10	0.48	94.2	11/3/2020 7:05	11/3/2020 22:15	15.3	0.24	0.74	13,401
11/3/2020 22:15	11/4/2020 9:10	10.9	0.18	0.02	0.24	7.9	11/3/2020 22:15	11/4/2020 15:40	17.5	0.14	0.21	9,081
11/4/2020 15:45	11/5/2020 15:25	23.7	0.65	0.03	0.60	9.1	11/4/2020 15:40	11/6/2020 3:20	35.8	0.19	0.46	24,978
11/9/2020 18:10	11/9/2020 22:35	4.4	0.12	0.03	0.24	99.5	11/9/2020 18:10	11/10/2020 8:10	14.1	0.08	0.11	4,299
11/10/2020 8:10	11/10/2020 13:40	5.5	0.04	0.01	0.12	10.9	11/10/2020 8:10	11/11/2020 1:40	17.6	0.07	0.09	4,323
11/12/2020 18:45	11/13/2020 6:05	11.3	0.57	0.05	0.24	58.6	11/12/2020 18:40	11/13/2020 18:00	23.4	0.19	0.41	15,606
11/14/2020 15:15	11/14/2020 23:30	8.3	0.28	0.03	0.12	33.5	11/14/2020 15:10	11/15/2020 11:25	20.3	0.15	0.25	11,220
11/16/2020 4:55	11/16/2020 18:20	13.4	0.58	0.04	0.36	31.8	11/16/2020 4:50	11/17/2020 6:20	25.6	0.25	0.67	22,902
11/17/2020 12:30	11/18/2020 15:30	27.0	1.00	0.04	0.48	18.9	11/17/2020 12:30	11/19/2020 3:30	39.1	0.32	1.12	45,228
11/20/2020 5:05	11/20/2020 7:40	2.6	0.03	0.01	0.12	38.3	11/20/2020 5:00	11/20/2020 19:40	14.8	0.13	0.14	6,723
11/22/2020 15:10	11/22/2020 22:25	7.3	0.09	0.01	0.12	96.4	11/22/2020 15:10	11/23/2020 4:40	13.6	0.11	0.14	5,298
11/23/2020 4:40	11/23/2020 13:10	8.5	0.24	0.03	0.24	12.2	11/23/2020 4:40	11/24/2020 1:05	20.5	0.14	0.20	10,056
11/24/2020 9:00	11/24/2020 23:20	14.3	0.46	0.03	0.36	20.7	11/24/2020 8:55	11/25/2020 11:15	26.4	0.20	0.46	18,735
11/27/2020 23:25	11/28/2020 4:45	5.3	0.08	0.02	0.12	73.7	11/27/2020 23:25	11/28/2020 16:40	17.3	0.10	0.13	6,150
11/30/2020 2:50	11/30/2020 7:15	4.4	0.41	0.09	0.24	49.4	11/30/2020 2:45	11/30/2020 19:15	16.6	0.19	0.43	11,340
12/8/2020 1:15	12/9/2020 7:45	30.5	0.82	0.03	0.24	186.6	12/8/2020 1:15	12/9/2020 19:40	42.5	0.17	0.35	25,344
12/13/2020 2:15	12/13/2020 16:40	14.4	0.17	0.01	0.12	91.0	12/13/2020 2:10	12/14/2020 0:00	21.9	0.10	0.13	7,584
12/14/2020 0:05	12/14/2020 10:30	10.4	0.06	0.01	0.12	13.2	12/14/2020 0:00	12/14/2020 22:25	22.5	0.08	0.10	6,729
12/15/2020 4:45	12/15/2020 11:10	6.4	0.12	0.02	0.12	22.8	12/15/2020 4:40	12/15/2020 23:10	18.6	0.10	0.14	6,891
12/16/2020 13:15	12/17/2020 4:30	15.3	0.43	0.03	0.24	28.7	12/16/2020 13:15	12/17/2020 15:50	26.7	0.18	0.35	16,824
12/17/2020 15:50	12/17/2020 18:45	2.9	0.13	0.04	0.24	15.3	12/17/2020 15:50	12/18/2020 1:40	9.9	0.16	0.21	5,643
12/18/2020 1:45	12/18/2020 9:15	7.5	0.23	0.03	0.12	8.0	12/18/2020 1:40	12/18/2020 17:50	16.3	0.18	0.32	10,401
12/18/2020 17:50	12/19/2020 2:45	8.9	0.51	0.06	0.24	9.1	12/18/2020 17:50	12/19/2020 12:20	18.6	0.31	0.83	21,060
12/19/2020 12:25	12/19/2020 21:00	8.6	0.26	0.03	0.24	9.9	12/19/2020 12:20	12/20/2020 8:55	20.7	0.24	0.37	17,649
12/20/2020 23:55	12/22/2020 3:10	27.3	2.19	0.08	0.72	28.2	12/20/2020 23:55	12/22/2020 11:00	35.2	1.11	4.45	140,061
12/22/2020 11:05	12/22/2020 12:00	0.9	0.05	0.05	0.12	8.8	12/22/2020 11:00	12/22/2020 23:55	13.0	0.39	0.51	18,270
12/25/2020 15:15	12/25/2020 23:05	7.8	0.45	0.06	0.12	75.7	12/25/2020 15:10	12/26/2020 11:00	19.9	0.31	0.59	22,185
12/26/2020 23:35	12/27/2020 1:25	1.8	0.04	0.02	0.24	25.3	12/26/2020 23:35	12/27/2020 6:55	7.4	0.16	0.17	4,188
12/27/2020 6:55	12/27/2020 10:50	3.9	0.05	0.01	0.12	7.3	12/27/2020 6:55	12/27/2020 22:50	16.0	0.14	0.17	8,334
12/29/2020 17:00	12/31/2020 8:10	39.2	1.01	0.03	0.24	57.6	12/29/2020 17:00	12/31/2020 20:10	51.3	0.31	0.74	56,607

Table E-5. Summary Statistics for Individual Storm Events at the MONMS Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
12/31/2020 22:25	1/1/2021 3:25	5.0	0.03	0.01	0.12	23.2	1/1/2021 0:05	1/1/2021 14:10	14.2	0.16	0.18	8,298
1/1/2021 14:10	1/1/2021 22:10	8.0	0.27	0.03	0.36	39.0	1/1/2021 14:10	1/2/2021 5:00	14.9	0.26	0.53	14,028
1/2/2021 5:00	1/3/2021 1:25	20.4	1.52	0.07	0.48	12.5	1/2/2021 5:00	1/3/2021 8:55	28.0	0.89	2.74	89,766
1/3/2021 8:55	1/3/2021 10:15	1.3	0.09	0.07	0.12	8.2	1/3/2021 8:55	1/3/2021 22:15	13.4	0.49	0.74	23,790
1/3/2021 23:00	1/4/2021 14:25	15.4	0.66	0.04	0.24	13.2	1/3/2021 23:00	1/5/2021 2:25	27.5	0.62	1.04	61,629
1/5/2021 12:00	1/6/2021 4:00	16.0	0.93	0.06	0.24	22.0	1/5/2021 12:00	1/6/2021 16:00	28.1	0.80	1.40	81,222
1/8/2021 1:40	1/8/2021 15:30	13.8	0.18	0.01	0.12	47.9	1/8/2021 1:40	1/9/2021 3:30	25.9	0.21	0.32	19,899
1/10/2021 2:10	1/10/2021 8:15	6.1	0.05	0.01	0.12	35.2	1/10/2021 2:10	1/10/2021 20:10	18.1	0.15	0.18	9,756
1/11/2021 9:05	1/13/2021 4:50	43.8	2.30	0.05	0.36	30.4	1/11/2021 9:00	1/13/2021 16:50	55.9	0.80	1.81	161,886
1/14/2021 23:10	1/15/2021 5:30	6.3	0.15	0.02	0.24	46.9	1/14/2021 23:10	1/15/2021 17:25	18.3	0.23	0.39	15,000
1/16/2021 23:30	1/17/2021 4:40	5.2	0.12	0.02	0.12	46.6	1/16/2021 23:25	1/17/2021 16:40	17.3	0.17	0.25	10,575
1/24/2021 3:35	1/24/2021 23:50	20.3	0.26	0.01	0.12	168.9	1/24/2021 3:30	1/25/2021 11:45	32.3	0.12	0.17	13,395
1/25/2021 17:20	1/25/2021 18:45	1.4	0.09	0.06	0.24	21.2	1/25/2021 17:15	1/26/2021 6:40	13.5	0.13	0.20	6,288
1/27/2021 7:10	1/27/2021 9:35	2.4	0.06	0.02	0.12	37.5	1/27/2021 7:10	1/27/2021 21:30	14.4	0.09	0.13	4,716
1/28/2021 4:40	1/28/2021 12:30	7.8	0.22	0.03	0.12	20.6	1/28/2021 4:40	1/29/2021 0:30	19.9	0.13	0.23	9,159
1/29/2021 21:20	1/30/2021 8:50	11.5	0.11	0.01	0.24	36.8	1/29/2021 21:20	1/30/2021 18:10	20.9	0.10	0.13	7,254
1/30/2021 18:15	2/3/2021 2:45	80.5	2.01	0.03	0.48	15.2	1/30/2021 18:10	2/3/2021 14:45	92.7	0.37	1.31	123,060
2/4/2021 6:00	2/5/2021 13:20	31.3	0.81	0.03	0.12	28.6	2/4/2021 5:55	2/6/2021 1:15	43.4	0.36	1.00	56,487
2/6/2021 13:45	2/6/2021 18:05	4.3	0.25	0.06	0.36	29.0	2/6/2021 13:45	2/7/2021 6:00	16.3	0.30	0.53	17,745
2/7/2021 16:00	2/8/2021 10:10	18.2	0.55	0.03	0.24	22.2	2/7/2021 15:55	2/8/2021 22:05	30.3	0.34	0.74	36,564
2/12/2021 11:45	2/12/2021 12:20	0.6	0.06	0.10	0.12	98.1	2/12/2021 11:45	2/13/2021 0:20	12.7	0.12	0.13	5,604
2/14/2021 12:00	2/16/2021 6:40	42.7	1.14	0.03	0.12	47.9	2/14/2021 11:55	2/16/2021 18:40	54.8	0.40	0.74	78,126
2/17/2021 6:30	2/17/2021 6:45	0.3	0.07	0.28	0.24	27.7	2/17/2021 6:30	2/17/2021 18:40	12.3	0.31	0.56	13,812
2/18/2021 16:35	2/18/2021 16:55	0.3	0.03	0.09	0.12	34.0	2/18/2021 16:30	2/19/2021 4:50	12.4	0.19	0.21	8,334
2/19/2021 14:00	2/20/2021 0:40	10.7	0.10	0.01	0.12	55.4	2/19/2021 14:00	2/20/2021 12:40	22.8	0.16	0.20	13,449
2/21/2021 21:35	2/22/2021 3:30	5.9	0.19	0.03	0.24	50.8	2/21/2021 21:30	2/22/2021 7:30	10.1	0.19	0.30	6,882
2/22/2021 7:35	2/22/2021 21:50	14.3	0.46	0.03	1.56	8.4	2/22/2021 7:30	2/23/2021 9:50	26.4	0.30	0.65	28,821
2/23/2021 14:05	2/23/2021 14:15	0.2	0.06	0.36	0.60	19.1	2/23/2021 14:00	2/24/2021 2:10	12.3	0.18	0.25	8,112
2/24/2021 8:25	2/24/2021 8:55	0.5	0.04	0.08	0.12	18.3	2/24/2021 8:25	2/24/2021 20:55	12.6	0.18	0.46	8,376
2/25/2021 1:30	2/25/2021 10:30	9.0	0.16	0.02	0.12	17.1	2/25/2021 1:25	2/25/2021 14:00	12.7	0.18	0.21	8,139
2/25/2021 14:00	2/25/2021 16:45	2.8	0.14	0.05	0.24	8.3	2/25/2021 14:00	2/26/2021 2:10	12.3	0.21	0.35	9,060
2/26/2021 2:10	2/26/2021 6:45	4.6	0.05	0.01	0.12	10.9	2/26/2021 2:10	2/26/2021 18:40	16.6	0.16	0.18	9,393
2/26/2021 21:05	2/26/2021 22:40	1.6	0.11	0.07	0.24	18.7	2/26/2021 21:00	2/27/2021 10:40	13.8	0.16	0.23	8,103
2/28/2021 1:15	2/28/2021 2:50	1.6	0.03	0.02	0.12	26.8	2/28/2021 1:15	2/28/2021 14:45	13.6	0.13	0.14	6,240
3/2/2021 8:35	3/2/2021 10:00	1.4	0.03	0.02	0.12	82.2	3/2/2021 8:35	3/2/2021 22:00	13.5	0.10	0.11	4,986
3/4/2021 15:35	3/4/2021 21:15	5.7	0.30	0.05	0.24	137.2	3/4/2021 15:35	3/5/2021 9:10	17.7	0.15	0.25	9,798
3/5/2021 9:40	3/5/2021 17:20	7.7	0.12	0.02	0.12	12.8	3/5/2021 9:40	3/6/2021 5:20	19.8	0.13	0.18	8,973
3/7/2021 3:15	3/7/2021 12:25	9.2	0.16	0.02	0.12	34.4	3/7/2021 3:10	3/7/2021 16:20	13.3	0.12	0.17	5,730
3/7/2021 16:20	3/8/2021 0:50	8.5	0.21	0.02	0.48	6.8	3/7/2021 16:20	3/8/2021 12:45	20.5	0.16	0.32	11,886
3/14/2021 10:40	3/14/2021 20:25	9.8	0.35	0.04	0.12	159.5	3/14/2021 10:40	3/15/2021 8:25	21.8	0.13	0.21	10,110
3/18/2021 16:05	3/18/2021 22:40	6.6	0.17	0.03	0.12	93.8	3/18/2021 16:05	3/19/2021 10:40	18.7	0.09	0.15	5,988
3/19/2021 22:15	3/20/2021 10:30	12.3	0.12	0.01	0.12	27.9	3/19/2021 22:15	3/20/2021 16:50	18.7	0.08	0.10	5,202
3/20/2021 16:50	3/21/2021 4:00	11.2	0.30	0.03	0.48	10.1	3/20/2021 16:50	3/21/2021 9:55	17.2	0.16	0.25	9,951
3/21/2021 9:55	3/21/2021 18:35	8.7	0.11	0.01	0.12	11.4	3/21/2021 9:55	3/22/2021 2:45	16.9	0.13	0.15	8,112
3/22/2021 2:45	3/22/2021 11:55	9.2	0.19	0.02	0.24	10.8	3/22/2021 2:45	3/22/2021 23:55	21.3	0.15	0.27	11,622

Table E-5. Summary Statistics for Individual Storm Events at the MONMS Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
3/24/2021 12:25	3/25/2021 6:05	17.7	0.61	0.03	0.48	53.6	3/24/2021 12:25	3/25/2021 18:00	29.7	0.22	0.53	23,532
3/28/2021 9:55	3/29/2021 1:00	15.1	0.59	0.04	0.24	77.7	3/28/2021 9:55	3/29/2021 12:55	27.1	0.21	0.43	20,928
4/3/2021 22:10	4/4/2021 4:55	6.8	0.08	0.01	0.12	142.6	4/3/2021 22:10	4/4/2021 16:50	18.8	0.08	0.10	5,616
4/6/2021 16:10	4/6/2021 16:20	0.2	0.18	1.08	1.08	64.8	4/6/2021 16:10	4/7/2021 4:15	12.2	0.06	0.08	2,661
4/7/2021 11:50	4/7/2021 15:15	3.4	0.04	0.01	0.12	19.5	4/7/2021 11:45	4/7/2021 22:40	11.0	0.07	0.08	2,742
4/7/2021 22:40	4/8/2021 5:00	6.3	0.25	0.04	0.24	10.8	4/7/2021 22:40	4/8/2021 17:00	18.4	0.11	0.20	7,434
4/10/2021 4:50	4/10/2021 8:45	3.9	0.03	0.01	0.12	48.2	4/10/2021 4:50	4/10/2021 20:45	16.0	0.09	0.10	5,241
4/24/2021 0:15	4/25/2021 6:55	30.7	0.65	0.02	0.24	379.6	4/24/2021 0:10	4/25/2021 18:55	42.8	0.13	0.23	20,367
4/25/2021 19:20	4/25/2021 22:00	2.7	0.18	0.07	0.36	17.1	4/25/2021 19:15	4/26/2021 9:55	14.8	0.14	0.23	7,677
4/30/2021 6:20	4/30/2021 9:05	2.8	0.13	0.05	0.12	105.0	4/30/2021 6:20	4/30/2021 21:00	14.8	0.12	0.17	6,111
5/3/2021 14:55	5/3/2021 23:15	8.3	0.20	0.02	0.12	78.9	5/3/2021 14:55	5/4/2021 11:10	20.3	0.12	0.20	8,814
5/7/2021 8:05	5/7/2021 14:50	6.8	0.26	0.04	0.24	82.8	5/7/2021 8:00	5/8/2021 2:45	18.8	0.12	0.28	8,073
5/8/2021 22:30	5/9/2021 0:30	2.0	0.07	0.04	0.12	36.6	5/8/2021 22:25	5/9/2021 12:30	14.2	0.10	0.13	4,950
5/17/2021 18:10	5/17/2021 22:10	4.0	0.13	0.03	0.12	211.3	5/17/2021 18:10	5/18/2021 10:05	16.0	0.07	0.14	4,197
5/18/2021 13:30	5/18/2021 17:40	4.2	0.05	0.01	0.24	15.6	5/18/2021 13:25	5/18/2021 21:55	8.6	0.06	0.06	1,752
5/18/2021 21:55	5/19/2021 0:35	2.7	0.20	0.08	0.36	8.3	5/18/2021 21:55	5/19/2021 8:00	10.2	0.11	0.23	4,176
5/19/2021 8:05	5/19/2021 10:45	2.7	0.06	0.02	0.12	9.1	5/19/2021 8:00	5/19/2021 22:40	14.8	0.08	0.13	4,407
5/24/2021 1:40	5/24/2021 12:15	10.6	0.15	0.01	0.12	112.8	5/24/2021 1:40	5/25/2021 0:10	22.6	0.05	0.09	4,146
5/27/2021 3:25	5/27/2021 11:15	7.8	0.29	0.04	0.48	68.2	5/27/2021 3:20	5/27/2021 23:10	19.9	0.06	0.15	4,359
6/5/2021 2:30	6/5/2021 2:40	0.2	0.03	0.18	0.12	207.5	6/5/2021 2:25	6/5/2021 14:35	12.3	0.03	0.04	1,398
6/6/2021 12:50	6/7/2021 6:05	17.3	1.01	0.06	1.44	241.8	6/6/2021 12:45	6/7/2021 18:00	29.3	0.16	0.48	16,809
6/11/2021 10:35	6/12/2021 1:40	15.1	0.59	0.04	2.04	100.8	6/11/2021 10:30	6/12/2021 13:40	27.3	0.14	0.39	13,548
6/12/2021 22:15	6/13/2021 6:50	8.6	0.32	0.04	0.12	21.9	6/12/2021 22:15	6/13/2021 12:55	14.8	0.15	0.35	8,004
6/13/2021 12:55	6/13/2021 23:45	10.8	0.59	0.05	0.24	9.5	6/13/2021 12:55	6/14/2021 10:25	21.6	0.24	0.59	18,330
6/14/2021 10:30	6/14/2021 12:35	2.1	0.05	0.02	0.12	11.1	6/14/2021 10:25	6/15/2021 0:30	14.2	0.14	0.18	6,978
6/29/2021 6:00	6/29/2021 6:00	0.0	0.03	0.00	0.36	355.3	6/29/2021 5:55	6/29/2021 17:55	12.1	0.01	0.01	435
7/20/2021 7:45	7/20/2021 9:35	1.8	0.08	0.04	0.24	861.1	7/20/2021 7:40	7/20/2021 21:30	13.9	0.03	0.09	1,341
8/5/2021 23:55	8/6/2021 10:50	10.9	0.18	0.02	0.12	398.8	8/5/2021 23:55	8/6/2021 22:50	23.0	0.02	0.06	1,641
8/26/2021 21:10	8/27/2021 2:05	4.9	0.04	0.01	0.12	491.2	8/26/2021 21:10	8/27/2021 10:25	13.3	0.01	0.01	480
8/27/2021 10:30	8/27/2021 12:40	2.2	0.05	0.02	0.12	13.3	8/27/2021 10:25	8/28/2021 0:40	14.3	0.01	0.02	630
8/31/2021 2:25	8/31/2021 2:40	0.3	0.03	0.12	0.12	86.8	8/31/2021 2:25	8/31/2021 14:35	12.3	0.01	0.01	441
9/17/2021 9:15	9/17/2021 10:45	1.5	0.03	0.02	0.12	501.7	9/17/2021 9:10	9/17/2021 16:40	7.6	0.06	0.09	1,770
9/17/2021 16:40	9/18/2021 4:20	11.7	0.76	0.07	0.48	509.1	9/17/2021 16:40	9/18/2021 13:25	20.8	0.17	0.51	12,513
9/18/2021 13:25	9/18/2021 22:50	9.4	0.22	0.02	0.48	9.6	9/18/2021 13:25	9/19/2021 10:50	21.5	0.09	0.20	6,924
9/19/2021 16:25	9/19/2021 16:40	0.3	0.04	0.16	0.12	18.6	9/19/2021 16:25	9/20/2021 4:40	12.3	0.04	0.05	1,650
9/26/2021 13:35	9/27/2021 3:55	14.3	0.57	0.04	0.36	165.2	9/26/2021 13:30	9/27/2021 13:50	24.4	0.14	0.32	12,036
9/27/2021 13:55	9/27/2021 14:55	1.0	0.23	0.23	0.72	13.5	9/27/2021 13:50	9/27/2021 22:15	8.5	0.16	0.28	4,752
9/27/2021 22:20	9/28/2021 10:00	11.7	0.17	0.01	0.24	7.8	9/27/2021 22:15	9/28/2021 22:00	23.8	0.10	0.17	8,595
9/29/2021 23:35	9/30/2021 13:20	13.8	0.61	0.04	0.36	39.0	9/29/2021 23:35	10/1/2021 1:15	25.8	0.16	0.53	14,610

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Table E-6. Summary Statistics for Individual Storm Events at the TOSMO Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
10/4/2020 1:55	10/4/2020 8:15	6.3	0.08	0.01	0.12	0.0	10/4/2020 1:50	10/4/2020 20:10	18.4	0.65	0.85	43,107
10/9/2020 20:55	10/10/2020 8:05	11.2	1.11	0.10	0.60	133.6	10/9/2020 20:55	10/10/2020 20:00	23.2	2.22	7.99	184,871
10/11/2020 10:30	10/11/2020 19:30	9.0	0.31	0.03	0.24	28.6	10/11/2020 10:30	10/12/2020 3:00	16.6	1.08	2.52	64,506
10/12/2020 3:05	10/12/2020 9:45	6.7	0.89	0.13	0.60	10.5	10/12/2020 3:00	10/12/2020 21:40	18.8	3.15	9.26	212,784
10/13/2020 0:45	10/13/2020 6:55	6.2	0.54	0.09	0.36	16.6	10/13/2020 0:45	10/13/2020 18:55	18.3	2.21	7.69	145,440
10/16/2020 14:10	10/17/2020 3:45	13.6	0.47	0.03	0.48	79.4	10/16/2020 14:10	10/17/2020 15:40	25.6	1.12	4.36	102,828
10/18/2020 2:00	10/18/2020 2:10	0.2	0.03	0.18	0.12	25.2	10/18/2020 2:00	10/18/2020 8:10	6.3	0.64	0.73	14,445
10/18/2020 8:10	10/18/2020 16:40	8.5	0.16	0.02	0.12	31.3	10/18/2020 8:10	10/19/2020 4:40	20.6	0.78	1.37	58,068
10/19/2020 9:25	10/19/2020 19:55	10.5	0.52	0.05	0.24	20.8	10/19/2020 9:20	10/20/2020 7:50	22.6	1.48	4.36	120,009
10/20/2020 19:35	10/21/2020 9:50	14.3	0.34	0.02	0.96	25.2	10/20/2020 19:30	10/21/2020 21:45	26.3	1.30	7.99	123,303
10/23/2020 6:30	10/23/2020 8:55	2.4	0.07	0.03	0.12	44.9	10/23/2020 6:30	10/23/2020 17:35	11.2	0.72	0.99	28,749
10/23/2020 17:40	10/23/2020 23:40	6.0	0.11	0.02	0.12	9.8	10/23/2020 17:35	10/24/2020 11:35	18.1	0.77	1.81	49,998
10/29/2020 2:00	10/29/2020 7:50	5.8	0.05	0.01	0.12	127.5	10/29/2020 2:00	10/29/2020 19:50	17.9	0.59	0.73	38,193
10/30/2020 4:20	10/30/2020 7:50	3.5	0.03	0.01	0.12	24.2	10/30/2020 4:15	10/30/2020 19:50	15.7	0.61	0.73	34,224
11/3/2020 7:10	11/3/2020 15:55	8.8	0.98	0.11	0.72	123.1	11/3/2020 7:05	11/3/2020 21:40	14.7	2.67	7.39	140,874
11/3/2020 21:40	11/4/2020 8:50	11.2	0.15	0.01	0.12	7.1	11/3/2020 21:40	11/4/2020 15:40	18.1	0.95	1.69	61,644
11/4/2020 15:40	11/5/2020 0:20	8.7	0.27	0.03	0.24	9.5	11/4/2020 15:40	11/5/2020 7:05	15.5	1.06	2.52	59,088
11/5/2020 7:05	11/5/2020 15:10	8.1	0.29	0.04	0.24	6.9	11/5/2020 7:05	11/6/2020 3:10	20.2	1.08	3.55	78,165
11/9/2020 18:05	11/9/2020 22:45	4.7	0.14	0.03	0.24	99.4	11/9/2020 18:05	11/10/2020 10:40	16.7	0.67	1.21	39,972
11/12/2020 18:10	11/13/2020 6:05	11.9	0.51	0.04	0.24	68.6	11/12/2020 18:10	11/13/2020 18:00	23.9	1.15	3.37	98,757
11/14/2020 15:15	11/14/2020 23:25	8.2	0.33	0.04	0.12	33.5	11/14/2020 15:10	11/15/2020 11:25	20.3	0.98	2.52	71,379
11/15/2020 22:55	11/15/2020 23:50	0.9	0.03	0.03	0.12	26.0	11/15/2020 22:50	11/16/2020 8:45	10.0	0.59	0.73	21,240
11/16/2020 8:45	11/16/2020 19:05	10.3	0.52	0.05	0.24	35.8	11/16/2020 8:45	11/17/2020 7:05	22.4	1.35	4.36	109,164
11/17/2020 12:25	11/18/2020 18:15	29.8	0.99	0.03	1.08	18.9	11/17/2020 12:20	11/19/2020 6:10	41.9	1.38	9.90	208,542
11/20/2020 0:15	11/20/2020 7:35	7.3	0.04	0.01	0.12	33.5	11/20/2020 0:15	11/20/2020 19:30	19.3	0.49	0.55	34,224
11/22/2020 15:15	11/22/2020 22:10	6.9	0.10	0.01	0.12	96.5	11/22/2020 15:10	11/23/2020 4:40	13.6	0.51	0.99	24,969
11/23/2020 4:40	11/23/2020 12:55	8.3	0.18	0.02	0.24	12.2	11/23/2020 4:40	11/24/2020 0:55	20.3	0.60	1.45	43,869
11/24/2020 8:35	11/25/2020 2:50	18.3	0.50	0.03	0.24	19.9	11/24/2020 8:35	11/25/2020 5:45	21.3	0.93	3.75	71,175
11/25/2020 5:45	11/25/2020 9:10	3.4	0.04	0.01	0.12	7.0	11/25/2020 5:45	11/25/2020 21:10	15.5	0.57	0.79	31,869
11/27/2020 23:15	11/28/2020 1:55	2.7	0.07	0.03	0.12	65.5	11/27/2020 23:10	11/28/2020 11:25	12.3	0.49	0.85	21,906
11/28/2020 11:25	11/28/2020 12:15	0.8	0.03	0.04	0.12	10.6	11/28/2020 11:25	11/29/2020 0:10	12.8	0.45	0.73	20,868
11/30/2020 1:45	11/30/2020 7:10	5.4	0.41	0.08	0.24	48.9	11/30/2020 1:40	11/30/2020 19:10	17.6	1.03	3.75	64,950
12/8/2020 0:40	12/9/2020 7:10	30.5	0.91	0.03	0.24	186.2	12/8/2020 0:40	12/9/2020 19:05	42.5	0.95	2.84	145,957
12/13/2020 2:10	12/13/2020 18:00	15.8	0.18	0.01	0.12	91.3	12/13/2020 2:10	12/13/2020 23:45	21.7	0.55	0.99	42,843
12/13/2020 23:45	12/14/2020 10:10	10.4	0.10	0.01	0.12	13.5	12/13/2020 23:45	12/14/2020 22:05	22.4	0.52	0.79	41,589
12/14/2020 23:45	12/15/2020 11:00	11.3	0.15	0.01	0.12	16.4	12/14/2020 23:45	12/15/2020 23:00	23.3	0.55	0.99	46,572
12/16/2020 13:00	12/17/2020 4:10	15.2	0.42	0.03	0.12	28.3	12/16/2020 12:55	12/17/2020 15:55	27.1	0.78	2.08	76,266
12/17/2020 16:00	12/17/2020 22:45	6.8	0.29	0.04	0.36	14.2	12/17/2020 15:55	12/18/2020 1:45	9.9	0.85	1.45	30,168
12/18/2020 1:45	12/18/2020 8:55	7.2	0.22	0.03	0.12	7.2	12/18/2020 1:45	12/18/2020 17:45	16.1	0.85	1.69	49,038
12/18/2020 17:50	12/19/2020 1:40	7.8	0.26	0.03	0.36	9.5	12/18/2020 17:45	12/19/2020 12:10	18.5	0.88	2.68	58,452
12/19/2020 12:15	12/19/2020 21:30	9.3	0.26	0.03	0.12	11.4	12/19/2020 12:10	12/20/2020 9:30	21.4	0.99	1.81	76,002
12/21/2020 0:10	12/22/2020 4:15	28.1	2.14	0.08	0.72	28.2	12/21/2020 0:10	12/22/2020 9:40	33.6	4.66	26.68	563,813
12/22/2020 9:40	12/22/2020 11:10	1.5	0.06	0.04	0.12	7.4	12/22/2020 9:40	12/22/2020 23:10	13.6	1.42	1.81	69,396
12/25/2020 15:20	12/26/2020 0:30	9.2	0.49	0.05	0.12	76.7	12/25/2020 15:20	12/26/2020 12:30	21.3	1.46	3.95	111,327
12/26/2020 23:25	12/27/2020 1:00	1.6	0.03	0.02	0.12	24.8	12/26/2020 23:25	12/27/2020 6:40	7.3	0.65	0.79	17,148

Table E-6. Summary Statistics for Individual Storm Events at the TOSMO Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
12/27/2020 6:40	12/27/2020 11:15	4.6	0.07	0.02	0.12	32.0	12/27/2020 6:40	12/27/2020 23:10	16.6	0.68	1.21	40,623
12/29/2020 17:05	12/31/2020 8:15	39.2	1.01	0.03	0.24	55.9	12/29/2020 17:00	12/31/2020 20:10	51.3	1.54	4.15	284,792
12/31/2020 22:20	1/1/2021 6:55	8.6	0.05	0.01	0.12	16.1	12/31/2020 22:15	1/1/2021 14:00	15.8	0.68	0.85	38,622
1/1/2021 14:00	1/1/2021 22:00	8.0	0.29	0.04	0.48	12.6	1/1/2021 14:00	1/2/2021 4:45	14.8	1.43	5.51	76,374
1/2/2021 4:45	1/3/2021 7:05	26.3	1.62	0.06	0.36	12.0	1/2/2021 4:45	1/3/2021 8:55	28.3	4.44	14.19	451,980
1/3/2021 9:00	1/3/2021 10:40	1.7	0.10	0.06	0.12	7.9	1/3/2021 8:55	1/3/2021 17:00	8.2	2.20	3.55	64,785
1/3/2021 17:05	1/4/2021 14:50	21.8	0.70	0.03	0.36	7.2	1/3/2021 17:00	1/5/2021 2:45	33.8	2.13	5.76	258,951
1/5/2021 11:50	1/6/2021 3:50	16.0	0.94	0.06	0.24	21.7	1/5/2021 11:45	1/6/2021 15:45	28.1	2.75	6.02	277,617
1/8/2021 3:10	1/8/2021 15:20	12.2	0.22	0.02	0.48	49.4	1/8/2021 3:10	1/9/2021 3:20	24.3	0.74	2.52	64,974
1/10/2021 1:50	1/10/2021 6:10	4.3	0.06	0.01	0.12	34.8	1/10/2021 1:50	1/10/2021 18:10	16.4	0.53	0.73	31,095
1/11/2021 8:25	1/13/2021 0:20	39.9	2.45	0.06	0.72	30.0	1/11/2021 8:25	1/13/2021 12:20	52.0	3.71	11.45	694,297
1/14/2021 23:05	1/15/2021 5:25	6.3	0.14	0.02	0.12	46.9	1/14/2021 23:05	1/15/2021 17:25	18.4	0.85	2.52	56,631
1/17/2021 0:25	1/17/2021 5:10	4.8	0.09	0.02	0.12	47.5	1/17/2021 0:20	1/17/2021 17:10	16.9	0.64	1.29	39,102
1/21/2021 2:45	1/21/2021 8:10	5.4	0.06	0.01	0.12	96.4	1/21/2021 2:45	1/21/2021 20:10	17.5	0.48	0.79	30,228
1/24/2021 5:30	1/24/2021 22:00	16.5	0.23	0.01	0.12	71.0	1/24/2021 5:25	1/25/2021 9:55	28.6	0.63	1.14	64,920
1/25/2021 17:05	1/25/2021 18:30	1.4	0.14	0.10	0.24	21.2	1/25/2021 17:00	1/26/2021 6:30	13.6	0.70	1.69	34,074
1/27/2021 6:40	1/27/2021 9:40	3.0	0.08	0.03	0.12	36.7	1/27/2021 6:40	1/27/2021 21:40	15.1	0.58	0.99	31,656
1/28/2021 4:15	1/28/2021 12:30	8.3	0.22	0.03	0.12	19.8	1/28/2021 4:15	1/29/2021 0:30	20.3	0.80	2.22	58,833
1/29/2021 21:10	1/30/2021 9:45	12.6	0.14	0.01	0.24	36.9	1/29/2021 21:10	1/30/2021 18:10	21.1	0.68	1.94	51,441
1/30/2021 18:10	2/3/2021 6:35	84.4	2.10	0.02	0.60	20.5	1/30/2021 18:10	2/3/2021 18:30	96.4	1.74	6.28	602,546
2/4/2021 7:10	2/5/2021 13:25	30.3	0.63	0.02	0.24	28.9	2/4/2021 7:05	2/6/2021 1:25	42.4	1.33	3.19	202,388
2/6/2021 13:55	2/6/2021 17:40	3.8	0.31	0.08	0.60	29.2	2/6/2021 13:50	2/7/2021 5:35	15.8	1.24	3.01	70,629
2/7/2021 17:50	2/7/2021 18:55	1.1	0.09	0.08	0.12	24.5	2/7/2021 17:45	2/8/2021 2:10	8.5	0.84	1.45	25,695
2/8/2021 2:15	2/8/2021 9:50	7.6	0.27	0.04	0.24	8.0	2/8/2021 2:10	2/8/2021 21:50	19.8	1.14	2.68	80,817
2/14/2021 11:50	2/14/2021 13:55	2.1	0.03	0.01	0.12	146.5	2/14/2021 11:45	2/15/2021 1:50	14.2	1.08	2.68	54,837
2/15/2021 8:40	2/16/2021 5:50	21.2	0.59	0.03	0.24	167.3	2/15/2021 8:35	2/16/2021 17:45	33.3	2.10	3.55	250,986
2/16/2021 18:40	2/16/2021 23:35	4.9	0.04	0.01	0.12	16.6	2/16/2021 18:40	2/17/2021 6:55	12.3	1.06	1.57	47,049
2/17/2021 6:55	2/17/2021 7:10	0.3	0.04	0.16	0.24	12.2	2/17/2021 6:55	2/17/2021 19:05	12.3	0.81	1.14	35,511
2/18/2021 11:10	2/18/2021 16:50	5.7	0.05	0.01	0.12	28.2	2/18/2021 11:10	2/19/2021 4:50	17.8	0.64	0.99	40,992
2/19/2021 13:50	2/19/2021 21:50	8.0	0.16	0.02	0.12	25.9	2/19/2021 13:50	2/20/2021 9:45	20.0	0.75	1.69	53,910
2/21/2021 21:35	2/22/2021 1:55	4.3	0.15	0.03	0.12	50.6	2/21/2021 21:30	2/22/2021 6:50	9.4	0.93	2.08	31,428
2/22/2021 6:50	2/22/2021 16:20	9.5	0.29	0.03	0.36	7.8	2/22/2021 6:50	2/23/2021 4:15	21.5	1.00	3.37	77,349
2/25/2021 2:15	2/25/2021 6:20	4.1	0.15	0.04	0.12	58.1	2/25/2021 2:10	2/25/2021 14:15	12.2	0.81	1.57	35,328
2/25/2021 14:15	2/25/2021 16:35	2.3	0.13	0.06	0.36	8.8	2/25/2021 14:15	2/26/2021 4:35	14.4	0.77	2.37	39,996
2/26/2021 20:50	2/27/2021 5:30	8.7	0.25	0.03	0.48	29.3	2/26/2021 20:50	2/27/2021 9:30	12.8	1.19	2.68	54,573
2/27/2021 9:35	2/27/2021 9:50	0.3	0.03	0.12	0.12	8.9	2/27/2021 9:30	2/27/2021 21:45	12.3	0.60	0.79	26,760
2/28/2021 0:05	2/28/2021 2:55	2.8	0.05	0.02	0.12	18.6	2/28/2021 0:05	2/28/2021 14:55	14.9	0.60	1.06	32,190
3/2/2021 8:35	3/2/2021 11:05	2.5	0.04	0.02	0.12	54.7	3/2/2021 8:35	3/2/2021 23:00	14.5	0.52	0.67	27,177
3/4/2021 15:30	3/4/2021 21:15	5.8	0.31	0.05	0.12	54.9	3/4/2021 15:30	3/5/2021 8:55	17.5	0.99	2.37	62,241
3/5/2021 8:55	3/5/2021 17:15	8.3	0.14	0.02	0.24	12.3	3/5/2021 8:55	3/6/2021 5:10	20.3	0.67	1.81	49,122
3/7/2021 3:00	3/7/2021 12:20	9.3	0.18	0.02	0.12	34.0	3/7/2021 2:55	3/7/2021 16:05	13.3	0.78	2.08	37,296
3/7/2021 16:10	3/7/2021 22:00	5.8	0.24	0.04	0.24	6.7	3/7/2021 16:05	3/8/2021 9:55	17.9	0.83	2.52	53,820
3/14/2021 11:00	3/14/2021 20:35	9.6	0.35	0.04	0.24	159.7	3/14/2021 11:00	3/15/2021 8:35	21.7	0.84	2.08	65,712
3/18/2021 16:00	3/18/2021 19:20	3.3	0.17	0.05	0.48	93.3	3/18/2021 15:55	3/19/2021 7:15	15.4	0.65	1.45	35,880
3/19/2021 21:40	3/20/2021 8:30	10.8	0.13	0.01	0.12	27.7	3/19/2021 21:40	3/20/2021 16:30	18.9	0.56	1.29	37,806

Table E-6. Summary Statistics for Individual Storm Events at the TOSMO Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
3/20/2021 16:35	3/21/2021 3:40	11.1	0.65	0.06	0.60	10.9	3/20/2021 16:30	3/21/2021 9:30	17.1	1.84	5.76	113,349
3/21/2021 9:35	3/21/2021 18:10	8.6	0.11	0.01	0.12	12.9	3/21/2021 9:30	3/22/2021 3:10	17.8	0.83	1.29	53,076
3/22/2021 3:10	3/22/2021 13:35	10.4	0.31	0.03	0.36	13.8	3/22/2021 3:10	3/23/2021 1:30	22.4	1.11	3.37	89,196
3/24/2021 12:55	3/25/2021 6:20	17.4	0.71	0.04	0.48	54.1	3/24/2021 12:55	3/25/2021 18:20	29.5	1.66	4.58	176,217
3/28/2021 9:55	3/28/2021 22:40	12.8	0.43	0.03	0.24	76.8	3/28/2021 9:55	3/29/2021 10:40	24.8	0.97	2.68	86,532
4/3/2021 19:10	4/4/2021 4:55	9.8	0.10	0.01	0.12	143.6	4/3/2021 19:05	4/4/2021 16:50	21.8	0.44	0.85	34,749
4/7/2021 12:50	4/7/2021 16:20	3.5	0.05	0.01	0.12	85.6	4/7/2021 12:50	4/7/2021 22:30	9.8	0.39	0.50	13,830
4/7/2021 22:35	4/8/2021 6:35	8.0	0.24	0.03	0.24	9.5	4/7/2021 22:30	4/8/2021 18:30	20.1	0.61	1.81	44,400
4/10/2021 5:25	4/10/2021 9:05	3.7	0.09	0.02	0.24	50.6	4/10/2021 5:25	4/10/2021 21:00	15.7	0.43	0.73	24,387
4/24/2021 0:20	4/25/2021 6:55	30.6	0.68	0.02	0.24	327.4	4/24/2021 0:20	4/25/2021 18:55	42.7	0.69	1.69	106,593
4/25/2021 19:40	4/25/2021 23:25	3.8	0.12	0.03	0.60	17.8	4/25/2021 19:40	4/26/2021 11:25	15.8	0.47	0.79	27,051
4/30/2021 5:35	4/30/2021 8:25	2.8	0.15	0.05	0.12	104.8	4/30/2021 5:35	4/30/2021 20:25	14.9	0.53	1.29	28,596
5/1/2021 16:10	5/1/2021 21:05	4.9	0.04	0.01	0.12	32.7	5/1/2021 16:05	5/2/2021 9:00	17.0	0.37	0.43	22,896
5/3/2021 14:35	5/4/2021 0:40	10.1	0.42	0.04	0.36	46.4	5/3/2021 14:35	5/4/2021 12:40	22.2	0.83	2.22	66,444
5/7/2021 8:15	5/7/2021 13:10	4.9	0.27	0.05	0.36	79.9	5/7/2021 8:15	5/8/2021 1:05	16.9	0.68	2.22	41,688
5/8/2021 23:40	5/9/2021 2:40	3.0	0.03	0.01	0.12	37.4	5/8/2021 23:35	5/9/2021 14:35	15.1	0.39	0.50	21,414
5/17/2021 18:10	5/17/2021 21:55	3.8	0.11	0.03	0.12	247.9	5/17/2021 18:10	5/18/2021 9:55	15.8	0.43	0.79	24,528
5/18/2021 17:30	5/19/2021 0:25	6.9	0.65	0.09	1.32	21.7	5/18/2021 17:25	5/19/2021 11:15	17.9	1.13	5.27	72,624
5/19/2021 11:20	5/19/2021 11:20	0.0	0.02	0.00	0.24	12.0	5/19/2021 11:15	5/19/2021 18:25	7.3	0.47	0.50	12,168
5/19/2021 18:25	5/19/2021 19:15	0.8	0.03	0.04	0.12	19.1	5/19/2021 18:25	5/20/2021 7:15	12.9	0.43	0.43	19,995
5/24/2021 1:45	5/24/2021 13:15	11.5	0.14	0.01	0.12	122.4	5/24/2021 1:40	5/25/2021 1:15	23.7	0.44	0.67	37,215
5/27/2021 3:25	5/27/2021 11:35	8.2	0.30	0.04	0.24	63.7	5/27/2021 3:25	5/27/2021 23:35	20.3	0.64	1.45	46,737
6/5/2021 2:25	6/5/2021 6:25	4.0	0.03	0.01	0.12	207.3	6/5/2021 2:25	6/5/2021 18:20	16.0	0.32	0.43	18,666
6/6/2021 13:00	6/7/2021 6:45	17.8	0.69	0.04	0.60	241.9	6/6/2021 12:55	6/7/2021 18:40	29.8	0.93	2.84	99,597
6/11/2021 10:30	6/11/2021 16:40	6.2	0.31	0.05	0.24	100.5	6/11/2021 10:25	6/11/2021 22:25	12.1	0.85	1.57	36,786
6/11/2021 22:30	6/12/2021 1:20	2.8	0.24	0.08	1.20	7.3	6/11/2021 22:25	6/12/2021 13:15	14.9	0.85	2.84	45,636
6/12/2021 22:05	6/13/2021 6:40	8.6	0.34	0.04	0.24	21.8	6/12/2021 22:05	6/13/2021 12:55	14.9	0.94	2.22	50,376
6/13/2021 12:55	6/13/2021 23:50	10.9	0.66	0.06	0.36	9.5	6/13/2021 12:55	6/14/2021 5:45	16.9	1.55	3.95	94,290
6/14/2021 5:45	6/14/2021 13:15	7.5	0.07	0.01	0.24	6.2	6/14/2021 5:45	6/15/2021 1:15	19.6	0.68	1.06	47,625
7/20/2021 7:10	7/20/2021 8:35	1.4	0.07	0.05	0.12	860.5	7/20/2021 7:10	7/20/2021 20:35	13.5	0.36	0.79	17,664
8/6/2021 0:00	8/6/2021 10:10	10.2	0.18	0.02	0.12	399.8	8/5/2021 23:55	8/6/2021 22:05	22.3	0.41	0.79	32,709
8/8/2021 3:05	8/8/2021 4:15	1.2	0.06	0.05	0.12	41.2	8/8/2021 3:00	8/8/2021 16:15	13.3	0.34	0.73	16,272
8/26/2021 20:30	8/27/2021 2:05	5.6	0.05	0.01	0.12	449.1	8/26/2021 20:25	8/27/2021 11:55	15.6	0.29	0.50	16,185
8/27/2021 12:00	8/27/2021 12:55	0.9	0.03	0.03	0.12	15.2	8/27/2021 11:55	8/28/2021 0:55	13.1	0.24	0.26	11,334
9/12/2021 6:45	9/12/2021 7:40	0.9	0.05	0.05	0.12	394.0	9/12/2021 6:40	9/12/2021 19:40	13.1	0.25	0.43	11,778
9/17/2021 4:55	9/17/2021 16:10	11.3	0.12	0.01	0.12	117.8	9/17/2021 4:50	9/17/2021 21:20	16.6	0.32	0.55	18,897
9/17/2021 21:20	9/18/2021 5:40	8.3	0.83	0.10	0.72	12.8	9/17/2021 21:20	9/18/2021 13:30	16.3	1.41	3.75	82,368
9/18/2021 13:35	9/18/2021 22:55	9.3	0.27	0.03	0.24	9.9	9/18/2021 13:30	9/19/2021 10:50	21.4	0.74	1.29	56,895
9/19/2021 16:40	9/19/2021 17:00	0.3	0.05	0.15	0.12	18.8	9/19/2021 16:40	9/20/2021 5:00	12.4	0.36	0.67	16,176
9/26/2021 13:30	9/27/2021 4:00	14.5	0.51	0.04	0.36	164.8	9/26/2021 13:25	9/27/2021 14:00	24.7	0.80	2.37	70,593
9/27/2021 14:00	9/28/2021 6:55	16.9	0.30	0.02	0.36	12.2	9/27/2021 14:00	9/28/2021 18:55	29.0	0.62	1.69	64,914
9/29/2021 23:35	9/30/2021 13:20	13.8	0.49	0.04	0.24	46.8	9/29/2021 23:35	10/1/2021 1:15	25.8	0.81	2.08	74,748

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Table E-7. Summary Statistics for Individual Storm Events at the TOSMI Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
10/4/2020 1:55	10/4/2020 8:15	6.3	0.08	0.01	0.12	0.0	10/4/2020 1:50	10/4/2020 20:10	18.4	0.25	0.56	16,722
10/9/2020 20:55	10/10/2020 8:05	11.2	1.11	0.10	0.60	133.6	10/9/2020 20:55	10/10/2020 20:00	23.2	1.81	4.33	150,579
10/11/2020 10:30	10/11/2020 19:30	9.0	0.31	0.03	0.24	28.6	10/11/2020 10:30	10/12/2020 3:00	16.6	0.91	2.03	54,483
10/12/2020 3:05	10/12/2020 9:45	6.7	0.89	0.13	0.60	10.5	10/12/2020 3:00	10/12/2020 21:40	18.8	2.18	4.88	146,898
10/13/2020 0:45	10/13/2020 6:55	6.2	0.54	0.09	0.36	16.6	10/13/2020 0:45	10/13/2020 18:55	18.3	1.76	4.33	115,584
10/16/2020 14:10	10/17/2020 3:45	13.6	0.47	0.03	0.48	79.4	10/16/2020 14:10	10/17/2020 15:40	25.6	0.81	3.14	74,547
10/18/2020 2:00	10/18/2020 2:10	0.2	0.03	0.18	0.12	25.2	10/18/2020 2:00	10/18/2020 8:10	6.3	0.40	0.56	9,072
10/18/2020 8:10	10/18/2020 16:40	8.5	0.16	0.02	0.12	31.3	10/18/2020 8:10	10/19/2020 4:40	20.6	0.61	1.46	44,850
10/19/2020 9:25	10/19/2020 19:55	10.5	0.52	0.05	0.24	20.8	10/19/2020 9:20	10/20/2020 7:50	22.6	1.20	2.74	97,719
10/20/2020 19:35	10/21/2020 9:50	14.3	0.34	0.02	0.96	25.2	10/20/2020 19:30	10/21/2020 21:45	26.3	1.00	4.33	94,344
10/23/2020 6:30	10/23/2020 8:55	2.4	0.07	0.03	0.12	44.9	10/23/2020 6:30	10/23/2020 17:35	11.2	0.49	0.89	19,800
10/23/2020 17:40	10/23/2020 23:40	6.0	0.11	0.02	0.12	9.8	10/23/2020 17:35	10/24/2020 11:35	18.1	0.52	1.59	33,579
10/29/2020 2:00	10/29/2020 7:50	5.8	0.05	0.01	0.12	127.5	10/29/2020 2:00	10/29/2020 19:50	17.9	0.24	0.34	15,291
10/30/2020 4:20	10/30/2020 7:50	3.5	0.03	0.01	0.12	24.2	10/30/2020 4:15	10/30/2020 19:50	15.7	0.23	0.40	12,978
11/3/2020 7:10	11/3/2020 15:55	8.8	0.98	0.11	0.72	123.1	11/3/2020 7:05	11/3/2020 21:40	14.7	2.00	4.33	105,849
11/3/2020 21:40	11/4/2020 8:50	11.2	0.15	0.01	0.12	7.1	11/3/2020 21:40	11/4/2020 15:40	18.1	0.86	1.59	56,130
11/4/2020 15:40	11/5/2020 0:20	8.7	0.27	0.03	0.24	9.5	11/4/2020 15:40	11/5/2020 7:05	15.5	0.90	2.03	50,295
11/5/2020 7:05	11/5/2020 15:10	8.1	0.29	0.04	0.24	6.9	11/5/2020 7:05	11/6/2020 3:10	20.2	0.90	2.55	65,283
11/9/2020 18:05	11/9/2020 22:45	4.7	0.14	0.03	0.24	99.4	11/9/2020 18:05	11/10/2020 10:40	16.7	0.30	1.02	18,054
11/12/2020 18:10	11/13/2020 6:05	11.9	0.51	0.04	0.24	68.6	11/12/2020 18:10	11/13/2020 18:00	23.9	0.86	2.37	74,148
11/14/2020 15:15	11/14/2020 23:25	8.2	0.33	0.04	0.12	33.5	11/14/2020 15:10	11/15/2020 11:25	20.3	0.73	2.03	53,148
11/15/2020 22:55	11/15/2020 23:50	0.9	0.03	0.03	0.12	26.0	11/15/2020 22:50	11/16/2020 8:45	10.0	0.24	0.40	8,787
11/16/2020 8:45	11/16/2020 19:05	10.3	0.52	0.05	0.24	35.8	11/16/2020 8:45	11/17/2020 7:05	22.4	1.09	3.14	88,002
11/17/2020 12:25	11/18/2020 18:15	29.8	0.99	0.03	1.08	18.9	11/17/2020 12:20	11/19/2020 6:10	41.9	1.12	6.80	168,846
11/20/2020 0:15	11/20/2020 7:35	7.3	0.04	0.01	0.12	33.5	11/20/2020 0:15	11/20/2020 19:30	19.3	0.26	0.28	18,138
11/22/2020 15:15	11/22/2020 22:10	6.9	0.10	0.01	0.12	96.5	11/22/2020 15:10	11/23/2020 4:40	13.6	0.29	0.89	14,247
11/23/2020 4:40	11/23/2020 12:55	8.3	0.18	0.02	0.24	12.2	11/23/2020 4:40	11/24/2020 0:55	20.3	0.37	1.34	27,387
11/24/2020 8:35	11/25/2020 2:50	18.3	0.50	0.03	0.24	19.9	11/24/2020 8:35	11/25/2020 5:45	21.3	0.72	2.74	55,452
11/25/2020 5:45	11/25/2020 9:10	3.4	0.04	0.01	0.12	7.0	11/25/2020 5:45	11/25/2020 21:10	15.5	0.34	0.66	18,897
11/27/2020 23:15	11/28/2020 1:55	2.7	0.07	0.03	0.12	65.5	11/27/2020 23:10	11/28/2020 11:25	12.3	0.25	0.66	10,878
11/28/2020 11:25	11/28/2020 12:15	0.8	0.03	0.04	0.12	10.6	11/28/2020 11:25	11/29/2020 0:10	12.8	0.20	0.48	9,051
11/30/2020 1:45	11/30/2020 7:10	5.4	0.41	0.08	0.24	48.9	11/30/2020 1:40	11/30/2020 19:10	17.6	0.73	2.74	46,416
12/8/2020 0:40	12/9/2020 7:10	30.5	0.91	0.03	0.24	186.2	12/8/2020 0:40	12/9/2020 19:05	42.5	0.67	2.20	102,618
12/13/2020 2:10	12/13/2020 18:00	15.8	0.18	0.01	0.12	91.3	12/13/2020 2:10	12/13/2020 23:45	21.7	0.24	0.76	18,897
12/13/2020 23:45	12/14/2020 10:10	10.4	0.10	0.01	0.12	13.5	12/13/2020 23:45	12/14/2020 22:05	22.4	0.22	0.56	18,147
12/14/2020 23:45	12/15/2020 11:00	11.3	0.15	0.01	0.12	16.4	12/14/2020 23:45	12/15/2020 23:00	23.3	0.27	0.76	22,593
12/16/2020 13:00	12/17/2020 4:10	15.2	0.42	0.03	0.12	28.3	12/16/2020 12:55	12/17/2020 15:55	27.1	0.50	1.59	49,224
12/17/2020 16:00	12/17/2020 22:45	6.8	0.29	0.04	0.36	14.2	12/17/2020 15:55	12/18/2020 1:45	9.9	0.57	1.34	20,304
12/18/2020 1:45	12/18/2020 8:55	7.2	0.22	0.03	0.12	7.2	12/18/2020 1:45	12/18/2020 17:45	16.1	0.55	1.46	31,770
12/18/2020 17:50	12/19/2020 1:40	7.8	0.26	0.03	0.36	9.5	12/18/2020 17:45	12/19/2020 12:10	18.5	0.49	1.88	32,889
12/19/2020 12:15	12/19/2020 21:30	9.3	0.26	0.03	0.12	11.4	12/19/2020 12:10	12/20/2020 9:30	21.4	0.62	1.46	47,988
12/21/2020 0:10	12/22/2020 4:15	28.1	2.14	0.08	0.72	28.2	12/21/2020 0:10	12/22/2020 9:40	33.6	2.63	10.93	317,440
12/22/2020 9:40	12/22/2020 11:10	1.5	0.06	0.04	0.12	7.4	12/22/2020 9:40	12/22/2020 23:10	13.6	0.83	1.17	40,389
12/25/2020 15:20	12/26/2020 0:30	9.2	0.49	0.05	0.12	76.7	12/25/2020 15:20	12/26/2020 12:30	21.3	0.76	1.88	58,050
12/26/2020 23:25	12/27/2020 1:00	1.6	0.03	0.02	0.12	24.8	12/26/2020 23:25	12/27/2020 6:40	7.3	0.18	0.28	4,701

Table E-7. Summary Statistics for Individual Storm Events at the TOSMI Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
12/27/2020 6:40	12/27/2020 11:15	4.6	0.07	0.02	0.12	32.0	12/27/2020 6:40	12/27/2020 23:10	16.6	0.20	0.66	12,051
12/29/2020 17:05	12/31/2020 8:15	39.2	1.01	0.03	0.24	55.9	12/29/2020 17:00	12/31/2020 20:10	51.3	0.85	2.20	157,272
12/31/2020 22:20	1/1/2021 6:55	8.6	0.05	0.01	0.12	16.1	12/31/2020 22:15	1/1/2021 14:00	15.8	0.23	0.40	13,350
1/1/2021 14:00	1/1/2021 22:00	8.0	0.29	0.04	0.48	12.6	1/1/2021 14:00	1/2/2021 4:45	14.8	0.70	2.74	37,155
1/2/2021 4:45	1/3/2021 7:05	26.3	1.62	0.06	0.36	12.0	1/2/2021 4:45	1/3/2021 8:55	28.3	2.59	8.53	262,962
1/3/2021 9:00	1/3/2021 10:40	1.7	0.10	0.06	0.12	7.9	1/3/2021 8:55	1/3/2021 17:00	8.2	1.54	2.20	45,378
1/3/2021 17:05	1/4/2021 14:50	21.8	0.70	0.03	0.36	7.2	1/3/2021 17:00	1/5/2021 2:45	33.8	1.52	3.36	184,893
1/5/2021 11:50	1/6/2021 3:50	16.0	0.94	0.06	0.24	21.7	1/5/2021 11:45	1/6/2021 15:45	28.1	1.91	3.59	192,639
1/8/2021 3:10	1/8/2021 15:20	12.2	0.22	0.02	0.48	49.4	1/8/2021 3:10	1/9/2021 3:20	24.3	0.37	1.59	32,646
1/10/2021 1:50	1/10/2021 6:10	4.3	0.06	0.01	0.12	34.8	1/10/2021 1:50	1/10/2021 18:10	16.4	0.19	0.34	10,953
1/11/2021 8:25	1/13/2021 0:20	39.9	2.45	0.06	0.72	30.0	1/11/2021 8:25	1/13/2021 12:20	52.0	2.40	7.22	449,490
1/14/2021 23:05	1/15/2021 5:25	6.3	0.14	0.02	0.12	46.9	1/14/2021 23:05	1/15/2021 17:25	18.4	0.40	1.59	26,664
1/17/2021 0:25	1/17/2021 5:10	4.8	0.09	0.02	0.12	47.5	1/17/2021 0:20	1/17/2021 17:10	16.9	0.24	0.76	14,691
1/21/2021 2:45	1/21/2021 8:10	5.4	0.06	0.01	0.12	96.4	1/21/2021 2:45	1/21/2021 20:10	17.5	0.13	0.34	8,133
1/24/2021 5:30	1/24/2021 22:00	16.5	0.23	0.01	0.12	71.0	1/24/2021 5:25	1/25/2021 9:55	28.6	0.25	0.76	26,082
1/25/2021 17:05	1/25/2021 18:30	1.4	0.14	0.10	0.24	21.2	1/25/2021 17:00	1/26/2021 6:30	13.6	0.28	1.34	13,815
1/27/2021 6:40	1/27/2021 9:40	3.0	0.08	0.03	0.12	36.7	1/27/2021 6:40	1/27/2021 21:40	15.1	0.18	0.48	9,522
1/28/2021 4:15	1/28/2021 12:30	8.3	0.22	0.03	0.12	19.8	1/28/2021 4:15	1/29/2021 0:30	20.3	0.38	1.59	27,672
1/29/2021 21:10	1/30/2021 9:45	12.6	0.14	0.01	0.24	36.9	1/29/2021 21:10	1/30/2021 18:10	21.1	0.24	1.46	18,330
1/30/2021 18:10	2/3/2021 6:35	84.4	2.10	0.02	0.60	20.5	1/30/2021 18:10	2/3/2021 18:30	96.4	1.10	3.82	382,088
2/4/2021 7:10	2/5/2021 13:25	30.3	0.63	0.02	0.24	28.9	2/4/2021 7:05	2/6/2021 1:25	42.4	0.80	2.20	121,935
2/6/2021 13:55	2/6/2021 17:40	3.8	0.31	0.08	0.60	29.2	2/6/2021 13:50	2/7/2021 5:35	15.8	0.89	2.37	50,658
2/7/2021 17:50	2/7/2021 18:55	1.1	0.09	0.08	0.12	24.5	2/7/2021 17:45	2/8/2021 2:10	8.5	0.55	1.17	16,752
2/8/2021 2:15	2/8/2021 9:50	7.6	0.27	0.04	0.24	8.0	2/8/2021 2:10	2/8/2021 21:50	19.8	0.80	2.03	57,111
2/14/2021 11:50	2/14/2021 13:55	2.1	0.03	0.01	0.12	146.5	2/14/2021 11:45	2/15/2021 1:50	14.2	0.76	1.88	38,526
2/15/2021 8:40	2/16/2021 5:50	21.2	0.59	0.03	0.24	167.3	2/15/2021 8:35	2/16/2021 17:45	33.3	1.78	2.94	213,502
2/16/2021 18:40	2/16/2021 23:35	4.9	0.04	0.01	0.12	16.6	2/16/2021 18:40	2/17/2021 6:55	12.3	0.87	1.46	38,697
2/17/2021 6:55	2/17/2021 7:10	0.3	0.04	0.16	0.24	12.2	2/17/2021 6:55	2/17/2021 19:05	12.3	0.54	1.02	23,862
2/18/2021 11:10	2/18/2021 16:50	5.7	0.05	0.01	0.12	28.2	2/18/2021 11:10	2/19/2021 4:50	17.8	0.29	0.66	18,408
2/19/2021 13:50	2/19/2021 21:50	8.0	0.16	0.02	0.12	25.9	2/19/2021 13:50	2/20/2021 9:45	20.0	0.39	1.34	28,407
2/21/2021 21:35	2/22/2021 1:55	4.3	0.15	0.03	0.12	50.6	2/21/2021 21:30	2/22/2021 6:50	9.4	0.54	1.59	18,372
2/22/2021 6:50	2/22/2021 16:20	9.5	0.29	0.03	0.36	7.8	2/22/2021 6:50	2/23/2021 4:15	21.5	0.58	2.37	44,850
2/25/2021 2:15	2/25/2021 6:20	4.1	0.15	0.04	0.12	58.1	2/25/2021 2:10	2/25/2021 14:15	12.2	0.41	1.34	18,015
2/25/2021 14:15	2/25/2021 16:35	2.3	0.13	0.06	0.36	8.8	2/25/2021 14:15	2/26/2021 4:35	14.4	0.39	1.88	20,313
2/26/2021 20:50	2/27/2021 5:30	8.7	0.25	0.03	0.48	29.3	2/26/2021 20:50	2/27/2021 9:30	12.8	0.80	2.20	36,633
2/27/2021 9:35	2/27/2021 9:50	0.3	0.03	0.12	0.12	8.9	2/27/2021 9:30	2/27/2021 21:45	12.3	0.23	0.48	10,422
2/28/2021 0:05	2/28/2021 2:55	2.8	0.05	0.02	0.12	18.6	2/28/2021 0:05	2/28/2021 14:55	14.9	0.22	0.76	11,961
3/2/2021 8:35	3/2/2021 11:05	2.5	0.04	0.02	0.12	54.7	3/2/2021 8:35	3/2/2021 23:00	14.5	0.15	0.34	7,704
3/4/2021 15:30	3/4/2021 21:15	5.8	0.31	0.05	0.12	54.9	3/4/2021 15:30	3/5/2021 8:55	17.5	0.70	1.88	43,869
3/5/2021 8:55	3/5/2021 17:15	8.3	0.14	0.02	0.24	12.3	3/5/2021 8:55	3/6/2021 5:10	20.3	0.37	1.59	27,069
3/7/2021 3:00	3/7/2021 12:20	9.3	0.18	0.02	0.12	34.0	3/7/2021 2:55	3/7/2021 16:05	13.3	0.50	1.73	24,033
3/7/2021 16:10	3/7/2021 22:00	5.8	0.24	0.04	0.24	6.7	3/7/2021 16:05	3/8/2021 9:55	17.9	0.55	2.03	35,436
3/14/2021 11:00	3/14/2021 20:35	9.6	0.35	0.04	0.24	159.7	3/14/2021 11:00	3/15/2021 8:35	21.7	0.67	1.88	52,014
3/18/2021 16:00	3/18/2021 19:20	3.3	0.17	0.05	0.48	93.3	3/18/2021 15:55	3/19/2021 7:15	15.4	0.47	1.59	25,995
3/19/2021 21:40	3/20/2021 8:30	10.8	0.13	0.01	0.12	27.7	3/19/2021 21:40	3/20/2021 16:30	18.9	0.35	1.46	24,027
3/20/2021 16:35	3/21/2021 3:40	11.1	0.65	0.06	0.60	10.9	3/20/2021 16:30	3/21/2021 9:30	17.1	1.84	4.88	113,361

Table E-7. Summary Statistics for Individual Storm Events at the TOSMI Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
3/21/2021 9:35	3/21/2021 18:10	8.6	0.11	0.01	0.12	12.9	3/21/2021 9:30	3/22/2021 3:10	17.8	0.71	1.46	45,474
3/22/2021 3:10	3/22/2021 13:35	10.4	0.31	0.03	0.36	13.8	3/22/2021 3:10	3/23/2021 1:30	22.4	1.00	3.59	80,349
3/24/2021 12:55	3/25/2021 6:20	17.4	0.71	0.04	0.48	54.1	3/24/2021 12:55	3/25/2021 18:20	29.5	1.65	4.33	174,723
3/28/2021 9:55	3/28/2021 22:40	12.8	0.43	0.03	0.24	76.8	3/28/2021 9:55	3/29/2021 10:40	24.8	0.79	2.55	70,386
4/3/2021 19:10	4/4/2021 4:55	9.8	0.10	0.01	0.12	143.6	4/3/2021 19:05	4/4/2021 16:50	21.8	0.23	0.89	18,354
4/7/2021 12:50	4/7/2021 16:20	3.5	0.05	0.01	0.12	85.6	4/7/2021 12:50	4/7/2021 22:30	9.8	0.19	0.28	6,675
4/7/2021 22:35	4/8/2021 6:35	8.0	0.24	0.03	0.24	9.5	4/7/2021 22:30	4/8/2021 18:30	20.1	0.56	2.37	40,659
4/10/2021 5:25	4/10/2021 9:05	3.7	0.09	0.02	0.24	50.6	4/10/2021 5:25	4/10/2021 21:00	15.7	0.27	0.66	15,450
4/24/2021 0:20	4/25/2021 6:55	30.6	0.68	0.02	0.24	327.4	4/24/2021 0:20	4/25/2021 18:55	42.7	0.89	2.55	136,866
4/25/2021 19:40	4/25/2021 23:25	3.8	0.12	0.03	0.60	17.8	4/25/2021 19:40	4/26/2021 11:25	15.8	0.50	1.17	28,479
4/30/2021 5:35	4/30/2021 8:25	2.8	0.15	0.05	0.12	104.8	4/30/2021 5:35	4/30/2021 20:25	14.9	0.48	1.88	25,770
5/1/2021 16:10	5/1/2021 21:05	4.9	0.04	0.01	0.12	32.7	5/1/2021 16:05	5/2/2021 9:00	17.0	0.20	0.28	12,360
5/3/2021 14:35	5/4/2021 0:40	10.1	0.42	0.04	0.36	46.4	5/3/2021 14:35	5/4/2021 12:40	22.2	0.86	2.74	68,898
5/7/2021 8:15	5/7/2021 13:10	4.9	0.27	0.05	0.36	79.9	5/7/2021 8:15	5/8/2021 1:05	16.9	0.63	2.74	38,226
5/8/2021 23:40	5/9/2021 2:40	3.0	0.03	0.01	0.12	37.4	5/8/2021 23:35	5/9/2021 14:35	15.1	0.22	0.34	11,913
5/17/2021 18:10	5/17/2021 21:55	3.8	0.11	0.03	0.12	247.9	5/17/2021 18:10	5/18/2021 9:55	15.8	0.32	1.02	18,417
5/18/2021 17:30	5/19/2021 0:25	6.9	0.65	0.09	1.32	21.7	5/18/2021 17:25	5/19/2021 11:15	17.9	1.36	7.22	87,975
5/19/2021 11:20	5/19/2021 11:20	0.0	0.02	0.00	0.24	12.0	5/19/2021 11:15	5/19/2021 18:25	7.3	0.31	0.40	8,154
5/19/2021 18:25	5/19/2021 19:15	0.8	0.03	0.04	0.12	19.1	5/19/2021 18:25	5/20/2021 7:15	12.9	0.26	0.34	12,033
5/24/2021 1:45	5/24/2021 13:15	11.5	0.14	0.01	0.12	122.4	5/24/2021 1:40	5/25/2021 1:15	23.7	0.20	0.48	16,815
5/27/2021 3:25	5/27/2021 11:35	8.2	0.30	0.04	0.24	63.7	5/27/2021 3:25	5/27/2021 23:35	20.3	0.56	1.73	41,160
6/5/2021 2:25	6/5/2021 6:25	4.0	0.03	0.01	0.12	207.3	6/5/2021 2:25	6/5/2021 18:20	16.0	0.12	0.28	6,981
6/6/2021 13:00	6/7/2021 6:45	17.8	0.69	0.04	0.60	241.9	6/6/2021 12:55	6/7/2021 18:40	29.8	1.05	3.59	112,332
6/11/2021 10:30	6/11/2021 16:40	6.2	0.31	0.05	0.24	100.5	6/11/2021 10:25	6/11/2021 22:25	12.1	0.95	2.20	41,454
6/11/2021 22:30	6/12/2021 1:20	2.8	0.24	0.08	1.20	7.3	6/11/2021 22:25	6/12/2021 13:15	14.9	0.89	3.59	47,988
6/12/2021 22:05	6/13/2021 6:40	8.6	0.34	0.04	0.24	21.8	6/12/2021 22:05	6/13/2021 12:55	14.9	1.02	2.55	54,543
6/13/2021 12:55	6/13/2021 23:50	10.9	0.66	0.06	0.36	9.5	6/13/2021 12:55	6/14/2021 5:45	16.9	1.90	4.07	115,698
6/14/2021 5:45	6/14/2021 13:15	7.5	0.07	0.01	0.24	6.2	6/14/2021 5:45	6/15/2021 1:15	19.6	0.67	1.34	47,016
7/20/2021 7:10	7/20/2021 8:35	1.4	0.07	0.05	0.12	860.5	7/20/2021 7:10	7/20/2021 20:35	13.5	0.24	0.89	11,472
8/6/2021 0:00	8/6/2021 10:10	10.2	0.18	0.02	0.12	399.8	8/5/2021 23:55	8/6/2021 22:05	22.3	0.30	0.89	23,712
8/8/2021 3:05	8/8/2021 4:15	1.2	0.06	0.05	0.12	41.2	8/8/2021 3:00	8/8/2021 16:15	13.3	0.20	0.76	9,600
8/26/2021 20:30	8/27/2021 2:05	5.6	0.05	0.01	0.12	449.1	8/26/2021 20:25	8/27/2021 11:55	15.6	0.14	0.34	8,082
8/27/2021 12:00	8/27/2021 12:55	0.9	0.03	0.03	0.12	15.2	8/27/2021 11:55	8/28/2021 0:55	13.1	0.11	0.15	4,977
9/12/2021 6:45	9/12/2021 7:40	0.9	0.05	0.05	0.12	394.0	9/12/2021 6:40	9/12/2021 19:40	13.1	0.11	0.34	5,328
9/17/2021 4:55	9/17/2021 16:10	11.3	0.12	0.01	0.12	117.8	9/17/2021 4:50	9/17/2021 21:20	16.6	0.13	0.34	7,788
9/17/2021 21:20	9/18/2021 5:40	8.3	0.83	0.10	0.72	12.8	9/17/2021 21:20	9/18/2021 13:30	16.3	1.87	4.33	109,674
9/18/2021 13:35	9/18/2021 22:55	9.3	0.27	0.03	0.24	9.9	9/18/2021 13:30	9/19/2021 10:50	21.4	0.84	1.88	65,040
9/19/2021 16:40	9/19/2021 17:00	0.3	0.05	0.15	0.12	18.8	9/19/2021 16:40	9/20/2021 5:00	12.4	0.24	0.56	10,632
9/26/2021 13:30	9/27/2021 4:00	14.5	0.51	0.04	0.36	164.8	9/26/2021 13:25	9/27/2021 14:00	24.7	0.85	2.74	75,453
9/27/2021 14:00	9/28/2021 6:55	16.9	0.30	0.02	0.36	12.2	9/27/2021 14:00	9/28/2021 18:55	29.0	0.60	2.37	62,892
9/29/2021 23:35	9/30/2021 13:20	13.8	0.49	0.04	0.24	46.8	9/29/2021 23:35	10/1/2021 1:15	25.8	0.78	2.37	72,504

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Table E-8. Summary Statistics for Individual Storm Events at the COLM Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
10/4/2020 5:20	10/4/2020 10:30	5.2	0.05	0.01	0.12	0.0	10/4/2020 5:15	10/4/2020 22:30	17.3	0.11	0.12	6,903
10/9/2020 21:05	10/10/2020 15:45	18.7	1.33	0.07	1.80	132.5	10/9/2020 21:00	10/11/2020 3:40	30.8	0.33	0.44	36,747
10/11/2020 10:45	10/11/2020 19:40	8.9	0.35	0.04	0.24	19.2	10/11/2020 10:40	10/12/2020 2:45	16.2	0.40	0.44	23,292
10/12/2020 2:50	10/12/2020 9:10	6.3	0.46	0.07	0.60	9.4	10/12/2020 2:45	10/12/2020 21:10	18.5	0.58	0.65	38,295
10/13/2020 0:35	10/13/2020 7:00	6.4	0.41	0.06	0.36	15.9	10/13/2020 0:30	10/13/2020 19:00	18.6	0.66	0.88	44,448
10/14/2020 4:40	10/14/2020 8:40	4.0	0.03	0.01	0.12	22.1	10/14/2020 4:40	10/14/2020 20:35	16.0	0.51	0.54	29,472
10/16/2020 13:45	10/17/2020 2:45	13.0	0.37	0.03	0.48	79.2	10/16/2020 13:40	10/17/2020 14:45	25.2	0.31	0.33	27,834
10/18/2020 1:45	10/18/2020 17:10	15.4	0.26	0.02	0.24	24.5	10/18/2020 1:40	10/19/2020 5:10	27.6	0.31	0.33	30,459
10/19/2020 10:05	10/19/2020 18:30	8.4	0.44	0.05	0.24	20.5	10/19/2020 10:05	10/20/2020 6:30	20.5	0.48	0.61	35,589
10/20/2020 19:45	10/21/2020 5:00	9.3	0.10	0.01	0.24	25.7	10/20/2020 19:40	10/21/2020 10:05	14.5	0.43	0.44	22,464
10/21/2020 10:10	10/21/2020 11:30	1.3	0.03	0.02	0.12	6.9	10/21/2020 10:05	10/21/2020 23:30	13.5	0.38	0.41	18,396
10/23/2020 6:20	10/23/2020 8:50	2.5	0.08	0.03	0.12	51.1	10/23/2020 6:20	10/23/2020 17:10	10.9	0.27	0.28	10,434
10/23/2020 17:15	10/23/2020 23:50	6.6	0.10	0.02	0.12	9.2	10/23/2020 17:10	10/24/2020 11:50	18.8	0.28	0.30	18,642
10/28/2020 23:25	10/29/2020 7:00	7.6	0.04	0.01	0.12	125.2	10/28/2020 23:25	10/29/2020 18:55	19.6	0.22	0.22	15,432
10/30/2020 4:30	10/30/2020 10:05	5.6	0.16	0.03	0.24	154.3	10/30/2020 4:25	10/30/2020 22:05	17.8	0.25	0.28	15,672
11/3/2020 7:10	11/3/2020 14:45	7.6	0.71	0.09	0.36	94.3	11/3/2020 7:05	11/3/2020 21:45	14.8	0.49	0.57	26,025
11/3/2020 21:50	11/4/2020 9:10	11.3	0.22	0.02	0.24	7.4	11/3/2020 21:45	11/4/2020 15:50	18.2	0.59	0.69	38,904
11/4/2020 15:50	11/5/2020 0:55	9.1	0.38	0.04	0.48	8.9	11/4/2020 15:50	11/5/2020 7:05	15.3	0.92	1.11	50,808
11/5/2020 7:05	11/5/2020 15:30	8.4	0.42	0.05	0.60	6.2	11/5/2020 7:05	11/6/2020 3:30	20.5	1.37	1.71	101,340
11/9/2020 17:45	11/9/2020 23:00	5.3	0.12	0.02	0.12	99.0	11/9/2020 17:45	11/10/2020 8:10	14.5	0.38	0.38	19,782
11/10/2020 8:10	11/10/2020 14:05	5.9	0.08	0.01	0.12	10.7	11/10/2020 8:10	11/11/2020 2:00	17.9	0.37	0.38	24,159
11/12/2020 18:30	11/13/2020 6:40	12.2	0.57	0.05	0.24	53.4	11/12/2020 18:30	11/13/2020 18:40	24.3	0.51	0.65	44,517
11/14/2020 15:25	11/15/2020 4:20	12.9	0.32	0.02	0.12	33.7	11/14/2020 15:20	11/15/2020 16:15	25.0	0.72	0.78	64,488
11/16/2020 8:50	11/16/2020 18:05	9.3	0.53	0.06	0.24	34.5	11/16/2020 8:50	11/17/2020 6:00	21.3	1.19	1.46	91,113
11/17/2020 12:30	11/18/2020 15:30	27.0	0.96	0.04	1.32	19.8	11/17/2020 12:30	11/19/2020 3:30	39.1	2.27	3.47	318,708
11/20/2020 4:45	11/20/2020 8:00	3.3	0.03	0.01	0.12	37.8	11/20/2020 4:40	11/20/2020 20:00	15.4	1.19	1.39	65,829
11/22/2020 15:20	11/23/2020 13:25	22.1	0.39	0.02	0.24	96.4	11/22/2020 15:20	11/24/2020 1:25	34.2	0.63	0.69	77,478
11/24/2020 9:15	11/25/2020 6:30	21.3	0.65	0.03	0.36	20.5	11/24/2020 9:10	11/25/2020 18:30	33.4	1.59	2.40	191,313
11/27/2020 23:00	11/28/2020 2:20	3.3	0.14	0.04	0.12	70.4	11/27/2020 23:00	11/28/2020 10:30	11.6	0.77	0.78	31,950
11/28/2020 10:35	11/28/2020 11:55	1.3	0.10	0.08	0.12	9.2	11/28/2020 10:30	11/28/2020 23:55	13.5	0.82	0.88	40,086
11/30/2020 3:00	11/30/2020 6:45	3.8	0.35	0.09	0.24	39.7	11/30/2020 3:00	11/30/2020 18:45	15.8	0.91	0.99	51,588
12/8/2020 2:30	12/9/2020 7:45	29.3	0.93	0.03	0.24	187.9	12/8/2020 2:25	12/9/2020 19:40	41.3	0.98	1.71	145,131
12/10/2020 21:30	12/10/2020 21:55	0.4	0.03	0.07	0.12	38.8	12/10/2020 21:30	12/11/2020 9:55	12.5	1.00	1.11	44,913
12/13/2020 2:45	12/13/2020 17:20	14.6	0.20	0.01	0.12	92.1	12/13/2020 2:45	12/14/2020 0:20	21.7	0.69	0.74	54,060
12/14/2020 0:20	12/14/2020 11:25	11.1	0.12	0.01	0.24	12.6	12/14/2020 0:20	12/14/2020 23:25	23.2	0.68	0.69	57,006
12/14/2020 23:35	12/15/2020 10:55	11.3	0.12	0.01	0.12	16.1	12/14/2020 23:35	12/15/2020 22:50	23.3	0.67	0.69	56,676
12/16/2020 13:20	12/17/2020 4:35	15.3	0.47	0.03	0.24	28.6	12/16/2020 13:15	12/17/2020 10:50	21.7	1.05	1.25	81,555
12/17/2020 10:50	12/17/2020 20:00	9.2	0.15	0.02	0.12	10.2	12/17/2020 10:50	12/18/2020 1:05	14.3	1.38	1.63	71,181
12/18/2020 1:10	12/18/2020 9:35	8.4	0.25	0.03	0.12	6.9	12/18/2020 1:05	12/18/2020 17:55	16.9	2.07	2.52	126,063
12/18/2020 17:55	12/19/2020 3:10	9.3	0.70	0.08	0.36	8.8	12/18/2020 17:55	12/19/2020 12:30	18.7	4.47	7.14	300,357
12/19/2020 12:35	12/19/2020 21:10	8.6	0.26	0.03	0.24	9.7	12/19/2020 12:30	12/20/2020 9:10	20.8	6.17	6.71	461,247
12/21/2020 0:00	12/22/2020 12:30	36.5	2.08	0.06	0.72	28.1	12/20/2020 23:55	12/23/2020 0:30	48.7	9.82	13.26	1,721,071
12/25/2020 15:25	12/25/2020 23:15	7.8	0.52	0.07	0.24	75.1	12/25/2020 15:20	12/26/2020 11:10	19.9	3.44	3.99	246,582
12/26/2020 23:35	12/27/2020 3:05	3.5	0.04	0.01	0.12	24.9	12/26/2020 23:35	12/27/2020 15:00	15.5	2.54	2.76	141,990
12/29/2020 17:15	12/31/2020 8:00	38.8	1.18	0.03	0.24	65.7	12/29/2020 17:10	12/31/2020 20:00	50.9	4.00	5.35	732,631
12/31/2020 22:25	1/1/2021 3:40	5.3	0.05	0.01	0.12	20.4	12/31/2020 22:25	1/1/2021 6:20	8.0	3.88	3.99	111,714
1/1/2021 6:20	1/1/2021 8:05	1.8	0.03	0.02	0.12	7.8	1/1/2021 6:20	1/1/2021 14:15	8.0	3.46	3.64	99,732
1/1/2021 14:20	1/1/2021 20:35	6.3	0.26	0.04	0.36	10.7	1/1/2021 14:15	1/2/2021 3:10	13.0	3.89	4.37	181,845
1/2/2021 3:15	1/3/2021 1:20	22.1	1.55	0.07	0.72	10.5	1/2/2021 3:10	1/3/2021 8:55	29.8	6.26	11.02	672,849

Table E-8. Summary Statistics for Individual Storm Events at the COLM Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
1/3/2021 9:00	1/3/2021 10:10	1.2	0.09	0.08	0.24	8.2	1/3/2021 8:55	1/3/2021 17:50	9.0	10.24	10.72	331,836
1/3/2021 17:50	1/4/2021 15:15	21.4	0.82	0.04	0.48	8.1	1/3/2021 17:50	1/4/2021 21:10	27.4	9.17	10.15	904,591
1/4/2021 21:15	1/5/2021 1:55	4.7	0.06	0.01	0.12	6.8	1/4/2021 21:10	1/5/2021 7:25	10.3	8.21	8.81	305,457
1/5/2021 7:30	1/6/2021 4:10	20.7	0.95	0.05	0.24	9.6	1/5/2021 7:25	1/6/2021 16:05	32.8	8.46	10.15	997,344
1/7/2021 6:50	1/7/2021 8:10	1.3	0.06	0.05	0.12	27.5	1/7/2021 6:45	1/7/2021 20:10	13.5	5.46	5.91	265,284
1/8/2021 3:15	1/8/2021 15:35	12.3	0.21	0.02	0.24	19.7	1/8/2021 3:10	1/9/2021 3:30	24.4	3.61	3.99	317,172
1/10/2021 2:15	1/10/2021 6:25	4.2	0.04	0.01	0.12	35.1	1/10/2021 2:10	1/10/2021 16:00	13.9	2.21	2.40	110,553
1/10/2021 16:00	1/10/2021 16:45	0.8	0.03	0.04	0.12	13.8	1/10/2021 16:00	1/11/2021 4:40	12.8	1.93	2.09	88,551
1/11/2021 8:45	1/13/2021 5:10	44.4	2.30	0.05	0.48	30.5	1/11/2021 8:45	1/13/2021 17:10	56.5	7.68	12.59	1,561,249
1/14/2021 23:15	1/15/2021 5:35	6.3	0.11	0.02	0.12	46.7	1/14/2021 23:10	1/15/2021 17:35	18.5	4.37	5.17	290,739
1/16/2021 23:35	1/17/2021 5:40	6.1	0.14	0.02	0.12	42.5	1/16/2021 23:35	1/17/2021 17:35	18.1	2.18	2.29	141,729
1/24/2021 3:50	1/25/2021 0:30	20.7	0.29	0.01	0.12	169.0	1/24/2021 3:45	1/25/2021 12:30	32.8	0.66	0.69	77,778
1/27/2021 7:25	1/27/2021 9:15	1.8	0.07	0.04	0.12	58.3	1/27/2021 7:25	1/27/2021 21:10	13.8	0.65	0.65	32,166
1/28/2021 5:00	1/28/2021 13:05	8.1	0.13	0.02	0.12	20.6	1/28/2021 5:00	1/29/2021 1:05	20.2	0.61	0.65	44,502
1/29/2021 21:30	1/30/2021 11:30	14.0	0.14	0.01	0.24	33.2	1/29/2021 21:30	1/30/2021 18:20	20.9	0.54	0.57	40,941
1/30/2021 18:25	2/3/2021 2:50	80.4	1.96	0.02	0.48	9.8	1/30/2021 18:20	2/3/2021 14:45	92.5	2.95	6.93	981,987
2/4/2021 5:45	2/5/2021 9:10	27.4	0.98	0.04	0.24	32.5	2/4/2021 5:45	2/5/2021 21:10	39.5	4.41	6.50	626,616
2/6/2021 13:35	2/6/2021 16:15	2.7	0.30	0.11	0.24	30.6	2/6/2021 13:30	2/7/2021 4:15	14.8	4.86	5.53	259,539
2/7/2021 15:55	2/8/2021 11:30	19.6	0.87	0.04	0.48	23.9	2/7/2021 15:55	2/8/2021 23:30	31.7	6.13	7.14	699,283
2/12/2021 12:45	2/12/2021 14:30	1.8	0.08	0.05	0.60	97.4	2/12/2021 12:40	2/13/2021 2:25	13.8	1.27	1.32	63,069
2/15/2021 9:35	2/16/2021 16:10	30.6	1.54	0.05	0.48	68.8	2/15/2021 9:30	2/17/2021 4:05	42.7	4.09	5.53	628,828
2/17/2021 5:00	2/17/2021 6:50	1.8	0.05	0.03	0.24	14.0	2/17/2021 5:00	2/17/2021 18:45	13.8	4.47	4.78	222,510
2/18/2021 14:50	2/18/2021 17:00	2.2	0.04	0.02	0.12	33.8	2/18/2021 14:45	2/19/2021 5:00	14.3	3.06	3.15	157,938
2/19/2021 15:55	2/19/2021 21:45	5.8	0.12	0.02	0.12	25.1	2/19/2021 15:55	2/20/2021 9:40	17.8	3.61	3.81	231,624
2/20/2021 22:20	2/20/2021 23:35	1.3	0.04	0.03	0.12	25.2	2/20/2021 22:15	2/21/2021 11:35	13.4	3.06	3.31	148,014
2/21/2021 21:40	2/22/2021 0:20	2.7	0.14	0.05	0.24	23.3	2/21/2021 21:40	2/22/2021 6:10	8.6	3.01	3.31	93,027
2/22/2021 6:15	2/22/2021 21:50	15.6	0.65	0.04	0.96	7.1	2/22/2021 6:10	2/23/2021 9:50	27.8	5.01	6.71	500,454
2/24/2021 10:00	2/24/2021 10:15	0.3	0.03	0.12	0.24	36.4	2/24/2021 10:00	2/24/2021 22:15	12.3	3.01	3.47	133,857
2/25/2021 1:55	2/25/2021 8:40	6.8	0.14	0.02	0.12	52.3	2/25/2021 1:50	2/25/2021 14:00	12.3	2.41	2.52	106,335
2/25/2021 14:00	2/25/2021 16:10	2.2	0.33	0.15	0.48	8.2	2/25/2021 14:00	2/25/2021 22:25	8.5	3.40	3.99	104,115
2/25/2021 22:25	2/26/2021 7:10	8.8	0.12	0.01	0.24	6.7	2/25/2021 22:25	2/26/2021 15:55	17.6	3.10	3.47	196,269
2/26/2021 15:55	2/26/2021 23:20	7.4	0.16	0.02	0.24	9.3	2/26/2021 15:55	2/27/2021 11:15	19.4	2.55	2.88	178,455
2/27/2021 23:35	2/28/2021 8:20	8.8	0.07	0.01	0.12	25.6	2/27/2021 23:35	2/28/2021 20:20	20.8	1.72	1.89	129,216
3/4/2021 16:00	3/4/2021 21:20	5.3	0.24	0.05	0.12	109.3	3/4/2021 15:55	3/5/2021 9:20	17.5	0.72	0.74	45,282
3/5/2021 9:50	3/5/2021 18:15	8.4	0.08	0.01	0.12	13.2	3/5/2021 9:50	3/6/2021 6:10	20.4	0.74	0.78	54,147
3/7/2021 3:45	3/7/2021 23:50	20.1	0.45	0.02	0.24	35.2	3/7/2021 3:40	3/8/2021 11:50	32.3	0.80	0.99	92,298
3/14/2021 11:00	3/14/2021 20:40	9.7	0.42	0.04	0.24	159.2	3/14/2021 11:00	3/15/2021 8:35	21.7	0.51	0.57	40,164
3/18/2021 16:00	3/18/2021 19:55	3.9	0.21	0.05	0.36	93.0	3/18/2021 15:55	3/19/2021 7:50	16.0	0.43	0.44	24,822
3/19/2021 23:40	3/20/2021 11:45	12.1	0.15	0.01	0.12	29.5	3/19/2021 23:35	3/20/2021 17:00	17.5	0.41	0.44	26,100
3/20/2021 17:00	3/21/2021 3:55	10.9	0.40	0.04	0.24	6.4	3/20/2021 17:00	3/21/2021 9:45	16.8	0.61	0.74	36,921
3/21/2021 9:50	3/21/2021 22:30	12.7	0.19	0.02	0.12	11.4	3/21/2021 9:45	3/22/2021 1:05	15.4	0.93	1.05	51,843
3/22/2021 1:05	3/22/2021 11:55	10.8	0.18	0.02	0.24	7.0	3/22/2021 1:05	3/22/2021 13:05	12.1	1.24	1.39	53,892
3/22/2021 13:10	3/22/2021 14:10	1.0	0.20	0.20	0.36	6.8	3/22/2021 13:05	3/23/2021 2:10	13.2	1.23	1.39	58,170
3/24/2021 12:05	3/25/2021 11:55	23.8	0.96	0.04	0.48	46.0	3/24/2021 12:00	3/25/2021 23:55	36.0	3.06	4.78	395,967
3/28/2021 10:05	3/29/2021 1:10	15.1	0.55	0.04	0.24	78.2	3/28/2021 10:05	3/29/2021 9:20	23.3	1.75	2.19	146,793
3/29/2021 9:20	3/29/2021 10:10	0.8	0.07	0.08	0.24	11.5	3/29/2021 9:20	3/29/2021 22:05	12.8	1.87	1.89	86,589
4/3/2021 22:15	4/4/2021 5:25	7.2	0.11	0.02	0.12	132.3	4/3/2021 22:15	4/4/2021 17:25	19.3	0.47	0.50	32,301
4/7/2021 11:50	4/7/2021 19:50	8.0	0.12	0.02	0.12	80.0	4/7/2021 11:45	4/7/2021 22:40	11.0	0.33	0.33	12,987
4/7/2021 22:45	4/8/2021 4:25	5.7	0.22	0.04	0.36	9.8	4/7/2021 22:40	4/8/2021 16:25	17.8	0.35	0.38	22,743

Table E-8. Summary Statistics for Individual Storm Events at the COLM Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
4/9/2021 22:45	4/10/2021 4:40	5.9	0.03	0.01	0.12	44.9	4/9/2021 22:40	4/10/2021 5:45	7.2	0.30	0.30	7,632
4/10/2021 5:50	4/10/2021 8:50	3.0	0.04	0.01	0.12	52.0	4/10/2021 5:45	4/10/2021 20:45	15.1	0.28	0.28	15,204
4/24/2021 0:30	4/25/2021 6:30	30.0	0.70	0.02	0.12	330.7	4/24/2021 0:30	4/25/2021 18:30	42.1	0.16	0.22	23,784
4/25/2021 19:55	4/26/2021 1:10	5.3	0.08	0.02	0.12	17.8	4/25/2021 19:50	4/26/2021 13:05	17.3	0.17	0.17	10,500
4/30/2021 6:20	4/30/2021 9:05	2.8	0.17	0.06	0.24	105.8	4/30/2021 6:20	4/30/2021 21:00	14.8	0.14	0.15	7,398
5/1/2021 17:55	5/1/2021 20:45	2.8	0.05	0.02	0.12	33.8	5/1/2021 17:55	5/2/2021 8:45	14.9	0.12	0.14	6,678
5/3/2021 14:55	5/4/2021 0:10	9.3	0.17	0.02	0.12	44.9	5/3/2021 14:55	5/4/2021 12:10	21.3	0.13	0.14	10,224
5/7/2021 7:45	5/7/2021 13:30	5.8	0.37	0.06	0.48	82.2	5/7/2021 7:40	5/8/2021 1:25	17.8	0.16	0.18	10,116
5/8/2021 22:20	5/9/2021 1:25	3.1	0.05	0.02	0.12	33.2	5/8/2021 22:15	5/9/2021 13:25	15.3	0.14	0.14	7,566
5/17/2021 18:25	5/17/2021 22:30	4.1	0.12	0.03	0.12	211.8	5/17/2021 18:20	5/18/2021 10:25	16.2	0.09	0.10	5,433
5/18/2021 13:35	5/18/2021 16:25	2.8	0.05	0.02	0.12	16.3	5/18/2021 13:30	5/18/2021 21:45	8.3	0.09	0.10	2,559
5/18/2021 21:50	5/19/2021 0:20	2.5	0.19	0.08	0.24	8.0	5/18/2021 21:45	5/19/2021 7:30	9.8	0.11	0.12	3,870
5/19/2021 7:35	5/19/2021 9:55	2.3	0.09	0.04	0.24	7.8	5/19/2021 7:30	5/19/2021 21:55	14.5	0.12	0.14	6,063
5/23/2021 9:40	5/23/2021 11:45	2.1	0.05	0.02	0.12	97.6	5/23/2021 9:40	5/23/2021 23:45	14.2	0.07	0.10	3,597
5/24/2021 1:30	5/24/2021 14:05	12.6	0.37	0.03	0.24	15.6	5/24/2021 1:25	5/25/2021 2:00	24.7	0.13	0.15	11,274
5/27/2021 3:35	5/27/2021 11:30	7.9	0.29	0.04	0.24	63.1	5/27/2021 3:30	5/27/2021 23:25	20.0	0.12	0.14	8,304
5/28/2021 8:05	5/28/2021 11:00	2.9	0.06	0.02	0.24	20.9	5/28/2021 8:00	5/28/2021 23:00	15.1	0.10	0.11	5,655
6/5/2021 2:35	6/5/2021 5:10	2.6	0.04	0.02	0.24	186.4	6/5/2021 2:35	6/5/2021 17:10	14.7	0.04	0.04	1,902
6/6/2021 10:30	6/7/2021 9:55	23.4	0.92	0.04	0.48	31.9	6/6/2021 10:25	6/7/2021 21:55	35.6	0.15	0.26	18,885
6/10/2021 6:50	6/10/2021 7:15	0.4	0.07	0.17	0.36	72.6	6/10/2021 6:45	6/10/2021 19:15	12.6	0.09	0.11	4,089
6/11/2021 10:05	6/11/2021 16:55	6.8	0.27	0.04	0.24	27.2	6/11/2021 10:05	6/11/2021 22:40	12.7	0.13	0.15	5,766
6/11/2021 22:45	6/12/2021 2:40	3.9	0.14	0.04	0.48	7.8	6/11/2021 22:40	6/12/2021 14:35	16.0	0.14	0.17	8,301
6/12/2021 22:25	6/13/2021 8:40	10.3	0.29	0.03	0.12	21.2	6/12/2021 22:25	6/13/2021 13:05	14.8	0.15	0.18	7,788
6/13/2021 13:10	6/13/2021 23:50	10.7	0.61	0.06	0.36	9.5	6/13/2021 13:05	6/14/2021 11:50	22.8	0.28	0.41	23,283
8/6/2021 3:50	8/6/2021 10:20	6.5	0.11	0.02	0.12	1279.	-	-	0.0	0.00	0.00	-
8/8/2021 3:35	8/8/2021 3:55	0.3	0.04	0.12	0.12	42.7	-	-	0.0	0.00	0.00	-
8/26/2021 21:40	8/27/2021 2:00	4.3	0.03	0.01	0.12	450.1	-	-	0.0	0.00	0.00	-
8/27/2021 6:45	8/27/2021 13:00	6.3	0.05	0.01	0.12	459.2	-	-	0.0	0.00	0.00	-
8/31/2021 1:50	8/31/2021 5:30	3.7	0.06	0.02	0.12	86.2	-	-	0.0	0.00	0.00	-
9/12/2021 7:00	9/12/2021 8:35	1.6	0.03	0.02	0.12	292.7	-	-	0.0	0.00	0.00	-
9/17/2021 4:45	9/17/2021 10:40	5.9	0.13	0.02	0.12	410.4	-	-	0.0	0.00	0.00	-
9/17/2021 16:15	9/18/2021 4:55	12.7	0.63	0.05	0.48	7.0	-	-	0.0	0.00	0.00	-
9/18/2021 13:50	9/18/2021 23:05	9.3	0.36	0.04	0.48	9.9	-	-	0.0	0.00	0.00	-
9/19/2021 16:25	9/19/2021 20:15	3.8	0.30	0.08	1.68	18.2	-	-	0.0	0.00	0.00	-
9/26/2021 13:35	9/27/2021 4:00	14.4	0.54	0.04	0.36	161.4	-	-	0.0	0.00	0.00	-
9/27/2021 11:15	9/27/2021 19:35	8.3	0.22	0.03	0.48	9.4	-	-	0.0	0.00	0.00	-
9/27/2021 22:15	9/28/2021 9:50	11.6	0.18	0.02	0.24	7.6	-	-	0.0	0.00	0.00	-
9/29/2021 13:45	9/29/2021 17:30	3.8	0.04	0.01	0.12	29.2	-	-	0.0	0.00	0.00	-
9/29/2021 23:40	9/30/2021 13:25	13.8	0.67	0.05	0.36	9.9	9/30/2021 11:10	10/1/2021 1:25	14.3	0.04	0.10	1,989

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Table E-9. Summary Statistics for Individual Storm Events at the SEIMN Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
10/4/2020 5:20	10/4/2020 10:30	5.2	0.05	0.01	0.12	0.0	10/4/2020 5:15	10/4/2020 22:25	17.3	0.08	0.10	5,070
10/9/2020 21:05	10/10/2020 15:45	18.7	1.33	0.07	1.80	132.5	10/9/2020 21:00	10/11/2020 3:40	30.8	0.24	0.42	26,532
10/11/2020 10:45	10/11/2020 19:40	8.9	0.35	0.04	0.24	19.2	10/11/2020 10:40	10/12/2020 2:45	16.2	0.16	0.20	9,306
10/12/2020 2:50	10/12/2020 9:10	6.3	0.46	0.07	0.60	9.4	10/12/2020 2:45	10/12/2020 21:10	18.5	0.20	0.29	13,038
10/13/2020 0:35	10/13/2020 7:00	6.4	0.41	0.06	0.36	15.9	10/13/2020 0:30	10/13/2020 18:55	18.5	0.26	0.35	17,109
10/14/2020 4:40	10/14/2020 8:40	4.0	0.03	0.01	0.12	22.1	10/14/2020 4:40	10/14/2020 20:35	16.0	0.15	0.20	8,628
10/16/2020 13:45	10/17/2020 2:45	13.0	0.37	0.03	0.48	79.2	10/16/2020 13:45	10/17/2020 14:45	25.1	0.12	0.16	10,938
10/18/2020 1:45	10/18/2020 17:10	15.4	0.26	0.02	0.24	24.5	10/18/2020 1:40	10/19/2020 5:10	27.6	0.13	0.13	12,864
10/19/2020 10:05	10/19/2020 18:30	8.4	0.44	0.05	0.24	20.5	10/19/2020 10:05	10/20/2020 6:30	20.5	0.25	0.35	18,303
10/20/2020 19:45	10/21/2020 5:00	9.3	0.10	0.01	0.24	25.7	10/20/2020 19:40	10/21/2020 10:05	14.5	0.16	0.20	8,436
10/21/2020 10:10	10/21/2020 11:30	1.3	0.03	0.02	0.12	6.9	10/21/2020 10:05	10/21/2020 23:25	13.4	0.14	0.16	6,819
10/23/2020 6:20	10/23/2020 8:50	2.5	0.08	0.03	0.12	51.1	10/23/2020 6:20	10/23/2020 17:10	10.9	0.09	0.10	3,348
10/23/2020 17:15	10/23/2020 23:50	6.6	0.10	0.02	0.12	9.2	10/23/2020 17:10	10/24/2020 11:45	18.7	0.08	0.10	5,502
10/28/2020 23:25	10/29/2020 7:00	7.6	0.04	0.01	0.12	125.2	10/28/2020 23:25	10/29/2020 18:55	19.6	0.04	0.06	2,856
10/30/2020 4:30	10/30/2020 10:05	5.6	0.16	0.03	0.24	154.3	10/30/2020 4:25	10/30/2020 22:05	17.8	0.05	0.08	3,354
11/3/2020 7:10	11/3/2020 14:45	7.6	0.71	0.09	0.36	94.3	11/3/2020 7:05	11/3/2020 21:45	14.8	0.15	0.35	7,758
11/3/2020 21:50	11/4/2020 9:10	11.3	0.22	0.02	0.24	7.4	11/3/2020 21:45	11/4/2020 15:45	18.1	0.19	0.20	12,432
11/4/2020 15:50	11/5/2020 0:55	9.1	0.38	0.04	0.48	8.9	11/4/2020 15:45	11/5/2020 7:05	15.4	0.26	0.35	14,628
11/5/2020 7:05	11/5/2020 15:30	8.4	0.42	0.05	0.60	6.2	11/5/2020 7:05	11/6/2020 3:30	20.5	0.30	0.49	22,311
11/9/2020 17:45	11/9/2020 23:00	5.3	0.12	0.02	0.12	99.0	11/9/2020 17:45	11/10/2020 8:10	14.5	0.10	0.13	5,274
11/10/2020 8:10	11/10/2020 14:05	5.9	0.08	0.01	0.12	10.7	11/10/2020 8:10	11/11/2020 2:00	17.9	0.10	0.10	6,450
11/12/2020 18:30	11/13/2020 6:40	12.2	0.57	0.05	0.24	53.4	11/12/2020 18:30	11/13/2020 18:40	24.3	0.18	0.35	15,714
11/14/2020 15:25	11/15/2020 4:20	12.9	0.32	0.02	0.12	33.7	11/14/2020 15:20	11/15/2020 16:15	25.0	0.18	0.20	16,017
11/16/2020 8:50	11/16/2020 18:05	9.3	0.53	0.06	0.24	34.5	11/16/2020 8:45	11/17/2020 6:00	21.3	0.27	0.49	20,841
11/17/2020 12:30	11/18/2020 15:30	27.0	0.96	0.04	1.32	19.8	11/17/2020 12:30	11/19/2020 3:30	39.1	0.37	0.58	51,981
11/20/2020 4:45	11/20/2020 8:00	3.3	0.03	0.01	0.12	37.8	11/20/2020 4:40	11/20/2020 20:00	15.4	0.17	0.20	9,672
11/22/2020 15:20	11/23/2020 13:25	22.1	0.39	0.02	0.24	96.4	11/22/2020 15:20	11/24/2020 1:25	34.2	0.14	0.20	17,475
11/24/2020 9:15	11/25/2020 6:30	21.3	0.65	0.03	0.36	20.5	11/24/2020 9:10	11/25/2020 18:30	33.4	0.24	0.35	28,425
11/27/2020 23:00	11/28/2020 2:20	3.3	0.14	0.04	0.12	70.4	11/27/2020 23:00	11/28/2020 10:30	11.6	0.22	0.29	9,096
11/28/2020 10:35	11/28/2020 11:55	1.3	0.10	0.08	0.12	9.2	11/28/2020 10:30	11/28/2020 23:55	13.5	0.25	0.29	11,967
11/30/2020 3:00	11/30/2020 6:45	3.8	0.35	0.09	0.24	39.7	11/30/2020 2:55	11/30/2020 18:40	15.8	0.30	0.42	16,830
12/8/2020 2:30	12/9/2020 7:45	29.3	0.93	0.03	0.24	187.9	12/8/2020 2:25	12/9/2020 19:40	41.3	0.40	0.63	60,126
12/10/2020 21:30	12/10/2020 21:55	0.4	0.03	0.07	0.12	38.8	12/10/2020 21:30	12/11/2020 9:55	12.5	0.25	0.29	11,304
12/13/2020 2:45	12/13/2020 17:20	14.6	0.20	0.01	0.12	92.1	12/13/2020 2:45	12/14/2020 0:20	21.7	0.29	0.35	22,656
12/14/2020 0:20	12/14/2020 11:25	11.1	0.12	0.01	0.24	12.6	12/14/2020 0:20	12/14/2020 23:25	23.2	0.29	0.29	24,186
12/14/2020 23:35	12/15/2020 10:55	11.3	0.12	0.01	0.12	16.1	12/14/2020 23:35	12/15/2020 22:50	23.3	0.29	0.29	24,360
12/16/2020 13:20	12/17/2020 4:35	15.3	0.47	0.03	0.24	28.6	12/16/2020 13:15	12/17/2020 10:50	21.7	0.47	0.49	36,630
12/17/2020 10:50	12/17/2020 20:00	9.2	0.15	0.02	0.12	10.2	12/17/2020 10:50	12/18/2020 1:05	14.3	0.46	0.53	23,571
12/18/2020 1:10	12/18/2020 9:35	8.4	0.25	0.03	0.12	6.9	12/18/2020 1:05	12/18/2020 17:55	16.9	0.59	0.68	36,105
12/18/2020 17:55	12/19/2020 3:10	9.3	0.70	0.08	0.36	8.8	12/18/2020 17:55	12/19/2020 12:30	18.7	0.82	1.03	54,936
12/19/2020 12:35	12/19/2020 21:10	8.6	0.26	0.03	0.24	9.7	12/19/2020 12:30	12/20/2020 9:10	20.8	0.87	1.03	64,683
12/21/2020 0:00	12/22/2020 12:30	36.5	2.08	0.06	0.72	28.1	12/20/2020 23:55	12/23/2020 0:30	48.7	2.04	3.39	357,876
12/25/2020 15:25	12/25/2020 23:15	7.8	0.52	0.07	0.24	75.1	12/25/2020 15:20	12/26/2020 11:10	19.9	0.85	0.91	61,080
12/26/2020 23:35	12/27/2020 3:05	3.5	0.04	0.01	0.12	24.9	12/26/2020 23:35	12/27/2020 15:00	15.5	0.70	0.73	38,874
12/29/2020 17:15	12/31/2020 8:00	38.8	1.18	0.03	0.24	65.7	12/29/2020 17:10	12/31/2020 20:00	50.9	1.03	1.31	187,995

Table E-9. Summary Statistics for Individual Storm Events at the SEIMN Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
12/31/2020 22:25	1/1/2021 3:40	5.3	0.05	0.01	0.12	20.4	12/31/2020 22:25	1/1/2021 6:20	8.0	0.88	0.91	25,380
1/1/2021 6:20	1/1/2021 8:05	1.8	0.03	0.02	0.12	7.8	1/1/2021 6:20	1/1/2021 14:15	8.0	0.84	0.85	24,066
1/1/2021 14:20	1/1/2021 20:35	6.3	0.26	0.04	0.36	10.7	1/1/2021 14:15	1/2/2021 3:10	13.0	0.95	1.03	44,298
1/2/2021 3:15	1/3/2021 1:20	22.1	1.55	0.07	0.72	10.5	1/2/2021 3:10	1/3/2021 8:55	29.8	1.62	3.03	173,619
1/3/2021 9:00	1/3/2021 10:10	1.2	0.09	0.08	0.24	8.2	1/3/2021 8:55	1/3/2021 17:45	8.9	2.30	2.58	73,827
1/3/2021 17:50	1/4/2021 15:15	21.4	0.82	0.04	0.48	8.1	1/3/2021 17:45	1/4/2021 21:10	27.5	1.56	1.98	154,119
1/4/2021 21:15	1/5/2021 1:55	4.7	0.06	0.01	0.12	6.8	1/4/2021 21:10	1/5/2021 7:25	10.3	1.38	1.54	51,327
1/5/2021 7:30	1/6/2021 4:10	20.7	0.95	0.05	0.24	9.6	1/5/2021 7:25	1/6/2021 16:05	32.8	1.68	2.37	198,534
1/7/2021 6:50	1/7/2021 8:10	1.3	0.06	0.05	0.12	27.5	1/7/2021 6:45	1/7/2021 20:10	13.5	0.98	1.10	47,415
1/8/2021 3:15	1/8/2021 15:35	12.3	0.21	0.02	0.24	19.7	1/8/2021 3:10	1/9/2021 3:35	24.5	0.79	0.85	70,020
1/10/2021 2:15	1/10/2021 6:25	4.2	0.04	0.01	0.12	35.1	1/10/2021 2:15	1/10/2021 16:00	13.8	0.74	0.79	36,756
1/10/2021 16:00	1/10/2021 16:45	0.8	0.03	0.04	0.12	13.8	1/10/2021 16:00	1/11/2021 4:40	12.8	0.69	0.73	31,467
1/11/2021 8:45	1/13/2021 5:10	44.4	2.30	0.05	0.48	30.5	1/11/2021 8:45	1/13/2021 17:10	56.5	1.90	3.39	386,411
1/14/2021 23:15	1/15/2021 5:35	6.3	0.11	0.02	0.12	46.7	1/14/2021 23:10	1/15/2021 17:35	18.5	0.79	0.85	52,362
1/16/2021 23:35	1/17/2021 5:40	6.1	0.14	0.02	0.12	42.5	1/16/2021 23:35	1/17/2021 17:35	18.1	0.69	0.73	44,718
1/24/2021 3:50	1/25/2021 0:30	20.7	0.29	0.01	0.12	169.0	1/24/2021 3:45	1/25/2021 12:30	32.8	0.52	0.58	61,233
1/27/2021 7:25	1/27/2021 9:15	1.8	0.07	0.04	0.12	58.3	1/27/2021 7:25	1/27/2021 21:10	13.8	0.49	0.49	24,402
1/28/2021 5:00	1/28/2021 13:05	8.1	0.13	0.02	0.12	20.6	1/28/2021 5:00	1/29/2021 1:05	20.2	0.49	0.49	35,574
1/29/2021 21:30	1/30/2021 11:30	14.0	0.14	0.01	0.24	33.2	1/29/2021 21:30	1/30/2021 18:20	20.9	0.49	0.53	37,065
1/30/2021 18:25	2/3/2021 2:50	80.4	1.96	0.02	0.48	9.8	1/30/2021 18:20	2/3/2021 14:50	92.6	1.02	1.80	341,521
2/4/2021 5:45	2/5/2021 9:10	27.4	0.98	0.04	0.24	32.5	2/4/2021 5:45	2/5/2021 21:10	39.5	1.34	1.98	190,642
2/6/2021 13:35	2/6/2021 16:15	2.7	0.30	0.11	0.24	30.6	2/6/2021 13:30	2/7/2021 4:15	14.8	1.35	1.46	72,057
2/7/2021 15:55	2/8/2021 11:30	19.6	0.87	0.04	0.48	23.9	2/7/2021 15:55	2/8/2021 23:25	31.6	1.79	1.98	204,054
2/12/2021 12:45	2/12/2021 14:30	1.8	0.08	0.05	0.60	97.4	2/12/2021 12:40	2/13/2021 2:25	13.8	0.73	0.73	36,129
2/15/2021 9:35	2/16/2021 16:10	30.6	1.54	0.05	0.48	68.8	2/15/2021 9:30	2/17/2021 4:10	42.8	1.15	1.31	177,435
2/17/2021 5:00	2/17/2021 6:50	1.8	0.05	0.03	0.24	14.0	2/17/2021 5:00	2/17/2021 18:45	13.8	1.10	1.10	54,612
2/18/2021 14:50	2/18/2021 17:00	2.2	0.04	0.02	0.12	33.8	2/18/2021 14:45	2/19/2021 5:00	14.3	1.03	1.03	53,148
2/19/2021 15:55	2/19/2021 21:45	5.8	0.12	0.02	0.12	25.1	2/19/2021 15:55	2/20/2021 9:40	17.8	1.10	1.17	70,641
2/20/2021 22:20	2/20/2021 23:35	1.3	0.04	0.03	0.12	25.2	2/20/2021 22:15	2/21/2021 11:35	13.4	1.23	1.31	59,640
2/21/2021 21:40	2/22/2021 0:20	2.7	0.14	0.05	0.24	23.3	2/21/2021 21:40	2/22/2021 6:15	8.7	1.19	1.24	37,071
2/22/2021 6:15	2/22/2021 21:50	15.6	0.65	0.04	0.96	7.1	2/22/2021 6:15	2/23/2021 9:45	27.6	1.85	2.37	183,867
2/24/2021 10:00	2/24/2021 10:15	0.3	0.03	0.12	0.24	36.4	2/24/2021 9:55	2/24/2021 22:15	12.4	1.69	2.07	75,633
2/25/2021 1:55	2/25/2021 8:40	6.8	0.14	0.02	0.12	52.3	2/25/2021 1:50	2/25/2021 14:00	12.3	1.69	1.98	74,541
2/25/2021 14:00	2/25/2021 16:10	2.2	0.33	0.15	0.48	8.2	2/25/2021 14:00	2/25/2021 22:25	8.5	1.91	1.98	58,347
2/25/2021 22:25	2/26/2021 7:10	8.8	0.12	0.01	0.24	6.7	2/25/2021 22:25	2/26/2021 15:55	17.6	1.92	1.98	121,257
2/26/2021 15:55	2/26/2021 23:20	7.4	0.16	0.02	0.24	9.3	2/26/2021 15:55	2/27/2021 11:15	19.4	1.70	1.89	119,025
2/27/2021 23:35	2/28/2021 8:20	8.8	0.07	0.01	0.12	25.6	2/27/2021 23:35	2/28/2021 20:15	20.8	1.48	1.54	110,676
3/4/2021 16:00	3/4/2021 21:20	5.3	0.24	0.05	0.12	109.3	3/4/2021 15:55	3/5/2021 9:20	17.5	1.30	1.31	82,152
3/5/2021 9:50	3/5/2021 18:15	8.4	0.08	0.01	0.12	13.2	3/5/2021 9:45	3/6/2021 6:10	20.5	1.26	1.31	93,087
3/7/2021 3:45	3/7/2021 23:50	20.1	0.45	0.02	0.24	35.2	3/7/2021 3:40	3/8/2021 11:45	32.2	1.30	1.46	150,979
3/14/2021 11:00	3/14/2021 20:40	9.7	0.42	0.04	0.24	159.2	3/14/2021 11:00	3/15/2021 8:35	21.7	1.25	1.31	97,434
3/18/2021 16:00	3/18/2021 19:55	3.9	0.21	0.05	0.36	93.0	3/18/2021 15:55	3/19/2021 7:50	16.0	1.10	1.10	63,360
3/19/2021 23:40	3/20/2021 11:45	12.1	0.15	0.01	0.12	29.5	3/19/2021 23:35	3/20/2021 17:00	17.5	0.96	1.03	60,498
3/20/2021 17:00	3/21/2021 3:55	10.9	0.40	0.04	0.24	6.4	3/20/2021 17:00	3/21/2021 9:45	16.8	1.15	1.24	69,537
3/21/2021 9:50	3/21/2021 22:30	12.7	0.19	0.02	0.12	11.4	3/21/2021 9:45	3/22/2021 1:05	15.4	1.18	1.24	65,733
3/22/2021 1:05	3/22/2021 11:55	10.8	0.18	0.02	0.24	7.0	3/22/2021 1:05	3/22/2021 13:05	12.1	1.24	1.31	54,003

Table E-9. Summary Statistics for Individual Storm Events at the SEIMN Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
3/22/2021 13:10	3/22/2021 14:10	1.0	0.20	0.20	0.36	6.8	3/22/2021 13:05	3/23/2021 2:10	13.2	1.20	1.24	56,970
3/24/2021 12:05	3/25/2021 11:55	23.8	0.96	0.04	0.48	46.0	3/24/2021 12:00	3/25/2021 23:55	36.0	2.05	2.91	265,212
3/28/2021 10:05	3/29/2021 1:10	15.1	0.55	0.04	0.24	78.2	3/28/2021 10:05	3/29/2021 9:20	23.3	1.73	1.89	145,392
3/29/2021 9:20	3/29/2021 10:10	0.8	0.07	0.08	0.24	11.5	3/29/2021 9:20	3/29/2021 22:05	12.8	1.69	1.71	78,042
4/3/2021 22:15	4/4/2021 5:25	7.2	0.11	0.02	0.12	132.3	4/3/2021 22:15	4/4/2021 17:25	19.3	1.24	1.24	85,722
4/7/2021 11:50	4/7/2021 19:50	8.0	0.12	0.02	0.12	80.0	4/7/2021 11:45	4/7/2021 22:40	11.0	0.46	0.49	18,081
4/7/2021 22:45	4/8/2021 4:25	5.7	0.22	0.04	0.36	9.8	4/7/2021 22:40	4/8/2021 16:25	17.8	0.51	0.53	32,430
4/9/2021 22:45	4/10/2021 4:40	5.9	0.03	0.01	0.12	44.9	4/9/2021 22:40	4/10/2021 5:45	7.2	0.53	0.53	13,674
4/10/2021 5:50	4/10/2021 8:50	3.0	0.04	0.01	0.12	52.0	4/10/2021 5:45	4/10/2021 20:45	15.1	0.53	0.53	28,683
4/24/2021 0:30	4/25/2021 6:30	30.0	0.70	0.02	0.12	330.7	4/24/2021 0:30	4/25/2021 18:30	42.1	0.49	0.63	74,271
4/25/2021 19:55	4/26/2021 1:10	5.3	0.08	0.02	0.12	17.8	4/25/2021 19:50	4/26/2021 13:05	17.3	0.50	0.53	31,392
4/30/2021 6:20	4/30/2021 9:05	2.8	0.17	0.06	0.24	105.8	4/30/2021 6:20	4/30/2021 21:05	14.8	0.30	0.35	16,008
5/1/2021 17:55	5/1/2021 20:45	2.8	0.05	0.02	0.12	33.8	5/1/2021 17:55	5/2/2021 8:45	14.9	0.35	0.35	18,615
5/3/2021 14:55	5/4/2021 0:10	9.3	0.17	0.02	0.12	44.9	5/3/2021 14:55	5/4/2021 12:10	21.3	0.29	0.35	22,290
5/7/2021 7:45	5/7/2021 13:30	5.8	0.37	0.06	0.48	82.2	5/7/2021 7:45	5/8/2021 1:25	17.8	0.30	0.42	19,146
5/8/2021 22:20	5/9/2021 1:25	3.1	0.05	0.02	0.12	33.2	5/8/2021 22:15	5/9/2021 13:25	15.3	0.29	0.29	15,921
5/17/2021 18:25	5/17/2021 22:30	4.1	0.12	0.03	0.12	211.8	5/17/2021 18:25	5/18/2021 10:25	16.1	0.18	0.20	10,416
5/18/2021 13:35	5/18/2021 16:25	2.8	0.05	0.02	0.12	16.3	5/18/2021 13:35	5/18/2021 21:45	8.3	0.17	0.20	5,196
5/18/2021 21:50	5/19/2021 0:20	2.5	0.19	0.08	0.24	8.0	5/18/2021 21:45	5/19/2021 7:30	9.8	0.18	0.20	6,267
5/19/2021 7:35	5/19/2021 9:55	2.3	0.09	0.04	0.24	7.8	5/19/2021 7:30	5/19/2021 21:55	14.5	0.16	0.16	8,154
5/23/2021 9:40	5/23/2021 11:45	2.1	0.05	0.02	0.12	97.6	5/23/2021 9:40	5/23/2021 23:45	14.2	0.15	0.16	7,530
5/24/2021 1:30	5/24/2021 14:05	12.6	0.37	0.03	0.24	15.6	5/24/2021 1:25	5/25/2021 2:00	24.7	0.16	0.20	14,628
5/27/2021 3:35	5/27/2021 11:30	7.9	0.29	0.04	0.24	63.1	5/27/2021 3:30	5/27/2021 23:25	20.0	0.15	0.20	11,079
5/28/2021 8:05	5/28/2021 11:00	2.9	0.06	0.02	0.24	20.9	5/28/2021 8:00	5/28/2021 23:00	15.1	0.16	0.16	8,526
6/5/2021 2:35	6/5/2021 5:10	2.6	0.04	0.02	0.24	186.4	6/5/2021 2:35	6/5/2021 17:10	14.7	0.14	0.16	7,629
6/6/2021 10:30	6/7/2021 9:55	23.4	0.92	0.04	0.48	31.9	6/6/2021 10:25	6/7/2021 21:55	35.6	0.15	0.24	19,371
6/10/2021 6:50	6/10/2021 7:15	0.4	0.07	0.17	0.36	72.6	6/10/2021 6:45	6/10/2021 19:15	12.6	0.13	0.16	5,898
6/11/2021 10:05	6/11/2021 16:55	6.8	0.27	0.04	0.24	27.2	6/11/2021 10:05	6/11/2021 22:45	12.8	0.15	0.20	6,864
6/11/2021 22:45	6/12/2021 2:40	3.9	0.14	0.04	0.48	7.8	6/11/2021 22:45	6/12/2021 14:35	15.9	0.13	0.16	7,458
6/12/2021 22:25	6/13/2021 8:40	10.3	0.29	0.03	0.12	21.2	6/12/2021 22:25	6/13/2021 13:05	14.8	0.17	0.24	8,949
6/13/2021 13:10	6/13/2021 23:50	10.7	0.61	0.06	0.36	9.5	6/13/2021 13:05	6/14/2021 11:45	22.8	0.44	0.53	36,342
8/6/2021 3:50	8/6/2021 10:20	6.5	0.11	0.02	0.12	1279.	8/6/2021 3:45	8/6/2021 22:15	18.6	0.09	0.10	5,778
8/8/2021 3:35	8/8/2021 3:55	0.3	0.04	0.12	0.12	42.7	8/8/2021 3:30	8/8/2021 15:55	12.5	0.09	0.10	4,236
8/26/2021 21:40	8/27/2021 2:00	4.3	0.03	0.01	0.12	450.1	8/26/2021 21:40	8/27/2021 6:40	9.1	0.13	0.13	4,251
8/27/2021 6:45	8/27/2021 13:00	6.3	0.05	0.01	0.12	459.2	8/27/2021 6:40	8/28/2021 0:55	18.3	0.13	0.13	8,445
8/31/2021 1:50	8/31/2021 5:30	3.7	0.06	0.02	0.12	86.2	8/31/2021 1:50	8/31/2021 17:25	15.7	0.11	0.13	6,450
9/12/2021 7:00	9/12/2021 8:35	1.6	0.03	0.02	0.12	292.7	9/12/2021 6:55	9/12/2021 20:35	13.8	0.11	0.13	5,553
9/17/2021 4:45	9/17/2021 10:40	5.9	0.13	0.02	0.12	410.4	9/17/2021 4:40	9/17/2021 16:15	11.7	0.16	0.16	6,720
9/17/2021 16:15	9/18/2021 4:55	12.7	0.63	0.05	0.48	7.0	9/17/2021 16:15	9/18/2021 13:50	21.7	0.22	0.42	16,836
9/18/2021 13:50	9/18/2021 23:05	9.3	0.36	0.04	0.48	9.9	9/18/2021 13:50	9/19/2021 11:00	21.3	0.19	0.29	14,358
9/19/2021 16:25	9/19/2021 20:15	3.8	0.30	0.08	1.68	18.2	9/19/2021 16:25	9/20/2021 8:10	15.8	0.15	0.20	8,331
9/26/2021 13:35	9/27/2021 4:00	14.4	0.54	0.04	0.36	161.4	9/26/2021 13:30	9/27/2021 11:10	21.8	0.18	0.29	14,214
9/27/2021 11:15	9/27/2021 19:35	8.3	0.22	0.03	0.48	9.4	9/27/2021 11:10	9/27/2021 22:15	11.2	0.18	0.24	7,188
9/27/2021 22:15	9/28/2021 9:50	11.6	0.18	0.02	0.24	7.6	9/27/2021 22:15	9/28/2021 21:50	23.7	0.16	0.20	13,992
9/29/2021 13:45	9/29/2021 17:30	3.8	0.04	0.01	0.12	29.2	9/29/2021 13:40	9/29/2021 23:35	10.0	0.16	0.16	5,688
9/29/2021 23:40	9/30/2021 13:25	13.8	0.67	0.05	0.36	9.9	9/29/2021 23:35	10/1/2021 1:25	25.9	0.24	0.49	22,296

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Table E-10. Summary Statistics for Individual Storm Events at the SEIMS Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
10/4/2020 5:20	10/4/2020 10:30	5.2	0.05	0.01	0.12	0.0	10/4/2020 5:15	10/4/2020 22:25	17.3	0.29	0.29	17,913
10/9/2020 21:05	10/10/2020 15:45	18.7	1.33	0.07	1.80	132.5	10/9/2020 21:00	10/11/2020 3:40	30.8	0.57	1.25	63,300
10/11/2020 10:45	10/11/2020 19:40	8.9	0.35	0.04	0.24	19.2	10/11/2020 10:40	10/12/2020 2:45	16.2	0.41	0.61	23,925
10/12/2020 2:50	10/12/2020 9:10	6.3	0.46	0.07	0.60	9.4	10/12/2020 2:45	10/12/2020 21:10	18.5	0.43	0.61	28,950
10/13/2020 0:35	10/13/2020 7:00	6.4	0.41	0.06	0.36	15.9	10/13/2020 0:30	10/13/2020 18:55	18.5	0.47	0.87	30,978
10/14/2020 4:40	10/14/2020 8:40	4.0	0.03	0.01	0.12	22.1	10/14/2020 4:40	10/14/2020 20:35	16.0	0.25	0.25	14,400
10/16/2020 13:45	10/17/2020 2:45	13.0	0.37	0.03	0.48	79.2	10/16/2020 13:45	10/17/2020 14:45	25.1	0.34	0.55	30,795
10/18/2020 1:45	10/18/2020 17:10	15.4	0.26	0.02	0.24	24.5	10/18/2020 1:40	10/19/2020 5:10	27.6	0.32	0.37	31,449
10/19/2020 10:05	10/19/2020 18:30	8.4	0.44	0.05	0.24	20.5	10/19/2020 10:05	10/20/2020 6:30	20.5	0.48	0.87	35,154
10/20/2020 19:45	10/21/2020 5:00	9.3	0.10	0.01	0.24	25.7	10/20/2020 19:40	10/21/2020 10:05	14.5	0.31	0.37	16,014
10/21/2020 10:10	10/21/2020 11:30	1.3	0.03	0.02	0.12	6.9	10/21/2020 10:05	10/21/2020 23:25	13.4	0.30	0.33	14,655
10/23/2020 6:20	10/23/2020 8:50	2.5	0.08	0.03	0.12	51.1	10/23/2020 6:20	10/23/2020 17:10	10.9	0.30	0.33	11,685
10/23/2020 17:15	10/23/2020 23:50	6.6	0.10	0.02	0.12	9.2	10/23/2020 17:10	10/24/2020 11:45	18.7	0.31	0.37	20,544
10/28/2020 23:25	10/29/2020 7:00	7.6	0.04	0.01	0.12	125.2	10/28/2020 23:25	10/29/2020 18:55	19.6	0.29	0.29	20,445
10/30/2020 4:30	10/30/2020 10:05	5.6	0.16	0.03	0.24	154.3	10/30/2020 4:25	10/30/2020 22:05	17.8	0.32	0.41	20,475
11/3/2020 7:10	11/3/2020 14:45	7.6	0.71	0.09	0.36	94.3	11/3/2020 7:05	11/3/2020 21:45	14.8	0.70	1.51	37,029
11/3/2020 21:50	11/4/2020 9:10	11.3	0.22	0.02	0.24	7.4	11/3/2020 21:45	11/4/2020 15:45	18.1	0.39	0.45	25,287
11/4/2020 15:50	11/5/2020 0:55	9.1	0.38	0.04	0.48	8.9	11/4/2020 15:45	11/5/2020 7:05	15.4	0.50	0.73	27,792
11/5/2020 7:05	11/5/2020 15:30	8.4	0.42	0.05	0.60	6.2	11/5/2020 7:05	11/6/2020 3:30	20.5	0.52	0.94	38,400
11/9/2020 17:45	11/9/2020 23:00	5.3	0.12	0.02	0.12	99.0	11/9/2020 17:45	11/10/2020 8:10	14.5	0.34	0.37	17,910
11/10/2020 8:10	11/10/2020 14:05	5.9	0.08	0.01	0.12	10.7	11/10/2020 8:10	11/11/2020 2:00	17.9	0.32	0.33	20,769
11/12/2020 18:30	11/13/2020 6:40	12.2	0.57	0.05	0.24	53.4	11/12/2020 18:30	11/13/2020 18:40	24.3	0.46	0.87	39,867
11/14/2020 15:25	11/15/2020 4:20	12.9	0.32	0.02	0.12	33.7	11/14/2020 15:20	11/15/2020 16:15	25.0	0.35	0.50	31,911
11/16/2020 8:50	11/16/2020 18:05	9.3	0.53	0.06	0.24	34.5	11/16/2020 8:45	11/17/2020 6:00	21.3	0.50	1.01	38,154
11/17/2020 12:30	11/18/2020 15:30	27.0	0.96	0.04	1.32	19.8	11/17/2020 12:30	11/19/2020 3:30	39.1	0.52	1.25	73,584
11/20/2020 4:45	11/20/2020 8:00	3.3	0.03	0.01	0.12	37.8	11/20/2020 4:40	11/20/2020 20:00	15.4	0.33	0.33	18,315
11/22/2020 15:20	11/23/2020 13:25	22.1	0.39	0.02	0.24	96.4	11/22/2020 15:20	11/24/2020 1:25	34.2	0.37	0.50	45,738
11/24/2020 9:15	11/25/2020 6:30	21.3	0.65	0.03	0.36	20.5	11/24/2020 9:10	11/25/2020 18:30	33.4	0.50	1.01	60,381
11/27/2020 23:00	11/28/2020 2:20	3.3	0.14	0.04	0.12	70.4	11/27/2020 23:00	11/28/2020 10:30	11.6	0.36	0.41	15,069
11/28/2020 10:35	11/28/2020 11:55	1.3	0.10	0.08	0.12	9.2	11/28/2020 10:30	11/28/2020 23:55	13.5	0.37	0.41	17,922
11/30/2020 3:00	11/30/2020 6:45	3.8	0.35	0.09	0.24	39.7	11/30/2020 2:55	11/30/2020 18:40	15.8	0.66	1.09	37,581
12/8/2020 2:30	12/9/2020 7:45	29.3	0.93	0.03	0.24	187.9	12/8/2020 2:25	12/9/2020 19:40	41.3	0.65	1.25	96,315
12/10/2020 21:30	12/10/2020 21:55	0.4	0.03	0.07	0.12	38.8	12/10/2020 21:30	12/11/2020 9:55	12.5	0.45	0.45	20,250
12/13/2020 2:45	12/13/2020 17:20	14.6	0.20	0.01	0.12	92.1	12/13/2020 2:45	12/14/2020 0:20	21.7	0.46	0.55	36,258
12/14/2020 0:20	12/14/2020 11:25	11.1	0.12	0.01	0.24	12.6	12/14/2020 0:20	12/14/2020 23:25	23.2	0.44	0.50	36,846
12/14/2020 23:35	12/15/2020 10:55	11.3	0.12	0.01	0.12	16.1	12/14/2020 23:35	12/15/2020 22:50	23.3	0.48	0.55	40,227
12/16/2020 13:20	12/17/2020 4:35	15.3	0.47	0.03	0.24	28.6	12/16/2020 13:15	12/17/2020 10:50	21.7	0.78	1.25	61,011
12/17/2020 10:50	12/17/2020 20:00	9.2	0.15	0.02	0.12	10.2	12/17/2020 10:50	12/18/2020 1:05	14.3	0.66	0.87	34,017
12/18/2020 1:10	12/18/2020 9:35	8.4	0.25	0.03	0.12	6.9	12/18/2020 1:05	12/18/2020 17:55	16.9	0.67	0.94	40,512
12/18/2020 17:55	12/19/2020 3:10	9.3	0.70	0.08	0.36	8.8	12/18/2020 17:55	12/19/2020 12:30	18.7	1.15	2.82	77,244
12/19/2020 12:35	12/19/2020 21:10	8.6	0.26	0.03	0.24	9.7	12/19/2020 12:30	12/20/2020 9:10	20.8	0.96	1.17	71,376
12/21/2020 0:00	12/22/2020 12:30	36.5	2.08	0.06	0.72	28.1	12/20/2020 23:55	12/23/2020 0:30	48.7	2.35	6.60	411,469
12/25/2020 15:25	12/25/2020 23:15	7.8	0.52	0.07	0.24	75.1	12/25/2020 15:20	12/26/2020 11:10	19.9	1.00	1.51	71,778
12/26/2020 23:35	12/27/2020 3:05	3.5	0.04	0.01	0.12	24.9	12/26/2020 23:35	12/27/2020 15:00	15.5	0.74	0.80	41,400
12/29/2020 17:15	12/31/2020 8:00	38.8	1.18	0.03	0.24	65.7	12/29/2020 17:10	12/31/2020 20:00	50.9	1.07	1.81	196,014

Table E-10. Summary Statistics for Individual Storm Events at the SEIMS Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
12/31/2020 22:25	1/1/2021 3:40	5.3	0.05	0.01	0.12	20.4	12/31/2020 22:25	1/1/2021 6:20	8.0	0.74	0.87	21,351
1/1/2021 6:20	1/1/2021 8:05	1.8	0.03	0.02	0.12	7.8	1/1/2021 6:20	1/1/2021 14:15	8.0	0.69	0.73	19,746
1/1/2021 14:20	1/1/2021 20:35	6.3	0.26	0.04	0.36	10.7	1/1/2021 14:15	1/2/2021 3:10	13.0	0.91	1.42	42,687
1/2/2021 3:15	1/3/2021 1:20	22.1	1.55	0.07	0.72	10.5	1/2/2021 3:10	1/3/2021 8:55	29.8	1.91	4.77	205,242
1/3/2021 9:00	1/3/2021 10:10	1.2	0.09	0.08	0.24	8.2	1/3/2021 8:55	1/3/2021 17:45	8.9	2.01	2.55	64,620
1/3/2021 17:50	1/4/2021 15:15	21.4	0.82	0.04	0.48	8.1	1/3/2021 17:45	1/4/2021 21:10	27.5	1.67	2.29	164,982
1/4/2021 21:15	1/5/2021 1:55	4.7	0.06	0.01	0.12	6.8	1/4/2021 21:10	1/5/2021 7:25	10.3	1.36	1.60	50,613
1/5/2021 7:30	1/6/2021 4:10	20.7	0.95	0.05	0.24	9.6	1/5/2021 7:25	1/6/2021 16:05	32.8	1.76	2.55	207,693
1/7/2021 6:50	1/7/2021 8:10	1.3	0.06	0.05	0.12	27.5	1/7/2021 6:45	1/7/2021 20:10	13.5	1.06	1.17	51,723
1/8/2021 3:15	1/8/2021 15:35	12.3	0.21	0.02	0.24	19.7	1/8/2021 3:10	1/9/2021 3:35	24.5	0.97	1.17	85,979
1/10/2021 2:15	1/10/2021 6:25	4.2	0.04	0.01	0.12	35.1	1/10/2021 2:15	1/10/2021 16:00	13.8	0.73	0.80	36,336
1/10/2021 16:00	1/10/2021 16:45	0.8	0.03	0.04	0.12	13.8	1/10/2021 16:00	1/11/2021 4:40	12.8	0.68	0.73	31,221
1/11/2021 8:45	1/13/2021 5:10	44.4	2.30	0.05	0.48	30.5	1/11/2021 8:45	1/13/2021 17:10	56.5	1.88	3.41	382,806
1/14/2021 23:15	1/15/2021 5:35	6.3	0.11	0.02	0.12	46.7	1/14/2021 23:10	1/15/2021 17:35	18.5	0.92	1.09	61,441
1/16/2021 23:35	1/17/2021 5:40	6.1	0.14	0.02	0.12	42.5	1/16/2021 23:35	1/17/2021 17:35	18.1	0.75	0.94	49,032
1/24/2021 3:50	1/25/2021 0:30	20.7	0.29	0.01	0.12	169.0	1/24/2021 3:45	1/25/2021 12:30	32.8	0.66	0.80	78,105
1/27/2021 7:25	1/27/2021 9:15	1.8	0.07	0.04	0.12	58.3	1/27/2021 7:25	1/27/2021 21:10	13.8	0.63	0.73	31,350
1/28/2021 5:00	1/28/2021 13:05	8.1	0.13	0.02	0.12	20.6	1/28/2021 5:00	1/29/2021 1:05	20.2	0.68	0.73	49,308
1/29/2021 21:30	1/30/2021 11:30	14.0	0.14	0.01	0.24	33.2	1/29/2021 21:30	1/30/2021 18:20	20.9	0.68	0.80	51,342
1/30/2021 18:25	2/3/2021 2:50	80.4	1.96	0.02	0.48	9.8	1/30/2021 18:20	2/3/2021 14:50	92.6	1.56	2.82	521,533
2/4/2021 5:45	2/5/2021 9:10	27.4	0.98	0.04	0.24	32.5	2/4/2021 5:45	2/5/2021 21:10	39.5	1.24	2.04	175,917
2/6/2021 13:35	2/6/2021 16:15	2.7	0.30	0.11	0.24	30.6	2/6/2021 13:30	2/7/2021 4:15	14.8	1.21	1.60	64,608
2/7/2021 15:55	2/8/2021 11:30	19.6	0.87	0.04	0.48	23.9	2/7/2021 15:55	2/8/2021 23:25	31.6	1.50	1.93	170,268
2/12/2021 12:45	2/12/2021 14:30	1.8	0.08	0.05	0.60	97.4	2/12/2021 12:40	2/13/2021 2:25	13.8	0.72	0.73	35,958
2/15/2021 9:35	2/16/2021 16:10	30.6	1.54	0.05	0.48	68.8	2/15/2021 9:30	2/17/2021 4:10	42.8	1.28	1.71	196,698
2/17/2021 5:00	2/17/2021 6:50	1.8	0.05	0.03	0.24	14.0	2/17/2021 5:00	2/17/2021 18:45	13.8	1.10	1.17	54,690
2/18/2021 14:50	2/18/2021 17:00	2.2	0.04	0.02	0.12	33.8	2/18/2021 14:45	2/19/2021 5:00	14.3	1.06	1.17	54,732
2/19/2021 15:55	2/19/2021 21:45	5.8	0.12	0.02	0.12	25.1	2/19/2021 15:55	2/20/2021 9:40	17.8	1.14	1.25	73,194
2/20/2021 22:20	2/20/2021 23:35	1.3	0.04	0.03	0.12	25.2	2/20/2021 22:15	2/21/2021 11:35	13.4	0.95	1.01	46,095
2/21/2021 21:40	2/22/2021 0:20	2.7	0.14	0.05	0.24	23.3	2/21/2021 21:40	2/22/2021 6:15	8.7	1.00	1.17	31,182
2/22/2021 6:15	2/22/2021 21:50	15.6	0.65	0.04	0.96	7.1	2/22/2021 6:15	2/23/2021 9:45	27.6	1.25	2.04	123,651
2/24/2021 10:00	2/24/2021 10:15	0.3	0.03	0.12	0.24	36.4	2/24/2021 9:55	2/24/2021 22:15	12.4	0.82	0.87	36,600
2/25/2021 1:55	2/25/2021 8:40	6.8	0.14	0.02	0.12	52.3	2/25/2021 1:50	2/25/2021 14:00	12.3	0.84	0.87	37,107
2/25/2021 14:00	2/25/2021 16:10	2.2	0.33	0.15	0.48	8.2	2/25/2021 14:00	2/25/2021 22:25	8.5	1.15	1.71	35,250
2/25/2021 22:25	2/26/2021 7:10	8.8	0.12	0.01	0.24	6.7	2/25/2021 22:25	2/26/2021 15:55	17.6	0.87	0.94	54,756
2/26/2021 15:55	2/26/2021 23:20	7.4	0.16	0.02	0.24	9.3	2/26/2021 15:55	2/27/2021 11:15	19.4	0.81	0.94	56,319
2/27/2021 23:35	2/28/2021 8:20	8.8	0.07	0.01	0.12	25.6	2/27/2021 23:35	2/28/2021 20:15	20.8	0.70	0.73	52,137
3/4/2021 16:00	3/4/2021 21:20	5.3	0.24	0.05	0.12	109.3	3/4/2021 15:55	3/5/2021 9:20	17.5	0.72	0.94	45,210
3/5/2021 9:50	3/5/2021 18:15	8.4	0.08	0.01	0.12	13.2	3/5/2021 9:45	3/6/2021 6:10	20.5	0.62	0.67	45,720
3/7/2021 3:45	3/7/2021 23:50	20.1	0.45	0.02	0.24	35.2	3/7/2021 3:40	3/8/2021 11:45	32.2	0.73	1.17	84,879
3/14/2021 11:00	3/14/2021 20:40	9.7	0.42	0.04	0.24	159.2	3/14/2021 11:00	3/15/2021 8:35	21.7	0.71	1.09	55,272
3/18/2021 16:00	3/18/2021 19:55	3.9	0.21	0.05	0.36	93.0	3/18/2021 15:55	3/19/2021 7:50	16.0	0.60	0.73	34,641
3/19/2021 23:40	3/20/2021 11:45	12.1	0.15	0.01	0.12	29.5	3/19/2021 23:35	3/20/2021 17:00	17.5	0.56	0.61	35,280
3/20/2021 17:00	3/21/2021 3:55	10.9	0.40	0.04	0.24	6.4	3/20/2021 17:00	3/21/2021 9:45	16.8	0.79	1.01	47,805
3/21/2021 9:50	3/21/2021 22:30	12.7	0.19	0.02	0.12	11.4	3/21/2021 9:45	3/22/2021 1:05	15.4	0.70	0.73	38,823
3/22/2021 1:05	3/22/2021 11:55	10.8	0.18	0.02	0.24	7.0	3/22/2021 1:05	3/22/2021 13:05	12.1	0.78	1.01	33,846

Table E-10. Summary Statistics for Individual Storm Events at the SEIMS Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
3/22/2021 13:10	3/22/2021 14:10	1.0	0.20	0.20	0.36	6.8	3/22/2021 13:05	3/23/2021 2:10	13.2	0.64	0.73	30,282
3/24/2021 12:05	3/25/2021 11:55	23.8	0.96	0.04	0.48	46.0	3/24/2021 12:00	3/25/2021 23:55	36.0	1.16	2.96	150,936
3/28/2021 10:05	3/29/2021 1:10	15.1	0.55	0.04	0.24	78.2	3/28/2021 10:05	3/29/2021 9:20	23.3	0.89	1.25	74,880
3/29/2021 9:20	3/29/2021 10:10	0.8	0.07	0.08	0.24	11.5	3/29/2021 9:20	3/29/2021 22:05	12.8	0.71	0.73	32,880
4/3/2021 22:15	4/4/2021 5:25	7.2	0.11	0.02	0.12	132.3	4/3/2021 22:15	4/4/2021 17:25	19.3	0.49	0.55	34,260
4/7/2021 11:50	4/7/2021 19:50	8.0	0.12	0.02	0.12	80.0	4/7/2021 11:45	4/7/2021 22:40	11.0	0.46	0.50	18,405
4/7/2021 22:45	4/8/2021 4:25	5.7	0.22	0.04	0.36	9.8	4/7/2021 22:40	4/8/2021 16:25	17.8	0.53	0.73	34,104
4/9/2021 22:45	4/10/2021 4:40	5.9	0.03	0.01	0.12	44.9	4/9/2021 22:40	4/10/2021 5:45	7.2	0.45	0.45	11,610
4/10/2021 5:50	4/10/2021 8:50	3.0	0.04	0.01	0.12	52.0	4/10/2021 5:45	4/10/2021 20:45	15.1	0.44	0.45	23,655
4/24/2021 0:30	4/25/2021 6:30	30.0	0.70	0.02	0.12	330.7	4/24/2021 0:30	4/25/2021 18:30	42.1	0.51	0.80	77,052
4/25/2021 19:55	4/26/2021 1:10	5.3	0.08	0.02	0.12	17.8	4/25/2021 19:50	4/26/2021 13:05	17.3	0.42	0.45	26,208
4/30/2021 6:20	4/30/2021 9:05	2.8	0.17	0.06	0.24	105.8	4/30/2021 6:20	4/30/2021 21:05	14.8	0.41	0.50	21,783
5/1/2021 17:55	5/1/2021 20:45	2.8	0.05	0.02	0.12	33.8	5/1/2021 17:55	5/2/2021 8:45	14.9	0.37	0.37	19,869
5/3/2021 14:55	5/4/2021 0:10	9.3	0.17	0.02	0.12	44.9	5/3/2021 14:55	5/4/2021 12:10	21.3	0.43	0.50	32,847
5/7/2021 7:45	5/7/2021 13:30	5.8	0.37	0.06	0.48	82.2	5/7/2021 7:45	5/8/2021 1:25	17.8	0.45	0.67	28,614
5/8/2021 22:20	5/9/2021 1:25	3.1	0.05	0.02	0.12	33.2	5/8/2021 22:15	5/9/2021 13:25	15.3	0.36	0.41	20,001
5/17/2021 18:25	5/17/2021 22:30	4.1	0.12	0.03	0.12	211.8	5/17/2021 18:25	5/18/2021 10:25	16.1	0.33	0.37	19,251
5/18/2021 13:35	5/18/2021 16:25	2.8	0.05	0.02	0.12	16.3	5/18/2021 13:35	5/18/2021 21:45	8.3	0.30	0.33	9,009
5/18/2021 21:50	5/19/2021 0:20	2.5	0.19	0.08	0.24	8.0	5/18/2021 21:45	5/19/2021 7:30	9.8	0.36	0.41	12,594
5/19/2021 7:35	5/19/2021 9:55	2.3	0.09	0.04	0.24	7.8	5/19/2021 7:30	5/19/2021 21:55	14.5	0.37	0.45	19,458
5/23/2021 9:40	5/23/2021 11:45	2.1	0.05	0.02	0.12	97.6	5/23/2021 9:40	5/23/2021 23:45	14.2	0.33	0.33	16,830
5/24/2021 1:30	5/24/2021 14:05	12.6	0.37	0.03	0.24	15.6	5/24/2021 1:25	5/25/2021 2:00	24.7	0.39	0.50	34,266
5/27/2021 3:35	5/27/2021 11:30	7.9	0.29	0.04	0.24	63.1	5/27/2021 3:30	5/27/2021 23:25	20.0	0.38	0.50	27,000
5/28/2021 8:05	5/28/2021 11:00	2.9	0.06	0.02	0.24	20.9	5/28/2021 8:00	5/28/2021 23:00	15.1	0.34	0.37	18,351
6/5/2021 2:35	6/5/2021 5:10	2.6	0.04	0.02	0.24	186.4	6/5/2021 2:35	6/5/2021 17:10	14.7	0.29	0.29	15,288
6/6/2021 10:30	6/7/2021 9:55	23.4	0.92	0.04	0.48	31.9	6/6/2021 10:25	6/7/2021 21:55	35.6	0.46	0.87	59,235
6/10/2021 6:50	6/10/2021 7:15	0.4	0.07	0.17	0.36	72.6	6/10/2021 6:45	6/10/2021 19:15	12.6	0.31	0.33	13,833
6/11/2021 10:05	6/11/2021 16:55	6.8	0.27	0.04	0.24	27.2	6/11/2021 10:05	6/11/2021 22:45	12.8	0.40	0.50	18,492
6/11/2021 22:45	6/12/2021 2:40	3.9	0.14	0.04	0.48	7.8	6/11/2021 22:45	6/12/2021 14:35	15.9	0.43	0.67	24,351
6/12/2021 22:25	6/13/2021 8:40	10.3	0.29	0.03	0.12	21.2	6/12/2021 22:25	6/13/2021 13:05	14.8	0.44	0.61	23,292
6/13/2021 13:10	6/13/2021 23:50	10.7	0.61	0.06	0.36	9.5	6/13/2021 13:05	6/14/2021 11:45	22.8	0.67	1.60	54,615
8/6/2021 3:50	8/6/2021 10:20	6.5	0.11	0.02	0.12	1279.	8/6/2021 3:45	8/6/2021 22:15	18.6	0.23	0.29	15,177
8/8/2021 3:35	8/8/2021 3:55	0.3	0.04	0.12	0.12	42.7	8/8/2021 3:30	8/8/2021 15:55	12.5	0.21	0.22	9,405
8/26/2021 21:40	8/27/2021 2:00	4.3	0.03	0.01	0.12	450.1	8/26/2021 21:40	8/27/2021 6:40	9.1	0.19	0.19	6,213
8/27/2021 6:45	8/27/2021 13:00	6.3	0.05	0.01	0.12	459.2	8/27/2021 6:40	8/28/2021 0:55	18.3	0.20	0.25	13,215
8/31/2021 1:50	8/31/2021 5:30	3.7	0.06	0.02	0.12	86.2	8/31/2021 1:50	8/31/2021 17:25	15.7	0.19	0.22	10,869
9/12/2021 7:00	9/12/2021 8:35	1.6	0.03	0.02	0.12	292.7	9/12/2021 6:55	9/12/2021 20:35	13.8	0.18	0.19	9,072
9/17/2021 4:45	9/17/2021 10:40	5.9	0.13	0.02	0.12	410.4	9/17/2021 4:40	9/17/2021 16:15	11.7	0.21	0.22	8,673
9/17/2021 16:15	9/18/2021 4:55	12.7	0.63	0.05	0.48	7.0	9/17/2021 16:15	9/18/2021 13:50	21.7	0.38	1.01	29,757
9/18/2021 13:50	9/18/2021 23:05	9.3	0.36	0.04	0.48	9.9	9/18/2021 13:50	9/19/2021 11:00	21.3	0.33	0.61	25,239
9/19/2021 16:25	9/19/2021 20:15	3.8	0.30	0.08	1.68	18.2	9/19/2021 16:25	9/20/2021 8:10	15.8	0.28	0.45	15,888
9/26/2021 13:35	9/27/2021 4:00	14.4	0.54	0.04	0.36	161.4	9/26/2021 13:30	9/27/2021 11:10	21.8	0.33	0.61	25,950
9/27/2021 11:15	9/27/2021 19:35	8.3	0.22	0.03	0.48	9.4	9/27/2021 11:10	9/27/2021 22:15	11.2	0.35	0.67	14,103
9/27/2021 22:15	9/28/2021 9:50	11.6	0.18	0.02	0.24	7.6	9/27/2021 22:15	9/28/2021 21:50	23.7	0.26	0.33	22,275
9/29/2021 13:45	9/29/2021 17:30	3.8	0.04	0.01	0.12	29.2	9/29/2021 13:40	9/29/2021 23:35	10.0	0.21	0.22	7,452
9/29/2021 23:40	9/30/2021 13:25	13.8	0.67	0.05	0.36	9.9	9/29/2021 23:35	10/1/2021 1:25	25.9	0.41	1.17	37,902

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Table E-11. Summary Statistics for Individual Storm Events at the COUMO Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
10/4/2020 1:55	10/4/2020 8:15	6.3	0.08	0.01	0.12	0.0	10/4/2020 1:50	10/4/2020 20:10	18.4	0.18	0.24	11,877
10/9/2020 20:55	10/10/2020 8:05	11.2	1.11	0.10	0.60	133.6	10/9/2020 20:55	10/10/2020 20:00	23.2	0.79	5.18	65,646
10/11/2020 10:30	10/11/2020 19:30	9.0	0.31	0.03	0.24	28.6	10/11/2020 10:25	10/12/2020 3:00	16.7	0.30	1.11	18,255
10/12/2020 3:05	10/12/2020 9:45	6.7	0.89	0.13	0.60	10.5	10/12/2020 3:00	10/12/2020 21:40	18.8	1.21	4.71	81,642
10/13/2020 0:45	10/13/2020 6:55	6.2	0.54	0.09	0.36	16.6	10/13/2020 0:40	10/13/2020 18:55	18.3	1.15	6.21	75,906
10/16/2020 14:10	10/17/2020 3:45	13.6	0.47	0.03	0.48	79.4	10/16/2020 14:10	10/17/2020 15:40	25.6	0.52	3.30	47,709
10/18/2020 2:00	10/18/2020 2:10	0.2	0.03	0.18	0.12	25.2	10/18/2020 2:00	10/18/2020 8:10	6.3	0.25	0.31	5,571
10/18/2020 8:10	10/18/2020 16:40	8.5	0.16	0.02	0.12	31.3	10/18/2020 8:10	10/19/2020 4:40	20.6	0.30	0.59	22,071
10/19/2020 9:25	10/19/2020 19:55	10.5	0.52	0.05	0.24	20.8	10/19/2020 9:20	10/20/2020 7:55	22.7	0.76	2.79	61,893
10/20/2020 19:35	10/21/2020 9:50	14.3	0.34	0.02	0.96	25.2	10/20/2020 19:30	10/21/2020 21:50	26.4	0.71	10.14	67,986
10/23/2020 6:30	10/23/2020 8:55	2.4	0.07	0.03	0.12	44.9	10/23/2020 6:30	10/23/2020 17:35	11.2	0.32	0.41	12,786
10/23/2020 17:40	10/23/2020 23:40	6.0	0.11	0.02	0.12	9.8	10/23/2020 17:35	10/24/2020 11:35	18.1	0.35	1.20	22,758
10/29/2020 2:00	10/29/2020 7:50	5.8	0.05	0.01	0.12	127.5	10/29/2020 2:00	10/29/2020 19:50	17.9	0.26	0.31	16,566
10/30/2020 4:20	10/30/2020 7:50	3.5	0.03	0.01	0.12	24.2	10/30/2020 4:20	10/30/2020 19:50	15.6	0.31	0.41	17,580
11/3/2020 7:10	11/3/2020 15:55	8.8	0.98	0.11	0.72	123.1	11/3/2020 7:05	11/3/2020 21:40	14.7	1.77	6.21	93,270
11/3/2020 21:40	11/4/2020 8:50	11.2	0.15	0.01	0.12	7.1	11/3/2020 21:40	11/4/2020 15:40	18.1	0.67	1.49	43,458
11/4/2020 15:40	11/5/2020 0:20	8.7	0.27	0.03	0.24	9.5	11/4/2020 15:40	11/5/2020 7:05	15.5	0.83	2.64	46,050
11/5/2020 7:05	11/5/2020 15:10	8.1	0.29	0.04	0.24	6.9	11/5/2020 7:05	11/6/2020 3:10	20.2	0.89	2.95	64,290
11/9/2020 18:05	11/9/2020 22:45	4.7	0.14	0.03	0.24	99.4	11/9/2020 18:00	11/10/2020 10:40	16.8	0.44	0.95	26,679
11/12/2020 18:10	11/13/2020 6:05	11.9	0.51	0.04	0.24	68.6	11/12/2020 18:10	11/13/2020 18:00	23.9	0.73	2.64	62,646
11/14/2020 15:15	11/14/2020 23:25	8.2	0.33	0.04	0.12	33.5	11/14/2020 15:10	11/15/2020 11:25	20.3	0.51	1.39	37,200
11/15/2020 22:55	11/15/2020 23:50	0.9	0.03	0.03	0.12	26.0	11/15/2020 22:50	11/16/2020 8:45	10.0	0.28	0.36	9,954
11/16/2020 8:45	11/16/2020 19:05	10.3	0.52	0.05	0.24	35.8	11/16/2020 8:45	11/17/2020 7:05	22.4	0.86	3.30	69,132
11/17/2020 12:25	11/18/2020 18:15	29.8	0.99	0.03	1.08	18.9	11/17/2020 12:20	11/19/2020 6:10	41.9	1.02	10.52	153,717
11/20/2020 0:15	11/20/2020 7:35	7.3	0.04	0.01	0.12	33.5	11/20/2020 0:10	11/20/2020 19:30	19.4	0.32	0.36	22,644
11/22/2020 15:15	11/22/2020 22:10	6.9	0.10	0.01	0.12	96.5	11/22/2020 15:10	11/23/2020 4:40	13.6	0.27	0.59	13,395
11/23/2020 4:40	11/23/2020 12:55	8.3	0.18	0.02	0.24	12.2	11/23/2020 4:40	11/24/2020 0:55	20.3	0.36	1.03	26,133
11/24/2020 8:35	11/25/2020 2:50	18.3	0.50	0.03	0.24	19.9	11/24/2020 8:35	11/25/2020 5:45	21.3	0.63	2.64	48,426
11/25/2020 5:45	11/25/2020 9:10	3.4	0.04	0.01	0.12	7.0	11/25/2020 5:45	11/25/2020 21:10	15.5	0.33	0.46	18,342
11/27/2020 23:15	11/28/2020 1:55	2.7	0.07	0.03	0.12	65.5	11/27/2020 23:10	11/28/2020 11:25	12.3	0.28	0.59	12,630
11/28/2020 11:25	11/28/2020 12:15	0.8	0.03	0.04	0.12	10.6	11/28/2020 11:25	11/29/2020 0:10	12.8	0.24	0.27	11,160
11/30/2020 1:45	11/30/2020 7:10	5.4	0.41	0.08	0.24	48.9	11/30/2020 1:40	11/30/2020 19:05	17.5	0.70	3.30	44,178
12/8/2020 0:40	12/9/2020 7:10	30.5	0.91	0.03	0.24	186.2	12/8/2020 0:40	12/9/2020 19:10	42.6	0.70	2.64	107,964
12/13/2020 2:10	12/13/2020 18:00	15.8	0.18	0.01	0.12	91.3	12/13/2020 2:10	12/13/2020 23:45	21.7	0.22	0.59	17,031
12/13/2020 23:45	12/14/2020 10:10	10.4	0.10	0.01	0.12	13.5	12/13/2020 23:45	12/14/2020 22:10	22.5	0.20	0.31	16,470
12/14/2020 23:45	12/15/2020 11:00	11.3	0.15	0.01	0.12	16.4	12/14/2020 23:45	12/15/2020 23:00	23.3	0.25	0.52	21,198
12/16/2020 13:00	12/17/2020 4:10	15.2	0.42	0.03	0.12	28.3	12/16/2020 13:00	12/17/2020 15:55	27.0	0.48	1.39	46,410
12/17/2020 16:00	12/17/2020 22:45	6.8	0.29	0.04	0.36	14.2	12/17/2020 15:55	12/18/2020 1:40	9.8	0.65	2.49	22,851
12/18/2020 1:45	12/18/2020 8:55	7.2	0.22	0.03	0.12	7.2	12/18/2020 1:40	12/18/2020 17:50	16.3	0.54	1.29	31,740
12/18/2020 17:50	12/19/2020 1:40	7.8	0.26	0.03	0.36	9.5	12/18/2020 17:50	12/19/2020 12:10	18.4	0.51	2.20	33,495
12/19/2020 12:15	12/19/2020 21:30	9.3	0.26	0.03	0.12	11.4	12/19/2020 12:10	12/20/2020 9:30	21.4	0.55	1.11	42,594
12/21/2020 0:10	12/22/2020 4:15	28.1	2.14	0.08	0.72	28.2	12/21/2020 0:10	12/22/2020 9:40	33.6	2.78	24.50	335,640
12/22/2020 9:40	12/22/2020 11:10	1.5	0.06	0.04	0.12	7.4	12/22/2020 9:40	12/22/2020 23:10	13.6	0.66	0.88	32,481

Table E-11. Summary Statistics for Individual Storm Events at the COUMO Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
12/25/2020 15:20	12/26/2020 0:30	9.2	0.49	0.05	0.12	76.7	12/25/2020 15:20	12/26/2020 12:30	21.3	0.53	1.60	40,719
12/26/2020 23:25	12/27/2020 1:00	1.6	0.03	0.02	0.12	24.8	12/26/2020 23:25	12/27/2020 6:40	7.3	0.20	0.24	5,298
12/27/2020 6:40	12/27/2020 11:15	4.6	0.07	0.02	0.12	32.0	12/27/2020 6:40	12/27/2020 23:10	16.6	0.20	0.31	12,009
12/29/2020 17:05	12/31/2020 8:15	39.2	1.01	0.03	0.24	55.9	12/29/2020 17:00	12/31/2020 20:10	51.3	0.55	1.82	100,929
12/31/2020 22:20	1/1/2021 6:55	8.6	0.05	0.01	0.12	16.1	12/31/2020 22:20	1/1/2021 14:00	15.8	0.24	0.27	13,704
1/1/2021 14:00	1/1/2021 22:00	8.0	0.29	0.04	0.48	12.6	1/1/2021 14:00	1/2/2021 4:40	14.8	0.57	3.48	30,225
1/2/2021 4:45	1/3/2021 7:05	26.3	1.62	0.06	0.36	12.0	1/2/2021 4:40	1/3/2021 8:55	28.3	2.49	11.33	253,986
1/3/2021 9:00	1/3/2021 10:40	1.7	0.10	0.06	0.12	7.9	1/3/2021 8:55	1/3/2021 17:00	8.2	1.21	2.07	35,484
1/3/2021 17:05	1/4/2021 14:50	21.8	0.70	0.03	0.36	7.2	1/3/2021 17:00	1/5/2021 2:45	33.8	1.53	6.06	186,006
1/5/2021 11:50	1/6/2021 3:50	16.0	0.94	0.06	0.24	21.7	1/5/2021 11:45	1/6/2021 15:45	28.1	2.61	6.34	263,766
1/8/2021 3:10	1/8/2021 15:20	12.2	0.22	0.02	0.48	49.4	1/8/2021 3:10	1/9/2021 3:20	24.3	0.62	1.78	54,231
1/10/2021 1:50	1/10/2021 6:10	4.3	0.06	0.01	0.12	34.8	1/10/2021 1:50	1/10/2021 18:10	16.4	0.41	0.52	24,438
1/11/2021 8:25	1/13/2021 0:20	39.9	2.45	0.06	0.72	30.0	1/11/2021 8:25	1/13/2021 12:20	52.0	3.53	13.21	660,946
1/14/2021 23:05	1/15/2021 5:25	6.3	0.14	0.02	0.12	46.9	1/14/2021 23:00	1/15/2021 17:25	18.5	1.14	2.47	75,651
1/17/2021 0:25	1/17/2021 5:10	4.8	0.09	0.02	0.12	47.5	1/17/2021 0:20	1/17/2021 17:10	16.9	0.74	1.24	45,000
1/21/2021 2:45	1/21/2021 8:10	5.4	0.06	0.01	0.12	96.4	1/21/2021 2:45	1/21/2021 20:10	17.5	0.46	0.60	28,686
1/24/2021 5:30	1/24/2021 22:00	16.5	0.23	0.01	0.12	71.0	1/24/2021 5:25	1/25/2021 9:55	28.6	0.45	0.97	46,518
1/25/2021 17:05	1/25/2021 18:30	1.4	0.14	0.10	0.24	21.2	1/25/2021 17:00	1/26/2021 6:30	13.6	0.53	1.78	25,869
1/27/2021 6:40	1/27/2021 9:40	3.0	0.08	0.03	0.12	36.7	1/27/2021 6:40	1/27/2021 21:40	15.1	0.32	0.60	17,559
1/28/2021 4:15	1/28/2021 12:30	8.3	0.22	0.03	0.12	19.8	1/28/2021 4:15	1/29/2021 0:30	20.3	0.48	1.24	35,373
1/29/2021 21:10	1/30/2021 9:45	12.6	0.14	0.01	0.24	36.9	1/29/2021 21:10	1/30/2021 18:10	21.1	0.37	1.44	28,314
1/30/2021 18:10	2/3/2021 6:35	84.4	2.10	0.02	0.60	20.5	1/30/2021 18:10	2/3/2021 18:30	96.4	1.49	10.33	515,686
2/4/2021 7:10	2/5/2021 13:25	30.3	0.63	0.02	0.24	28.9	2/4/2021 7:10	2/6/2021 1:25	42.3	1.24	3.90	188,459
2/6/2021 13:55	2/6/2021 17:40	3.8	0.31	0.08	0.60	29.2	2/6/2021 13:50	2/7/2021 5:35	15.8	1.06	3.50	60,480
2/7/2021 17:50	2/7/2021 18:55	1.1	0.09	0.08	0.12	24.5	2/7/2021 17:45	2/8/2021 2:10	8.5	0.75	1.34	22,872
2/8/2021 2:15	2/8/2021 9:50	7.6	0.27	0.04	0.24	8.0	2/8/2021 2:10	2/8/2021 21:45	19.7	0.85	2.47	60,153
2/14/2021 11:50	2/14/2021 13:55	2.1	0.03	0.01	0.12	146.5	2/14/2021 11:45	2/15/2021 1:50	14.2	0.76	1.91	38,838
2/15/2021 8:40	2/16/2021 5:50	21.2	0.59	0.03	0.24	167.3	2/15/2021 8:40	2/16/2021 17:45	33.2	1.57	3.31	187,097
2/16/2021 18:40	2/16/2021 23:35	4.9	0.04	0.01	0.12	16.6	2/16/2021 18:40	2/17/2021 6:55	12.3	0.82	1.44	36,489
2/17/2021 6:55	2/17/2021 7:10	0.3	0.04	0.16	0.24	12.2	2/17/2021 6:55	2/17/2021 19:05	12.3	0.69	1.05	30,549
2/18/2021 11:10	2/18/2021 16:50	5.7	0.05	0.01	0.12	28.2	2/18/2021 11:10	2/19/2021 4:50	17.8	0.46	0.69	29,481
2/19/2021 13:50	2/19/2021 21:50	8.0	0.16	0.02	0.12	25.9	2/19/2021 13:50	2/20/2021 9:45	20.0	0.47	1.05	33,945
2/21/2021 21:35	2/22/2021 1:55	4.3	0.15	0.03	0.12	50.6	2/21/2021 21:30	2/22/2021 6:50	9.4	0.50	1.05	16,836
2/22/2021 6:50	2/22/2021 16:20	9.5	0.29	0.03	0.36	7.8	2/22/2021 6:50	2/23/2021 4:20	21.6	0.58	4.33	44,715
2/25/2021 2:15	2/25/2021 6:20	4.1	0.15	0.04	0.12	58.1	2/25/2021 2:15	2/25/2021 14:10	12.0	0.39	0.69	16,953
2/25/2021 14:15	2/25/2021 16:35	2.3	0.13	0.06	0.36	8.8	2/25/2021 14:10	2/26/2021 4:30	14.4	0.34	1.34	17,784
2/26/2021 20:50	2/27/2021 5:30	8.7	0.25	0.03	0.48	29.3	2/26/2021 20:50	2/27/2021 9:30	12.8	0.59	2.79	27,261
2/27/2021 9:35	2/27/2021 9:50	0.3	0.03	0.12	0.12	8.9	2/27/2021 9:30	2/27/2021 21:50	12.4	0.29	0.33	13,152
2/28/2021 0:05	2/28/2021 2:55	2.8	0.05	0.02	0.12	18.6	2/28/2021 0:00	2/28/2021 14:55	15.0	0.26	0.45	13,827
3/2/2021 8:35	3/2/2021 11:05	2.5	0.04	0.02	0.12	54.7	3/2/2021 8:35	3/2/2021 23:00	14.5	0.17	0.20	9,072
3/4/2021 15:30	3/4/2021 21:15	5.8	0.31	0.05	0.12	54.9	3/4/2021 15:30	3/5/2021 8:55	17.5	0.37	0.89	23,343
3/5/2021 8:55	3/5/2021 17:15	8.3	0.14	0.02	0.24	12.3	3/5/2021 8:55	3/6/2021 5:10	20.3	0.24	0.39	17,790
3/7/2021 3:00	3/7/2021 12:20	9.3	0.18	0.02	0.12	34.0	3/7/2021 2:55	3/7/2021 16:05	13.3	0.27	0.89	13,089
3/7/2021 16:10	3/7/2021 22:00	5.8	0.24	0.04	0.24	6.7	3/7/2021 16:05	3/8/2021 9:55	17.9	0.31	0.97	19,989

Table E-11. Summary Statistics for Individual Storm Events at the COUMO Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
3/14/2021 11:00	3/14/2021 20:35	9.6	0.35	0.04	0.24	159.7	3/14/2021 11:00	3/15/2021 8:35	21.7	0.32	0.78	25,188
3/18/2021 16:00	3/18/2021 19:20	3.3	0.17	0.05	0.48	93.3	3/18/2021 15:55	3/19/2021 7:20	15.5	0.23	0.45	12,828
3/19/2021 21:40	3/20/2021 8:30	10.8	0.13	0.01	0.12	27.7	3/19/2021 21:40	3/20/2021 16:30	18.9	0.19	0.45	13,101
3/20/2021 16:35	3/21/2021 3:40	11.1	0.65	0.06	0.60	10.9	3/20/2021 16:30	3/21/2021 9:30	17.1	0.74	4.11	45,777
3/21/2021 9:35	3/21/2021 18:10	8.6	0.11	0.01	0.12	12.9	3/21/2021 9:30	3/22/2021 3:10	17.8	0.34	0.45	21,558
3/22/2021 3:10	3/22/2021 13:35	10.4	0.31	0.03	0.36	13.8	3/22/2021 3:10	3/23/2021 1:30	22.4	0.50	2.18	40,632
3/24/2021 12:55	3/25/2021 6:20	17.4	0.71	0.04	0.48	54.1	3/24/2021 12:55	3/25/2021 18:20	29.5	0.85	3.13	90,399
3/28/2021 9:55	3/28/2021 22:40	12.8	0.43	0.03	0.24	76.8	3/28/2021 9:55	3/29/2021 10:40	24.8	0.42	1.34	37,188
4/3/2021 19:10	4/4/2021 4:55	9.8	0.10	0.01	0.12	143.6	4/3/2021 19:05	4/4/2021 16:50	21.8	0.18	0.33	14,523
4/7/2021 12:50	4/7/2021 16:20	3.5	0.05	0.01	0.12	85.6	4/7/2021 12:45	4/7/2021 22:30	9.8	0.32	0.39	11,196
4/7/2021 22:35	4/8/2021 6:35	8.0	0.24	0.03	0.24	9.5	4/7/2021 22:30	4/8/2021 18:30	20.1	0.27	1.14	19,716
4/10/2021 5:25	4/10/2021 9:05	3.7	0.09	0.02	0.24	50.6	4/10/2021 5:25	4/10/2021 21:00	15.7	0.17	0.33	9,399
4/24/2021 0:20	4/25/2021 6:55	30.6	0.68	0.02	0.24	327.4	4/24/2021 0:20	4/25/2021 18:55	42.7	0.29	1.24	44,127
4/25/2021 19:40	4/25/2021 23:25	3.8	0.12	0.03	0.60	17.8	4/25/2021 19:40	4/26/2021 11:25	15.8	0.18	0.24	10,449
4/30/2021 5:35	4/30/2021 8:25	2.8	0.15	0.05	0.12	104.8	4/30/2021 5:35	4/30/2021 20:25	14.9	0.16	0.33	8,589
5/1/2021 16:10	5/1/2021 21:05	4.9	0.04	0.01	0.12	32.7	5/1/2021 16:05	5/2/2021 9:00	17.0	0.13	0.14	7,800
5/3/2021 14:35	5/4/2021 0:40	10.1	0.42	0.04	0.36	46.4	5/3/2021 14:35	5/4/2021 12:40	22.2	0.27	1.05	21,606
5/7/2021 8:15	5/7/2021 13:10	4.9	0.27	0.05	0.36	79.9	5/7/2021 8:10	5/8/2021 1:10	17.1	0.19	0.97	11,790
5/8/2021 23:40	5/9/2021 2:40	3.0	0.03	0.01	0.12	37.4	5/8/2021 23:35	5/9/2021 14:35	15.1	0.14	0.20	7,722
5/17/2021 18:10	5/17/2021 21:55	3.8	0.11	0.03	0.12	247.9	5/17/2021 18:10	5/18/2021 9:55	15.8	0.14	0.20	7,893
5/18/2021 17:30	5/19/2021 0:25	6.9	0.65	0.09	1.32	21.7	5/18/2021 17:25	5/19/2021 11:15	17.9	0.81	12.53	52,068
5/19/2021 11:20	5/19/2021 11:20	0.0	0.02	0.00	0.24	12.0	5/19/2021 11:15	5/19/2021 18:20	7.2	0.23	0.29	5,979
5/19/2021 18:25	5/19/2021 19:15	0.8	0.03	0.04	0.12	19.1	5/19/2021 18:20	5/20/2021 7:15	13.0	0.20	0.24	9,552
5/24/2021 1:45	5/24/2021 13:15	11.5	0.14	0.01	0.12	122.4	5/24/2021 1:40	5/25/2021 1:15	23.7	0.17	0.24	14,316
5/27/2021 3:25	5/27/2021 11:35	8.2	0.30	0.04	0.24	63.7	5/27/2021 3:20	5/27/2021 23:35	20.3	0.28	0.89	20,655
6/5/2021 2:25	6/5/2021 6:25	4.0	0.03	0.01	0.12	207.3	6/5/2021 2:25	6/5/2021 18:20	16.0	0.12	0.20	7,116
6/6/2021 13:00	6/7/2021 6:45	17.8	0.69	0.04	0.60	241.9	6/6/2021 13:00	6/7/2021 18:40	29.8	0.40	2.63	42,390
6/11/2021 10:30	6/11/2021 16:40	6.2	0.31	0.05	0.24	100.5	6/11/2021 10:30	6/11/2021 22:30	12.1	0.35	0.97	15,201
6/11/2021 22:30	6/12/2021 1:20	2.8	0.24	0.08	1.20	7.3	6/11/2021 22:30	6/12/2021 13:15	14.8	0.49	4.55	26,400
6/12/2021 22:05	6/13/2021 6:40	8.6	0.34	0.04	0.24	21.8	6/12/2021 22:05	6/13/2021 12:55	14.9	0.51	1.55	27,636
6/13/2021 12:55	6/13/2021 23:50	10.9	0.66	0.06	0.36	9.5	6/13/2021 12:55	6/14/2021 5:45	16.9	1.13	4.11	69,057
6/14/2021 5:45	6/14/2021 13:15	7.5	0.07	0.01	0.24	6.2	6/14/2021 5:45	6/15/2021 1:15	19.6	0.35	0.52	24,819
7/20/2021 7:10	7/20/2021 8:35	1.4	0.07	0.05	0.12	860.5	7/20/2021 7:05	7/20/2021 20:35	13.6	0.11	0.14	5,484
8/6/2021 0:00	8/6/2021 10:10	10.2	0.18	0.02	0.12	399.8	8/5/2021 23:55	8/6/2021 22:05	22.3	0.13	0.20	10,677
8/8/2021 3:05	8/8/2021 4:15	1.2	0.06	0.05	0.12	41.2	8/8/2021 3:00	8/8/2021 16:15	13.3	0.11	0.17	5,202
8/26/2021 20:30	8/27/2021 2:05	5.6	0.05	0.01	0.12	449.1	8/26/2021 20:25	8/27/2021 12:00	15.7	0.14	0.17	7,866
8/27/2021 12:00	8/27/2021 12:55	0.9	0.03	0.03	0.12	15.2	8/27/2021 12:00	8/28/2021 0:55	13.0	0.13	0.14	5,961
9/12/2021 6:45	9/12/2021 7:40	0.9	0.05	0.05	0.12	394.0	9/12/2021 6:45	9/12/2021 19:40	13.0	0.15	0.20	6,981
9/17/2021 4:55	9/17/2021 16:10	11.3	0.12	0.01	0.12	117.8	9/17/2021 4:50	9/17/2021 21:20	16.6	0.10	0.17	6,078
9/17/2021 21:20	9/18/2021 5:40	8.3	0.83	0.10	0.72	12.8	9/17/2021 21:20	9/18/2021 13:30	16.3	1.03	4.33	60,441
9/18/2021 13:35	9/18/2021 22:55	9.3	0.27	0.03	0.24	9.9	9/18/2021 13:30	9/19/2021 10:50	21.4	0.43	1.66	33,462
9/19/2021 16:40	9/19/2021 17:00	0.3	0.05	0.15	0.12	18.8	9/19/2021 16:40	9/20/2021 5:00	12.4	0.23	0.29	10,302
9/26/2021 13:30	9/27/2021 4:00	14.5	0.51	0.04	0.36	164.8	9/26/2021 13:25	9/27/2021 14:00	24.7	0.51	3.70	45,384
9/27/2021 14:00	9/28/2021 6:55	16.9	0.30	0.02	0.36	12.2	9/27/2021 14:00	9/28/2021 18:55	29.0	0.40	2.63	42,225
9/29/2021 23:35	9/30/2021 13:20	13.8	0.49	0.04	0.24	46.8	9/29/2021 23:35	10/1/2021 1:15	25.8	0.55	2.63	51,324

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Table E-12. Summary Statistics for Individual Storm Events at the COUMI Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
10/4/2020 1:55	10/4/2020 8:15	6.3	0.08	0.01	0.12	0.0	10/4/2020 1:50	10/4/2020 20:10	18.4	0.08	0.09	5,331
10/9/2020 20:55	10/10/2020 8:05	11.2	1.11	0.10	0.60	133.6	10/9/2020 20:55	10/10/2020 20:00	23.2	0.29	1.24	24,141
10/11/2020 10:30	10/11/2020 19:30	9.0	0.31	0.03	0.24	28.6	10/11/2020 10:25	10/12/2020 3:00	16.7	0.15	0.44	8,862
10/12/2020 3:05	10/12/2020 9:45	6.7	0.89	0.13	0.60	10.5	10/12/2020 3:00	10/12/2020 21:40	18.8	0.42	1.13	28,038
10/13/2020 0:45	10/13/2020 6:55	6.2	0.54	0.09	0.36	16.6	10/13/2020 0:40	10/13/2020 18:55	18.3	0.32	1.03	21,018
10/16/2020 14:10	10/17/2020 3:45	13.6	0.47	0.03	0.48	79.4	10/16/2020 14:10	10/17/2020 15:40	25.6	0.14	0.85	12,657
10/18/2020 2:00	10/18/2020 2:10	0.2	0.03	0.18	0.12	25.2	10/18/2020 2:00	10/18/2020 8:10	6.3	0.10	0.11	2,208
10/18/2020 8:10	10/18/2020 16:40	8.5	0.16	0.02	0.12	31.3	10/18/2020 8:10	10/19/2020 4:40	20.6	0.10	0.13	7,671
10/19/2020 9:25	10/19/2020 19:55	10.5	0.52	0.05	0.24	20.8	10/19/2020 9:20	10/20/2020 7:55	22.7	0.19	0.69	15,333
10/20/2020 19:35	10/21/2020 9:50	14.3	0.34	0.02	0.96	25.2	10/20/2020 19:30	10/21/2020 21:50	26.4	0.16	1.03	15,126
10/23/2020 6:30	10/23/2020 8:55	2.4	0.07	0.03	0.12	44.9	10/23/2020 6:30	10/23/2020 17:35	11.2	0.09	0.10	3,627
10/23/2020 17:40	10/23/2020 23:40	6.0	0.11	0.02	0.12	9.8	10/23/2020 17:35	10/24/2020 11:35	18.1	0.10	0.24	6,237
10/29/2020 2:00	10/29/2020 7:50	5.8	0.05	0.01	0.12	127.5	10/29/2020 2:00	10/29/2020 19:50	17.9	0.08	0.09	5,187
10/30/2020 4:20	10/30/2020 7:50	3.5	0.03	0.01	0.12	24.2	10/30/2020 4:20	10/30/2020 19:50	15.6	0.08	0.09	4,512
11/3/2020 7:10	11/3/2020 15:55	8.8	0.98	0.11	0.72	123.1	11/3/2020 7:05	11/3/2020 21:40	14.7	0.51	1.48	27,078
11/3/2020 21:40	11/4/2020 8:50	11.2	0.15	0.01	0.12	7.1	11/3/2020 21:40	11/4/2020 15:40	18.1	0.20	0.49	13,065
11/4/2020 15:40	11/5/2020 0:20	8.7	0.27	0.03	0.24	9.5	11/4/2020 15:40	11/5/2020 7:05	15.5	0.22	0.85	12,540
11/5/2020 7:05	11/5/2020 15:10	8.1	0.29	0.04	0.24	6.9	11/5/2020 7:05	11/6/2020 3:10	20.2	0.25	0.85	18,084
11/9/2020 18:05	11/9/2020 22:45	4.7	0.14	0.03	0.24	99.4	11/9/2020 18:00	11/10/2020 10:40	16.8	0.10	0.18	6,159
11/12/2020 18:10	11/13/2020 6:05	11.9	0.51	0.04	0.24	68.6	11/12/2020 18:10	11/13/2020 18:00	23.9	0.21	1.03	18,336
11/14/2020 15:15	11/14/2020 23:25	8.2	0.33	0.04	0.12	33.5	11/14/2020 15:10	11/15/2020 11:25	20.3	0.14	0.30	10,296
11/15/2020 22:55	11/15/2020 23:50	0.9	0.03	0.03	0.12	26.0	11/15/2020 22:50	11/16/2020 8:45	10.0	0.10	0.11	3,528
11/16/2020 8:45	11/16/2020 19:05	10.3	0.52	0.05	0.24	35.8	11/16/2020 8:45	11/17/2020 7:05	22.4	0.22	0.77	17,646
11/17/2020 12:25	11/18/2020 18:15	29.8	0.99	0.03	1.08	18.9	11/17/2020 12:20	11/19/2020 6:10	41.9	0.27	1.13	40,107
11/20/2020 0:15	11/20/2020 7:35	7.3	0.04	0.01	0.12	33.5	11/20/2020 0:10	11/20/2020 19:30	19.4	0.11	0.12	7,491
11/22/2020 15:15	11/22/2020 22:10	6.9	0.10	0.01	0.12	96.5	11/22/2020 15:10	11/23/2020 4:40	13.6	0.09	0.15	4,638
11/23/2020 4:40	11/23/2020 12:55	8.3	0.18	0.02	0.24	12.2	11/23/2020 4:40	11/24/2020 0:55	20.3	0.12	0.30	8,472
11/24/2020 8:35	11/25/2020 2:50	18.3	0.50	0.03	0.24	19.9	11/24/2020 8:35	11/25/2020 5:45	21.3	0.18	0.77	13,773
11/25/2020 5:45	11/25/2020 9:10	3.4	0.04	0.01	0.12	7.0	11/25/2020 5:45	11/25/2020 21:10	15.5	0.12	0.15	6,960
11/27/2020 23:15	11/28/2020 1:55	2.7	0.07	0.03	0.12	65.5	11/27/2020 23:10	11/28/2020 11:25	12.3	0.10	0.13	4,341
11/28/2020 11:25	11/28/2020 12:15	0.8	0.03	0.04	0.12	10.6	11/28/2020 11:25	11/29/2020 0:10	12.8	0.09	0.10	4,206
11/30/2020 1:45	11/30/2020 7:10	5.4	0.41	0.08	0.24	48.9	11/30/2020 1:40	11/30/2020 19:05	17.5	0.20	0.85	12,591
12/8/2020 0:40	12/9/2020 7:10	30.5	0.91	0.03	0.24	186.2	12/8/2020 0:40	12/9/2020 19:10	42.6	0.23	0.85	35,454
12/13/2020 2:10	12/13/2020 18:00	15.8	0.18	0.01	0.12	91.3	12/13/2020 2:10	12/13/2020 23:45	21.7	0.12	0.20	9,042
12/13/2020 23:45	12/14/2020 10:10	10.4	0.10	0.01	0.12	13.5	12/13/2020 23:45	12/14/2020 22:10	22.5	0.11	0.13	8,811
12/14/2020 23:45	12/15/2020 11:00	11.3	0.15	0.01	0.12	16.4	12/14/2020 23:45	12/15/2020 23:00	23.3	0.10	0.15	8,352
12/16/2020 13:00	12/17/2020 4:10	15.2	0.42	0.03	0.12	28.3	12/16/2020 13:00	12/17/2020 15:55	27.0	0.21	0.62	20,757
12/17/2020 16:00	12/17/2020 22:45	6.8	0.29	0.04	0.36	14.2	12/17/2020 15:55	12/18/2020 1:40	9.8	0.43	1.48	15,051
12/18/2020 1:45	12/18/2020 8:55	7.2	0.22	0.03	0.12	7.2	12/18/2020 1:40	12/18/2020 17:50	16.3	0.41	0.94	23,820
12/18/2020 17:50	12/19/2020 1:40	7.8	0.26	0.03	0.36	9.5	12/18/2020 17:50	12/19/2020 12:10	18.4	0.41	1.48	27,306
12/19/2020 12:15	12/19/2020 21:30	9.3	0.26	0.03	0.12	11.4	12/19/2020 12:10	12/20/2020 9:30	21.4	0.44	0.94	33,708
12/21/2020 0:10	12/22/2020 4:15	28.1	2.14	0.08	0.72	28.2	12/21/2020 0:10	12/22/2020 9:40	33.6	1.06	6.16	128,091
12/22/2020 9:40	12/22/2020 11:10	1.5	0.06	0.04	0.12	7.4	12/22/2020 9:40	12/22/2020 23:10	13.6	0.35	0.48	17,349
12/25/2020 15:20	12/26/2020 0:30	9.2	0.49	0.05	0.12	76.7	12/25/2020 15:20	12/26/2020 12:30	21.3	0.20	0.44	14,919
12/26/2020 23:25	12/27/2020 1:00	1.6	0.03	0.02	0.12	24.8	12/26/2020 23:25	12/27/2020 6:40	7.3	0.12	0.17	3,105

Table E-12. Summary Statistics for Individual Storm Events at the COUMI Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
12/27/2020 6:40	12/27/2020 11:15	4.6	0.07	0.02	0.12	32.0	12/27/2020 6:40	12/27/2020 23:10	16.6	0.11	0.17	6,474
12/29/2020 17:05	12/31/2020 8:15	39.2	1.01	0.03	0.24	55.9	12/29/2020 17:00	12/31/2020 20:10	51.3	0.24	0.66	44,211
12/31/2020 22:20	1/1/2021 6:55	8.6	0.05	0.01	0.12	16.1	12/31/2020 22:20	1/1/2021 14:00	15.8	0.16	0.22	8,850
1/1/2021 14:00	1/1/2021 22:00	8.0	0.29	0.04	0.48	12.6	1/1/2021 14:00	1/2/2021 4:40	14.8	0.30	1.70	16,056
1/2/2021 4:45	1/3/2021 7:05	26.3	1.62	0.06	0.36	12.0	1/2/2021 4:40	1/3/2021 8:55	28.3	1.24	5.44	126,150
1/3/2021 9:00	1/3/2021 10:40	1.7	0.10	0.06	0.12	7.9	1/3/2021 8:55	1/3/2021 17:00	8.2	0.75	1.30	21,915
1/3/2021 17:05	1/4/2021 14:50	21.8	0.70	0.03	0.36	7.2	1/3/2021 17:00	1/5/2021 2:45	33.8	0.52	0.98	63,516
1/5/2021 11:50	1/6/2021 3:50	16.0	0.94	0.06	0.24	21.7	1/5/2021 11:45	1/6/2021 15:45	28.1	0.64	0.98	64,245
1/8/2021 3:10	1/8/2021 15:20	12.2	0.22	0.02	0.48	49.4	1/8/2021 3:10	1/9/2021 3:20	24.3	0.21	0.44	18,567
1/10/2021 1:50	1/10/2021 6:10	4.3	0.06	0.01	0.12	34.8	1/10/2021 1:50	1/10/2021 18:10	16.4	0.09	0.14	5,331
1/11/2021 8:25	1/13/2021 0:20	39.9	2.45	0.06	0.72	30.0	1/11/2021 8:25	1/13/2021 12:20	52.0	0.80	1.42	150,588
1/14/2021 23:05	1/15/2021 5:25	6.3	0.14	0.02	0.12	46.9	1/14/2021 23:00	1/15/2021 17:25	18.5	0.29	0.54	19,386
1/17/2021 0:25	1/17/2021 5:10	4.8	0.09	0.02	0.12	47.5	1/17/2021 0:20	1/17/2021 17:10	16.9	0.13	0.25	7,842
1/21/2021 2:45	1/21/2021 8:10	5.4	0.06	0.01	0.12	96.4	1/21/2021 2:45	1/21/2021 20:10	17.5	0.04	0.07	2,415
1/24/2021 5:30	1/24/2021 22:00	16.5	0.23	0.01	0.12	71.0	1/24/2021 5:25	1/25/2021 9:55	28.6	0.05	0.17	4,902
1/25/2021 17:05	1/25/2021 18:30	1.4	0.14	0.10	0.24	21.2	1/25/2021 17:00	1/26/2021 6:30	13.6	0.11	0.44	5,160
1/27/2021 6:40	1/27/2021 9:40	3.0	0.08	0.03	0.12	36.7	1/27/2021 6:40	1/27/2021 21:40	15.1	0.07	0.14	3,624
1/28/2021 4:15	1/28/2021 12:30	8.3	0.22	0.03	0.12	19.8	1/28/2021 4:15	1/29/2021 0:30	20.3	0.11	0.28	7,842
1/29/2021 21:10	1/30/2021 9:45	12.6	0.14	0.01	0.24	36.9	1/29/2021 21:10	1/30/2021 18:10	21.1	0.11	0.48	8,334
1/30/2021 18:10	2/3/2021 6:35	84.4	2.10	0.02	0.60	20.5	1/30/2021 18:10	2/3/2021 18:30	96.4	0.50	1.30	172,737
2/4/2021 7:10	2/5/2021 13:25	30.3	0.63	0.02	0.24	28.9	2/4/2021 7:10	2/6/2021 1:25	42.3	0.45	1.08	69,015
2/6/2021 13:55	2/6/2021 17:40	3.8	0.31	0.08	0.60	29.2	2/6/2021 13:50	2/7/2021 5:35	15.8	0.43	1.08	24,591
2/7/2021 17:50	2/7/2021 18:55	1.1	0.09	0.08	0.12	24.5	2/7/2021 17:45	2/8/2021 2:10	8.5	0.32	0.60	9,822
2/8/2021 2:15	2/8/2021 9:50	7.6	0.27	0.04	0.24	8.0	2/8/2021 2:10	2/8/2021 21:45	19.7	0.38	0.89	26,877
2/14/2021 11:50	2/14/2021 13:55	2.1	0.03	0.01	0.12	146.5	2/14/2021 11:45	2/15/2021 1:50	14.2	0.27	0.73	13,722
2/15/2021 8:40	2/16/2021 5:50	21.2	0.59	0.03	0.24	167.3	2/15/2021 8:40	2/16/2021 17:45	33.2	0.70	1.18	83,991
2/16/2021 18:40	2/16/2021 23:35	4.9	0.04	0.01	0.12	16.6	2/16/2021 18:40	2/17/2021 6:55	12.3	0.47	0.81	20,694
2/17/2021 6:55	2/17/2021 7:10	0.3	0.04	0.16	0.24	12.2	2/17/2021 6:55	2/17/2021 19:05	12.3	0.37	0.54	16,218
2/18/2021 11:10	2/18/2021 16:50	5.7	0.05	0.01	0.12	28.2	2/18/2021 11:10	2/19/2021 4:50	17.8	0.26	0.35	16,758
2/19/2021 13:50	2/19/2021 21:50	8.0	0.16	0.02	0.12	25.9	2/19/2021 13:50	2/20/2021 9:45	20.0	0.24	0.54	17,013
2/21/2021 21:35	2/22/2021 1:55	4.3	0.15	0.03	0.12	50.6	2/21/2021 21:30	2/22/2021 6:50	9.4	0.21	0.48	7,092
2/22/2021 6:50	2/22/2021 16:20	9.5	0.29	0.03	0.36	7.8	2/22/2021 6:50	2/23/2021 4:20	21.6	0.28	1.18	22,113
2/25/2021 2:15	2/25/2021 6:20	4.1	0.15	0.04	0.12	58.1	2/25/2021 2:15	2/25/2021 14:10	12.0	0.20	0.35	8,640
2/25/2021 14:15	2/25/2021 16:35	2.3	0.13	0.06	0.36	8.8	2/25/2021 14:10	2/26/2021 4:30	14.4	0.21	0.73	10,824
2/26/2021 20:50	2/27/2021 5:30	8.7	0.25	0.03	0.48	29.3	2/26/2021 20:50	2/27/2021 9:30	12.8	0.36	1.18	16,482
2/27/2021 9:35	2/27/2021 9:50	0.3	0.03	0.12	0.12	8.9	2/27/2021 9:30	2/27/2021 21:50	12.4	0.22	0.25	9,843
2/28/2021 0:05	2/28/2021 2:55	2.8	0.05	0.02	0.12	18.6	2/28/2021 0:00	2/28/2021 14:55	15.0	0.19	0.31	10,293
3/2/2021 8:35	3/2/2021 11:05	2.5	0.04	0.02	0.12	54.7	3/2/2021 8:35	3/2/2021 23:00	14.5	0.10	0.14	5,442
3/4/2021 15:30	3/4/2021 21:15	5.8	0.31	0.05	0.12	54.9	3/4/2021 15:30	3/5/2021 8:55	17.5	0.22	0.60	13,821
3/5/2021 8:55	3/5/2021 17:15	8.3	0.14	0.02	0.24	12.3	3/5/2021 8:55	3/6/2021 5:10	20.3	0.13	0.28	9,396
3/7/2021 3:00	3/7/2021 12:20	9.3	0.18	0.02	0.12	34.0	3/7/2021 2:55	3/7/2021 16:05	13.3	0.17	0.73	8,046
3/7/2021 16:10	3/7/2021 22:00	5.8	0.24	0.04	0.24	6.7	3/7/2021 16:05	3/8/2021 9:55	17.9	0.23	0.98	15,147
3/14/2021 11:00	3/14/2021 20:35	9.6	0.35	0.04	0.24	159.7	3/14/2021 11:00	3/15/2021 8:35	21.7	0.15	0.54	11,604
3/18/2021 16:00	3/18/2021 19:20	3.3	0.17	0.05	0.48	93.3	3/18/2021 15:55	3/19/2021 7:20	15.5	0.12	0.35	6,429
3/19/2021 21:40	3/20/2021 8:30	10.8	0.13	0.01	0.12	27.7	3/19/2021 21:40	3/20/2021 16:30	18.9	0.10	0.35	7,050
3/20/2021 16:35	3/21/2021 3:40	11.1	0.65	0.06	0.60	10.9	3/20/2021 16:30	3/21/2021 9:30	17.1	0.68	2.01	42,018

Table E-12. Summary Statistics for Individual Storm Events at the COUMI Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
3/21/2021 9:35	3/21/2021 18:10	8.6	0.11	0.01	0.12	12.9	3/21/2021 9:30	3/22/2021 3:10	17.8	0.35	0.48	22,170
3/22/2021 3:10	3/22/2021 13:35	10.4	0.31	0.03	0.36	13.8	3/22/2021 3:10	3/23/2021 1:30	22.4	0.51	1.85	40,797
3/24/2021 12:55	3/25/2021 6:20	17.4	0.71	0.04	0.48	54.1	3/24/2021 12:55	3/25/2021 18:20	29.5	0.89	2.19	94,134
3/28/2021 9:55	3/28/2021 22:40	12.8	0.43	0.03	0.24	76.8	3/28/2021 9:55	3/29/2021 10:40	24.8	0.46	1.30	41,271
4/3/2021 19:10	4/4/2021 4:55	9.8	0.10	0.01	0.12	143.6	4/3/2021 19:05	4/4/2021 16:50	21.8	0.17	0.28	13,443
4/7/2021 12:50	4/7/2021 16:20	3.5	0.05	0.01	0.12	85.6	4/7/2021 12:45	4/7/2021 22:30	9.8	0.14	0.17	5,001
4/7/2021 22:35	4/8/2021 6:35	8.0	0.24	0.03	0.24	9.5	4/7/2021 22:30	4/8/2021 18:30	20.1	0.24	0.81	17,025
4/10/2021 5:25	4/10/2021 9:05	3.7	0.09	0.02	0.24	50.6	4/10/2021 5:25	4/10/2021 21:00	15.7	0.16	0.31	9,096
4/24/2021 0:20	4/25/2021 6:55	30.6	0.68	0.02	0.24	327.4	4/24/2021 0:20	4/25/2021 18:55	42.7	0.19	0.73	28,977
4/25/2021 19:40	4/25/2021 23:25	3.8	0.12	0.03	0.60	17.8	4/25/2021 19:40	4/26/2021 11:25	15.8	0.10	0.17	5,892
4/30/2021 5:35	4/30/2021 8:25	2.8	0.15	0.05	0.12	104.8	4/30/2021 5:35	4/30/2021 20:25	14.9	0.07	0.12	3,591
5/1/2021 16:10	5/1/2021 21:05	4.9	0.04	0.01	0.12	32.7	5/1/2021 16:05	5/2/2021 9:00	17.0	0.06	0.06	3,429
5/3/2021 14:35	5/4/2021 0:40	10.1	0.42	0.04	0.36	46.4	5/3/2021 14:35	5/4/2021 12:40	22.2	0.09	0.25	7,278
5/7/2021 8:15	5/7/2021 13:10	4.9	0.27	0.05	0.36	79.9	5/7/2021 8:10	5/8/2021 1:10	17.1	0.08	0.28	4,836
5/8/2021 23:40	5/9/2021 2:40	3.0	0.03	0.01	0.12	37.4	5/8/2021 23:35	5/9/2021 14:35	15.1	0.06	0.07	3,057
5/17/2021 18:10	5/17/2021 21:55	3.8	0.11	0.03	0.12	247.9	5/17/2021 18:10	5/18/2021 9:55	15.8	0.06	0.10	3,648
5/18/2021 17:30	5/19/2021 0:25	6.9	0.65	0.09	1.32	21.7	5/18/2021 17:25	5/19/2021 11:15	17.9	0.15	3.09	9,888
5/19/2021 11:20	5/19/2021 11:20	0.0	0.02	0.00	0.24	12.0	5/19/2021 11:15	5/19/2021 18:20	7.2	0.06	0.07	1,641
5/19/2021 18:25	5/19/2021 19:15	0.8	0.03	0.04	0.12	19.1	5/19/2021 18:20	5/20/2021 7:15	13.0	0.05	0.07	2,526
5/24/2021 1:45	5/24/2021 13:15	11.5	0.14	0.01	0.12	122.4	5/24/2021 1:40	5/25/2021 1:15	23.7	0.04	0.06	3,783
5/27/2021 3:25	5/27/2021 11:35	8.2	0.30	0.04	0.24	63.7	5/27/2021 3:20	5/27/2021 23:35	20.3	0.06	0.17	4,485
6/5/2021 2:25	6/5/2021 6:25	4.0	0.03	0.01	0.12	207.3	6/5/2021 2:25	6/5/2021 18:20	16.0	0.03	0.04	1,896
6/6/2021 13:00	6/7/2021 6:45	17.8	0.69	0.04	0.60	241.9	6/6/2021 13:00	6/7/2021 18:40	29.8	0.08	0.54	8,397
6/11/2021 10:30	6/11/2021 16:40	6.2	0.31	0.05	0.24	100.5	6/11/2021 10:30	6/11/2021 22:30	12.1	0.07	0.19	2,961
6/11/2021 22:30	6/12/2021 1:20	2.8	0.24	0.08	1.20	7.3	6/11/2021 22:30	6/12/2021 13:15	14.8	0.09	1.30	4,665
6/12/2021 22:05	6/13/2021 6:40	8.6	0.34	0.04	0.24	21.8	6/12/2021 22:05	6/13/2021 12:55	14.9	0.09	0.25	4,695
6/13/2021 12:55	6/13/2021 23:50	10.9	0.66	0.06	0.36	9.5	6/13/2021 12:55	6/14/2021 5:45	16.9	0.18	0.73	11,019
6/14/2021 5:45	6/14/2021 13:15	7.5	0.07	0.01	0.24	6.2	6/14/2021 5:45	6/15/2021 1:15	19.6	0.07	0.10	4,956
7/20/2021 7:10	7/20/2021 8:35	1.4	0.07	0.05	0.12	860.5	7/20/2021 7:05	7/20/2021 20:35	13.6	0.04	0.05	1,974
8/6/2021 0:00	8/6/2021 10:10	10.2	0.18	0.02	0.12	399.8	8/5/2021 23:55	8/6/2021 22:05	22.3	0.04	0.06	3,159
8/8/2021 3:05	8/8/2021 4:15	1.2	0.06	0.05	0.12	41.2	8/8/2021 3:00	8/8/2021 16:15	13.3	0.04	0.05	1,767
8/26/2021 20:30	8/27/2021 2:05	5.6	0.05	0.01	0.12	449.1	8/26/2021 20:25	8/27/2021 12:00	15.7	0.03	0.03	1,692
8/27/2021 12:00	8/27/2021 12:55	0.9	0.03	0.03	0.12	15.2	8/27/2021 12:00	8/28/2021 0:55	13.0	0.03	0.04	1,410
9/12/2021 6:45	9/12/2021 7:40	0.9	0.05	0.05	0.12	394.0	9/12/2021 6:45	9/12/2021 19:40	13.0	0.03	0.04	1,272
9/17/2021 4:55	9/17/2021 16:10	11.3	0.12	0.01	0.12	117.8	9/17/2021 4:50	9/17/2021 21:20	16.6	0.03	0.04	1,854
9/17/2021 21:20	9/18/2021 5:40	8.3	0.83	0.10	0.72	12.8	9/17/2021 21:20	9/18/2021 13:30	16.3	0.17	1.08	9,936
9/18/2021 13:35	9/18/2021 22:55	9.3	0.27	0.03	0.24	9.9	9/18/2021 13:30	9/19/2021 10:50	21.4	0.08	0.39	6,168
9/19/2021 16:40	9/19/2021 17:00	0.3	0.05	0.15	0.12	18.8	9/19/2021 16:40	9/20/2021 5:00	12.4	0.04	0.07	1,836
9/26/2021 13:30	9/27/2021 4:00	14.5	0.51	0.04	0.36	164.8	9/26/2021 13:25	9/27/2021 14:00	24.7	0.08	0.73	7,377
9/27/2021 14:00	9/28/2021 6:55	16.9	0.30	0.02	0.36	12.2	9/27/2021 14:00	9/28/2021 18:55	29.0	0.07	0.66	7,518
9/29/2021 23:35	9/30/2021 13:20	13.8	0.49	0.04	0.24	46.8	9/29/2021 23:35	10/1/2021 1:15	25.8	0.08	0.44	7,665

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Table E-13. Summary Statistics for Individual Storm Events at the TYLMO Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
10/9/2020 20:25	10/10/2020 8:05	11.7	0.99	0.08	0.60	0.0	10/9/2020 20:25	10/10/2020 15:20	19.0	1.35	5.82	92,139
10/10/2020 15:20	10/10/2020 15:40	0.3	0.11	0.33	0.60	9.7	10/10/2020 15:20	10/11/2020 3:40	12.4	0.53	3.20	23,691
10/11/2020 10:30	10/11/2020 17:50	7.3	0.35	0.05	0.36	19.0	10/11/2020 10:30	10/12/2020 2:55	16.5	0.71	2.71	42,405
10/12/2020 2:55	10/12/2020 9:15	6.3	0.31	0.05	0.12	10.2	10/12/2020 2:55	10/12/2020 21:10	18.3	0.74	2.06	48,693
10/13/2020 0:10	10/13/2020 7:00	6.8	0.46	0.07	0.48	15.4	10/13/2020 0:10	10/13/2020 18:55	18.8	0.94	4.72	64,008
10/16/2020 14:50	10/17/2020 4:40	13.8	0.30	0.02	0.36	80.3	10/16/2020 14:50	10/17/2020 16:40	25.9	0.39	2.48	36,771
10/18/2020 1:50	10/18/2020 15:50	14.0	0.16	0.01	0.24	23.5	10/18/2020 1:50	10/19/2020 3:50	26.1	0.18	0.50	17,106
10/19/2020 10:30	10/19/2020 18:25	7.9	0.56	0.07	0.84	20.4	10/19/2020 10:25	10/20/2020 6:20	20.0	1.08	5.82	77,841
10/21/2020 1:40	10/21/2020 9:30	7.8	0.06	0.01	0.24	31.6	10/21/2020 1:40	10/21/2020 11:15	9.7	0.28	0.58	9,630
10/21/2020 11:20	10/21/2020 11:25	0.1	0.05	0.60	0.36	7.7	10/21/2020 11:15	10/21/2020 23:25	12.3	0.20	0.76	8,679
10/23/2020 6:20	10/23/2020 8:50	2.5	0.08	0.03	0.12	43.0	10/23/2020 6:20	10/23/2020 17:25	11.2	0.17	0.58	6,645
10/23/2020 17:25	10/23/2020 23:20	5.9	0.09	0.02	0.12	9.5	10/23/2020 17:25	10/24/2020 11:15	17.9	0.19	0.87	12,393
10/29/2020 2:50	10/29/2020 6:10	3.3	0.04	0.01	0.12	128.8	10/29/2020 2:45	10/29/2020 18:10	15.5	0.07	0.11	3,912
10/30/2020 4:55	10/30/2020 9:15	4.3	0.09	0.02	0.36	26.1	10/30/2020 4:50	10/30/2020 21:10	16.4	0.15	0.67	8,745
11/3/2020 7:10	11/3/2020 14:55	7.8	0.78	0.10	0.48	94.2	11/3/2020 7:05	11/3/2020 22:15	15.3	1.67	7.56	91,797
11/3/2020 22:15	11/4/2020 9:10	10.9	0.18	0.02	0.24	7.9	11/3/2020 22:15	11/4/2020 15:40	17.5	0.70	1.87	44,040
11/4/2020 15:45	11/5/2020 15:25	23.7	0.65	0.03	0.60	9.1	11/4/2020 15:40	11/6/2020 3:25	35.8	1.02	5.82	132,195
11/9/2020 18:10	11/9/2020 22:35	4.4	0.12	0.03	0.24	99.5	11/9/2020 18:10	11/10/2020 8:10	14.1	0.30	1.10	15,072
11/10/2020 8:10	11/10/2020 13:40	5.5	0.04	0.01	0.12	10.9	11/10/2020 8:10	11/11/2020 1:40	17.6	0.15	0.21	9,789
11/12/2020 18:45	11/13/2020 6:05	11.3	0.57	0.05	0.24	58.6	11/12/2020 18:40	11/13/2020 18:00	23.4	0.81	3.48	68,646
11/14/2020 15:15	11/14/2020 23:30	8.3	0.28	0.03	0.12	33.5	11/14/2020 15:10	11/15/2020 11:25	20.3	0.57	1.53	41,742
11/16/2020 4:55	11/16/2020 18:20	13.4	0.58	0.04	0.36	31.8	11/16/2020 4:50	11/17/2020 6:20	25.6	0.96	5.07	88,629
11/17/2020 12:30	11/18/2020 15:30	27.0	1.00	0.04	0.48	18.9	11/17/2020 12:30	11/19/2020 3:30	39.1	1.29	8.54	181,980
11/20/2020 5:05	11/20/2020 7:40	2.6	0.03	0.01	0.12	38.3	11/20/2020 5:00	11/20/2020 19:40	14.8	0.29	0.37	15,225
11/22/2020 15:10	11/22/2020 22:25	7.3	0.09	0.01	0.12	96.4	11/22/2020 15:10	11/23/2020 4:40	13.6	0.17	0.43	8,379
11/23/2020 4:40	11/23/2020 13:10	8.5	0.24	0.03	0.24	12.2	11/23/2020 4:40	11/24/2020 1:05	20.5	0.41	1.23	30,585
11/24/2020 9:00	11/24/2020 23:20	14.3	0.46	0.03	0.36	20.7	11/24/2020 8:55	11/25/2020 11:15	26.4	0.75	4.38	71,496
11/27/2020 23:25	11/28/2020 4:45	5.3	0.08	0.02	0.12	73.7	11/27/2020 23:25	11/28/2020 16:40	17.3	0.19	0.67	11,751
11/30/2020 2:50	11/30/2020 7:15	4.4	0.41	0.09	0.24	49.4	11/30/2020 2:45	11/30/2020 19:15	16.6	0.86	4.06	51,054
12/8/2020 1:15	12/9/2020 7:45	30.5	0.82	0.03	0.24	186.6	12/8/2020 1:15	12/9/2020 19:40	42.5	0.68	2.71	103,296
12/13/2020 2:15	12/13/2020 16:40	14.4	0.17	0.01	0.12	91.0	12/13/2020 2:10	12/14/2020 0:00	21.9	0.20	0.58	15,681
12/14/2020 0:05	12/14/2020 10:30	10.4	0.06	0.01	0.12	13.2	12/14/2020 0:00	12/14/2020 22:25	22.5	0.12	0.37	9,651
12/15/2020 4:45	12/15/2020 11:10	6.4	0.12	0.02	0.12	22.8	12/15/2020 4:40	12/15/2020 23:10	18.6	0.23	0.76	15,198
12/16/2020 13:15	12/17/2020 4:30	15.3	0.43	0.03	0.24	28.7	12/16/2020 13:15	12/17/2020 15:45	26.6	0.74	3.76	70,701
12/17/2020 15:50	12/17/2020 18:45	2.9	0.13	0.04	0.24	15.3	12/17/2020 15:45	12/18/2020 1:45	10.1	0.96	4.06	34,929
12/18/2020 1:45	12/18/2020 9:15	7.5	0.23	0.03	0.12	8.0	12/18/2020 1:45	12/18/2020 17:45	16.1	0.74	2.26	42,591
12/18/2020 17:50	12/19/2020 2:45	8.9	0.51	0.06	0.24	9.1	12/18/2020 17:45	12/19/2020 12:20	18.7	1.34	5.44	89,820
12/19/2020 12:25	12/19/2020 21:00	8.6	0.26	0.03	0.24	9.9	12/19/2020 12:20	12/20/2020 8:55	20.7	0.93	2.26	69,219
12/20/2020 23:55	12/22/2020 3:10	27.3	2.19	0.08	0.72	28.2	12/20/2020 23:55	12/22/2020 11:00	35.2	3.88	13.99	491,206
12/22/2020 11:05	12/22/2020 12:00	0.9	0.05	0.05	0.12	8.8	12/22/2020 11:00	12/22/2020 23:55	13.0	0.95	1.36	44,613
12/25/2020 15:15	12/25/2020 23:05	7.8	0.45	0.06	0.12	75.7	12/25/2020 15:15	12/26/2020 11:00	19.8	0.89	2.67	63,780
12/26/2020 23:35	12/27/2020 1:25	1.8	0.04	0.02	0.24	25.3	12/26/2020 23:35	12/27/2020 6:55	7.4	0.33	0.43	8,814
12/27/2020 6:55	12/27/2020 10:50	3.9	0.05	0.01	0.12	7.3	12/27/2020 6:55	12/27/2020 22:50	16.0	0.29	0.43	16,512
12/29/2020 17:00	12/31/2020 8:10	39.2	1.01	0.03	0.24	57.6	12/29/2020 17:00	12/31/2020 20:10	51.3	0.86	4.00	158,685
12/31/2020 22:25	1/1/2021 3:25	5.0	0.03	0.01	0.12	23.2	12/31/2020 22:25	1/1/2021 14:10	15.8	0.34	0.36	19,590

Table E-13. Summary Statistics for Individual Storm Events at the TYLMO Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
10/4/2020 6:45	10/4/2020 9:00	2.3	0.03	0.01	0.12	175.2	10/4/2020 6:40	10/4/2020 20:55	14.3	0.03	0.07	1,377
1/1/2021 14:10	1/1/2021 22:10	8.0	0.27	0.03	0.36	39.0	1/1/2021 14:10	1/2/2021 5:00	14.9	0.82	4.99	43,968
1/2/2021 5:00	1/3/2021 1:25	20.4	1.52	0.07	0.48	12.5	1/2/2021 5:00	1/3/2021 8:55	28.0	3.12	10.79	314,865
1/3/2021 8:55	1/3/2021 10:15	1.3	0.09	0.07	0.12	8.2	1/3/2021 8:55	1/3/2021 22:15	13.4	1.41	3.42	67,923
1/3/2021 23:00	1/4/2021 14:25	15.4	0.66	0.04	0.24	13.2	1/3/2021 23:00	1/5/2021 2:25	27.5	1.58	3.42	156,009
1/5/2021 12:00	1/6/2021 4:00	16.0	0.93	0.06	0.24	22.0	1/5/2021 11:55	1/6/2021 15:55	28.1	2.46	6.54	248,418
1/8/2021 1:40	1/8/2021 15:30	13.8	0.18	0.01	0.12	47.9	1/8/2021 1:40	1/9/2021 3:30	25.9	0.57	1.67	52,713
1/10/2021 2:10	1/10/2021 8:15	6.1	0.05	0.01	0.12	35.2	1/10/2021 2:10	1/10/2021 20:10	18.1	0.31	0.43	20,127
1/11/2021 9:05	1/13/2021 4:50	43.8	2.30	0.05	0.36	30.4	1/11/2021 9:00	1/13/2021 16:50	55.9	3.02	8.91	607,782
1/14/2021 23:10	1/15/2021 5:30	6.3	0.15	0.02	0.24	46.9	1/14/2021 23:10	1/15/2021 17:25	18.3	0.72	2.23	47,301
1/16/2021 23:30	1/17/2021 4:40	5.2	0.12	0.02	0.12	46.6	1/16/2021 23:25	1/17/2021 16:40	17.3	0.48	1.67	30,123
1/24/2021 3:35	1/24/2021 23:50	20.3	0.26	0.01	0.12	168.9	1/24/2021 3:30	1/25/2021 11:45	32.3	0.28	0.67	32,583
1/25/2021 17:20	1/25/2021 18:45	1.4	0.09	0.06	0.24	21.2	1/25/2021 17:15	1/26/2021 6:40	13.5	0.36	1.70	17,640
1/27/2021 7:10	1/27/2021 9:35	2.4	0.06	0.02	0.12	37.5	1/27/2021 7:05	1/27/2021 21:35	14.6	0.21	0.43	10,995
1/28/2021 4:40	1/28/2021 12:30	7.8	0.22	0.03	0.12	20.6	1/28/2021 4:40	1/29/2021 0:30	19.9	0.38	1.23	27,381
1/29/2021 21:20	1/30/2021 8:50	11.5	0.11	0.01	0.24	36.8	1/29/2021 21:20	1/30/2021 18:15	21.0	0.17	0.67	13,158
1/30/2021 18:15	2/3/2021 2:45	80.5	2.01	0.03	0.48	15.2	1/30/2021 18:15	2/3/2021 14:45	92.6	1.35	7.56	450,885
2/4/2021 6:00	2/5/2021 13:20	31.3	0.81	0.03	0.12	28.6	2/4/2021 5:55	2/6/2021 1:15	43.4	1.45	5.07	226,521
2/6/2021 13:45	2/6/2021 18:05	4.3	0.25	0.06	0.36	29.0	2/6/2021 13:45	2/7/2021 6:05	16.4	1.24	4.99	73,452
2/7/2021 16:00	2/8/2021 10:10	18.2	0.55	0.03	0.24	22.2	2/7/2021 15:55	2/8/2021 22:05	30.3	1.15	4.99	125,526
2/12/2021 11:45	2/12/2021 12:20	0.6	0.06	0.10	0.12	98.1	2/12/2021 11:45	2/13/2021 0:20	12.7	0.22	0.26	10,071
2/14/2021 12:00	2/16/2021 6:40	42.7	1.14	0.03	0.12	47.9	2/14/2021 11:55	2/16/2021 18:40	54.8	1.54	3.71	302,999
2/17/2021 6:30	2/17/2021 6:45	0.3	0.07	0.28	0.24	27.7	2/17/2021 6:30	2/17/2021 18:40	12.3	0.98	3.71	43,371
2/18/2021 16:35	2/18/2021 16:55	0.3	0.03	0.09	0.12	34.0	2/18/2021 16:30	2/19/2021 4:50	12.4	0.47	0.75	20,910
2/19/2021 14:00	2/20/2021 0:40	10.7	0.10	0.01	0.12	55.4	2/19/2021 14:00	2/20/2021 12:40	22.8	0.39	0.75	31,842
2/21/2021 21:35	2/22/2021 3:30	5.9	0.19	0.03	0.24	50.8	2/21/2021 21:30	2/22/2021 7:30	10.1	0.63	2.44	22,905
2/22/2021 7:35	2/22/2021 21:50	14.3	0.46	0.03	1.56	8.4	2/22/2021 7:30	2/23/2021 9:45	26.3	0.99	6.54	94,320
2/23/2021 14:05	2/23/2021 14:15	0.2	0.06	0.36	0.60	19.1	2/23/2021 14:00	2/24/2021 2:10	12.3	0.59	1.85	25,953
2/24/2021 8:25	2/24/2021 8:55	0.5	0.04	0.08	0.12	18.3	2/24/2021 8:25	2/24/2021 20:55	12.6	0.34	0.43	15,525
2/25/2021 1:30	2/25/2021 10:30	9.0	0.16	0.02	0.12	17.1	2/25/2021 1:25	2/25/2021 14:00	12.7	0.51	0.86	23,217
2/25/2021 14:00	2/25/2021 16:45	2.8	0.14	0.05	0.24	8.3	2/25/2021 14:00	2/26/2021 2:10	12.3	0.76	3.71	33,612
2/26/2021 2:10	2/26/2021 6:45	4.6	0.05	0.01	0.12	10.9	2/26/2021 2:10	2/26/2021 18:40	16.6	0.42	0.66	25,011
2/26/2021 21:05	2/26/2021 22:40	1.6	0.11	0.07	0.24	18.7	2/26/2021 21:00	2/27/2021 10:40	13.8	0.49	2.03	24,009
2/28/2021 1:15	2/28/2021 2:50	1.6	0.03	0.02	0.12	26.8	2/28/2021 1:15	2/28/2021 14:50	13.7	0.28	0.43	13,731
3/2/2021 8:35	3/2/2021 10:00	1.4	0.03	0.02	0.12	82.2	3/2/2021 8:35	3/2/2021 21:55	13.4	0.22	0.31	10,563
3/4/2021 15:35	3/4/2021 21:15	5.7	0.30	0.05	0.24	137.2	3/4/2021 15:30	3/5/2021 9:15	17.8	0.54	1.51	34,887
3/5/2021 9:40	3/5/2021 17:20	7.7	0.12	0.02	0.12	12.8	3/5/2021 9:40	3/6/2021 5:15	19.7	0.37	1.36	26,202
3/7/2021 3:15	3/7/2021 12:25	9.2	0.16	0.02	0.12	34.4	3/7/2021 3:15	3/7/2021 16:15	13.1	0.38	1.22	17,970
3/7/2021 16:20	3/8/2021 0:50	8.5	0.21	0.02	0.48	6.8	3/7/2021 16:15	3/8/2021 12:45	20.6	0.59	3.42	43,776
3/14/2021 10:40	3/14/2021 20:25	9.8	0.35	0.04	0.12	159.5	3/14/2021 10:40	3/15/2021 8:25	21.8	0.42	1.67	33,087
3/18/2021 16:05	3/18/2021 22:40	6.6	0.17	0.03	0.12	93.8	3/18/2021 16:05	3/19/2021 10:40	18.7	0.27	0.86	18,240
3/19/2021 22:15	3/20/2021 10:30	12.3	0.12	0.01	0.12	27.9	3/19/2021 22:15	3/20/2021 16:50	18.7	0.23	0.50	15,129
3/20/2021 16:50	3/21/2021 4:00	11.2	0.30	0.03	0.48	10.1	3/20/2021 16:50	3/21/2021 9:55	17.2	0.67	3.16	41,103
3/21/2021 9:55	3/21/2021 18:35	8.7	0.11	0.01	0.12	11.4	3/21/2021 9:55	3/22/2021 2:45	16.9	0.36	0.57	21,999
3/22/2021 2:45	3/22/2021 11:55	9.2	0.19	0.02	0.24	10.8	3/22/2021 2:45	3/22/2021 23:55	21.3	0.52	3.42	39,981
3/24/2021 12:25	3/25/2021 6:05	17.7	0.61	0.03	0.48	53.6	3/24/2021 12:20	3/25/2021 18:05	29.8	0.96	5.73	102,576

Table E-13. Summary Statistics for Individual Storm Events at the TYLMO Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
3/28/2021 9:55	3/29/2021 1:00	15.1	0.59	0.04	0.24	77.7	3/28/2021 9:55	3/29/2021 12:55	27.1	0.95	3.42	93,066
4/3/2021 22:10	4/4/2021 4:55	6.8	0.08	0.01	0.12	142.6	4/3/2021 22:05	4/4/2021 16:50	18.8	0.19	0.36	12,954
4/6/2021 16:10	4/6/2021 16:20	0.2	0.18	1.08	1.08	64.8	4/6/2021 16:10	4/7/2021 4:15	12.2	0.14	0.14	6,132
4/7/2021 11:50	4/7/2021 15:15	3.4	0.04	0.01	0.12	19.5	4/7/2021 11:45	4/7/2021 22:40	11.0	0.17	0.21	6,882
4/7/2021 22:40	4/8/2021 5:00	6.3	0.25	0.04	0.24	10.8	4/7/2021 22:40	4/8/2021 17:00	18.4	0.49	2.44	32,694
4/10/2021 4:50	4/10/2021 8:45	3.9	0.03	0.01	0.12	48.2	4/10/2021 4:50	4/10/2021 20:45	16.0	0.20	0.26	11,319
4/24/2021 0:15	4/25/2021 6:55	30.7	0.65	0.02	0.24	379.6	4/24/2021 0:10	4/25/2021 18:55	42.8	0.38	2.03	58,965
4/25/2021 19:20	4/25/2021 22:00	2.7	0.18	0.07	0.36	17.1	4/25/2021 19:15	4/26/2021 9:55	14.8	0.28	0.97	15,033
4/30/2021 6:20	4/30/2021 9:05	2.8	0.13	0.05	0.12	105.0	4/30/2021 6:20	4/30/2021 21:05	14.8	0.20	0.75	10,728
5/3/2021 14:55	5/3/2021 23:15	8.3	0.20	0.02	0.12	78.9	5/3/2021 14:55	5/4/2021 11:10	20.3	0.25	1.36	18,324
5/7/2021 8:05	5/7/2021 14:50	6.8	0.26	0.04	0.24	82.8	5/7/2021 8:00	5/8/2021 2:45	18.8	0.25	2.91	17,043
5/8/2021 22:30	5/9/2021 0:30	2.0	0.07	0.04	0.12	36.6	5/8/2021 22:25	5/9/2021 12:30	14.2	0.14	0.57	7,017
5/17/2021 18:10	5/17/2021 22:10	4.0	0.13	0.03	0.12	211.3	5/17/2021 18:10	5/18/2021 10:05	16.0	0.09	0.66	5,361
5/18/2021 13:30	5/18/2021 17:40	4.2	0.05	0.01	0.24	15.6	5/18/2021 13:25	5/18/2021 21:55	8.6	0.05	0.05	1,539
5/18/2021 21:55	5/19/2021 0:35	2.7	0.20	0.08	0.36	8.3	5/18/2021 21:55	5/19/2021 8:05	10.3	0.30	2.67	11,055
5/19/2021 8:05	5/19/2021 10:45	2.7	0.06	0.02	0.12	9.1	5/19/2021 8:05	5/19/2021 22:45	14.8	0.10	0.43	5,556
5/24/2021 1:40	5/24/2021 12:15	10.6	0.15	0.01	0.12	112.8	5/24/2021 1:40	5/25/2021 0:15	22.7	0.11	0.43	9,378
5/27/2021 3:25	5/27/2021 11:15	7.8	0.29	0.04	0.48	68.2	5/27/2021 3:25	5/27/2021 23:10	19.8	0.23	1.36	16,401
6/5/2021 2:30	6/5/2021 2:40	0.2	0.03	0.18	0.12	207.5	6/5/2021 2:25	6/5/2021 14:40	12.3	0.04	0.09	1,959
6/6/2021 12:50	6/7/2021 6:05	17.3	1.01	0.06	1.44	241.8	6/6/2021 12:45	6/7/2021 18:00	29.3	0.64	5.35	67,971
6/11/2021 10:35	6/12/2021 1:40	15.1	0.59	0.04	2.04	100.8	6/11/2021 10:30	6/12/2021 13:40	27.3	0.53	7.90	52,224
6/12/2021 22:15	6/13/2021 6:50	8.6	0.32	0.04	0.12	21.9	6/12/2021 22:15	6/13/2021 12:55	14.8	0.59	2.44	31,353
6/13/2021 12:55	6/13/2021 23:45	10.8	0.59	0.05	0.24	9.5	6/13/2021 12:55	6/14/2021 10:25	21.6	1.15	4.99	89,244
6/14/2021 10:30	6/14/2021 12:35	2.1	0.05	0.02	0.12	11.1	6/14/2021 10:25	6/15/2021 0:30	14.2	0.30	0.75	15,462
6/29/2021 6:00	6/29/2021 6:00	0.0	0.03	0.00	0.36	355.3	6/29/2021 5:55	6/29/2021 17:55	12.1	0.03	0.05	1,428
7/20/2021 7:45	7/20/2021 9:35	1.8	0.08	0.04	0.24	861.1	7/20/2021 7:45	7/20/2021 21:30	13.8	0.07	0.57	3,690
8/5/2021 23:55	8/6/2021 10:50	10.9	0.18	0.02	0.12	398.8	8/5/2021 23:55	8/6/2021 22:50	23.0	0.08	0.43	6,387
8/26/2021 21:10	8/27/2021 2:05	4.9	0.04	0.01	0.12	491.2	8/26/2021 21:10	8/27/2021 10:25	13.3	0.06	0.09	2,850
8/27/2021 10:30	8/27/2021 12:40	2.2	0.05	0.02	0.12	13.3	8/27/2021 10:25	8/28/2021 0:40	14.3	0.08	0.36	4,053
8/31/2021 2:25	8/31/2021 2:40	0.3	0.03	0.12	0.12	86.8	8/31/2021 2:25	8/31/2021 14:35	12.3	0.05	0.07	2,157
9/17/2021 9:15	9/17/2021 10:45	1.5	0.03	0.02	0.12	501.7	9/17/2021 9:10	9/17/2021 16:40	7.6	0.08	0.17	2,145
9/17/2021 16:40	9/18/2021 4:20	11.7	0.76	0.07	0.48	509.1	9/17/2021 16:40	9/18/2021 13:25	20.8	0.77	4.99	58,116
9/18/2021 13:25	9/18/2021 22:50	9.4	0.22	0.02	0.48	9.6	9/18/2021 13:25	9/19/2021 10:50	21.5	0.33	2.67	25,215
9/19/2021 16:25	9/19/2021 16:40	0.3	0.04	0.16	0.12	18.6	9/19/2021 16:25	9/20/2021 4:40	12.3	0.11	0.50	5,019
9/26/2021 13:35	9/27/2021 3:55	14.3	0.57	0.04	0.36	165.2	9/26/2021 13:30	9/27/2021 13:50	24.4	0.41	4.31	35,781
9/27/2021 13:55	9/27/2021 14:55	1.0	0.23	0.23	0.72	13.5	9/27/2021 13:50	9/27/2021 22:15	8.5	0.66	4.31	20,202
9/27/2021 22:20	9/28/2021 10:00	11.7	0.17	0.01	0.24	7.8	9/27/2021 22:15	9/28/2021 21:55	23.8	0.23	1.09	19,266
9/29/2021 23:35	9/30/2021 13:20	13.8	0.61	0.04	0.36	39.0	9/29/2021 23:35	10/1/2021 1:15	25.8	0.70	4.99	64,581

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Table E-14. Summary Statistics for Individual Storm Events at the TYLMI Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
10/9/2020 20:25	10/10/2020 8:05	11.7	0.99	0.08	0.60	0.0	10/9/2020 20:25	10/10/2020 15:20	19.0	0.25	0.38	17,178
10/10/2020 15:20	10/10/2020 15:40	0.3	0.11	0.33	0.60	9.7	10/10/2020 15:20	10/11/2020 3:40	12.4	0.27	0.32	12,195
10/11/2020 10:30	10/11/2020 17:50	7.3	0.35	0.05	0.36	19.0	10/11/2020 10:30	10/12/2020 2:55	16.5	0.25	0.27	14,850
10/12/2020 2:55	10/12/2020 9:15	6.3	0.31	0.05	0.12	10.2	10/12/2020 2:55	10/12/2020 21:10	18.3	0.27	0.32	17,937
10/13/2020 0:10	10/13/2020 7:00	6.8	0.46	0.07	0.48	15.4	10/13/2020 0:10	10/13/2020 18:55	18.8	0.28	0.38	18,819
10/16/2020 14:50	10/17/2020 4:40	13.8	0.30	0.02	0.36	80.3	10/16/2020 14:50	10/17/2020 16:40	25.9	0.08	0.15	7,788
10/18/2020 1:50	10/18/2020 15:50	14.0	0.16	0.01	0.24	23.5	10/18/2020 1:50	10/19/2020 3:50	26.1	0.04	0.07	4,182
10/19/2020 10:30	10/19/2020 18:25	7.9	0.56	0.07	0.84	20.4	10/19/2020 10:25	10/20/2020 6:20	20.0	0.20	0.27	14,262
10/21/2020 1:40	10/21/2020 9:30	7.8	0.06	0.01	0.24	31.6	10/21/2020 1:40	10/21/2020 11:15	9.7	0.06	0.07	2,160
10/21/2020 11:20	10/21/2020 11:25	0.1	0.05	0.60	0.36	7.7	10/21/2020 11:15	10/21/2020 23:25	12.3	0.03	0.07	1,530
10/23/2020 6:20	10/23/2020 8:50	2.5	0.08	0.03	0.12	43.0	10/23/2020 6:20	10/23/2020 17:25	11.2	0.02	0.04	975
10/23/2020 17:25	10/23/2020 23:20	5.9	0.09	0.02	0.12	9.5	10/23/2020 17:25	10/24/2020 11:15	17.9	0.03	0.07	2,139
10/29/2020 2:50	10/29/2020 6:10	3.3	0.04	0.01	0.12	128.8	10/29/2020 2:45	10/29/2020 18:10	15.5	0.01	0.02	642
10/30/2020 4:55	10/30/2020 9:15	4.3	0.09	0.02	0.36	26.1	10/30/2020 4:50	10/30/2020 21:10	16.4	0.02	0.04	1,071
11/3/2020 7:10	11/3/2020 14:55	7.8	0.78	0.10	0.48	94.2	11/3/2020 7:05	11/3/2020 22:15	15.3	0.25	0.32	13,785
11/3/2020 22:15	11/4/2020 9:10	10.9	0.18	0.02	0.24	7.9	11/3/2020 22:15	11/4/2020 15:40	17.5	0.26	0.27	16,530
11/4/2020 15:45	11/5/2020 15:25	23.7	0.65	0.03	0.60	9.1	11/4/2020 15:40	11/6/2020 3:25	35.8	0.28	0.38	35,676
11/9/2020 18:10	11/9/2020 22:35	4.4	0.12	0.03	0.24	99.5	11/9/2020 18:10	11/10/2020 8:10	14.1	0.05	0.07	2,295
11/10/2020 8:10	11/10/2020 13:40	5.5	0.04	0.01	0.12	10.9	11/10/2020 8:10	11/11/2020 1:40	17.6	0.03	0.04	1,638
11/12/2020 18:45	11/13/2020 6:05	11.3	0.57	0.05	0.24	58.6	11/12/2020 18:40	11/13/2020 18:00	23.4	0.17	0.27	14,484
11/14/2020 15:15	11/14/2020 23:30	8.3	0.28	0.03	0.12	33.5	11/14/2020 15:10	11/15/2020 11:25	20.3	0.09	0.15	6,549
11/16/2020 4:55	11/16/2020 18:20	13.4	0.58	0.04	0.36	31.8	11/16/2020 4:50	11/17/2020 6:20	25.6	0.18	0.32	16,881
11/17/2020 12:30	11/18/2020 15:30	27.0	1.00	0.04	0.48	18.9	11/17/2020 12:30	11/19/2020 3:30	39.1	0.32	1.05	44,841
11/20/2020 5:05	11/20/2020 7:40	2.6	0.03	0.01	0.12	38.3	11/20/2020 5:00	11/20/2020 19:40	14.8	0.08	0.10	4,266
11/22/2020 15:10	11/22/2020 22:25	7.3	0.09	0.01	0.12	96.4	11/22/2020 15:10	11/23/2020 4:40	13.6	0.02	0.03	984
11/23/2020 4:40	11/23/2020 13:10	8.5	0.24	0.03	0.24	12.2	11/23/2020 4:40	11/24/2020 1:05	20.5	0.05	0.07	3,597
11/24/2020 9:00	11/24/2020 23:20	14.3	0.46	0.03	0.36	20.7	11/24/2020 8:55	11/25/2020 11:15	26.4	0.13	0.27	12,042
11/27/2020 23:25	11/28/2020 4:45	5.3	0.08	0.02	0.12	73.7	11/27/2020 23:25	11/28/2020 16:40	17.3	0.02	0.03	1,230
11/30/2020 2:50	11/30/2020 7:15	4.4	0.41	0.09	0.24	49.4	11/30/2020 2:45	11/30/2020 19:15	16.6	0.15	0.27	9,075
12/8/2020 1:15	12/9/2020 7:45	30.5	0.82	0.03	0.24	186.6	12/8/2020 1:15	12/9/2020 19:40	42.5	0.10	0.23	15,828
12/13/2020 2:15	12/13/2020 16:40	14.4	0.17	0.01	0.12	91.0	12/13/2020 2:10	12/14/2020 0:00	21.9	0.02	0.03	1,476
12/14/2020 0:05	12/14/2020 10:30	10.4	0.06	0.01	0.12	13.2	12/14/2020 0:00	12/14/2020 22:25	22.5	0.01	0.02	909
12/15/2020 4:45	12/15/2020 11:10	6.4	0.12	0.02	0.12	22.8	12/15/2020 4:40	12/15/2020 23:10	18.6	0.02	0.02	1,002
12/16/2020 13:15	12/17/2020 4:30	15.3	0.43	0.03	0.24	28.7	12/16/2020 13:15	12/17/2020 15:45	26.6	0.07	0.10	6,306
12/17/2020 15:50	12/17/2020 18:45	2.9	0.13	0.04	0.24	15.3	12/17/2020 15:45	12/18/2020 1:45	10.1	0.07	0.10	2,703
12/18/2020 1:45	12/18/2020 9:15	7.5	0.23	0.03	0.12	8.0	12/18/2020 1:45	12/18/2020 17:45	16.1	0.10	0.15	5,826
12/18/2020 17:50	12/19/2020 2:45	8.9	0.51	0.06	0.24	9.1	12/18/2020 17:45	12/19/2020 12:20	18.7	0.27	0.80	18,132
12/19/2020 12:25	12/19/2020 21:00	8.6	0.26	0.03	0.24	9.9	12/19/2020 12:20	12/20/2020 8:55	20.7	0.22	0.27	16,698
12/20/2020 23:55	12/22/2020 3:10	27.3	2.19	0.08	0.72	28.2	12/20/2020 23:55	12/22/2020 11:00	35.2	1.06	2.99	134,100
12/22/2020 11:05	12/22/2020 12:00	0.9	0.05	0.05	0.12	8.8	12/22/2020 11:00	12/22/2020 23:55	13.0	0.52	0.69	24,114
12/25/2020 15:15	12/25/2020 23:05	7.8	0.45	0.06	0.12	75.7	12/25/2020 15:15	12/26/2020 11:00	19.8	0.22	0.38	15,372
12/26/2020 23:35	12/27/2020 1:25	1.8	0.04	0.02	0.24	25.3	12/26/2020 23:35	12/27/2020 6:55	7.4	0.04	0.04	1,068
12/27/2020 6:55	12/27/2020 10:50	3.9	0.05	0.01	0.12	7.3	12/27/2020 6:55	12/27/2020 22:50	16.0	0.04	0.04	2,061
12/29/2020 17:00	12/31/2020 8:10	39.2	1.01	0.03	0.24	57.6	12/29/2020 17:00	12/31/2020 20:10	51.3	0.29	0.80	52,923
12/31/2020 22:25	1/1/2021 3:25	5.0	0.03	0.01	0.12	23.2	12/31/2020 22:25	1/1/2021 14:10	15.8	0.08	0.10	4,800

Table E-14. Summary Statistics for Individual Storm Events at the TYLMI Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
10/4/2020 6:45	10/4/2020 9:00	2.3	0.03	0.01	0.12	175.2	10/4/2020 6:40	10/4/2020 20:55	14.3	0.01	0.02	558
1/1/2021 14:10	1/1/2021 22:10	8.0	0.27	0.03	0.36	39.0	1/1/2021 14:10	1/2/2021 5:00	14.9	0.25	0.44	13,293
1/2/2021 5:00	1/3/2021 1:25	20.4	1.52	0.07	0.48	12.5	1/2/2021 5:00	1/3/2021 8:55	28.0	0.91	2.41	92,208
1/3/2021 8:55	1/3/2021 10:15	1.3	0.09	0.07	0.12	8.2	1/3/2021 8:55	1/3/2021 22:15	13.4	0.67	0.92	32,190
1/3/2021 23:00	1/4/2021 14:25	15.4	0.66	0.04	0.24	13.2	1/3/2021 23:00	1/5/2021 2:25	27.5	0.58	0.92	56,964
1/5/2021 12:00	1/6/2021 4:00	16.0	0.93	0.06	0.24	22.0	1/5/2021 11:55	1/6/2021 15:55	28.1	0.77	1.33	77,874
1/8/2021 1:40	1/8/2021 15:30	13.8	0.18	0.01	0.12	47.9	1/8/2021 1:40	1/9/2021 3:30	25.9	0.11	0.15	10,467
1/10/2021 2:10	1/10/2021 8:15	6.1	0.05	0.01	0.12	35.2	1/10/2021 2:10	1/10/2021 20:10	18.1	0.04	0.04	2,604
1/11/2021 9:05	1/13/2021 4:50	43.8	2.30	0.05	0.36	30.4	1/11/2021 9:00	1/13/2021 16:50	55.9	0.91	1.82	182,564
1/14/2021 23:10	1/15/2021 5:30	6.3	0.15	0.02	0.24	46.9	1/14/2021 23:10	1/15/2021 17:25	18.3	0.23	0.32	15,420
1/16/2021 23:30	1/17/2021 4:40	5.2	0.12	0.02	0.12	46.6	1/16/2021 23:25	1/17/2021 16:40	17.3	0.07	0.10	4,476
1/24/2021 3:35	1/24/2021 23:50	20.3	0.26	0.01	0.12	168.9	1/24/2021 3:30	1/25/2021 11:45	32.3	0.03	0.04	3,003
1/25/2021 17:20	1/25/2021 18:45	1.4	0.09	0.06	0.24	21.2	1/25/2021 17:15	1/26/2021 6:40	13.5	0.03	0.03	1,443
1/27/2021 7:10	1/27/2021 9:35	2.4	0.06	0.02	0.12	37.5	1/27/2021 7:05	1/27/2021 21:35	14.6	0.02	0.02	1,050
1/28/2021 4:40	1/28/2021 12:30	7.8	0.22	0.03	0.12	20.6	1/28/2021 4:40	1/29/2021 0:30	19.9	0.03	0.04	2,499
1/29/2021 21:20	1/30/2021 8:50	11.5	0.11	0.01	0.24	36.8	1/29/2021 21:20	1/30/2021 18:15	21.0	0.03	0.04	2,274
1/30/2021 18:15	2/3/2021 2:45	80.5	2.01	0.03	0.48	15.2	1/30/2021 18:15	2/3/2021 14:45	92.6	0.48	1.26	158,439
2/4/2021 6:00	2/5/2021 13:20	31.3	0.81	0.03	0.12	28.6	2/4/2021 5:55	2/6/2021 1:15	43.4	0.56	1.12	87,006
2/6/2021 13:45	2/6/2021 18:05	4.3	0.25	0.06	0.36	29.0	2/6/2021 13:45	2/7/2021 6:05	16.4	0.42	0.60	24,885
2/7/2021 16:00	2/8/2021 10:10	18.2	0.55	0.03	0.24	22.2	2/7/2021 15:55	2/8/2021 22:05	30.3	0.44	0.92	47,907
2/12/2021 11:45	2/12/2021 12:20	0.6	0.06	0.10	0.12	98.1	2/12/2021 11:45	2/13/2021 0:20	12.7	0.07	0.07	3,192
2/14/2021 12:00	2/16/2021 6:40	42.7	1.14	0.03	0.12	47.9	2/14/2021 11:55	2/16/2021 18:40	54.8	0.55	1.12	109,248
2/17/2021 6:30	2/17/2021 6:45	0.3	0.07	0.28	0.24	27.7	2/17/2021 6:30	2/17/2021 18:40	12.3	0.45	0.52	19,662
2/18/2021 16:35	2/18/2021 16:55	0.3	0.03	0.09	0.12	34.0	2/18/2021 16:30	2/19/2021 4:50	12.4	0.24	0.27	10,665
2/19/2021 14:00	2/20/2021 0:40	10.7	0.10	0.01	0.12	55.4	2/19/2021 14:00	2/20/2021 12:40	22.8	0.15	0.15	12,270
2/21/2021 21:35	2/22/2021 3:30	5.9	0.19	0.03	0.24	50.8	2/21/2021 21:30	2/22/2021 7:30	10.1	0.14	0.15	5,037
2/22/2021 7:35	2/22/2021 21:50	14.3	0.46	0.03	1.56	8.4	2/22/2021 7:30	2/23/2021 9:45	26.3	0.36	0.60	34,515
2/23/2021 14:05	2/23/2021 14:15	0.2	0.06	0.36	0.60	19.1	2/23/2021 14:00	2/24/2021 2:10	12.3	0.26	0.27	11,403
2/24/2021 8:25	2/24/2021 8:55	0.5	0.04	0.08	0.12	18.3	2/24/2021 8:25	2/24/2021 20:55	12.6	0.16	0.23	7,131
2/25/2021 1:30	2/25/2021 10:30	9.0	0.16	0.02	0.12	17.1	2/25/2021 1:25	2/25/2021 14:00	12.7	0.19	0.23	8,592
2/25/2021 14:00	2/25/2021 16:45	2.8	0.14	0.05	0.24	8.3	2/25/2021 14:00	2/26/2021 2:10	12.3	0.28	0.32	12,258
2/26/2021 2:10	2/26/2021 6:45	4.6	0.05	0.01	0.12	10.9	2/26/2021 2:10	2/26/2021 18:40	16.6	0.27	0.32	15,957
2/26/2021 21:05	2/26/2021 22:40	1.6	0.11	0.07	0.24	18.7	2/26/2021 21:00	2/27/2021 10:40	13.8	0.23	0.27	11,553
2/28/2021 1:15	2/28/2021 2:50	1.6	0.03	0.02	0.12	26.8	2/28/2021 1:15	2/28/2021 14:50	13.7	0.15	0.15	7,380
3/2/2021 8:35	3/2/2021 10:00	1.4	0.03	0.02	0.12	82.2	3/2/2021 8:35	3/2/2021 21:55	13.4	0.09	0.10	4,389
3/4/2021 15:35	3/4/2021 21:15	5.7	0.30	0.05	0.24	137.2	3/4/2021 15:30	3/5/2021 9:15	17.8	0.16	0.23	10,377
3/5/2021 9:40	3/5/2021 17:20	7.7	0.12	0.02	0.12	12.8	3/5/2021 9:40	3/6/2021 5:15	19.7	0.15	0.23	10,644
3/7/2021 3:15	3/7/2021 12:25	9.2	0.16	0.02	0.12	34.4	3/7/2021 3:15	3/7/2021 16:15	13.1	0.12	0.15	5,685
3/7/2021 16:20	3/8/2021 0:50	8.5	0.21	0.02	0.48	6.8	3/7/2021 16:15	3/8/2021 12:45	20.6	0.24	0.32	17,634
3/14/2021 10:40	3/14/2021 20:25	9.8	0.35	0.04	0.12	159.5	3/14/2021 10:40	3/15/2021 8:25	21.8	0.15	0.23	11,832
3/18/2021 16:05	3/18/2021 22:40	6.6	0.17	0.03	0.12	93.8	3/18/2021 16:05	3/19/2021 10:40	18.7	0.09	0.15	6,159
3/19/2021 22:15	3/20/2021 10:30	12.3	0.12	0.01	0.12	27.9	3/19/2021 22:15	3/20/2021 16:50	18.7	0.04	0.07	2,751
3/20/2021 16:50	3/21/2021 4:00	11.2	0.30	0.03	0.48	10.1	3/20/2021 16:50	3/21/2021 9:55	17.2	0.14	0.23	8,832
3/21/2021 9:55	3/21/2021 18:35	8.7	0.11	0.01	0.12	11.4	3/21/2021 9:55	3/22/2021 2:45	16.9	0.15	0.15	9,135
3/22/2021 2:45	3/22/2021 11:55	9.2	0.19	0.02	0.24	10.8	3/22/2021 2:45	3/22/2021 23:55	21.3	0.20	0.27	15,591
3/24/2021 12:25	3/25/2021 6:05	17.7	0.61	0.03	0.48	53.6	3/24/2021 12:20	3/25/2021 18:05	29.8	0.30	0.52	32,415

Table E-14. Summary Statistics for Individual Storm Events at the TYLMI Station.

Precipitation Start Time	Precipitation Stop Time	Precipitation Duration (hour)	Precipitation Depth (inch)	Precipitation Average Intensity (inch/hour)	Precipitation Maximum Intensity (inch/hour)	Precipitation Antecedent Dry Period (hour)	Flow Start Time	Flow Stop Time	Flow Duration (hour)	Average Flow Rate ($feet^3$/second)	Maximum Flow Rate ($feet^3$/second)	Flow Volume ($feet^3$)
3/28/2021 9:55	3/29/2021 1:00	15.1	0.59	0.04	0.24	77.7	3/28/2021 9:55	3/29/2021 12:55	27.1	0.34	0.52	33,498
4/3/2021 22:10	4/4/2021 4:55	6.8	0.08	0.01	0.12	142.6	4/3/2021 22:05	4/4/2021 16:50	18.8	0.10	0.10	6,780
4/6/2021 16:10	4/6/2021 16:20	0.2	0.18	1.08	1.08	64.8	4/6/2021 16:10	4/7/2021 4:15	12.2	0.06	0.07	2,508
4/7/2021 11:50	4/7/2021 15:15	3.4	0.04	0.01	0.12	19.5	4/7/2021 11:45	4/7/2021 22:40	11.0	0.06	0.07	2,430
4/7/2021 22:40	4/8/2021 5:00	6.3	0.25	0.04	0.24	10.8	4/7/2021 22:40	4/8/2021 17:00	18.4	0.18	0.23	12,096
4/10/2021 4:50	4/10/2021 8:45	3.9	0.03	0.01	0.12	48.2	4/10/2021 4:50	4/10/2021 20:45	16.0	0.13	0.15	7,245
4/24/2021 0:15	4/25/2021 6:55	30.7	0.65	0.02	0.24	379.6	4/24/2021 0:10	4/25/2021 18:55	42.8	0.19	0.38	29,118
4/25/2021 19:20	4/25/2021 22:00	2.7	0.18	0.07	0.36	17.1	4/25/2021 19:15	4/26/2021 9:55	14.8	0.27	0.32	14,472
4/30/2021 6:20	4/30/2021 9:05	2.8	0.13	0.05	0.12	105.0	4/30/2021 6:20	4/30/2021 21:05	14.8	0.07	0.07	3,612
5/3/2021 14:55	5/3/2021 23:15	8.3	0.20	0.02	0.12	78.9	5/3/2021 14:55	5/4/2021 11:10	20.3	0.07	0.10	5,421
5/7/2021 8:05	5/7/2021 14:50	6.8	0.26	0.04	0.24	82.8	5/7/2021 8:00	5/8/2021 2:45	18.8	0.07	0.07	4,521
5/8/2021 22:30	5/9/2021 0:30	2.0	0.07	0.04	0.12	36.6	5/8/2021 22:25	5/9/2021 12:30	14.2	0.07	0.07	3,570
5/17/2021 18:10	5/17/2021 22:10	4.0	0.13	0.03	0.12	211.3	5/17/2021 18:10	5/18/2021 10:05	16.0	0.03	0.03	1,728
5/18/2021 13:30	5/18/2021 17:40	4.2	0.05	0.01	0.24	15.6	5/18/2021 13:25	5/18/2021 21:55	8.6	0.03	0.03	927
5/18/2021 21:55	5/19/2021 0:35	2.7	0.20	0.08	0.36	8.3	5/18/2021 21:55	5/19/2021 8:05	10.3	0.04	0.04	1,449
5/19/2021 8:05	5/19/2021 10:45	2.7	0.06	0.02	0.12	9.1	5/19/2021 8:05	5/19/2021 22:45	14.8	0.04	0.04	2,124
5/24/2021 1:40	5/24/2021 12:15	10.6	0.15	0.01	0.12	112.8	5/24/2021 1:40	5/25/2021 0:15	22.7	0.03	0.04	2,826
5/27/2021 3:25	5/27/2021 11:15	7.8	0.29	0.04	0.48	68.2	5/27/2021 3:25	5/27/2021 23:10	19.8	0.04	0.04	2,745
6/5/2021 2:30	6/5/2021 2:40	0.2	0.03	0.18	0.12	207.5	6/5/2021 2:25	6/5/2021 14:40	12.3	0.02	0.02	888
6/6/2021 12:50	6/7/2021 6:05	17.3	1.01	0.06	1.44	241.8	6/6/2021 12:45	6/7/2021 18:00	29.3	0.09	0.23	9,054
6/11/2021 10:35	6/12/2021 1:40	15.1	0.59	0.04	2.04	100.8	6/11/2021 10:30	6/12/2021 13:40	27.3	0.16	0.38	16,143
6/12/2021 22:15	6/13/2021 6:50	8.6	0.32	0.04	0.12	21.9	6/12/2021 22:15	6/13/2021 12:55	14.8	0.26	0.38	13,698
6/13/2021 12:55	6/13/2021 23:45	10.8	0.59	0.05	0.24	9.5	6/13/2021 12:55	6/14/2021 10:25	21.6	0.49	0.69	38,382
6/14/2021 10:30	6/14/2021 12:35	2.1	0.05	0.02	0.12	11.1	6/14/2021 10:25	6/15/2021 0:30	14.2	0.26	0.38	13,329
6/29/2021 6:00	6/29/2021 6:00	0.0	0.03	0.00	0.36	355.3	6/29/2021 5:55	6/29/2021 17:55	12.1	0.02	0.04	882
7/20/2021 7:45	7/20/2021 9:35	1.8	0.08	0.04	0.24	861.1	7/20/2021 7:45	7/20/2021 21:30	13.8	0.03	0.03	1,476
8/5/2021 23:55	8/6/2021 10:50	10.9	0.18	0.02	0.12	398.8	8/5/2021 23:55	8/6/2021 22:50	23.0	0.03	0.03	2,385
8/26/2021 21:10	8/27/2021 2:05	4.9	0.04	0.01	0.12	491.2	8/26/2021 21:10	8/27/2021 10:25	13.3	0.02	0.02	957
8/27/2021 10:30	8/27/2021 12:40	2.2	0.05	0.02	0.12	13.3	8/27/2021 10:25	8/28/2021 0:40	14.3	0.02	0.02	1,029
8/31/2021 2:25	8/31/2021 2:40	0.3	0.03	0.12	0.12	86.8	8/31/2021 2:25	8/31/2021 14:35	12.3	0.02	0.02	840
9/17/2021 9:15	9/17/2021 10:45	1.5	0.03	0.02	0.12	501.7	9/17/2021 9:10	9/17/2021 16:40	7.6	0.01	0.01	273
9/17/2021 16:40	9/18/2021 4:20	11.7	0.76	0.07	0.48	509.1	9/17/2021 16:40	9/18/2021 13:25	20.8	0.04	0.07	2,997
9/18/2021 13:25	9/18/2021 22:50	9.4	0.22	0.02	0.48	9.6	9/18/2021 13:25	9/19/2021 10:50	21.5	0.07	0.10	5,229
9/19/2021 16:25	9/19/2021 16:40	0.3	0.04	0.16	0.12	18.6	9/19/2021 16:25	9/20/2021 4:40	12.3	0.07	0.07	2,991
9/26/2021 13:35	9/27/2021 3:55	14.3	0.57	0.04	0.36	165.2	9/26/2021 13:30	9/27/2021 13:50	24.4	0.03	0.04	2,613
9/27/2021 13:55	9/27/2021 14:55	1.0	0.23	0.23	0.72	13.5	9/27/2021 13:50	9/27/2021 22:15	8.5	0.12	0.23	3,711
9/27/2021 22:20	9/28/2021 10:00	11.7	0.17	0.01	0.24	7.8	9/27/2021 22:15	9/28/2021 21:55	23.8	0.08	0.15	6,960
9/29/2021 23:35	9/30/2021 13:20	13.8	0.61	0.04	0.36	39.0	9/29/2021 23:35	10/1/2021 1:15	25.8	0.15	0.27	13,701

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APPENDIX F

Line Plots Showing Sampling Times Relative to the Storm Event Hydrograph

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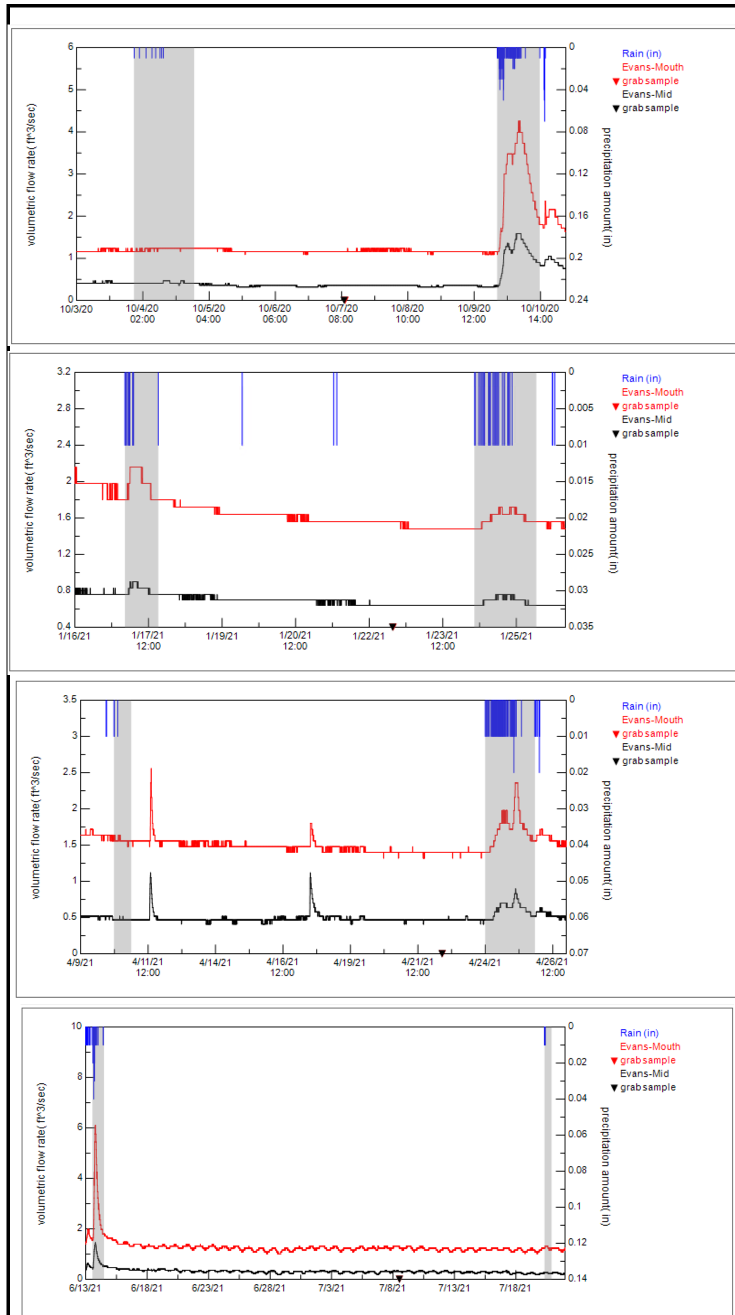
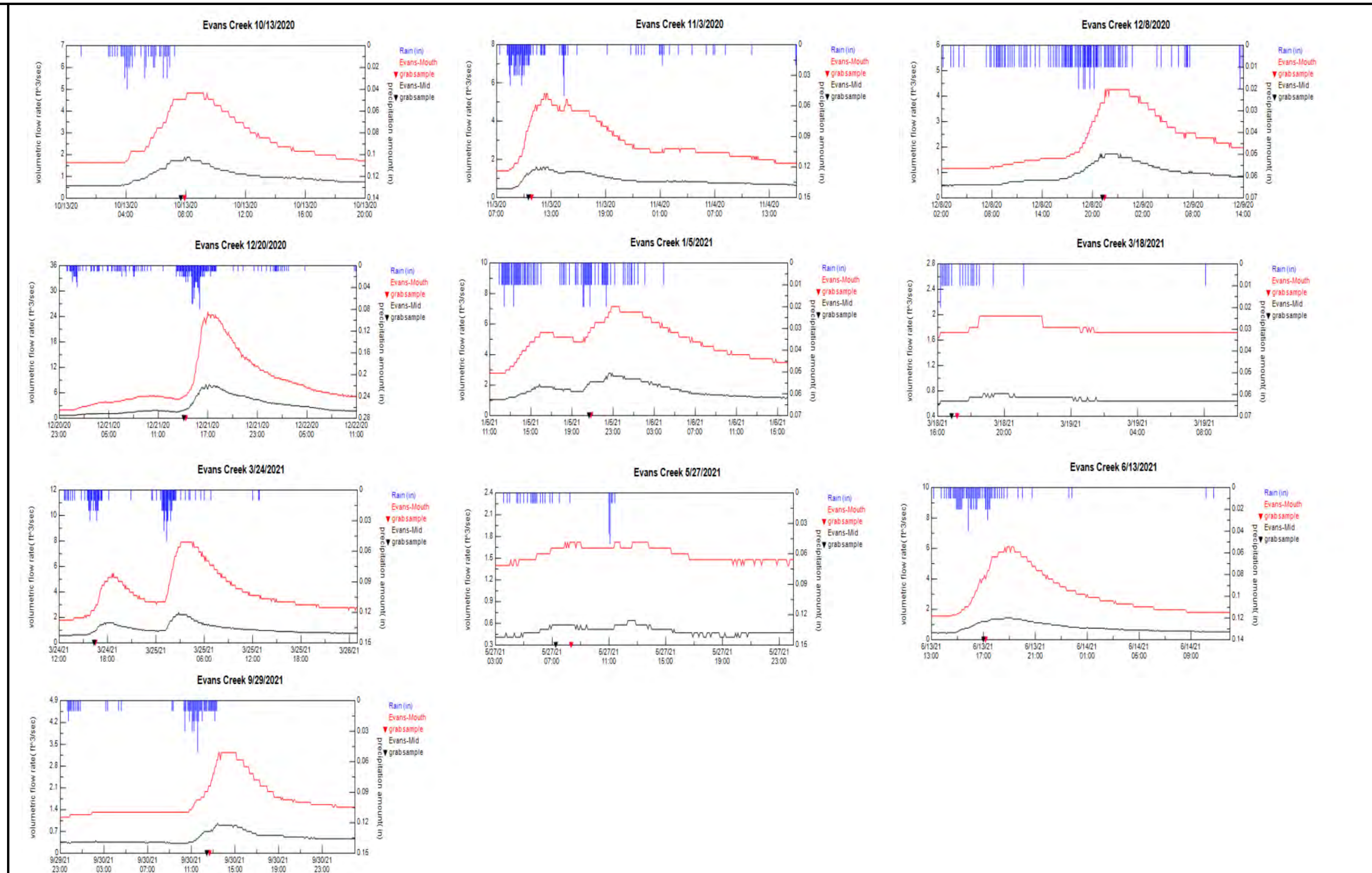
Evans – Application Watershed – Sampled Hydrographs

Base Flow



Storm Flow



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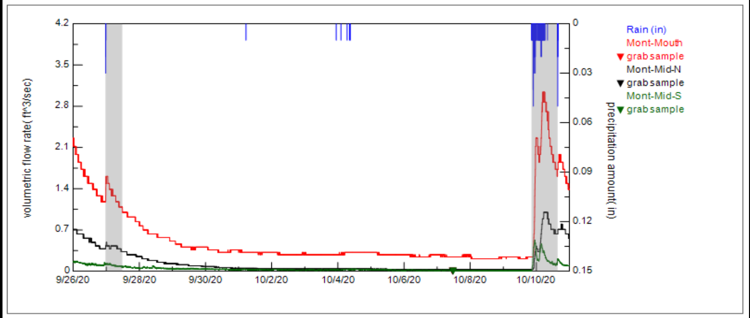
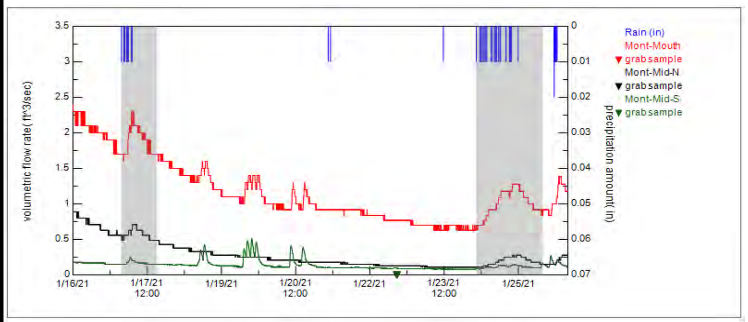
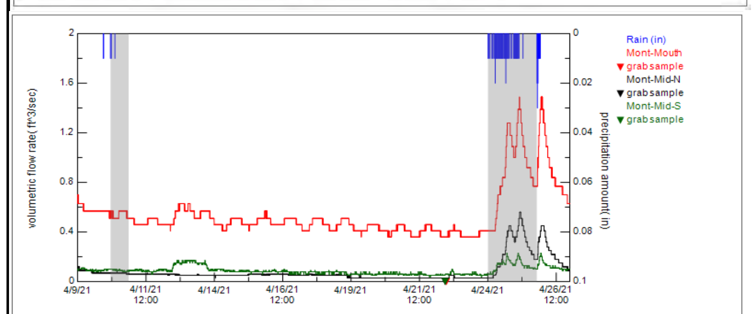
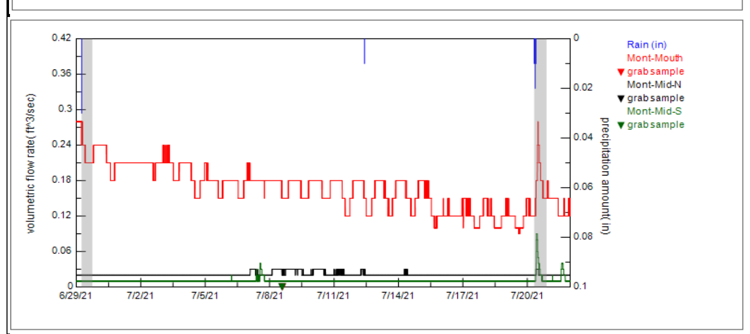
Monticello – Application Watershed – Sampled Hydrographs

Base Flow



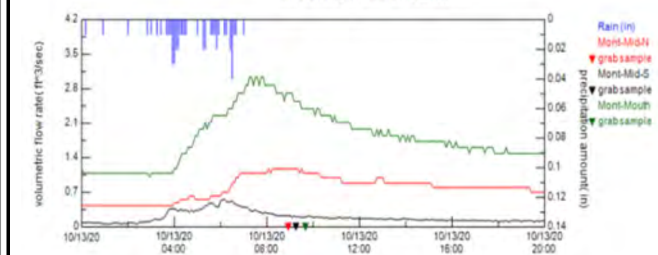




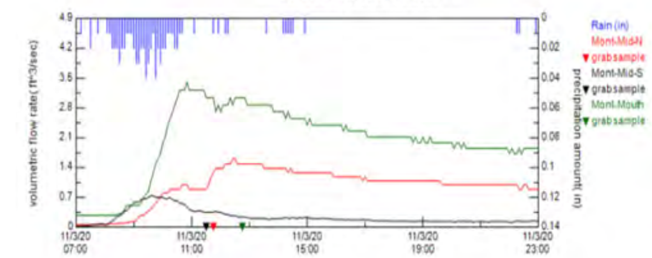


Storm Flow

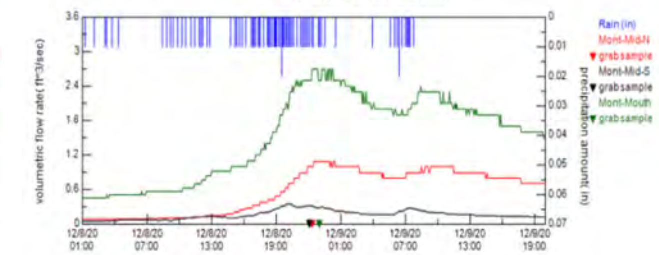
Monticello Creek 10/13/2020



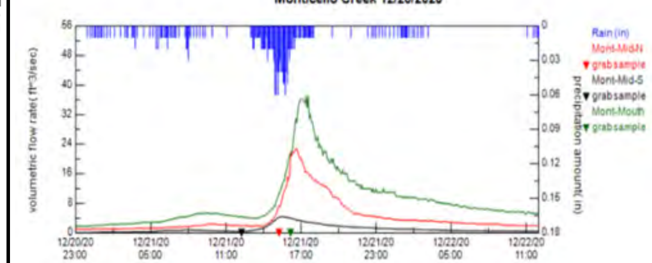
Monticello Creek 11/3/2020



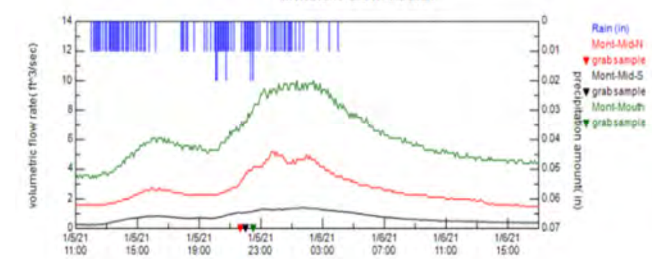
Monticello Creek 12/8/2020



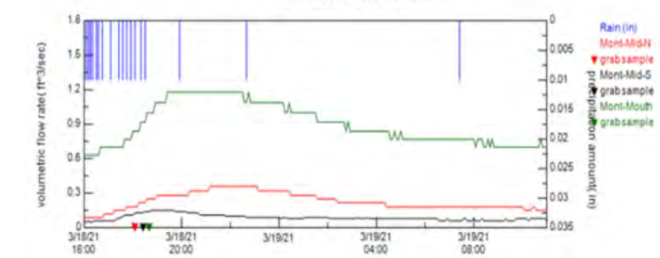
Monticello Creek 12/20/2020



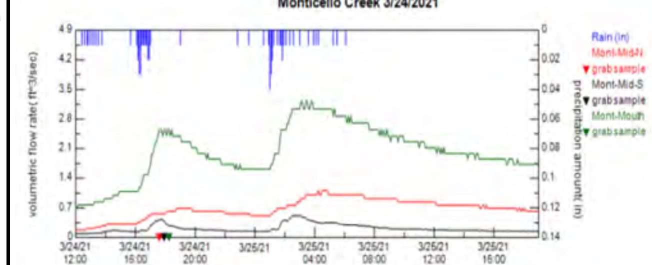
Monticello Creek 1/5/2021



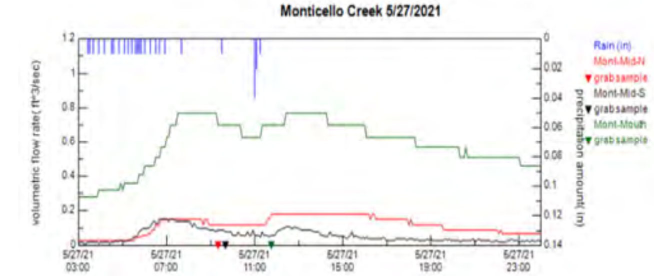
Monticello Creek 3/18/2021



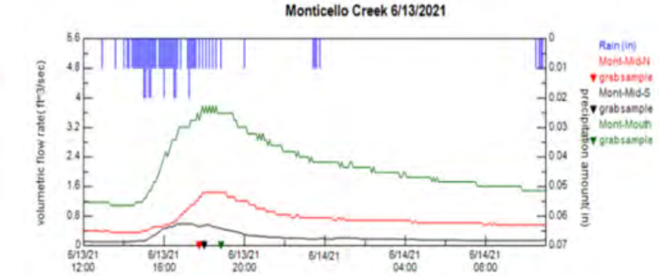
Monticello Creek 3/24/2021



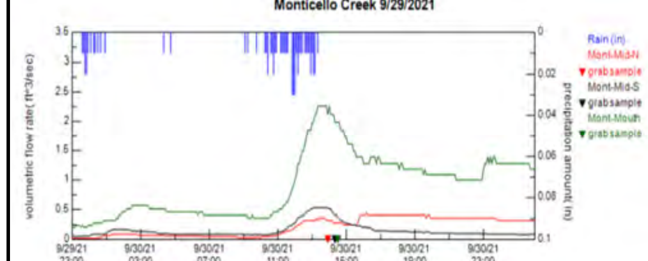
Monticello Creek 5/27/2021



Monticello Creek 6/13/2021



Monticello Creek 9/29/2021



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Tosh – Application Watershed – Sampled Hydrographs

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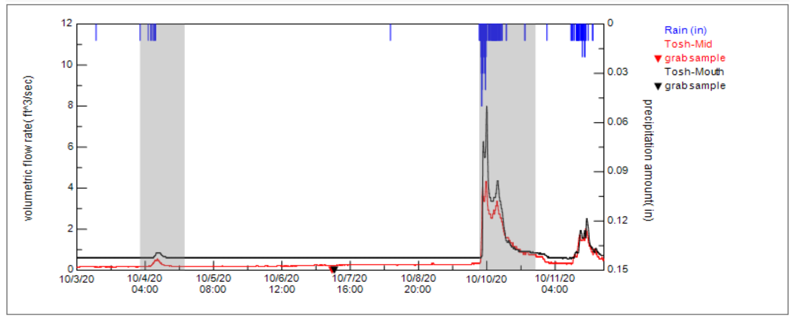
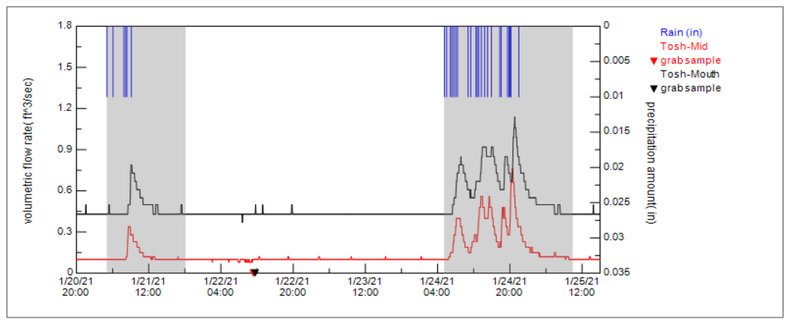
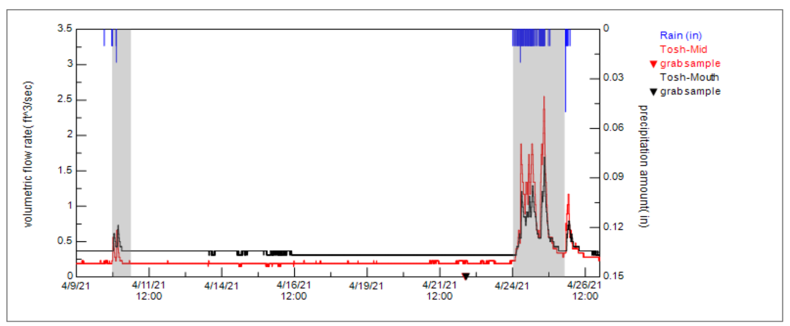
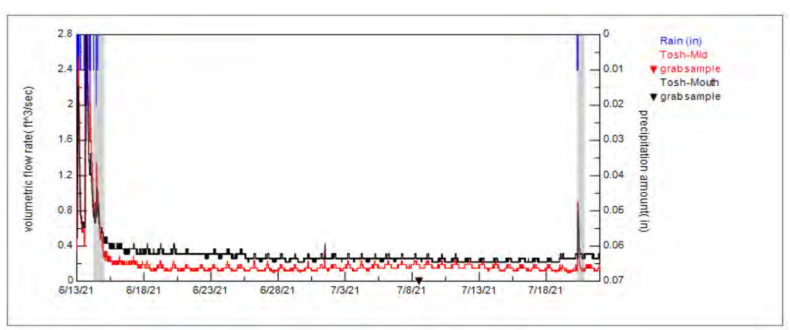
Base Flow

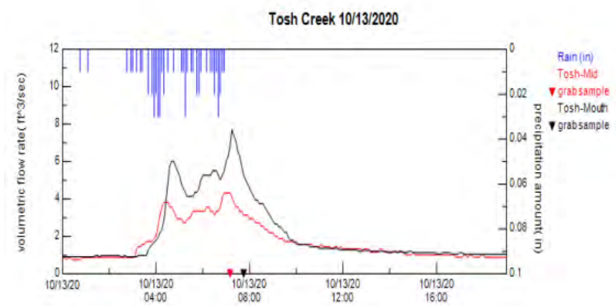


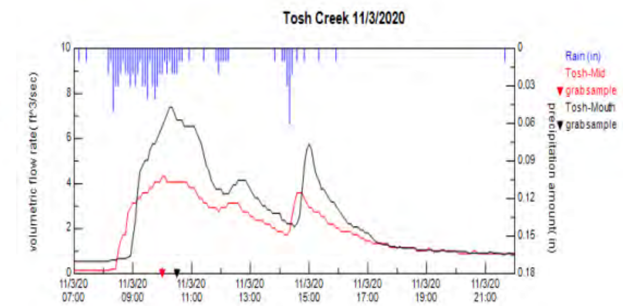


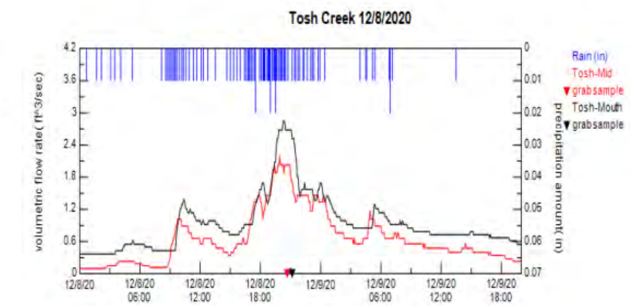


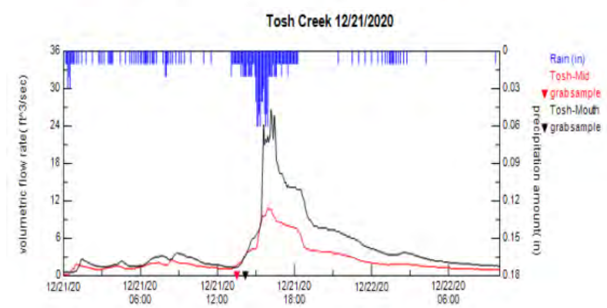


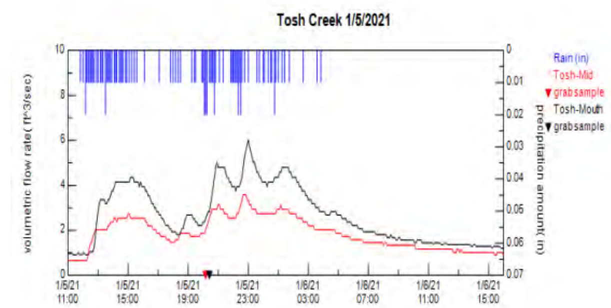
Storm Flow

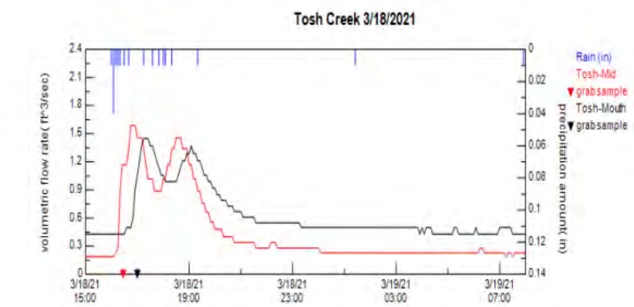


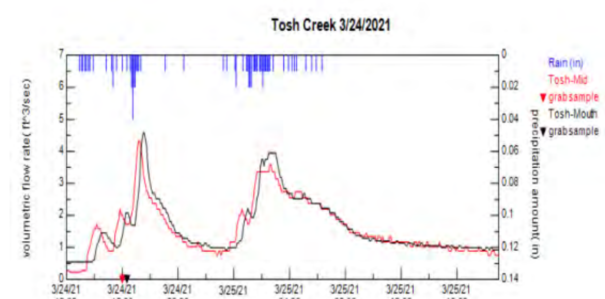


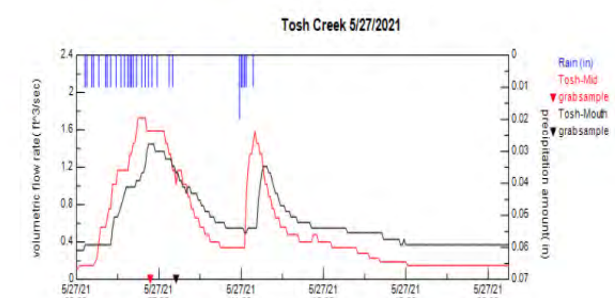


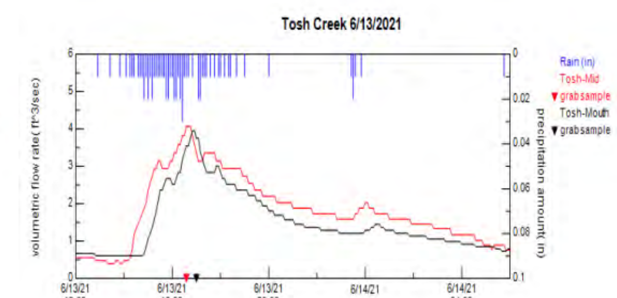


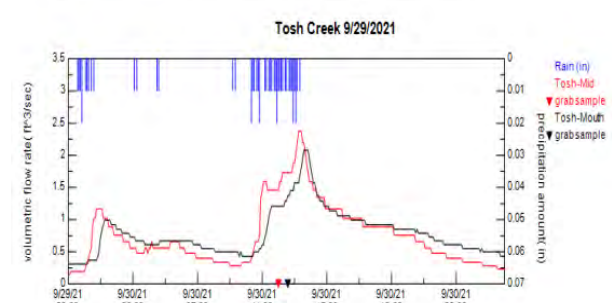












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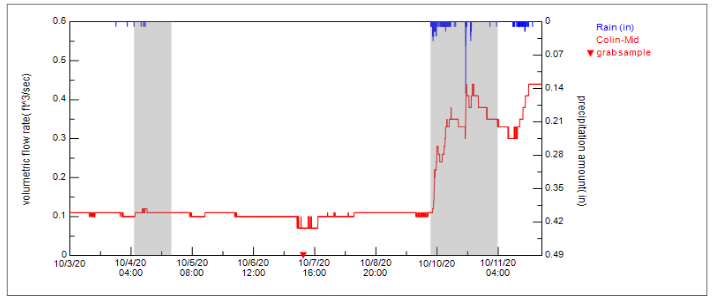
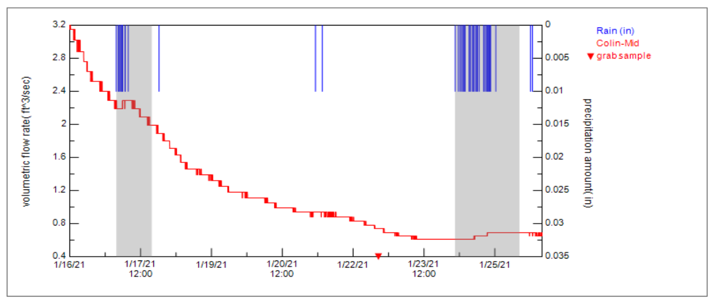
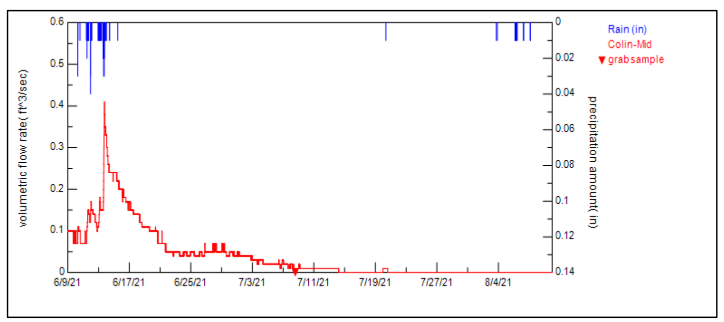
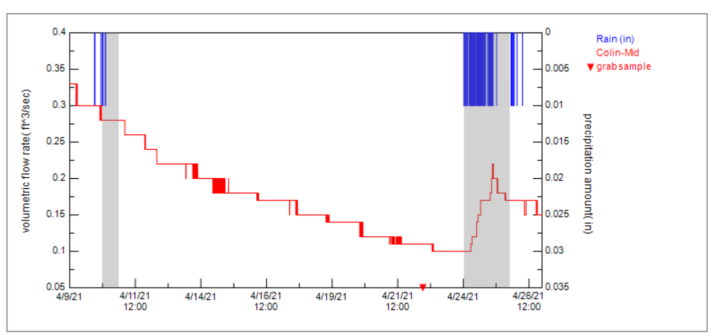
Colin – Application Watershed – Sampled Hydrographs

Base Flow

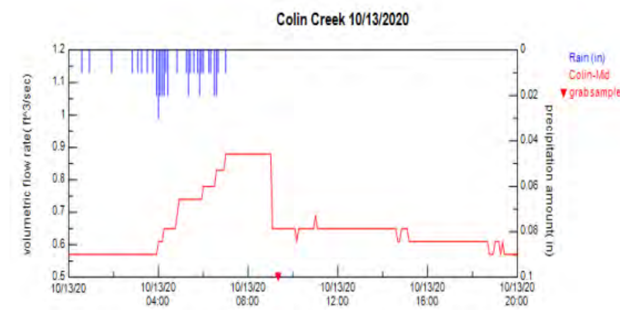


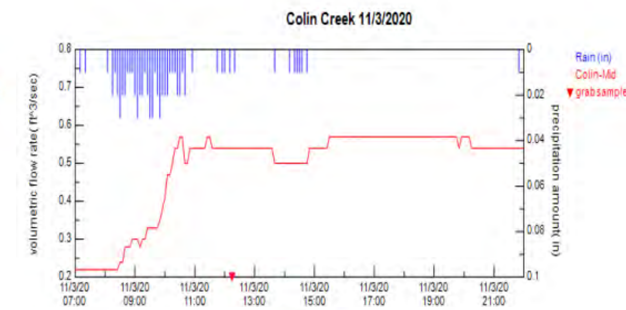


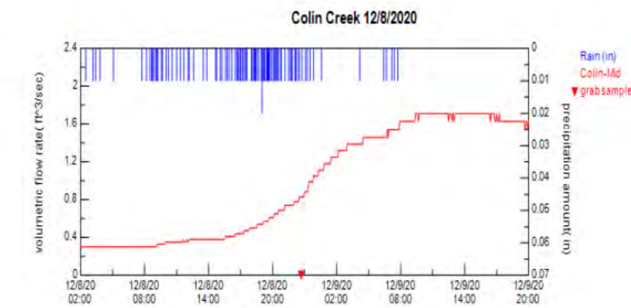


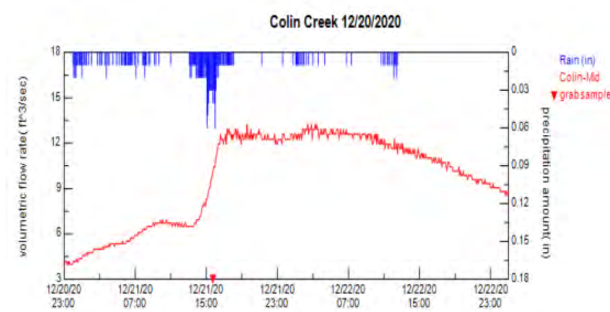


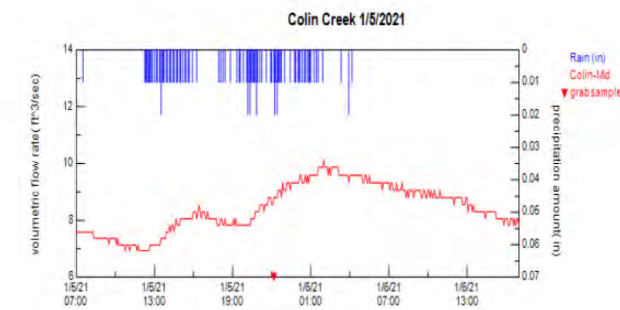
Storm Flow

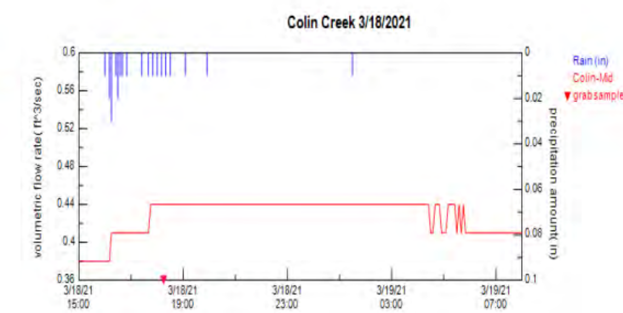


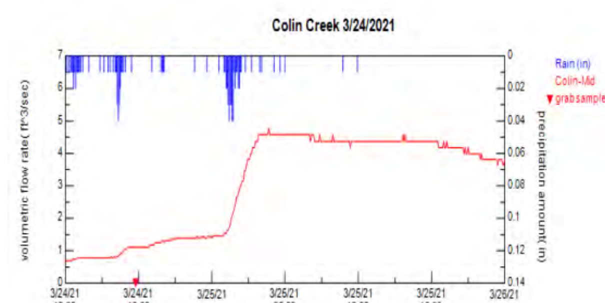


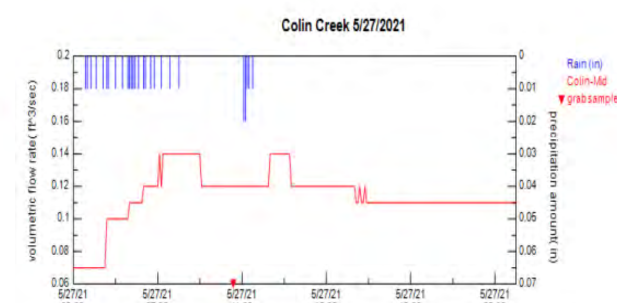


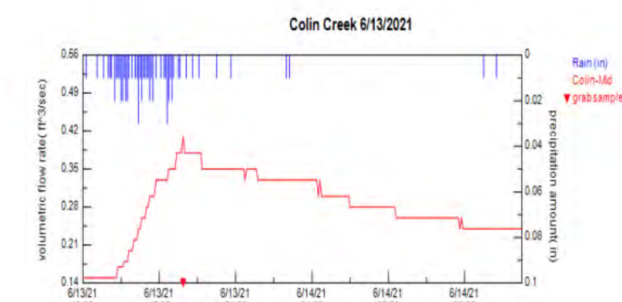


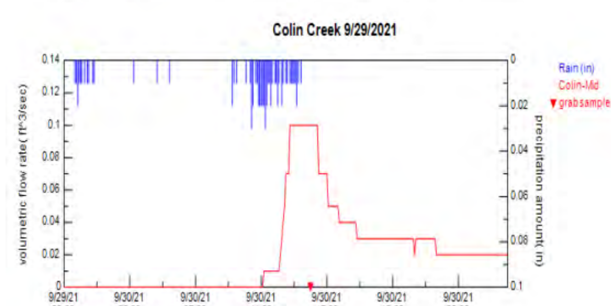












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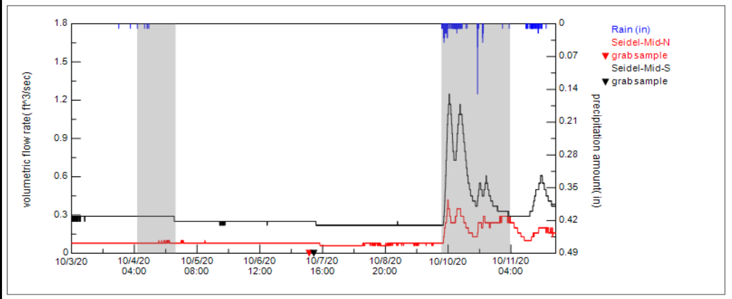
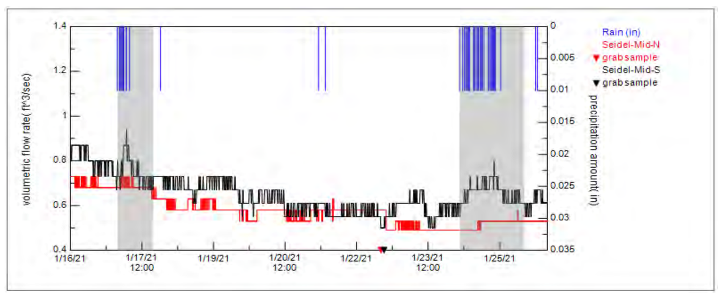
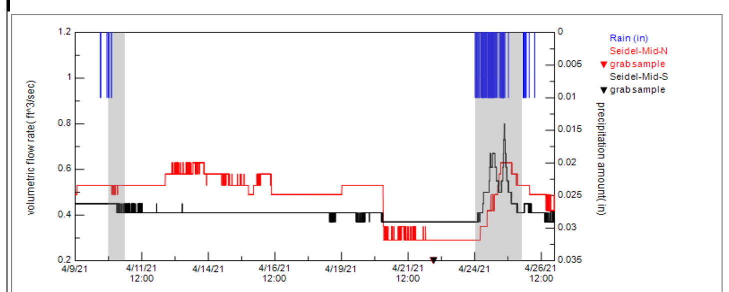
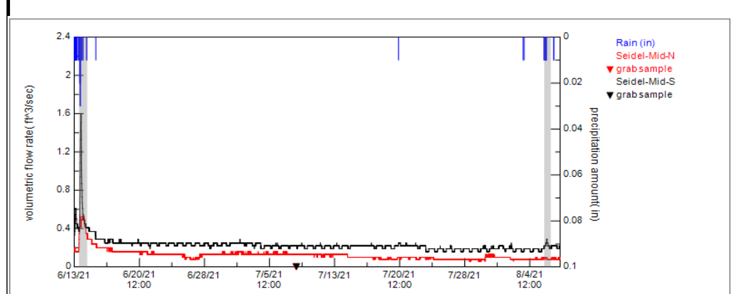
Seidel – Application Watershed – Sampled Hydrographs

Base Flow

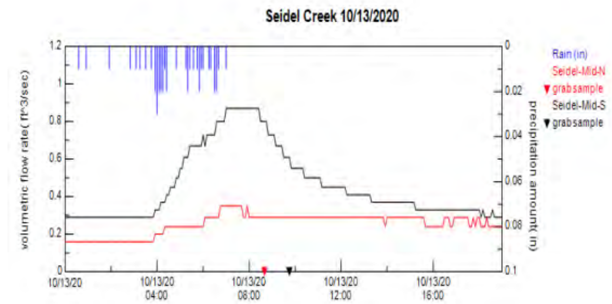


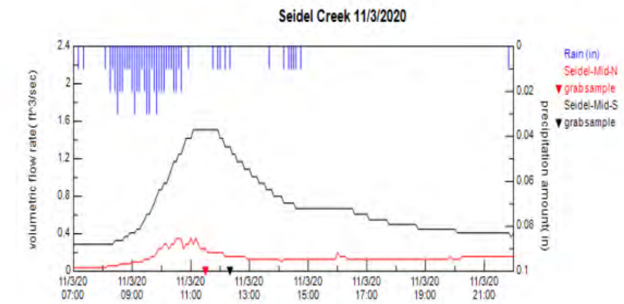


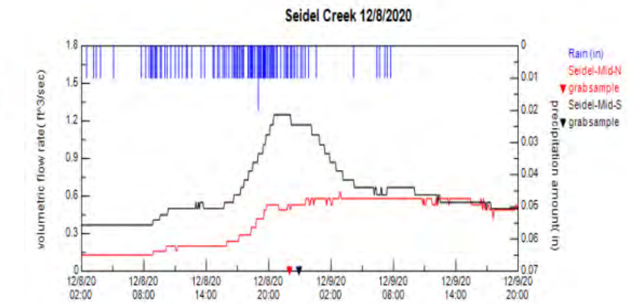


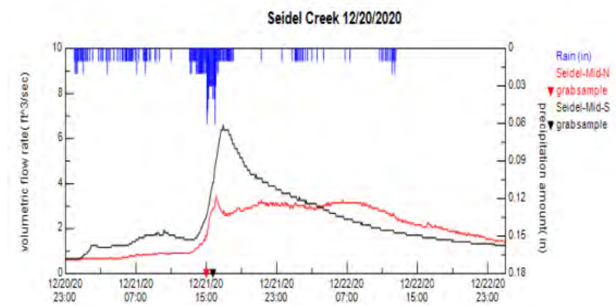


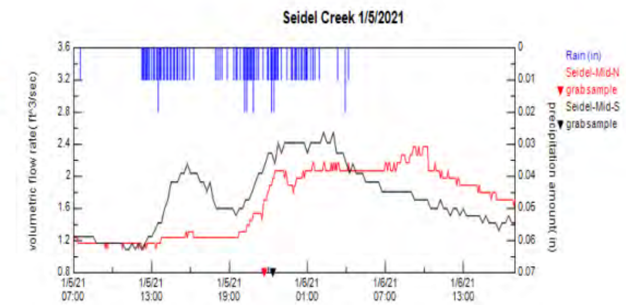
Storm Flow

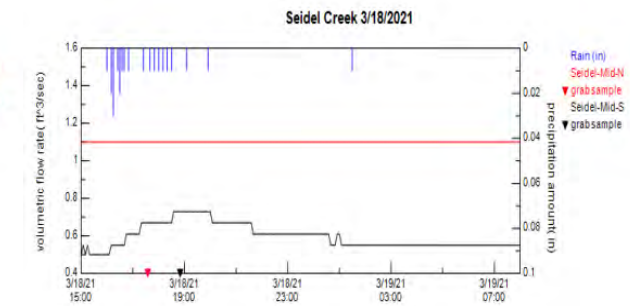


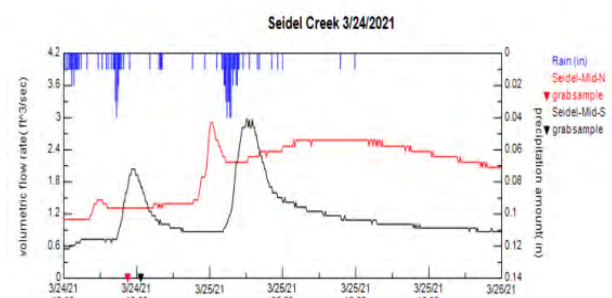


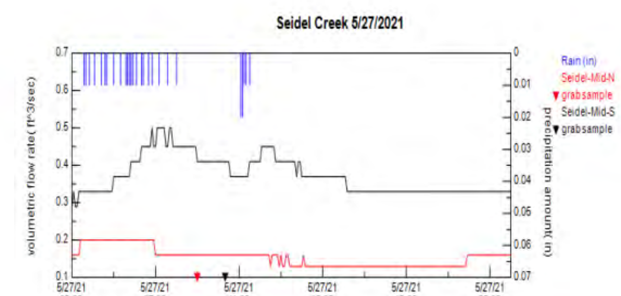


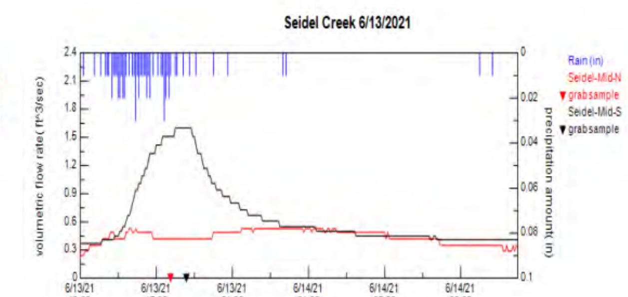


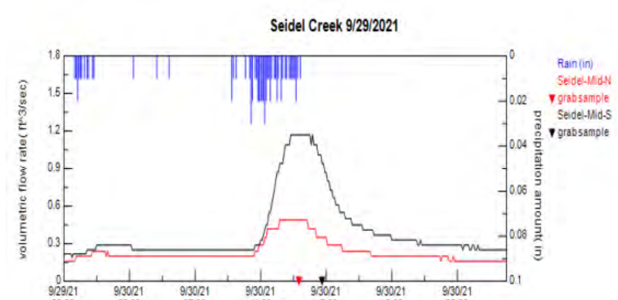












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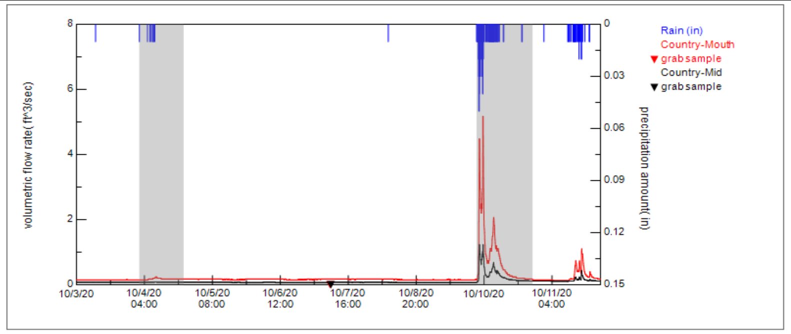
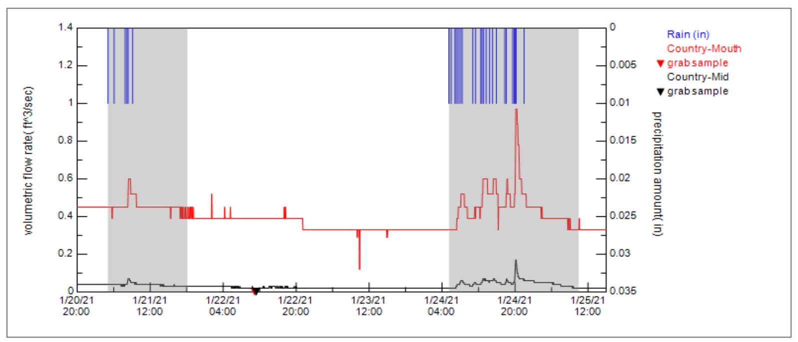
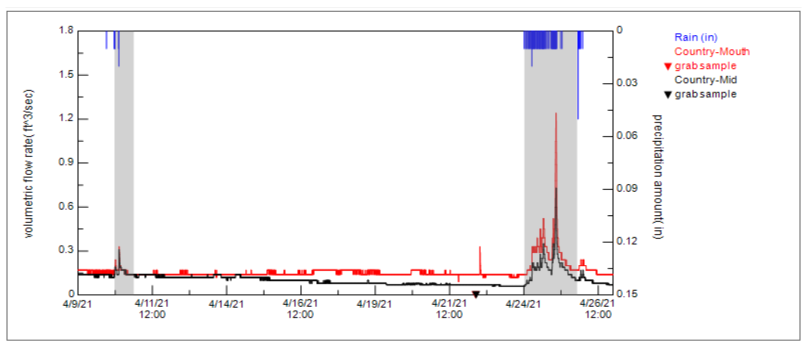
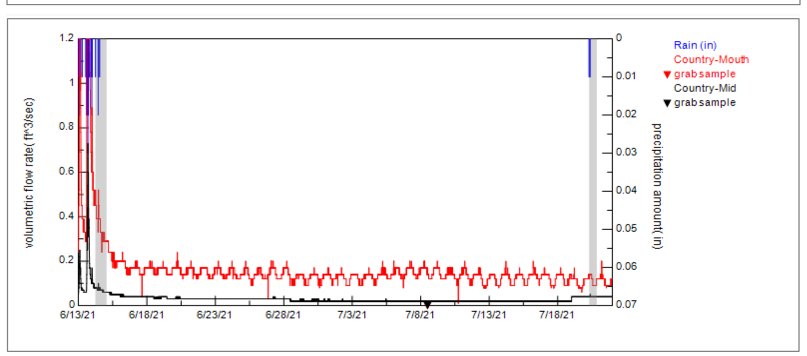
Country – Application Watershed – Sampled Hydrographs

Base Flow



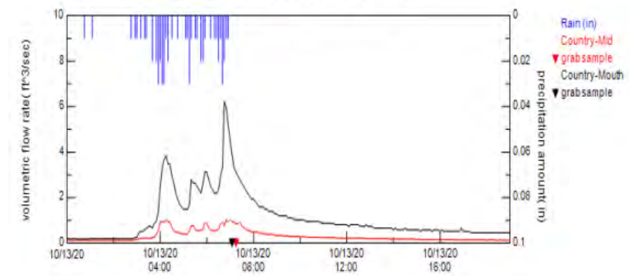




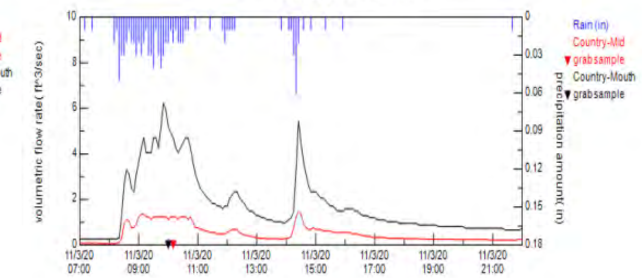


Storm Flow

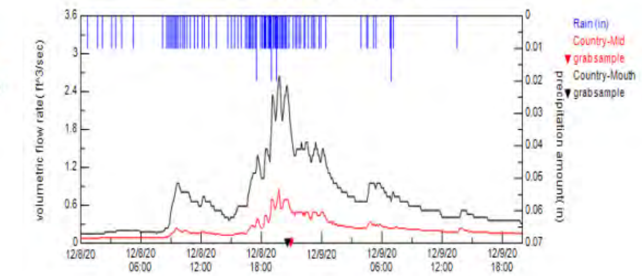
Country Creek 10/13/2020



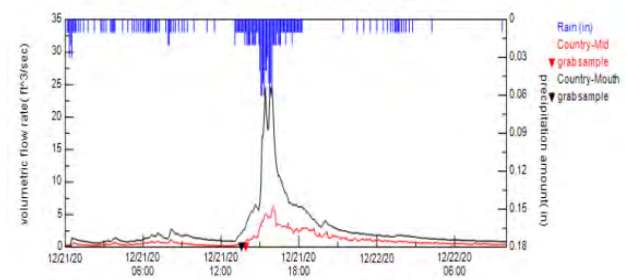
Country Creek 11/3/2020



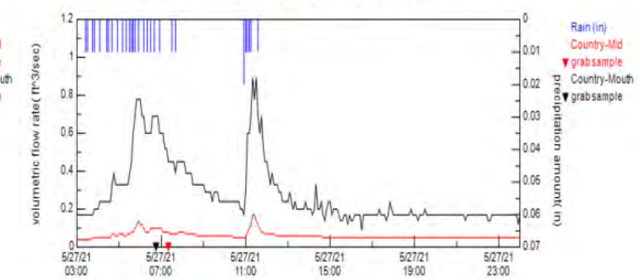
Country Creek 12/8/2020



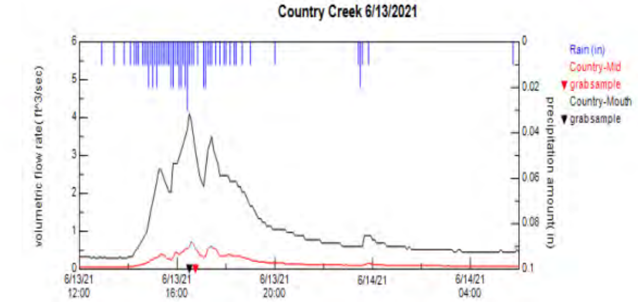
Country Creek 12/21/2020



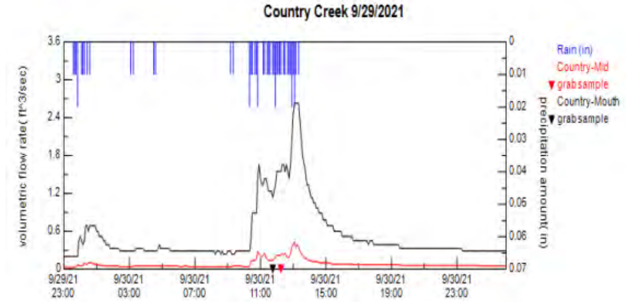
Country Creek 5/27/2021



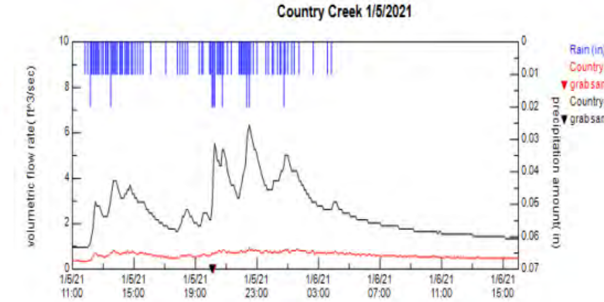
Country Creek 6/13/2021



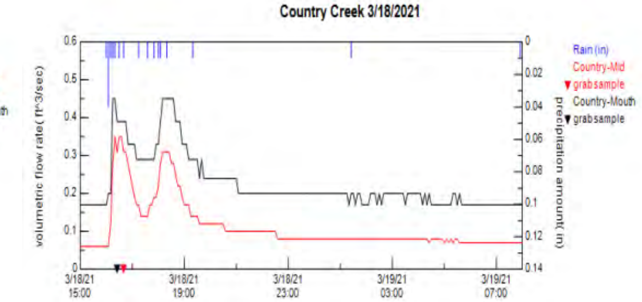
Country Creek 9/29/2021



Country Creek 1/5/2021



Country Creek 3/18/2021



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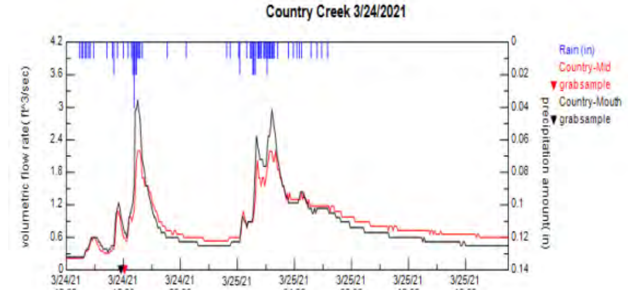

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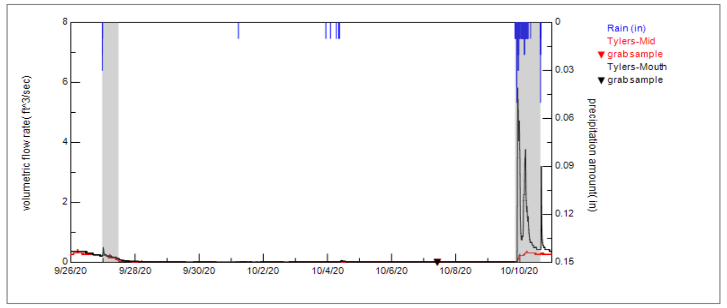
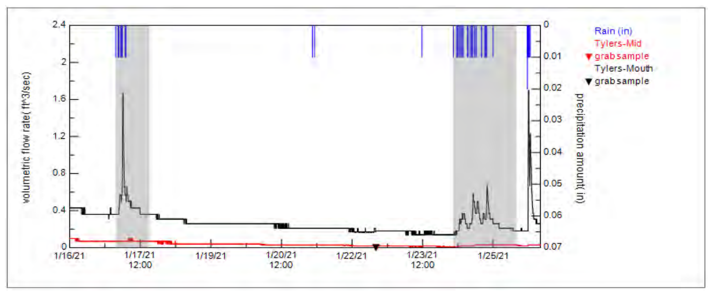
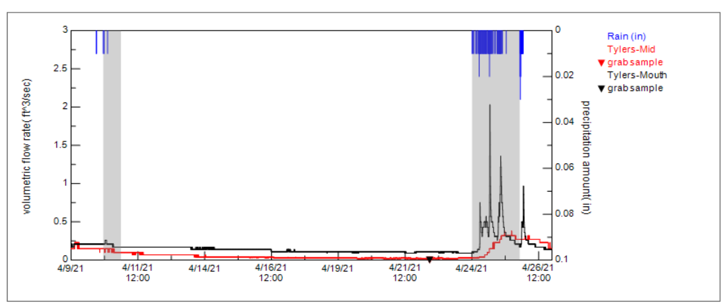
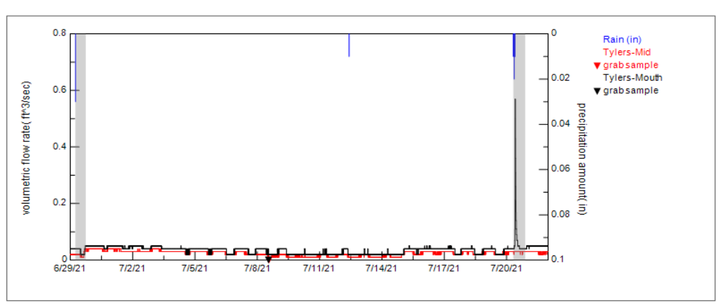
Tyler's – Application Watershed – Sampled Hydrographs

Base Flow

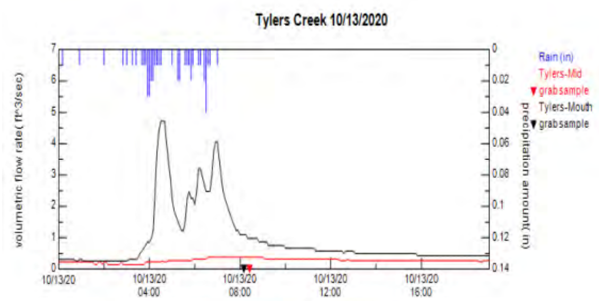


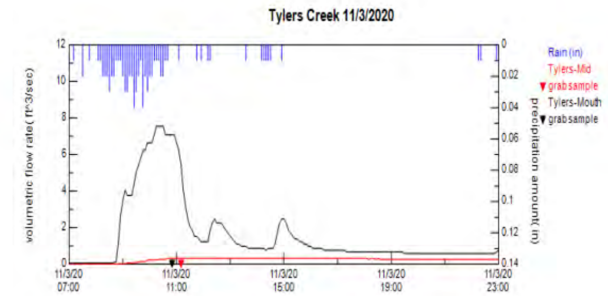


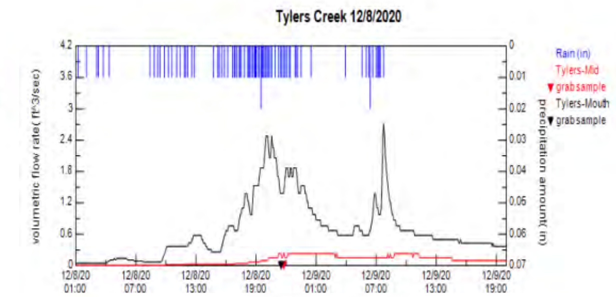


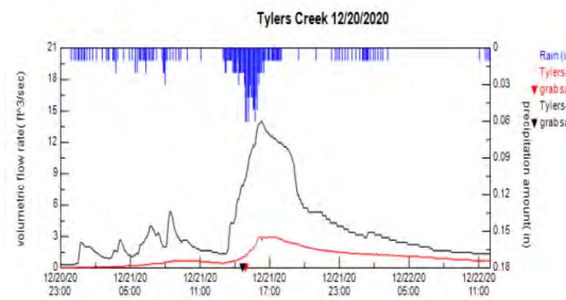


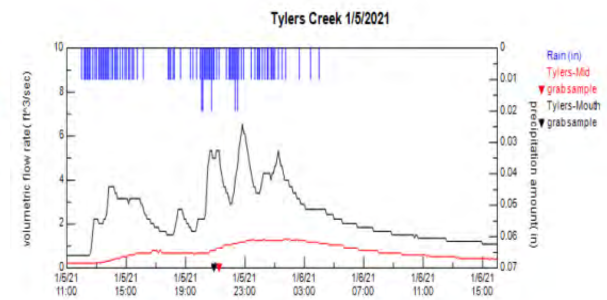
Storm Flow

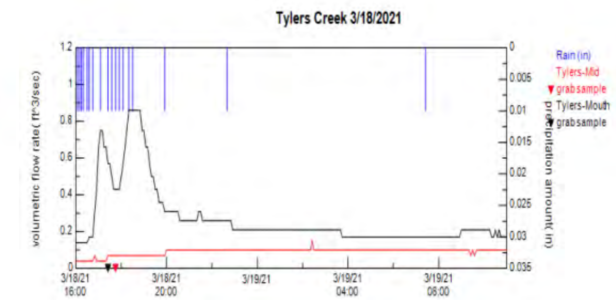


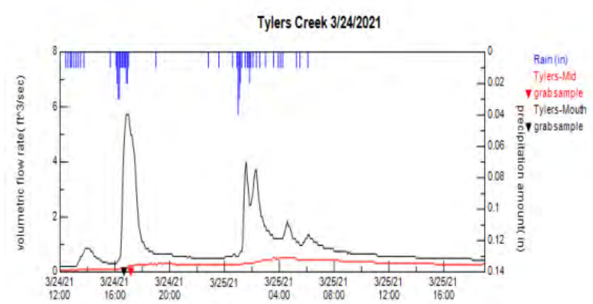


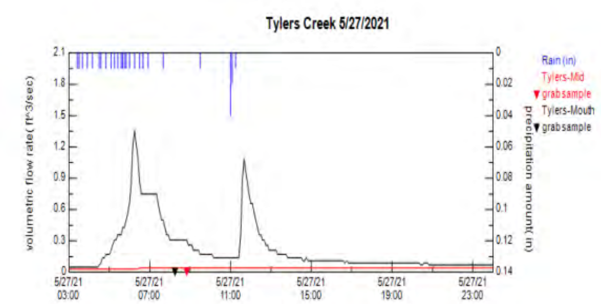


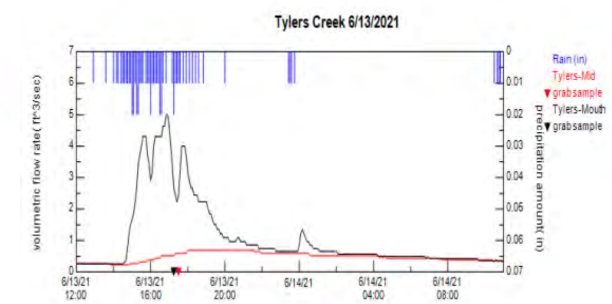


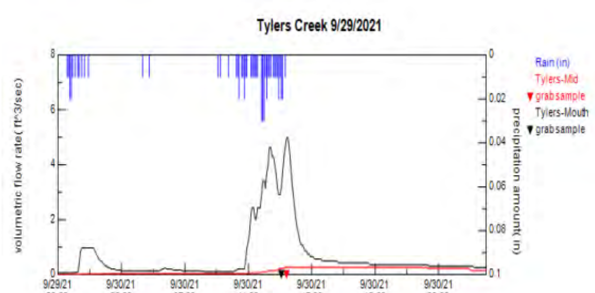












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APPENDIX G

Laboratory Reports, Field Forms, and Data Quality Assurance Audit Forms for Water Quality Monitoring

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OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

November 3, 2020

Jess Brown
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2010-075

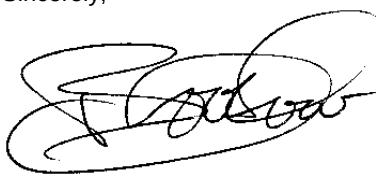
Dear Jess:

Enclosed are the analytical results and associated quality control data for samples submitted on October 7, 2020.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



Blair Goodrow
Project Manager

Enclosures

Date of Report: November 3, 2020
Samples Submitted: October 7, 2020
Laboratory Reference: 2010-075
Project: 14-05806-000

Case Narrative

Samples were collected on October 7, 2020 and received by the laboratory on October 7, 2020. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: November 3, 2020
Samples Submitted: October 7, 2020
Laboratory Reference: 2010-075
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201007**					
Laboratory ID:	10-075-01					
Total Suspended Solids	**5.0**	1.0	SM 2540D	10-8-20	10-9-20	
Client ID:	**COUMI-20201007**					
Laboratory ID:	10-075-02					
Total Suspended Solids	**51**	2.0	SM 2540D	10-8-20	10-9-20	
Client ID:	**COUMO-20201007**					
Laboratory ID:	10-075-03					
Total Suspended Solids	**2.4**	1.0	SM 2540D	10-8-20	10-9-20	
Client ID:	**EVAMS-20201007**					
Laboratory ID:	10-075-04					
Total Suspended Solids	**57**	2.0	SM 2540D	10-8-20	10-9-20	
Client ID:	**EVALSS-20201007**					
Laboratory ID:	10-075-05					
Total Suspended Solids	**7.0**	1.0	SM 2540D	10-8-20	10-9-20	
Client ID:	**MONMN-20201007**					
Laboratory ID:	10-075-06					
Total Suspended Solids	**3.4**	1.0	SM 2540D	10-8-20	10-9-20	
Client ID:	**MONMS-20201007**					
Laboratory ID:	10-075-07					
Total Suspended Solids	**12**	2.0	SM 2540D	10-8-20	10-9-20	
Client ID:	**MONM-20201007**					
Laboratory ID:	10-075-08					
Total Suspended Solids	**1.6**	1.0	SM 2540D	10-8-20	10-9-20	
Client ID:	**SEIMN-20201007**					
Laboratory ID:	10-075-09					
Total Suspended Solids	**11**	2.0	SM 2540D	10-8-20	10-9-20	

Date of Report: November 3, 2020
Samples Submitted: October 7, 2020
Laboratory Reference: 2010-075
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20201007**					
Laboratory ID:	10-075-10					
Total Suspended Solids	**3.6**	2.0	SM 2540D	10-8-20	10-9-20	
Client ID:	**TOSMI-20201007**					
Laboratory ID:	10-075-11					
Total Suspended Solids	**7.4**	1.0	SM 2540D	10-8-20	10-9-20	
Client ID:	**TOSMO-20201007**					
Laboratory ID:	10-075-12					
Total Suspended Solids	**4.2**	1.0	SM 2540D	10-8-20	10-9-20	
Client ID:	**TYLMI-20201007**					
Laboratory ID:	10-075-13					
Total Suspended Solids	**96**	5.0	SM 2540D	10-8-20	10-9-20	
Client ID:	**TYLMO-20201007**					
Laboratory ID:	10-075-14					
Total Suspended Solids	**2.8**	1.0	SM 2540D	10-8-20	10-9-20	
Client ID:	**QA93-20201007**					
Laboratory ID:	10-075-15					
Total Suspended Solids	**77**	5.0	SM 2540D	10-8-20	10-9-20	

Date of Report: November 3, 2020
Samples Submitted: October 7, 2020
Laboratory Reference: 2010-075
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1008W1					
Total Suspended Solids	**ND**	1.0	SM 2540D	10-8-20	10-9-20	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	10-075-04								
	ORIG	DUP							
Total Suspended Solids	**57.2**	**58.0**	NA	NA	NA	NA	1	21	
SPIKE BLANK									
Laboratory ID:	SB1008W1								
	SB		SB		SB				
Total Suspended Solids	**95.0**		100	NA	95	57-126	NA	NA	

Date of Report: November 3, 2020
Samples Submitted: October 7, 2020
Laboratory Reference: 2010-075
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201007**					
Laboratory ID:	10-075-01					
Turbidity	**1.4**	0.10	EPA 180.1	10-8-20	10-8-20	
Client ID:	**COUMI-20201007**					
Laboratory ID:	10-075-02					
Turbidity	**13**	0.10	EPA 180.1	10-8-20	10-8-20	
Client ID:	**COUMO-20201007**					
Laboratory ID:	10-075-03					
Turbidity	**1.4**	0.10	EPA 180.1	10-8-20	10-8-20	
Client ID:	**EVAMS-20201007**					
Laboratory ID:	10-075-04					
Turbidity	**23**	0.10	EPA 180.1	10-8-20	10-8-20	
Client ID:	**EVALSS-20201007**					
Laboratory ID:	10-075-05					
Turbidity	**2.5**	0.10	EPA 180.1	10-8-20	10-8-20	
Client ID:	**MONMN-20201007**					
Laboratory ID:	10-075-06					
Turbidity	**2.1**	0.10	EPA 180.1	10-8-20	10-8-20	
Client ID:	**MONMS-20201007**					
Laboratory ID:	10-075-07					
Turbidity	**5.0**	0.10	EPA 180.1	10-8-20	10-8-20	
Client ID:	**MONM-20201007**					
Laboratory ID:	10-075-08					
Turbidity	**0.94**	0.10	EPA 180.1	10-8-20	10-8-20	
Client ID:	**SEIMN-20201007**					
Laboratory ID:	10-075-09					
Turbidity	**3.3**	0.10	EPA 180.1	10-8-20	10-8-20	

Date of Report: November 3, 2020
Samples Submitted: October 7, 2020
Laboratory Reference: 2010-075
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20201007**					
Laboratory ID:	10-075-10					
Turbidity	**1.6**	0.10	EPA 180.1	10-8-20	10-8-20	
Client ID:	**TOSMI-20201007**					
Laboratory ID:	10-075-11					
Turbidity	**3.0**	0.10	EPA 180.1	10-8-20	10-8-20	
Client ID:	**TOSMO-20201007**					
Laboratory ID:	10-075-12					
Turbidity	**3.4**	0.10	EPA 180.1	10-8-20	10-8-20	
Client ID:	**TYLMI-20201007**					
Laboratory ID:	10-075-13					
Turbidity	**36**	0.10	EPA 180.1	10-8-20	10-8-20	
Client ID:	**TYLMO-20201007**					
Laboratory ID:	10-075-14					
Turbidity	**1.2**	0.10	EPA 180.1	10-8-20	10-8-20	
Client ID:	**QA93-20201007**					
Laboratory ID:	10-075-15					
Turbidity	**35**	0.10	EPA 180.1	10-8-20	10-8-20	

Date of Report: November 3, 2020
Samples Submitted: October 7, 2020
Laboratory Reference: 2010-075
Project: 14-05806-000

TURBIDITY
EPA 180.1
QUALITY CONTROL

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1008W1					
Turbidity	**ND**	0.10	EPA 180.1	10-8-20	10-8-20	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	10-075-02								
	ORIG	DUP							
Turbidity	**13.4**	**13.5**	NA	NA	NA	NA	1	14	

Date of Report: November 3, 2020
Samples Submitted: October 7, 2020
Laboratory Reference: 2010-075
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201007**					
Laboratory ID:	10-075-01					
Hardness	**16**	1.0	EPA 200.7/SM 2340B	10-9-20	10-9-20	
Client ID:	**COUMI-20201007**					
Laboratory ID:	10-075-02					
Hardness	**170**	1.0	EPA 200.7/SM 2340B	10-9-20	10-9-20	
Client ID:	**COUMO-20201007**					
Laboratory ID:	10-075-03					
Hardness	**130**	1.0	EPA 200.7/SM 2340B	10-9-20	10-9-20	
Client ID:	**EVAMS-20201007**					
Laboratory ID:	10-075-04					
Hardness	**100**	1.0	EPA 200.7/SM 2340B	10-9-20	10-9-20	
Client ID:	**EVALSS-20201007**					
Laboratory ID:	10-075-05					
Hardness	**97**	1.0	EPA 200.7/SM 2340B	10-9-20	10-9-20	
Client ID:	**MONMN-20201007**					
Laboratory ID:	10-075-06					
Hardness	**120**	1.0	EPA 200.7/SM 2340B	10-9-20	10-9-20	
Client ID:	**MONMS-20201007**					
Laboratory ID:	10-075-07					
Hardness	**170**	1.0	EPA 200.7/SM 2340B	10-9-20	10-9-20	

Date of Report: November 3, 2020
Samples Submitted: October 7, 2020
Laboratory Reference: 2010-075
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20201007**					
Laboratory ID:	10-075-08					
Hardness	**120**	1.0	EPA 200.7/SM 2340B	10-9-20	10-9-20	
Client ID:	**SEIMN-20201007**					
Laboratory ID:	10-075-09					
Hardness	**49**	1.0	EPA 200.7/SM 2340B	10-9-20	10-9-20	
Client ID:	**SEIMS-20201007**					
Laboratory ID:	10-075-10					
Hardness	**58**	1.0	EPA 200.7/SM 2340B	10-9-20	10-9-20	
Client ID:	**TOSMI-20201007**					
Laboratory ID:	10-075-11					
Hardness	**140**	1.0	EPA 200.7/SM 2340B	10-9-20	10-9-20	
Client ID:	**TOSMO-20201007**					
Laboratory ID:	10-075-12					
Hardness	**130**	1.0	EPA 200.7/SM 2340B	10-9-20	10-9-20	
Client ID:	**TYLMI-20201007**					
Laboratory ID:	10-075-13					
Hardness	**130**	1.0	EPA 200.7/SM 2340B	10-9-20	10-9-20	
Client ID:	**TYLMO-20201007**					
Laboratory ID:	10-075-14					
Hardness	**110**	1.0	EPA 200.7/SM 2340B	10-9-20	10-9-20	

Date of Report: November 3, 2020
Samples Submitted: October 7, 2020
Laboratory Reference: 2010-075
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA93-20201007**					
Laboratory ID:	10-075-15					
Hardness	**100**	1.0	EPA 200.7/SM 2340B	10-9-20	10-9-20	

Date of Report: November 3, 2020
Samples Submitted: October 7, 2020
Laboratory Reference: 2010-075
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B
QUALITY CONTROL

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1009WH1					
Hardness	**ND**	1.0	EPA 200.7/SM 2340B	10-9-20	10-9-20	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	10-075-02										
	ORIG	DUP									
Hardness	**168**	**174**	NA		NA	NA		NA	4	20	
MATRIX SPIKES											
Laboratory ID:	10-075-02										
	MS	MSD	MS	MSD		MS	MSD				
Hardness	**323**	**314**	132	132	168	117	111	75-125	3	20	
SPIKE BLANK											
Laboratory ID:	SB1009WH1										
	SB		SB			SB					
Hardness	**139**		132		NA	105		85-115	NA	NA	

Date of Report: November 3, 2020
Samples Submitted: October 7, 2020
Laboratory Reference: 2010-075
Project: 14-05806-000

DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201007**					
Laboratory ID:	10-075-01					
Dissolved Organic Carbon	**12**	1.0	SM 5310B	10-13-20	10-13-20	
Client ID:	**COUMI-20201007**					
Laboratory ID:	10-075-02					
Dissolved Organic Carbon	**3.4**	1.0	SM 5310B	10-13-20	10-13-20	
Client ID:	**COUMO-20201007**					
Laboratory ID:	10-075-03					
Dissolved Organic Carbon	**3.2**	1.0	SM 5310B	10-13-20	10-13-20	
Client ID:	**EVAMS-20201007**					
Laboratory ID:	10-075-04					
Dissolved Organic Carbon	**3.6**	1.0	SM 5310B	10-13-20	10-13-20	
Client ID:	**EVALSS-20201007**					
Laboratory ID:	10-075-05					
Dissolved Organic Carbon	**2.8**	1.0	SM 5310B	10-13-20	10-13-20	
Client ID:	**MONMN-20201007**					
Laboratory ID:	10-075-06					
Dissolved Organic Carbon	**3.8**	1.0	SM 5310B	10-13-20	10-13-20	
Client ID:	**MONMS-20201007**					
Laboratory ID:	10-075-07					
Dissolved Organic Carbon	**5.3**	1.0	SM 5310B	10-13-20	10-13-20	
Client ID:	**MONM-20201007**					
Laboratory ID:	10-075-08					
Dissolved Organic Carbon	**4.1**	1.0	SM 5310B	10-13-20	10-13-20	
Client ID:	**SEIMN-20201007**					
Laboratory ID:	10-075-09					
Dissolved Organic Carbon	**2.0**	1.0	SM 5310B	10-13-20	10-13-20	

Date of Report: November 3, 2020
Samples Submitted: October 7, 2020
Laboratory Reference: 2010-075
Project: 14-05806-000

DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20201007**					
Laboratory ID:	10-075-10					
Dissolved Organic Carbon	**4.4**	1.0	SM 5310B	10-13-20	10-13-20	
Client ID:	**TOSMI-20201007**					
Laboratory ID:	10-075-11					
Dissolved Organic Carbon	**2.7**	1.0	SM 5310B	10-13-20	10-13-20	
Client ID:	**TOSMO-20201007**					
Laboratory ID:	10-075-12					
Dissolved Organic Carbon	**2.6**	1.0	SM 5310B	10-13-20	10-13-20	
Client ID:	**TYLMI-20201007**					
Laboratory ID:	10-075-13					
Dissolved Organic Carbon	**3.0**	1.0	SM 5310B	10-13-20	10-13-20	
Client ID:	**TYLMO-20201007**					
Laboratory ID:	10-075-14					
Dissolved Organic Carbon	**3.8**	1.0	SM 5310B	10-13-20	10-13-20	
Client ID:	**QA93-20201007**					
Laboratory ID:	10-075-15					
Dissolved Organic Carbon	**3.5**	1.0	SM 5310B	10-13-20	10-13-20	

Date of Report: November 3, 2020
Samples Submitted: October 7, 2020
Laboratory Reference: 2010-075
Project: 14-05806-000

DISSOLVED ORGANIC CARBON
SM 5310B
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1013D1					
Dissolved Organic Carbon	**ND**	1.0	SM 5310B	10-13-20	10-13-20	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	10-075-02								
	ORIG	DUP							
Dissolved Organic Carbon	**3.45**	**3.40**	NA	NA	NA	NA	1	15	
MATRIX SPIKE									
Laboratory ID:	10-075-02								
	MS		MS		MS				
Dissolved Organic Carbon	**13.9**		10.0	3.45	105	72-132	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB1013D1								
	SB		SB		SB				
Dissolved Organic Carbon	**10.2**		10.0	NA	102	82-123	NA	NA	

Date of Report: November 3, 2020
Samples Submitted: October 7, 2020
Laboratory Reference: 2010-075
Project: 14-05806-000

TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201007**					
Laboratory ID:	10-075-01					
Total Phosphorus	**0.039**	0.010	EPA 365.1	10-12-20	10-13-20	
Client ID:	**COUMI-20201007**					
Laboratory ID:	10-075-02					
Total Phosphorus	**0.13**	0.010	EPA 365.1	10-12-20	10-13-20	
Client ID:	**COUMO-20201007**					
Laboratory ID:	10-075-03					
Total Phosphorus	**0.075**	0.010	EPA 365.1	10-12-20	10-13-20	
Client ID:	**EVAMS-20201007**					
Laboratory ID:	10-075-04					
Total Phosphorus	**0.033**	0.010	EPA 365.1	10-12-20	10-13-20	
Client ID:	**EVALSS-20201007**					
Laboratory ID:	10-075-05					
Total Phosphorus	**0.034**	0.010	EPA 365.1	10-12-20	10-13-20	
Client ID:	**MONMN-20201007**					
Laboratory ID:	10-075-06					
Total Phosphorus	**0.068**	0.010	EPA 365.1	10-12-20	10-13-20	
Client ID:	**MONMS-20201007**					
Laboratory ID:	10-075-07					
Total Phosphorus	**0.029**	0.010	EPA 365.1	10-12-20	10-13-20	
Client ID:	**MONM-20201007**					
Laboratory ID:	10-075-08					
Total Phosphorus	**0.046**	0.010	EPA 365.1	10-12-20	10-13-20	
Client ID:	**SEIMN-20201007**					
Laboratory ID:	10-075-09					
Total Phosphorus	**0.040**	0.010	EPA 365.1	10-12-20	10-13-20	

Date of Report: November 3, 2020
Samples Submitted: October 7, 2020
Laboratory Reference: 2010-075
Project: 14-05806-000

TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20201007**					
Laboratory ID:	10-075-10					
Total Phosphorus	**0.046**	0.010	EPA 365.1	10-12-20	10-13-20	
Client ID:	**TOSMI-20201007**					
Laboratory ID:	10-075-11					
Total Phosphorus	**0.074**	0.010	EPA 365.1	10-12-20	10-13-20	
Client ID:	**TOSMO-20201007**					
Laboratory ID:	10-075-12					
Total Phosphorus	**0.071**	0.010	EPA 365.1	10-12-20	10-13-20	
Client ID:	**TYLMI-20201007**					
Laboratory ID:	10-075-13					
Total Phosphorus	**0.32**	0.010	EPA 365.1	10-12-20	10-13-20	
Client ID:	**TYLMO-20201007**					
Laboratory ID:	10-075-14					
Total Phosphorus	**0.075**	0.010	EPA 365.1	10-12-20	10-13-20	
Client ID:	**QA93-20201007**					
Laboratory ID:	10-075-15					
Total Phosphorus	**0.031**	0.010	EPA 365.1	10-12-20	10-13-20	

Date of Report: November 3, 2020
Samples Submitted: October 7, 2020
Laboratory Reference: 2010-075
Project: 14-05806-000

TOTAL PHOSPHORUS
EPA 365.1
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1012W1					
Total Phosphorus	**ND**	0.010	EPA 365.1	10-12-20	10-13-20	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	10-075-01								
	ORIG	DUP							
Total Phosphorus	**0.0388**	**0.0396**	NA	NA	NA	NA	2	14	
MATRIX SPIKE									
Laboratory ID:	10-075-01								
	MS		MS		MS				
Total Phosphorus	**0.282**		0.250	0.0388	97	80-110	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB1012W1								
	SB		SB		SB				
Total Phosphorus	**0.232**		0.250	NA	93	78-110	NA	NA	

Date of Report: November 3, 2020
Samples Submitted: October 7, 2020
Laboratory Reference: 2010-075
Project: 14-05806-000

TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201007**					
Laboratory ID:	10-075-01					
Copper	**ND**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**ND**	5.0	EPA 200.8	10-15-20	10-15-20	
Client ID:	**COUMI-20201007**					
Laboratory ID:	10-075-02					
Copper	**ND**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**5.7**	5.0	EPA 200.8	10-15-20	10-15-20	
Client ID:	**COUMO-20201007**					
Laboratory ID:	10-075-03					
Copper	**ND**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**17**	5.0	EPA 200.8	10-15-20	10-15-20	
Client ID:	**EVAMS-20201007**					
Laboratory ID:	10-075-04					
Copper	**ND**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**ND**	5.0	EPA 200.8	10-15-20	10-15-20	
Client ID:	**EVALSS-20201007**					
Laboratory ID:	10-075-05					
Copper	**ND**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**ND**	5.0	EPA 200.8	10-15-20	10-15-20	
Client ID:	**MONMN-20201007**					
Laboratory ID:	10-075-06					
Copper	**ND**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**ND**	5.0	EPA 200.8	10-15-20	10-15-20	
Client ID:	**MONMS-20201007**					
Laboratory ID:	10-075-07					
Copper	**ND**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**ND**	5.0	EPA 200.8	10-15-20	10-15-20	

Date of Report: November 3, 2020
Samples Submitted: October 7, 2020
Laboratory Reference: 2010-075
Project: 14-05806-000

TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20201007**					
Laboratory ID:	10-075-08					
Copper	**ND**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**9.3**	5.0	EPA 200.8	10-15-20	10-15-20	
Client ID:	**SEIMN-20201007**					
Laboratory ID:	10-075-09					
Copper	**ND**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**ND**	5.0	EPA 200.8	10-15-20	10-15-20	
Client ID:	**SEIMS-20201007**					
Laboratory ID:	10-075-10					
Copper	**ND**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**ND**	5.0	EPA 200.8	10-15-20	10-15-20	
Client ID:	**TOSMI-20201007**					
Laboratory ID:	10-075-11					
Copper	**1.2**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**15**	5.0	EPA 200.8	10-15-20	10-15-20	
Client ID:	**TOSMO-20201007**					
Laboratory ID:	10-075-12					
Copper	**ND**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**5.5**	5.0	EPA 200.8	10-15-20	10-15-20	
Client ID:	**TYLMI-20201007**					
Laboratory ID:	10-075-13					
Copper	**21**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**2000**	130	EPA 200.8	10-15-20	10-15-20	
Client ID:	**TYLMO-20201007**					
Laboratory ID:	10-075-14					
Copper	**1.1**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**7.8**	5.0	EPA 200.8	10-15-20	10-15-20	

Date of Report: November 3, 2020
Samples Submitted: October 7, 2020
Laboratory Reference: 2010-075
Project: 14-05806-000

TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA93-20201007**					
Laboratory ID:	10-075-15					
Copper	**ND**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**ND**	5.0	EPA 200.8	10-15-20	10-15-20	

Date of Report: November 3, 2020
Samples Submitted: October 7, 2020
Laboratory Reference: 2010-075
Project: 14-05806-000

TOTAL METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1015WH1					
Copper	**ND**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**ND**	5.0	EPA 200.8	10-15-20	10-15-20	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	10-075-04										
	ORIG	DUP									
Copper	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Zinc	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	10-075-04										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**98.2**	**93.8**	100	100	ND	**98**	**94**	75-125	5	20	
Zinc	**102**	**99.4**	100	100	ND	**102**	**99**	75-125	3	20	

Date of Report: November 3, 2020
Samples Submitted: October 7, 2020
Laboratory Reference: 2010-075
Project: 14-05806-000

DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201007**					
Laboratory ID:	10-075-01					
Copper	**ND**	1.0	EPA 200.8		10-14-20	
Zinc	**ND**	5.0	EPA 200.8		10-14-20	
Client ID:	**COUMI-20201007**					
Laboratory ID:	10-075-02					
Copper	**ND**	1.0	EPA 200.8		10-14-20	
Zinc	**ND**	5.0	EPA 200.8		10-14-20	
Client ID:	**COUMO-20201007**					
Laboratory ID:	10-075-03					
Copper	**ND**	1.0	EPA 200.8		10-14-20	
Zinc	**6.5**	5.0	EPA 200.8		10-14-20	
Client ID:	**EVAMS-20201007**					
Laboratory ID:	10-075-04					
Copper	**ND**	1.0	EPA 200.8		10-14-20	
Zinc	**ND**	5.0	EPA 200.8		10-14-20	
Client ID:	**EVALSS-20201007**					
Laboratory ID:	10-075-05					
Copper	**ND**	1.0	EPA 200.8		10-14-20	
Zinc	**ND**	5.0	EPA 200.8		10-14-20	
Client ID:	**MONMN-20201007**					
Laboratory ID:	10-075-06					
Copper	**ND**	1.0	EPA 200.8		10-14-20	
Zinc	**ND**	5.0	EPA 200.8		10-14-20	
Client ID:	**MONMS-20201007**					
Laboratory ID:	10-075-07					
Copper	**ND**	1.0	EPA 200.8		10-14-20	
Zinc	**ND**	5.0	EPA 200.8		10-14-20	

Date of Report: November 3, 2020
Samples Submitted: October 7, 2020
Laboratory Reference: 2010-075
Project: 14-05806-000

DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20201007**					
Laboratory ID:	10-075-08					
Copper	**ND**	1.0	EPA 200.8		10-14-20	
Zinc	**5.4**	5.0	EPA 200.8		10-14-20	
Client ID:	**SEIMN-20201007**					
Laboratory ID:	10-075-09					
Copper	**ND**	1.0	EPA 200.8		10-14-20	
Zinc	**ND**	5.0	EPA 200.8		10-14-20	
Client ID:	**SEIMS-20201007**					
Laboratory ID:	10-075-10					
Copper	**ND**	1.0	EPA 200.8		10-14-20	
Zinc	**ND**	5.0	EPA 200.8		10-14-20	
Client ID:	**TOSMI-20201007**					
Laboratory ID:	10-075-11					
Copper	**ND**	1.0	EPA 200.8		10-14-20	
Zinc	**10**	5.0	EPA 200.8		10-14-20	
Client ID:	**TOSMO-20201007**					
Laboratory ID:	10-075-12					
Copper	**ND**	1.0	EPA 200.8		10-14-20	
Zinc	**6.2**	5.0	EPA 200.8		10-14-20	
Client ID:	**TYLMI-20201007**					
Laboratory ID:	10-075-13					
Copper	**ND**	1.0	EPA 200.8		10-14-20	
Zinc	**320**	13	EPA 200.8		10-14-20	
Client ID:	**TYLMO-20201007**					
Laboratory ID:	10-075-14					
Copper	**ND**	1.0	EPA 200.8		10-14-20	
Zinc	**ND**	5.0	EPA 200.8		10-14-20	

Date of Report: November 3, 2020
Samples Submitted: October 7, 2020
Laboratory Reference: 2010-075
Project: 14-05806-000

DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA93-20201007**					
Laboratory ID:	10-075-15					
Copper	**ND**	1.0	EPA 200.8		10-14-20	
Zinc	**ND**	5.0	EPA 200.8		10-14-20	

Date of Report: November 3, 2020
Samples Submitted: October 7, 2020
Laboratory Reference: 2010-075
Project: 14-05806-000

DISSOLVED METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1014D1					
Copper	**ND**	1.0	EPA 200.8		10-14-20	
Zinc	**ND**	5.0	EPA 200.8		10-14-20	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	10-075-01										
	ORIG	DUP									
Copper	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Zinc	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	10-075-01										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**69.4**	**69.4**	80.0	80.0	ND	**87**	**87**	75-125	0	20	
Zinc	**74.6**	**73.8**	80.0	80.0	ND	**93**	**92**	75-125	1	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Nov 3 2020
On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister

Dear David Baumeister:

Enclosed please find the analytical data for your REDMOND PAIRED WATERSHED STUDY project.

The following is a cross correlation of client and laboratory identifications for your convenience.

CLIENT ID	MATRIX	AMTEST ID	TEST
COLM-20201007	Water	20-A016321	Micro, NUT
COUMI-20201007	Water	20-A016322	Micro, NUT
COUMO-20201007	Water	20-A016323	Micro, NUT
EVAMS-20201007	Water	20-A016324	Micro, NUT
EVALSS-20201007	Water	20-A016325	Micro, NUT
MONMN-20201007	Water	20-A016326	Micro, NUT
MONMS-20201007	Water	20-A016327	Micro, NUT
MONM-20201007	Water	20-A016328	Micro, NUT
SEIMN-20201007	Water	20-A016329	Micro, NUT
SEIMS-20201007	Water	20-A016330	Micro, NUT
TOSMI-20201007	Water	20-A016331	Micro, NUT
TOSMO-20201007	Water	20-A016332	Micro, NUT
TYLMI-20201007	Water	20-A016333	Micro, NUT
TYLMO-20201007	Water	20-A016334	Micro, NUT
QA93-20201007	Water	20-A016335	Micro, NUT

Your samples were received on Wednesday, October 7, 2020. At the time of receipt, the samples were logged in and properly maintained prior to the subsequent analysis.

The analytical procedures used at AmTest are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

Following the analytical data you will find the Quality Control (QC) results.

Please note that the detection limits that are listed in the body of the report refer to the Practical Quantitation Limits (PQL's), as opposed to the Method Detection Limits (MDL's).

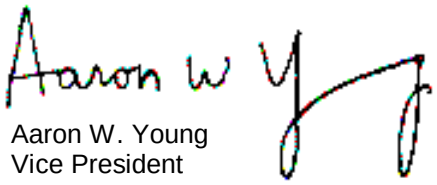
Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Nov 3 2020
On-Site Environmental
continued . . .

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,



Aaron W. Young
Vice President

Project #: 14-05806-000
PO Number: 10-075

BACT = Bacteriological	MET = Metals	NUT=Nutrients	MIN=Minerals
CONV = Conventionals	ORG = Organics	DEM=Demand	

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664
www.amtestlab.com

Professional Analytical Services

ANALYSIS REPORT

On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister
Project Name: REDMOND PAIRED WATERSHED STUDY
Project #: 14-05806-000
PO Number: 10-075
All results reported on an as received basis.

Date Received: 10/07/20
Date Reported: 11/ 3/20

AMTEST Identification Number **20-A016321**
Client Identification **COLM-20201007**
Sampling Date **10/07/20, 11:45**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal coliform	5.	CFU/100 ml		1	SM 9222D	JM	10/07/20
Total Nitrogen (NOX&TKN)	1.12	mg/l		0.1			
Total Nitrogen (TKN)	1.07	mg/l		0.2	SM4500N	KS	10/21/20
Total Nitrate + Nitrite	0.054	mg/l		0.02	SM4500NO3	KS	10/27/20

AMTEST Identification Number **20-A016322**
Client Identification **COUMI-20201007**
Sampling Date **10/07/20, 09:50**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal coliform	21.	CFU/100 ml		1	SM 9222D	JM	10/07/20
Total Nitrogen (NOX&TKN)	0.97	mg/l		0.1			
Total Nitrogen (TKN)	0.739	mg/l		0.2	SM4500N	KS	10/21/20
Total Nitrate + Nitrite	0.23	mg/l		0.02	SM4500NO3	KS	10/27/20

AMTEST Identification Number **20-A016323**
Client Identification **COUMO-20201007**
Sampling Date **10/07/20, 09:30**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal coliform	80.	CFU/100 ml		1	SM 9222D	JM	10/07/20
Total Nitrogen (NOX&TKN)	1.11	mg/l		0.1			
Total Nitrogen (TKN)	0.711	mg/l		0.2	SM4500N	KS	10/21/20
Total Nitrate + Nitrite	0.40	mg/l		0.02	SM4500NO3	KS	10/27/20

AMTEST Identification Number **20-A016324**
Client Identification **EVAMS-20201007**
Sampling Date **10/07/20, 10:00**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal coliform	34.	CFU/100 ml		1	SM 9222D	JM	10/07/20
Total Nitrogen (NOX&TKN)	2.47	mg/l		0.1			
Total Nitrogen (TKN)	0.773	mg/l		0.2	SM4500N	KS	10/21/20
Total Nitrate + Nitrite	1.7	mg/l		0.02	SM4500NO3	KS	10/27/20

AMTEST Identification Number **20-A016325**
Client Identification **EVALSS-20201007**
Sampling Date **10/07/20, 10:20**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal coliform	88.	CFU/100 ml		1	SM 9222D	JM	10/07/20
Total Nitrogen (NOX&TKN)	2.59	mg/l		0.1			
Total Nitrogen (TKN)	1.19	mg/l		0.2	SM4500N	KS	10/21/20
Total Nitrate + Nitrite	1.4	mg/l		0.02	SM4500NO3	KS	10/27/20

AMTEST Identification Number **20-A016326**
Client Identification **MONMN-20201007**
Sampling Date **10/07/20, 12:15**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal coliform	370	CFU/100 ml		1	SM 9222D	JM	10/07/20
Total Nitrogen (NOX&TKN)	1.05	mg/l		0.1			
Total Nitrogen (TKN)	0.913	mg/l		0.2	SM4500N	KS	10/21/20
Total Nitrate + Nitrite	0.14	mg/l		0.02	SM4500NO3	KS	10/27/20

AMTEST Identification Number **20-A016327**
Client Identification **MONMS-20201007**
Sampling Date **10/07/20, 12:40**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal coliform	12.	CFU/100 ml		1	SM 9222D	JM	10/07/20
Total Nitrogen (NOX&TKN)	0.74	mg/l		0.1			
Total Nitrogen (TKN)	0.703	mg/l		0.2	SM4500N	KS	10/21/20
Total Nitrate + Nitrite	0.040	mg/l		0.02	SM4500NO3	KS	10/27/20

AMTEST Identification Number **20-A016328**
Client Identification **MONM-20201007**
Sampling Date **10/07/20, 12:10**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal coliform	87.	CFU/100 ml		1	SM 9222D	JM	10/07/20
Total Nitrogen (NOX&TKN)	1.08	mg/l		0.1			
Total Nitrogen (TKN)	0.883	mg/l		0.2	SM4500N	KS	10/21/20
Total Nitrate + Nitrite	0.20	mg/l		0.02	SM4500NO3	KS	10/27/20

AMTEST Identification Number **20-A016329**
Client Identification **SEIMN-20201007**
Sampling Date **10/07/20, 11:00**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal coliform	5.	CFU/100 ml		1	SM 9222D	JM	10/07/20
Total Nitrogen (NOX&TKN)	0.88	mg/l		0.1			
Total Nitrogen (TKN)	0.614	mg/l		0.2	SM4500N	KS	10/21/20
Total Nitrate + Nitrite	0.27	mg/l		0.02	SM4500NO3	KS	10/30/20

AMTEST Identification Number **20-A016330**
Client Identification **SEIMS-20201007**
Sampling Date **10/07/20, 13:05**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal coliform	65.	CFU/100 ml		1	SM 9222D	JM	10/07/20
Total Nitrogen (NOX&TKN)	1.03	mg/l		0.1			
Total Nitrogen (TKN)	0.717	mg/l		0.2	SM4500N	KS	10/21/20
Total Nitrate + Nitrite	0.31	mg/l		0.02	SM4500NO3	KS	10/30/20

AMTEST Identification Number **20-A016331**
Client Identification **TOSMI-20201007**
Sampling Date **10/07/20, 09:35**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal coliform	430	CFU/100 ml		1	SM 9222D	JM	10/07/20
Total Nitrogen (NOX&TKN)	1.39	mg/l		0.1			
Total Nitrogen (TKN)	0.613	mg/l		0.2	SM4500N	KS	10/21/20
Total Nitrate + Nitrite	0.78	mg/l		0.02	SM4500NO3	KS	10/30/20

AMTEST Identification Number **20-A016332**
Client Identification **TOSMO-20201007**
Sampling Date **10/07/20, 10:30**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal coliform	240	CFU/100 ml		1	SM 9222D	JM	10/07/20
Total Nitrogen (NOX&TKN)	1.15	mg/l		0.1			
Total Nitrogen (TKN)	0.587	mg/l		0.2	SM4500N	KS	10/21/20
Total Nitrate + Nitrite	0.56	mg/l		0.02	SM4500NO3	KS	10/30/20

AMTEST Identification Number **20-A016333**
Client Identification **TYLMI-20201007**
Sampling Date **10/07/20, 11:35**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal coliform	220	CFU/100 ml		1	SM 9222D	JM	10/07/20
Total Nitrogen (NOX&TKN)	2.94	mg/l		0.1			
Total Nitrogen (TKN)	2.01	mg/l		0.2	SM4500N	KS	10/21/20
Total Nitrate + Nitrite	0.93	mg/l		0.02	SM4500NO3	KS	10/30/20

AMTEST Identification Number **20-A016334**
Client Identification **TYLMO-20201007**
Sampling Date **10/07/20, 11:05**

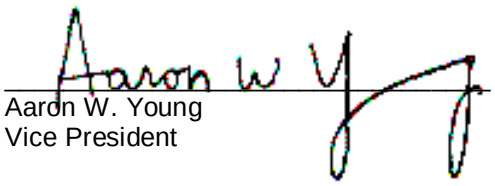
Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal coliform	250	CFU/100 ml		1	SM 9222D	JM	10/07/20
Total Nitrogen (NOX&TKN)	0.96	mg/l		0.1			
Total Nitrogen (TKN)	0.606	mg/l		0.2	SM4500N	KS	10/21/20
Total Nitrate + Nitrite	0.35	mg/l		0.02	SM4500NO3	KS	10/30/20

AMTEST Identification Number **20-A016335**
Client Identification **QA93-20201007**
Sampling Date **10/07/20, 10:10**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal coliform	120	CFU/100 ml		1	SM 9222D	JM	10/07/20
Total Nitrogen (NOX&TKN)	2.44	mg/l		0.1			
Total Nitrogen (TKN)	0.639	mg/l		0.2	SM4500N	KS	10/21/20
Total Nitrate + Nitrite	1.8	mg/l		0.02	SM4500NO3	KS	10/30/20



Aaron W. Young
Vice President

Am Test Inc.
13600 NE 126th PL
Suite C
Kirkland, WA, 98034
(425) 885-1664
www.amtestlab.com

Professional Analytical Services

QC Summary for sample numbers: 20-A016321 to 20-A016335

DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	DUP VALUE	RPD
20-A016322	Fecal coliform	CFU/100 ml	21.	23.	9.1
20-A016335	Fecal coliform	CFU/100 ml	120	90.	29.
20-A016326	Total Nitrogen (TKN)	mg/l	0.913	0.902	1.2
20-A016350	Total Nitrogen (TKN)	mg/l	25.9	26.2	1.2
20-A016428	Total Nitrogen (TKN)	mg/l	0.740	0.704	5.0
20-A016498	Total Nitrogen (TKN)	mg/l	11.0	10.9	0.91
20-A016122	Total Nitrogen (TKN)	mg/l	8.35	10.3	21.
20-A016328	Total Nitrate + Nitrite	mg/l	0.20	0.19	5.1
20-A016303	Total Nitrate + Nitrite	mg/l	0.18	0.18	0.00
20-A016329	Total Nitrate + Nitrite	mg/l	0.27	0.28	3.6
20-A016352	Total Nitrate + Nitrite	mg/l	1.1	1.0	9.5
20-A016547	Total Nitrate + Nitrite	mg/l	6.3	6.5	3.1
20-A016586	Total Nitrate + Nitrite	mg/l	0.18	0.18	0.00
20-A016623	Total Nitrate + Nitrite	mg/l	0.032	0.034	6.1
20-A016666	Total Nitrate + Nitrite	mg/l	< 0.02	< 0.02	
20-A016677	Total Nitrate + Nitrite	mg/l	0.37	0.38	2.7
20-A016698	Total Nitrate + Nitrite	mg/l	0.39	0.41	5.0
20-A016770	Total Nitrate + Nitrite	mg/l	2.2	2.2	0.00
20-A016924	Total Nitrate + Nitrite	mg/l	0.027	0.027	0.00

MATRIX SPIKES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	SMPL+ SPK	SPK AMT	RECOVERY
20-A016326	Total Nitrogen (TKN)	mg/l	0.913	2.83	2.00	95.85 %
20-A016350	Total Nitrogen (TKN)	mg/l	25.9	66.7	40.0	102.00 %
20-A016428	Total Nitrogen (TKN)	mg/l	0.740	2.60	2.00	93.00 %
20-A016498	Total Nitrogen (TKN)	mg/l	11.0	31.9	20.0	104.50 %
20-A016328	Total Nitrate + Nitrite	mg/l	0.20	1.2	1.0	100.00 %
20-A016303	Total Nitrate + Nitrite	mg/l	0.18	1.1	1.0	92.00 %
20-A016329	Total Nitrate + Nitrite	mg/l	0.27	1.3	1.0	103.00 %
20-A016352	Total Nitrate + Nitrite	mg/l	1.1	2.0	1.0	90.00 %
20-A016547	Total Nitrate + Nitrite	mg/l	6.3	16.	10.	97.00 %
20-A016586	Total Nitrate + Nitrite	mg/l	0.18	1.1	1.0	92.00 %
20-A016623	Total Nitrate + Nitrite	mg/l	0.032	0.98	1.0	94.80 %
20-A016666	Total Nitrate + Nitrite	mg/l	< 0.02	0.99	1.0	99.00 %
20-A016677	Total Nitrate + Nitrite	mg/l	0.37	1.4	1.0	103.00 %
20-A016698	Total Nitrate + Nitrite	mg/l	0.39	1.4	1.0	101.00 %
20-A016770	Total Nitrate + Nitrite	mg/l	2.2	3.3	1.0	110.00 %
20-A016924	Total Nitrate + Nitrite	mg/l	0.027	1.1	1.0	107.30 %

QC Summary for sample numbers: 20-A016321 to 20-A016335...

STANDARD REFERENCE MATERIALS

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
Total Nitrogen (TKN)	mg/l	1.00	0.997	99.7 %
Total Nitrogen (TKN)	mg/l	1.00	0.978	97.8 %
Total Nitrate + Nitrite	mg/l	1.0	0.94	94.0 %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	0.99	99.0 %
Total Nitrate + Nitrite	mg/l	1.0	0.98	98.0 %
Total Nitrate + Nitrite	mg/l	1.0	0.98	98.0 %
Total Nitrate + Nitrite	mg/l	1.0	0.98	98.0 %
Total Nitrate + Nitrite	mg/l	1.0	0.98	98.0 %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %

BLANKS

ANALYTE	UNITS	RESULT
Fecal coliform	CFU/100 ml	< 1
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Laboratory Reference #: 10-075

Laboratory: AmTest Laboratories

Attention: Aaron Young

13600 NE 126th Pl Kirkland, WA 98034

Phone Number: (425) 885-1664

Turnaround Request

1 Day 2 Day 3 Day

(Standard)

Other: _____

Project Manager: Blair Goodrow

email: bgoodrow@onsite-env.com

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analyses
1	COLM-20201007 16321	10/7/20	11:45	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
2	COUMI-20201007 22	10/7/20	9:50	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
3	COUMO-20201007 23	10/7/20	9:30	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
4	EVAMS-20201007 24	10/7/20	10:00	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
5	EVALSS-20201007 25	10/7/20	10:20	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
6	MONMN-20201007 26	10/7/20	12:15	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
7	MONMS-20201007 27	10/7/20	12:40	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
8	MONM-20201007 28	10/7/20	12:10	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
9	SEIMN-20201007 29	10/7/20	11:00	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
10	SEIMS-20201007 30	10/7/20	13:05	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N

Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:	OSE	10/7/20	1530	
Received by:	AMTEST T=8.3	10/7/20	1530	**EDDs - CSV**
Relinquished by:				**Reporting Limits:**
Received by:				**Fecal Coliform - 1.0 cfu/100ml**
Relinquished by:				**Total Nitrogen - .10 mg/L**
Received by:				

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Laboratory Reference #: 10-075

Laboratory: AmTest Laboratories

Attention: Aaron Young

13600 NE 126th Pl Kirkland, WA 98034

Phone Number: (425) 885-1664

Turnaround Request

1 Day 2 Day 3 Day

Standard

Other: _____

Project Manager: Blair Goodrow

email: bgoodrow@onsite-env.com

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analyses
11	TOSMI-20201007 16331	10/7/20	9:35	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
12	TOSMO-20201007 32	10/7/20	10:30	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
13	TYLMI-20201007 33	10/7/20	11:35	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
14	TYLMO-20201007 34	10/7/20	11:05	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
15	QA93-20201007 35	10/7/20	10:10	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N

Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by: Michelle Bluhm	OSE	10/7	1530	
Received by:	AMTEST T=8.3	10/7/20	1530	**EDDs - CSV**
Relinquished by:				**Reporting Limits:**
Received by:				**Fecal Coliform - 1.0 cfu/100ml**
Relinquished by:				**Total Nitrogen - .10 mg/L**
Received by:				

CHAIN OF CUSTODY

10-075 Page 1 of 1

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants
Project No.: 14-05806-000
Project Name: Redmond Paired Watershed Study
Project Manager: George Iftner

Turnaround Requested:
_____ 1 Day
_____ 2 Day
_____ 3 Day
__X__ Standard

Laboratory No.

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Suspended Solids (SM 2540D)	Turbidity (EPA 181.1)	Hardness (EPA 200.7 / SM 2340B)	Dissolved Organ Carbon (SM 5310B) *	Fecal Coliform (SM 9222D)	Total Phosphorus (EPA 365.1)	Total Nitrogen (SM 4500 N-B)	Total Cu and Zn (EPA 200.8)	Dissolved Cu and Zn (EPA 200.8) *			
1	COLM-2020 1007		11:45	Water	7	X	X	X	X	X	X	X	X	X			
2	COUMI-2020		9:50	Water	7	X	X	X	X	X	X	X	X	X			
3	COUMO-2020		9:30	Water	7	X	X	X	X	X	X	X	X	X			
4	EVAMS-2020		10:00	Water	7	X	X	X	X	X	X	X	X	X			
5	EVALSS-2020		10:20	Water	7	X	X	X	X	X	X	X	X	X			
6	MONMN-2020		12:15	Water	7	X	X	X	X	X	X	X	X	X			
7	MONMS-2020		12:40	Water	7	X	X	X	X	X	X	X	X	X			
8	MONM-2020		17:10	Water	7	X	X	X	X	X	X	X	X	X			
9	SEIMN-2020		11:00	Water	7	X	X	X	X	X	X	X	X	X			
10	SEIMS-2020		13:05	Water	7	X	X	X	X	X	X	X	X	X			
11	TOSMI-2020		9:35	Water	7	X	X	X	X	X	X	X	X	X			
12	TOSMO-2020		10:30	Water	7	X	X	X	X	X	X	X	X	X			
13	TYLMI-2020		11:35	Water	7	X	X	X	X	X	X	X	X	X			
14	TYLMO-2020		11:05	Water	7	X	X	X	X	X	X	X	X	X			
15	QA 93-2020 1007		10:10	Water	7	X	X	X	X	X	X	X	X	X			

Relinquished by [signature] Date 10/07/20 Received by [signature] Date 10/7/20

Firm _____ Time _____ Firm OSE Time 1410

Relinquished by _____ Date _____ Received by _____ Date _____

Firm _____ Time _____ Firm _____ Time _____

Comments:
* - field filtered with 0.45 µm filter within 15 minutes of collecting sample

CHAIN OF CUSTODY

10-075 Page 1 of 1

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants

Project No.: 14-05806-000

Project Name: Redmond Paired Watershed Study

Project Manager: George Iftner

Turnaround Requested:

_____ 1 Day

_____ 2 Day

_____ 3 Day

__X__ Standard

Laboratory No.

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Suspended Solids (SM 2540D)	Turbidity (EPA 181.1)	Hardness (EPA 200.7 / SM 2340B)	Dissolved Organ Carbon (SM 5310B) *	Fecal Coliform (SM 9222D)	Total Phosphorus (EPA 365.1)	Total Nitrogen (SM 4500 N-B)	Total Cu and Zn (EPA 200.8)	Dissolved Cu and Zn (EPA 200.8) *			
1	COLM-2020 1007		11:45	Water	7	X	X	X	X	X	X	X	X	X			
2	COUMI-2020		9:50	Water	7	X	X	X	X	X	X	X	X	X			
3	COUMO-2020		9:30	Water	7	X	X	X	X	X	X	X	X	X			
4	EVAMS-2020		10:00	Water	7	X	X	X	X	X	X	X	X	X			
5	EVALSS-2020		10:20	Water	7	X	X	X	X	X	X	X	X	X			
6	MONMN-2020		12:15	Water	7	X	X	X	X	X	X	X	X	X			
7	MONMS-2020		12:40	Water	7	X	X	X	X	X	X	X	X	X			
8	MONM-2020		12:10	Water	7	X	X	X	X	X	X	X	X	X			
9	SEIMN-2020		11:00	Water	7	X	X	X	X	X	X	X	X	X			
10	SEIMS-2020		13:05	Water	7	X	X	X	X	X	X	X	X	X			
11	TOSMI-2020		9:35	Water	7	X	X	X	X	X	X	X	X	X			
12	TOSMO-2020		10:30	Water	7	X	X	X	X	X	X	X	X	X			
13	TYLMI-2020		11:35	Water	7	X	X	X	X	X	X	X	X	X			
14	TYLMO-2020		11:05	Water	7	X	X	X	X	X	X	X	X	X			
15	QA 93-2020 1007		10:10	Water	7	X	X	X	X	X	X	X	X	X			

Relinquished by [signature] Date 10/07/20 Received by [signature] Date 10/7/20

Firm _____ Time _____ Firm OSE Time 1410

Relinquished by _____ Date _____ Received by _____ Date _____

Firm _____ Time _____ Firm _____ Time _____

Comments:
* - field filtered with 0.45 µm filter within 15 minutes of collecting sample

METER CALIBRATION LOG - Redmond Paired Watershed Study

Project Number:	14-05806-000
Personnel Performing Calibration:	N. Bartlett
Meter:	ProDSS #1
Date/Time:	10/06/20 17:00
Barometric Pressure Start of Day:	mmHg: 765.4 Time: 17:00
Barometric Pressure End of Day:	mmHg: 764.5 Time: 17:20

PRE Field Run CALIBRATION	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	4.6	0	23.4	
Conductivity (µS/cm)	967.	1,000	22.6	
Conductivity (µS/cm)	103.6	100	22.2	
DO % Saturation	91.7	100	23.4	

POST Field Run CHECK	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	0.1	0	23.1	
Conductivity (µS/cm)	99.5	100	22.7	
DO % Saturation	115.5	100	23.4	

Calibration Procedures:

Rinse Multimeter Sonde Between Each Operation

Rinse 3 times with tap water, 3 times with deionized water, then 3 times with the solution to be used for calibrating or testing.

Conductivity Calibration Notes:

1. Dry the conductivity probe with a lab tissue (e.g., KimWipes®) and DI water.
2. Fill calibration cup to within a centimeter of the top of the calibration cup with DI water (0 µS).
3. Fill the calibration cup with 1,000 µS standard so that the temperature/conductivity probe is submerged.
4. Make sure there are no bubbles in the cell; wait 2 minutes.
5. Enter the appropriate standard value (1,000 µS/cm or 1.0 mS/cm) for Sp Cond.
6. Check conductivity using 100 µS/cm standard.

Dissolved Oxygen Calibration Notes:

1. Fill the calibration cup with about 1/2 inch of DI; it should be below the sensor cap.
2. Use KimWipes® to dry any droplets from the sensor cap.
3. Invert calibration cup's cap and gently rest it on the cup.
4. Wait 5 minutes, making sure that temperature stabilizes.
5. Determine local barometric pressure (mm Hg) and enter this value into the meter.
6. Click "Calibrate". "Calibrate Successful" will be displayed.
7. To retain calibration accuracy between measurements, store with the sensor immersed in water or within a water-saturated air environment such as a sealed storage cup with at least 10 ml of water.
8. It is important to have the water-saturated air and the sensor at the same temperature. Therefore, store a jar of DI in the same environment as the sonde and calibrate in a similar air temperature as the water and sonde.
9. Keep probe out of direct sun or wind.

METER CALIBRATION LOG - Redmond Paired Watershed Study

Project Number:	14-05806-000		
Personnel Performing Calibration:	N. Bartlett		
Meter:	Pro DSS #2		
Date/Time:	10/06/20	17:00	
Barometric Pressure Start of Day:	mmHg: 765.2	Time:	17:00
Barometric Pressure End of Day:	mmHg: 769.8	Time:	17:20

PRE Field Run CALIBRATION	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	7.2	0	24.0	
Conductivity (µS/cm)	975	1,000	25.2	
Conductivity (µS/cm)	106.6	100	24.3	
DO % Saturation	99.4	100	22.3	

POST Field Run CHECK	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	0.0	0	23.7	
Conductivity (µS/cm)	94.9	100	23.4	
DO % Saturation	104.2	100	24.0	

Calibration Procedures:

Rinse Multimeter Sonde Between Each Operation

Rinse 3 times with tap water, 3 times with deionized water, then 3 times with the solution to be used for calibrating or testing.

Conductivity Calibration Notes:

1. Dry the conductivity probe with a lab tissue (e.g., KimWipes®) and DI water.
2. Fill calibration cup to within a centimeter of the top of the calibration cup with DI water (0 µS).
3. Fill the calibration cup with 1,000 µS standard so that the temperature/conductivity probe is submerged.
4. Make sure there are no bubbles in the cell; wait 2 minutes.
5. Enter the appropriate standard value (1,000 µS/cm or 1.0 mS/cm) for Sp Cond.
6. Check conductivity using 100 µS/cm standard.

Dissolved Oxygen Calibration Notes:

1. Fill the calibration cup with about 1/2 inch of DI; it should be below the sensor cap.
2. Use KimWipes® to dry any droplets from the sensor cap.
3. Invert calibration cup's cap and gently rest it on the cup.
4. Wait 5 minutes, making sure that temperature stabilizes.
5. Determine local barometric pressure (mm Hg) and enter this value into the meter.
6. Click "Calibrate". "Calibrate Successful" will be displayed.
7. To retain calibration accuracy between measurements, store with the sensor immersed in water or within a water-saturated air environment such as a sealed storage cup with at least 10 ml of water.
8. It is important to have the water-saturated air and the sensor at the same temperature. Therefore, store a jar of DI in the same environment as the sonde and calibrate in a similar air temperature as the water and sonde.
9. Keep probe out of direct sun or wind.

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + MMH

Sample Date: 10-07-2020 **Sample Time:** 13:05 PDT: PST:

Base Flow or Storm Event?

Field Filtered Time:
(Must filter within 15 minutes of collection)

SITE ID: SEIMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Cloudy + 63°F

Water Quality Sampling

Sample ID: SEIMS10072020

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Clear
Color: None
Odor: None
Sheen: None
Floatables: None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

~~YSI Pro DSS 2~~

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 7.6

Reference Point (description):

Water Quality Measurments

Temperature (°C) 11.5

Specific Conductivity (µs/cm) 126.1

Dissolved Oxygen (mg/L) 10.33

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Personnel: JW + MMH

Sample Date: 10-07-20 Sample Time: 11:35 PDT:

Base Flow or Storm Event? Field Filtered Time: 11:40 PST:
(Must filter within 15 minutes of collection)

SITE ID: TYLMI

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

HERRERA

Current Weather and Temp: Cloudy + 61°F

Water Quality Sampling

Sample ID: TYLMI10072020

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Slightly turbid

Color: Clear

Odor: None

Sheen: None

Floatables: None

LABORATORY DELIVERY

Date: Time:

Quality Assurance

Checked By: Signature:

Date Checked: Time:

Data Entered into Database? YES NO initials:

Date Entered: Time:

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 5.2

Reference Point (description):

Water Quality Measurments

Temperature (°C) 13.3

Specific Conductivity (µs/cm) 253.7

Dissolved Oxygen (mg/L) 9.55

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + MMH

Sample Date: 10-07-2020 **Sample Time:** 12:40 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 12:50 PST:

(Must filter within 15 minutes of collection)

SITE ID: MONMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Cloudy + 63°F

Water Quality Sampling

Sample ID: MONMS10072020

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: clear

Color: None

Odor: None

Sheen: None

Floatables: None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): NA Catch Basin bolted

Reference Point (description): Shut

Water Quality Measurments

Temperature (°C) 12.9

Specific Conductivity (µs/cm) 361.9

Dissolved Oxygen (mg/L) 7.30

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + MMH

Sample Date: 10-07-20 **Sample Time:** 12:15 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 12:25 PST:

(Must filter within 15 minutes of collection)

SITE ID: MONMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Cloudy + 63°F

Water Quality Sampling

Sample ID: MONMN10072020

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Clear

Color: None

Odor: None

Sheen: None

Floatables: None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): .81

Reference Point (description):

Water Quality Measurments

Temperature (°C) 12.9

Specific Conductivity (µs/cm) 246.2

Dissolved Oxygen (mg/L) 9.54

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + MM

Sample Date: 10-07-2020 **Sample Time:** 10:30 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 10:35 PST:

(Must filter within 15 minutes of collection)

SITE ID: TOSMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Foggy + 58°F

Water Quality Sampling

Sample ID: TOSMO 10072020

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Clear

Color: None

Odor: None

Sheen: None

Floatables: None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

~~YSI Pro Plus~~ (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): ~~0.57~~ 3.6

Reference Point (description):

Water Quality Measurments

Temperature (°C) 11.7°C

Specific Conductivity (µs/cm) 267.0

Dissolved Oxygen (mg/L) 10.77

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + MMH

Sample Date: 10-07-2020 **Sample Time:** 9:30 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 9:30 PST:

(Must filter within 15 minutes of collection)

SITE ID: COUMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Foggy and 58°F

Water Quality Sampling

Sample ID: COUMO20201007 20

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Clear

Color: light brown

Odor: none

Sheen: none

Floatables: none

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 1.3

Reference Point (description):

Water Quality Measurments

Temperature (°C) 13°C

Specific Conductivity (µs/cm) 277.0

Dissolved Oxygen (mg/L) 9.99

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + MMH

Sample Date: 10/07/2020 **Sample Time:** 9:50 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 9:55 PST:

(Must filter within 15 minutes of collection)

SITE ID: COUMI

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Foggy + 58°F

Water Quality Sampling

Sample ID: COUMI10072020

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Clear

Color: None

Odor: None

Sheen: None

Floatables: None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.4

Reference Point (description):

Water Quality Measurments

Temperature (°C) 12.0

Specific Conductivity (µs/cm) 341.0

Dissolved Oxygen (mg/L) 10.51

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + MMH

Sample Date: 10-07-2020 **Sample Time:** 11:05 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 11:15 PST:

(Must filter within 15 minutes of collection)

SITE ID: TYLMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Foggy + 61°F

Water Quality Sampling

Sample ID: TYLMO10072020

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Clear

Color: None

Odor: Slight odor

Sheen: None

Floatables: None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 7.5 in

Reference Point (description):

Water Quality Measurments

Temperature (°C) 12.2

Specific Conductivity (µs/cm) 223.9

Dissolved Oxygen (mg/L) 10.67

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, GK

Sample Date: 10/07/20 **Sample Time:** 12:10 PDT

Base Flow or Storm Event? **Field Filtered Time:** 12:15 PST

(Must filter within 15 minutes of collection)

SITE ID: MONM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Overcast, 60°F

Water Quality Sampling

Sample ID: MONM 20201007

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Clear

Color:

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft):

Reference Point (description): N/A

Water Quality Measurments

Temperature (°C) 13.0

Specific Conductivity (µs/cm) 240.2

Dissolved Oxygen (mg/L) 9.59

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, BK

Sample Date: 10/07/20 **Sample Time:** 11:45 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 11:50 PST:

(Must filter within 15 minutes of collection)

SITE ID: COLM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: overcast, 60°F

Water Quality Sampling

Sample ID: COLM20201007

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	No
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity:

Color: Yellowish color

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 5.40

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 13.2

Specific Conductivity (µs/cm) 39.2

Dissolved Oxygen (mg/L) 7.40

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, GK

Sample Date: 10/07/20 **Sample Time:** 11:00 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 11:05 PST:

(Must filter within 15 minutes of collection)

SITE ID: SEIMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: cloudy, 60°F

Water Quality Sampling

Sample ID: SEIMN20201007

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	No
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Clear

Color:

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.95

Reference Point (description): Masonry top

Water Quality Measurments

Temperature (°C) 11.9

Specific Conductivity (µs/cm) 107.5

Dissolved Oxygen (mg/L) 9.82

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, GK

Sample Date: 10/07/20 **Sample Time:** 10:27 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 10:26 PST:

(Must filter within 15 minutes of collection)

SITE ID: EVALS5

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

HERRERA

Current Weather and Temp: overcast

Water Quality Sampling

Sample ID: EVALS5 20201007

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	No
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Clear

Color:

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.25

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 12.3

Specific Conductivity (µs/cm) 197.3

Dissolved Oxygen (mg/L) 9.92

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: MB, GK

Sample Date: 10/07/20 **Sample Time:** 10:00 / 10:10 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 10:05 / 10:15 PST:

(Must filter within 15 minutes of collection)

SITE ID: EVAMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Overcast, 60°F

Water Quality Sampling

Sample ID: EVAMS 2020 1007

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	YES
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID: QA93 2020 1007

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Clear

Color:

Odor:

Sheen: small amount of bubbles

Floatables: some pine needles

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 3.74

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 12.2

Specific Conductivity (µs/cm) 212.1

Dissolved Oxygen (mg/L) 9.70

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, GK

Sample Date: 10/07/20 **Sample Time:** 9:35 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 1:40 PST:

(Must filter within 15 minutes of collection)

SITE ID: TOSM1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

HERRERA

Current Weather and Temp: overcast, 60°F

Water Quality Sampling

Sample ID: TOSM1 20201007

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Clear

Color:

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.13

Reference Point (description): S6

Water Quality Measurments

Temperature (°C) 13.4

Specific Conductivity (µs/cm) 289.2

Dissolved Oxygen (mg/L) 9.42

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Data Quality Assurance Worksheet

By J. Brown

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 11/30/20 Page 1 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 10/7/20 /All locations, QA93 (EVAMS) Lab Ref No 210-075

date 12/22/2020

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
TSS	OK / SM 2540D	NA	**NA**	2	**≤7**	≤1.0 mg/L 1.0 mg/L	NA	**NA**	95	**±20**	1	**≤ 25**	30	**≤ 25**	OK	NO FLAG FOR FIELD DUPE EXCEEDANCE, WITHIN 5% AND ALL OTHER QA OK.
Turbidity	OK / EPA 180.1	NA	**NA**	1	**≤2**	≤0.1 NTU 0.1 NTU	NA	**NA**	NA	**±10**	1	**≤ 25**	41	**≤ 25**	OK	FLAG EVAMS J DUE TO FIELD DUPLICATE EXCEEDANCE.
Hardness	OK / SM 2340B	NA	**NA**	2	**≤180**	≤1.0 mg/L 1.0 mg/L	117, 111	**±25**	105	**±15**	4 MS 3	**≤ 20**	0	**≤ 20**	OK	NONE
DOC	OK / SM 5310B	≤15	**≤15**	6	**≤28**	≤1.0 mg/L 1.0 mg/L	105	**±25**	102	**±15**	D=0.05	**≤ 20**	D=0.1	**≤ 20**	OK	NONE
Total Phosphorus	OK / EPA 365.1	NA	**NA**	6	**≤28**	≤0.01 mg/L 0.01 mg/L	97	**±25**	93	**±20**	D= 0.0008	**≤ 20**	D=0.002	**≤ 20**	OK	NONE
Total Nitrogen (TKN + N+N)	OK/ SM 4500 N-B	NA	**NA**	14-23	**≤28**	≤0.1 mg/L 0.1 mg/L	90-110	**±25**	94-100	**±20**	0-21, D=0-0.04	**≤ 20**	6, D=0.13	**≤ 20**	OK	NO FLAG FOR SLIGHT LAB DUPE EXCEEDANCE.

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

Data Quality Assurance Worksheet

By J. Brown

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 11/30/20 Page 2 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 10/7/20 /All locations, QA93 (EVAMS) Lab Ref No 210-075

date 12/22/2020

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
Total Copper	OK/ EPA 200.8	NA	**NA**	8	**≤180**	≤1.0 µg/L 1.0 µg/L	98, 94	**±25**	NR	**±15**	NC, MS 5	**≤ 20**	NC	**≤ 20**	OK	NONE
Total Zinc	OK/ EPA 200.8	NA	**NA**	8	**≤180**	≤5.0 µg/L 5.0 µg/L	102, 99	**±25**	NR	**±15**	NC, MS 3	**≤ 20**	NC	**≤ 20**	OK	NONE
Dissolved Copper	OK/ EPA 200.8	≤15	**≤15**	7	**≤180**	≤1.0 µg/L 1.0 µg/L	87, 87	**±25**	NR	**±15**	NC, MS 0	**≤ 20**	NC	**≤ 20**	OK	NONE
Dissolved Zinc	OK/ EPA 200.8	≤15	**≤15**	7	**≤180**	≤5.0 µg/L 5.0 µg/L	93, 92	**±25**	NR	**±15**	NC, MS 1	**≤ 20**	NC	**≤ 20**	OK	NONE
Fecal Coliform	OK / SM 9222D	NA	**NA**	1	**≤1**	≤1.0 cfu/ 100mL 10 cfu/ 100mL	NA	**NA**	NA	**NA**	9, 29	**≤ 35**	112	**≤ 50**	OK	FLAG EVAMS J DUE TO FIELD DUPE EXCEEDANCE.

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

November 11, 2020

Jess Brown
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2010-144

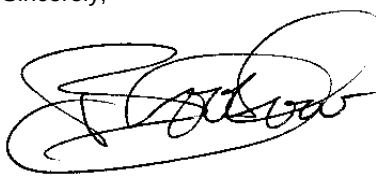
Dear Jess:

Enclosed are the analytical results and associated quality control data for samples submitted on October 13, 2020.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



Blair Goodrow
Project Manager

Enclosures

Date of Report: November 11, 2020
Samples Submitted: October 13, 2020
Laboratory Reference: 2010-144
Project: 14-05806-000

Case Narrative

Samples were collected on October 13, 2020 and received by the laboratory on October 13, 2020. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: November 11, 2020
Samples Submitted: October 13, 2020
Laboratory Reference: 2010-144
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201013**					
Laboratory ID:	10-144-01					
Total Suspended Solids	**8.4**	2.0	SM 2540D	10-19-20	10-20-20	
Client ID:	**COUMI-20201013**					
Laboratory ID:	10-144-02					
Total Suspended Solids	**320**	5.0	SM 2540D	10-19-20	10-20-20	
Client ID:	**COUMO-20201013**					
Laboratory ID:	10-144-03					
Total Suspended Solids	**110**	2.0	SM 2540D	10-19-20	10-20-20	
Client ID:	**EVAMS-20201013**					
Laboratory ID:	10-144-04					
Total Suspended Solids	**33**	2.0	SM 2540D	10-19-20	10-20-20	
Client ID:	**EVALSS-20201013**					
Laboratory ID:	10-144-05					
Total Suspended Solids	**66**	5.0	SM 2540D	10-19-20	10-20-20	
Client ID:	**MONMN-20201013**					
Laboratory ID:	10-144-06					
Total Suspended Solids	**28**	2.0	SM 2540D	10-19-20	10-20-20	
Client ID:	**MONMS-20201013**					
Laboratory ID:	10-144-07					
Total Suspended Solids	**3.0**	1.0	SM 2540D	10-19-20	10-20-20	
Client ID:	**MONM-20201013**					
Laboratory ID:	10-144-08					
Total Suspended Solids	**16**	2.0	SM 2540D	10-19-20	10-20-20	
Client ID:	**SEIMN-20201013**					
Laboratory ID:	10-144-09					
Total Suspended Solids	**27**	2.0	SM 2540D	10-19-20	10-20-20	

Date of Report: November 11, 2020
Samples Submitted: October 13, 2020
Laboratory Reference: 2010-144
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20201013**					
Laboratory ID:	10-144-10					
Total Suspended Solids	**16**	2.5	SM 2540D	10-19-20	10-20-20	
Client ID:	**TOSMI-20201013**					
Laboratory ID:	10-144-11					
Total Suspended Solids	**58**	2.0	SM 2540D	10-19-20	10-20-20	
Client ID:	**TOSMO-20201013**					
Laboratory ID:	10-144-12					
Total Suspended Solids	**140**	5.0	SM 2540D	10-19-20	10-20-20	
Client ID:	**TYLMI-20201013**					
Laboratory ID:	10-144-13					
Total Suspended Solids	**12**	1.0	SM 2540D	10-19-20	10-20-20	
Client ID:	**TYLMO-20201013**					
Laboratory ID:	10-144-14					
Total Suspended Solids	**7.4**	1.0	SM 2540D	10-19-20	10-20-20	
Client ID:	**QA9420201013**					
Laboratory ID:	10-144-15					
Total Suspended Solids	**60**	2.0	SM 2540D	10-19-20	10-20-20	

Date of Report: November 11, 2020
Samples Submitted: October 13, 2020
Laboratory Reference: 2010-144
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1019W1					
Total Suspended Solids	**ND**	1.0	SM 2540D	10-19-20	10-20-20	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	10-144-10								
	ORIG	DUP							
Total Suspended Solids	**16.0**	**16.5**	NA	NA	NA	NA	3	21	
SPIKE BLANK									
Laboratory ID:	SB1019W1								
	SB		SB		SB				
Total Suspended Solids	**92.0**		100	NA	92	57-126	NA	NA	

Date of Report: November 11, 2020
Samples Submitted: October 13, 2020
Laboratory Reference: 2010-144
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201013**					
Laboratory ID:	10-144-01					
Turbidity	**3.6**	0.10	EPA 180.1	10-13-20	10-13-20	
Client ID:	**COUMI-20201013**					
Laboratory ID:	10-144-02					
Turbidity	**120**	0.50	EPA 180.1	10-13-20	10-13-20	
Client ID:	**COUMO-20201013**					
Laboratory ID:	10-144-03					
Turbidity	**38**	0.20	EPA 180.1	10-13-20	10-13-20	
Client ID:	**EVAMS-20201013**					
Laboratory ID:	10-144-04					
Turbidity	**18**	0.10	EPA 180.1	10-13-20	10-13-20	
Client ID:	**EVALSS-20201013**					
Laboratory ID:	10-144-05					
Turbidity	**27**	0.10	EPA 180.1	10-13-20	10-13-20	
Client ID:	**MONMN-20201013**					
Laboratory ID:	10-144-06					
Turbidity	**12**	0.10	EPA 180.1	10-13-20	10-13-20	
Client ID:	**MONMS-20201013**					
Laboratory ID:	10-144-07					
Turbidity	**2.6**	0.10	EPA 180.1	10-13-20	10-13-20	
Client ID:	**MONM-20201013**					
Laboratory ID:	10-144-08					
Turbidity	**7.7**	0.10	EPA 180.1	10-13-20	10-13-20	
Client ID:	**SEIMN-20201013**					
Laboratory ID:	10-144-09					
Turbidity	**12**	0.10	EPA 180.1	10-13-20	10-13-20	

Date of Report: November 11, 2020
Samples Submitted: October 13, 2020
Laboratory Reference: 2010-144
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20201013**					
Laboratory ID:	10-144-10					
Turbidity	**6.2**	0.10	EPA 180.1	10-13-20	10-13-20	
Client ID:	**TOSMI-20201013**					
Laboratory ID:	10-144-11					
Turbidity	**17**	0.10	EPA 180.1	10-13-20	10-13-20	
Client ID:	**TOSMO-20201013**					
Laboratory ID:	10-144-12					
Turbidity	**59**	0.20	EPA 180.1	10-13-20	10-13-20	
Client ID:	**TYLMI-20201013**					
Laboratory ID:	10-144-13					
Turbidity	**5.8**	0.10	EPA 180.1	10-13-20	10-13-20	
Client ID:	**TYLMO-20201013**					
Laboratory ID:	10-144-14					
Turbidity	**4.8**	0.10	EPA 180.1	10-13-20	10-13-20	
Client ID:	**QA9420201013**					
Laboratory ID:	10-144-15					
Turbidity	**17**	0.10	EPA 180.1	10-13-20	10-13-20	

Date of Report: November 11, 2020
Samples Submitted: October 13, 2020
Laboratory Reference: 2010-144
Project: 14-05806-000

TURBIDITY
EPA 180.1
QUALITY CONTROL

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1013W1					
Turbidity	**ND**	0.10	EPA 180.1	10-13-20	10-13-20	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	10-134-01								
	ORIG	DUP							
Turbidity	**7.42**	**7.49**	NA	NA	NA	NA	1	14	

Date of Report: November 11, 2020
Samples Submitted: October 13, 2020
Laboratory Reference: 2010-144
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201013**					
Laboratory ID:	10-144-01					
Hardness	**13**	1.0	EPA 200.7/SM 2340B	10-20-20	10-20-20	
Client ID:	**COUMI-20201013**					
Laboratory ID:	10-144-02					
Hardness	**74**	1.0	EPA 200.7/SM 2340B	10-20-20	10-20-20	
Client ID:	**COUMO-20201013**					
Laboratory ID:	10-144-03					
Hardness	**32**	1.0	EPA 200.7/SM 2340B	10-20-20	10-20-20	
Client ID:	**EVAMS-20201013**					
Laboratory ID:	10-144-04					
Hardness	**73**	1.0	EPA 200.7/SM 2340B	10-20-20	10-20-20	
Client ID:	**EVALSS-20201013**					
Laboratory ID:	10-144-05					
Hardness	**77**	1.0	EPA 200.7/SM 2340B	10-20-20	10-20-20	
Client ID:	**MONMN-20201013**					
Laboratory ID:	10-144-06					
Hardness	**48**	1.0	EPA 200.7/SM 2340B	10-20-20	10-20-20	
Client ID:	**MONMS-20201013**					
Laboratory ID:	10-144-07					
Hardness	**70**	1.0	EPA 200.7/SM 2340B	10-20-20	10-20-20	

Date of Report: November 11, 2020
Samples Submitted: October 13, 2020
Laboratory Reference: 2010-144
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20201013**					
Laboratory ID:	10-144-08					
Hardness	**58**	1.0	EPA 200.7/SM 2340B	10-20-20	10-20-20	
Client ID:	**SEIMN-20201013**					
Laboratory ID:	10-144-09					
Hardness	**29**	1.0	EPA 200.7/SM 2340B	10-20-20	10-20-20	
Client ID:	**SEIMS-20201013**					
Laboratory ID:	10-144-10					
Hardness	**48**	1.0	EPA 200.7/SM 2340B	10-20-20	10-20-20	
Client ID:	**TOSMI-20201013**					
Laboratory ID:	10-144-11					
Hardness	**25**	1.0	EPA 200.7/SM 2340B	10-20-20	10-20-20	
Client ID:	**TOSMO-20201013**					
Laboratory ID:	10-144-12					
Hardness	**39**	1.0	EPA 200.7/SM 2340B	10-20-20	10-20-20	
Client ID:	**TYLMI-20201013**					
Laboratory ID:	10-144-13					
Hardness	**39**	1.0	EPA 200.7/SM 2340B	10-20-20	10-20-20	
Client ID:	**TYLMO-20201013**					
Laboratory ID:	10-144-14					
Hardness	**39**	1.0	EPA 200.7/SM 2340B	10-20-20	10-20-20	
Client ID:	**QA9420201013**					
Laboratory ID:	10-144-15					
Hardness	**24**	1.0	EPA 200.7/SM 2340B	10-20-20	10-20-20	

Date of Report: November 11, 2020
Samples Submitted: October 13, 2020
Laboratory Reference: 2010-144
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B
QUALITY CONTROL

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1020WH2					
Hardness	**ND**	1.0	EPA 200.7/SM 2340B	10-20-20	10-20-20	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	10-144-01										
	ORIG	DUP									
Hardness	**12.6**	**13.8**	NA		NA	NA		NA	9	20	
MATRIX SPIKES											
Laboratory ID:	10-144-01										
	MS	MSD	MS	MSD		MS	MSD				
Hardness	**150**	**145**	132	132	12.6	104	100	75-125	3	20	
SPIKE BLANK											
Laboratory ID:	SB1020WH2										
	SB		SB			SB					
Hardness	**131**		132		NA	99		85-115	NA	NA	

Date of Report: November 11, 2020
Samples Submitted: October 13, 2020
Laboratory Reference: 2010-144
Project: 14-05806-000

DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201013**					
Laboratory ID:	10-144-01					
Dissolved Organic Carbon	**16**	1.0	SM 5310B	10-20-20	10-20-20	
Client ID:	**COUMI-20201013**					
Laboratory ID:	10-144-02					
Dissolved Organic Carbon	**11**	1.0	SM 5310B	10-20-20	10-20-20	
Client ID:	**COUMO-20201013**					
Laboratory ID:	10-144-03					
Dissolved Organic Carbon	**6.0**	1.0	SM 5310B	10-20-20	10-20-20	
Client ID:	**EVAMS-20201013**					
Laboratory ID:	10-144-04					
Dissolved Organic Carbon	**13**	1.0	SM 5310B	10-20-20	10-20-20	
Client ID:	**EVALSS-20201013**					
Laboratory ID:	10-144-05					
Dissolved Organic Carbon	**12**	1.0	SM 5310B	10-20-20	10-20-20	
Client ID:	**MONMN-20201013**					
Laboratory ID:	10-144-06					
Dissolved Organic Carbon	**7.0**	1.0	SM 5310B	10-20-20	10-20-20	
Client ID:	**MONMS-20201013**					
Laboratory ID:	10-144-07					
Dissolved Organic Carbon	**8.7**	1.0	SM 5310B	10-20-20	10-20-20	
Client ID:	**MONM-20201013**					
Laboratory ID:	10-144-08					
Dissolved Organic Carbon	**7.1**	1.0	SM 5310B	10-20-20	10-20-20	
Client ID:	**SEIMN-20201013**					
Laboratory ID:	10-144-09					
Dissolved Organic Carbon	**10**	1.0	SM 5310B	10-20-20	10-20-20	

Date of Report: November 11, 2020
Samples Submitted: October 13, 2020
Laboratory Reference: 2010-144
Project: 14-05806-000

DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20201013**					
Laboratory ID:	10-144-10					
Dissolved Organic Carbon	**14**	1.0	SM 5310B	10-20-20	10-20-20	
Client ID:	**TOSMI-20201013**					
Laboratory ID:	10-144-11					
Dissolved Organic Carbon	**4.2**	1.0	SM 5310B	10-20-20	10-20-20	
Client ID:	**TOSMO-20201013**					
Laboratory ID:	10-144-12					
Dissolved Organic Carbon	**7.5**	1.0	SM 5310B	10-20-20	10-20-20	
Client ID:	**TYLMI-20201013**					
Laboratory ID:	10-144-13					
Dissolved Organic Carbon	**7.2**	1.0	SM 5310B	10-20-20	10-20-20	
Client ID:	**TYLMO-20201013**					
Laboratory ID:	10-144-14					
Dissolved Organic Carbon	**6.2**	1.0	SM 5310B	10-20-20	10-20-20	
Client ID:	**QA9420201013**					
Laboratory ID:	10-144-15					
Dissolved Organic Carbon	**4.5**	1.0	SM 5310B	10-20-20	10-20-20	

Date of Report: November 11, 2020
Samples Submitted: October 13, 2020
Laboratory Reference: 2010-144
Project: 14-05806-000

DISSOLVED ORGANIC CARBON
SM 5310B
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1020D1					
Dissolved Organic Carbon	**ND**	1.0	SM 5310B	10-20-20	10-20-20	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	10-185-01								
	ORIG	DUP							
Dissolved Organic Carbon	**1.31**	**1.28**	NA	NA	NA	NA	2	15	
MATRIX SPIKE									
Laboratory ID:	10-185-01								
	MS		MS		MS				
Dissolved Organic Carbon	**11.9**		10.0	1.31	106	72-132	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB1020D1								
	SB		SB		SB				
Dissolved Organic Carbon	**10.6**		10.0	NA	106	82-123	NA	NA	

Date of Report: November 11, 2020
Samples Submitted: October 13, 2020
Laboratory Reference: 2010-144
Project: 14-05806-000

TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201013**					
Laboratory ID:	10-144-01					
Total Phosphorus	**0.049**	0.010	EPA 365.1	10-20-20	10-21-20	
Client ID:	**COUMI-20201013**					
Laboratory ID:	10-144-02					
Total Phosphorus	**0.48**	0.010	EPA 365.1	10-20-20	10-21-20	
Client ID:	**COUMO-20201013**					
Laboratory ID:	10-144-03					
Total Phosphorus	**0.21**	0.010	EPA 365.1	10-20-20	10-21-20	
Client ID:	**EVAMS-20201013**					
Laboratory ID:	10-144-04					
Total Phosphorus	**0.079**	0.010	EPA 365.1	10-20-20	10-21-20	
Client ID:	**EVALSS-20201013**					
Laboratory ID:	10-144-05					
Total Phosphorus	**0.11**	0.010	EPA 365.1	10-20-20	10-21-20	
Client ID:	**MONMN-20201013**					
Laboratory ID:	10-144-06					
Total Phosphorus	**0.098**	0.010	EPA 365.1	10-20-20	10-21-20	
Client ID:	**MONMS-20201013**					
Laboratory ID:	10-144-07					
Total Phosphorus	**0.051**	0.010	EPA 365.1	10-20-20	10-21-20	
Client ID:	**MONM-20201013**					
Laboratory ID:	10-144-08					
Total Phosphorus	**0.076**	0.010	EPA 365.1	10-20-20	10-21-20	
Client ID:	**SEIMN-20201013**					
Laboratory ID:	10-144-09					
Total Phosphorus	**0.11**	0.010	EPA 365.1	10-20-20	10-21-20	

Date of Report: November 11, 2020
Samples Submitted: October 13, 2020
Laboratory Reference: 2010-144
Project: 14-05806-000

TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20201013**					
Laboratory ID:	10-144-10					
Total Phosphorus	**0.076**	0.010	EPA 365.1	10-20-20	10-21-20	
Client ID:	**TOSMI-20201013**					
Laboratory ID:	10-144-11					
Total Phosphorus	**0.17**	0.010	EPA 365.1	10-20-20	10-21-20	
Client ID:	**TOSMO-20201013**					
Laboratory ID:	10-144-12					
Total Phosphorus	**0.24**	0.010	EPA 365.1	10-20-20	10-21-20	
Client ID:	**TYLMI-20201013**					
Laboratory ID:	10-144-13					
Total Phosphorus	**0.069**	0.010	EPA 365.1	10-20-20	10-21-20	
Client ID:	**TYLMO-20201013**					
Laboratory ID:	10-144-14					
Total Phosphorus	**0.058**	0.010	EPA 365.1	10-20-20	10-21-20	
Client ID:	**QA9420201013**					
Laboratory ID:	10-144-15					
Total Phosphorus	**0.16**	0.010	EPA 365.1	10-20-20	10-21-20	

Date of Report: November 11, 2020
Samples Submitted: October 13, 2020
Laboratory Reference: 2010-144
Project: 14-05806-000

TOTAL PHOSPHORUS
EPA 365.1
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1020W1					
Total Phosphorus	**ND**	0.010	EPA 365.1	10-20-20	10-21-20	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	10-144-01								
	ORIG	DUP							
Total Phosphorus	**0.0490**	**0.0473**	NA	NA	NA	NA	4	14	
MATRIX SPIKE									
Laboratory ID:	10-144-01								
	MS		MS		MS				
Total Phosphorus	**0.301**		0.250	0.0490	101	80-110	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB1020W1								
	SB		SB		SB				
Total Phosphorus	**0.246**		0.250	NA	98	78-110	NA	NA	

Date of Report: November 11, 2020
Samples Submitted: October 13, 2020
Laboratory Reference: 2010-144
Project: 14-05806-000

TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201013**					
Laboratory ID:	10-144-01					
Copper	**ND**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**ND**	5.0	EPA 200.8	10-15-20	10-15-20	
Client ID:	**COUMI-20201013**					
Laboratory ID:	10-144-02					
Copper	**8.8**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**160**	5.0	EPA 200.8	10-15-20	10-15-20	
Client ID:	**COUMO-20201013**					
Laboratory ID:	10-144-03					
Copper	**6.2**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**94**	5.0	EPA 200.8	10-15-20	10-15-20	
Client ID:	**EVAMS-20201013**					
Laboratory ID:	10-144-04					
Copper	**1.7**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**5.2**	5.0	EPA 200.8	10-15-20	10-15-20	
Client ID:	**EVALSS-20201013**					
Laboratory ID:	10-144-05					
Copper	**2.2**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**5.8**	5.0	EPA 200.8	10-15-20	10-15-20	
Client ID:	**MONMN-20201013**					
Laboratory ID:	10-144-06					
Copper	**2.3**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**13**	5.0	EPA 200.8	10-15-20	10-15-20	
Client ID:	**MONMS-20201013**					
Laboratory ID:	10-144-07					
Copper	**2.3**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**ND**	5.0	EPA 200.8	10-15-20	10-15-20	

Date of Report: November 11, 2020
Samples Submitted: October 13, 2020
Laboratory Reference: 2010-144
Project: 14-05806-000

TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20201013**					
Laboratory ID:	10-144-08					
Copper	**2.1**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**27**	5.0	EPA 200.8	10-15-20	10-15-20	
Client ID:	**SEIMN-20201013**					
Laboratory ID:	10-144-09					
Copper	**1.9**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**ND**	5.0	EPA 200.8	10-15-20	10-15-20	
Client ID:	**SEIMS-20201013**					
Laboratory ID:	10-144-10					
Copper	**ND**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**ND**	5.0	EPA 200.8	10-15-20	10-15-20	
Client ID:	**TOSMI-20201013**					
Laboratory ID:	10-144-11					
Copper	**5.0**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**47**	5.0	EPA 200.8	10-15-20	10-15-20	
Client ID:	**TOSMO-20201013**					
Laboratory ID:	10-144-12					
Copper	**7.5**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**76**	5.0	EPA 200.8	10-15-20	10-15-20	
Client ID:	**TYLMI-20201013**					
Laboratory ID:	10-144-13					
Copper	**5.0**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**200**	5.0	EPA 200.8	10-15-20	10-15-20	
Client ID:	**TYLMO-20201013**					
Laboratory ID:	10-144-14					
Copper	**3.7**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**37**	5.0	EPA 200.8	10-15-20	10-15-20	

Date of Report: November 11, 2020
Samples Submitted: October 13, 2020
Laboratory Reference: 2010-144
Project: 14-05806-000

TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA9420201013**					
Laboratory ID:	10-144-15					
Copper	**4.7**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**46**	5.0	EPA 200.8	10-15-20	10-15-20	

Date of Report: November 11, 2020
Samples Submitted: October 13, 2020
Laboratory Reference: 2010-144
Project: 14-05806-000

TOTAL METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1015WH2					
Copper	**ND**	1.0	EPA 200.8	10-15-20	10-15-20	
Zinc	**ND**	5.0	EPA 200.8	10-15-20	10-15-20	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	10-144-04										
	ORIG	DUP									
Copper	**1.72**	**1.74**	NA	NA		NA		NA	1	20	
Zinc	**5.16**	**5.34**	NA	NA		NA		NA	3	20	
MATRIX SPIKES											
Laboratory ID:	10-144-04										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**91.2**	**93.4**	100	100	1.72	**90**	**92**	75-125	2	20	
Zinc	**99.8**	**103**	100	100	5.16	**95**	**98**	75-125	4	20	

Date of Report: November 11, 2020
Samples Submitted: October 13, 2020
Laboratory Reference: 2010-144
Project: 14-05806-000

DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201013**					
Laboratory ID:	10-144-01					
Copper	**ND**	1.0	EPA 200.8		10-15-20	
Zinc	**ND**	5.0	EPA 200.8		10-15-20	
Client ID:	**COUMI-20201013**					
Laboratory ID:	10-144-02					
Copper	**2.1**	1.0	EPA 200.8		10-15-20	
Zinc	**46**	5.0	EPA 200.8		10-15-20	
Client ID:	**COUMO-20201013**					
Laboratory ID:	10-144-03					
Copper	**2.0**	1.0	EPA 200.8		10-15-20	
Zinc	**32**	5.0	EPA 200.8		10-15-20	
Client ID:	**EVAMS-20201013**					
Laboratory ID:	10-144-04					
Copper	**ND**	1.0	EPA 200.8		10-15-20	
Zinc	**ND**	5.0	EPA 200.8		10-15-20	
Client ID:	**EVALSS-20201013**					
Laboratory ID:	10-144-05					
Copper	**1.1**	1.0	EPA 200.8		10-15-20	
Zinc	**ND**	5.0	EPA 200.8		10-15-20	
Client ID:	**MONMN-20201013**					
Laboratory ID:	10-144-06					
Copper	**1.6**	1.0	EPA 200.8		10-15-20	
Zinc	**5.6**	5.0	EPA 200.8		10-15-20	
Client ID:	**MONMS-20201013**					
Laboratory ID:	10-144-07					
Copper	**1.9**	1.0	EPA 200.8		10-15-20	
Zinc	**ND**	5.0	EPA 200.8		10-15-20	

Date of Report: November 11, 2020
Samples Submitted: October 13, 2020
Laboratory Reference: 2010-144
Project: 14-05806-000

DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20201013**					
Laboratory ID:	10-144-08					
Copper	**1.3**	1.0	EPA 200.8		10-15-20	
Zinc	**13**	5.0	EPA 200.8		10-15-20	
Client ID:	**SEIMN-20201013**					
Laboratory ID:	10-144-09					
Copper	**1.1**	1.0	EPA 200.8		10-15-20	
Zinc	**ND**	5.0	EPA 200.8		10-15-20	
Client ID:	**SEIMS-20201013**					
Laboratory ID:	10-144-10					
Copper	**ND**	1.0	EPA 200.8		10-15-20	
Zinc	**ND**	5.0	EPA 200.8		10-15-20	
Client ID:	**TOSMI-20201013**					
Laboratory ID:	10-144-11					
Copper	**2.0**	1.0	EPA 200.8		10-15-20	
Zinc	**24**	5.0	EPA 200.8		10-15-20	
Client ID:	**TOSMO-20201013**					
Laboratory ID:	10-144-12					
Copper	**1.9**	1.0	EPA 200.8		10-15-20	
Zinc	**11**	5.0	EPA 200.8		10-15-20	
Client ID:	**TYLMI-20201013**					
Laboratory ID:	10-144-13					
Copper	**3.7**	1.0	EPA 200.8		10-15-20	
Zinc	**160**	5.0	EPA 200.8		10-15-20	
Client ID:	**TYLMO-20201013**					
Laboratory ID:	10-144-14					
Copper	**2.8**	1.0	EPA 200.8		10-15-20	
Zinc	**28**	5.0	EPA 200.8		10-15-20	

Date of Report: November 11, 2020
Samples Submitted: October 13, 2020
Laboratory Reference: 2010-144
Project: 14-05806-000

DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA9420201013**					
Laboratory ID:	10-144-15					
Copper	**1.9**	1.0	EPA 200.8		10-15-20	
Zinc	**23**	5.0	EPA 200.8		10-15-20	

Date of Report: November 11, 2020
Samples Submitted: October 13, 2020
Laboratory Reference: 2010-144
Project: 14-05806-000

DISSOLVED METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1015D1					
Copper	**ND**	1.0	EPA 200.8		10-15-20	
Zinc	**ND**	5.0	EPA 200.8		10-15-20	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	10-144-01										
	ORIG	DUP									
Copper	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Zinc	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	10-144-01										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**68.8**	**70.8**	80.0	80.0	ND	**86**	**89**	75-125	3	20	
Zinc	**76.0**	**78.4**	80.0	80.0	ND	**95**	**98**	75-125	3	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Nov 11 2020
On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister

Dear David Baumeister:

Enclosed please find the analytical data for your REDMOND PAIRED WATERSHED PROJECT project.

The following is a cross correlation of client and laboratory identifications for your convenience.

CLIENT ID	MATRIX	AMTEST ID	TEST
COLM-20201013	Water	20-A016579	Micro, NUT
COUMI-20201013	Water	20-A016580	Micro, NUT
COUMO-20201013	Water	20-A016581	Micro, NUT
EVAMS-20201013	Water	20-A016582	Micro, NUT
EVALSS-20201013	Water	20-A016583	Micro, NUT
MONMN-20201013	Water	20-A016584	Micro, NUT
MONMS-20201013	Water	20-A016585	Micro, NUT
MONM-20201013	Water	20-A016586	Micro, NUT
SEIMN-20201013	Water	20-A016587	Micro, NUT
SEIMS-20201013	Water	20-A016588	Micro, NUT
TOSMI-20201013	Water	20-A016589	Micro, NUT
TOSMO-20201013	Water	20-A016590	Micro, NUT
TYLMI-20201013	Water	20-A016591	Micro, NUT
TYLMO-20201013	Water	20-A016592	Micro, NUT
QA94-20201013	Water	20-A016593	Micro, NUT

Your samples were received on Tuesday, October 13, 2020. At the time of receipt, the samples were logged in and properly maintained prior to the subsequent analysis.

The analytical procedures used at AmTest are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

Following the analytical data you will find the Quality Control (QC) results.

Please note that the detection limits that are listed in the body of the report refer to the Practical Quantitation Limits (PQL's), as opposed to the Method Detection Limits (MDL's).

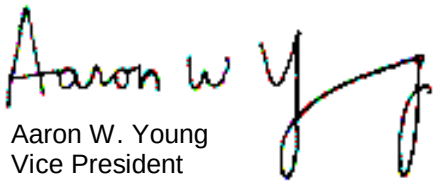
Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Nov 11 2020
On-Site Environmental
continued . . .

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,



Aaron W. Young
Vice President

Project #: 14-05806-000
PO Number: 10-144

BACT = Bacteriological	MET = Metals	NUT=Nutrients	MIN=Minerals
CONV = Conventionals	ORG = Organics	DEM=Demand	

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664
www.amtestlab.com

Professional Analytical Services

ANALYSIS REPORT

On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister
Project Name: REDMOND PAIRED WATERSHED PROJECT
Project #: 14-05806-000
PO Number: 10-144
All results reported on an as received basis.

Date Received: 10/13/20
Date Reported: 11/11/20

AMTEST Identification Number **20-A016579**
Client Identification **COLM-20201013**
Sampling Date **10/13/20, 10:20**

Microbiological

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE / TIME
Fecal coliform	800	CFU/100 ml		10	SM 9222D	JM	10/13/20 16:00

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Nitrogen (NOX&TKN)	1.45	mg/l		0.1			
Total Nitrogen (TKN)	1.09	mg/l		0.2	EPA 351.2	KS	11/05/20
Total Nitrate + Nitrite	0.36	mg/l		0.02	EPA 353.2	KS	10/30/20

AMTEST Identification Number **20-A016580**
Client Identification **COUMI-20201013**
Sampling Date **10/13/20, 08:15**

Microbiological

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE / TIME
Fecal coliform	3300	CFU/100 ml		100	SM 9222D	JM	10/13/20 16:00

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Nitrogen (NOX&TKN)	2.56	mg/l		0.1			
Total Nitrogen (TKN)	2.18	mg/l		0.2	EPA 351.2	KS	11/05/20
Total Nitrate + Nitrite	0.38	mg/l		0.02	EPA 353.2	KS	10/30/20

AMTEST Identification Number **20-A016581**
Client Identification **COUMO-20201013**
Sampling Date **10/13/20, 08:05**

Microbiological

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE / TIME
Fecal coliform	2100	CFU/100 ml		20	SM 9222D	JM	10/13/20 16:00

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Nitrogen (NOX&TKN)	1.85	mg/l		0.1			
Total Nitrogen (TKN)	1.51	mg/l		0.2	EPA 351.2	KS	11/05/20
Total Nitrate + Nitrite	0.34	mg/l		0.02	EPA 353.2	KS	10/30/20

AMTEST Identification Number **20-A016582**
Client Identification **EVAMS-20201013**
Sampling Date **10/13/20, 08:40**

Microbiological

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE / TIME
Fecal coliform	520	CFU/100 ml		20	SM 9222D	JM	10/13/20 16:00

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Nitrogen (NOX&TKN)	2.45	mg/l		0.1			
Total Nitrogen (TKN)	1.45	mg/l		0.2	EPA 351.2	KS	11/05/20
Total Nitrate + Nitrite	1.0	mg/l		0.02	EPA 353.2	KS	10/30/20

AMTEST Identification Number **20-A016583**
Client Identification **EVALSS-20201013**
Sampling Date **10/13/20, 08:55**

Microbiological

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE / TIME
Fecal coliform	3200	CFU/100 ml		100	SM 9222D	JM	10/13/20 16:00

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Nitrogen (NOX&TKN)	2.48	mg/l		0.1			
Total Nitrogen (TKN)	1.55	mg/l		0.2	EPA 351.2	KS	11/05/20
Total Nitrate + Nitrite	0.93	mg/l		0.02	EPA 353.2	KS	10/30/20

AMTEST Identification Number **20-A016584**
Client Identification **MONMN-20201013**
Sampling Date **10/13/20, 09:55**

Microbiological

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE / TIME
Fecal coliform	230	CFU/100 ml		10	SM 9222D	JM	10/13/20 16:00

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Nitrogen (NOX&TKN)	1.28	mg/l		0.1			
Total Nitrogen (TKN)	1.16	mg/l		0.2	EPA 351.2	KS	11/05/20
Total Nitrate + Nitrite	0.12	mg/l		0.02	EPA 353.2	KS	10/30/20

AMTEST Identification Number **20-A016585**
Client Identification **MONMS-20201013**
Sampling Date **10/13/20, 10:15**

Microbiological

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE / TIME
Fecal coliform	610	CFU/100 ml		10	SM 9222D	JM	10/13/20 16:00

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Nitrogen (NOX&TKN)	0.89	mg/l		0.1			
Total Nitrogen (TKN)	0.811	mg/l		0.2	EPA 351.2	KS	11/05/20
Total Nitrate + Nitrite	0.082	mg/l		0.02	EPA 353.2	KS	10/30/20

AMTEST Identification Number **20-A016586**
Client Identification **MONM-20201013**
Sampling Date **10/13/20, 10:40**

Microbiological

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE / TIME
Fecal coliform	410	CFU/100 ml		10	SM 9222D	JM	10/13/20 16:00

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Nitrogen (NOX&TKN)	0.91	mg/l		0.1			
Total Nitrogen (TKN)	0.728	mg/l		0.2	EPA 351.2	KS	11/05/20
Total Nitrate + Nitrite	0.18	mg/l		0.02	EPA 353.2	KS	10/30/20

AMTEST Identification Number **20-A016587**
Client Identification **SEIMN-20201013**
Sampling Date **10/13/20, 09:40**

Microbiological

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE / TIME
Fecal coliform	160	CFU/100 ml		20	SM 9222D	JM	10/13/20 16:00

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Nitrogen (NOX&TKN)	1.32	mg/l		0.1			
Total Nitrogen (TKN)	1.05	mg/l		0.2	EPA 351.2	KS	11/05/20
Total Nitrate + Nitrite	0.27	mg/l		0.02	EPA 353.2	KS	10/30/20

AMTEST Identification Number **20-A016588**
Client Identification **SEIMS-20201013**
Sampling Date **10/13/20, 10:45**

Microbiological

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE / TIME
Fecal coliform	150	CFU/100 ml		10	SM 9222D	JM	10/13/20 16:00

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Nitrogen (NOX&TKN)	1.32	mg/l		0.1			
Total Nitrogen (TKN)	1.03	mg/l		0.2	EPA 351.2	KS	11/05/20
Total Nitrate + Nitrite	0.29	mg/l		0.02	EPA 353.2	KS	10/30/20

AMTEST Identification Number **20-A016589**
Client Identification **TOSMI-20201013**
Sampling Date **10/13/20, 08:10**

Microbiological

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE / TIME
Fecal coliform	1500	CFU/100 ml		10	SM 9222D	JM	10/13/20 16:00

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Nitrogen (NOX&TKN)	4.19	mg/l		0.1			
Total Nitrogen (TKN)	3.81	mg/l		0.2	EPA 351.2	KS	11/05/20
Total Nitrate + Nitrite	0.38	mg/l		0.02	EPA 353.2	KS	10/30/20

AMTEST Identification Number **20-A016590**
Client Identification **TOSMO-20201013**
Sampling Date **10/13/20, 08:45**

Microbiological

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE / TIME
Fecal coliform	2300	CFU/100 ml		100	SM 9222D	JM	10/13/20 16:00

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Nitrogen (NOX&TKN)	2.60	mg/l		0.1			
Total Nitrogen (TKN)	2.29	mg/l		0.2	EPA 351.2	KS	11/05/20
Total Nitrate + Nitrite	0.31	mg/l		0.02	EPA 353.2	KS	10/30/20

AMTEST Identification Number **20-A016591**
Client Identification **TYLMI-20201013**
Sampling Date **10/13/20, 09:25**

Microbiological

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE / TIME
Fecal coliform	800	CFU/100 ml		10	SM 9222D	JM	10/13/20 16:00

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Nitrogen (NOX&TKN)	1.26	mg/l		0.1			
Total Nitrogen (TKN)	0.825	mg/l		0.2	EPA 351.2	KS	11/05/20
Total Nitrate + Nitrite	0.43	mg/l		0.02	EPA 353.2	KS	10/30/20

AMTEST Identification Number **20-A016592**
Client Identification **TYLMO-20201013**
Sampling Date **10/13/20, 09:10**

Microbiological

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE / TIME
Fecal coliform	900	CFU/100 ml		10	SM 9222D	JM	10/13/20 16:00

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Nitrogen (NOX&TKN)	1.25	mg/l		0.1			
Total Nitrogen (TKN)	0.940	mg/l		0.2	EPA 351.2	KS	11/05/20
Total Nitrate + Nitrite	0.31	mg/l		0.02	EPA 353.2	KS	10/30/20

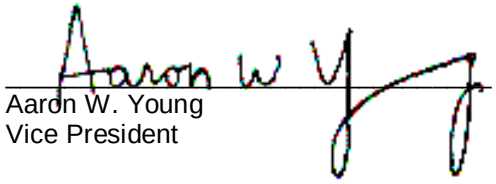
AMTEST Identification Number **20-A016593**
Client Identification **QA94-20201013**
Sampling Date **10/13/20, 08:20**

Microbiological

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE / TIME
Fecal coliform	260	CFU/100 ml		10	SM 9222D	JM	10/13/20 16:00

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Nitrogen (NOX&TKN)	4.13	mg/l		0.1			
Total Nitrogen (TKN)	3.75	mg/l		0.2	EPA 351.2	KS	11/05/20
Total Nitrate + Nitrite	0.38	mg/l		0.02	EPA 353.2	KS	10/30/20



Aaron W. Young
Vice President

Am Test Inc.
13600 NE 126th PL
Suite C
Kirkland, WA, 98034
(425) 885-1664
www.amtestlab.com

Professional Analytical Services

QC Summary for sample numbers: 20-A016579 to 20-A016593

DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	DUP VALUE	RPD
20-A016612	Fecal coliform	CFU/100 ml	< 10	20.	
20-A016596	Total Nitrogen (TKN)	mg/l	30.6	30.1	1.6
20-A016570	Total Nitrogen (TKN)	mg/l	0.674	0.579	15.
20-A016585	Total Nitrogen (TKN)	mg/l	0.811	0.748	8.1
20-A016943	Total Nitrogen (TKN)	mg/l	37.3	37.0	0.81
20-A017155	Total Nitrogen (TKN)	mg/l	40.9	43.0	5.0
20-A017382	Total Nitrogen (TKN)	mg/l	43.1	43.2	0.23
20-A017685	Total Nitrogen (TKN)	mg/l	0.492	0.497	1.0
20-A016303	Total Nitrate + Nitrite	mg/l	0.18	0.18	0.00
20-A016329	Total Nitrate + Nitrite	mg/l	0.27	0.28	3.6
20-A016352	Total Nitrate + Nitrite	mg/l	1.1	1.0	9.5
20-A016547	Total Nitrate + Nitrite	mg/l	6.3	6.5	3.1
20-A016586	Total Nitrate + Nitrite	mg/l	0.18	0.18	0.00
20-A016623	Total Nitrate + Nitrite	mg/l	0.032	0.034	6.1
20-A016666	Total Nitrate + Nitrite	mg/l	< 0.02	< 0.02	
20-A016677	Total Nitrate + Nitrite	mg/l	0.37	0.38	2.7
20-A016698	Total Nitrate + Nitrite	mg/l	0.39	0.41	5.0
20-A016770	Total Nitrate + Nitrite	mg/l	2.2	2.2	0.00
20-A016924	Total Nitrate + Nitrite	mg/l	0.027	0.027	0.00
20-A016279	Total Nitrate + Nitrite	mg/l	0.91	0.88	3.4
20-A017246	Total Nitrate + Nitrite	mg/l	0.14	0.14	0.00

MATRIX SPIKES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	SMPL+ SPK	SPK AMT	RECOVERY
20-A016596	Total Nitrogen (TKN)	mg/l	30.6	70.3	40.0	99.25 %
20-A016570	Total Nitrogen (TKN)	mg/l	0.674	2.60	2.00	96.30 %
20-A016585	Total Nitrogen (TKN)	mg/l	0.811	2.76	2.00	97.45 %
20-A016943	Total Nitrogen (TKN)	mg/l	37.3	78.9	40.0	104.00 %
20-A017155	Total Nitrogen (TKN)	mg/l	40.9	127.	80.0	107.62 %
20-A017382	Total Nitrogen (TKN)	mg/l	43.1	86.3	40.0	108.00 %
20-A017685	Total Nitrogen (TKN)	mg/l	0.492	2.42	2.00	96.40 %
20-A016303	Total Nitrate + Nitrite	mg/l	0.18	1.1	1.0	92.00 %
20-A016329	Total Nitrate + Nitrite	mg/l	0.27	1.3	1.0	103.00 %
20-A016352	Total Nitrate + Nitrite	mg/l	1.1	2.0	1.0	90.00 %
20-A016547	Total Nitrate + Nitrite	mg/l	6.3	16.	10.	97.00 %
20-A016586	Total Nitrate + Nitrite	mg/l	0.18	1.1	1.0	92.00 %
20-A016623	Total Nitrate + Nitrite	mg/l	0.032	0.98	1.0	94.80 %
20-A016666	Total Nitrate + Nitrite	mg/l	< 0.02	0.99	1.0	99.00 %
20-A016677	Total Nitrate + Nitrite	mg/l	0.37	1.4	1.0	103.00 %
20-A016698	Total Nitrate + Nitrite	mg/l	0.39	1.4	1.0	101.00 %

QC Summary for sample numbers: 20-A016579 to 20-A016593...

MATRIX SPIKES continued....

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	SMPL+ SPK	SPK AMT	RECOVERY
20-A016770	Total Nitrate + Nitrite	mg/l	2.2	3.3	1.0	110.00 %
20-A016924	Total Nitrate + Nitrite	mg/l	0.027	1.1	1.0	107.30 %
20-A017246	Total Nitrate + Nitrite	mg/l	0.14	1.1	1.0	96.00 %

STANDARD REFERENCE MATERIALS

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
Total Nitrogen (TKN)	mg/l	1.00	1.01	101. %
Total Nitrogen (TKN)	mg/l	1.00	1.00	100. %
Total Nitrogen (TKN)	mg/l	1.00	1.00	100. %
Total Nitrogen (TKN)	mg/l	1.00	0.985	98.5 %
Total Nitrogen (TKN)	mg/l	1.00	1.00	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	0.99	99.0 %
Total Nitrate + Nitrite	mg/l	1.0	0.98	98.0 %
Total Nitrate + Nitrite	mg/l	1.0	0.98	98.0 %
Total Nitrate + Nitrite	mg/l	1.0	0.98	98.0 %
Total Nitrate + Nitrite	mg/l	1.0	0.98	98.0 %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	0.93	93.0 %
Total Nitrate + Nitrite	mg/l	1.0	1.1	110. %

BLANKS

ANALYTE	UNITS	RESULT
Fecal coliform	CFU/100 ml	< 1
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02

QC Summary for sample numbers: 20-A016579 to 20-A016593...

BLANKS continued....

ANALYTE	UNITS	RESULT
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Laboratory Reference #: 10-144

Laboratory: AmTest Laboratories

Attention: Aaron Young

13600 NE 126th Pl Kirkland, WA 98034

Phone Number: (425) 885-1664

Turnaround Request

1 Day ~~2 Day~~ 3 Day

Standard

Other: _____

Project Manager: Blair Goodrow

email: bgoodrow@onsite-env.com

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analyses
1	COLM-20201013 16579	10/13/20	10:20	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
2	COUMI-20201013 80	10/13/20	8:15	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
3	COUMO-20201013 81	10/13/20	8:05	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
4	EVAMS-20201013 82	10/13/20	8:40	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
5	EVALSS-20201013 83	10/13/20	8:55	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
6	MONMN-20201013 84	10/13/20	9:55	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
7	MONMS-20201013 85	10/13/20	10:15	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
8	MONM-20201013 86	10/13/20	10:40	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
9	SEIMN-20201013 87	10/13/20	9:40	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
10	SEIMS-20201013 88	10/13/20	10:45	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:	[signature]	OSE	10/13	1215	
Received by:	[signature]	AmTest	10/13/20	1215	**EDDs - CSV**
Relinquished by:					**Reporting Limits:**
Received by:					**Fecal Coliform - 1.0 cfu/100ml**
Relinquished by:					**Total Nitrogen - .10 mg/L**
Received by:					

T=6.0 Client

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Laboratory Reference #: 10-144

Laboratory: AmTest Laboratories

Attention: Aaron Young

13600 NE 126th Pl Kirkland, WA 98034

Phone Number: (425) 885-1664

Turnaround Request

1 Day 2 Day 3 Day

Standard

Other:

Project Manager: Blair Goodrow

email: bgoodrow@onsite-env.com

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont	Requested Analyses
11	TOSMI-20201013 (60589)	10/13/20	8:10	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
12	TOSMO-20201013 (90)	10/13/20	8:45	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
13	TYLMI-20201013 (91)	10/13/20	9:25	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
14	TYLMO-20201013 (92)	10/13/20	9:10	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
15	QA94-20201013 (93)	10/13/20	8:20	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N

Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by: Michelle Zhu	OSE	10/13	12:15	**EDDs - CSV** **Reporting Limits:** **Fecal Coliform - 1.0 cfu/100ml** **Total Nitrogen - .10 mg/L**
Received by:	AmTest	10/13/20	12:15	
Relinquished by:				
Received by:				
Relinquished by:				
Received by:				

CHAIN OF CUSTODY

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants

Project No.: 14-05806-000

Project Name: Redmond Paired Watershed Study

Project Manager: George Iftner

Turnaround Requested:

_____ 1 Day

_____ 2 Day

_____ 3 Day

__X__ Standard

Laboratory No. 10-144

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Suspended Solids (SM 2540D)	Turbidity (EPA 181.1)	Hardness (EPA 200.7 / SM 2340B)	Dissolved Organ Carbon (SM 5310B) *	Fecal Coliform (SM 9222D)	Total Phosphorus (EPA 365.1)	Total Nitrogen (SM 4500 N-B)	Total Cu and Zn (EPA 200.8)	Dissolved Cu and Zn (EPA 200.8) *			
1	COLM-2020 1013	10/13/20	1020	Water	7	X	X	X	X	X	X	X	X	X			
2	COUMI-2020 1013	10/13/20	8:15	Water	7	X	X	X	X	X	X	X	X	X			
3	COUMO-2020 1013	10/13/20	8:05	Water	7	X	X	X	X	X	X	X	X	X			
4	EVAMS-2020 1013	10/13/20	840	Water	7	X	X	X	X	X	X	X	X	X			
5	EVALSS-2020 1013	10/13/20	855	Water	7	X	X	X	X	X	X	X	X	X			
6	MONMN-2020 1013	10/13/20	9:55	Water	7	X	X	X	X	X	X	X	X	X			
7	MONMS-2020 1013	10/13/20	10:15	Water	7	X	X	X	X	X	X	X	X	X			
8	MONM-2020 1013	10/13/20	1040	Water	7	X	X	X	X	X	X	X	X	X			
9	SEIMN-2020 1013	10/13/20	940	Water	7	X	X	X	X	X	X	X	X	X			
10	SEIMS-2020 1013	10/13/20	10:45	Water	7	X	X	X	X	X	X	X	X	X			
11	TOSMI-2020 1013	10/13/20	810	Water	7	X	X	X	X	X	X	X	X	X			
12	TOSMO-2020 1013	10/13/20	8:45	Water	7	X	X	X	X	X	X	X	X	X			
13	TYLMI-2020 1013	10/13/20	9:25	Water	7	X	X	X	X	X	X	X	X	X			
14	TYLMO-2020 1013	10/13/20	9:10	Water	7	X	X	X	X	X	X	X	X	X			
15	QA 94 20201013	10/13/20	820	Water	7	X	X	X	X	X	X	X	X	X			

Relinquished by Nikki Bartlett Date 10/15/20 Received by [illegible] Date 10/13/20

Firm Herrera Env. Con. Time 11:40 Firm OSE Time 1140

Relinquished by _____ Date _____ Received by _____ Date _____

Firm _____ Time _____ Firm _____ Time _____

Comments:

* - field filtered with 0.45 µm filter within 15 minutes of collecting sample

CHAIN OF CUSTODY

Page 1 of 1

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants

Project No.: 14-05806-000

Project Name: Redmond Paired Watershed Study

Project Manager: George Iftner

Turnaround Requested:

_____ 1 Day

_____ 2 Day

_____ 3 Day

__X__ Standard

Laboratory No. 10-144

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Suspended Solids (SM 2540D)	Turbidity (EPA 181.1)	Hardness (EPA 200.7 / SM 2340B)	Dissolved Organ Carbon (SM 5310B) *	Fecal Coliform (SM 9222D)	Total Phosphorus (EPA 365.1)	Total Nitrogen (SM 4500 N-B)	Total Cu and Zn (EPA 200.8)	Dissolved Cu and Zn (EPA 200.8) *			
	COLM-2020 1013	10/13/20	1020	Water	7	X	X	X	X	X	X	X	X	X			
	COUMI-2020 1013	10/13/20	8:15	Water	7	X	X	X	X	X	X	X	X	X			
	COUMO-2020 1013	10/13/20	8:05	Water	7	X	X	X	X	X	X	X	X	X			
	EVAMS-2020 1013	10/13/20	840	Water	7	X	X	X	X	X	X	X	X	X			
	EVALSS-2020 1013	10/13/20	855	Water	7	X	X	X	X	X	X	X	X	X			
	MONMN-2020 1013	10/13/20	9:55	Water	7	X	X	X	X	X	X	X	X	X			
	MONMS-2020 1013	10/13/20	10:15	Water	7	X	X	X	X	X	X	X	X	X			
	MONM-2020 1013	10/13/20	1040	Water	7	X	X	X	X	X	X	X	X	X			
	SEIMN-2020 1013	10/13/20	940	Water	7	X	X	X	X	X	X	X	X	X			
	SEIMS-2020 1013	10/13/20	10:45	Water	7	X	X	X	X	X	X	X	X	X			
	TOSMI-2020 1013	10/13/20	810	Water	7	X	X	X	X	X	X	X	X	X			
	TOSMO-2020 1013	10/13/20	8:45	Water	7	X	X	X	X	X	X	X	X	X			
	TYLMI-2020 1013	10/13/20	9:25	Water	7	X	X	X	X	X	X	X	X	X			
	TYLMO-2020 1013	10/13/20	9:10	Water	7	X	X	X	X	X	X	X	X	X			
	QA 94 20201013	10/13/20	820	Water	7	X	X	X	X	X	X	X	X	X			

Relinquished by Nick Bodell Date 10/15/20 Received by [illegible] Date 10/13/20

Firm Herrera Env. Con. Time 11:40 Firm OSE Time 1140

Relinquished by _____ Date _____ Received by _____ Date _____

Firm _____ Time _____ Firm _____ Time _____

Comments:
* - field filtered with 0.45 µm filter within 15 minutes of collecting sample

METER CALIBRATION LOG - Redmond Paired Watershed Study

Project Number:	14-05806-000
Personnel Performing Calibration:	N. Dattilo
Meter:	Pro DSS #2
Date/Time:	10/12/20
Barometric Pressure Start of Day:	mmHg: 769.4 Time: 16:00
Barometric Pressure End of Day:	mmHg: 769.3 Time: 16:10

PRE Field Run CALIBRATION	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	0.1	0	22.6	
Conductivity (µS/cm)	925	1,000	23.3	
Conductivity (µS/cm)	103.9	100	22.9	
DO % Saturation	92.9	100	23.1	

POST Field Run CHECK	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	1.3	0	23.3	
Conductivity (µS/cm)	97.0	100	22.1	
DO % Saturation	96.1	100	23.1	

Calibration Procedures:

Rinse Multimeter Sonde Between Each Operation

Rinse 3 times with tap water, 3 times with deionized water, then 3 times with the solution to be used for calibrating or testing.

Conductivity Calibration Notes:

1. Dry the conductivity probe with a lab tissue (e.g., KimWipes®) and DI water.
2. Fill calibration cup to within a centimeter of the top of the calibration cup with DI water (0 µS).
3. Fill the calibration cup with 1,000 µS standard so that the temperature/conductivity probe is submerged.
4. Make sure there are no bubbles in the cell; wait 2 minutes.
5. Enter the appropriate standard value (1,000 µS/cm or 1.0 mS/cm) for Sp Cond.
6. Check conductivity using 100 µS/cm standard.

Dissolved Oxygen Calibration Notes:

1. Fill the calibration cup with about 1/2 inch of DI; it should be below the sensor cap.
2. Use KimWipes® to dry any droplets from the sensor cap.
3. Invert calibration cup's cap and gently rest it on the cup.
4. Wait 5 minutes, making sure that temperature stabilizes.
5. Determine local barometric pressure (mm Hg) and enter this value into the meter.
6. Click "Calibrate". "Calibrate Successful" will be displayed.
7. To retain calibration accuracy between measurements, store with the sensor immersed in water or within a water-saturated air environment such as a sealed storage cup with at least 10 ml of water.
8. It is important to have the water-saturated air and the sensor at the same temperature. Therefore, store a jar of DI in the same environment as the sonde and calibrate in a similar air temperature as the water and sonde.
9. Keep probe out of direct sun or wind.

METER CALIBRATION LOG - Redmond Paired Watershed Study

Project Number:	14-05806-000
Personnel Performing Calibration:	N. Bartish
Meter:	ProDSS #1
Date/Time:	12/12/20
Barometric Pressure Start of Day:	mmHg: 769.2 Time: 16:00
Barometric Pressure End of Day:	mmHg: 769.2 Time: 16:10

PRE Field Run CALIBRATION	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	0.2	0	21.7	
Conductivity (µS/cm)	969	1,000	22.6	
Conductivity (µS/cm)	102.9	100	22.0	
DO % Saturation	101.0	100	22.5	

POST Field Run CHECK	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	1.2	0	22.5	
Conductivity (µS/cm)	97.6	100	21.9	
DO % Saturation	100.6	100	22.2	

Calibration Procedures:

Rinse Multimeter Sonde Between Each Operation

Rinse 3 times with tap water, 3 times with deionized water, then 3 times with the solution to be used for calibrating or testing.

Conductivity Calibration Notes:

1. Dry the conductivity probe with a lab tissue (e.g., KimWipes®) and DI water.
2. Fill calibration cup to within a centimeter of the top of the calibration cup with DI water (0 µS).
3. Fill the calibration cup with 1,000 µS standard so that the temperature/conductivity probe is submerged.
4. Make sure there are no bubbles in the cell; wait 2 minutes.
5. Enter the appropriate standard value (1,000 µS/cm or 1.0 mS/cm) for Sp Cond.
6. Check conductivity using 100 µS/cm standard.

Dissolved Oxygen Calibration Notes:

1. Fill the calibration cup with about 1/2 inch of DI; it should be below the sensor cap.
2. Use KimWipes® to dry any droplets from the sensor cap.
3. Invert calibration cup's cap and gently rest it on the cup.
4. Wait 5 minutes, making sure that temperature stabilizes.
5. Determine local barometric pressure (mm Hg) and enter this value into the meter.
6. Click "Calibrate". "Calibrate Successful" will be displayed.
7. To retain calibration accuracy between measurements, store with the sensor immersed in water or within a water-saturated air environment such as a sealed storage cup with at least 10 ml of water.
8. It is important to have the water-saturated air and the sensor at the same temperature. Therefore, store a jar of DI in the same environment as the sonde and calibrate in a similar air temperature as the water and sonde.
9. Keep probe out of direct sun or wind.

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: MM + GK

Sample Date: 10/13/2020 **Sample Time:** 940 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 940 PST:

(Must filter within 15 minutes of collection)

SITE ID: SEIMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 54° + Rainy

Water Quality Sampling

Sample ID: SEIMN 20201013

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: slightly turbid but clearish

Color: √ light Yellow

Odor: NA

Sheen: NA

Floatables: √ small amount

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 8.00 inches

Reference Point (description): Measure down from top of bolt

Water Quality Measurments

Temperature (°C) 11.2

Specific Conductivity (µs/cm) 68.4

Dissolved Oxygen (mg/L) 9.92

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: MM + GK

Sample Date: 10/13/2020 **Sample Time:** 855 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 855 PST:

(Must filter within 15 minutes of collection)

SITE ID: EVALSS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 54° + misting

Water Quality Sampling

Sample ID: EVALSS 2020 1013

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	bit turbid
Color:	yellow / red brown
Odor:	NA
Sheen:	NA
Floatables:	v little

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- ~~YSI Pro DSS 2~~

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.45

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 11.3

Specific Conductivity (µs/cm) 155.2

Dissolved Oxygen (mg/L) 10.12

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: MM + GK

Sample Date: 10/13/2020 **Sample Time:** 840 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 840 PST:

(Must filter within 15 minutes of collection)

SITE ID: EVAMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 52° + Rainy

Water Quality Sampling

Sample ID: EVAMS 2020 1013

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	bit turbid
Color:	light yellow
Odor:	NAT
Sheen:	NA
Floatables:	some (little bit)

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 3.90

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 11.4

Specific Conductivity (µs/cm) 159.6

Dissolved Oxygen (mg/L) 9.75

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: MM + GK

Sample Date: 10/13/2020 **Sample Time:** 1020 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 1020 PST:

(Must filter within 15 minutes of collection)

SITE ID: COLM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Misting + 57°

Water Quality Sampling

Sample ID: CALM 2020 1013

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: brownish red turbid

Color:

Odor: NA

Sheen: NA

Floatables: YES

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): SG

Reference Point (description): 5.60

Water Quality Measurments

Temperature (°C) 11.5

Specific Conductivity (µs/cm) 40.7

Dissolved Oxygen (mg/L) 9.16

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: MM + GK

Sample Date: 10/13/20 **Sample Time:** 1040 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 1040 PST:

(Must filter within 15 minutes of collection)

SITE ID: MONM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 59° + cloudy

Water Quality Sampling

Sample ID: MONM20201013

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	turbid
Color:	light red brown
Odor:	NA
Sheen:	NA
Floatables:	Yes

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): NA

Reference Point (description): NA

Water Quality Measurments

Temperature (°C) 12.9

Specific Conductivity (µs/cm) 110.7

Dissolved Oxygen (mg/L) 9.77

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: MB, JW

Sample Date: 10/13/20 **Sample Time:** 8:05 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 8:10 PST:

(Must filter within 15 minutes of collection)

SITE ID: COUNO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rain, 55°F

Water Quality Sampling

Sample ID: COUNO20201013

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity:

Color: Yellow color

Odor:

Sheen:

Floatables: some particulate

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 1.6

Reference Point (description):

Water Quality Measurments

Temperature (°C) 11.5

Specific Conductivity (µs/cm) 68.7

Dissolved Oxygen (mg/L) 10.69

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, JW

Sample Date: 10/13/20 **Sample Time:** 8:15 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 8:20 PST:

(Must filter within 15 minutes of collection)

SITE ID: COUN1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 55°F, Rainy

Water Quality Sampling

Sample ID: COUN12020 10 13

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	↓
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	↓
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	↓
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	↓
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	↓
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	low
Color:	dark color
Odor:	
Sheen:	
Floatables:	lots of small particulate

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1)
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.76

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 11.2

Specific Conductivity (µs/cm) 138.4

Dissolved Oxygen (mg/L) 10.74

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, JW

Sample Date: 10/13/20 **Sample Time:** 8:45 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 8:50 PST:

(Must filter within 15 minutes of collection)

SITE ID: TOSMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rainy, 55°F

Water Quality Sampling

Sample ID: TOSMO2020 1013

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	low
Color:	yellow
Odor:	
Sheen:	
Floatables:	small particles

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.91

Reference Point (description): TG

Water Quality Measurments

Temperature (°C) 11.1

Specific Conductivity (µs/cm) 88.2

Dissolved Oxygen (mg/L) 10.86

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: MM + GK

Sample Date: 10/13/2020 **Sample Time:** 810 / 820 PDT: / 810 / 820 PST:

Base Flow or Storm Event?

Field Filtered Time: 810 / 820 (Must filter within 15 minutes of collection)

SITE ID: TOSM1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rainy + 52°

Water Quality Sampling

Sample ID: TOSM1 20201013

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	Yes
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	QA94 20201013
Filter blank sample ID:	—
Transfer blank sample ID:	—

Visual and Olfactory Conditions:

Clarity:	turbid
Color:	brown
Odor:	NA
Sheen:	NA
Floatables:	yes

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest ~~100th~~ of a foot)

Stream Stage (ft): 1.07

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 11.9

Specific Conductivity (µs/cm) 84.6

Dissolved Oxygen (mg/L) 9.97

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, JW

Sample Date: 10/13/20 **Sample Time:** 10:45 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 10:50 PST:

(Must filter within 15 minutes of collection)

SITE ID: SEIMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Windy, 55°F

Water Quality Sampling

Sample ID: SEIMS20201013

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	Yellow
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.81

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 10.7

Specific Conductivity (µs/cm) 100.7

Dissolved Oxygen (mg/L) 10.05

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NS, JW

Sample Date: 10/13/20 **Sample Time:** 10:15 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 10:27 PST:

(Must filter within 15 minutes of collection)

SITE ID: MONM5

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: overcast, 55°F

Water Quality Sampling

Sample ID: MONM5 20201013

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	No
DOC *	HDPE	250 ml	1	HCL	↓
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	↓
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	↓
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	↓
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	↓
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	↓

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus ~~(15D100020)~~

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): NA

Reference Point (description):

Water Quality Measurments

Temperature (°C) 11.5

Specific Conductivity (µs/cm) 183.4

Dissolved Oxygen (mg/L) 7.98

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, SW

Sample Date: 10/13/20 **Sample Time:** 9:10 PDT:

Base Flow or ~~Storm~~ Event? **Field Filtered Time:** 9:15 PST:

(Must filter within 15 minutes of collection)

SITE ID: TYLMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: overcast, light rain

Water Quality Sampling

Sample ID: TYLM_201013

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	No
DOC *	HDPE	250 ml	1	HCL	↓
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	↓
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	↓
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	↓
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	↓
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	↓

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro ~~DSS~~ 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 33.25 in

Reference Point (description): Top

Water Quality Measurments

Temperature (°C) 11.9

Specific Conductivity (µs/cm) 86.8

Dissolved Oxygen (mg/L) 10.36

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, JW

Sample Date: 10/18/20 **Sample Time:** 9:55 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 10:00 PST:

(Must filter within 15 minutes of collection)

SITE ID: MONMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Overcast, 55°F

Water Quality Sampling

Sample ID: MONMN 2020 1018

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	No
DOC *	HDPE	250 ml	1	HCL	"
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	"
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	"
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	"
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	"
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	✓

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	slight yellow tint
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 9.40

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 12.0

Specific Conductivity (µs/cm) 113.4

Dissolved Oxygen (mg/L) 10.18

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: HD, JW

Sample Date: 10/12/20 **Sample Time:** 9:25 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 9:30 PST:

(Must filter within 15 minutes of collection)

SITE ID: TYLM1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: overcast, 58° F

Water Quality Sampling

Sample ID: TYLM120201013

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	V

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1 ✓
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 57.5 ft

Reference Point (description): Tape

Water Quality Measurments

Temperature (°C) 12.2

Specific Conductivity (µs/cm) 96.5

Dissolved Oxygen (mg/L) 10.01

Data Quality Assurance Worksheet

By J. Brown

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 11/30/20 Page 1 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 10/13/20 /All locations, QA94 (TOSMI) Lab Ref No 2010-144

date 12/22/2020

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
TSS	OK / SM 2540D	NA	**NA**	7	**≤7**	≤1.0 mg/L 1.0 mg/L	NA	**NA**	92	**±20**	3	**≤ 25**	3	**≤ 25**	OK	NONE
Turbidity	OK / EPA 180.1	NA	**NA**	<1	**≤2**	≤0.1 NTU 0.1 NTU	NA	**NA**	NA	**±10**	1	**≤ 25**	0	**≤ 25**	OK	NONE
Hardness	OK / SM 2340B	NA	**NA**	7	**≤180**	≤1.0 mg/L 1.0 mg/L	104, 100	**±25**	99	**±15**	9, MS 3	**≤ 20**	4	**≤ 20**	OK	NONE
DOC	OK / SM 5310B	≤15	**≤15**	7	**≤28**	≤1.0 mg/L 1.0 mg/L	106	**±25**	106	**±15**	D=0.03	**≤ 20**	D=0.3	**≤ 20**	OK	NONE
Total Phosphorus	OK / EPA 365.1	NA	**NA**	8	**≤28**	≤0.01 mg/L 0.01 mg/L	101	**±25**	98	**±20**	D=0.002	**≤ 20**	6	**≤ 20**	OK	NONE
Total Nitrogen (TKN + N+N)	OK/ SM 4500 N-B	NA	**NA**	17, 23	**≤28**	≤0.1 mg/L 0.1 mg/L	90-108	**±25**	93-110	**±20**	0-10 D=0-0.1	**≤ 20**	2, 0	**≤ 20**	OK	NONE

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

Data Quality Assurance Worksheet

By J. Brown

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 11/30/20 Page 2 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 10/13/20 /All locations, QA94 (TOSMI) Lab Ref No 2010-144

date 12/22/2020

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
Total Copper	OK/ EPA 200.8	NA	**NA**	3	**≤180**	≤1.0 µg/L 1.0 µg/L	90, 92	**±25**	NR	**±15**	D=0.02 MS 2	**≤ 20**	D=0.3	**≤ 20**	OK	NONE
Total Zinc	OK/ EPA 200.8	NA	**NA**	3	**≤180**	≤5.0 µg/L 5.0 µg/L	95, 98	**±25**	NR	**±15**	D=0.18 MS 4	**≤ 20**	2.2	**≤ 20**	OK	NONE
Dissolved Copper	OK/ EPA 200.8	≤15	**≤15**	3	**≤180**	≤1.0 µg/L 1.0 µg/L	86, 89	**±25**	NR	**±15**	NC MS 3	**≤ 20**	D=0.1	**≤ 20**	OK	NONE
Dissolved Zinc	OK/ EPA 200.8	≤15	**≤15**	3	**≤180**	≤5.0 µg/L 5.0 µg/L	95, 98	**±25**	NR	**±15**	NC MS 3	**≤ 20**	D=1.0	**≤ 20**	OK	NONE
Fecal Coliform	OK / SM 9222D	NA	**NA**	<1	**≤1**	≤1.0 cfu/ 100mL 10 cfu/ 100mL	NA	**NA**	NA	**NA**	NC	**≤ 35**	141	**≤ 50**	OK	FLAG TOSMI J DUE TO FIELD DUPE EXCEEDANCE

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

December 1, 2020

Jess Brown
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2011-021

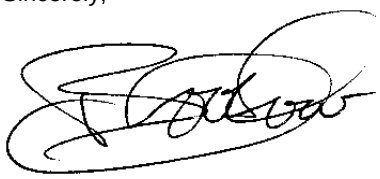
Dear Jess:

Enclosed are the analytical results and associated quality control data for samples submitted on November 3, 2020.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



Blair Goodrow
Project Manager

Enclosures

Date of Report: December 1, 2020
Samples Submitted: November 3, 2020
Laboratory Reference: 2011-021
Project: 14-05806-000

Case Narrative

Samples were collected on November 3, 2020 and received by the laboratory on November 3, 2020. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: December 1, 2020
Samples Submitted: November 3, 2020
Laboratory Reference: 2011-021
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201103**					
Laboratory ID:	11-021-01					
Total Suspended Solids	**3.0**	1.0	SM 2540D	11-4-20	11-5-20	
Client ID:	**COUMI-20201103**					
Laboratory ID:	11-021-02					
Total Suspended Solids	**320**	5.0	SM 2540D	11-4-20	11-5-20	
Client ID:	**COUMO-20201103**					
Laboratory ID:	11-021-03					
Total Suspended Solids	**150**	5.0	SM 2540D	11-4-20	11-5-20	
Client ID:	**EVAMS-20201103**					
Laboratory ID:	11-021-04					
Total Suspended Solids	**59**	5.0	SM 2540D	11-4-20	11-5-20	
Client ID:	**EVALSS-20201103**					
Laboratory ID:	11-021-05					
Total Suspended Solids	**140**	5.0	SM 2540D	11-4-20	11-5-20	
Client ID:	**MONMN-20201103**					
Laboratory ID:	11-021-06					
Total Suspended Solids	**140**	5.0	SM 2540D	11-4-20	11-5-20	
Client ID:	**MONMS-20201103**					
Laboratory ID:	11-021-07					
Total Suspended Solids	**8.4**	1.0	SM 2540D	11-4-20	11-5-20	
Client ID:	**MONM-20201103**					
Laboratory ID:	11-021-08					
Total Suspended Solids	**38**	2.0	SM 2540D	11-4-20	11-5-20	
Client ID:	**SEIMN-20201103**					
Laboratory ID:	11-021-09					
Total Suspended Solids	**150**	5.0	SM 2540D	11-4-20	11-5-20	

Date of Report: December 1, 2020
Samples Submitted: November 3, 2020
Laboratory Reference: 2011-021
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20201103**					
Laboratory ID:	11-021-10					
Total Suspended Solids	**65**	5.0	SM 2540D	11-4-20	11-5-20	
Client ID:	**TOSMI-20201103**					
Laboratory ID:	11-021-11					
Total Suspended Solids	**270**	5.0	SM 2540D	11-4-20	11-5-20	
Client ID:	**TOSMO-20201103**					
Laboratory ID:	11-021-12					
Total Suspended Solids	**420**	5.0	SM 2540D	11-4-20	11-5-20	
Client ID:	**TYLMI-20201103**					
Laboratory ID:	11-021-13					
Total Suspended Solids	**65**	5.0	SM 2540D	11-4-20	11-5-20	
Client ID:	**TYLMO-20201103**					
Laboratory ID:	11-021-14					
Total Suspended Solids	**49**	2.5	SM 2540D	11-4-20	11-5-20	
Client ID:	**QA 95-20201103**					
Laboratory ID:	11-021-15					
Total Suspended Solids	**2.2**	1.0	SM 2540D	11-4-20	11-5-20	

Date of Report: December 1, 2020
Samples Submitted: November 3, 2020
Laboratory Reference: 2011-021
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1104W1					
Total Suspended Solids	**ND**	1.0	SM 2540D	11-4-20	11-5-20	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	11-021-02								
	ORIG	DUP							
Total Suspended Solids	**317**	**327**	NA	NA	NA	NA	3	21	
SPIKE BLANK									
Laboratory ID:	SB1104W1								
	SB		SB		SB				
Total Suspended Solids	**90.0**		100	NA	90	57-126	NA	NA	

Date of Report: December 1, 2020
Samples Submitted: November 3, 2020
Laboratory Reference: 2011-021
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201103**					
Laboratory ID:	11-021-01					
Turbidity	**1.8**	0.10	EPA 180.1	11-3-20	11-3-20	
Client ID:	**COUMI-20201103**					
Laboratory ID:	11-021-02					
Turbidity	**160**	0.50	EPA 180.1	11-3-20	11-3-20	
Client ID:	**COUMO-20201103**					
Laboratory ID:	11-021-03					
Turbidity	**68**	0.20	EPA 180.1	11-3-20	11-3-20	
Client ID:	**EVAMS-20201103**					
Laboratory ID:	11-021-04					
Turbidity	**39**	0.10	EPA 180.1	11-3-20	11-3-20	
Client ID:	**EVALSS-20201103**					
Laboratory ID:	11-021-05					
Turbidity	**68**	0.20	EPA 180.1	11-3-20	11-3-20	
Client ID:	**MONMN-20201103**					
Laboratory ID:	11-021-06					
Turbidity	**91**	0.50	EPA 180.1	11-3-20	11-3-20	
Client ID:	**MONMS-20201103**					
Laboratory ID:	11-021-07					
Turbidity	**6.2**	0.10	EPA 180.1	11-3-20	11-3-20	
Client ID:	**MONM-20201103**					
Laboratory ID:	11-021-08					
Turbidity	**29**	0.10	EPA 180.1	11-3-20	11-3-20	
Client ID:	**SEIMN-20201103**					
Laboratory ID:	11-021-09					
Turbidity	**63**	0.20	EPA 180.1	11-3-20	11-3-20	

Date of Report: December 1, 2020
Samples Submitted: November 3, 2020
Laboratory Reference: 2011-021
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20201103**					
Laboratory ID:	11-021-10					
Turbidity	**35**	0.10	EPA 180.1	11-3-20	11-3-20	
Client ID:	**TOSMI-20201103**					
Laboratory ID:	11-021-11					
Turbidity	**100**	0.50	EPA 180.1	11-3-20	11-3-20	
Client ID:	**TOSMO-20201103**					
Laboratory ID:	11-021-12					
Turbidity	**230**	1.0	EPA 180.1	11-3-20	11-3-20	
Client ID:	**TYLMI-20201103**					
Laboratory ID:	11-021-13					
Turbidity	**35**	0.10	EPA 180.1	11-3-20	11-3-20	
Client ID:	**TYLMO-20201103**					
Laboratory ID:	11-021-14					
Turbidity	**23**	0.10	EPA 180.1	11-3-20	11-3-20	
Client ID:	**QA 95-20201103**					
Laboratory ID:	11-021-15					
Turbidity	**1.5**	0.10	EPA 180.1	11-3-20	11-3-20	

Date of Report: December 1, 2020
Samples Submitted: November 3, 2020
Laboratory Reference: 2011-021
Project: 14-05806-000

TURBIDITY
EPA 180.1
QUALITY CONTROL

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1103W1					
Turbidity	**ND**	0.10	EPA 180.1	11-3-20	11-3-20	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	11-012-01								
	ORIG	DUP							
Turbidity	**8.35**	**8.35**	NA	NA	NA	NA	0	14	

Date of Report: December 1, 2020
Samples Submitted: November 3, 2020
Laboratory Reference: 2011-021
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201103**					
Laboratory ID:	11-021-01					
Hardness	**14**	1.0	EPA 200.7/SM 2340B	11-6-20	11-6-20	
Client ID:	**COUMI-20201103**					
Laboratory ID:	11-021-02					
Hardness	**72**	1.0	EPA 200.7/SM 2340B	11-6-20	11-6-20	
Client ID:	**COUMO-20201103**					
Laboratory ID:	11-021-03					
Hardness	**34**	1.0	EPA 200.7/SM 2340B	11-6-20	11-6-20	
Client ID:	**EVAMS-20201103**					
Laboratory ID:	11-021-04					
Hardness	**81**	1.0	EPA 200.7/SM 2340B	11-6-20	11-6-20	
Client ID:	**EVALSS-20201103**					
Laboratory ID:	11-021-05					
Hardness	**85**	1.0	EPA 200.7/SM 2340B	11-6-20	11-6-20	
Client ID:	**MONMN-20201103**					
Laboratory ID:	11-021-06					
Hardness	**65**	1.0	EPA 200.7/SM 2340B	11-6-20	11-6-20	
Client ID:	**MONMS-20201103**					
Laboratory ID:	11-021-07					
Hardness	**65**	1.0	EPA 200.7/SM 2340B	11-6-20	11-6-20	

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HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20201103**					
Laboratory ID:	11-021-08					
Hardness	**64**	1.0	EPA 200.7/SM 2340B	11-6-20	11-6-20	
Client ID:	**SEIMN-20201103**					
Laboratory ID:	11-021-09					
Hardness	**36**	1.0	EPA 200.7/SM 2340B	11-6-20	11-6-20	
Client ID:	**SEIMS-20201103**					
Laboratory ID:	11-021-10					
Hardness	**44**	1.0	EPA 200.7/SM 2340B	11-6-20	11-6-20	
Client ID:	**TOSMI-20201103**					
Laboratory ID:	11-021-11					
Hardness	**31**	1.0	EPA 200.7/SM 2340B	11-6-20	11-6-20	
Client ID:	**TOSMO-20201103**					
Laboratory ID:	11-021-12					
Hardness	**55**	1.0	EPA 200.7/SM 2340B	11-6-20	11-6-20	
Client ID:	**TYLMI-20201103**					
Laboratory ID:	11-021-13					
Hardness	**41**	1.0	EPA 200.7/SM 2340B	11-6-20	11-6-20	
Client ID:	**TYLMO-20201103**					
Laboratory ID:	11-021-14					
Hardness	**24**	1.0	EPA 200.7/SM 2340B	11-6-20	11-6-20	

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HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA 95-20201103**					
Laboratory ID:	11-021-15					
Hardness	**14**	1.0	EPA 200.7/SM 2340B	11-6-20	11-6-20	

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HARDNESS
EPA 200.7/SM 2340B
QUALITY CONTROL

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1106WH3					
Hardness	**ND**	1.0	EPA 200.7/SM 2340B	11-6-20	11-6-20	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	11-021-01										
	ORIG	DUP									
Hardness	**14.4**	**13.9**	NA		NA	NA		NA	4	20	
MATRIX SPIKES											
Laboratory ID:	11-021-01										
	MS	MSD	MS	MSD		MS	MSD				
Hardness	**151**	**153**	132	132	14.4	103	105	75-125	1	20	
SPIKE BLANK											
Laboratory ID:	SB1106WH1										
	SB		SB			SB					
Hardness	**142**		132		NA	108		85-115	NA	NA	

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DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201103**					
Laboratory ID:	11-021-01					
Dissolved Organic Carbon	**13**	1.0	SM 5310B	11-6-20	11-6-20	
Client ID:	**COUMI-20201103**					
Laboratory ID:	11-021-02					
Dissolved Organic Carbon	**8.7**	1.0	SM 5310B	11-6-20	11-6-20	
Client ID:	**COUMO-20201103**					
Laboratory ID:	11-021-03					
Dissolved Organic Carbon	**5.0**	1.0	SM 5310B	11-6-20	11-6-20	
Client ID:	**EVAMS-20201103**					
Laboratory ID:	11-021-04					
Dissolved Organic Carbon	**7.6**	1.0	SM 5310B	11-6-20	11-6-20	
Client ID:	**EVALSS-20201103**					
Laboratory ID:	11-021-05					
Dissolved Organic Carbon	**5.9**	1.0	SM 5310B	11-6-20	11-6-20	
Client ID:	**MONMN-20201103**					
Laboratory ID:	11-021-06					
Dissolved Organic Carbon	**11**	1.0	SM 5310B	11-6-20	11-6-20	
Client ID:	**MONMS-20201103**					
Laboratory ID:	11-021-07					
Dissolved Organic Carbon	**6.2**	1.0	SM 5310B	11-6-20	11-6-20	
Client ID:	**MONM-20201103**					
Laboratory ID:	11-021-08					
Dissolved Organic Carbon	**8.3**	1.0	SM 5310B	11-6-20	11-6-20	
Client ID:	**SEIMN-20201103**					
Laboratory ID:	11-021-09					
Dissolved Organic Carbon	**8.0**	1.0	SM 5310B	11-6-20	11-6-20	

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DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20201103**					
Laboratory ID:	11-021-10					
Dissolved Organic Carbon	**16**	1.0	SM 5310B	11-6-20	11-6-20	
Client ID:	**TOSMI-20201103**					
Laboratory ID:	11-021-11					
Dissolved Organic Carbon	**7.6**	1.0	SM 5310B	11-6-20	11-6-20	
Client ID:	**TOSMO-20201103**					
Laboratory ID:	11-021-12					
Dissolved Organic Carbon	**8.9**	1.0	SM 5310B	11-6-20	11-6-20	
Client ID:	**TYLMI-20201103**					
Laboratory ID:	11-021-13					
Dissolved Organic Carbon	**7.3**	1.0	SM 5310B	11-6-20	11-6-20	
Client ID:	**TYLMO-20201103**					
Laboratory ID:	11-021-14					
Dissolved Organic Carbon	**5.8**	1.0	SM 5310B	11-6-20	11-6-20	
Client ID:	**QA 95-20201103**					
Laboratory ID:	11-021-15					
Dissolved Organic Carbon	**13**	1.0	SM 5310B	11-6-20	11-6-20	

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DISSOLVED ORGANIC CARBON
SM 5310B
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1106D1					
Dissolved Organic Carbon	**ND**	1.0	SM 5310B	11-6-20	11-6-20	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	11-021-05								
	ORIG	DUP							
Dissolved Organic Carbon	**5.90**	**5.81**	NA	NA	NA	NA	2	15	
MATRIX SPIKE									
Laboratory ID:	11-021-05								
	MS		MS		MS				
Dissolved Organic Carbon	**16.1**		10.0	5.90	102	72-132	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB1106D1								
	SB		SB		SB				
Dissolved Organic Carbon	**11.0**		10.0	NA	110	82-123	NA	NA	

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TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201103**					
Laboratory ID:	11-021-01					
Total Phosphorus	**0.026**	0.010	EPA 365.1	11-9-20	11-10-20	
Client ID:	**COUMI-20201103**					
Laboratory ID:	11-021-02					
Total Phosphorus	**0.52**	0.010	EPA 365.1	11-9-20	11-10-20	
Client ID:	**COUMO-20201103**					
Laboratory ID:	11-021-03					
Total Phosphorus	**0.31**	0.010	EPA 365.1	11-9-20	11-10-20	
Client ID:	**EVAMS-20201103**					
Laboratory ID:	11-021-04					
Total Phosphorus	**0.13**	0.010	EPA 365.1	11-9-20	11-10-20	
Client ID:	**EVALSS-20201103**					
Laboratory ID:	11-021-05					
Total Phosphorus	**0.22**	0.010	EPA 365.1	11-9-20	11-10-20	
Client ID:	**MONMN-20201103**					
Laboratory ID:	11-021-06					
Total Phosphorus	**0.44**	0.010	EPA 365.1	11-9-20	11-10-20	
Client ID:	**MONMS-20201103**					
Laboratory ID:	11-021-07					
Total Phosphorus	**0.073**	0.010	EPA 365.1	11-9-20	11-10-20	
Client ID:	**MONM-20201103**					
Laboratory ID:	11-021-08					
Total Phosphorus	**0.15**	0.010	EPA 365.1	11-9-20	11-10-20	
Client ID:	**SEIMN-20201103**					
Laboratory ID:	11-021-09					
Total Phosphorus	**0.20**	0.010	EPA 365.1	11-9-20	11-10-20	

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TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20201103**					
Laboratory ID:	11-021-10					
Total Phosphorus	**0.14**	0.010	EPA 365.1	11-9-20	11-10-20	
Client ID:	**TOSMI-20201103**					
Laboratory ID:	11-021-11					
Total Phosphorus	**0.40**	0.010	EPA 365.1	11-9-20	11-10-20	
Client ID:	**TOSMO-20201103**					
Laboratory ID:	11-021-12					
Total Phosphorus	**0.51**	0.010	EPA 365.1	11-9-20	11-10-20	
Client ID:	**TYLMI-20201103**					
Laboratory ID:	11-021-13					
Total Phosphorus	**0.21**	0.010	EPA 365.1	11-9-20	11-10-20	
Client ID:	**TYLMO-20201103**					
Laboratory ID:	11-021-14					
Total Phosphorus	**0.15**	0.010	EPA 365.1	11-9-20	11-10-20	
Client ID:	**QA 95-20201103**					
Laboratory ID:	11-021-15					
Total Phosphorus	**0.020**	0.010	EPA 365.1	11-9-20	11-10-20	

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TOTAL PHOSPHORUS
EPA 365.1
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1109W1					
Total Phosphorus	**ND**	0.010	EPA 365.1	11-9-20	11-10-20	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	11-021-01								
	ORIG	DUP							
Total Phosphorus	**0.0258**	**0.0232**	NA	NA	NA	NA	11	14	
MATRIX SPIKE									
Laboratory ID:	11-021-01								
	MS		MS		MS				
Total Phosphorus	**0.259**		0.250	0.0258	93	80-110	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB1109W1								
	SB		SB		SB				
Total Phosphorus	**0.224**		0.250	NA	90	78-110	NA	NA	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201103**					
Laboratory ID:	11-021-01					
Copper	**ND**	1.0	EPA 200.8	11-6-20	11-10-20	
Zinc	**ND**	5.0	EPA 200.8	11-6-20	11-10-20	
Client ID:	**COUMI-20201103**					
Laboratory ID:	11-021-02					
Copper	**12**	1.0	EPA 200.8	11-6-20	11-10-20	
Zinc	**140**	5.0	EPA 200.8	11-6-20	11-10-20	
Client ID:	**COUMO-20201103**					
Laboratory ID:	11-021-03					
Copper	**9.0**	1.0	EPA 200.8	11-6-20	11-10-20	
Zinc	**110**	5.0	EPA 200.8	11-6-20	11-10-20	
Client ID:	**EVAMS-20201103**					
Laboratory ID:	11-021-04					
Copper	**2.3**	1.0	EPA 200.8	11-6-20	11-10-20	
Zinc	**8.3**	5.0	EPA 200.8	11-6-20	11-10-20	
Client ID:	**EVALSS-20201103**					
Laboratory ID:	11-021-05					
Copper	**4.4**	1.0	EPA 200.8	11-6-20	11-10-20	
Zinc	**13**	5.0	EPA 200.8	11-6-20	11-10-20	
Client ID:	**MONMN-20201103**					
Laboratory ID:	11-021-06					
Copper	**6.3**	1.0	EPA 200.8	11-6-20	11-10-20	
Zinc	**81**	5.0	EPA 200.8	11-6-20	11-10-20	
Client ID:	**MONMS-20201103**					
Laboratory ID:	11-021-07					
Copper	**2.0**	1.0	EPA 200.8	11-6-20	11-10-20	
Zinc	**ND**	5.0	EPA 200.8	11-6-20	11-10-20	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20201103**					
Laboratory ID:	11-021-08					
Copper	**2.8**	1.0	EPA 200.8	11-6-20	11-10-20	
Zinc	**37**	5.0	EPA 200.8	11-6-20	11-10-20	
Client ID:	**SEIMN-20201103**					
Laboratory ID:	11-021-09					
Copper	**4.6**	1.0	EPA 200.8	11-6-20	11-10-20	
Zinc	**6.6**	5.0	EPA 200.8	11-6-20	11-10-20	
Client ID:	**SEIMS-20201103**					
Laboratory ID:	11-021-10					
Copper	**2.2**	1.0	EPA 200.8	11-6-20	11-10-20	
Zinc	**6.4**	5.0	EPA 200.8	11-6-20	11-10-20	
Client ID:	**TOSMI-20201103**					
Laboratory ID:	11-021-11					
Copper	**13**	1.0	EPA 200.8	11-6-20	11-10-20	
Zinc	**140**	5.0	EPA 200.8	11-6-20	11-10-20	
Client ID:	**TOSMO-20201103**					
Laboratory ID:	11-021-12					
Copper	**17**	1.0	EPA 200.8	11-6-20	11-10-20	
Zinc	**160**	5.0	EPA 200.8	11-6-20	11-10-20	
Client ID:	**TYLMI-20201103**					
Laboratory ID:	11-021-13					
Copper	**10**	1.0	EPA 200.8	11-6-20	11-10-20	
Zinc	**210**	130	EPA 200.8	11-6-20	11-10-20	
Client ID:	**TYLMO-20201103**					
Laboratory ID:	11-021-14					
Copper	**6.4**	1.0	EPA 200.8	11-6-20	11-10-20	
Zinc	**54**	5.0	EPA 200.8	11-6-20	11-10-20	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA 95-20201103**					
Laboratory ID:	11-021-15					
Copper	**ND**	1.0	EPA 200.8	11-6-20	11-10-20	
Zinc	**ND**	5.0	EPA 200.8	11-6-20	11-10-20	

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TOTAL METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1106WH2					
Copper	**ND**	1.0	EPA 200.8	11-6-20	11-10-20	
Zinc	**ND**	5.0	EPA 200.8	11-6-20	11-10-20	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	11-021-04										
	ORIG	DUP									
Copper	**2.30**	**2.14**	NA	NA		NA		NA	7	20	
Zinc	**8.28**	**8.56**	NA	NA		NA		NA	3	20	
MATRIX SPIKES											
Laboratory ID:	11-021-04										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**94.8**	**95.4**	100	100	2.30	**93**	**93**	75-125	1	20	
Zinc	**101**	**101**	100	100	8.28	**92**	**93**	75-125	0	20	

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201103**					
Laboratory ID:	11-021-01					
Copper	**ND**	1.0	EPA 200.8		11-10-20	
Zinc	**ND**	5.0	EPA 200.8		11-10-20	
Client ID:	**COUMI-20201103**					
Laboratory ID:	11-021-02					
Copper	**1.8**	1.0	EPA 200.8		11-10-20	
Zinc	**13**	5.0	EPA 200.8		11-10-20	
Client ID:	**COUMO-20201103**					
Laboratory ID:	11-021-03					
Copper	**1.6**	1.0	EPA 200.8		11-10-20	
Zinc	**18**	5.0	EPA 200.8		11-10-20	
Client ID:	**EVAMS-20201103**					
Laboratory ID:	11-021-04					
Copper	**ND**	1.0	EPA 200.8		11-10-20	
Zinc	**ND**	5.0	EPA 200.8		11-10-20	
Client ID:	**EVALSS-20201103**					
Laboratory ID:	11-021-05					
Copper	**ND**	1.0	EPA 200.8		11-10-20	
Zinc	**ND**	5.0	EPA 200.8		11-10-20	
Client ID:	**MONMN-20201103**					
Laboratory ID:	11-021-06					
Copper	**1.3**	1.0	EPA 200.8		11-10-20	
Zinc	**12**	5.0	EPA 200.8		11-10-20	
Client ID:	**MONMS-20201103**					
Laboratory ID:	11-021-07					
Copper	**1.4**	1.0	EPA 200.8		11-10-20	
Zinc	**ND**	5.0	EPA 200.8		11-10-20	

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20201103**					
Laboratory ID:	11-021-08					
Copper	**1.4**	1.0	EPA 200.8		11-10-20	
Zinc	**11**	5.0	EPA 200.8		11-10-20	
Client ID:	**SEIMN-20201103**					
Laboratory ID:	11-021-09					
Copper	**ND**	1.0	EPA 200.8		11-10-20	
Zinc	**ND**	5.0	EPA 200.8		11-10-20	
Client ID:	**SEIMS-20201103**					
Laboratory ID:	11-021-10					
Copper	**ND**	1.0	EPA 200.8		11-10-20	
Zinc	**ND**	5.0	EPA 200.8		11-10-20	
Client ID:	**TOSMI-20201103**					
Laboratory ID:	11-021-11					
Copper	**2.1**	1.0	EPA 200.8		11-10-20	
Zinc	**17**	5.0	EPA 200.8		11-10-20	
Client ID:	**TOSMO-20201103**					
Laboratory ID:	11-021-12					
Copper	**2.1**	1.0	EPA 200.8		11-10-20	
Zinc	**11**	5.0	EPA 200.8		11-10-20	
Client ID:	**TYLMI-20201103**					
Laboratory ID:	11-021-13					
Copper	**3.5**	1.0	EPA 200.8		11-10-20	
Zinc	**43**	5.0	EPA 200.8		11-10-20	
Client ID:	**TYLMO-20201103**					
Laboratory ID:	11-021-14					
Copper	**3.1**	1.0	EPA 200.8		11-10-20	
Zinc	**17**	5.0	EPA 200.8		11-10-20	

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA 95-20201103**					
Laboratory ID:	11-021-15					
Copper	**ND**	1.0	EPA 200.8		11-10-20	
Zinc	**ND**	5.0	EPA 200.8		11-10-20	

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DISSOLVED METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1110D1					
Copper	**ND**	1.0	EPA 200.8		11-10-20	
Zinc	**ND**	5.0	EPA 200.8		11-10-20	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	11-021-15										
	ORIG	DUP									
Copper	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Zinc	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	11-021-15										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**69.8**	**69.8**	80.0	80.0	ND	**87**	**87**	75-125	0	20	
Zinc	**72.8**	**73.0**	80.0	80.0	ND	**91**	**91**	75-125	0	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Dec 4 2020
On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister

Dear David Baumeister:

Enclosed please find the analytical data for your REDMOND PAIRED WATERSHED STUDY project.

The following is a cross correlation of client and laboratory identifications for your convenience.

CLIENT ID	MATRIX	AMTEST ID	TEST
COLM-20201103	Water	20-A017917	Micro, NUT
COUMI-20201103	Water	20-A017918	Micro, NUT
COUMO-20201103	Water	20-A017919	Micro, NUT
EVAMS-20201103	Water	20-A017920	Micro, NUT
EVALSS-20201103	Water	20-A017921	Micro, NUT
MONMN-20201103	Water	20-A017922	Micro, NUT
MONMS-20201103	Water	20-A017923	Micro, NUT
MONM-20201103	Water	20-A017924	Micro, NUT
SEIMN-20201103	Water	20-A017925	Micro, NUT
SEIMS-20201103	Water	20-A017926	Micro, NUT
TOSMI-20201103	Water	20-A017927	Micro, NUT
TOSMO-20201103	Water	20-A017928	Micro, NUT
TYLMI-20201103	Water	20-A017929	Micro, NUT
TYLMO-20201103	Water	20-A017930	Micro, NUT
QA95-20201103	Water	20-A017931	Micro, NUT

Your samples were received on Tuesday, November 3, 2020. At the time of receipt, the samples were logged in and properly maintained prior to the subsequent analysis.

The analytical procedures used at AmTest are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

Following the analytical data you will find the Quality Control (QC) results.

Please note that the detection limits that are listed in the body of the report refer to the Practical Quantitation Limits (PQL's), as opposed to the Method Detection Limits (MDL's).

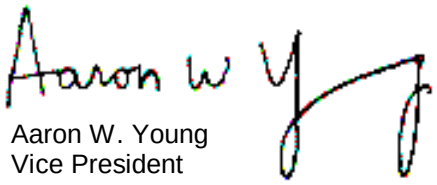
Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Dec 4 2020
On-Site Environmental
continued . . .

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,



Aaron W. Young
Vice President

PO Number: 11-021

BACT = Bacteriological	MET = Metals	NUT=Nutrients	MIN=Minerals
CONV = Conventionals	ORG = Organics	DEM=Demand	

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664
www.amtestlab.com

Professional Analytical Services

ANALYSIS REPORT

On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister
Project Name: REDMOND PAIRED WATERSHED STUDY
PO Number: 11-021
All results reported on an as received basis.

Date Received: 11/03/20
Date Reported: 12/ 4/20

AMTEST Identification Number **20-A017917**
Client Identification **COLM-20201103**
Sampling Date **11/03/20, 12:15**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	48.	CFU/100 ml		1	SM 9222D	JM	11/03/20
Total Nitrogen (NOX&TKN)	1.02	mg/l		0.1			
Total Nitrogen (TKN)	0.809	mg/l		0.2	SM4500N	KS	11/19/20
Total Nitrate + Nitrite	0.21	mg/l		0.02	SM4500NO3	KS	11/11/20

AMTEST Identification Number **20-A017918**
Client Identification **COUMI-20201103**
Sampling Date **11/03/20, 10:10**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	1500	CFU/100 ml		1	SM 9222D	JM	11/03/20
Total Nitrogen (NOX&TKN)	2.43	mg/l		0.1			
Total Nitrogen (TKN)	2.18	mg/l		0.2	SM4500N	KS	11/19/20
Total Nitrate + Nitrite	0.25	mg/l		0.02	SM4500NO3	KS	11/11/20

AMTEST Identification Number **20-A017919**
Client Identification **COUMO-20201103**
Sampling Date **11/03/20, 10:00**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	1600	CFU/100 ml		1	SM 9222D	JM	11/03/20
Total Nitrogen (NOX&TKN)	1.50	mg/l		0.1			
Total Nitrogen (TKN)	1.31	mg/l		0.2	SM4500N	KS	11/19/20
Total Nitrate + Nitrite	0.19	mg/l		0.02	SM4500NO3	KS	11/11/20

AMTEST Identification Number **20-A017920**
Client Identification **EVAMS-20201103**
Sampling Date **11/03/20, 10:30**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	300	CFU/100 ml		1	SM 9222D	JM	11/03/20
Total Nitrogen (NOX&TKN)	2.80	mg/l		0.1			
Total Nitrogen (TKN)	1.40	mg/l		0.2	SM4500N	KS	11/19/20
Total Nitrate + Nitrite	1.4	mg/l		0.02	SM4500NO3	KS	11/11/20

AMTEST Identification Number **20-A017921**
Client Identification **EVALSS-20201103**
Sampling Date **11/03/20, 10:50**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	700	CFU/100 ml		1	SM 9222D	JM	11/03/20
Total Nitrogen (NOX&TKN)	3.01	mg/l		0.1			
Total Nitrogen (TKN)	1.71	mg/l		0.2	SM4500N	KS	11/19/20
Total Nitrate + Nitrite	1.3	mg/l		0.02	SM4500NO3	KS	11/11/20

AMTEST Identification Number **20-A017922**
Client Identification **MONMN-20201103**
Sampling Date **11/03/20, 11:45**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	1400	CFU/100 ml		1	SM 9222D	JM	11/03/20
Total Nitrogen (NOX&TKN)	2.53	mg/l		0.1			
Total Nitrogen (TKN)	2.28	mg/l		0.2	SM4500N	KS	11/19/20
Total Nitrate + Nitrite	0.25	mg/l		0.02	SM4500NO3	KS	11/11/20

AMTEST Identification Number **20-A017923**
Client Identification **MONMS-20201103**
Sampling Date **11/03/20, 11:30**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	1100	CFU/100 ml		1	SM 9222D	JM	11/03/20
Total Nitrogen (NOX&TKN)	0.97	mg/l		0.1			
Total Nitrogen (TKN)	0.782	mg/l		0.2	SM4500N	KS	11/19/20
Total Nitrate + Nitrite	0.19	mg/l		0.02	SM4500NO3	KS	11/11/20

AMTEST Identification Number **20-A017924**
Client Identification **MONM-20201103**
Sampling Date **11/03/20, 12:45**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	560	CFU/100 ml		1	SM 9222D	JM	11/03/20
Total Nitrogen (NOX&TKN)	1.49	mg/l		0.1			
Total Nitrogen (TKN)	1.21	mg/l		0.2	SM4500N	KS	11/19/20
Total Nitrate + Nitrite	0.28	mg/l		0.02	SM4500NO3	KS	11/11/20

AMTEST Identification Number **20-A017925**
Client Identification **SEIMN-20201103**
Sampling Date **11/03/20, 11:30**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	52.	CFU/100 ml		1	SM 9222D	JM	11/03/20
Total Nitrogen (NOX&TKN)	1.88	mg/l		0.1			
Total Nitrogen (TKN)	1.51	mg/l		0.2	SM4500N	KS	11/19/20
Total Nitrate + Nitrite	0.37	mg/l		0.02	SM4500NO3	KS	11/11/20

AMTEST Identification Number **20-A017926**
Client Identification **SEIMS-20201103**
Sampling Date **11/03/20, 12:20**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	740	CFU/100 ml		1	SM 9222D	JM	11/03/20
Total Nitrogen (NOX&TKN)	1.99	mg/l		0.1			
Total Nitrogen (TKN)	1.50	mg/l		0.2	SM4500N	KS	11/19/20
Total Nitrate + Nitrite	0.49	mg/l		0.02	SM4500NO3	KS	11/11/20

AMTEST Identification Number **20-A017927**
Client Identification **TOSMI-20201103**
Sampling Date **11/03/20, 10:00**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	1300	CFU/100 ml		1	SM 9222D	JM	11/03/20
Total Nitrogen (NOX&TKN)	1.63	mg/l		0.1			
Total Nitrogen (TKN)	1.28	mg/l		0.2	SM4500N	KS	11/19/20
Total Nitrate + Nitrite	0.35	mg/l		0.02	SM4500NO3	KS	11/11/20

AMTEST Identification Number **20-A017928**
Client Identification **TOSMO-20201103**
Sampling Date **11/03/20, 10:30**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	1700	CFU/100 ml		1	SM 9222D	JM	11/03/20
Total Nitrogen (NOX&TKN)	2.17	mg/l		0.1			
Total Nitrogen (TKN)	1.91	mg/l		0.2	SM4500N	KS	11/19/20
Total Nitrate + Nitrite	0.26	mg/l		0.02	SM4500NO3	KS	11/11/20

AMTEST Identification Number **20-A017929**
Client Identification **TYLMI-20201103**
Sampling Date **11/03/20, 11:10**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	600	CFU/100 ml		1	SM 9222D	JM	11/03/20
Total Nitrogen (NOX&TKN)	1.68	mg/l		0.1			
Total Nitrogen (TKN)	1.26	mg/l		0.2	SM4500N	KS	11/19/20
Total Nitrate + Nitrite	0.42	mg/l		0.02	SM4500NO3	KS	11/11/20

AMTEST Identification Number **20-A017930**
Client Identification **TYLMO-20201103**
Sampling Date **11/03/20, 10:50**

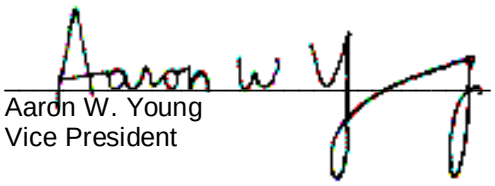
Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	900	CFU/100 ml		1	SM 9222D	JM	11/03/20
Total Nitrogen (NOX&TKN)	1.13	mg/l		0.1			
Total Nitrogen (TKN)	0.850	mg/l		0.2	SM4500N	KS	11/19/20
Total Nitrate + Nitrite	0.28	mg/l		0.02	SM4500NO3	KS	11/11/20

AMTEST Identification Number **20-A017931**
Client Identification **QA95-20201103**
Sampling Date **11/03/20, 12:20**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	21.	CFU/100 ml		1	SM 9222D	JM	11/03/20
Total Nitrogen (NOX&TKN)	1.06	mg/l		0.1			
Total Nitrogen (TKN)	0.819	mg/l		0.2	SM4500N	KS	11/19/20
Total Nitrate + Nitrite	0.24	mg/l		0.02	SM4500NO3	KS	11/11/20



Aaron W. Young
Vice President

Am Test Inc.
13600 NE 126th PL
Suite C
Kirkland, WA, 98034
(425) 885-1664
www.amtestlab.com

Professional Analytical Services

QC Summary for sample numbers: 20-A017917 to 20-A017931

DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	DUP VALUE	RPD
20-A017885	Fecal Coliform	CFU/100 ml	1300	1200	8.0
20-A017916	Fecal Coliform	CFU/100 ml	51.	42.	19.
20-A017925	Fecal Coliform	CFU/100 ml	52.	46.	12.
20-A017946	Fecal Coliform	CFU/100 ml	1100	960	14.
20-A017879	Total Nitrogen (TKN)	mg/l	8.11	8.19	0.98
20-A017924	Total Nitrogen (TKN)	mg/l	1.21	1.11	8.6
20-A018032	Total Nitrogen (TKN)	mg/l	10.1	9.83	2.7
20-A018082	Total Nitrogen (TKN)	mg/l	0.419	0.419	0.00
20-A018248	Total Nitrogen (TKN)	mg/l	25.4	25.7	1.2
20-A018401	Total Nitrogen (TKN)	mg/l	46.5	46.0	1.1
20-A017254	Total Nitrate + Nitrite	mg/l	< 0.02	< 0.02	
20-A017425	Total Nitrate + Nitrite	mg/l	34.	33.	3.0
20-A017589	Total Nitrate + Nitrite	mg/l	< 0.02	< 0.02	
20-A017692	Total Nitrate + Nitrite	mg/l	0.82	0.89	8.2
20-A017882	Total Nitrate + Nitrite	mg/l	0.099	0.088	12.
20-A017914	Total Nitrate + Nitrite	mg/l	0.64	0.70	9.0
20-A017925	Total Nitrate + Nitrite	mg/l	0.37	0.42	13.
20-A018038	Total Nitrate + Nitrite	mg/l	< 0.02	0.024	
20-A018048	Total Nitrate + Nitrite	mg/l	0.041	0.048	16.

MATRIX SPIKES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	SMPL+ SPK	SPK AMT	RECOVERY
20-A017879	Total Nitrogen (TKN)	mg/l	8.11	30.6	20.0	112.45 %
20-A017924	Total Nitrogen (TKN)	mg/l	1.21	3.08	2.00	93.50 %
20-A018082	Total Nitrogen (TKN)	mg/l	0.419	2.23	2.00	90.55 %
20-A018248	Total Nitrogen (TKN)	mg/l	25.4	67.9	40.0	106.25 %
20-A018401	Total Nitrogen (TKN)	mg/l	46.5	153.	100.	106.50 %
20-A017254	Total Nitrate + Nitrite	mg/l	< 0.02	1.1	1.0	110.00 %
20-A017425	Total Nitrate + Nitrite	mg/l	34.	81.	40.	117.50 %
20-A017589	Total Nitrate + Nitrite	mg/l	< 0.02	1.1	1.0	110.00 %
20-A017692	Total Nitrate + Nitrite	mg/l	0.82	2.0	1.0	118.00 %
20-A017882	Total Nitrate + Nitrite	mg/l	0.099	1.0	1.0	90.10 %
20-A017914	Total Nitrate + Nitrite	mg/l	0.64	1.5	1.0	86.00 %
20-A017925	Total Nitrate + Nitrite	mg/l	0.37	1.4	1.0	103.00 %
20-A018038	Total Nitrate + Nitrite	mg/l	< 0.02	1.0	1.0	100.00 %
20-A018048	Total Nitrate + Nitrite	mg/l	0.041	1.0	1.0	95.90 %

QC Summary for sample numbers: 20-A017917 to 20-A017931...

STANDARD REFERENCE MATERIALS

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
Total Nitrogen (TKN)	mg/l	1.00	0.980	98.0 %
Total Nitrogen (TKN)	mg/l	1.00	0.996	99.6 %
Total Nitrogen (TKN)	mg/l	1.00	0.913	91.3 %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.1	110. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %

BLANKS

ANALYTE	UNITS	RESULT
Fecal Coliform	CFU/100 ml	< 1
Fecal Coliform	CFU/100 ml	< 1
Fecal Coliform	CFU/100 ml	< 1
Fecal Coliform	CFU/100 ml	< 1
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 - (425) 883-3881

Laboratory Reference #: 11-021

Laboratory: AmTest Laboratories

Attention: Aaron Young

13600 NE 126th Pl Kirkland, WA 98034

Phone Number: (425) 885-1664

Turnaround Request

1 Day 2 Day 3 Day

Standard

Other: _____

Project Manager: Blair Goodrow

email: bgoodrow@onsite-env.com

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analyses
1	COLM-20201103 17917	11/3/20	12:15	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
2	COUMI-20201103 18	11/3/20	10:10	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
3	COUMO-20201103 19	11/3/20	10:00	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
4	EVAMS-20201103 20	11/3/20	10:30	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
5	EVALSS-20201103 21	11/3/20	10:50	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
6	MONMN-20201103 22	11/3/20	~~10:45~~ 11:45 AM 12/4/20	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
7	MONMS-20201103 23	11/3/20	11:30	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
8	MONM-20201103 24	11/3/20	12:45	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
9	SEIMN-20201103 25	11/3/20	11:30	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
10	SEIMS-20201103 26	11/3/20	12:20	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:		OnSite Env	11/3/20	1425	
Received by:		AMTEST T= 4.0	11/3/20	1425	
Relinquished by:					
Received by:					
Relinquished by:					
Received by:					

EDDs - CSV

Reporting Limits:

Fecal Coliform - 1.0 cfu/100ml

Total Nitrogen - .10 mg/L

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Laboratory Reference #: 11-021

Laboratory: AmTest Laboratories

Attention: Aaron Young

13600 NE 126th Pl Kirkland, WA 98034

Phone Number: (425) 885-1664

Turnaround Request

1 Day 2 Day 3 Day

Standard

Other:

Project Manager: Blair Goodrow

email: bgoodrow@onsite-env.com

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analyses
11	TOSMI-20201103 17927	11/3/20	10:00	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
12	TOSMO-20201103 28	11/3/20	10:30	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
13	TYLMI-20201103 29	11/3/20	11:10	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
14	TYLMO-20201103 30	11/3/20	10:50	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
15	QA 95-20201103 31	11/3/20	12:20	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N

Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:	OnSite ES	11/3/20	1425	EDDs - CSV
Received by:	AMTEST T=14.0	11/3/20	1425	Reporting Limits:
Relinquished by:				Fecal Coliform - 1.0 cfu/100ml
Received by:				Total Nitrogen - .10 mg/L
Relinquished by:				
Received by:				

14

CHAIN OF CUSTODY

11-021 Page 1 of 1

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants

Project No.: 14-05806-000

Project Name: Redmond Paired Watershed Study

Project Manager: George Iftner

Turnaround Requested:

_____ 1 Day

_____ 2 Day

_____ 3 Day

__X__ Standard

Laboratory No.

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Suspended Solids (SM 2540D)	Turbidity (EPA 181.1)	Hardness (EPA 200.7 / SM 2340B)	Dissolved Organ Carbon (SM 5310B) *	Fecal Coliform (SM 9222D)	Total Phosphorus (EPA 365.1)	Total Nitrogen (SM 4500 N-B)	Total Cu and Zn (EPA 200.8)	Dissolved Cu and Zn (EPA 200.8) *			
1	COLM-2020 1103	11/02/20	12:15	Water	7	X	X	X	X	X	X	X	X	X			
2	COUMI-2020		10:10	Water	7	X	X	X	X	X	X	X	X	X			
3	COUMO-2020		10:00	Water	7	X	X	X	X	X	X	X	X	X			
4	EVAMS-2020		10:30	Water	7	X	X	X	X	X	X	X	X	X			
5	EVALSS-2020		10:50	Water	7	X	X	X	X	X	X	X	X	X			
6	MONMN-2020		11:45	Water	7	X	X	X	X	X	X	X	X	X			
7	MONMS-2020		11:30	Water	7	X	X	X	X	X	X	X	X	X			
8	MONM-2020		12:45	Water	7	X	X	X	X	X	X	X	X	X			
9	SEIMN-2020		11:30	Water	7	X	X	X	X	X	X	X	X	X			
10	SEIMS-2020		12:20	Water	7	X	X	X	X	X	X	X	X	X			
11	TOSMI-2020		10:00	Water	7	X	X	X	X	X	X	X	X	X			
12	TOSMO-2020		10:30	Water	7	X	X	X	X	X	X	X	X	X			
13	TYLMI-2020		11:10	Water	7	X	X	X	X	X	X	X	X	X			
14	TYLMO-2020		10:50	Water	7	X	X	X	X	X	X	X	X	X			
15	QA 95-20201103		12:20	Water	7	X	X	X	X	X	X	X	X	X			

Relinquished by N. Batista Date 11/3/20 Received by Nicole Ehlers Date 11/3/20

Firm Herrera Time _____ Firm OSE Time 1340

Relinquished by _____ Date _____ Received by _____ Date _____

Firm _____ Time _____ Firm _____ Time _____

Comments:

* - field filtered with 0.45 µm filter within 15 minutes of collecting sample

CHAIN OF CUSTODY

11-021 Page 1 of

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants

Project No.: 14-05806-000

Project Name: Redmond Paired Watershed Study

Project Manager: George Iftner

Turnaround Requested:

_____ 1 Day

_____ 2 Day

_____ 3 Day

__X__ Standard

Laboratory No.

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Suspended Solids (SM 2540D)	Turbidity (EPA 181.1)	Hardness (EPA 200.7 / SM 2340B)	Dissolved Organ Carbon (SM 5310B) *	Fecal Coliform (SM 9222D)	Total Phosphorus (EPA 365.1)	Total Nitrogen (SM 4500 N-B)	Total Cu and Zn (EPA 200.8)	Dissolved Cu and Zn (EPA 200.8) *			
	COLM-2020 1103	11/08/20	12:15	Water	7	X	X	X	X	X	X	X	X	X			
	COUMI-2020		10:10	Water	7	X	X	X	X	X	X	X	X	X			
	COUMO-2020		10:00	Water	7	X	X	X	X	X	X	X	X	X			
	EVAMS-2020		10:30	Water	7	X	X	X	X	X	X	X	X	X			
	EVALSS-2020		10:50	Water	7	X	X	X	X	X	X	X	X	X			
	MONMN-2020		11:45	Water	7	X	X	X	X	X	X	X	X	X			
	MONMS-2020		11:30	Water	7	X	X	X	X	X	X	X	X	X			
	MONM-2020		12:45	Water	7	X	X	X	X	X	X	X	X	X			
	SEIMN-2020		11:30	Water	7	X	X	X	X	X	X	X	X	X			
	SEIMS-2020		12:20	Water	7	X	X	X	X	X	X	X	X	X			
	TOSMI-2020		10:00	Water	7	X	X	X	X	X	X	X	X	X			
	TOSMO-2020		10:30	Water	7	X	X	X	X	X	X	X	X	X			
	TYLMI-2020		11:10	Water	7	X	X	X	X	X	X	X	X	X			
	TYLMO-2020		10:50	Water	7	X	X	X	X	X	X	X	X	X			
	QA 95-2020/1103		12:20	Water	7	X	X	X	X	X	X	X	X	X			

Relinquished by N. Bartl Date 11/3/20 Received by [illegible] Date 11/3/20

Firm Herrera Time _____ Firm OSE Time 1340

Relinquished by Date Received by Date

Firm Time Firm Time

Comments:

* - field filtered with 0.45 µm filter within 15 minutes of collecting sample

METER CALIBRATION LOG - Redmond Paired Watershed Study

Project Number:	14-05806-000
Personnel Performing Calibration:	N. Bartlett
Meter:	Pro DSS #2
Date/Time:	11/2/20
Barometric Pressure Start of Day:	mmHg: 764.15 Time: 1745
Barometric Pressure End of Day:	mmHg: Time:

PRE Field Run CALIBRATION	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	4.6	0	22.2	
Conductivity (µS/cm)	997	1,000	21.8	
Conductivity (µS/cm)	98.8	100	21.8	
DO % Saturation	92.3	100	21.9	

POST Field Run CHECK	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	5.5	0	23.2	
Conductivity (µS/cm)	99.3	100	23.6	
DO % Saturation	90.2	100	23.1	

Calibration Procedures:

Rinse Multimeter Sonde Between Each Operation

Rinse 3 times with tap water, 3 times with deionized water, then 3 times with the solution to be used for calibrating or testing.

Conductivity Calibration Notes:

1. Dry the conductivity probe with a lab tissue (e.g., KimWipes®) and DI water.
2. Fill calibration cup to within a centimeter of the top of the calibration cup with DI water (0 µS).
3. Fill the calibration cup with 1,000 µS standard so that the temperature/conductivity probe is submerged.
4. Make sure there are no bubbles in the cell; wait 2 minutes.
5. Enter the appropriate standard value (1,000 µS/cm or 1.0 mS/cm) for Sp Cond.
6. Check conductivity using 100 µS/cm standard.

Dissolved Oxygen Calibration Notes:

1. Fill the calibration cup with about 1/2 inch of DI; it should be below the sensor cap.
2. Use KimWipes® to dry any droplets from the sensor cap.
3. Invert calibration cup's cap and gently rest it on the cup.
4. Wait 5 minutes, making sure that temperature stabilizes.
5. Determine local barometric pressure (mm Hg) and enter this value into the meter.
6. Click "Calibrate". "Calibrate Successful" will be displayed.
7. To retain calibration accuracy between measurements, store with the sensor immersed in water or within a water-saturated air environment such as a sealed storage cup with at least 10 ml of water.
8. It is important to have the water-saturated air and the sensor at the same temperature. Therefore, store a jar of DI in the same environment as the sonde and calibrate in a similar air temperature as the water and sonde.
9. Keep probe out of direct sun or wind.

METER CALIBRATION LOG - Redmond Paired Watershed Study

Project Number:	14-05806-000
Personnel Performing Calibration:	N. Bonham
Meter:	Pro DSS #1
Date/Time:	11/2/20
Barometric Pressure Start of Day:	mmHg: 764.3 Time: 17:45
Barometric Pressure End of Day:	mmHg: Time:

PRE Field Run CALIBRATION	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	7.1	0	21.6	
Conductivity (µS/cm)	1010	1,000	21.1	
Conductivity (µS/cm)	99.6	100	21.6	
DO % Saturation	99.5	100	21.3	

POST Field Run CHECK	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	4.1	0	22.6	
Conductivity (µS/cm)	99.3	100	23.0	
DO % Saturation	99.0	100	22.5	

Calibration Procedures:

Rinse Multimeter Sonde Between Each Operation

Rinse 3 times with tap water, 3 times with deionized water, then 3 times with the solution to be used for calibrating or testing.

Conductivity Calibration Notes:

1. Dry the conductivity probe with a lab tissue (e.g., KimWipes®) and DI water.
2. Fill calibration cup to within a centimeter of the top of the calibration cup with DI water (0 µS).
3. Fill the calibration cup with 1,000 µS standard so that the temperature/conductivity probe is submerged.
4. Make sure there are no bubbles in the cell; wait 2 minutes.
5. Enter the appropriate standard value (1,000 µS/cm or 1.0 mS/cm) for Sp Cond.
6. Check conductivity using 100 µS/cm standard.

Dissolved Oxygen Calibration Notes:

1. Fill the calibration cup with about 1/2 inch of DI; it should be below the sensor cap.
2. Use KimWipes® to dry any droplets from the sensor cap.
3. Invert calibration cup's cap and gently rest it on the cup.
4. Wait 5 minutes, making sure that temperature stabilizes.
5. Determine local barometric pressure (mm Hg) and enter this value into the meter.
6. Click "Calibrate". "Calibrate Successful" will be displayed.
7. To retain calibration accuracy between measurements, store with the sensor immersed in water or within a water-saturated air environment such as a sealed storage cup with at least 10 ml of water.
8. It is important to have the water-saturated air and the sensor at the same temperature. Therefore, store a jar of DI in the same environment as the sonde and calibrate in a similar air temperature as the water and sonde.
9. Keep probe out of direct sun or wind.

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: BB JW

Sample Date: 11.3.20 **Sample Time:** 1220 PDT: PST: X

Base Flow or Storm Event?

Field Filtered Time: 1225 (Must filter within 15 minutes of collection)

SITE ID: SEIMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: drizzle, 50°F

Water Quality Sampling

Sample ID: SEIMS-20201103

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	N
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	clear
Color:	brown, tannins
Odor:	none
Sheen:	none
Floatables:	sup sed, org debris

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1 X
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.90

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 8.5

Specific Conductivity (µs/cm) 110.9

Dissolved Oxygen (mg/L) 10.4

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: BB JW

Sample Date: 11.3.20 **Sample Time:** 1145 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 1150 PST: X

(Must filter within 15 minutes of collection)

SITE ID: MONMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: drizzle, 49°F

Water Quality Sampling

Sample ID: MONMN-20201103

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	N
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: ~~Clr~~ cloudy

Color: brown

Odor: none

Sheen: none

Floatables: sm sed, org debris

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1 X

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.41

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 8.5

Specific Conductivity (µs/cm) 119.4

Dissolved Oxygen (mg/L) 10.98

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: BB HW

Sample Date: 11.3.20 **Sample Time:** 1130 PDT: PST: X

Base Flow or Storm Event? **Field Filtered Time:** 1135
(Must filter within 15 minutes of collection)

SITE ID: MONMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: drizzle, 49°F

Water Quality Sampling

Sample ID: MONMS-20201103

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	N
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	light brown, clear
Color:	
Odor:	none
Sheen:	none
Floatables:	susp sed

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1 X
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): —

Reference Point (description): grate bolted

Water Quality Measurments

Temperature (°C) 8.6

Specific Conductivity (µs/cm) 147.4

Dissolved Oxygen (mg/L) 9.29

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: BB JW

Sample Date: 11.3.20 **Sample Time:** 1110 PDT: PST: X

Base Flow or Storm Event? **Field Filtered Time:** 1115

(Must filter within 15 minutes of collection)

SITE ID: TYLM1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: drizzle, 48°F

Water Quality Sampling

Sample ID: TYLM1-20201103

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	N
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	clear
Color:	none
Odor:	
Sheen:	
Floatables:	org debris

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1 X
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 4.33

Reference Point (description): top of culvert L

Water Quality Measurments

Temperature (°C) 9.3

Specific Conductivity (µs/cm) 87.9

Dissolved Oxygen (mg/L) 10.76

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: BB JW

Sample Date: 11.3.20 **Sample Time:** 1050 PDT: PST: X

Base Flow or Storm Event?

Field Filtered Time: 1055 (Must filter within 15 minutes of collection)

SITE ID: TYLMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: drizzle, 48°F

Water Quality Sampling

Sample ID: TYLMO-20201103

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	N
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: cloudy

Color: none

Odor:

Sheen:

Floatables: susp sed, org debris

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1 X

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): ~~3.00~~ 2.55

Reference Point (description): top of culvert

Water Quality Measurments

Temperature (°C) 9.0

Specific Conductivity (µs/cm) 49.3

Dissolved Oxygen (mg/L) 11.25

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: BB JW

Sample Date: 11.3.20 **Sample Time:** 1030 PDT: PST: X

Base Flow or Storm Event? **Field Filtered Time:** 1035 (Must filter within 15 minutes of collection)

SITE ID: TOSMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rain, 48°F

Water Quality Sampling

Sample ID: TOSMO-110320

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	N
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: cloudy

Color: brown

Odor: none

Sheen: none

Floatables: susp sed, org debris

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1 X

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.98

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 9.0

Specific Conductivity (µs/cm) 71.0

Dissolved Oxygen (mg/L) 11.53

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: BB JW

Sample Date: 11.3.20 **Sample Time:** 1010 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 1020 PST: X

(Must filter within 15 minutes of collection)

SITE ID: COUMI-

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rain 48°F

Water Quality Sampling

Sample ID: COUMI-20201103

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	N
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	cloudy
Color:	brown
Odor:	none
Sheen:	none
Floatables:	susp sed, org debris

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1 X
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.88

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 8.8

Specific Conductivity (µs/cm) ~~11.55~~ 110.3

Dissolved Oxygen (mg/L) 11.55

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: BB JW

Sample Date: 11.5.20 **Sample Time:** 10:00 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 1010 PST: X

(Must filter within 15 minutes of collection)

SITE ID: COUMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rain 48°F

Water Quality Sampling

Sample ID: COUMO-20201103

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	N
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	cloudy
Color:	brown
Odor:	none
Sheen:	none
Floatables:	suspended org debris

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1 X
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 1.82

Reference Point (description): SG

cleared debris from SG

Water Quality Measurments

Temperature (°C) 9.1

Specific Conductivity (µs/cm) 52.2

Dissolved Oxygen (mg/L) 11.39

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: BD JW

Sample Date: 11.3.20 **Sample Time:** 1245 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 1250 PST: X

(Must filter within 15 minutes of collection)

SITE ID: MONM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: drizzle, 50°F

Water Quality Sampling

Sample ID: MONM-20201103

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	N
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: cloudy

Color: brown

Odor: none

Sheen:

Floatables: susp sed, org debris

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1 X

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): —

Reference Point (description): NA

Water Quality Measurments

Temperature (°C) 9.0

Specific Conductivity (µs/cm) 111.5

Dissolved Oxygen (mg/L) 12.2

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NO, OS

Sample Date: 11/3/20 **Sample Time:** 12:15 | 12:30 PDT

Base Flow or Storm Event? **Field Filtered Time:** 12:[illegible] | 12:25 PST

(Must filter within 15 minutes of collection)

SITE ID: COLM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: rainy, 55°F

Water Quality Sampling

Sample ID: COLM20201103

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	Yes
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID: QA 95 20201103

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: fair

Color: light yellow

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 5.58

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 8.5

Specific Conductivity (µs/cm) 40.6

Dissolved Oxygen (mg/L) 10.41

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, DS

Sample Date: 11/8/20 **Sample Time:** 11:30 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 11:35 PST:

(Must filter within 15 minutes of collection)

SITE ID: SELMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rainy, 55°F

Water Quality Sampling

Sample ID: SELMN20201107

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	low
Color:	brown
Odor:	
Sheen:	
Floatables:	1 x bs of particulate

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 8.6 in

Reference Point (description): Tape

Water Quality Measurments

Temperature (°C) 9.2

Specific Conductivity (µs/cm) 20.6

Dissolved Oxygen (mg/L) 11.06

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, DS

Sample Date: 11/3/20 **Sample Time:** 10:50 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 10:56 PST:

(Must filter within 15 minutes of collection)

SITE ID: EVALSS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rainy. 55° F

Water Quality Sampling

Sample ID: EVALSS 2020 11 03

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	low
Color:	brown
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.42

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 9.2

Specific Conductivity (µs/cm) 161.6

Dissolved Oxygen (mg/L) 11.29

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: AB, DS

Sample Date: 10/4/20 **Sample Time:** 10:30 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 10:35 PST:

(Must filter within 15 minutes of collection)

SITE ID: EVANS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rain, 55° F

Water Quality Sampling

Sample ID: EVANS20201103

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	No
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: decent, fairly clear

Color: light brown

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 3.88

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 9.1

Specific Conductivity (µs/cm) 164.1

Dissolved Oxygen (mg/L) 10.82

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: N. Bartsch, D. Stang

Sample Date: 11/8/20 **Sample Time:** 10:00 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 10:05 PST:

(Must filter within 15 minutes of collection)

SITE ID: TOSM1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

HERRERA

Water Quality Sampling

Sample ID: TOSM1202011 08

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: low

Color: brown

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Current Weather and Temp: rainy

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 1.15

Reference Point (description): S6

Water Quality Measurments

Temperature (°C) 9.8

Specific Conductivity (µs/cm) 43.8

Dissolved Oxygen (mg/L) 11.07

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Data Quality Assurance Worksheet

By J. Brown

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 12/1/20 Page 1 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 11/3/20 /All locations, QA95 (COLM) Lab Ref No 2011-021

date 12/222020

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
TSS	OK / SM 2540D	NA	**NA**	2	**≤7**	≤1.0 mg/L 1.0 mg/L	NA	**NA**	90	**±20**	3	**≤ 25**	D=0.8	**≤ 25**	OK	NONE
Turbidity	OK / EPA 180.1	NA	**NA**	<1	**≤2**	≤0.1 NTU 0.1 NTU	NA	**NA**	NA	**±10**	0	**≤ 25**	18	**≤ 25**	OK	NONE
Hardness	OK / SM 2340B	NA	**NA**	3	**≤180**	≤1.0 mg/L 1.0 mg/L	103, 105	**±25**	108	**±15**	4 MS 1	**≤ 20**	0	**≤ 20**	OK	NONE
DOC	OK / SM 5310B	≤15	**≤15**	3	**≤28**	≤1.0 mg/L 1.0 mg/L	102	**±25**	110	**±15**	2	**≤ 20**	0	**≤ 20**	OK	NONE
Total Phosphorus	OK / EPA 365.1	NA	**NA**	6	**≤28**	≤0.01 mg/L 0.01 mg/L	93	**±25**	90	**±20**	D=0.003	**≤ 20**	D=0.01	**≤ 20**	OK	NONE
Total Nitrogen (TKN + N+N)	OK/ SM 4500 N-B	NA	**NA**	8, 16	**≤28**	≤0.1 mg/L 0.1 mg/L	86-118	**±25**	91-110	**±20**	NC, 1-13, D=0-0.01	**≤ 20**	13, D=0.01	**≤ 20**	OK	NONE

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

Data Quality Assurance Worksheet

By J. Brown

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 12/1/20 Page 2 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 11/3/20 /All locations, QA95 (COLM) Lab Ref No 2011-021

date 12/222020

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
Total Copper	OK/ EPA 200.8	NA	**NA**	3	**≤180**	≤1.0 µg/L 1.0 µg/L	95, 95	**±25**	NR	**±15**	D=0.16 MS 1	**≤ 20**	NC	**≤ 20**	OK	NONE
Total Zinc	OK/ EPA 200.8	NA	**NA**	3	**≤180**	≤5.0 µg/L 5.0 µg/L	101, 101	**±25**	NR	**±15**	D=0.28 MS 0	**≤ 20**	NC	**≤ 20**	OK	NONE
Dissolved Copper	OK/ EPA 200.8	≤15	**≤15**	7	**≤180**	≤1.0 µg/L 1.0 µg/L	70, 70	**±25**	NR	**±15**	NC MS 0	**≤ 20**	NC	**≤ 20**	OK	NONE
Dissolved Zinc	OK/ EPA 200.8	≤15	**≤15**	7	**≤180**	≤5.0 µg/L 5.0 µg/L	73, 73	**±25**	NR	**±15**	NC MS 0	**≤ 20**	NC	**≤ 20**	OK	NONE
Fecal Coliform	OK / SM 9222D	NA	**NA**	<1	**≤1**	≤1.0 cfu/ 100mL 10 cfu/ 100mL	NA	**NA**	NA	**NA**	8-19	**≤ 35**	78	**≤ 50**	OK	FLAG COLM J FOR FIELD DUPE EXCEEDANCE

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

December 23, 2020

Jess Brown
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2012-089

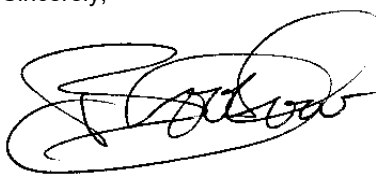
Dear Jess:

Enclosed are the analytical results and associated quality control data for samples submitted on December 9, 2020.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



Blair Goodrow
Project Manager

Enclosures

Date of Report: December 23, 2020
Samples Submitted: December 9, 2020
Laboratory Reference: 2012-089
Project: 14-05806-000

Case Narrative

Samples were collected on December 9, 2020 and received by the laboratory on December 9, 2020. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: December 23, 2020
Samples Submitted: December 9, 2020
Laboratory Reference: 2012-089
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201208**					
Laboratory ID:	12-089-01					
Total Suspended Solids	**3.6**	1.0	SM 2540D	12-10-20	12-11-20	
Client ID:	**COUMI-20201208**					
Laboratory ID:	12-089-02					
Total Suspended Solids	**88**	2.5	SM 2540D	12-10-20	12-11-20	
Client ID:	**COUMO-20201208**					
Laboratory ID:	12-089-03					
Total Suspended Solids	**34**	2.0	SM 2540D	12-10-20	12-11-20	
Client ID:	**EVAMS-20201208**					
Laboratory ID:	12-089-04					
Total Suspended Solids	**25**	2.0	SM 2540D	12-10-20	12-11-20	
Client ID:	**EVALSS-20201208**					
Laboratory ID:	12-089-05					
Total Suspended Solids	**65**	2.5	SM 2540D	12-10-20	12-11-20	
Client ID:	**MONMN-20201208**					
Laboratory ID:	12-089-06					
Total Suspended Solids	**18**	1.0	SM 2540D	12-10-20	12-11-20	
Client ID:	**MONMS-20201208**					
Laboratory ID:	12-089-07					
Total Suspended Solids	**5.2**	1.0	SM 2540D	12-10-20	12-11-20	
Client ID:	**MONM-20201208**					
Laboratory ID:	12-089-08					
Total Suspended Solids	**18**	1.0	SM 2540D	12-10-20	12-11-20	
Client ID:	**SEIMN-20201208**					
Laboratory ID:	12-089-09					
Total Suspended Solids	**44**	2.0	SM 2540D	12-10-20	12-11-20	

Date of Report: December 23, 2020
Samples Submitted: December 9, 2020
Laboratory Reference: 2012-089
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20201208**					
Laboratory ID:	12-089-10					
Total Suspended Solids	**34**	2.5	SM 2540D	12-10-20	12-11-20	
Client ID:	**TOSMI-20201208**					
Laboratory ID:	12-089-11					
Total Suspended Solids	**62**	2.0	SM 2540D	12-10-20	12-11-20	
Client ID:	**TOSMO-20201208**					
Laboratory ID:	12-089-12					
Total Suspended Solids	**60**	2.0	SM 2540D	12-10-20	12-11-20	
Client ID:	**TYLMI-20201208**					
Laboratory ID:	12-089-13					
Total Suspended Solids	**21**	2.0	SM 2540D	12-10-20	12-11-20	
Client ID:	**TYLMO-20201208**					
Laboratory ID:	12-089-14					
Total Suspended Solids	**14**	1.0	SM 2540D	12-10-20	12-11-20	
Client ID:	**QA96-20201208**					
Laboratory ID:	12-089-15					
Total Suspended Solids	**18**	2.0	SM 2540D	12-10-20	12-11-20	

Date of Report: December 23, 2020
Samples Submitted: December 9, 2020
Laboratory Reference: 2012-089
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1210W1					
Total Suspended Solids	**ND**	1.0	SM 2540D	12-10-20	12-11-20	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	12-089-02								
	ORIG	DUP							
Total Suspended Solids	**87.5**	**88.5**	NA	NA	NA	NA	1	21	
SPIKE BLANK									
Laboratory ID:	SB1210W1								
	SB		SB		SB				
Total Suspended Solids	**85.0**		100	NA	85	57-126	NA	NA	

Date of Report: December 23, 2020
Samples Submitted: December 9, 2020
Laboratory Reference: 2012-089
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201208**					
Laboratory ID:	12-089-01					
Turbidity	**2.2**	0.10	EPA 180.1	12-9-20	12-9-20	
Client ID:	**COUMI-20201208**					
Laboratory ID:	12-089-02					
Turbidity	**45**	0.20	EPA 180.1	12-9-20	12-9-20	
Client ID:	**COUMO-20201208**					
Laboratory ID:	12-089-03					
Turbidity	**20**	0.10	EPA 180.1	12-9-20	12-9-20	
Client ID:	**EVAMS-20201208**					
Laboratory ID:	12-089-04					
Turbidity	**18**	0.10	EPA 180.1	12-9-20	12-9-20	
Client ID:	**EVALSS-20201208**					
Laboratory ID:	12-089-05					
Turbidity	**31**	0.10	EPA 180.1	12-9-20	12-9-20	
Client ID:	**MONMN-20201208**					
Laboratory ID:	12-089-06					
Turbidity	**11**	0.10	EPA 180.1	12-9-20	12-9-20	
Client ID:	**MONMS-20201208**					
Laboratory ID:	12-089-07					
Turbidity	**5.2**	0.10	EPA 180.1	12-9-20	12-9-20	
Client ID:	**MONM-20201208**					
Laboratory ID:	12-089-08					
Turbidity	**11**	0.10	EPA 180.1	12-9-20	12-9-20	
Client ID:	**SEIMN-20201208**					
Laboratory ID:	12-089-09					
Turbidity	**21**	0.10	EPA 180.1	12-9-20	12-9-20	

Date of Report: December 23, 2020
Samples Submitted: December 9, 2020
Laboratory Reference: 2012-089
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20201208**					
Laboratory ID:	12-089-10					
Turbidity	**18**	0.10	EPA 180.1	12-9-20	12-9-20	
Client ID:	**TOSMI-20201208**					
Laboratory ID:	12-089-11					
Turbidity	**19**	0.10	EPA 180.1	12-9-20	12-9-20	
Client ID:	**TOSMO-20201208**					
Laboratory ID:	12-089-12					
Turbidity	**31**	0.10	EPA 180.1	12-9-20	12-9-20	
Client ID:	**TYLMI-20201208**					
Laboratory ID:	12-089-13					
Turbidity	**12**	0.10	EPA 180.1	12-9-20	12-9-20	
Client ID:	**TYLMO-20201208**					
Laboratory ID:	12-089-14					
Turbidity	**8.4**	0.10	EPA 180.1	12-9-20	12-9-20	
Client ID:	**QA96-20201208**					
Laboratory ID:	12-089-15					
Turbidity	**11**	0.10	EPA 180.1	12-9-20	12-9-20	

Date of Report: December 23, 2020
Samples Submitted: December 9, 2020
Laboratory Reference: 2012-089
Project: 14-05806-000

TURBIDITY
EPA 180.1
QUALITY CONTROL

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1209W1					
Turbidity	**ND**	0.10	EPA 180.1	12-9-20	12-9-20	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	12-081-01								
	ORIG	DUP							
Turbidity	**4.06**	**3.78**	NA	NA	NA	NA	7	14	

Date of Report: December 23, 2020
Samples Submitted: December 9, 2020
Laboratory Reference: 2012-089
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201208**					
Laboratory ID:	12-089-01					
Hardness	**13**	1.0	EPA 200.7/SM 2340B	12-11-20	12-14-20	
Client ID:	**COUMI-20201208**					
Laboratory ID:	12-089-02					
Hardness	**85**	1.0	EPA 200.7/SM 2340B	12-11-20	12-14-20	
Client ID:	**COUMO-20201208**					
Laboratory ID:	12-089-03					
Hardness	**40**	1.0	EPA 200.7/SM 2340B	12-11-20	12-14-20	
Client ID:	**EVAMS-20201208**					
Laboratory ID:	12-089-04					
Hardness	**80**	1.0	EPA 200.7/SM 2340B	12-11-20	12-14-20	
Client ID:	**EVALSS-20201208**					
Laboratory ID:	12-089-05					
Hardness	**79**	1.0	EPA 200.7/SM 2340B	12-11-20	12-14-20	
Client ID:	**MONMN-20201208**					
Laboratory ID:	12-089-06					
Hardness	**47**	1.0	EPA 200.7/SM 2340B	12-11-20	12-14-20	
Client ID:	**MONMS-20201208**					
Laboratory ID:	12-089-07					
Hardness	**76**	1.0	EPA 200.7/SM 2340B	12-11-20	12-14-20	

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HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20201208**					
Laboratory ID:	12-089-08					
Hardness	**63**	1.0	EPA 200.7/SM 2340B	12-11-20	12-14-20	
Client ID:	**SEIMN-20201208**					
Laboratory ID:	12-089-09					
Hardness	**28**	1.0	EPA 200.7/SM 2340B	12-11-20	12-14-20	
Client ID:	**SEIMS-20201208**					
Laboratory ID:	12-089-10					
Hardness	**45**	1.0	EPA 200.7/SM 2340B	12-11-20	12-14-20	
Client ID:	**TOSMI-20201208**					
Laboratory ID:	12-089-11					
Hardness	**22**	1.0	EPA 200.7/SM 2340B	12-11-20	12-14-20	
Client ID:	**TOSMO-20201208**					
Laboratory ID:	12-089-12					
Hardness	**43**	1.0	EPA 200.7/SM 2340B	12-11-20	12-14-20	
Client ID:	**TYLMI-20201208**					
Laboratory ID:	12-089-13					
Hardness	**43**	1.0	EPA 200.7/SM 2340B	12-11-20	12-14-20	
Client ID:	**TYLMO-20201208**					
Laboratory ID:	12-089-14					
Hardness	**32**	1.0	EPA 200.7/SM 2340B	12-11-20	12-14-20	

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HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA96-20201208**					
Laboratory ID:	12-089-15					
Hardness	**45**	1.0	EPA 200.7/SM 2340B	12-11-20	12-14-20	

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HARDNESS
EPA 200.7/SM 2340B
QUALITY CONTROL

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1211WH1					
Hardness	**ND**	1.0	EPA 200.7/SM 2340B	12-11-20	12-14-20	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	12-089-01										
	ORIG	DUP									
Hardness	**13.0**	**13.3**	NA		NA	NA		NA	2	20	
MATRIX SPIKES											
Laboratory ID:	12-089-01										
	MS	MSD	MS	MSD		MS	MSD				
Hardness	**153**	**153**	132	132	13.0	106	106	75-125	0	20	
SPIKE BLANK											
Laboratory ID:	SB1211WH1										
	SB		SB			SB					
Hardness	**142**		132		NA	108		85-115	NA	NA	

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DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201208**					
Laboratory ID:	12-089-01					
Dissolved Organic Carbon	**15**	1.0	SM 5310B	12-11-20	12-11-20	
Client ID:	**COUMI-20201208**					
Laboratory ID:	12-089-02					
Dissolved Organic Carbon	**8.2**	1.0	SM 5310B	12-11-20	12-11-20	
Client ID:	**COUMO-20201208**					
Laboratory ID:	12-089-03					
Dissolved Organic Carbon	**5.2**	1.0	SM 5310B	12-11-20	12-11-20	
Client ID:	**EVAMS-20201208**					
Laboratory ID:	12-089-04					
Dissolved Organic Carbon	**10**	1.0	SM 5310B	12-11-20	12-11-20	
Client ID:	**EVALSS-20201208**					
Laboratory ID:	12-089-05					
Dissolved Organic Carbon	**8.4**	1.0	SM 5310B	12-11-20	12-11-20	
Client ID:	**MONMN-20201208**					
Laboratory ID:	12-089-06					
Dissolved Organic Carbon	**6.5**	1.0	SM 5310B	12-11-20	12-11-20	
Client ID:	**MONMS-20201208**					
Laboratory ID:	12-089-07					
Dissolved Organic Carbon	**5.7**	1.0	SM 5310B	12-11-20	12-11-20	
Client ID:	**MONM-20201208**					
Laboratory ID:	12-089-08					
Dissolved Organic Carbon	**5.9**	1.0	SM 5310B	12-11-20	12-11-20	
Client ID:	**SEIMN-20201208**					
Laboratory ID:	12-089-09					
Dissolved Organic Carbon	**8.6**	1.0	SM 5310B	12-11-20	12-11-20	

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DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20201208**					
Laboratory ID:	12-089-10					
Dissolved Organic Carbon	**11**	1.0	SM 5310B	12-11-20	12-11-20	
Client ID:	**TOSMI-20201208**					
Laboratory ID:	12-089-11					
Dissolved Organic Carbon	**3.5**	1.0	SM 5310B	12-11-20	12-11-20	
Client ID:	**TOSMO-20201208**					
Laboratory ID:	12-089-12					
Dissolved Organic Carbon	**5.7**	1.0	SM 5310B	12-11-20	12-11-20	
Client ID:	**TYLMI-20201208**					
Laboratory ID:	12-089-13					
Dissolved Organic Carbon	**7.4**	1.0	SM 5310B	12-11-20	12-11-20	
Client ID:	**TYLMO-20201208**					
Laboratory ID:	12-089-14					
Dissolved Organic Carbon	**4.6**	1.0	SM 5310B	12-11-20	12-11-20	
Client ID:	**QA96-20201208**					
Laboratory ID:	12-089-15					
Dissolved Organic Carbon	**6.2**	1.0	SM 5310B	12-11-20	12-11-20	

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DISSOLVED ORGANIC CARBON
SM 5310B
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1211D1					
Dissolved Organic Carbon	**ND**	1.0	SM 5310B	12-11-20	12-11-20	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	12-089-01								
	ORIG	DUP							
Dissolved Organic Carbon	**14.6**	**14.6**	NA	NA	NA	NA	0	15	
MATRIX SPIKE									
Laboratory ID:	12-089-01								
	MS		MS		MS				
Dissolved Organic Carbon	**23.9**		10.0	14.6	93	72-132	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB1211D1								
	SB		SB		SB				
Dissolved Organic Carbon	**10.1**		10.0	NA	101	82-123	NA	NA	

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TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201208**					
Laboratory ID:	12-089-01					
Total Phosphorus	**0.026**	0.010	EPA 365.1	12-11-20	12-14-20	
Client ID:	**COUMI-20201208**					
Laboratory ID:	12-089-02					
Total Phosphorus	**0.24**	0.010	EPA 365.1	12-11-20	12-14-20	
Client ID:	**COUMO-20201208**					
Laboratory ID:	12-089-03					
Total Phosphorus	**0.12**	0.010	EPA 365.1	12-11-20	12-14-20	
Client ID:	**EVAMS-20201208**					
Laboratory ID:	12-089-04					
Total Phosphorus	**0.067**	0.010	EPA 365.1	12-11-20	12-14-20	
Client ID:	**EVALSS-20201208**					
Laboratory ID:	12-089-05					
Total Phosphorus	**0.12**	0.010	EPA 365.1	12-11-20	12-14-20	
Client ID:	**MONMN-20201208**					
Laboratory ID:	12-089-06					
Total Phosphorus	**0.075**	0.010	EPA 365.1	12-11-20	12-14-20	
Client ID:	**MONMS-20201208**					
Laboratory ID:	12-089-07					
Total Phosphorus	**0.056**	0.010	EPA 365.1	12-11-20	12-14-20	
Client ID:	**MONM-20201208**					
Laboratory ID:	12-089-08					
Total Phosphorus	**0.082**	0.010	EPA 365.1	12-11-20	12-14-20	
Client ID:	**SEIMN-20201208**					
Laboratory ID:	12-089-09					
Total Phosphorus	**0.12**	0.010	EPA 365.1	12-11-20	12-14-20	

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TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20201208**					
Laboratory ID:	12-089-10					
Total Phosphorus	**0.097**	0.010	EPA 365.1	12-11-20	12-14-20	
Client ID:	**TOSMI-20201208**					
Laboratory ID:	12-089-11					
Total Phosphorus	**0.16**	0.010	EPA 365.1	12-11-20	12-14-20	
Client ID:	**TOSMO-20201208**					
Laboratory ID:	12-089-12					
Total Phosphorus	**0.12**	0.010	EPA 365.1	12-11-20	12-14-20	
Client ID:	**TYLMI-20201208**					
Laboratory ID:	12-089-13					
Total Phosphorus	**0.093**	0.010	EPA 365.1	12-11-20	12-14-20	
Client ID:	**TYLMO-20201208**					
Laboratory ID:	12-089-14					
Total Phosphorus	**0.068**	0.010	EPA 365.1	12-11-20	12-14-20	
Client ID:	**QA96-20201208**					
Laboratory ID:	12-089-15					
Total Phosphorus	**0.078**	0.010	EPA 365.1	12-11-20	12-14-20	

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TOTAL PHOSPHORUS
EPA 365.1
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1211W1					
Total Phosphorus	**ND**	0.010	EPA 365.1	12-11-20	12-14-20	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	12-089-01								
	ORIG	DUP							
Total Phosphorus	**0.0255**	**0.0261**	NA	NA	NA	NA	2	14	
MATRIX SPIKE									
Laboratory ID:	12-089-01								
	MS		MS		MS				
Total Phosphorus	**0.265**		0.250	0.0255	96	80-110	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB1211W1								
	SB		SB		SB				
Total Phosphorus	**0.252**		0.250	NA	101	78-110	NA	NA	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201208**					
Laboratory ID:	12-089-01					
Copper	**ND**	1.0	EPA 200.8	12-10-20	12-14-20	
Zinc	**ND**	5.0	EPA 200.8	12-10-20	12-14-20	
Client ID:	**COUMI-20201208**					
Laboratory ID:	12-089-02					
Copper	**5.4**	1.0	EPA 200.8	12-10-20	12-14-20	
Zinc	**63**	5.0	EPA 200.8	12-10-20	12-14-20	
Client ID:	**COUMO-20201208**					
Laboratory ID:	12-089-03					
Copper	**3.9**	1.0	EPA 200.8	12-10-20	12-14-20	
Zinc	**160**	5.0	EPA 200.8	12-10-20	12-14-20	
Client ID:	**EVAMS-20201208**					
Laboratory ID:	12-089-04					
Copper	**1.5**	1.0	EPA 200.8	12-10-20	12-14-20	
Zinc	**6.5**	5.0	EPA 200.8	12-10-20	12-14-20	
Client ID:	**EVALSS-20201208**					
Laboratory ID:	12-089-05					
Copper	**2.2**	1.0	EPA 200.8	12-10-20	12-14-20	
Zinc	**7.5**	5.0	EPA 200.8	12-10-20	12-14-20	
Client ID:	**MONMN-20201208**					
Laboratory ID:	12-089-06					
Copper	**1.8**	1.0	EPA 200.8	12-10-20	12-14-20	
Zinc	**20**	5.0	EPA 200.8	12-10-20	12-14-20	
Client ID:	**MONMS-20201208**					
Laboratory ID:	12-089-07					
Copper	**1.7**	1.0	EPA 200.8	12-10-20	12-14-20	
Zinc	**ND**	5.0	EPA 200.8	12-10-20	12-14-20	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20201208**					
Laboratory ID:	12-089-08					
Copper	**1.9**	1.0	EPA 200.8	12-10-20	12-14-20	
Zinc	**26**	5.0	EPA 200.8	12-10-20	12-14-20	
Client ID:	**SEIMN-20201208**					
Laboratory ID:	12-089-09					
Copper	**2.0**	1.0	EPA 200.8	12-10-20	12-14-20	
Zinc	**ND**	5.0	EPA 200.8	12-10-20	12-14-20	
Client ID:	**SEIMS-20201208**					
Laboratory ID:	12-089-10					
Copper	**1.3**	1.0	EPA 200.8	12-10-20	12-14-20	
Zinc	**ND**	5.0	EPA 200.8	12-10-20	12-14-20	
Client ID:	**TOSMI-20201208**					
Laboratory ID:	12-089-11					
Copper	**4.0**	1.0	EPA 200.8	12-10-20	12-14-20	
Zinc	**65**	5.0	EPA 200.8	12-10-20	12-14-20	
Client ID:	**TOSMO-20201208**					
Laboratory ID:	12-089-12					
Copper	**4.2**	1.0	EPA 200.8	12-10-20	12-14-20	
Zinc	**63**	5.0	EPA 200.8	12-10-20	12-14-20	
Client ID:	**TYLMI-20201208**					
Laboratory ID:	12-089-13					
Copper	**4.3**	1.0	EPA 200.8	12-10-20	12-14-20	
Zinc	**100**	5.0	EPA 200.8	12-10-20	12-14-20	
Client ID:	**TYLMO-20201208**					
Laboratory ID:	12-089-14					
Copper	**3.6**	1.0	EPA 200.8	12-10-20	12-14-20	
Zinc	**39**	5.0	EPA 200.8	12-10-20	12-14-20	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA96-20201208**					
Laboratory ID:	12-089-15					
Copper	**1.8**	1.0	EPA 200.8	12-10-20	12-14-20	
Zinc	**21**	5.0	EPA 200.8	12-10-20	12-14-20	

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TOTAL METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1210WH2					
Copper	**ND**	1.0	EPA 200.8	12-10-20	12-14-20	
Zinc	**ND**	5.0	EPA 200.8	12-10-20	12-14-20	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	12-089-04										
	ORIG	DUP									
Copper	**1.50**	**1.48**	NA	NA		NA		NA	1	20	
Zinc	**6.48**	**6.52**	NA	NA		NA		NA	1	20	
MATRIX SPIKES											
Laboratory ID:	12-089-04										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**104**	**95.0**	100	100	1.50	**102**	**94**	75-125	9	20	
Zinc	**118**	**113**	100	100	6.48	**112**	**106**	75-125	5	20	

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201208**					
Laboratory ID:	12-089-01					
Copper	**ND**	1.0	EPA 200.8		12-10-20	
Zinc	**ND**	5.0	EPA 200.8		12-10-20	
Client ID:	**COUMI-20201208**					
Laboratory ID:	12-089-02					
Copper	**1.5**	1.0	EPA 200.8		12-10-20	
Zinc	**14**	5.0	EPA 200.8		12-10-20	
Client ID:	**COUMO-20201208**					
Laboratory ID:	12-089-03					
Copper	**1.7**	1.0	EPA 200.8		12-10-20	
Zinc	**94**	5.0	EPA 200.8		12-10-20	
Client ID:	**EVAMS-20201208**					
Laboratory ID:	12-089-04					
Copper	**ND**	1.0	EPA 200.8		12-10-20	
Zinc	**ND**	5.0	EPA 200.8		12-10-20	
Client ID:	**EVALSS-20201208**					
Laboratory ID:	12-089-05					
Copper	**ND**	1.0	EPA 200.8		12-10-20	
Zinc	**ND**	5.0	EPA 200.8		12-10-20	
Client ID:	**MONMN-20201208**					
Laboratory ID:	12-089-06					
Copper	**1.2**	1.0	EPA 200.8		12-10-20	
Zinc	**8.7**	5.0	EPA 200.8		12-10-20	
Client ID:	**MONMS-20201208**					
Laboratory ID:	12-089-07					
Copper	**1.2**	1.0	EPA 200.8		12-10-20	
Zinc	**ND**	5.0	EPA 200.8		12-10-20	

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20201208**					
Laboratory ID:	12-089-08					
Copper	**1.1**	1.0	EPA 200.8		12-10-20	
Zinc	**9.2**	5.0	EPA 200.8		12-10-20	
Client ID:	**SEIMN-20201208**					
Laboratory ID:	12-089-09					
Copper	**ND**	1.0	EPA 200.8		12-10-20	
Zinc	**ND**	5.0	EPA 200.8		12-10-20	
Client ID:	**SEIMS-20201208**					
Laboratory ID:	12-089-10					
Copper	**ND**	1.0	EPA 200.8		12-10-20	
Zinc	**ND**	5.0	EPA 200.8		12-10-20	
Client ID:	**TOSMI-20201208**					
Laboratory ID:	12-089-11					
Copper	**1.7**	1.0	EPA 200.8		12-10-20	
Zinc	**26**	5.0	EPA 200.8		12-10-20	
Client ID:	**TOSMO-20201208**					
Laboratory ID:	12-089-12					
Copper	**1.6**	1.0	EPA 200.8		12-10-20	
Zinc	**18**	5.0	EPA 200.8		12-10-20	
Client ID:	**TYLMI-20201208**					
Laboratory ID:	12-089-13					
Copper	**2.6**	1.0	EPA 200.8		12-10-20	
Zinc	**45**	5.0	EPA 200.8		12-10-20	
Client ID:	**TYLMO-20201208**					
Laboratory ID:	12-089-14					
Copper	**2.2**	1.0	EPA 200.8		12-10-20	
Zinc	**18**	5.0	EPA 200.8		12-10-20	

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA96-20201208**					
Laboratory ID:	12-089-15					
Copper	**1.2**	1.0	EPA 200.8		12-10-20	
Zinc	**8.2**	5.0	EPA 200.8		12-10-20	

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DISSOLVED METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1210D1					
Copper	**ND**	1.0	EPA 200.8		12-10-20	
Zinc	**ND**	5.0	EPA 200.8		12-10-20	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	12-089-15										
	ORIG	DUP									
Copper	**1.17**	**1.27**	NA	NA		NA		NA	8	20	
Zinc	**8.24**	**8.52**	NA	NA		NA		NA	3	20	
MATRIX SPIKES											
Laboratory ID:	12-089-15										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**74.4**	**72.4**	80.0	80.0	1.17	**92**	**89**	75-125	3	20	
Zinc	**79.0**	**78.8**	80.0	80.0	8.24	**89**	**88**	75-125	0	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Dec 23 2020
On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: BGOODROW@ONSITE-ENV.COM

Dear BGOODROW@ONSITE-ENV.COM:

Enclosed please find the analytical data for your REDMOND PAIRED WATERSHED STUDY project.

The following is a cross correlation of client and laboratory identifications for your convenience.

CLIENT ID	MATRIX	AMTEST ID	TEST
COLM-20201208	Water	20-A019468	Micro, NUT
COUMI-20201208	Water	20-A019469	Micro, NUT
COUMO-20201208	Water	20-A019470	Micro, NUT
EVAMS-20201208	Water	20-A019471	Micro, NUT
EVALSS-20201208	Water	20-A019472	Micro, NUT
MONMN-20201208	Water	20-A019473	Micro, NUT
MONMS-20201208	Water	20-A019474	Micro, NUT
MONM-20201208	Water	20-A019475	Micro, NUT
SEIMN-20201208	Water	20-A019476	Micro, NUT
SEIMS-20201208	Water	20-A019477	Micro, NUT
TOSMI-20201208	Water	20-A019478	Micro, NUT
TOSMO-20201208	Water	20-A019479	Micro, NUT
TYLMI-20201208	Water	20-A019480	Micro, NUT
TYLMO-20201208	Water	20-A019481	Micro, NUT
QA85-20201208	Water	20-A019482	Micro, NUT

Your samples were received on Wednesday, December 9, 2020. At the time of receipt, the samples were logged in and properly maintained prior to the subsequent analysis.

The analytical procedures used at AmTest are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

Following the analytical data you will find the Quality Control (QC) results.

Please note that the detection limits that are listed in the body of the report refer to the Practical Quantitation Limits (PQL's), as opposed to the Method Detection Limits (MDL's).

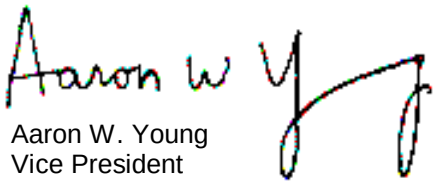
Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Dec 23 2020
On-Site Environmental
continued . . .

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,



Aaron W. Young
Vice President

Project #: 14-05806-000
PO Number: 12-089

BACT = Bacteriological	MET = Metals	NUT=Nutrients	MIN=Minerals
CONV = Conventionals	ORG = Organics	DEM=Demand	

Am Test Inc.
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www.amtestlab.com

Professional Analytical Services

ANALYSIS REPORT

On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: BGOODROW@ONSITE-ENV.COM
Project Name: REDMOND PAIRED WATERSHED STUDY
Project #: 14-05806-000
PO Number: 12-089
All results reported on an as received basis.

Date Received: 12/09/20
Date Reported: 12/23/20

AMTEST Identification Number **20-A019468**
Client Identification **COLM-20201208**
Sampling Date **12/08/20, 22:40**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	53.	CFU/100 ml		1	SM 9222D	SB	12/09/20
Total Nitrogen (NOX&TKN)	0.87	mg/l		0.1			
Total Nitrogen (TKN)	0.710	mg/l		0.2	SM4500N	KS	12/18/20
Total Nitrate + Nitrite	0.16	mg/l		0.02	SM4500NO3	KS	12/14/20

AMTEST Identification Number **20-A019469**
Client Identification **COUMI-20201208**
Sampling Date **12/08/20, 20:55**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	400	CFU/100 ml		1	SM 9222D	SB	12/09/20
Total Nitrogen (NOX&TKN)	1.76	mg/l		0.1			
Total Nitrogen (TKN)	1.41	mg/l		0.2	SM4500N	KS	12/18/20
Total Nitrate + Nitrite	0.35	mg/l		0.02	SM4500NO3	KS	12/14/20

AMTEST Identification Number **20-A019470**
Client Identification **COUMO-20201208**
Sampling Date **12/08/20, 20:35**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	240	CFU/100 ml		1	SM 9222D	SB	12/09/20
Total Nitrogen (NOX&TKN)	1.21	mg/l		0.1			
Total Nitrogen (TKN)	0.921	mg/l		0.2	SM4500N	KS	12/18/20
Total Nitrate + Nitrite	0.29	mg/l		0.02	SM4500NO3	KS	12/14/20

AMTEST Identification Number **20-A019471**
Client Identification **EVAMS-20201208**
Sampling Date **12/08/20, 21:10**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	100	CFU/100 ml		1	SM 9222D	SB	12/09/20
Total Nitrogen (NOX&TKN)	2.29	mg/l		0.1			
Total Nitrogen (TKN)	1.09	mg/l		0.2	SM4500N	KS	12/18/20
Total Nitrate + Nitrite	1.2	mg/l		0.02	SM4500NO3	KS	12/14/20

AMTEST Identification Number **20-A019472**
Client Identification **EVALSS-20201208**
Sampling Date **12/08/20, 21:25**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	200	CFU/100 ml		1	SM 9222D	SB	12/09/20
Total Nitrogen (NOX&TKN)	2.28	mg/l		0.1			
Total Nitrogen (TKN)	1.18	mg/l		0.2	SM4500N	KS	12/18/20
Total Nitrate + Nitrite	1.1	mg/l		0.02	SM4500NO3	KS	12/14/20

AMTEST Identification Number **20-A019473**
Client Identification **MONMN-20201208**
Sampling Date **12/08/20, 22:20**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	180	CFU/100 ml		1	SM 9222D	SB	12/09/20
Total Nitrogen (NOX&TKN)	1.04	mg/l		0.1			
Total Nitrogen (TKN)	0.806	mg/l		0.2	SM4500N	KS	12/18/20
Total Nitrate + Nitrite	0.23	mg/l		0.02	SM4500NO3	KS	12/14/20

AMTEST Identification Number **20-A019474**
Client Identification **MONMS-20201208**
Sampling Date **12/08/20, 22:05**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	79.	CFU/100 ml		1	SM 9222D	SB	12/09/20
Total Nitrogen (NOX&TKN)	0.77	mg/l		0.1			
Total Nitrogen (TKN)	0.588	mg/l		0.2	SM4500N	KS	12/18/20
Total Nitrate + Nitrite	0.18	mg/l		0.02	SM4500NO3	KS	12/14/20

AMTEST Identification Number **20-A019475**
Client Identification **MONM-20201208**
Sampling Date **12/08/20, 23:00**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	130	CFU/100 ml		1	SM 9222D	SB	12/09/20
Total Nitrogen (NOX&TKN)	1.06	mg/l		0.1			
Total Nitrogen (TKN)	0.835	mg/l		0.2	SM4500N	KS	12/18/20
Total Nitrate + Nitrite	0.22	mg/l		0.02	SM4500NO3	KS	12/14/20

AMTEST Identification Number **20-A019476**
Client Identification **SEIMN-20201208**
Sampling Date **12/08/20, 22:00**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	200	CFU/100 ml		1	SM 9222D	SB	12/09/20
Total Nitrogen (NOX&TKN)	1.05	mg/l		0.1			
Total Nitrogen (TKN)	0.846	mg/l		0.2	SM4500N	KS	12/18/20
Total Nitrate + Nitrite	0.20	mg/l		0.02	SM4500NO3	KS	12/14/20

AMTEST Identification Number **20-A019477**
Client Identification **SEIMS-20201208**
Sampling Date **12/08/20, 22:55**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	320	CFU/100 ml		1	SM 9222D	SB	12/09/20
Total Nitrogen (NOX&TKN)	1.44	mg/l		0.1			
Total Nitrogen (TKN)	1.12	mg/l		0.2	SM4500N	KS	12/18/20
Total Nitrate + Nitrite	0.32	mg/l		0.02	SM4500NO3	KS	12/14/20

AMTEST Identification Number **20-A019478**
Client Identification **TOSMI-20201208**
Sampling Date **12/08/20, 20:40**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	720	CFU/100 ml		1	SM 9222D	SB	12/09/20
Total Nitrogen (NOX&TKN)	1.04	mg/l		0.1			
Total Nitrogen (TKN)	0.807	mg/l		0.2	SM4500N	KS	12/18/20
Total Nitrate + Nitrite	0.23	mg/l		0.02	SM4500NO3	KS	12/14/20

AMTEST Identification Number **20-A019479**
Client Identification **TOSMO-20201208**
Sampling Date **12/08/20, 21:10**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	380	CFU/100 ml		1	SM 9222D	SB	12/09/20
Total Nitrogen (NOX&TKN)	1.13	mg/l		0.1			
Total Nitrogen (TKN)	0.867	mg/l		0.2	SM4500N	KS	12/18/20
Total Nitrate + Nitrite	0.26	mg/l		0.02	SM4500NO3	KS	12/14/20

AMTEST Identification Number **20-A019480**
Client Identification **TYLMI-20201208**
Sampling Date **12/08/20, 21:45**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	21.	CFU/100 ml		1	SM 9222D	SB	12/09/20
Total Nitrogen (NOX&TKN)	1.15	mg/l		0.1			
Total Nitrogen (TKN)	0.851	mg/l		0.2	SM4500N	KS	12/18/20
Total Nitrate + Nitrite	0.30	mg/l		0.02	SM4500NO3	KS	12/14/20

AMTEST Identification Number **20-A019481**
Client Identification **TYLMO-20201208**
Sampling Date **12/08/20, 21:30**

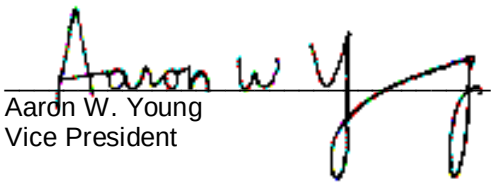
Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	100	CFU/100 ml		1	SM 9222D	SB	12/09/20
Total Nitrogen (NOX&TKN)	0.96	mg/l		0.1			
Total Nitrogen (TKN)	0.697	mg/l		0.2	SM4500N	KS	12/18/20
Total Nitrate + Nitrite	0.26	mg/l		0.02	SM4500NO3	KS	12/14/20

AMTEST Identification Number **20-A019482**
Client Identification **QA85-20201208**
Sampling Date **12/08/20, 22:20**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	330	CFU/100 ml		1	SM 9222D	SB	12/09/20
Total Nitrogen (NOX&TKN)	0.93	mg/l		0.1			
Total Nitrogen (TKN)	0.733	mg/l		0.2	SM4500N	KS	12/18/20
Total Nitrate + Nitrite	0.20	mg/l		0.02	SM4500NO3	KS	12/14/20



Aaron W. Young
Vice President

Am Test Inc.
13600 NE 126th PL
Suite C
Kirkland, WA, 98034
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www.amtestlab.com

Professional Analytical Services

QC Summary for sample numbers: 20-A019468 to 20-A019482

DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	DUP VALUE	RPD
20-A019468	Fecal Coliform	CFU/100 ml	53.	63.	17.
20-A019506	Fecal Coliform	CFU/100 ml	34.	29.	16.
20-A019482	Fecal Coliform	CFU/100 ml	330	290	13.
20-A019476	Total Nitrogen (TKN)	mg/l	0.846	0.837	1.1
20-A019565	Total Nitrogen (TKN)	mg/l	33.7	34.1	1.2
20-A019779	Total Nitrogen (TKN)	mg/l	24.1	24.7	2.5
20-A019800	Total Nitrogen (TKN)	mg/l	0.258	0.249	3.6
20-A019103	Total Nitrate + Nitrite	mg/l	2.0	2.1	4.9
20-A019107	Total Nitrate + Nitrite	mg/l	1.0	1.0	0.00
20-A019316	Total Nitrate + Nitrite	mg/l	< 0.02	< 0.02	
20-A019326	Total Nitrate + Nitrite	mg/l	0.42	0.42	0.00
20-A019408	Total Nitrate + Nitrite	mg/l	0.46	0.47	2.2
20-A019432	Total Nitrate + Nitrite	mg/l	0.91	0.91	0.00
20-A019471	Total Nitrate + Nitrite	mg/l	1.2	1.2	0.00
20-A019481	Total Nitrate + Nitrite	mg/l	0.26	0.26	0.00
20-A019620	Total Nitrate + Nitrite	mg/l	0.83	0.85	2.4
20-A019630	Total Nitrate + Nitrite	mg/l	0.24	0.25	4.1
20-A019637	Total Nitrate + Nitrite	mg/l	0.36	0.42	15.

MATRIX SPIKES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	SMPL+ SPK	SPK AMT	RECOVERY
20-A019476	Total Nitrogen (TKN)	mg/l	0.846	2.68	2.00	91.70 %
20-A019565	Total Nitrogen (TKN)	mg/l	33.7	71.6	40.0	94.75 %
20-A019779	Total Nitrogen (TKN)	mg/l	24.1	42.3	20.0	91.00 %
20-A019800	Total Nitrogen (TKN)	mg/l	0.258	2.07	2.00	90.60 %
20-A019103	Total Nitrate + Nitrite	mg/l	2.0	3.1	1.0	110.00 %
20-A019108	Total Nitrate + Nitrite	mg/l	1.3	2.4	1.0	110.00 %
20-A019316	Total Nitrate + Nitrite	mg/l	< 0.02	0.94	1.0	94.00 %
20-A019326	Total Nitrate + Nitrite	mg/l	0.42	1.5	1.0	108.00 %
20-A019408	Total Nitrate + Nitrite	mg/l	0.46	1.4	1.0	94.00 %
20-A019432	Total Nitrate + Nitrite	mg/l	0.91	1.9	1.0	99.00 %
20-A019471	Total Nitrate + Nitrite	mg/l	1.2	2.3	1.0	110.00 %
20-A019481	Total Nitrate + Nitrite	mg/l	0.26	1.3	1.0	104.00 %
20-A019620	Total Nitrate + Nitrite	mg/l	0.83	1.8	1.0	97.00 %
20-A019630	Total Nitrate + Nitrite	mg/l	0.24	1.2	1.0	96.00 %
20-A019637	Total Nitrate + Nitrite	mg/l	0.36	1.3	1.0	94.00 %

QC Summary for sample numbers: 20-A019468 to 20-A019482...

STANDARD REFERENCE MATERIALS

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
Total Nitrogen (TKN)	mg/l	1.00	0.945	94.5 %
Total Nitrogen (TKN)	mg/l	1.00	0.930	93.0 %
Total Nitrate + Nitrite	mg/l	1.0	0.99	99.0 %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	0.98	98.0 %
Total Nitrate + Nitrite	mg/l	1.0	0.92	92.0 %

BLANKS

ANALYTE	UNITS	RESULT
Fecal Coliform	CFU/100 ml	< 1
Fecal Coliform	CFU/100 ml	< 1
Fecal Coliform	CFU/100 ml	< 1
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02

CHAIN OF CUSTODY

12-089

Page 1 of 1

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants

Project No.: 14-05806-000

Project Name: Redmond Paired Watershed Study

Project Manager: George Iftner

Turnaround Requested:

_____ 1 Day

_____ 2 Day

_____ 3 Day

__X__ Standard

Laboratory No.

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Suspended Solids (SM 2540D)	Turbidity (EPA 181.1)	Hardness (EPA 200.7 / SM 2340B)	Dissolved Organ Carbon (SM 5310B) *	Fecal Coliform (SM 9222D)	Total Phosphorus (EPA 365.1)	Total Nitrogen (SM 4500 N-B)	Total Cu and Zn (EPA 200.8)	Dissolved Cu and Zn (EPA 200.8) *			
1	COLM-2020 1208	12-08-20	22:40	Water	7	X	X	X	X	X	X	X	X	X			
2	COUMI-2020 1208		20:55	Water	7	X	X	X	X	X	X	X	X	X			
3	COUMO-2020 1208		20:35	Water	7	X	X	X	X	X	X	X	X	X			
4	EVAMS-2020 1208		21:10	Water	7	X	X	X	X	X	X	X	X	X			
5	EVALSS-2020 1208		21:25	Water	7	X	X	X	X	X	X	X	X	X			
6	MONMN-2020 1208		22:20	Water	7	X	X	X	X	X	X	X	X	X			
7	MONMS-2020 1208		22:05	Water	7	X	X	X	X	X	X	X	X	X			
8	MONM-2020 1208		23:00	Water	7	X	X	X	X	X	X	X	X	X			
9	SEIMN-2020 1208		22:00	Water	7	X	X	X	X	X	X	X	X	X			
10	SEIMS-2020 1208		22:55	Water	7	X	X	X	X	X	X	X	X	X			
11	TOSMI-2020 1208		20:40	Water	7	X	X	X	X	X	X	X	X	X			
12	TOSMO-2020 1208		21:10	Water	7	X	X	X	X	X	X	X	X	X			
13	TYLMI-2020 1208		21:45	Water	7	X	X	X	X	X	X	X	X	X			
14	TYLMO-2020 1208		21:30	Water	7	X	X	X	X	X	X	X	X	X			
15	QA96-2020 1208		22:20	Water	7	X	X	X	X	X	X	X	X	X			

Relinquished by James Watson Date 12-08-20 Received by Nicholle Ellis Date 12/9/20

Firm _____ Time 1050 Firm OSE Time 1050

Relinquished by _____ Date _____ Received by _____ Date _____

Firm _____ Time _____ Firm _____ Time _____

Comments:

* - field filtered with 0.45 µm filter within 15 minutes of collecting sample

CHAIN OF CUSTODY

12-089

Page 1 of 1

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants

Project No.: 14-05806-000

Project Name: Redmond Paired Watershed Study

Project Manager: George Iftner

Turnaround Requested:

_____ 1 Day

_____ 2 Day

_____ 3 Day

__X__ Standard

Laboratory No.

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Suspended Solids (SM 2540D)	Turbidity (EPA 181.1)	Hardness (EPA 200.7 / SM 2340B)	Dissolved Organ Carbon (SM 5310B) *	Fecal Coliform (SM 9222D)	Total Phosphorus (EPA 365.1)	Total Nitrogen (SM 4500 N-B)	Total Cu and Zn (EPA 200.8)	Dissolved Cu and Zn (EPA 200.8) *			
1	COLM-2020 1208	12-08-20	22:40	Water	7	x	x	x	x	x	x	x	x	x			
2	COUMI-2020 1208		20:55	Water	7	x	x	x	x	x	x	x	x	x			
3	COUMO-2020 1208		20:35	Water	7	x	x	x	x	x	x	x	x	x			
4	EVAMS-2020 1208		21:10	Water	7	x	x	x	x	x	x	x	x	x			
5	EVALSS-2020 1208		21:25	Water	7	x	x	x	x	x	x	x	x	x			
6	MONMN-2020 1208		22:20	Water	7	x	x	x	x	x	x	x	x	x			
7	MONMS-2020 1208		22:05	Water	7	x	x	x	x	x	x	x	x	x			
8	MONM-2020 1208		23:00	Water	7	x	x	x	x	x	x	x	x	x			
9	SEIMN-2020 1208		22:00	Water	7	x	x	x	x	x	x	x	x	x			
10	SEIMS-2020 1208		22:55	Water	7	x	x	x	x	x	x	x	x	x			
11	TOSMI-2020 1208		20:40	Water	7	x	x	x	x	x	x	x	x	x			
12	TOSMO-2020 1208		21:10	Water	7	x	x	x	x	x	x	x	x	x			
13	TYLMI-2020 1208		21:45	Water	7	x	x	x	x	x	x	x	x	x			
14	TYLMO-2020 1208		21:30	Water	7	x	x	x	x	x	x	x	x	x			
15	QA96-2020 1208		22:20	Water	7	x	x	x	x	x	x	x	x	x			

Relinquished by James Watson Date 12-08-20 Received by Nichelle Ellis Date 12/9/20

Firm _____ Time 1050 Firm OSE Time 1050

Relinquished by _____ Date _____ Received by _____ Date _____

Firm _____ Time _____ Firm _____ Time _____

Comments:
* - field filtered with 0.45 µm filter within 15 minutes of collecting sample

METER CALIBRATION LOG - Redmond Paired Watershed Study

Project Number:	14-05806-000
Personnel Performing Calibration:	Gretchen Kayser
Meter:	YSI ProDSS #1
Date/Time:	12/8/2020
Barometric Pressure Start of Day:	mmHg: 767 Time: 1430
Barometric Pressure End of Day:	mmHg: Time:

PRE Field Run CALIBRATION	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	3.6	0	24.7	→ cal, out of range,
Conductivity (µS/cm)	958	1,000	23.9	
Conductivity (µS/cm) really low →	45.1	100	23.9	
DO % Saturation	1003	100	23.8	→ post cal 100.9

POST Field Run CHECK	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	2.1	0	23.2	
Conductivity (µS/cm)	231.6	100	22.1	High.
DO % Saturation	101.2	100	23.2	

Calibration Procedures:

Rinse Multimeter Sonde Between Each Operation

Rinse 3 times with tap water, 3 times with deionized water, then 3 times with the solution to be used for calibrating or testing.

Conductivity Calibration Notes:

1. Dry the conductivity probe with a lab tissue (e.g., KimWipes®) and DI water.
2. Fill calibration cup to within a centimeter of the top of the calibration cup with DI water (0 µS).
3. Fill the calibration cup with 1,000 µS standard so that the temperature/conductivity probe is submerged.
4. Make sure there are no bubbles in the cell; wait 2 minutes.
5. Enter the appropriate standard value (1,000 µS/cm or 1.0 mS/cm) for Sp Cond.
6. Check conductivity using 100 µS/cm standard.

Dissolved Oxygen Calibration Notes:

1. Fill the calibration cup with about 1/2 inch of DI; it should be below the sensor cap.
2. Use KimWipes® to dry any droplets from the sensor cap.
3. Invert calibration cup's cap and gently rest it on the cup.
4. Wait 5 minutes, making sure that temperature stabilizes.
5. Determine local barometric pressure (mm Hg) and enter this value into the meter.
6. Click "Calibrate". "Calibrate Successful" will be displayed.
7. To retain calibration accuracy between measurements, store with the sensor immersed in water or within a water-saturated air environment such as a sealed storage cup with at least 10 ml of water.
8. It is important to have the water-saturated air and the sensor at the same temperature. Therefore, store a jar of DI in the same environment as the sonde and calibrate in a similar air temperature as the water and sonde.
9. Keep probe out of direct sun or wind.

METER CALIBRATION LOG - Redmond Paired Watershed Study

Project Number:	14-05806-000		
Personnel Performing Calibration:	Gretchen Kayser		
Meter:	YSI Pro DSS #2		
Date/Time:	12/8/2020		
Barometric Pressure Start of Day:	mmHg: 767.2	Time:	19:30
Barometric Pressure End of Day:	mmHg:	Time:	

PRE Field Run CALIBRATION	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	2.5	0	24.1	→ cal. at of range
Conductivity (µS/cm)	964	1,000	24.9	
Conductivity (µS/cm)	97.5	100	24.5	
DO % Saturation 98.7 ~~100~~		100	23.6	→ post cal. 100.9

POST Field Run CHECK	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	1.1	0	23.9	
Conductivity (µS/cm)	108.6	100	23.6	
DO % Saturation	93.7	100	23.8	

Calibration Procedures:

Rinse Multimeter Sonde Between Each Operation

Rinse 3 times with tap water, 3 times with deionized water, then 3 times with the solution to be used for calibrating or testing.

Conductivity Calibration Notes:

1. Dry the conductivity probe with a lab tissue (e.g., KimWipes®) and DI water.
2. Fill calibration cup to within a centimeter of the top of the calibration cup with DI water (0 µS).
3. Fill the calibration cup with 1,000 µS standard so that the temperature/conductivity probe is submerged.
4. Make sure there are no bubbles in the cell; wait 2 minutes.
5. Enter the appropriate standard value (1,000 µS/cm or 1.0 mS/cm) for Sp Cond.
6. Check conductivity using 100 µS/cm standard.

Dissolved Oxygen Calibration Notes:

1. Fill the calibration cup with about 1/2 inch of DI; it should be below the sensor cap.
2. Use KimWipes® to dry any droplets from the sensor cap.
3. Invert calibration cup's cap and gently rest it on the cup.
4. Wait 5 minutes, making sure that temperature stabilizes.
5. Determine local barometric pressure (mm Hg) and enter this value into the meter.
6. Click "Calibrate". "Calibrate Successful" will be displayed.
7. To retain calibration accuracy between measurements, store with the sensor immersed in water or within a water-saturated air environment such as a sealed storage cup with at least 10 ml of water.
8. It is important to have the water-saturated air and the sensor at the same temperature. Therefore, store a jar of DI in the same environment as the sonde and calibrate in a similar air temperature as the water and sonde.
9. Keep probe out of direct sun or wind.

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + JW

Sample Date: **Sample Time:** 2300 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 2300 PST:

(Must filter within 15 minutes of collection)

SITE ID: MoNM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 48° + Rainy

Water Quality Sampling

Sample ID: MoNM 20201206

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: bit turbid

Color: brown

Odor: NA

Sheen: slight

Floatables: yes, lots

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

~~YSI Pro DSS 1~~

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): NA

Reference Point (description): NA

Water Quality Measurments

Temperature (°C) 8.1

Specific Conductivity (µs/cm) 240.0

Dissolved Oxygen (mg/L) 11.90

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: BB MHM

Sample Date: 12.8.20 **Sample Time:** 2035 PDT: PST: X

Base Flow or Storm Event? **Field Filtered Time:** 2040

(Must filter within 15 minutes of collection)

SITE ID: WUM0

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rain 48°F

Water Quality Sampling

Sample ID: WUM0-20201208

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	N
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: cloudy

Color: light gray

Odor: none

Sheen: L

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2 X

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 1.60

Reference Point (description): 36

Water Quality Measurments

Temperature (°C) 9.6

Specific Conductivity (µs/cm) 94.5

Dissolved Oxygen (mg/L) 11.23

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: BB MSm

Sample Date: 12.3.20 **Sample Time:** ~~2~~ 2055 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 2100 PST: X

(Must filter within 15 minutes of collection)

SITE ID: LOUMI

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rain, 48°F

Water Quality Sampling

Sample ID: LOUMI-20201208

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	N
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	cloudy
Color:	light gray
Odor:	none
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2 X

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.71

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 9.2

Specific Conductivity (µs/cm) ~~9813~~ 173.8

Dissolved Oxygen (mg/L) ~~9.95~~ 11.49

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: BB MHM

Sample Date: 12-8-20 **Sample Time:** 2150 PDT: PST: X

Base Flow or Storm Event? **Field Filtered Time:** 2155

(Must filter within 15 minutes of collection)

SITE ID: TOSMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: drizzle, 43°F

Water Quality Sampling

Sample ID: TOSMO-20201208

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	N
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	cloudy
Color:	light brown
Odor:	none
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2 X

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.79

Reference Point (description): St

Water Quality Measurments

Temperature (°C) 9.4

Specific Conductivity (µs/cm) 92.9

Dissolved Oxygen (mg/L) 11.55

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: BB MSM

Sample Date: 12-30-8-20 **Sample Time:** 2130 PDT: PST: X

Base Flow or Storm Event? **Field Filtered Time:** 2135

(Must filter within 15 minutes of collection)

SITE ID: TYLM0

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: drizzle, 48°F

Water Quality Sampling

Sample ID: TYLM0-20201208

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	N
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	clear
Color:	none
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2 X

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.68

Reference Point (description): top of culvert L

Water Quality Measurments

Temperature (°C) 9.1

Specific Conductivity (µs/cm) 80.9

Dissolved Oxygen (mg/L) 11.34

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: BB MAM

Sample Date: 12.8.20 **Sample Time:** 2145 PDT: PST: X

Base Flow or Storm Event? **Field Filtered Time:** 2150

(Must filter within 15 minutes of collection)

SITE ID: TYLM1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: drizzle, 48°F

Water Quality Sampling

Sample ID: TYLM1-20201208

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	N
DOC *	HDPE	250 ml	1	HCL	"
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	"
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	"
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	"
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	"
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	"

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: clear

Color: none

Odor: "

Sheen: "

Floatables: "

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2 X

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 4.31

Reference Point (description): top of culvert L

Water Quality Measurments

Temperature (°C) 9.0

Specific Conductivity (µs/cm) 104.3

Dissolved Oxygen (mg/L) 11.11

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: BB MHM

Sample Date: 12.8.20 **Sample Time:** 2205 PDT: PST: X

Base Flow or Storm Event? **Field Filtered Time:** 2210

(Must filter within 15 minutes of collection)

SITE ID: MONMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rain, 47°F

Water Quality Sampling

Sample ID: MONMS-20201208

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	N
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	clear
Color:	none
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2 X

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft):

Reference Point (description): vault was locked

Water Quality Measurments

Temperature (°C) 9.1

Specific Conductivity (µs/cm) 181.2

Dissolved Oxygen (mg/L) 8.98

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: BB MHM

Sample Date: 12-8-20 **Sample Time:** 2220 PDT: PST: X

Base Flow or Storm Event? **Field Filtered Time:** 2225

(Must filter within 15 minutes of collection)

SITE ID: MONMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rain 47°F

Water Quality Sampling

Sample ID: MONMN-20201208

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	Y
DOC *	HDPE	250 ml	1	HCL	↓
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	↓
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	↓
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	↓
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	↓
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	↓

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID: QA96-20201208

Filter blank sample ID: NA

Transfer blank sample ID: NA

Visual and Olfactory Conditions:

Clarity:

Color:

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2 X

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.39

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 8.3

Specific Conductivity (µs/cm) 46.6

Dissolved Oxygen (mg/L) 11.40

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + JW

Sample Date: 12/8/2020 **Sample Time:** 2040 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 2040 PST:

(Must filter within 15 minutes of collection)

SITE ID: TOSM1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 46° + rainy

Water Quality Sampling

Sample ID: TOSM120201208

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: turbid

Color: light brown

Odor: NA

Sheen: NA

Floatables: small amount

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

~~YSI Pro DSS 1~~

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 1.10

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 8.9

Specific Conductivity (µs/cm) 120.6

Dissolved Oxygen (mg/L) 11.65

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + JW

Sample Date: 12/08/2020 **Sample Time:** 2110 PDT

Base Flow or Storm Event? **Field Filtered Time:** 2110 PST

(Must filter within 15 minutes of collection)

SITE ID: EVAMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 46° + Rainy

Water Quality Sampling

Sample ID: EVAMS20201208

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: bit turbid

Color: light yellow brown

Odor: NA

Sheen: NA

Floatables: yes same + ~~~

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 3.90

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 8.3

Specific Conductivity (µs/cm) 378.6

Dissolved Oxygen (mg/L) 11.34

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + JW

Sample Date: 12/8/2026 **Sample Time:** ~~2125~~ 2125 PDT: / PST:

Base Flow or Storm Event?

Field Filtered Time: 2125 (Must filter within 15 minutes of collection)

SITE ID: EVALSS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 48° + Rainy

Water Quality Sampling

Sample ID: EVALSS20201208

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: turbid

Color: brownish / yellow

Odor: NA

Sheen: NA

Floatables: Yes

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

~~YSI Pro DSS 1~~

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): SG

Reference Point (description): 2.45

Water Quality Measurments

Temperature (°C) 8.5

Specific Conductivity (µs/cm) 363.9

Dissolved Oxygen (mg/L) 11.84

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + JW

Sample Date: 12/8/2020 **Sample Time:** 2240 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 2240 PST:

(Must filter within 15 minutes of collection)

SITE ID: COLM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 48° + Rainy

Water Quality Sampling

Sample ID: COLM 20201208

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: pretty clear

Color: light rust

Odor: cedar

Sheen: NA

Floatables: some

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 5.65

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 7.1

Specific Conductivity (µs/cm) 87.8

Dissolved Oxygen (mg/L) 11.32

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + JW

Sample Date: 12/8/20 **Sample Time:** 2200 PDT:

Base Flow or ~~Storm Event?~~ **Field Filtered Time:** 2200 PST:

(Must filter within 15 minutes of collection)

SITE ID: SEIMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 48° + Rainy

Water Quality Sampling

Sample ID: SEIMN20201208

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: slightly turbid

Color: light yellow

Odor: NA

Sheen: NA

Floatables: NA

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

~~YSI Pro DSS 1~~

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 5.54

Reference Point (description): Measure down from top of bolt on pipe

Water Quality Measurments

Temperature (°C) 7.5

Specific Conductivity (µs/cm) 140.0

Dissolved Oxygen (mg/L) 11.93

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: BB MHM

Sample Date: **Sample Time:** 2255 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 2300 PST: X

(Must filter within 15 minutes of collection)

SITE ID: SEIM~~N~~S

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rain, 46°F

Water Quality Sampling

Sample ID: SEIMNS-20201208

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	N
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: clear

Color: light brown

Odor: none

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2 X

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.88

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 8.3

Specific Conductivity (µs/cm) 95.2

Dissolved Oxygen (mg/L) 10.96

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Data Quality Assurance Worksheet

By J. Brown

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 12/30/20 Page 1 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 12/8/20 /All locations, QA96 (MONMN) Lab Ref No 2012-089

date 1/7/2021

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
TSS	OK / SM 2540D	NA	**NA**	3	**≤7**	≤1.0 mg/L 1.0 mg/L	NA	**NA**	85	**±20**	1	**≤ 25**	0	**≤ 25**	OK	NONE
Turbidity	OK / EPA 180.1	NA	**NA**	1	**≤2**	≤0.1 NTU 0.1 NTU	NA	**NA**	NA	**±10**	7	**≤ 25**	0	**≤ 25**	OK	NONE
Hardness	OK / SM 2340B	NA	**NA**	6	**≤180**	≤1.0 mg/L 1.0 mg/L	106, 106	**±25**	108	**±15**	2 MS 0	**≤ 20**	4	**≤ 20**	OK	NONE
DOC	OK / SM 5310B	≤15	**≤15**	3	**≤28**	≤1.0 mg/L 1.0 mg/L	93	**±25**	101	**±15**	0	**≤ 20**	5	**≤ 20**	OK	NONE
Total Phosphorus	OK / EPA 365.1	NA	**NA**	6	**≤28**	≤0.01 mg/L 0.01 mg/L	96	**±25**	101	**±20**	D=0.006	**≤ 20**	4	**≤ 20**	OK	NONE
Total Nitrogen (TKN + N+N)	OK/ SM 4500 N-B	NA	**NA**	6, 10	**≤28**	≤0.1 mg/L 0.1 mg/L	91-110	**±25**	92-100	**±20**	0-15, D=0.01, D=0.01	**≤ 20**	10, D=0.1	**≤ 20**	OK	NONE

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

Data Quality Assurance Worksheet

By J. Brown

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 12/30/20 Page 2 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 12/8/20 /All locations, QA96 (MONMN) Lab Ref No 2012-089

date 1/7/2021

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
Total Copper	OK/ EPA 200.8	NA	**NA**	6	**≤180**	≤1.0 µg/L 1.0 µg/L	102, 94	**±25**	NR	**±15**	D=0.02 MS 9	**≤ 20**	D=0	**≤ 20**	OK	NONE
Total Zinc	OK/ EPA 200.8	NA	**NA**	6	**≤180**	≤5.0 µg/L 5.0 µg/L	112, 106	**±25**	NR	**±15**	D=0.04 MS 5	**≤ 20**	D=1	**≤ 20**	OK	NONE
Dissolved Copper	OK/ EPA 200.8	≤15	**≤15**	2	**≤180**	≤1.0 µg/L 1.0 µg/L	92, 89	**±25**	NR	**±15**	D=0.1 MS 3	**≤ 20**	D=0	**≤ 20**	OK	NONE
Dissolved Zinc	OK/ EPA 200.8	≤15	**≤15**	2	**≤180**	≤5.0 µg/L 5.0 µg/L	89, 88	**±25**	NR	**±15**	D=0.28 MS <1	**≤ 20**	D=0.5	**≤ 20**	OK	NONE
Fecal Coliform	OK / SM 9222D	NA	**NA**	1	**≤1**	≤1.0 cfu/ 100mL 10 cfu/ 100mL	NA	**NA**	NA	**NA**	17, 16	**≤ 35**	87	**≤ 50**	OK	FLAG MONMN J FOR FIELD DUPE EXCEEDANCE

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

January 12, 2021

Jess Brown
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2012-220

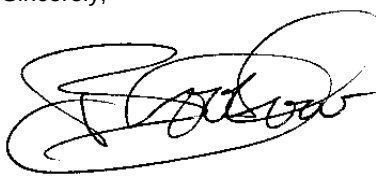
Dear Jess:

Enclosed are the analytical results and associated quality control data for samples submitted on December 22, 2020.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



Blair Goodrow
Project Manager

Enclosures

Date of Report: January 12, 2021
Samples Submitted: December 22, 2020
Laboratory Reference: 2012-220
Project: 14-05806-000

Case Narrative

Samples were collected on December 21, 2020 and received by the laboratory on December 22, 2020. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: January 12, 2021
Samples Submitted: December 22, 2020
Laboratory Reference: 2012-220
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201221**					
Laboratory ID:	12-220-01					
Total Suspended Solids	**93**	2.0	SM 2540D	12-23-20	12-23-20	
Client ID:	**COUMI-20201221**					
Laboratory ID:	12-220-02					
Total Suspended Solids	**170**	2.0	SM 2540D	12-23-20	12-23-20	
Client ID:	**COUMO-20201221**					
Laboratory ID:	12-220-03					
Total Suspended Solids	**32**	1.3	SM 2540D	12-23-20	12-23-20	
Client ID:	**EVAMS-20201221**					
Laboratory ID:	12-220-04					
Total Suspended Solids	**9.2**	1.0	SM 2540D	12-23-20	12-23-20	
Client ID:	**EVALSS-20201221**					
Laboratory ID:	12-220-05					
Total Suspended Solids	**31**	1.4	SM 2540D	12-23-20	12-23-20	
Client ID:	**MONMN-20201221**					
Laboratory ID:	12-220-06					
Total Suspended Solids	**370**	5.0	SM 2540D	12-23-20	12-23-20	
Client ID:	**MONMS-20201221**					
Laboratory ID:	12-220-07					
Total Suspended Solids	**3.8**	1.0	SM 2540D	12-23-20	12-23-20	
Client ID:	**MONM-20201221**					
Laboratory ID:	12-220-08					
Total Suspended Solids	**290**	5.0	SM 2540D	12-23-20	12-23-20	
Client ID:	**SEIMN-20201221**					
Laboratory ID:	12-220-09					
Total Suspended Solids	**420**	5.0	SM 2540D	12-23-20	12-23-20	

Date of Report: January 12, 2021
Samples Submitted: December 22, 2020
Laboratory Reference: 2012-220
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20201221**					
Laboratory ID:	12-220-10					
Total Suspended Solids	**360**	5.0	SM 2540D	12-23-20	12-23-20	
Client ID:	**TOSMI-20201221**					
Laboratory ID:	12-220-11					
Total Suspended Solids	**40**	1.3	SM 2540D	12-23-20	12-23-20	
Client ID:	**TOSMO-20201221**					
Laboratory ID:	12-220-12					
Total Suspended Solids	**140**	2.0	SM 2540D	12-23-20	12-23-20	
Client ID:	**TYLMI-20201221**					
Laboratory ID:	12-220-13					
Total Suspended Solids	**140**	2.5	SM 2540D	12-23-20	12-23-20	
Client ID:	**TYLMO-20201221**					
Laboratory ID:	12-220-14					
Total Suspended Solids	**210**	2.5	SM 2540D	12-23-20	12-23-20	
Client ID:	**QA97-20201221**					
Laboratory ID:	12-220-15					
Total Suspended Solids	**5.6**	1.0	SM 2540D	12-23-20	12-23-20	

Date of Report: January 12, 2021
Samples Submitted: December 22, 2020
Laboratory Reference: 2012-220
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1223W1					
Total Suspended Solids	**ND**	1.0	SM 2540D	12-23-20	12-23-20	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	12-220-08								
	ORIG	DUP							
Total Suspended Solids	**291**	**309**	NA	NA	NA	NA	6	21	
SPIKE BLANK									
Laboratory ID:	SB1223W1								
	SB		SB		SB				
Total Suspended Solids	**85.0**		100	NA	85	57-126	NA	NA	

Date of Report: January 12, 2021
Samples Submitted: December 22, 2020
Laboratory Reference: 2012-220
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201221**					
Laboratory ID:	12-220-01					
Turbidity	**26**	0.10	EPA 180.1	12-22-20	12-22-20	
Client ID:	**COUMI-20201221**					
Laboratory ID:	12-220-02					
Turbidity	**31**	0.10	EPA 180.1	12-22-20	12-22-20	
Client ID:	**COUMO-20201221**					
Laboratory ID:	12-220-03					
Turbidity	**15**	0.10	EPA 180.1	12-22-20	12-22-20	
Client ID:	**EVAMS-20201221**					
Laboratory ID:	12-220-04					
Turbidity	**8.2**	0.10	EPA 180.1	12-22-20	12-22-20	
Client ID:	**EVALSS-20201221**					
Laboratory ID:	12-220-05					
Turbidity	**15**	0.10	EPA 180.1	12-22-20	12-22-20	
Client ID:	**MONMN-20201221**					
Laboratory ID:	12-220-06					
Turbidity	**180**	0.50	EPA 180.1	12-22-20	12-22-20	
Client ID:	**MONMS-20201221**					
Laboratory ID:	12-220-07					
Turbidity	**5.9**	0.10	EPA 180.1	12-22-20	12-22-20	
Client ID:	**MONM-20201221**					
Laboratory ID:	12-220-08					
Turbidity	**160**	0.50	EPA 180.1	12-22-20	12-22-20	
Client ID:	**SEIMN-20201221**					
Laboratory ID:	12-220-09					
Turbidity	**160**	0.50	EPA 180.1	12-22-20	12-22-20	

Date of Report: January 12, 2021
Samples Submitted: December 22, 2020
Laboratory Reference: 2012-220
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20201221**					
Laboratory ID:	12-220-10					
Turbidity	**160**	0.50	EPA 180.1	12-22-20	12-22-20	
Client ID:	**TOSMI-20201221**					
Laboratory ID:	12-220-11					
Turbidity	**20**	0.10	EPA 180.1	12-22-20	12-22-20	
Client ID:	**TOSMO-20201221**					
Laboratory ID:	12-220-12					
Turbidity	**70**	0.20	EPA 180.1	12-22-20	12-22-20	
Client ID:	**TYLMI-20201221**					
Laboratory ID:	12-220-13					
Turbidity	**78**	0.20	EPA 180.1	12-22-20	12-22-20	
Client ID:	**TYLMO-20201221**					
Laboratory ID:	12-220-14					
Turbidity	**81**	0.20	EPA 180.1	12-22-20	12-22-20	
Client ID:	**QA97-20201221**					
Laboratory ID:	12-220-15					
Turbidity	**5.5**	0.10	EPA 180.1	12-22-20	12-22-20	

Date of Report: January 12, 2021
Samples Submitted: December 22, 2020
Laboratory Reference: 2012-220
Project: 14-05806-000

TURBIDITY
EPA 180.1
QUALITY CONTROL

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1222W1					
Turbidity	**ND**	0.10	EPA 180.1	12-22-20	12-22-20	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	12-218-01								
	ORIG	DUP							
Turbidity	**7.54**	**7.46**	NA	NA	NA	NA	1	14	

Date of Report: January 12, 2021
Samples Submitted: December 22, 2020
Laboratory Reference: 2012-220
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201221**					
Laboratory ID:	12-220-01					
Hardness	**12**	1.0	EPA 200.7/SM 2340B	12-29-20	12-29-20	
Client ID:	**COUMI-20201221**					
Laboratory ID:	12-220-02					
Hardness	**60**	1.0	EPA 200.7/SM 2340B	12-29-20	12-29-20	
Client ID:	**COUMO-20201221**					
Laboratory ID:	12-220-03					
Hardness	**54**	1.0	EPA 200.7/SM 2340B	12-29-20	12-29-20	
Client ID:	**EVAMS-20201221**					
Laboratory ID:	12-220-04					
Hardness	**66**	1.0	EPA 200.7/SM 2340B	12-29-20	12-29-20	
Client ID:	**EVALSS-20201221**					
Laboratory ID:	12-220-05					
Hardness	**64**	1.0	EPA 200.7/SM 2340B	12-29-20	12-29-20	
Client ID:	**MONMN-20201221**					
Laboratory ID:	12-220-06					
Hardness	**60**	1.0	EPA 200.7/SM 2340B	12-29-20	12-29-20	
Client ID:	**MONMS-20201221**					
Laboratory ID:	12-220-07					
Hardness	**72**	1.0	EPA 200.7/SM 2340B	12-29-20	12-29-20	

Date of Report: January 12, 2021
Samples Submitted: December 22, 2020
Laboratory Reference: 2012-220
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20201221**					
Laboratory ID:	12-220-08					
Hardness	**51**	1.0	EPA 200.7/SM 2340B	12-29-20	12-29-20	
Client ID:	**SEIMN-20201221**					
Laboratory ID:	12-220-09					
Hardness	**36**	1.0	EPA 200.7/SM 2340B	12-29-20	12-29-20	
Client ID:	**SEIMS-20201221**					
Laboratory ID:	12-220-10					
Hardness	**40**	1.0	EPA 200.7/SM 2340B	12-29-20	12-29-20	
Client ID:	**TOSMI-20201221**					
Laboratory ID:	12-220-11					
Hardness	**47**	1.0	EPA 200.7/SM 2340B	12-29-20	12-29-20	
Client ID:	**TOSMO-20201221**					
Laboratory ID:	12-220-12					
Hardness	**67**	1.0	EPA 200.7/SM 2340B	12-29-20	12-29-20	
Client ID:	**TYLMI-20201221**					
Laboratory ID:	12-220-13					
Hardness	**43**	1.0	EPA 200.7/SM 2340B	12-29-20	12-29-20	
Client ID:	**TYLMO-20201221**					
Laboratory ID:	12-220-14					
Hardness	**29**	1.0	EPA 200.7/SM 2340B	12-29-20	12-29-20	

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HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA97-20201221**					
Laboratory ID:	12-220-15					
Hardness	**68**	1.0	EPA 200.7/SM 2340B	12-29-20	12-29-20	

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HARDNESS
EPA 200.7/SM 2340B
QUALITY CONTROL

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1229WH2					
Hardness	**ND**	1.0	EPA 200.7/SM 2340B	12-29-20	12-29-20	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	12-230-02										
	ORIG	DUP									
Hardness	**168**	**162**	NA		NA	NA		NA	4	20	
MATRIX SPIKES											
Laboratory ID:	12-230-02										
	MS	MSD	MS	MSD		MS	MSD				
Hardness	**299**	**313**	132	132	168	99	110	75-125	5	20	
SPIKE BLANK											
Laboratory ID:	SB1229WH2										
	SB		SB			SB					
Hardness	**137**		132		NA	104		85-115	NA	NA	

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DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201221**					
Laboratory ID:	12-220-01					
Dissolved Organic Carbon	**14**	1.0	SM 5310B	12-30-20	12-30-20	
Client ID:	**COUMI-20201221**					
Laboratory ID:	12-220-02					
Dissolved Organic Carbon	**5.5**	1.0	SM 5310B	12-30-20	12-30-20	
Client ID:	**COUMO-20201221**					
Laboratory ID:	12-220-03					
Dissolved Organic Carbon	**5.7**	1.0	SM 5310B	12-30-20	12-30-20	
Client ID:	**EVAMS-20201221**					
Laboratory ID:	12-220-04					
Dissolved Organic Carbon	**11**	1.0	SM 5310B	12-30-20	12-30-20	
Client ID:	**EVALSS-20201221**					
Laboratory ID:	12-220-05					
Dissolved Organic Carbon	**11**	1.0	SM 5310B	12-30-20	12-30-20	
Client ID:	**MONMN-20201221**					
Laboratory ID:	12-220-06					
Dissolved Organic Carbon	**6.9**	1.0	SM 5310B	12-30-20	12-30-20	
Client ID:	**MONMS-20201221**					
Laboratory ID:	12-220-07					
Dissolved Organic Carbon	**8.8**	1.0	SM 5310B	12-30-20	12-30-20	
Client ID:	**MONM-20201221**					
Laboratory ID:	12-220-08					
Dissolved Organic Carbon	**9.8**	1.0	SM 5310B	12-30-20	12-30-20	
Client ID:	**SEIMN-20201221**					
Laboratory ID:	12-220-09					
Dissolved Organic Carbon	**11**	1.0	SM 5310B	12-30-20	12-30-20	

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DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20201221**					
Laboratory ID:	12-220-10					
Dissolved Organic Carbon	**11**	1.0	SM 5310B	12-30-20	12-30-20	
Client ID:	**TOSMI-20201221**					
Laboratory ID:	12-220-11					
Dissolved Organic Carbon	**6.3**	1.0	SM 5310B	12-30-20	12-30-20	
Client ID:	**TOSMO-20201221**					
Laboratory ID:	12-220-12					
Dissolved Organic Carbon	**8.1**	1.0	SM 5310B	12-30-20	12-30-20	
Client ID:	**TYLMI-20201221**					
Laboratory ID:	12-220-13					
Dissolved Organic Carbon	**8.9**	1.0	SM 5310B	12-30-20	12-30-20	
Client ID:	**TYLMO-20201221**					
Laboratory ID:	12-220-14					
Dissolved Organic Carbon	**5.0**	1.0	SM 5310B	12-30-20	12-30-20	
Client ID:	**QA97-20201221**					
Laboratory ID:	12-220-15					
Dissolved Organic Carbon	**8.9**	1.0	SM 5310B	12-30-20	12-30-20	

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DISSOLVED ORGANIC CARBON
SM 5310B
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1230D1					
Dissolved Organic Carbon	**ND**	1.0	SM 5310B	12-30-20	12-30-20	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	12-220-01								
	ORIG	DUP							
Dissolved Organic Carbon	**14.1**	**14.5**	NA	NA	NA	NA	3	15	
MATRIX SPIKE									
Laboratory ID:	12-220-01								
	MS		MS		MS				
Dissolved Organic Carbon	**24.0**		10.0	14.1	99	72-132	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB1230D1								
	SB		SB		SB				
Dissolved Organic Carbon	**10.4**		10.0	NA	104	82-123	NA	NA	

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TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201221**					
Laboratory ID:	12-220-01					
Total Phosphorus	**0.10**	0.010	EPA 365.1	12-30-20	12-30-20	
Client ID:	**COUMI-20201221**					
Laboratory ID:	12-220-02					
Total Phosphorus	**0.19**	0.010	EPA 365.1	12-30-20	12-30-20	
Client ID:	**COUMO-20201221**					
Laboratory ID:	12-220-03					
Total Phosphorus	**0.11**	0.010	EPA 365.1	12-30-20	12-30-20	
Client ID:	**EVAMS-20201221**					
Laboratory ID:	12-220-04					
Total Phosphorus	**0.043**	0.010	EPA 365.1	12-30-20	12-30-20	
Client ID:	**EVALSS-20201221**					
Laboratory ID:	12-220-05					
Total Phosphorus	**0.071**	0.010	EPA 365.1	12-30-20	12-30-20	
Client ID:	**MONMN-20201221**					
Laboratory ID:	12-220-06					
Total Phosphorus	**0.77**	0.010	EPA 365.1	12-30-20	12-30-20	
Client ID:	**MONMS-20201221**					
Laboratory ID:	12-220-07					
Total Phosphorus	**0.053**	0.010	EPA 365.1	12-30-20	12-30-20	
Client ID:	**MONM-20201221**					
Laboratory ID:	12-220-08					
Total Phosphorus	**0.67**	0.010	EPA 365.1	12-30-20	12-30-20	
Client ID:	**SEIMN-20201221**					
Laboratory ID:	12-220-09					
Total Phosphorus	**0.58**	0.010	EPA 365.1	12-30-20	12-30-20	

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TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20201221**					
Laboratory ID:	12-220-10					
Total Phosphorus	**0.58**	0.010	EPA 365.1	12-30-20	12-30-20	
Client ID:	**TOSMI-20201221**					
Laboratory ID:	12-220-11					
Total Phosphorus	**0.12**	0.010	EPA 365.1	12-30-20	12-30-20	
Client ID:	**TOSMO-20201221**					
Laboratory ID:	12-220-12					
Total Phosphorus	**0.21**	0.010	EPA 365.1	12-30-20	12-30-20	
Client ID:	**TYLMI-20201221**					
Laboratory ID:	12-220-13					
Total Phosphorus	**0.33**	0.010	EPA 365.1	12-30-20	12-30-20	
Client ID:	**TYLMO-20201221**					
Laboratory ID:	12-220-14					
Total Phosphorus	**0.34**	0.010	EPA 365.1	12-30-20	12-30-20	
Client ID:	**QA97-20201221**					
Laboratory ID:	12-220-15					
Total Phosphorus	**0.076**	0.010	EPA 365.1	12-30-20	12-30-20	

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TOTAL PHOSPHORUS
EPA 365.1
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1229W1					
Total Phosphorus	**ND**	0.010	EPA 365.1	12-30-20	12-30-20	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	12-220-01								
	ORIG	DUP							
Total Phosphorus	**0.102**	**0.0980**	NA	NA	NA	NA	4	14	
MATRIX SPIKE									
Laboratory ID:	12-220-01								
	MS		MS		MS				
Total Phosphorus	**0.341**		0.250	0.102	96	80-110	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB1229W1								
	SB		SB		SB				
Total Phosphorus	**0.244**		0.250	NA	98	78-110	NA	NA	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201221**					
Laboratory ID:	12-220-01					
Copper	**1.8**	1.0	EPA 200.8	12-23-20	12-23-20	
Zinc	**9.4**	5.0	EPA 200.8	12-23-20	12-23-20	
Client ID:	**COUMI-20201221**					
Laboratory ID:	12-220-02					
Copper	**5.9**	1.0	EPA 200.8	12-23-20	12-23-20	
Zinc	**55**	5.0	EPA 200.8	12-23-20	12-23-20	
Client ID:	**COUMO-20201221**					
Laboratory ID:	12-220-03					
Copper	**4.4**	1.0	EPA 200.8	12-23-20	12-23-20	
Zinc	**78**	5.0	EPA 200.8	12-23-20	12-23-20	
Client ID:	**EVAMS-20201221**					
Laboratory ID:	12-220-04					
Copper	**1.3**	1.0	EPA 200.8	12-23-20	12-23-20	
Zinc	**ND**	5.0	EPA 200.8	12-23-20	12-23-20	
Client ID:	**EVALSS-20201221**					
Laboratory ID:	12-220-05					
Copper	**2.1**	1.0	EPA 200.8	12-23-20	12-23-20	
Zinc	**5.5**	5.0	EPA 200.8	12-23-20	12-23-20	
Client ID:	**MONMN-20201221**					
Laboratory ID:	12-220-06					
Copper	**11**	2.5	EPA 200.8	12-23-20	12-23-20	
Zinc	**140**	13	EPA 200.8	12-23-20	12-23-20	
Client ID:	**MONMS-20201221**					
Laboratory ID:	12-220-07					
Copper	**2.0**	1.0	EPA 200.8	12-23-20	12-23-20	
Zinc	**ND**	5.0	EPA 200.8	12-23-20	12-23-20	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20201221**					
Laboratory ID:	12-220-08					
Copper	**12**	1.0	EPA 200.8	12-23-20	12-23-20	
Zinc	**160**	5.0	EPA 200.8	12-23-20	12-23-20	
Client ID:	**SEIMN-20201221**					
Laboratory ID:	12-220-09					
Copper	**11**	1.0	EPA 200.8	12-23-20	12-23-20	
Zinc	**23**	5.0	EPA 200.8	12-23-20	12-23-20	
Client ID:	**SEIMS-20201221**					
Laboratory ID:	12-220-10					
Copper	**7.5**	1.0	EPA 200.8	12-23-20	12-23-20	
Zinc	**24**	5.0	EPA 200.8	12-23-20	12-23-20	
Client ID:	**TOSMI-20201221**					
Laboratory ID:	12-220-11					
Copper	**6.7**	1.0	EPA 200.8	12-23-20	12-23-20	
Zinc	**81**	5.0	EPA 200.8	12-23-20	12-23-20	
Client ID:	**TOSMO-20201221**					
Laboratory ID:	12-220-12					
Copper	**7.9**	2.5	EPA 200.8	12-23-20	12-23-20	
Zinc	**380**	13	EPA 200.8	12-23-20	12-23-20	
Client ID:	**TYLMI-20201221**					
Laboratory ID:	12-220-13					
Copper	**11**	2.5	EPA 200.8	12-23-20	12-23-20	
Zinc	**200**	13	EPA 200.8	12-23-20	12-23-20	
Client ID:	**TYLMO-20201221**					
Laboratory ID:	12-220-14					
Copper	**12**	1.0	EPA 200.8	12-23-20	12-23-20	
Zinc	**110**	5.0	EPA 200.8	12-23-20	12-23-20	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA97-20201221**					
Laboratory ID:	12-220-15					
Copper	**1.9**	1.0	EPA 200.8	12-23-20	12-23-20	
Zinc	**ND**	5.0	EPA 200.8	12-23-20	12-23-20	

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TOTAL METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1223WH1					
Copper	**ND**	1.0	EPA 200.8	12-23-20	12-23-20	
Zinc	**ND**	5.0	EPA 200.8	12-23-20	12-23-20	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	12-220-04										
	ORIG	DUP									
Copper	**1.35**	**1.31**	NA	NA		NA		NA	3	20	
Zinc	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	12-220-04										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**93.8**	**92.0**	100	100	1.35	**93**	**91**	75-125	2	20	
Zinc	**102**	**103**	100	100	ND	**102**	**103**	75-125	0	20	

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20201221**					
Laboratory ID:	12-220-01					
Copper	**ND**	1.0	EPA 200.8		12-23-20	
Zinc	**ND**	5.0	EPA 200.8		12-23-20	
Client ID:	**COUMI-20201221**					
Laboratory ID:	12-220-02					
Copper	**1.5**	1.0	EPA 200.8		12-23-20	
Zinc	**18**	5.0	EPA 200.8		12-23-20	
Client ID:	**COUMO-20201221**					
Laboratory ID:	12-220-03					
Copper	**1.9**	1.0	EPA 200.8		12-23-20	
Zinc	**42**	5.0	EPA 200.8		12-23-20	
Client ID:	**EVAMS-20201221**					
Laboratory ID:	12-220-04					
Copper	**ND**	1.0	EPA 200.8		12-23-20	
Zinc	**ND**	5.0	EPA 200.8		12-23-20	
Client ID:	**EVALSS-20201221**					
Laboratory ID:	12-220-05					
Copper	**ND**	1.0	EPA 200.8		12-23-20	
Zinc	**ND**	5.0	EPA 200.8		12-23-20	
Client ID:	**MONMN-20201221**					
Laboratory ID:	12-220-06					
Copper	**1.2**	1.0	EPA 200.8		12-23-20	
Zinc	**11**	5.0	EPA 200.8		12-23-20	
Client ID:	**MONMS-20201221**					
Laboratory ID:	12-220-07					
Copper	**1.5**	1.0	EPA 200.8		12-23-20	
Zinc	**ND**	5.0	EPA 200.8		12-23-20	

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20201221**					
Laboratory ID:	12-220-08					
Copper	**1.4**	1.0	EPA 200.8		12-23-20	
Zinc	**11**	5.0	EPA 200.8		12-23-20	
Client ID:	**SEIMN-20201221**					
Laboratory ID:	12-220-09					
Copper	**1.2**	1.0	EPA 200.8		12-23-20	
Zinc	**8.6**	5.0	EPA 200.8		12-23-20	
Client ID:	**SEIMS-20201221**					
Laboratory ID:	12-220-10					
Copper	**ND**	1.0	EPA 200.8		12-23-20	
Zinc	**5.3**	5.0	EPA 200.8		12-23-20	
Client ID:	**TOSMI-20201221**					
Laboratory ID:	12-220-11					
Copper	**3.9**	1.0	EPA 200.8		12-23-20	
Zinc	**46**	5.0	EPA 200.8		12-23-20	
Client ID:	**TOSMO-20201221**					
Laboratory ID:	12-220-12					
Copper	**2.6**	1.0	EPA 200.8		12-23-20	
Zinc	**180**	5.0	EPA 200.8		12-23-20	
Client ID:	**TYLMI-20201221**					
Laboratory ID:	12-220-13					
Copper	**2.3**	1.0	EPA 200.8		12-23-20	
Zinc	**35**	5.0	EPA 200.8		12-23-20	
Client ID:	**TYLMO-20201221**					
Laboratory ID:	12-220-14					
Copper	**2.0**	1.0	EPA 200.8		12-23-20	
Zinc	**11**	5.0	EPA 200.8		12-23-20	

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA97-20201221**					
Laboratory ID:	12-220-15					
Copper	**1.6**	1.0	EPA 200.8		12-23-20	
Zinc	**ND**	5.0	EPA 200.8		12-23-20	

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DISSOLVED METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1223D1					
Copper	**ND**	1.0	EPA 200.8		12-23-20	
Zinc	**ND**	5.0	EPA 200.8		12-23-20	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	12-220-15										
	ORIG	DUP									
Copper	**1.64**	**1.68**	NA	NA		NA		NA	3	20	
Zinc	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	12-220-15										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**67.6**	**70.2**	80.0	80.0	1.64	**83**	**86**	75-125	4	20	
Zinc	**73.4**	**76.6**	80.0	80.0	ND	**92**	**96**	75-125	4	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Jan 8 2021
On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister

Dear David Baumeister:

Enclosed please find the analytical data for your REDMOND PAIRED WATERSHED STUDY project.

The following is a cross correlation of client and laboratory identifications for your convenience.

CLIENT ID	MATRIX	AMTEST ID	TEST
COLM-20201221	Water	20-A019993	Micro, NUT
COUMI-20201221	Water	20-A019994	Micro, NUT
COUMO-20201221	Water	20-A019995	Micro, NUT
EVAMS-20201221	Water	20-A019996	Micro, NUT
EVALSS-20201221	Water	20-A019997	Micro, NUT
MONMN-20201221	Water	20-A019998	Micro, NUT
MONMS-20201221	Water	20-A019999	Micro, NUT
MONM-20201221	Water	20-A020000	Micro, NUT
SEIMN-20201221	Water	20-A020001	Micro, NUT
SEIMS-20201221	Water	20-A020002	Micro, NUT
TOSMI-20201221	Water	20-A020003	Micro, NUT
TOSMO-20201221	Water	20-A020004	Micro, NUT
TYLMI-20201221	Water	20-A020005	Micro, NUT
TYLMO-20201221	Water	20-A020006	Micro, NUT
QA97-20201221	Water	20-A020007	Micro, NUT

Your samples were received on Tuesday, December 22, 2020. At the time of receipt, the samples were logged in and properly maintained prior to the subsequent analysis.

The analytical procedures used at AmTest are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

Following the analytical data you will find the Quality Control (QC) results.

Please note that the detection limits that are listed in the body of the report refer to the Practical Quantitation Limits (PQL's), as opposed to the Method Detection Limits (MDL's).

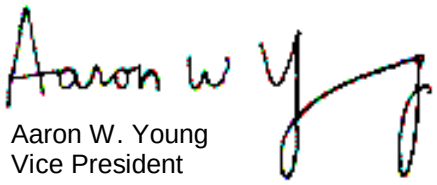
Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Jan 8 2021
On-Site Environmental
continued . . .

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,



Aaron W. Young
Vice President

Project #: 14-05806-000
PO Number: 12-220

BACT = Bacteriological	MET = Metals	NUT=Nutrients	MIN=Minerals
CONV = Conventionals	ORG = Organics	DEM=Demand	

Am Test Inc.
13600 NE 126TH PL
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www.amtestlab.com

Professional Analytical Services

ANALYSIS REPORT

On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister
Project Name: REDMOND PAIRED WATERSHED STUDY
Project #: 14-05806-000
PO Number: 12-220
All results reported on an as received basis.

Date Received: 12/22/20
Date Reported: 1/ 8/21

AMTEST Identification Number **20-A019993**
Client Identification **COLM-20201221**
Sampling Date **12/21/20, 15:45**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	690	CFU/100 ml		10	SM 9222D	SB	12/22/20
Total Nitrogen (NOX&TKN)	1.68	mg/l		0.1			
Total Nitrogen (TKN)	1.48	mg/l		0.2	SM4500N	KS	12/28/20
Total Nitrate + Nitrite	0.20	mg/l		0.02	SM4500NO3	KS	12/29/20

AMTEST Identification Number **20-A019994**
Client Identification **COUMI-20201221**
Sampling Date **12/21/20, 13:55**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	760	CFU/100 ml		10	SM 9222D	SB	12/22/20
Total Nitrogen (NOX&TKN)	2.17	mg/l		0.1			
Total Nitrogen (TKN)	1.76	mg/l		0.2	SM4500N	KS	12/28/20
Total Nitrate + Nitrite	0.41	mg/l		0.02	SM4500NO3	KS	12/29/20

AMTEST Identification Number **20-A019995**
Client Identification **COUMO-20201221**
Sampling Date **12/21/20, 13:35**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	210	CFU/100 ml		10	SM 9222D	SB	12/22/20
Total Nitrogen (NOX&TKN)	1.48	mg/l		0.1			
Total Nitrogen (TKN)	0.837	mg/l		0.2	SM4500N	KS	12/28/20
Total Nitrate + Nitrite	0.64	mg/l		0.02	SM4500NO3	KS	12/29/20

AMTEST Identification Number **20-A019996**
Client Identification **EVAMS-20201221**
Sampling Date **12/21/20, 14:05**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	100	CFU/100 ml		2	SM 9222D	SB	12/22/20
Total Nitrogen (NOX&TKN)	2.41	mg/l		0.1			
Total Nitrogen (TKN)	0.907	mg/l		0.2	SM4500N	KS	12/28/20
Total Nitrate + Nitrite	1.5	mg/l		0.02	SM4500NO3	KS	12/29/20

AMTEST Identification Number **20-A019997**
Client Identification **EVALSS-20201221**
Sampling Date **12/21/20, 14:20**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	100	CFU/100 ml		2	SM 9222D	SB	12/22/20
Total Nitrogen (NOX&TKN)	2.44	mg/l		0.1			
Total Nitrogen (TKN)	1.14	mg/l		0.2	SM4500N	KS	12/28/20
Total Nitrate + Nitrite	1.3	mg/l		0.02	SM4500NO3	KS	12/29/20

AMTEST Identification Number **20-A019998**
Client Identification **MONMN-20201221**
Sampling Date **12/21/20, 15:15**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	1300	CFU/100 ml		10	SM 9222D	SB	12/22/20
Total Nitrogen (NOX&TKN)	4.34	mg/l		0.1			
Total Nitrogen (TKN)	3.98	mg/l		0.2	SM4500N	KS	12/28/20
Total Nitrate + Nitrite	0.36	mg/l		0.02	SM4500NO3	KS	12/29/20

AMTEST Identification Number **20-A019999**
Client Identification **MONMS-20201221**
Sampling Date **12/21/20, 12:15**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	27.	CFU/100 ml		2	SM 9222D	SB	12/22/20
Total Nitrogen (NOX&TKN)	1.32	mg/l		0.1			
Total Nitrogen (TKN)	0.886	mg/l		0.2	SM4500N	KS	12/28/20
Total Nitrate + Nitrite	0.43	mg/l		0.02	SM4500NO3	KS	12/29/20

AMTEST Identification Number **20-A020000**
Client Identification **MONM-20201221**
Sampling Date **12/21/20, 16:10**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	1000	CFU/100 ml		10	SM 9222D	SB	12/22/20
Total Nitrogen (NOX&TKN)	4.12	mg/l		0.1			
Total Nitrogen (TKN)	3.72	mg/l		0.2	SM4500N	KS	12/28/20
Total Nitrate + Nitrite	0.40	mg/l		0.02	SM4500NO3	KS	12/29/20

AMTEST Identification Number **20-A020001**
Client Identification **SEIMN-20201221**
Sampling Date **12/21/20, 15:00**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	1600	CFU/100 ml		10	SM 9222D	SB	12/22/20
Total Nitrogen (NOX&TKN)	2.93	mg/l		0.1			
Total Nitrogen (TKN)	2.58	mg/l		0.2	SM4500N	KS	12/28/20
Total Nitrate + Nitrite	0.35	mg/l		0.02	SM4500NO3	KS	12/29/20

AMTEST Identification Number **20-A020002**
Client Identification **SEIMS-20201221**
Sampling Date **12/21/20, 15:45**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	680	CFU/100 ml		10	SM 9222D	SB	12/22/20
Total Nitrogen (NOX&TKN)	5.33	mg/l		0.1			
Total Nitrogen (TKN)	5.04	mg/l		0.2	SM4500N	KS	12/28/20
Total Nitrate + Nitrite	0.29	mg/l		0.02	SM4500NO3	KS	12/29/20

AMTEST Identification Number **20-A020003**
Client Identification **TOSMI-20201221**
Sampling Date **12/21/20, 13:30**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	150	CFU/100 ml		10	SM 9222D	SB	12/22/20
Total Nitrogen (NOX&TKN)	1.78	mg/l		0.1			
Total Nitrogen (TKN)	0.992	mg/l		0.2	SM4500N	KS	12/28/20
Total Nitrate + Nitrite	0.79	mg/l		0.02	SM4500NO3	KS	12/29/20

AMTEST Identification Number **20-A020004**
Client Identification **TOSMO-20201221**
Sampling Date **12/21/20, 14:10**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	520	CFU/100 ml		10	SM 9222D	SB	12/22/20
Total Nitrogen (NOX&TKN)	1.81	mg/l		0.1			
Total Nitrogen (TKN)	1.22	mg/l		0.2	SM4500N	KS	12/28/20
Total Nitrate + Nitrite	0.59	mg/l		0.02	SM4500NO3	KS	12/29/20

AMTEST Identification Number **20-A020005**
Client Identification **TYLMI-20201221**
Sampling Date **12/21/20, 14:55**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	480	CFU/100 ml		10	SM 9222D	SB	12/22/20
Total Nitrogen (NOX&TKN)	2.37	mg/l		0.1			
Total Nitrogen (TKN)	1.77	mg/l		0.2	SM4500N	KS	12/28/20
Total Nitrate + Nitrite	0.60	mg/l		0.02	SM4500NO3	KS	12/29/20

AMTEST Identification Number **20-A020006**
Client Identification **TYLMO-20201221**
Sampling Date **12/21/20, 14:40**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	930	CFU/100 ml		10	SM 9222D	SB	12/22/20
Total Nitrogen (NOX&TKN)	1.96	mg/l		0.1			
Total Nitrogen (TKN)	1.70	mg/l		0.2	SM4500N	KS	12/28/20
Total Nitrate + Nitrite	0.26	mg/l		0.02	SM4500NO3	KS	12/29/20

AMTEST Identification Number **20-A020007**
Client Identification **QA97-20201221**
Sampling Date **12/21/20, 14:20**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	38.	CFU/100 ml		2	SM 9222D	SB	12/22/20
Total Nitrogen (NOX&TKN)	1.26	mg/l		0.1			
Total Nitrogen (TKN)	0.785	mg/l		0.2	SM4500N	KS	12/28/20
Total Nitrate + Nitrite	0.47	mg/l		0.02	SM4500NO3	KS	12/29/20

Aaron W. Young
Vice President

Am Test Inc.
13600 NE 126th PL
Suite C
Kirkland, WA, 98034
(425) 885-1664
www.amtestlab.com

Professional Analytical Services

QC Summary for sample numbers: 20-A019993 to 20-A020007

DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	DUP VALUE	RPD
20-A020005	Fecal Coliform	CFU/100 ml	480	460	4.3
20-A020007	Fecal Coliform	CFU/100 ml	38.	38.	0.00
20-A019949	Total Nitrogen (TKN)	mg/l	35.8	36.8	2.8
20-A019962	Total Nitrogen (TKN)	mg/l	0.917	0.951	3.6
20-A019994	Total Nitrogen (TKN)	mg/l	1.76	1.78	1.1
20-A020004	Total Nitrogen (TKN)	mg/l	1.22	1.18	3.3
20-A020007	Total Nitrogen (TKN)	mg/l	0.785	0.791	0.76
20-A019996	Total Nitrate + Nitrite	mg/l	1.5	1.4	6.9
20-A020006	Total Nitrate + Nitrite	mg/l	0.26	0.27	3.8
20-A020033	Total Nitrate + Nitrite	mg/l	< 0.02	< 0.02	
20-A020093	Total Nitrate + Nitrite	mg/l	< 0.02	< 0.02	
20-A020164	Total Nitrate + Nitrite	mg/l	0.43	0.44	2.3
20-A020205	Total Nitrate + Nitrite	mg/l	< 0.02	< 0.02	
20-A020209	Total Nitrate + Nitrite	mg/l	< 0.02	< 0.02	

MATRIX SPIKES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	SMPL+ SPK	SPK AMT	RECOVERY
20-A019949	Total Nitrogen (TKN)	mg/l	35.8	78.7	40.0	107.25 %
20-A019962	Total Nitrogen (TKN)	mg/l	0.917	3.00	2.00	104.15 %
20-A019994	Total Nitrogen (TKN)	mg/l	1.76	3.86	2.00	105.00 %
20-A020004	Total Nitrogen (TKN)	mg/l	1.22	3.25	2.00	101.50 %
20-A020007	Total Nitrogen (TKN)	mg/l	0.785	2.74	2.00	97.75 %
20-A019996	Total Nitrate + Nitrite	mg/l	1.5	2.6	1.0	110.00 %
20-A020006	Total Nitrate + Nitrite	mg/l	0.26	1.2	1.0	94.00 %
20-A020033	Total Nitrate + Nitrite	mg/l	< 0.02	0.91	1.0	91.00 %
20-A020093	Total Nitrate + Nitrite	mg/l	< 0.02	1.0	1.0	100.00 %
20-A020164	Total Nitrate + Nitrite	mg/l	0.43	1.4	1.0	97.00 %
20-A020205	Total Nitrate + Nitrite	mg/l	< 0.02	0.90	1.0	90.00 %
20-A020209	Total Nitrate + Nitrite	mg/l	< 0.02	0.92	1.0	92.00 %

STANDARD REFERENCE MATERIALS

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
Total Nitrogen (TKN)	mg/l	1.00	1.03	103. %
Total Nitrogen (TKN)	mg/l	1.00	1.04	104. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %

QC Summary for sample numbers: 20-A019993 to 20-A020007...

BLANKS

ANALYTE	UNITS	RESULT
Fecal Coliform	CFU/100 ml	< 1
Fecal Coliform	CFU/100 ml	< 1
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Laboratory Reference #: 12-220

Laboratory: AmTest Laboratories

Attention: Aaron Young

13600 NE 126th Pl Kirkland, WA 98034

Phone Number: (425) 885-1664

Turnaround Request

1 Day ~~2 Day~~ 3 Day

Standard

Other: _____

Project Manager: Blair Goodrow

email: bgoodrow@onsite-env.com

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analyses
1	COLM-20201221 19993	12/21/20	15:45	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
2	COUMI-20201221 94	12/21/20	13:55	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
3	COUMO-20201221 95	12/21/20	13:35	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
4	EVAMS-20201221 96	12/21/20	14:05	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
5	EVALSS-20201221 97	12/21/20	14:20	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
6	MONMN-20201221 98	12/21/20	15:15	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
7	MONMS-20201221 99	12/21/20	12:15	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
8	MONM-20201221 20000	12/21/20	16:10	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
9	SEIMN-20201221 01	12/21/20	15:00	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
10	SEIMS-20201221 02	12/21/20	15:45	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N

Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:	Emily Eu	12/22/20	1020	
Received by:	AmTest	12/22/20	1020	**EDDs - CSV**
Relinquished by:				**Reporting Limits:**
Received by:				**Fecal Coliform - 1.0 cfu/100ml**
Relinquished by:				**Total Nitrogen - .10 mg/L**
Received by:				

Client T=5.3

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Laboratory Reference #: 12-220

Laboratory: AmTest Laboratories

Attention: Aaron Young

13600 NE 126th Pl Kirkland, WA 98034

Phone Number: (425) 885-1664

Turnaround Request

1 Day 2 Day 3 Day

Standard

Other:

Project Manager: Blair Goodrow

email: bgoodrow@onsite-env.com

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analyses
11	TOSMI-20201221 20003	12/21/20	13:30	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
12	TOSMO-20201221 04	12/21/20	14:10	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
13	TYLMI-20201221 05	12/21/20	14:55	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
14	TYLMO-20201221 06	12/21/20	14:40	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
15	QA97-20201221 07	12/21/20	14:20	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N

Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:	Onsite Env	12/22/20	1020	
Received by:	AmTest	12/22/20	1020	**EDDs - CSV**
Relinquished by:				**Reporting Limits:**
Received by:				**Fecal Coliform - 1.0 cfu/100ml**
Relinquished by:				**Total Nitrogen - .10 mg/L**
Received by:				

CHAIN OF CUSTODY

12-220 Page 1 of 1

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants

Project No.: 14-05806-000

Project Name: Redmond Paired Watershed Study

Project Manager: George Iftner

Turnaround Requested:

_____ 1 Day

_____ 2 Day

_____ 3 Day

__X__ Standard

Laboratory No.

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Suspended Solids (SM 2540D)	Turbidity (EPA 181.1)	Hardness (EPA 200.7 / SM 2340B)	Dissolved Organ Carbon (SM 5310B) *	Fecal Coliform (SM 9222D)	Total Phosphorus (EPA 365.1)	Total Nitrogen (SM 4500 N-B)	Total Cu and Zn (EPA 200.8)	Dissolved Cu and Zn (EPA 200.8) *			
1	COLM-2020 1221	12/21/20	15:45	Water	7	X	X	X	X	X	X	X	X	X			
2	COUMI-2020		13:55	Water	7	X	X	X	X	X	X	X	X	X			
3	COUMO-2020		13:35	Water	7	X	X	X	X	X	X	X	X	X			
4	EVAMS-2020		14:05	Water	7	X	X	X	X	X	X	X	X	X			
5	EVALSS-2020		14:20	Water	7	X	X	X	X	X	X	X	X	X			
6	MONMN-2020		15:15	Water	7	X	X	X	X	X	X	X	X	X			
7	MONMS-2020		12:14	Water	7	X	X	X	X	X	X	X	X	X			
8	MONM-2020		16.10	Water	7	X	X	X	X	X	X	X	X	X			
9	SEIMN-2020		15:00	Water	7	X	X	X	X	X	X	X	X	X			
10	SEIMS-2020		15:45	Water	7	X	X	X	X	X	X	X	X	X			
11	TOSMI-2020		13:30	Water	7	X	X	X	X	X	X	X	X	X			
12	TOSMO-2020		14:10	Water	7	X	X	X	X	X	X	X	X	X			
13	TYLMI-2020		14:55	Water	7	X	X	X	X	X	X	X	X	X			
14	TYLMO-2020		14:40	Water	7	X	X	X	X	X	X	X	X	X			
15	QA 97-20201221		1220	Water	7	X	X	X	X	X	X	X	X	X			

Relinquished by N. Bartish Date 12/22/20 Received by Nicole Griffin Date 12/22/20

Firm Herrera Time 09:40 Firm OSE Time 0940

Relinquished by _____ Date _____ Received by _____ Date _____

Firm _____ Time _____ Firm _____ Time _____

Comments:
* - field filtered with 0.45 µm filter within 15 minutes of collecting sample

CHAIN OF CUSTODY

12-220 Page 1 of 1

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants

Project No.: 14-05806-000

Project Name: Redmond Paired Watershed Study

Project Manager: George Iftner

Turnaround Requested:

_____ 1 Day

_____ 2 Day

_____ 3 Day

__X__ Standard

Laboratory No.

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Suspended Solids (SM 2540D)	Turbidity (EPA 181.1)	Hardness (EPA 200.7 / SM 2340B)	Dissolved Organ Carbon (SM 5310B) *	Fecal Coliform (SM 9222D)	Total Phosphorus (EPA 365.1)	Total Nitrogen (SM 4500 N-B)	Total Cu and Zn (EPA 200.8)	Dissolved Cu and Zn (EPA 200.8) *			
1	COLM-2020 12 21	12/21/20	15:45	Water	7	X	X	X	X	X	X	X	X	X			
2	COUMI-2020		13:55	Water	7	X	X	X	X	X	X	X	X	X			
3	COUMO-2020		13:35	Water	7	X	X	X	X	X	X	X	X	X			
4	EVAMS-2020		14:05	Water	7	X	X	X	X	X	X	X	X	X			
5	EVALSS-2020		14:20	Water	7	X	X	X	X	X	X	X	X	X			
6	MONMN-2020		15:15	Water	7	X	X	X	X	X	X	X	X	X			
7	MONMS-2020		12:14	Water	7	X	X	X	X	X	X	X	X	X			
8	MONM-2020		16.10	Water	7	X	X	X	X	X	X	X	X	X			
9	SEIMN-2020		15:00	Water	7	X	X	X	X	X	X	X	X	X			
10	SEIMS-2020		15:45	Water	7	X	X	X	X	X	X	X	X	X			
11	TOSMI-2020		13:30	Water	7	X	X	X	X	X	X	X	X	X			
12	TOSMO-2020		14:10	Water	7	X	X	X	X	X	X	X	X	X			
13	TYLMI-2020		14:55	Water	7	X	X	X	X	X	X	X	X	X			
14	TYLMO-2020		14:40	Water	7	X	X	X	X	X	X	X	X	X			
15	QA 92-20201221		12:20	Water	7	X	X	X	X	X	X	X	X	X			

Relinquished by N. Bartish Date 12/23/20 Received by Nicholas Thin Date 12/22/20

Firm Herrera Time 09:40 Firm OSE Time 0940

Relinquished by _____ Date _____ Received by _____ Date _____

Firm _____ Time _____ Firm _____ Time _____

Comments:

* - field filtered with 0.45 µm filter within 15 minutes of collecting sample

METER CALIBRATION LOG - Redmond Paired Watershed Study

Project Number:	14-05806-000		
Personnel Performing Calibration:	N. Bartish		
Meter:	PmDS #1		
Date/Time:	12/20/20	12:30	
Barometric Pressure Start of Day:	mmHg: 768.7	Time:	12:30
Barometric Pressure End of Day:	mmHg: 768.7	Time:	12:50

PRE Field Run CALIBRATION	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	73.0	0	26.4	High
Conductivity (µS/cm)	2318	1,000	21.4	Extremely high...
Conductivity (µS/cm)	97.7	100	21.7	
DO % Saturation	100.1	100	21.6	

POST Field Run CHECK	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	1.0	0	23.2	-
Conductivity (µS/cm)	99.6	100	23.1	
DO % Saturation	100.9	100	23.1	

Calibration Procedures:

Rinse Multimeter Sonde Between Each Operation

Rinse 3 times with tap water, 3 times with deionized water, then 3 times with the solution to be used for calibrating or testing.

Conductivity Calibration Notes:

1. Dry the conductivity probe with a lab tissue (e.g., KimWipes®) and DI water.
2. Fill calibration cup to within a centimeter of the top of the calibration cup with DI water (0 µS).
3. Fill the calibration cup with 1,000 µS standard so that the temperature/conductivity probe is submerged.
4. Make sure there are no bubbles in the cell; wait 2 minutes.
5. Enter the appropriate standard value (1,000 µS/cm or 1.0 mS/cm) for Sp Cond.
6. Check conductivity using 100 µS/cm standard.

Dissolved Oxygen Calibration Notes:

1. Fill the calibration cup with about 1/2 inch of DI; it should be below the sensor cap.
2. Use KimWipes® to dry any droplets from the sensor cap.
3. Invert calibration cup's cap and gently rest it on the cup.
4. Wait 5 minutes, making sure that temperature stabilizes.
5. Determine local barometric pressure (mm Hg) and enter this value into the meter.
6. Click "Calibrate". "Calibrate Successful" will be displayed.
7. To retain calibration accuracy between measurements, store with the sensor immersed in water or within a water-saturated air environment such as a sealed storage cup with at least 10 r of water.
8. It is important to have the water-saturated air and the sensor at the same temperature. Therefore, store a jar of DI in the same environment as the sonde and calibrate in a similar air temperature as the water and sonde.
9. Keep probe out of direct sun or wind.

METER CALIBRATION LOG - Redmond Paired Watershed Study

Project Number:	14-05806-000
Personnel Performing Calibration:	N. Bartlett
Meter:	6050 #2
Date/Time:	12/20/20 12:10
Barometric Pressure Start of Day:	mmHg: ~~22.1~~ 768.8 Time: 12:30
Barometric Pressure End of Day:	mmHg: 768.8 Time: 12:50

PRE Field Run CALIBRATION	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	18.5	0	22.3	High
Conductivity (µS/cm)	1075	1,000	22.3	
Conductivity (µS/cm)	97.6	100	22.4	
DO % Saturation	99.2	100	22.3	

POST Field Run CHECK	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	1.2	0	24.3	
Conductivity (µS/cm)	100.2	100	23.1	
DO % Saturation	100.1	100	23.1	

Calibration Procedures:

Rinse Multimeter Sonde Between Each Operation

Rinse 3 times with tap water, 3 times with deionized water, then 3 times with the solution to be used for calibrating or testing.

Conductivity Calibration Notes:

1. Dry the conductivity probe with a lab tissue (e.g., KimWipes®) and DI water.
2. Fill calibration cup to within a centimeter of the top of the calibration cup with DI water (0 µS).
3. Fill the calibration cup with 1,000 µS standard so that the temperature/conductivity probe is submerged.
4. Make sure there are no bubbles in the cell; wait 2 minutes.
5. Enter the appropriate standard value (1,000 µS/cm or 1.0 mS/cm) for Sp Cond.
6. Check conductivity using 100 µS/cm standard.

Dissolved Oxygen Calibration Notes:

1. Fill the calibration cup with about 1/2 inch of DI; it should be below the sensor cap.
2. Use KimWipes® to dry any droplets from the sensor cap.
3. Invert calibration cup's cap and gently rest it on the cup.
4. Wait 5 minutes, making sure that temperature stabilizes.
5. Determine local barometric pressure (mm Hg) and enter this value into the meter.
6. Click "Calibrate". "Calibrate Successful" will be displayed.
7. To retain calibration accuracy between measurements, store with the sensor immersed in water or within a water-saturated air environment such as a sealed storage cup with at least 10 ml of water.
8. It is important to have the water-saturated air and the sensor at the same temperature. Therefore, store a jar of DI in the same environment as the sonde and calibrate in a similar air temperature as the water and sonde.
9. Keep probe out of direct sun or wind.

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: N. Bartlett

Sample Date: 12/21/20 **Sample Time:** 12:15/12:20 PDT:

Base Flow or Storm Event? (B) **Field Filtered Time:** 12:20/12:25 PST:
(Must filter within 15 minutes of collection)

SITE ID: MONMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: overcast, 45°

Water Quality Sampling

Sample ID: MONMS20201221

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	YES
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID: QA1720201221

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: clear

Color: light yellow

Odor: none

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): NA

Reference Point (description):

Water Quality Measurments

Temperature (°C) 9.3

Specific Conductivity (µs/cm) 190.0

Dissolved Oxygen (mg/L) 9.77

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, TF

Sample Date: 12/21/20 **Sample Time:** 13:35 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 13:45 PST:

(Must filter within 15 minutes of collection)

SITE ID: COUNO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rainy, 40°F

Water Quality Sampling

Sample ID: COUNO20201221

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: low

Color: light brown

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 1.68

Reference Point (description): 56

Water Quality Measurments

Temperature (°C) 10.1

Specific Conductivity (µs/cm) 99.8

Dissolved Oxygen (mg/L) 10.63

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: ND, TF

Sample Date: 12/21/20 **Sample Time:** 13:55 PDT

Base Flow or Storm Event? **Field Filtered Time:** 14:00 PST

(Must filter within 15 minutes of collection)

SITE ID: COUM1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rainy, 40°F

Water Quality Sampling

Sample ID: COUM120201221

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	No
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	somewhat clear
Color:	brownish
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.81

Reference Point (description): S G

Water Quality Measurments

Temperature (°C) 9.9

Specific Conductivity (µs/cm) 104.9

Dissolved Oxygen (mg/L) 10.89

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, TF

Sample Date: 12/21/20 **Sample Time:** 14:10 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 14:15 PST:

(Must filter within 15 minutes of collection)

SITE ID: TOSM0

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rainy, 40°F

Water Quality Sampling

Sample ID: TOSM020201221

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Slight low brown

Color:

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.87

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 9.7

Specific Conductivity (µs/cm) 116.2

Dissolved Oxygen (mg/L) 96.7

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, TH

Sample Date: 12/21/20 **Sample Time:** 14:40 PDT

Base Flow or Storm Event? **Field Filtered Time:** 14:45 PST

(Must filter within 15 minutes of collection)

SITE ID: TYLM0

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 40°, Rainy

Water Quality Sampling

Sample ID: TYLM020201221

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	No
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	lgy
Color:	brown
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 15.75 in

Reference Point (description): Marine Iron Pipe

Water Quality Measurments

Temperature (°C) 10.0

Specific Conductivity (µs/cm) 48.2

Dissolved Oxygen (mg/L) 10.79

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, TF

Sample Date: 12/21/20 **Sample Time:** 14:55 PDT

Base Flow or Storm Event? **Field Filtered Time:** 15:00 PST

(Must filter within 15 minutes of collection)

SITE ID: TYLM1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: rainy, 40°F

Water Quality Sampling

Sample ID: TYLM120201221

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	low
Color:	brown
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 5.1 ft

Reference Point (description): Top

Water Quality Measurments

Temperature (°C) 8.8

Specific Conductivity (µs/cm) 85.2

Dissolved Oxygen (mg/L) 10.71

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, TF

Sample Date: 12/21/20 **Sample Time:** 15:15 PDT

Base Flow or Storm Event? B **Field Filtered Time:** 15:27 PST

(Must filter within 15 minutes of collection)

SITE ID: MONMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rainy, 40°F

Water Quality Sampling

Sample ID: MONMN20201221

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	No
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: extremely low

Color: dark brown

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.62

Reference Point (description): 50

Water Quality Measurments

Temperature (°C) 8.9

Specific Conductivity (µs/cm) 93.3

Dissolved Oxygen (mg/L) 10.76

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, TF

Sample Date: 12/22/22 **Sample Time:** 15:45 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 15:50 PST:

(Must filter within 15 minutes of collection)

SITE ID: SEIM5

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rainy, 40°

Water Quality Sampling

Sample ID: SEIM520221221

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Extremely low

Color: brown

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 1.60

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 8.2

Specific Conductivity (µs/cm) 49.1

Dissolved Oxygen (mg/L) 10.66

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: MH + GK

Sample Date: 12/21/2020 **Sample Time:** 1405 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 1405 PST:

(Must filter within 15 minutes of collection)

SITE ID: EVAMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: SS + rainy

Water Quality Sampling

Sample ID: EVAMS - 20201221

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	bit turbid
Color:	light brown
Odor:	NA
Sheen:	NA
Floatables:	some

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

~~YSI Pro DSS 1~~

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 3.91

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 8.6

Specific Conductivity (µs/cm) 147.7

Dissolved Oxygen (mg/L) 11.07

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + MH

Sample Date: 12-21-20 **Sample Time:** 1330 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 1330 PST:

(Must filter within 15 minutes of collection)

SITE ID: TOSM1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 55° + rainy

Water Quality Sampling

Sample ID: TOSM1-20201221

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: V turbid

Color: brownish gray

Odor: NA

Sheen: NA

Floatables: yes some

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

~~YSI Pro DSS 1~~

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.99

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 9.5

Specific Conductivity (µs/cm) 92.9

Dissolved Oxygen (mg/L) 11.21

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: MH + GK

Sample Date: 12/21/20 **Sample Time:** 1920 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 1920 PST:

(Must filter within 15 minutes of collection)

SITE ID: EVALSS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 54 + rainy

Water Quality Sampling

Sample ID: EVALSS-20201221

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: bit turbid

Color: rust color

Odor: NA

Sheen: NA

Floatables: v. few some

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.48

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 8.7

Specific Conductivity (µs/cm) 134.0

Dissolved Oxygen (mg/L) 11.60

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + MH

Sample Date: 12/21/20 **Sample Time:** 1500 PDT

Base Flow or Storm Event? **Field Filtered Time:** 1500 PST

(Must filter within 15 minutes of collection)

SITE ID: SEIMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: SS + rainy

Water Quality Sampling

Sample ID: SEIMN-20201221

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: ~~Slo~~ V turbid

Color: V brown

Odor: NA

Sheen: NA

Floatables: Some

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 7.01

Reference Point (description): Measure down from top of bolt

Water Quality Measurments

Temperature (°C) 7.5

Specific Conductivity (µs/cm) 42.9

Dissolved Oxygen (mg/L) 11.78

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GkrM H

Sample Date: 12/21/20 **Sample Time:** 1610 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 1610 PST:

(Must filter within 15 minutes of collection)

SITE ID: MONM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: SO + rainy

Water Quality Sampling

Sample ID: MONM-20201221

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: V turbid

Color: brown

Odor: NA

Sheen: NA

Floatables: yes lots

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

~~YSI Pro DSS~~

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): NA

Reference Point (description): NA

Water Quality Measurments

Temperature (°C) 7.7

Specific Conductivity (µs/cm) 83.0

Dissolved Oxygen (mg/L) 11.76

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK+MH

Sample Date: 12/21/20 **Sample Time:** 1545 PDT

Base Flow or Storm Event? **Field Filtered Time:** 1545 PST

(Must filter within 15 minutes of collection)

SITE ID: COLM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 54 + rainy

Water Quality Sampling

Sample ID: COLM-20201221

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: V turbid

Color: brown

Odor: NA

Sheen: NA

Floatables: Yes

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

~~YSI Pro DSS 1~~

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): XX.30

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 7.0

Specific Conductivity (µs/cm) 30.6

Dissolved Oxygen (mg/L) 11.19

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Data Quality Assurance Worksheet

By J. Brown

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 1/21/21 Page 1 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 12/21/20 /All locations, QA97 (MONMS) Lab Ref No 2012-220

date 2/26/2021

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
TSS	OK / SM 2540D	NA	**NA**	2	**≤7**	≤1.0 mg/L 1.0 mg/L	NA	**NA**	85	**±20**	6	**≤ 25**	D=1.8	**≤ 25**	OK	NONE
Turbidity	OK / EPA 180.1	NA	**NA**	1	**≤2**	≤0.1 NTU 0.1 NTU	NA	**NA**	NA	**±10**	1	**≤ 25**	7	**≤ 25**	OK	NONE
Hardness	OK / SM 2340B	NA	**NA**	8	**≤180**	≤1.0 mg/L 1.0 mg/L	99, 110	**±25**	104	**±15**	4, MS 5	**≤ 20**	6	**≤ 20**	OK	NONE
DOC	OK / SM 5310B	≤15	**≤15**	9	**≤28**	≤1.0 mg/L 1.0 mg/L	99	**±25**	104	**±15**	3	**≤ 20**	1	**≤ 20**	OK	NONE
Total Phosphorus	OK / EPA 365.1	NA	**NA**	9	**≤28**	≤0.01 mg/L 0.01 mg/L	96	**±25**	98	**±20**	4	**≤ 20**	36	**≤ 20**	OK	FLAG MONMS J DUE TO FIELD DUPE EXCEEDANCE
Total Nitrogen (TKN + N+N)	OK/ SM 4500 N-B	NA	**NA**	7, 8	**≤28**	≤0.1 mg/L 0.1 mg/L	90-107	**±25**	100-104	**±20**	1-7, D=0.01-0.04	**≤ 20**	9, D=0.1	**≤ 20**	OK	NONE

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

Data Quality Assurance Worksheet

By J. Brown

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 1/21/21 Page 2 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 12/21/20 /All locations, QA97 (MONMS) Lab Ref No 2012-220

date 2/26/2021

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
Total Copper	OK/ EPA 200.8	NA	**NA**	2	**≤180**	≤1.0 µg/L 1.0 µg/L	93, 91	**±25**	NR	**±15**	D=0.04, MS 2	**≤ 20**	D=0.1	**≤ 20**	OK	NONE
Total Zinc	OK/ EPA 200.8	NA	**NA**	2	**≤180**	≤5.0 µg/L 5.0 µg/L	102, 103	**±25**	NR	**±15**	NC, MS <1	**≤ 20**	NC	**≤ 20**	OK	NONE
Dissolved Copper	OK/ EPA 200.8	≤15	**≤15**	2	**≤180**	≤1.0 µg/L 1.0 µg/L	83, 86	**±25**	NR	**±15**	D=0.04, MS 4	**≤ 20**	D=0.1	**≤ 20**	OK	NONE
Dissolved Zinc	OK/ EPA 200.8	≤15	**≤15**	2	**≤180**	≤5.0 µg/L 5.0 µg/L	92, 96	**±25**	NR	**±15**	NC, MS 4	**≤ 20**	NC	**≤ 20**	OK	NONE
Fecal Coliform	OK / SM 9222D	NA	**NA**	1	**≤1**	≤1.0 cfu/ 100mL 10 cfu/ 100mL	NA	**NA**	NA	**NA**	4, <1	**≤ 35**	34	**≤ 50**	OK	NONE

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

January 15, 2021

Jess Brown
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2101-026

Dear Jess:

Enclosed are the analytical results and associated quality control data for samples submitted on January 6, 2021.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

Blair Goodrow
Project Manager

Enclosures

Date of Report: January 15, 2021
Samples Submitted: January 6, 2021
Laboratory Reference: 2101-026
Project: 14-05806-000

Case Narrative

Samples were collected on January 5, 2021 and received by the laboratory on January 6, 2021. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: January 15, 2021
Samples Submitted: January 6, 2021
Laboratory Reference: 2101-026
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20210105**					
Laboratory ID:	01-026-01					
Total Suspended Solids	**1.8**	1.0	SM 2540D	1-6-21	1-7-21	
Client ID:	**COUMI-20210105**					
Laboratory ID:	01-026-02					
Total Suspended Solids	**57**	5.0	SM 2540D	1-6-21	1-7-21	
Client ID:	**COUMO-20210105**					
Laboratory ID:	01-026-03					
Total Suspended Solids	**7.4**	1.0	SM 2540D	1-6-21	1-7-21	
Client ID:	**EVAMS-20210105**					
Laboratory ID:	01-026-04					
Total Suspended Solids	**5.6**	2.0	SM 2540D	1-6-21	1-7-21	
Client ID:	**EVALSS-20210105**					
Laboratory ID:	01-026-05					
Total Suspended Solids	**48**	2.5	SM 2540D	1-6-21	1-7-21	
Client ID:	**MONMN-20210105**					
Laboratory ID:	01-026-06					
Total Suspended Solids	**14**	1.0	SM 2540D	1-6-21	1-7-21	
Client ID:	**MONMS-20210105**					
Laboratory ID:	01-026-07					
Total Suspended Solids	**5.6**	1.0	SM 2540D	1-6-21	1-7-21	
Client ID:	**MONM-20210105**					
Laboratory ID:	01-026-08					
Total Suspended Solids	**25**	2.0	SM 2540D	1-6-21	1-7-21	
Client ID:	**SEIMN-20210105**					
Laboratory ID:	01-026-09					
Total Suspended Solids	**50**	2.0	SM 2540D	1-6-21	1-7-21	

Date of Report: January 15, 2021
Samples Submitted: January 6, 2021
Laboratory Reference: 2101-026
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20210105**					
Laboratory ID:	01-026-10					
Total Suspended Solids	**26**	2.0	SM 2540D	1-6-21	1-7-21	
Client ID:	**TOSMI-20210105**					
Laboratory ID:	01-026-11					
Total Suspended Solids	**83**	2.0	SM 2540D	1-6-21	1-7-21	
Client ID:	**TOSMO-20210105**					
Laboratory ID:	01-026-12					
Total Suspended Solids	**110**	2.5	SM 2540D	1-6-21	1-7-21	
Client ID:	**TYLMI-20210105**					
Laboratory ID:	01-026-13					
Total Suspended Solids	**10**	1.0	SM 2540D	1-6-21	1-7-21	
Client ID:	**TYLMO-20210105**					
Laboratory ID:	01-026-14					
Total Suspended Solids	**42**	2.5	SM 2540D	1-6-21	1-7-21	
Client ID:	**QA98-20210105**					
Laboratory ID:	01-026-15					
Total Suspended Solids	**99**	2.5	SM 2540D	1-6-21	1-7-21	

Date of Report: January 15, 2021
Samples Submitted: January 6, 2021
Laboratory Reference: 2101-026
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0106W2					
Total Suspended Solids	**ND**	1.0	SM 2540D	1-6-21	1-7-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	01-026-14								
	ORIG	DUP							
Total Suspended Solids	**42.0**	**45.0**	NA	NA	NA	NA	7	21	
SPIKE BLANK									
Laboratory ID:	SB0106W2								
	SB		SB		SB				
Total Suspended Solids	**91.0**		100	NA	91	57-126	NA	NA	

Date of Report: January 15, 2021
Samples Submitted: January 6, 2021
Laboratory Reference: 2101-026
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20210105**					
Laboratory ID:	01-026-01					
Turbidity	**1.3**	0.10	EPA 180.1	1-6-21	1-6-21	
Client ID:	**COUMI-20210105**					
Laboratory ID:	01-026-02					
Turbidity	**20**	0.10	EPA 180.1	1-6-21	1-6-21	
Client ID:	**COUMO-20210105**					
Laboratory ID:	01-026-03					
Turbidity	**5.5**	0.10	EPA 180.1	1-6-21	1-6-21	
Client ID:	**EVAMS-20210105**					
Laboratory ID:	01-026-04					
Turbidity	**5.1**	0.10	EPA 180.1	1-6-21	1-6-21	
Client ID:	**EVALSS-20210105**					
Laboratory ID:	01-026-05					
Turbidity	**26**	0.10	EPA 180.1	1-6-21	1-6-21	
Client ID:	**MONMN-20210105**					
Laboratory ID:	01-026-06					
Turbidity	**7.9**	0.10	EPA 180.1	1-6-21	1-6-21	
Client ID:	**MONMS-20210105**					
Laboratory ID:	01-026-07					
Turbidity	**6.7**	0.10	EPA 180.1	1-6-21	1-6-21	
Client ID:	**MONM-20210105**					
Laboratory ID:	01-026-08					
Turbidity	**14**	0.10	EPA 180.1	1-6-21	1-6-21	
Client ID:	**SEIMN-20210105**					
Laboratory ID:	01-026-09					
Turbidity	**26**	0.10	EPA 180.1	1-6-21	1-6-21	

Date of Report: January 15, 2021
Samples Submitted: January 6, 2021
Laboratory Reference: 2101-026
Project: 14-05806-000

TURBIDITY
EPA 180.1

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20210105**					
Laboratory ID:	01-026-10					
Turbidity	**14**	0.10	EPA 180.1	1-6-21	1-6-21	
Client ID:	**TOSMI-20210105**					
Laboratory ID:	01-026-11					
Turbidity	**19**	0.10	EPA 180.1	1-6-21	1-6-21	
Client ID:	**TOSMO-20210105**					
Laboratory ID:	01-026-12					
Turbidity	**41**	0.20	EPA 180.1	1-6-21	1-6-21	
Client ID:	**TYLMI-20210105**					
Laboratory ID:	01-026-13					
Turbidity	**9.1**	0.10	EPA 180.1	1-6-21	1-6-21	
Client ID:	**TYLMO-20210105**					
Laboratory ID:	01-026-14					
Turbidity	**18**	0.10	EPA 180.1	1-6-21	1-6-21	
Client ID:	**QA98-20210105**					
Laboratory ID:	01-026-15					
Turbidity	**35**	0.10	EPA 180.1	1-6-21	1-6-21	

Date of Report: January 15, 2021
Samples Submitted: January 6, 2021
Laboratory Reference: 2101-026
Project: 14-05806-000

TURBIDITY
EPA 180.1
QUALITY CONTROL

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0106W1					
Turbidity	**ND**	0.10	EPA 180.1	1-6-21	1-6-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	01-026-02								
	ORIG	DUP							
Turbidity	**19.8**	**17.9**	NA	NA	NA	NA	10	14	

Date of Report: January 15, 2021
Samples Submitted: January 6, 2021
Laboratory Reference: 2101-026
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20210105**					
Laboratory ID:	01-026-01					
Hardness	**7.9**	1.0	EPA 200.7/SM 2340B	1-8-21	1-8-21	
Client ID:	**COUMI-20210105**					
Laboratory ID:	01-026-02					
Hardness	**50**	1.0	EPA 200.7/SM 2340B	1-8-21	1-8-21	
Client ID:	**COUMO-20210105**					
Laboratory ID:	01-026-03					
Hardness	**57**	1.0	EPA 200.7/SM 2340B	1-8-21	1-8-21	
Client ID:	**EVAMS-20210105**					
Laboratory ID:	01-026-04					
Hardness	**57**	1.0	EPA 200.7/SM 2340B	1-8-21	1-8-21	
Client ID:	**EVALSS-20210105**					
Laboratory ID:	01-026-05					
Hardness	**57**	1.0	EPA 200.7/SM 2340B	1-8-21	1-8-21	
Client ID:	**MONMN-20210105**					
Laboratory ID:	01-026-06					
Hardness	**41**	1.0	EPA 200.7/SM 2340B	1-8-21	1-8-21	
Client ID:	**MONMS-20210105**					
Laboratory ID:	01-026-07					
Hardness	**52**	1.0	EPA 200.7/SM 2340B	1-8-21	1-8-21	

Date of Report: January 15, 2021
Samples Submitted: January 6, 2021
Laboratory Reference: 2101-026
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20210105**					
Laboratory ID:	01-026-08					
Hardness	**44**	1.0	EPA 200.7/SM 2340B	1-8-21	1-8-21	
Client ID:	**SEIMN-20210105**					
Laboratory ID:	01-026-09					
Hardness	**18**	1.0	EPA 200.7/SM 2340B	1-8-21	1-8-21	
Client ID:	**SEIMS-20210105**					
Laboratory ID:	01-026-10					
Hardness	**29**	1.0	EPA 200.7/SM 2340B	1-8-21	1-8-21	
Client ID:	**TOSMI-20210105**					
Laboratory ID:	01-026-11					
Hardness	**56**	1.0	EPA 200.7/SM 2340B	1-8-21	1-8-21	
Client ID:	**TOSMO-20210105**					
Laboratory ID:	01-026-12					
Hardness	**54**	1.0	EPA 200.7/SM 2340B	1-8-21	1-8-21	
Client ID:	**TYLMI-20210105**					
Laboratory ID:	01-026-13					
Hardness	**39**	1.0	EPA 200.7/SM 2340B	1-8-21	1-8-21	
Client ID:	**TYLMO-20210105**					
Laboratory ID:	01-026-14					
Hardness	**26**	1.0	EPA 200.7/SM 2340B	1-8-21	1-8-21	
Client ID:	**QA98-20210105**					
Laboratory ID:	01-026-15					
Hardness	**54**	1.0	EPA 200.7/SM 2340B	1-8-21	1-8-21	

Date of Report: January 15, 2021
Samples Submitted: January 6, 2021
Laboratory Reference: 2101-026
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B
QUALITY CONTROL

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0108WH3					
Hardness	**ND**	1.0	EPA 200.7/SM 2340B	1-8-21	1-8-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	01-026-01										
	ORIG	DUP									
Hardness	**7.88**	**7.73**	NA		NA	NA		NA	2	20	
MATRIX SPIKES											
Laboratory ID:	01-026-01										
	MS	MSD	MS	MSD		MS	MSD				
Hardness	**148**	**146**	132	132	7.88	106	105	75-125	1	20	
SPIKE BLANK											
Laboratory ID:	SB0108WH3										
	SB		SB			SB					
Hardness	**139**		132		NA	105		85-115	NA	NA	

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Project: 14-05806-000

DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20210105**					
Laboratory ID:	01-026-01					
Dissolved Organic Carbon	**11**	1.0	SM 5310B	1-6-21	1-6-21	
Client ID:	**COUMI-20210105**					
Laboratory ID:	01-026-02					
Dissolved Organic Carbon	**4.4**	1.0	SM 5310B	1-6-21	1-6-21	
Client ID:	**COUMO-20210105**					
Laboratory ID:	01-026-03					
Dissolved Organic Carbon	**5.1**	1.0	SM 5310B	1-6-21	1-6-21	
Client ID:	**EVAMS-20210105**					
Laboratory ID:	01-026-04					
Dissolved Organic Carbon	**8.3**	1.0	SM 5310B	1-6-21	1-6-21	
Client ID:	**EVALSS-20210105**					
Laboratory ID:	01-026-05					
Dissolved Organic Carbon	**8.9**	1.0	SM 5310B	1-6-21	1-6-21	
Client ID:	**MONMN-20210105**					
Laboratory ID:	01-026-06					
Dissolved Organic Carbon	**5.0**	1.0	SM 5310B	1-6-21	1-6-21	
Client ID:	**MONMS-20210105**					
Laboratory ID:	01-026-07					
Dissolved Organic Carbon	**6.1**	1.0	SM 5310B	1-6-21	1-6-21	
Client ID:	**MONM-20210105**					
Laboratory ID:	01-026-08					
Dissolved Organic Carbon	**5.2**	1.0	SM 5310B	1-6-21	1-6-21	
Client ID:	**SEIMN-20210105**					
Laboratory ID:	01-026-09					
Dissolved Organic Carbon	**8.8**	1.0	SM 5310B	1-6-21	1-6-21	

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DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20210105**					
Laboratory ID:	01-026-10					
Dissolved Organic Carbon	**8.5**	1.0	SM 5310B	1-6-21	1-6-21	
Client ID:	**TOSMI-20210105**					
Laboratory ID:	01-026-11					
Dissolved Organic Carbon	**5.1**	1.0	SM 5310B	1-6-21	1-6-21	
Client ID:	**TOSMO-20210105**					
Laboratory ID:	01-026-12					
Dissolved Organic Carbon	**5.7**	1.0	SM 5310B	1-6-21	1-6-21	
Client ID:	**TYLMI-20210105**					
Laboratory ID:	01-026-13					
Dissolved Organic Carbon	**7.0**	1.0	SM 5310B	1-6-21	1-6-21	
Client ID:	**TYLMO-20210105**					
Laboratory ID:	01-026-14					
Dissolved Organic Carbon	**4.0**	1.0	SM 5310B	1-6-21	1-6-21	
Client ID:	**QA98-20210105**					
Laboratory ID:	01-026-15					
Dissolved Organic Carbon	**5.7**	1.0	SM 5310B	1-6-21	1-6-21	

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DISSOLVED ORGANIC CARBON
SM 5310B
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0106F1					
Dissolved Organic Carbon	**ND**	1.0	SM 5310B	1-6-21	1-6-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	12-269-01								
	ORIG	DUP							
Dissolved Organic Carbon	**304**	**305**	NA	NA	NA	NA	0	15	
MATRIX SPIKE									
Laboratory ID:	12-269-01								
	MS		MS		MS				
Dissolved Organic Carbon	**404**		100	304	100	72-132	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB0106F1								
	SB		SB		SB				
Dissolved Organic Carbon	**10.3**		10.0	NA	103	82-123	NA	NA	

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TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20210105**					
Laboratory ID:	01-026-01					
Total Phosphorus	**0.015**	0.010	EPA 365.1	1-11-21	1-12-21	
Client ID:	**COUMI-20210105**					
Laboratory ID:	01-026-02					
Total Phosphorus	**0.10**	0.010	EPA 365.1	1-11-21	1-12-21	
Client ID:	**COUMO-20210105**					
Laboratory ID:	01-026-03					
Total Phosphorus	**0.050**	0.010	EPA 365.1	1-11-21	1-12-21	
Client ID:	**EVAMS-20210105**					
Laboratory ID:	01-026-04					
Total Phosphorus	**0.031**	0.010	EPA 365.1	1-11-21	1-12-21	
Client ID:	**EVALSS-20210105**					
Laboratory ID:	01-026-05					
Total Phosphorus	**0.079**	0.010	EPA 365.1	1-11-21	1-12-21	
Client ID:	**MONMN-20210105**					
Laboratory ID:	01-026-06					
Total Phosphorus	**0.047**	0.010	EPA 365.1	1-11-21	1-12-21	
Client ID:	**MONMS-20210105**					
Laboratory ID:	01-026-07					
Total Phosphorus	**0.048**	0.010	EPA 365.1	1-11-21	1-12-21	
Client ID:	**MONM-20210105**					
Laboratory ID:	01-026-08					
Total Phosphorus	**0.061**	0.010	EPA 365.1	1-11-21	1-12-21	
Client ID:	**SEIMN-20210105**					
Laboratory ID:	01-026-09					
Total Phosphorus	**0.076**	0.010	EPA 365.1	1-11-21	1-12-21	

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Project: 14-05806-000

TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20210105**					
Laboratory ID:	01-026-10					
Total Phosphorus	**0.057**	0.010	EPA 365.1	1-11-21	1-12-21	
Client ID:	**TOSMI-20210105**					
Laboratory ID:	01-026-11					
Total Phosphorus	**0.088**	0.010	EPA 365.1	1-11-21	1-12-21	
Client ID:	**TOSMO-20210105**					
Laboratory ID:	01-026-12					
Total Phosphorus	**0.11**	0.010	EPA 365.1	1-11-21	1-12-21	
Client ID:	**TYLMI-20210105**					
Laboratory ID:	01-026-13					
Total Phosphorus	**0.050**	0.010	EPA 365.1	1-11-21	1-12-21	
Client ID:	**TYLMO-20210105**					
Laboratory ID:	01-026-14					
Total Phosphorus	**0.082**	0.010	EPA 365.1	1-11-21	1-12-21	
Client ID:	**QA98-20210105**					
Laboratory ID:	01-026-15					
Total Phosphorus	**0.12**	0.010	EPA 365.1	1-11-21	1-12-21	

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TOTAL PHOSPHORUS
EPA 365.1
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0111W1					
Total Phosphorus	**ND**	0.010	EPA 365.1	1-11-21	1-12-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	01-026-01								
	ORIG	DUP							
Total Phosphorus	**0.0149**	**0.0107**	NA	NA	NA	NA	33	14	C
SPIKE BLANK									
Laboratory ID:	SB0111W1								
	SB		SB		SB				
Total Phosphorus	**0.239**		0.250	NA	96	78-110	NA	NA	
MATRIX SPIKE									
Laboratory ID:	01-026-01								
	MS		MS		MS				
Total Phosphorus	**0.249**		0.250	0.0149	94	80-110	NA	NA	

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Project: 14-05806-000

TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20210105**					
Laboratory ID:	01-026-01					
Copper	**ND**	1.0	EPA 200.8	1-8-21	1-11-21	
Zinc	**ND**	5.0	EPA 200.8	1-8-21	1-11-21	
Client ID:	**COUMI-20210105**					
Laboratory ID:	01-026-02					
Copper	**3.8**	1.0	EPA 200.8	1-8-21	1-11-21	
Zinc	**34**	5.0	EPA 200.8	1-8-21	1-11-21	
Client ID:	**COUMO-20210105**					
Laboratory ID:	01-026-03					
Copper	**2.0**	1.0	EPA 200.8	1-8-21	1-11-21	
Zinc	**32**	5.0	EPA 200.8	1-8-21	1-11-21	
Client ID:	**EVAMS-20210105**					
Laboratory ID:	01-026-04					
Copper	**1.1**	1.0	EPA 200.8	1-8-21	1-11-21	
Zinc	**ND**	5.0	EPA 200.8	1-8-21	1-11-21	
Client ID:	**EVALSS-20210105**					
Laboratory ID:	01-026-05					
Copper	**2.0**	1.0	EPA 200.8	1-8-21	1-11-21	
Zinc	**6.9**	5.0	EPA 200.8	1-8-21	1-11-21	
Client ID:	**MONMN-20210105**					
Laboratory ID:	01-026-06					
Copper	**1.7**	1.0	EPA 200.8	1-8-21	1-11-21	
Zinc	**9.6**	5.0	EPA 200.8	1-8-21	1-11-21	
Client ID:	**MONMS-20210105**					
Laboratory ID:	01-026-07					
Copper	**2.0**	1.0	EPA 200.8	1-8-21	1-11-21	
Zinc	**ND**	5.0	EPA 200.8	1-8-21	1-11-21	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20210105**					
Laboratory ID:	01-026-08					
Copper	**2.2**	1.0	EPA 200.8	1-8-21	1-11-21	
Zinc	**20**	5.0	EPA 200.8	1-8-21	1-11-21	
Client ID:	**SEIMN-20210105**					
Laboratory ID:	01-026-09					
Copper	**2.4**	1.0	EPA 200.8	1-8-21	1-11-21	
Zinc	**5.5**	5.0	EPA 200.8	1-8-21	1-11-21	
Client ID:	**SEIMS-20210105**					
Laboratory ID:	01-026-10					
Copper	**1.0**	1.0	EPA 200.8	1-8-21	1-11-21	
Zinc	**ND**	5.0	EPA 200.8	1-8-21	1-11-21	
Client ID:	**TOSMI-20210105**					
Laboratory ID:	01-026-11					
Copper	**7.5**	1.0	EPA 200.8	1-8-21	1-11-21	
Zinc	**92**	5.0	EPA 200.8	1-8-21	1-11-21	
Client ID:	**TOSMO-20210105**					
Laboratory ID:	01-026-12					
Copper	**4.4**	1.0	EPA 200.8	1-8-21	1-11-21	
Zinc	**63**	5.0	EPA 200.8	1-8-21	1-11-21	
Client ID:	**TYLMI-20210105**					
Laboratory ID:	01-026-13					
Copper	**2.5**	1.0	EPA 200.8	1-8-21	1-11-21	
Zinc	**20**	5.0	EPA 200.8	1-8-21	1-11-21	
Client ID:	**TYLMO-20210105**					
Laboratory ID:	01-026-14					
Copper	**3.7**	1.0	EPA 200.8	1-8-21	1-11-21	
Zinc	**29**	5.0	EPA 200.8	1-8-21	1-11-21	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA98-20210105**					
Laboratory ID:	01-026-15					
Copper	**4.4**	1.0	EPA 200.8	1-8-21	1-11-21	
Zinc	**61**	5.0	EPA 200.8	1-8-21	1-11-21	

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Samples Submitted: January 6, 2021
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Project: 14-05806-000

TOTAL METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0108WH2					
Copper	**ND**	1.0	EPA 200.8	1-8-21	1-11-21	
Zinc	**ND**	5.0	EPA 200.8	1-8-21	1-11-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	01-026-04										
	ORIG	DUP									
Copper	**1.08**	**1.10**	NA	NA		NA		NA	2	20	
Zinc	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	01-026-04										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**89.4**	**88.4**	100	100	1.08	**88**	**87**	75-125	1	20	
Zinc	**113**	**108**	100	100	ND	**113**	**108**	75-125	5	20	

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Laboratory Reference: 2101-026
Project: 14-05806-000

DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20210105**					
Laboratory ID:	01-026-01					
Copper	**ND**	1.0	EPA 200.8		1-8-21	
Zinc	**ND**	5.0	EPA 200.8		1-8-21	
Client ID:	**COUMI-20210105**					
Laboratory ID:	01-026-02					
Copper	**1.5**	1.0	EPA 200.8		1-8-21	
Zinc	**40**	5.0	EPA 200.8		1-8-21	
Client ID:	**COUMO-20210105**					
Laboratory ID:	01-026-03					
Copper	**1.7**	1.0	EPA 200.8		1-8-21	
Zinc	**26**	5.0	EPA 200.8		1-8-21	
Client ID:	**EVAMS-20210105**					
Laboratory ID:	01-026-04					
Copper	**ND**	1.0	EPA 200.8		1-8-21	
Zinc	**ND**	5.0	EPA 200.8		1-8-21	
Client ID:	**EVALSS-20210105**					
Laboratory ID:	01-026-05					
Copper	**ND**	1.0	EPA 200.8		1-8-21	
Zinc	**ND**	5.0	EPA 200.8		1-8-21	
Client ID:	**MONMN-20210105**					
Laboratory ID:	01-026-06					
Copper	**1.3**	1.0	EPA 200.8		1-8-21	
Zinc	**8.8**	5.0	EPA 200.8		1-8-21	
Client ID:	**MONMS-20210105**					
Laboratory ID:	01-026-07					
Copper	**1.6**	1.0	EPA 200.8		1-8-21	
Zinc	**ND**	5.0	EPA 200.8		1-8-21	

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Project: 14-05806-000

DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20210105**					
Laboratory ID:	01-026-08					
Copper	**1.4**	1.0	EPA 200.8		1-8-21	
Zinc	**11**	5.0	EPA 200.8		1-8-21	
Client ID:	**SEIMN-20210105**					
Laboratory ID:	01-026-09					
Copper	**ND**	1.0	EPA 200.8		1-8-21	
Zinc	**ND**	5.0	EPA 200.8		1-8-21	
Client ID:	**SEIMS-20210105**					
Laboratory ID:	01-026-10					
Copper	**ND**	1.0	EPA 200.8		1-8-21	
Zinc	**ND**	5.0	EPA 200.8		1-8-21	
Client ID:	**TOSMI-20210105**					
Laboratory ID:	01-026-11					
Copper	**3.1**	1.0	EPA 200.8		1-8-21	
Zinc	**40**	5.0	EPA 200.8		1-8-21	
Client ID:	**TOSMO-20210105**					
Laboratory ID:	01-026-12					
Copper	**2.2**	1.0	EPA 200.8		1-8-21	
Zinc	**29**	5.0	EPA 200.8		1-8-21	
Client ID:	**TYLMI-20210105**					
Laboratory ID:	01-026-13					
Copper	**2.5**	1.0	EPA 200.8		1-8-21	
Zinc	**18**	5.0	EPA 200.8		1-8-21	
Client ID:	**TYLMO-20210105**					
Laboratory ID:	01-026-14					
Copper	**1.8**	1.0	EPA 200.8		1-8-21	
Zinc	**11**	5.0	EPA 200.8		1-8-21	

Date of Report: January 15, 2021
Samples Submitted: January 6, 2021
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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA98-20210105**					
Laboratory ID:	01-026-15					
Copper	**2.2**	1.0	EPA 200.8		1-8-21	
Zinc	**30**	5.0	EPA 200.8		1-8-21	

Date of Report: January 15, 2021
Samples Submitted: January 6, 2021
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DISSOLVED METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0108D1					
Copper	**ND**	1.0	EPA 200.8		1-8-21	
Zinc	**ND**	5.0	EPA 200.8		1-8-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	01-026-15										
	ORIG	DUP									
Copper	**2.18**	**2.14**	NA	NA		NA		NA	2	20	
Zinc	**30.2**	**29.6**	NA	NA		NA		NA	2	20	
MATRIX SPIKES											
Laboratory ID:	01-026-15										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**76.2**	**73.8**	80.0	80.0	2.18	**93**	**90**	75-125	3	20	
Zinc	**109**	**107**	80.0	80.0	30.2	**99**	**96**	75-125	2	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Jan 15 2021
On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister

Dear David Baumeister:

Enclosed please find the analytical data for your REDMOND PAIRED WATERSHED STUDY project.

The following is a cross correlation of client and laboratory identifications for your convenience.

CLIENT ID	MATRIX	AMTEST ID	TEST
COLM-20210105	Water	21-A000122	Micro, NUT
COUMI-20210105	Water	21-A000123	Micro, NUT
COUMO-20210105	Water	21-A000124	Micro, NUT
EVAMS-20210105	Water	21-A000125	Micro, NUT
EVALSS-20210105	Water	21-A000126	Micro, NUT
MONMN-20210105	Water	21-A000127	Micro, NUT
MONMS-20210105	Water	21-A000128	Micro, NUT
MONM-20210105	Water	21-A000129	Micro, NUT
SEIMN-20210105	Water	21-A000130	Micro, NUT
SEIMS-20210105	Water	21-A000131	Micro, NUT
TOSMI-20210105	Water	21-A000132	Micro, NUT
TOSMO-20210105	Water	21-A000133	Micro, NUT
TYLMI-20210105	Water	21-A000134	Micro, NUT
TYLMO-20210105	Water	21-A000135	Micro, NUT
QA97-20210105	Water	21-A000136	Micro, NUT

Your samples were received on Wednesday, January 6, 2021. At the time of receipt, the samples were logged in and properly maintained prior to the subsequent analysis.

The analytical procedures used at AmTest are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

Following the analytical data you will find the Quality Control (QC) results.

Please note that the detection limits that are listed in the body of the report refer to the Practical Quantitation Limits (PQL's), as opposed to the Method Detection Limits (MDL's).

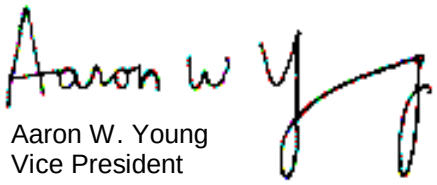
Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Jan 15 2021
On-Site Environmental
continued . . .

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,



Aaron W. Young
Vice President

Project #: 14-05806-000
PO Number: 01-026

BACT = Bacteriological	MET = Metals	NUT=Nutrients	MIN=Minerals
CONV = Conventionals	ORG = Organics	DEM=Demand	

Am Test Inc.
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www.amtestlab.com

Professional Analytical Services

ANALYSIS REPORT

On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister
Project Name: REDMOND PAIRED WATERSHED STUDY
Project #: 14-05806-000
PO Number: 01-026
All results reported on an as received basis.

Date Received: 01/06/21
Date Reported: 1/15/21

AMTEST Identification Number **21-A000122**
Client Identification **COLM-20210105**
Sampling Date **01/05/21, 22:10**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	12.	CFU/100 ml		1	SM 9222D	SB	01/06/21
Total Nitrogen (NOX&TKN)	0.82	mg/l		0.1			
Total Nitrogen (TKN)	0.713	mg/l		0.2	SM4500N	KS	01/11/21
Total Nitrate + Nitrite	0.11	mg/l		0.02	SM4500NO3	KS	01/13/21

AMTEST Identification Number **21-A000123**
Client Identification **COUMI-20210105**
Sampling Date **01/05/21, 20:10**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	620	CFU/100 ml		10	SM 9222D	SB	01/06/21
Total Nitrogen (NOX&TKN)	1.51	mg/l		0.1			
Total Nitrogen (TKN)	0.998	mg/l		0.2	SM4500N	KS	01/11/21
Total Nitrate + Nitrite	0.51	mg/l		0.02	SM4500NO3	KS	01/13/21

AMTEST Identification Number **21-A000124**
Client Identification **COUMO-20210105**
Sampling Date **01/05/21, 20:05**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	120	CFU/100 ml		10	SM 9222D	SB	01/06/21
Total Nitrogen (NOX&TKN)	1.26	mg/l		0.1			
Total Nitrogen (TKN)	0.564	mg/l		0.2	SM4500N	KS	01/11/21
Total Nitrate + Nitrite	0.70	mg/l		0.02	SM4500NO3	KS	01/13/21

AMTEST Identification Number **21-A000125**
Client Identification **EVAMS-20210105**
Sampling Date **01/05/21, 20:40**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	85.	CFU/100 ml		1	SM 9222D	SB	01/06/21
Total Nitrogen (NOX&TKN)	2.25	mg/l		0.1			
Total Nitrogen (TKN)	0.749	mg/l		0.2	SM4500N	KS	01/11/21
Total Nitrate + Nitrite	1.5	mg/l		0.02	SM4500NO3	KS	01/13/21

AMTEST Identification Number **21-A000126**
Client Identification **EVALSS-20210105**
Sampling Date **01/05/21, 20:50**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	90.	CFU/100 ml		10	SM 9222D	SB	01/06/21
Total Nitrogen (NOX&TKN)	2.40	mg/l		0.1			
Total Nitrogen (TKN)	1.10	mg/l		0.2	SM4500N	KS	01/11/21
Total Nitrate + Nitrite	1.3	mg/l		0.02	SM4500NO3	KS	01/13/21

AMTEST Identification Number **21-A000127**
Client Identification **MONMN-20210105**
Sampling Date **01/05/21, 21:40**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	17.	CFU/100 ml		1	SM 9222D	SB	01/06/21
Total Nitrogen (NOX&TKN)	1.33	mg/l		0.1			
Total Nitrogen (TKN)	0.577	mg/l		0.2	SM4500N	KS	01/11/21
Total Nitrate + Nitrite	0.75	mg/l		0.02	SM4500NO3	KS	01/13/21

AMTEST Identification Number **21-A000128**
Client Identification **MONMS-20210105**
Sampling Date **01/05/21, 22:00**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	53.	CFU/100 ml		1	SM 9222D	SB	01/06/21
Total Nitrogen (NOX&TKN)	1.30	mg/l		0.1			
Total Nitrogen (TKN)	0.617	mg/l		0.2	SM4500N	KS	01/11/21
Total Nitrate + Nitrite	0.68	mg/l		0.02	SM4500NO3	KS	01/13/21

AMTEST Identification Number **21-A000129**
Client Identification **MONM-20210105**
Sampling Date **01/05/21, 22:30**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	47.	CFU/100 ml		1	SM 9222D	SB	01/06/21
Total Nitrogen (NOX&TKN)	1.34	mg/l		0.1			
Total Nitrogen (TKN)	0.714	mg/l		0.2	SM4500N	KS	01/11/21
Total Nitrate + Nitrite	0.63	mg/l		0.02	SM4500NO3	KS	01/13/21

AMTEST Identification Number **21-A000130**
Client Identification **SEIMN-20210105**
Sampling Date **01/05/21, 21:40**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	24.	CFU/100 ml		1	SM 9222D	SB	01/06/21
Total Nitrogen (NOX&TKN)	1.45	mg/l		0.1			
Total Nitrogen (TKN)	0.756	mg/l		0.2	SM4500N	KS	01/11/21
Total Nitrate + Nitrite	0.69	mg/l		0.02	SM4500NO3	KS	01/13/21

AMTEST Identification Number **21-A000131**
Client Identification **SEIMS-20210105**
Sampling Date **01/05/21, 22:20**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	40.	CFU/100 ml		1	SM 9222D	SB	01/06/21
Total Nitrogen (NOX&TKN)	1.33	mg/l		0.1			
Total Nitrogen (TKN)	0.990	mg/l		0.2	SM4500N	KS	01/11/21
Total Nitrate + Nitrite	0.34	mg/l		0.02	SM4500NO3	KS	01/13/21

AMTEST Identification Number **21-A000132**
Client Identification **TOSMI-20210105**
Sampling Date **01/05/21, 20:10**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	20.	CFU/100 ml		1	SM 9222D	SB	01/06/21
Total Nitrogen (NOX&TKN)	1.42	mg/l		0.1			
Total Nitrogen (TKN)	0.931	mg/l		0.2	SM4500N	KS	01/11/21
Total Nitrate + Nitrite	0.49	mg/l		0.02	SM4500NO3	KS	01/13/21

AMTEST Identification Number **21-A000133**
Client Identification **TOSMO-20210105**
Sampling Date **01/05/21, 20:25**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	24.	CFU/100 ml		1	SM 9222D	SB	01/06/21
Total Nitrogen (NOX&TKN)	1.20	mg/l		0.1			
Total Nitrogen (TKN)	0.744	mg/l		0.2	SM4500N	KS	01/11/21
Total Nitrate + Nitrite	0.46	mg/l		0.02	SM4500NO3	KS	01/13/21

AMTEST Identification Number **21-A000134**
Client Identification **TYLMI-20210105**
Sampling Date **01/05/21, 21:15**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	120	CFU/100 ml		1	SM 9222D	SB	01/06/21
Total Nitrogen (NOX&TKN)	1.37	mg/l		0.1			
Total Nitrogen (TKN)	0.784	mg/l		0.2	SM4500N	KS	01/11/21
Total Nitrate + Nitrite	0.59	mg/l		0.02	SM4500NO3	KS	01/13/21

AMTEST Identification Number **21-A000135**
Client Identification **TYLMO-20210105**
Sampling Date **01/05/21, 20:55**

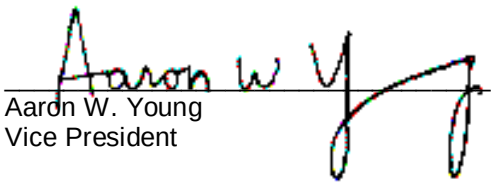
Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	250	CFU/100 ml		10	SM 9222D	SB	01/06/21
Total Nitrogen (NOX&TKN)	1.13	mg/l		0.1			
Total Nitrogen (TKN)	0.768	mg/l		0.2	SM4500N	KS	01/11/21
Total Nitrate + Nitrite	0.36	mg/l		0.02	SM4500NO3	KS	01/13/21

AMTEST Identification Number **21-A000136**
Client Identification **QA97-20210105**
Sampling Date **01/05/21, 20:30**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	160	CFU/100 ml		10	SM 9222D	SB	01/06/21
Total Nitrogen (NOX&TKN)	1.19	mg/l		0.1			
Total Nitrogen (TKN)	0.734	mg/l		0.2	SM4500N	KS	01/11/21
Total Nitrate + Nitrite	0.46	mg/l		0.02	SM4500NO3	KS	01/13/21



Aaron W. Young
Vice President

Am Test Inc.
13600 NE 126th PL
Suite C
Kirkland, WA, 98034
(425) 885-1664
www.amtestlab.com

Professional Analytical Services

QC Summary for sample numbers: 21-A000122 to 21-A000136

DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	DUP VALUE	RPD
21-A000133	Fecal Coliform	CFU/100 ml	24.	20.	18.
21-A000122	Fecal Coliform	CFU/100 ml	12.	8.	40.
21-A000172	Fecal Coliform	CFU/100 ml	< 2	< 2	
21-A000163	Fecal Coliform	CFU/100 ml	< 2	< 2	
21-A000170	Fecal Coliform	CFU/100 ml	< 2	< 2	
21-A000129	Total Nitrogen (TKN)	mg/l	0.714	0.735	2.9
21-A000203	Total Nitrogen (TKN)	mg/l	18.2	17.9	1.7
21-A000226	Total Nitrogen (TKN)	mg/l	0.416	0.525	23.
21-A000271	Total Nitrogen (TKN)	mg/l	7.64	7.98	4.4
21-A000274	Total Nitrogen (TKN)	mg/l	8.01	7.70	3.9
21-A000131	Total Nitrate + Nitrite	mg/l	0.34	0.35	2.9
21-A000193	Total Nitrate + Nitrite	mg/l	0.36	0.36	0.00
21-A000239	Total Nitrate + Nitrite	mg/l	13.	13.	0.00
21-A000262	Total Nitrate + Nitrite	mg/l	< 0.02	< 0.02	
21-A000335	Total Nitrate + Nitrite	mg/l	1.2	1.2	0.00
21-A000426	Total Nitrate + Nitrite	mg/l	< 0.02	< 0.02	
21-A000437	Total Nitrate + Nitrite	mg/l	0.43	0.43	0.00

MATRIX SPIKES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	SMPL+ SPK	SPK AMT	RECOVERY
21-A000129	Total Nitrogen (TKN)	mg/l	0.714	2.52	2.00	90.30 %
21-A000203	Total Nitrogen (TKN)	mg/l	18.2	59.6	40.0	103.50 %
21-A000226	Total Nitrogen (TKN)	mg/l	0.416	2.41	2.00	99.70 %
21-A000271	Total Nitrogen (TKN)	mg/l	7.64	18.3	10.0	106.60 %
21-A000274	Total Nitrogen (TKN)	mg/l	8.01	18.6	10.0	105.90 %
21-A000131	Total Nitrate + Nitrite	mg/l	0.34	1.4	1.0	106.00 %
21-A000193	Total Nitrate + Nitrite	mg/l	0.36	1.4	1.0	104.00 %
21-A000239	Total Nitrate + Nitrite	mg/l	13.	31.	20.	90.00 %
21-A000262	Total Nitrate + Nitrite	mg/l	< 0.02	0.93	1.0	93.00 %
21-A000335	Total Nitrate + Nitrite	mg/l	1.2	2.2	1.0	100.00 %
21-A000426	Total Nitrate + Nitrite	mg/l	< 0.02	0.82	1.0	82.00 %
21-A000437	Total Nitrate + Nitrite	mg/l	0.43	1.5	1.0	107.00 %

QC Summary for sample numbers: 21-A000122 to 21-A000136...

STANDARD REFERENCE MATERIALS

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
Total Nitrogen (TKN)	mg/l	1.00	0.992	99.2 %
Total Nitrogen (TKN)	mg/l	1.00	0.998	99.8 %
Total Nitrogen (TKN)	mg/l	1.00	1.00	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %

BLANKS

ANALYTE	UNITS	RESULT
Fecal Coliform	CFU/100 ml	< 1
Fecal Coliform	CFU/100 ml	< 1
Fecal Coliform	CFU/100 ml	< 1
Fecal Coliform	CFU/100 ml	< 1
Fecal Coliform	CFU/100 ml	< 1
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Laboratory Reference #: 01-026

Laboratory: AmTest Laboratories

Attention: Aaron Young

13600 NE 126th Pl Kirkland, WA 98034

Phone Number: (425) 885-1664

Turnaround Request

1 Day 2 Day 3 Day

(Standard)

Other: _____

Project Manager: Blair Goodrow

email: bgoodrow@onsite-env.com

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analyses
1	COLM-20210105 22	1/5/21	22:10	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
2	COUMI-20210105 23	1/5/21	20:10	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
3	COUMO-20210105 24	1/5/21	20:05	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
4	EVAMS-20210105 25	1/5/21	20:40	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
5	EVALSS-20210105 26	1/5/21	20:50	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
6	MONMN-20210105 27	1/5/21	21:40	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
7	MONMS-20210105 28	1/5/21	22:00	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
8	MONM-20210105 29	1/5/21	22:30	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
9	SEIMN-20210105 30	1/5/21	21:40	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
10	SEIMS-20210105 31	1/5/21	22:20	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N

	Signature	Company	Date	Time
Relinquished by:		OnSite Env	1/6/21	1135
Received by:		AmTest	1/6/21	1135
Relinquished by:				
Received by:				
Relinquished by:				
Received by:				

Comments/Special Instructions

EDDs - CSV

Reporting Limits:

Fecal Coliform - 1.0 cfu/100ml

Total Nitrogen - .10 mg/L

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Laboratory Reference #: 01-026

Laboratory: AmTest Laboratories

Attention: Aaron Young

13600 NE 126th Pl Kirkland, WA 98034

Phone Number: (425) 885-1664

Turnaround Request

1 Day 2 Day 3 Day

(Standard)

Other: _____

Project Manager: Blair Goodrow

email: bgoodrow@onsite-env.com

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analyses
11	TOSMI-20210105 (32)	1/5/21	20:10	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
12	TOSMO-20210105 (33)	1/5/21	20:25	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
13	TYLMI-20210105 (34)	1/5/21	21:15	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
14	TYLMO-20210105 (35)	1/5/21	20:55	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
15	QA97-20210105 (36)	1/5/21	20:30	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N

Signature	Company	Date	Time
Relinquished by:	OnSite Env	1/6/21	1135
Received by:	Amtest	1/6/21	1135
Relinquished by:			
Received by:			
Relinquished by:			
Received by:			

Comments/Special Instructions

EDDs - CSV

Reporting Limits:

Fecal Coliform - 1.0 cfu/100ml

Total Nitrogen - .10 mg/L

PR4

Client TZ1

CHAIN OF CUSTODY

01-026 Page 1 of 1

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants

Project No.: 14-05806-000

Project Name: Redmond Paired Watershed Study

Project Manager: George Iftner

Turnaround Requested:

_____ 1 Day

_____ 2 Day

_____ 3 Day

__X__ Standard

Laboratory No.

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Suspended Solids (SM 2540D)	Turbidity (EPA 181.1)	Hardness (EPA 200.7 / SM 2340B)	Dissolved Organ Carbon (SM 5310B) *	Fecal Coliform (SM 9222D)	Total Phosphorus (EPA 365.1)	Total Nitrogen (SM 4500 N-B)	Total Cu and Zn (EPA 200.8)	Dissolved Cu and Zn (EPA 200.8) *			
1	COLM-2020 20210105	1/5/21	22:10	Water	7	X	X	X	X	X	X	X	X	X			
2	COUMI-2020		20:10	Water	7	X	X	X	X	X	X	X	X	X			
3	COUMO-2020		20:05	Water	7	X	X	X	X	X	X	X	X	X			
4	EVAMS-2020		20:40	Water	7	X	X	X	X	X	X	X	X	X			
5	EVALSS-2020		20:50	Water	7	X	X	X	X	X	X	X	X	X			
6	MONMN-2020		21:40	Water	7	X	X	X	X	X	X	X	X	X			
7	MONMS-2020		22:00	Water	7	X	X	X	X	X	X	X	X	X			
8	MONM-2020		22:30	Water	7	X	X	X	X	X	X	X	X	X			
9	SEIMN-2020		21:40	Water	7	X	X	X	X	X	X	X	X	X			
10	SEIMS-2020		22:20	Water	7	X	X	X	X	X	X	X	X	X			
11	TOSMI-2020		20:10	Water	7	X	X	X	X	X	X	X	X	X			
12	TOSMO-2020		20:25	Water	7	X	X	X	X	X	X	X	X	X			
13	TYLMI-2020		21:15	Water	7	X	X	X	X	X	X	X	X	X			
14	TYLMO-2020		20:55	Water	7	X	X	X	X	X	X	X	X	X			
15	QA 11-		20:30	Water	7	X	X	X	X	X	X	X	X	X			

Relinquished by N. Bartish Date 1/6/21 Received by [signature] Date 1/6/21

Firm Herrera Time 10:40 Firm OSE Time 1040

Relinquished by _____ Date _____ Received by _____ Date _____

Firm _____ Time _____ Firm _____ Time _____

Comments:
* - field filtered with 0.45 µm filter within 15 minutes of collecting sample

CHAIN OF CUSTODY

01-026 Page 1 of 1

WA 98052

Co. ntal Consultants

Project No.

Project Name: Re d Paired Watershed Study

Project Manager: George Iftner

Turnaround Requested:

_____ 1 Day

_____ 2 Day

_____ 3 Day

__X__ Standard

Laboratory No.

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Suspended Solids (SM 2540D)	Turbidity (EPA 181.1)	Hardness (EPA 200.7 / SM 2340B)	Dissolved Organ Carbon (SM 5310B) *	Fecal Coliform (SM 9222D)	Total Phosphorus (EPA 365.1)	Total Nitrogen (SM 4500 N-B)	Total Cu and Zn (EPA 200.8)	Dissolved Cu and Zn (EPA 200.8) *			
	COLM-2020 20210105	1/5/21	22:10	Water	7	x	x	x	x	x	x	x	x	x			
	COUMI-2020		20:10	Water	7	x	x	x	x	x	x	x	x	x			
	COUMO-2020		20:05	Water	7	x	x	x	x	x	x	x	x	x			
	EVAMS-2020		20:40	Water	7	x	x	x	x	x	x	x	x	x			
	EVALSS-2020		20:55	Water	7	x	x	x	x	x	x	x	x	x			
	MONMN-2020		21:40	Water	7	x	x	x	x	x	x	x	x	x			
	MONMS-2020		22:00	Water	7	x	x	x	x	x	x	x	x	x			
	MONM-2020		22:30	Water	7	x	x	x	x	x	x	x	x	x			
	SEIMN-2020		21:40	Water	7	x	x	x	x	x	x	x	x	x			
	SEIMS-2020		22:20	Water	7	x	x	x	x	x	x	x	x	x			
	TOSMI-2020		20:10	Water	7	x	x	x	x	x	x	x	x	x			
	TOSMO-2020		20:25	Water	7	x	x	x	x	x	x	x	x	x			
	TYLMI-2020		21:15	Water	7	x	x	x	x	x	x	x	x	x			
	TYLMO-2020		20:55	Water	7	x	x	x	x	x	x	x	x	x			
	QA 98-		20:30	Water	7	x	x	x	x	x	x	x	x	x			

Relinquished by N. Bartish Date 1/6/21 Received by Nicole Shaw Date 1/6/21

Firm Herrera Time 10:40 Firm OSE Time 1040

Relinquished by _____ Date _____ Received by _____ Date _____

Firm _____ Time _____ Firm _____ Time _____

Comments:

* - field filtered with 0.45 µm filter within 15 minutes of collecting sample

METER CALIBRATION LOG - Redmond Paired Watershed Study

Project Number:	14-05806-000
Personnel Performing Calibration:	
Meter:	ProDSS #2
Date/Time:	1/5/21 18:35
Barometric Pressure Start of Day:	mmHg: 762.4 Time: 18:35
Barometric Pressure End of Day:	mmHg: 762.1 Time: 18:55

PRE Field Run CALIBRATION	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	1.7	0	24.1	
Conductivity (µS/cm)	1025	1,000	24.1	
Conductivity (µS/cm)	97.7	100	24.1	
DO % Saturation	94.5	100	23.8	

POST Field Run CHECK	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	0.7	0	24.0	
Conductivity (µS/cm)	100.4	100	24.4	
DO % Saturation	~~93.3~~ ~~100.9~~	100	~~23.9~~ ~~24.1~~	

Calibration Procedures:

Rinse Multimeter Sonde Between Each Operation

Rinse 3 times with tap water, 3 times with deionized water, then 3 times with the solution to be used for calibrating or testing.

Conductivity Calibration Notes:

1. Dry the conductivity probe with a lab tissue (e.g., KimWipes®) and DI water.
2. Fill calibration cup to within a centimeter of the top of the calibration cup with DI water (0 µS).
3. Fill the calibration cup with 1,000 µS standard so that the temperature/conductivity probe is submerged.
4. Make sure there are no bubbles in the cell; wait 2 minutes.
5. Enter the appropriate standard value (1,000 µS/cm or 1.0 mS/cm) for Sp Cond.
6. Check conductivity using 100 µS/cm standard.

Dissolved Oxygen Calibration Notes:

1. Fill the calibration cup with about 1/2 inch of DI; it should be below the sensor cap.
2. Use KimWipes® to dry any droplets from the sensor cap.
3. Invert calibration cup's cap and gently rest it on the cup.
4. Wait 5 minutes, making sure that temperature stabilizes.
5. Determine local barometric pressure (mm Hg) and enter this value into the meter.
6. Click "Calibrate". "Calibrate Successful" will be displayed.
7. To retain calibration accuracy between measurements, store with the sensor immersed in water or within a water-saturated air environment such as a sealed storage cup with at least 10 ml of water.
8. It is important to have the water-saturated air and the sensor at the same temperature. Therefore, store a jar of DI in the same environment as the sonde and calibrate in a similar air temperature as the water and sonde.
9. Keep probe out of direct sun or wind.

METER CALIBRATION LOG - Redmond Paired Watershed Study

Project Number:	14-05806-000
Personnel Performing Calibration:	
Meter:	DuraDSS #1
Date/Time:	1/5/21 18:35
Barometric Pressure Start of Day:	mmHg: 762.1 Time: 18:35
Barometric Pressure End of Day:	mmHg: 761.9 Time: 18:57

PRE Field Run CALIBRATION	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	1.2	0	23.6	
Conductivity (µS/cm)	1029	1,000	23.4	
Conductivity (µS/cm)	97.4	100	23.4	
DO % Saturation	101.5	100	23.2	

POST Field Run CHECK	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	0.7	0	23.2	
Conductivity (µS/cm)	99.7	100	23.1	
DO % Saturation	100.8	100	23.2	

Calibration Procedures:

Rinse Multimeter Sonde Between Each Operation

Rinse 3 times with tap water, 3 times with deionized water, then 3 times with the solution to be used for calibrating or testing.

Conductivity Calibration Notes:

1. Dry the conductivity probe with a lab tissue (e.g., KimWipes®) and DI water.
2. Fill calibration cup to within a centimeter of the top of the calibration cup with DI water (0 µS).
3. Fill the calibration cup with 1,000 µS standard so that the temperature/conductivity probe is submerged.
4. Make sure there are no bubbles in the cell; wait 2 minutes.
5. Enter the appropriate standard value (1,000 µS/cm or 1.0 mS/cm) for Sp Cond.
6. Check conductivity using 100 µS/cm standard.

Dissolved Oxygen Calibration Notes:

1. Fill the calibration cup with about 1/2 inch of DI; it should be below the sensor cap.
2. Use KimWipes® to dry any droplets from the sensor cap.
3. Invert calibration cup's cap and gently rest it on the cup.
4. Wait 5 minutes, making sure that temperature stabilizes.
5. Determine local barometric pressure (mm Hg) and enter this value into the meter.
6. Click "Calibrate". "Calibrate Successful" will be displayed.
7. To retain calibration accuracy between measurements, store with the sensor immersed in water or within a water-saturated air environment such as a sealed storage cup with at least 10 ml of water.
8. It is important to have the water-saturated air and the sensor at the same temperature. Therefore, store a jar of DI in the same environment as the sonde and calibrate in a similar air temperature as the water and sonde.
9. Keep probe out of direct sun or wind.

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + MA

Sample Date: 1/5/21 **Sample Time:** 2230 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 2230 PST:

(Must filter within 15 minutes of collection)

SITE ID: MONM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 43+ Rainy

Water Quality Sampling

Sample ID: MONM20210105

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: turbid

Color: brown

Odor: bit gasoline smell

Sheen: NA

Floatables: Yes lots

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): NA

Reference Point (description): NA

Water Quality Measurments

Temperature (°C) 6.7

Specific Conductivity (µs/cm) 91.5

Dissolved Oxygen (mg/L) 12.34

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GL + MH

Sample Date: 1/5/21 **Sample Time:** 2210 PDT

Base Flow or Storm Event? **Field Filtered Time:** 2210 PST

(Must filter within 15 minutes of collection)

SITE ID: COLM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 45° + Rainy

Water Quality Sampling

Sample ID: COLM20210105

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: bit turbid

Color: brownish

Odor: NA

Sheen: NA

Floatables: bit of floatables

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

~~YSI Pro DSS 1~~

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): X.25

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 5.0

Specific Conductivity (µs/cm) 27.3

Dissolved Oxygen (mg/L) 11.91

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + MH

Sample Date: 1/5/21 **Sample Time:** 2051 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 2050 PST:

(Must filter within 15 minutes of collection)

SITE ID: EVALSS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 45 + Rainy

Water Quality Sampling

Sample ID: EVALSS20210105

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: bit turbid

Color: light brown / gray

Odor: NA

Sheen: NA

Floatables: vv small amount

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

~~YSI Pro DSS 1~~

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.51

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 6.7

Specific Conductivity (µs/cm) 121.6

Dissolved Oxygen (mg/L) 12.31

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: MH + GK

Sample Date: 1/5/21 **Sample Time:** 2040 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 2040 PST:

(Must filter within 15 minutes of collection)

SITE ID: EVAMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 45 + Rainy

Water Quality Sampling

Sample ID: EVAMS20210105

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: clear

Color: light blue / sandy color

Odor: NA

Sheen: NA

Floatables: V V small amount

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

~~YSI Pro DSS~~

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): SG

Reference Point (description): 3.92 B

Water Quality Measurments

Temperature (°C) 6.7

Specific Conductivity (µs/cm) 133.5

Dissolved Oxygen (mg/L) 11.75

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: MH + GH

Sample Date: 1/5/21 **Sample Time:** 2010 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 20:10 PST:

(Must filter within 15 minutes of collection)

SITE ID: TOSM1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rainy +45

Water Quality Sampling

Sample ID: TOSM120210105

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	bit turbid
Color:	light gray
Odor:	NA
Sheen:	NA
Floatables:	some

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.98

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 7.2

Specific Conductivity (µs/cm) 94.0

Dissolved Oxygen (mg/L) 11.93

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK+MA

Sample Date: 1/5/21 **Sample Time:** 2140 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 2140 PST:

(Must filter within 15 minutes of collection)

SITE ID: SEIMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 45°F Rainy

Water Quality Sampling

Sample ID: SEIMN20210105

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: brt turbid

Color: Light brown

Odor: NA

Sheen: NA

Floatables: v small amount

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 7.04

Reference Point (description): Measure down from top of bolt

Water Quality Measurments

Temperature (°C) 6.1

Specific Conductivity (µs/cm) 40.1

Dissolved Oxygen (mg/L) 99.4

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: ND, JW

Sample Date: 1/5/21 **Sample Time:** 22:20 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 22:25 PST:

(Must filter within 15 minutes of collection)

SITE ID: SEIMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rainy, 50°F

Water Quality Sampling

Sample ID: SEIMS20210105

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	clear
Color:	
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.96

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 6.1

Specific Conductivity (µs/cm) 58.

Dissolved Oxygen (mg/L) 10.50

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: ND, JW

Sample Date: 11/05/21 **Sample Time:** 22:00 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 22:05 PST:

(Must filter within 15 minutes of collection)

SITE ID: MONMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rainy, 50°

Water Quality Sampling

Sample ID: MONMS20211105

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Clear

Color:

Odor:

Sheen:

Floatables: Some

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): NA

Reference Point (description):

Water Quality Measurments

Temperature (°C) 7.1

Specific Conductivity (µs/cm) 129.5

Dissolved Oxygen (mg/L) 9.55

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, JW

Sample Date: 1/5/21 **Sample Time:** 21:40 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 21:45 PST:

(Must filter within 15 minutes of collection)

SITE ID: MONMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rain, 50°F

Water Quality Sampling

Sample ID: MONMN20210105

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Clear

Color:

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.41

Reference Point (description): S6

Water Quality Measurments

Temperature (°C) 7.2

Specific Conductivity (µs/cm) 94.3

Dissolved Oxygen (mg/L) 10.71

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: ND, JV

Sample Date: 1/15/20 **Sample Time:** 21:15 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 21:20 PST:

(Must filter within 15 minutes of collection)

SITE ID: TYLM1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rainy, 50°F

Water Quality Sampling

Sample ID: TYLM20210105

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	No
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: clear

Color: light brown

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 51.5 in

Reference Point (description): Tape

Water Quality Measurments

Temperature (°C) 7.0

Specific Conductivity (µs/cm) 84.5

Dissolved Oxygen (mg/L) 10.74

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: ND, JW

Sample Date: 1/5/21 **Sample Time:** 20:55 PDT:

Base Flow or Storm Event? (Storm) **Field Filtered Time:** 21:00 PST:

(Must filter within 15 minutes of collection)

SITE ID: TYLMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rainy, 50°F

Water Quality Sampling

Sample ID: TYLMO20210105

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	No
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Clear

Color:

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 15.5 in

Reference Point (description): Tape

Water Quality Measurments

Temperature (°C) 7.1

Specific Conductivity (µs/cm) 56.2

Dissolved Oxygen (mg/L) 10.96

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: ND, SW

Sample Date: 1/5/21 **Sample Time:** 20:25 / 20:30 PDT

Base Flow or Storm Event? (0) **Field Filtered Time:** 20:30 / 20:35 PST

(Must filter within 15 minutes of collection)

SITE ID: TOSMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rainy, 50°F

Water Quality Sampling

Sample ID: TOSMO20210105

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	YES
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID: QA20210105

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: low

Color: none

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.91

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 7.8

Specific Conductivity (µs/cm) 109.0

Dissolved Oxygen (mg/L) 10.88

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, JLW

Sample Date: 1/5/21 **Sample Time:** 20:10 PDT:

Base Flow or Storm Event? Base **Field Filtered Time:** 20:15 PST:

(Must filter within 15 minutes of collection)

SITE ID: COUM1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rainy, 50°F

Water Quality Sampling

Sample ID: COUM12021/0105

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Clear

Color:

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.76

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 7.7

Specific Conductivity (µs/cm) 107.3

Dissolved Oxygen (mg/L) 10.88

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: N. Bartish, J. Watson

Sample Date: 1/5/21 **Sample Time:** 20:05 PDT

Base Flow or Storm Event? Q **Field Filtered Time:** 20:10 PST

(Must filter within 15 minutes of collection)

SITE ID: COUMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rain, 50°F

Water Quality Sampling

Sample ID: Coumo20210105

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	No
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: clear

Color:

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 4.60

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 8.0

Specific Conductivity (µs/cm) 118.4

Dissolved Oxygen (mg/L) 10.61

Data Quality Assurance Worksheet

By J. Brown

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 1/21/22 Page 1 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 1/5/21 /All locations, QA98 (TOSMO) Lab Ref No 2101-026

date 2/26/2021

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
TSS	OK / SM 2540D	NA	**NA**	2	**≤7**	≤1.0 mg/L 1.0 mg/L	NA	**NA**	91	**±20**	7	**≤ 25**	11	**≤ 25**	OK	NONE
Turbidity	OK / EPA 180.1	NA	**NA**	1	**≤2**	≤0.1 NTU 0.1 NTU	NA	**NA**	NA	**±10**	10	**≤ 25**	16	**≤ 25**	OK	NONE
Hardness	OK / SM 2340B	NA	**NA**	3	**≤180**	≤1.0 mg/L 1.0 mg/L	106, 105	**±25**	105	**±15**	2 MS 1	**≤ 20**	<1	**≤ 20**	OK	NONE
DOC	OK / SM 5310B	≤15	**≤15**	1	**≤28**	≤1.0 mg/L 1.0 mg/L	100	**±25**	103	**±15**	<1	**≤ 20**	<1	**≤ 20**	OK	NONE
Total Phosphorus	OK / EPA 365.1	NA	**NA**	7	**≤28**	≤0.01 mg/L 0.01 mg/L	94	**±25**	96	**±20**	D=0.004	**≤ 20**	9	**≤ 20**	OK	NONE
Total Nitrogen (TKN + N+N)	OK/ SM 4500 N-B	NA	**NA**	6, 8	**≤28**	≤0.1 mg/L 0.1 mg/L	90-107	**±25**	99-100	**±20**	0-4, D=0.1, NC	**≤ 20**	<1, D=0.01	**≤ 20**	OK	NONE

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

Data Quality Assurance Worksheet

By J. Brown

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 1/21/22 Page 2 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 1/5/21 /All locations, QA98 (TOSMO) Lab Ref No 2101-026

date 2/26/2021

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
Total Copper	OK/ EPA 200.8	NA	**NA**	5	**≤180**	≤1.0 µg/L 1.0 µg/L	88, 87	**±25**	NR	**±15**	D=0.02 MS 1	**≤ 20**	D=0	**≤ 20**	OK	NONE
Total Zinc	OK/ EPA 200.8	NA	**NA**	5	**≤180**	≤5.0 µg/L 5.0 µg/L	113, 108	**±25**	NR	**±15**	NC MS 5	**≤ 20**	3	**≤ 20**	OK	NONE
Dissolved Copper	OK/ EPA 200.8	≤15	**≤15**	3	**≤180**	≤1.0 µg/L 1.0 µg/L	93, 90	**±25**	NR	**±15**	D=0.04 MS 3	**≤ 20**	D=0	**≤ 20**	OK	NONE
Dissolved Zinc	OK/ EPA 200.8	≤15	**≤15**	3	**≤180**	≤5.0 µg/L 5.0 µg/L	99, 96	**±25**	NR	**±15**	2 MS 2	**≤ 20**	3	**≤ 20**	OK	NONE
Fecal Coliform	OK / SM 9222D	NA	**NA**	1	**≤1**	≤1.0 cfu/ 100mL 10 cfu/ 100mL	NA	**NA**	NA	**NA**	NC, 18, 40	**≤ 35**	148	**≤ 50**	OK	FLAG TOSMO J DUE TO FIELD DUPE EXCEEDANCE. NO FLAG FOR LAB DUPE EXCEEDANCE, OTHER LAB DUPE OK.

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

February 9, 2021

Jess Brown
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2101-208

Dear Jess:

Enclosed are the analytical results and associated quality control data for samples submitted on January 22, 2021.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

Blair Goodrow
Project Manager

Enclosures

Date of Report: February 9, 2021
Samples Submitted: January 22, 2021
Laboratory Reference: 2101-208
Project: 14-05806-000

Case Narrative

Samples were collected on January 22, 2021 and received by the laboratory on January 22, 2021. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: February 9, 2021
Samples Submitted: January 22, 2021
Laboratory Reference: 2101-208
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20200122**					
Laboratory ID:	01-208-01					
Total Suspended Solids	**ND**	1.0	SM 2540D	1-25-21	1-26-21	
Client ID:	**COUMI-20200122**					
Laboratory ID:	01-208-02					
Total Suspended Solids	**14**	1.0	SM 2540D	1-25-21	1-26-21	
Client ID:	**COUMO-20200122**					
Laboratory ID:	01-208-03					
Total Suspended Solids	**5.8**	1.0	SM 2540D	1-25-21	1-26-21	
Client ID:	**EVAMS-20200122**					
Laboratory ID:	01-208-04					
Total Suspended Solids	**3.2**	1.0	SM 2540D	1-25-21	1-26-21	
Client ID:	**EVALSS-20200122**					
Laboratory ID:	01-208-05					
Total Suspended Solids	**3.2**	1.0	SM 2540D	1-25-21	1-26-21	
Client ID:	**MONMN-20200122**					
Laboratory ID:	01-208-06					
Total Suspended Solids	**1.8**	1.0	SM 2540D	1-25-21	1-26-21	
Client ID:	**MONMS-20200122**					
Laboratory ID:	01-208-07					
Total Suspended Solids	**3.2**	1.0	SM 2540D	1-25-21	1-26-21	
Client ID:	**MONM-20200122**					
Laboratory ID:	01-208-08					
Total Suspended Solids	**1.0**	1.0	SM 2540D	1-25-21	1-26-21	
Client ID:	**SEIMN-20200122**					
Laboratory ID:	01-208-09					
Total Suspended Solids	**3.0**	1.0	SM 2540D	1-25-21	1-26-21	

Date of Report: February 9, 2021
Samples Submitted: January 22, 2021
Laboratory Reference: 2101-208
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20200122**					
Laboratory ID:	01-208-10					
Total Suspended Solids	**5.4**	1.0	SM 2540D	1-25-21	1-26-21	
Client ID:	**TOSMI-20200122**					
Laboratory ID:	01-208-11					
Total Suspended Solids	**26**	1.0	SM 2540D	1-25-21	1-26-21	
Client ID:	**TOSMO-20200122**					
Laboratory ID:	01-208-12					
Total Suspended Solids	**2.2**	1.0	SM 2540D	1-25-21	1-26-21	
Client ID:	**TYLMI-20200122**					
Laboratory ID:	01-208-13					
Total Suspended Solids	**1.4**	1.0	SM 2540D	1-25-21	1-26-21	
Client ID:	**TYLMO-20200122**					
Laboratory ID:	01-208-14					
Total Suspended Solids	**13**	1.0	SM 2540D	1-25-21	1-26-21	
Client ID:	**QA99-20200122**					
Laboratory ID:	01-208-15					
Total Suspended Solids	**3.6**	1.0	SM 2540D	1-25-21	1-26-21	

Date of Report: February 9, 2021
Samples Submitted: January 22, 2021
Laboratory Reference: 2101-208
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0125W1					
Total Suspended Solids	**ND**	1.0	SM 2540D	1-25-21	1-26-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	01-208-10								
	ORIG	DUP							
Total Suspended Solids	**5.40**	**5.20**	NA	NA	NA	NA	4	21	
SPIKE BLANK									
Laboratory ID:	SB0125W1								
	SB		SB		SB				
Total Suspended Solids	**96.0**		100	NA	96	57-126	NA	NA	

Date of Report: February 9, 2021
Samples Submitted: January 22, 2021
Laboratory Reference: 2101-208
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20200122**					
Laboratory ID:	01-208-01					
Turbidity	**0.77**	0.10	EPA 180.1	1-22-21	1-22-21	
Client ID:	**COUMI-20200122**					
Laboratory ID:	01-208-02					
Turbidity	**2.3**	0.10	EPA 180.1	1-22-21	1-22-21	
Client ID:	**COUMO-20200122**					
Laboratory ID:	01-208-03					
Turbidity	**1.7**	0.10	EPA 180.1	1-22-21	1-22-21	
Client ID:	**EVAMS-20200122**					
Laboratory ID:	01-208-04					
Turbidity	**1.5**	0.10	EPA 180.1	1-22-21	1-22-21	
Client ID:	**EVALSS-20200122**					
Laboratory ID:	01-208-05					
Turbidity	**1.5**	0.10	EPA 180.1	1-22-21	1-22-21	
Client ID:	**MONMN-20200122**					
Laboratory ID:	01-208-06					
Turbidity	**1.2**	0.10	EPA 180.1	1-22-21	1-22-21	
Client ID:	**MONMS-20200122**					
Laboratory ID:	01-208-07					
Turbidity	**1.3**	0.10	EPA 180.1	1-22-21	1-22-21	
Client ID:	**MONM-20200122**					
Laboratory ID:	01-208-08					
Turbidity	**1.1**	0.10	EPA 180.1	1-22-21	1-22-21	
Client ID:	**SEIMN-20200122**					
Laboratory ID:	01-208-09					
Turbidity	**2.1**	0.10	EPA 180.1	1-22-21	1-22-21	

Date of Report: February 9, 2021
Samples Submitted: January 22, 2021
Laboratory Reference: 2101-208
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20200122**					
Laboratory ID:	01-208-10					
Turbidity	**3.2**	0.10	EPA 180.1	1-22-21	1-22-21	
Client ID:	**TOSMI-20200122**					
Laboratory ID:	01-208-11					
Turbidity	**9.5**	0.10	EPA 180.1	1-22-21	1-22-21	
Client ID:	**TOSMO-20200122**					
Laboratory ID:	01-208-12					
Turbidity	**1.1**	0.10	EPA 180.1	1-22-21	1-22-21	
Client ID:	**TYLMI-20200122**					
Laboratory ID:	01-208-13					
Turbidity	**2.0**	0.10	EPA 180.1	1-22-21	1-22-21	
Client ID:	**TYLMO-20200122**					
Laboratory ID:	01-208-14					
Turbidity	**4.4**	0.10	EPA 180.1	1-22-21	1-22-21	
Client ID:	**QA99-20200122**					
Laboratory ID:	01-208-15					
Turbidity	**2.3**	0.10	EPA 180.1	1-22-21	1-22-21	

Date of Report: February 9, 2021
Samples Submitted: January 22, 2021
Laboratory Reference: 2101-208
Project: 14-05806-000

TURBIDITY
EPA 180.1
QUALITY CONTROL

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0122W1					
Turbidity	**ND**	0.10	EPA 180.1	1-22-21	1-22-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	01-208-05								
	ORIG	DUP							
Turbidity	**1.46**	**1.50**	NA	NA	NA	NA	3	14	

Date of Report: February 9, 2021
Samples Submitted: January 22, 2021
Laboratory Reference: 2101-208
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20200122**					
Laboratory ID:	01-208-01					
Hardness	**9.0**	1.0	EPA 200.7/SM 2340B	1-25-21	1-25-21	
Client ID:	**COUMI-20200122**					
Laboratory ID:	01-208-02					
Hardness	**120**	1.0	EPA 200.7/SM 2340B	1-25-21	1-25-21	
Client ID:	**COUMO-20200122**					
Laboratory ID:	01-208-03					
Hardness	**110**	1.0	EPA 200.7/SM 2340B	1-25-21	1-25-21	
Client ID:	**EVAMS-20200122**					
Laboratory ID:	01-208-04					
Hardness	**84**	1.0	EPA 200.7/SM 2340B	1-25-21	1-25-21	
Client ID:	**EVALSS-20200122**					
Laboratory ID:	01-208-05					
Hardness	**81**	1.0	EPA 200.7/SM 2340B	1-25-21	1-25-21	
Client ID:	**MONMN-20200122**					
Laboratory ID:	01-208-06					
Hardness	**69**	1.0	EPA 200.7/SM 2340B	1-25-21	1-25-21	
Client ID:	**MONMS-20200122**					
Laboratory ID:	01-208-07					
Hardness	**110**	1.0	EPA 200.7/SM 2340B	1-25-21	1-25-21	

Date of Report: February 9, 2021
Samples Submitted: January 22, 2021
Laboratory Reference: 2101-208
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20200122**					
Laboratory ID:	01-208-08					
Hardness	**86**	1.0	EPA 200.7/SM 2340B	1-25-21	1-25-21	
Client ID:	**SEIMN-20200122**					
Laboratory ID:	01-208-09					
Hardness	**22**	1.0	EPA 200.7/SM 2340B	1-25-21	1-25-21	
Client ID:	**SEIMS-20200122**					
Laboratory ID:	01-208-10					
Hardness	**44**	1.0	EPA 200.7/SM 2340B	1-25-21	1-25-21	
Client ID:	**TOSMI-20200122**					
Laboratory ID:	01-208-11					
Hardness	**120**	1.0	EPA 200.7/SM 2340B	1-25-21	1-25-21	
Client ID:	**TOSMO-20200122**					
Laboratory ID:	01-208-12					
Hardness	**110**	1.0	EPA 200.7/SM 2340B	1-25-21	1-25-21	
Client ID:	**TYLMI-20200122**					
Laboratory ID:	01-208-13					
Hardness	**74**	1.0	EPA 200.7/SM 2340B	1-25-21	1-25-21	
Client ID:	**TYLMO-20200122**					
Laboratory ID:	01-208-14					
Hardness	**78**	1.0	EPA 200.7/SM 2340B	1-25-21	1-25-21	

Date of Report: February 9, 2021
Samples Submitted: January 22, 2021
Laboratory Reference: 2101-208
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA99-20200122**					
Laboratory ID:	01-208-15					
Hardness	**22**	1.0	EPA 200.7/SM 2340B	1-25-21	1-25-21	

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HARDNESS
EPA 200.7/SM 2340B
QUALITY CONTROL

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0125WH2					
Hardness	**ND**	1.0	EPA 200.7/SM 2340B	1-25-21	1-25-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	01-208-15										
	ORIG	DUP									
Hardness	**22.4**	**22.5**	NA		NA	NA		NA	0	20	
MATRIX SPIKES											
Laboratory ID:	01-208-15										
	MS	MSD	MS	MSD		MS	MSD				
Hardness	**157**	**155**	132	132	22.4	102	100	75-125	1	20	
SPIKE BLANK											
Laboratory ID:	SB0125WH2										
	SB		SB			SB					
Hardness	**134**		132		NA	102		85-115	NA	NA	

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DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20200122**					
Laboratory ID:	01-208-01					
Dissolved Organic Carbon	**11**	1.0	SM 5310B	1-26-21	1-26-21	
Client ID:	**COUMI-20200122**					
Laboratory ID:	01-208-02					
Dissolved Organic Carbon	**4.3**	1.0	SM 5310B	1-26-21	1-26-21	
Client ID:	**COUMO-20200122**					
Laboratory ID:	01-208-03					
Dissolved Organic Carbon	**4.3**	1.0	SM 5310B	1-26-21	1-26-21	
Client ID:	**EVAMS-20200122**					
Laboratory ID:	01-208-04					
Dissolved Organic Carbon	**4.4**	1.0	SM 5310B	1-26-21	1-26-21	
Client ID:	**EVALSS-20200122**					
Laboratory ID:	01-208-05					
Dissolved Organic Carbon	**4.1**	1.0	SM 5310B	1-26-21	1-26-21	
Client ID:	**MONMN-20200122**					
Laboratory ID:	01-208-06					
Dissolved Organic Carbon	**4.4**	1.0	SM 5310B	1-26-21	1-26-21	
Client ID:	**MONMS-20200122**					
Laboratory ID:	01-208-07					
Dissolved Organic Carbon	**5.6**	1.0	SM 5310B	1-26-21	1-26-21	
Client ID:	**MONM-20200122**					
Laboratory ID:	01-208-08					
Dissolved Organic Carbon	**4.0**	1.0	SM 5310B	1-26-21	1-26-21	
Client ID:	**SEIMN-20200122**					
Laboratory ID:	01-208-09					
Dissolved Organic Carbon	**6.6**	1.0	SM 5310B	1-26-21	1-26-21	

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DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20200122**					
Laboratory ID:	01-208-10					
Dissolved Organic Carbon	**4.1**	1.0	SM 5310B	1-26-21	1-26-21	
Client ID:	**TOSMI-20200122**					
Laboratory ID:	01-208-11					
Dissolved Organic Carbon	**3.9**	1.0	SM 5310B	1-26-21	1-26-21	
Client ID:	**TOSMO-20200122**					
Laboratory ID:	01-208-12					
Dissolved Organic Carbon	**3.4**	1.0	SM 5310B	1-26-21	1-26-21	
Client ID:	**TYLMI-20200122**					
Laboratory ID:	01-208-13					
Dissolved Organic Carbon	**5.4**	1.0	SM 5310B	1-26-21	1-26-21	
Client ID:	**TYLMO-20200122**					
Laboratory ID:	01-208-14					
Dissolved Organic Carbon	**4.5**	1.0	SM 5310B	1-26-21	1-26-21	
Client ID:	**QA99-20200122**					
Laboratory ID:	01-208-15					
Dissolved Organic Carbon	**6.6**	1.0	SM 5310B	1-26-21	1-26-21	

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DISSOLVED ORGANIC CARBON
SM 5310B
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0126D1					
Dissolved Organic Carbon	**ND**	1.0	SM 5310B	1-26-21	1-26-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	01-208-01								
	ORIG	DUP							
Dissolved Organic Carbon	**10.9**	**10.8**	NA	NA	NA	NA	1	15	
MATRIX SPIKE									
Laboratory ID:	01-208-01								
	MS		MS		MS				
Dissolved Organic Carbon	**20.9**		10.0	10.9	100	72-132	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB0126D1								
	SB		SB		SB				
Dissolved Organic Carbon	**10.4**		10.0	NA	104	82-123	NA	NA	

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TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20200122**					
Laboratory ID:	01-208-01					
Total Phosphorus	**0.016**	0.010	EPA 365.1	1-26-21	1-27-21	
Client ID:	**COUMI-20200122**					
Laboratory ID:	01-208-02					
Total Phosphorus	**0.077**	0.010	EPA 365.1	1-26-21	1-27-21	
Client ID:	**COUMO-20200122**					
Laboratory ID:	01-208-03					
Total Phosphorus	**0.048**	0.010	EPA 365.1	1-26-21	1-27-21	
Client ID:	**EVAMS-20200122**					
Laboratory ID:	01-208-04					
Total Phosphorus	**0.039**	0.010	EPA 365.1	1-26-21	1-27-21	
Client ID:	**EVALSS-20200122**					
Laboratory ID:	01-208-05					
Total Phosphorus	**0.033**	0.010	EPA 365.1	1-26-21	1-27-21	
Client ID:	**MONMN-20200122**					
Laboratory ID:	01-208-06					
Total Phosphorus	**0.029**	0.010	EPA 365.1	1-26-21	1-27-21	
Client ID:	**MONMS-20200122**					
Laboratory ID:	01-208-07					
Total Phosphorus	**0.034**	0.010	EPA 365.1	1-26-21	1-27-21	
Client ID:	**MONM-20200122**					
Laboratory ID:	01-208-08					
Total Phosphorus	**0.030**	0.010	EPA 365.1	1-26-21	1-27-21	
Client ID:	**SEIMN-20200122**					
Laboratory ID:	01-208-09					
Total Phosphorus	**0.029**	0.010	EPA 365.1	1-26-21	1-27-21	

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TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20200122**					
Laboratory ID:	01-208-10					
Total Phosphorus	**0.035**	0.010	EPA 365.1	1-26-21	1-27-21	
Client ID:	**TOSMI-20200122**					
Laboratory ID:	01-208-11					
Total Phosphorus	**0.081**	0.010	EPA 365.1	1-26-21	1-27-21	
Client ID:	**TOSMO-20200122**					
Laboratory ID:	01-208-12					
Total Phosphorus	**0.048**	0.010	EPA 365.1	1-26-21	1-27-21	
Client ID:	**TYLMI-20200122**					
Laboratory ID:	01-208-13					
Total Phosphorus	**0.035**	0.010	EPA 365.1	1-26-21	1-27-21	
Client ID:	**TYLMO-20200122**					
Laboratory ID:	01-208-14					
Total Phosphorus	**0.042**	0.010	EPA 365.1	1-26-21	1-27-21	
Client ID:	**QA99-20200122**					
Laboratory ID:	01-208-15					
Total Phosphorus	**0.028**	0.010	EPA 365.1	1-26-21	1-27-21	

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TOTAL PHOSPHORUS
EPA 365.1
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0126W1					
Total Phosphorus	**ND**	0.010	EPA 365.1	1-26-21	1-27-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	01-208-01								
	ORIG	DUP							
Total Phosphorus	**0.0161**	**0.0140**	NA	NA	NA	NA	14	14	
MATRIX SPIKE									
Laboratory ID:	01-208-01								
	MS		MS		MS				
Total Phosphorus	**0.251**		0.250	0.0161	94	80-110	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB0126W1								
	SB		SB		SB				
Total Phosphorus	**0.239**		0.250	NA	96	78-110	NA	NA	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20200122**					
Laboratory ID:	01-208-01					
Copper	**ND**	11	EPA 200.8	1-26-21	1-26-21	
Zinc	**ND**	28	EPA 200.8	1-26-21	1-26-21	
Client ID:	**COUMI-20200122**					
Laboratory ID:	01-208-02					
Copper	**ND**	11	EPA 200.8	1-26-21	1-26-21	
Zinc	**38**	28	EPA 200.8	1-26-21	1-26-21	
Client ID:	**COUMO-20200122**					
Laboratory ID:	01-208-03					
Copper	**ND**	11	EPA 200.8	1-26-21	1-26-21	
Zinc	**ND**	28	EPA 200.8	1-26-21	1-26-21	
Client ID:	**EVAMS-20200122**					
Laboratory ID:	01-208-04					
Copper	**ND**	11	EPA 200.8	1-26-21	1-26-21	
Zinc	**ND**	28	EPA 200.8	1-26-21	1-26-21	
Client ID:	**EVALSS-20200122**					
Laboratory ID:	01-208-05					
Copper	**ND**	11	EPA 200.8	1-26-21	1-26-21	
Zinc	**ND**	28	EPA 200.8	1-26-21	1-26-21	
Client ID:	**MONMN-20200122**					
Laboratory ID:	01-208-06					
Copper	**ND**	11	EPA 200.8	1-26-21	1-26-21	
Zinc	**ND**	28	EPA 200.8	1-26-21	1-26-21	
Client ID:	**MONMS-20200122**					
Laboratory ID:	01-208-07					
Copper	**ND**	11	EPA 200.8	1-26-21	1-26-21	
Zinc	**ND**	28	EPA 200.8	1-26-21	1-26-21	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20200122**					
Laboratory ID:	01-208-08					
Copper	**ND**	11	EPA 200.8	1-26-21	1-26-21	
Zinc	**ND**	28	EPA 200.8	1-26-21	1-26-21	
Client ID:	**SEIMN-20200122**					
Laboratory ID:	01-208-09					
Copper	**ND**	11	EPA 200.8	1-26-21	1-27-21	
Zinc	**ND**	28	EPA 200.8	1-26-21	1-27-21	
Client ID:	**SEIMS-20200122**					
Laboratory ID:	01-208-10					
Copper	**ND**	11	EPA 200.8	1-26-21	1-27-21	
Zinc	**ND**	28	EPA 200.8	1-26-21	1-27-21	
Client ID:	**TOSMI-20200122**					
Laboratory ID:	01-208-11					
Copper	**ND**	11	EPA 200.8	1-26-21	1-27-21	
Zinc	**110**	28	EPA 200.8	1-26-21	1-27-21	
Client ID:	**TOSMO-20200122**					
Laboratory ID:	01-208-12					
Copper	**ND**	11	EPA 200.8	1-26-21	1-27-21	
Zinc	**63**	28	EPA 200.8	1-26-21	1-27-21	
Client ID:	**TYLMI-20200122**					
Laboratory ID:	01-208-13					
Copper	**ND**	11	EPA 200.8	1-26-21	1-27-21	
Zinc	**ND**	28	EPA 200.8	1-26-21	1-27-21	
Client ID:	**TYLMO-20200122**					
Laboratory ID:	01-208-14					
Copper	**ND**	11	EPA 200.8	1-26-21	1-27-21	
Zinc	**48**	28	EPA 200.8	1-26-21	1-27-21	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA99-20200122**					
Laboratory ID:	01-208-15					
Copper	**ND**	11	EPA 200.8	1-26-21	1-27-21	
Zinc	**ND**	28	EPA 200.8	1-26-21	1-27-21	

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TOTAL METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0126WH1					
Copper	**ND**	11	EPA 200.8	1-26-21	1-26-21	
Zinc	**ND**	28	EPA 200.8	1-26-21	1-26-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	01-208-04										
	ORIG	DUP									
Copper	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Zinc	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	01-208-04										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**110**	**111**	111	111	ND	**100**	**100**	75-125	0	20	
Zinc	**118**	**119**	111	111	ND	**106**	**107**	75-125	1	20	

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20200122**					
Laboratory ID:	01-208-01					
Copper	**ND**	1.0	EPA 200.8		1-26-21	
Zinc	**ND**	5.0	EPA 200.8		1-26-21	
Client ID:	**COUMI-20200122**					
Laboratory ID:	01-208-02					
Copper	**ND**	1.0	EPA 200.8		1-26-21	
Zinc	**21**	5.0	EPA 200.8		1-26-21	
Client ID:	**COUMO-20200122**					
Laboratory ID:	01-208-03					
Copper	**ND**	1.0	EPA 200.8		1-26-21	
Zinc	**15**	5.0	EPA 200.8		1-26-21	
Client ID:	**EVAMS-20200122**					
Laboratory ID:	01-208-04					
Copper	**ND**	1.0	EPA 200.8		1-26-21	
Zinc	**ND**	5.0	EPA 200.8		1-26-21	
Client ID:	**EVALSS-20200122**					
Laboratory ID:	01-208-05					
Copper	**ND**	1.0	EPA 200.8		1-26-21	
Zinc	**ND**	5.0	EPA 200.8		1-26-21	
Client ID:	**MONMN-20200122**					
Laboratory ID:	01-208-06					
Copper	**ND**	1.0	EPA 200.8		1-26-21	
Zinc	**ND**	5.0	EPA 200.8		1-26-21	
Client ID:	**MONMS-20200122**					
Laboratory ID:	01-208-07					
Copper	**ND**	1.0	EPA 200.8		1-26-21	
Zinc	**ND**	5.0	EPA 200.8		1-26-21	

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20200122**					
Laboratory ID:	01-208-08					
Copper	**ND**	1.0	EPA 200.8		1-26-21	
Zinc	**5.2**	5.0	EPA 200.8		1-26-21	
Client ID:	**SEIMN-20200122**					
Laboratory ID:	01-208-09					
Copper	**ND**	1.0	EPA 200.8		1-26-21	
Zinc	**ND**	5.0	EPA 200.8		1-26-21	
Client ID:	**SEIMS-20200122**					
Laboratory ID:	01-208-10					
Copper	**ND**	1.0	EPA 200.8		1-26-21	
Zinc	**ND**	5.0	EPA 200.8		1-26-21	
Client ID:	**TOSMI-20200122**					
Laboratory ID:	01-208-11					
Copper	**ND**	1.0	EPA 200.8		1-26-21	
Zinc	**74**	5.0	EPA 200.8		1-26-21	
Client ID:	**TOSMO-20200122**					
Laboratory ID:	01-208-12					
Copper	**ND**	1.0	EPA 200.8		1-26-21	
Zinc	**48**	5.0	EPA 200.8		1-26-21	
Client ID:	**TYLMI-20200122**					
Laboratory ID:	01-208-13					
Copper	**1.9**	1.0	EPA 200.8		1-26-21	
Zinc	**15**	5.0	EPA 200.8		1-26-21	
Client ID:	**TYLMO-20200122**					
Laboratory ID:	01-208-14					
Copper	**1.1**	1.0	EPA 200.8		1-26-21	
Zinc	**31**	5.0	EPA 200.8		1-26-21	

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA99-20200122**					
Laboratory ID:	01-208-15					
Copper	**ND**	1.0	EPA 200.8		1-26-21	
Zinc	**ND**	5.0	EPA 200.8		1-26-21	

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DISSOLVED METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0126D1					
Copper	**ND**	1.0	EPA 200.8		1-26-21	
Zinc	**ND**	5.0	EPA 200.8		1-26-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	01-208-15										
	ORIG	DUP									
Copper	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Zinc	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	01-208-15										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**63.2**	**64.2**	80.0	80.0	ND	**79**	**80**	75-125	2	20	
Zinc	**69.2**	**71.6**	80.0	80.0	ND	**87**	**90**	75-125	3	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Feb 5 2021
On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister

Dear David Baumeister:

Enclosed please find the analytical data for your REDMOND PAIRED WATERSHED STUDY project.

The following is a cross correlation of client and laboratory identifications for your convenience.

CLIENT ID	MATRIX	AMTEST ID	TEST
COLM-20200122	Water	21-A000958	Micro, NUT
COUMI-20200122	Water	21-A000959	Micro, NUT
COUMO-20200122	Water	21-A000960	Micro, NUT
EVAMS-20200122	Water	21-A000961	Micro, NUT
EVALSS-20200122	Water	21-A000962	Micro, NUT
MONMN-20200122	Water	21-A000963	Micro, NUT
MONMS-20200122	Water	21-A000964	Micro, NUT
MONM-20200122	Water	21-A000965	Micro, NUT
SEIMN-20200122	Water	21-A000966	Micro, NUT
SEIMS-20200122	Water	21-A000967	Micro, NUT
TOSMI-20200122	Water	21-A000968	Micro, NUT
TOSMO-20200122	Water	21-A000969	Micro, NUT
TYLMI-20200122	Water	21-A000970	Micro, NUT
TYLMO-20200122	Water	21-A000971	Micro, NUT
QA99-2021	Water	21-A000972	Micro, NUT

Your samples were received on Friday, January 22, 2021. At the time of receipt, the samples were logged in and properly maintained prior to the subsequent analysis.

The analytical procedures used at AmTest are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

Following the analytical data you will find the Quality Control (QC) results.

Please note that the detection limits that are listed in the body of the report refer to the Practical Quantitation Limits (PQL's), as opposed to the Method Detection Limits (MDL's).

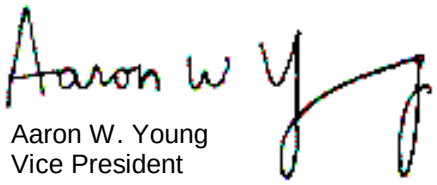
Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Feb 5 2021
On-Site Environmental
continued . . .

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,



Aaron W. Young
Vice President

Project #: 14-05806-000
PO Number: 01-208

BACT = Bacteriological	MET = Metals	NUT=Nutrients	MIN=Minerals
CONV = Conventionals	ORG = Organics	DEM=Demand	

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664
www.amtestlab.com

Professional Analytical Services

ANALYSIS REPORT

On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister
Project Name: REDMOND PAIRED WATERSHED STUDY
Project #: 14-05806-000
PO Number: 01-208
All results reported on an as received basis.

Date Received: 01/22/21
Date Reported: 2/ 5/21

AMTEST Identification Number **21-A000958**
Client Identification **COLM-20200122**
Sampling Date **01/22/21, 12:50**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	2.	CFU/100 ml		1	SM 9222D	JM	01/22/21
Total Nitrogen (NOX&TKN)	0.70	mg/l		0.1			
Total Nitrogen (TKN)	0.606	mg/l		0.2	SM4500N	KS	02/03/21
Total Nitrate + Nitrite	0.090	mg/l		0.02	SM4500NO3	KS	01/28/21

AMTEST Identification Number **21-A000959**
Client Identification **COUMI-20200122**
Sampling Date **01/22/21, 11:15**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	24.	CFU/100 ml		1	SM 9222D	JM	01/22/21
Total Nitrogen (NOX&TKN)	1.03	mg/l		0.1			
Total Nitrogen (TKN)	0.714	mg/l		0.2	SM4500N	KS	02/03/21
Total Nitrate + Nitrite	0.32	mg/l		0.02	SM4500NO3	KS	01/28/21

AMTEST Identification Number **21-A000960**
Client Identification **COUMO-20200122**
Sampling Date **01/22/21, 10:55**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	6.	CFU/100 ml		1	SM 9222D	JM	01/22/21
Total Nitrogen (NOX&TKN)	1.10	mg/l		0.1			
Total Nitrogen (TKN)	0.594	mg/l		0.2	SM4500N	KS	02/03/21
Total Nitrate + Nitrite	0.51	mg/l		0.02	SM4500NO3	KS	01/28/21

AMTEST Identification Number **21-A000961**
Client Identification **EVAMS-20200122**
Sampling Date **01/22/21, 11:25**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	1.	CFU/100 ml		1	SM 9222D	JM	01/22/21
Total Nitrogen (NOX&TKN)	2.67	mg/l		0.1			
Total Nitrogen (TKN)	0.670	mg/l		0.2	SM4500N	KS	02/03/21
Total Nitrate + Nitrite	2.0	mg/l		0.02	SM4500NO3	KS	01/28/21

AMTEST Identification Number **21-A000962**
Client Identification **EVALSS-20200122**
Sampling Date **01/22/21, 11:40**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	3.	CFU/100 ml		1	SM 9222D	JM	01/22/21
Total Nitrogen (NOX&TKN)	2.21	mg/l		0.1			
Total Nitrogen (TKN)	0.612	mg/l		0.2	SM4500N	KS	02/03/21
Total Nitrate + Nitrite	1.6	mg/l		0.02	SM4500NO3	KS	01/28/21

AMTEST Identification Number **21-A000963**
Client Identification **MONMN-20200122**
Sampling Date **01/22/21, 12:50**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	37.	CFU/100 ml		1	SM 9222D	JM	01/22/21
Total Nitrogen (NOX&TKN)	1.03	mg/l		0.1			
Total Nitrogen (TKN)	0.824	mg/l		0.2	SM4500N	KS	02/03/21
Total Nitrate + Nitrite	0.21	mg/l		0.02	SM4500NO3	KS	01/28/21

AMTEST Identification Number **21-A000964**
Client Identification **MONMS-20200122**
Sampling Date **01/22/21, 13:10**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	< 1	CFU/100 ml		1	SM 9222D	JM	01/22/21
Total Nitrogen (NOX&TKN)	1.24	mg/l		0.1			
Total Nitrogen (TKN)	0.601	mg/l		0.2	SM4500N	KS	02/03/21
Total Nitrate + Nitrite	0.64	mg/l		0.02	SM4500NO3	KS	01/28/21

AMTEST Identification Number **21-A000965**
Client Identification **MONM-20200122**
Sampling Date **01/22/21, 13:20**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	16.	CFU/100 ml		1	SM 9222D	JM	01/22/21
Total Nitrogen (NOX&TKN)	0.94	mg/l		0.1			
Total Nitrogen (TKN)	0.420	mg/l		0.2	SM4500N	KS	02/03/21
Total Nitrate + Nitrite	0.52	mg/l		0.02	SM4500NO3	KS	01/28/21

AMTEST Identification Number **21-A000966**
Client Identification **SEIMN-20200122**
Sampling Date **01/22/21, 12:20**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	4.	CFU/100 ml		1	SM 9222D	JM	01/22/21
Total Nitrogen (NOX&TKN)	0.81	mg/l		0.1			
Total Nitrogen (TKN)	0.534	mg/l		0.2	SM4500N	KS	02/03/21
Total Nitrate + Nitrite	0.28	mg/l		0.02	SM4500NO3	KS	01/28/21

AMTEST Identification Number **21-A000967**
Client Identification **SEIMS-20200122**
Sampling Date **01/22/21, 13:45**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	2.	CFU/100 ml		1	SM 9222D	JM	01/22/21
Total Nitrogen (NOX&TKN)	0.75	mg/l		0.1			
Total Nitrogen (TKN)	0.426	mg/l		0.2	SM4500N	KS	02/03/21
Total Nitrate + Nitrite	0.32	mg/l		0.02	SM4500NO3	KS	01/28/21

AMTEST Identification Number **21-A000968**
Client Identification **TOSMI-20200122**
Sampling Date **01/22/21, 11:10**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	1.	CFU/100 ml		1	SM 9222D	JM	01/22/21
Total Nitrogen (NOX&TKN)	1.47	mg/l		0.1			
Total Nitrogen (TKN)	0.648	mg/l		0.2	SM4500N	KS	02/03/21
Total Nitrate + Nitrite	0.82	mg/l		0.02	SM4500NO3	KS	01/28/21

AMTEST Identification Number **21-A000969**
Client Identification **TOSMO-20200122**
Sampling Date **01/22/21, 11:35**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	5.	CFU/100 ml		1	SM 9222D	JM	01/22/21
Total Nitrogen (NOX&TKN)	0.98	mg/l		0.1			
Total Nitrogen (TKN)	0.377	mg/l		0.2	SM4500N	KS	02/03/21
Total Nitrate + Nitrite	0.60	mg/l		0.02	SM4500NO3	KS	01/28/21

AMTEST Identification Number **21-A000970**
Client Identification **TYLMI-20200122**
Sampling Date **01/22/21, 12:25**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	46.	CFU/100 ml		1	SM 9222D	JM	01/22/21
Total Nitrogen (NOX&TKN)	1.33	mg/l		0.1			
Total Nitrogen (TKN)	0.671	mg/l		0.2	SM4500N	KS	02/03/21
Total Nitrate + Nitrite	0.66	mg/l		0.02	SM4500NO3	KS	01/28/21

AMTEST Identification Number **21-A000971**
Client Identification **TYLMO-20200122**
Sampling Date **01/22/21, 12:00**

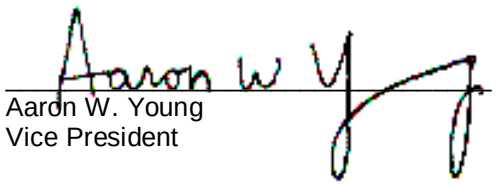
Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	95.	CFU/100 ml		1	SM 9222D	JM	01/22/21
Total Nitrogen (NOX&TKN)	1.30	mg/l		0.1			
Total Nitrogen (TKN)	0.566	mg/l		0.2	SM4500N	KS	02/03/21
Total Nitrate + Nitrite	0.73	mg/l		0.02	SM4500NO3	KS	01/28/21

AMTEST Identification Number **21-A000972**
Client Identification **QA99-2021**
Sampling Date **01/22/21, 12:30**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	3.	CFU/100 ml		1	SM 9222D	JM	01/22/21
Total Nitrogen (NOX&TKN)	0.85	mg/l		0.1			
Total Nitrogen (TKN)	0.592	mg/l		0.2	SM4500N	KS	02/03/21
Total Nitrate + Nitrite	0.26	mg/l		0.02	SM4500NO3	KS	01/28/21



Aaron W. Young
Vice President

Am Test Inc.
13600 NE 126th PL
Suite C
Kirkland, WA, 98034
(425) 885-1664
www.amtestlab.com

Professional Analytical Services

QC Summary for sample numbers: 21-A000958 to 21-A000972

DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	DUP VALUE	RPD
21-A000960	Fecal Coliform	CFU/100 ml	6.	5.	18.
21-A000965	Fecal Coliform	CFU/100 ml	16.	8.	67.
21-A000966	Total Nitrogen (TKN)	mg/l	0.534	0.540	1.1
21-A001247	Total Nitrogen (TKN)	mg/l	25.2	24.7	2.0
21-A001340	Total Nitrogen (TKN)	mg/l	28.9	28.6	1.0
21-A000805	Total Nitrate + Nitrite	mg/l	2.0	2.0	0.00
21-A000872	Total Nitrate + Nitrite	mg/l	0.044	0.047	6.6
21-A000923	Total Nitrate + Nitrite	mg/l	1.4	1.5	6.9
21-A000948	Total Nitrate + Nitrite	mg/l	3.5	3.2	9.0
21-A000967	Total Nitrate + Nitrite	mg/l	0.32	0.31	3.2
21-A001172	Total Nitrate + Nitrite	mg/l	< 0.02	< 0.02	
21-A001212	Total Nitrate + Nitrite	mg/l	1.4	1.5	6.9
21-A001222	Total Nitrate + Nitrite	mg/l	0.61	0.62	1.6
21-A001223	Total Nitrate + Nitrite	mg/l	< 0.02	< 0.02	

MATRIX SPIKES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	SMPL+ SPK	SPK AMT	RECOVERY
21-A000966	Total Nitrogen (TKN)	mg/l	0.534	2.44	2.00	95.30 %
21-A001247	Total Nitrogen (TKN)	mg/l	25.2	44.6	20.0	97.00 %
21-A001340	Total Nitrogen (TKN)	mg/l	28.9	47.5	20.0	93.00 %
21-A000805	Total Nitrate + Nitrite	mg/l	2.0	2.9	1.0	90.00 %
21-A000872	Total Nitrate + Nitrite	mg/l	0.044	1.0	1.0	95.60 %
21-A000923	Total Nitrate + Nitrite	mg/l	1.4	2.4	1.0	100.00 %
21-A000948	Total Nitrate + Nitrite	mg/l	3.5	14.	10.	105.00 %
21-A000967	Total Nitrate + Nitrite	mg/l	0.32	1.3	1.0	98.00 %
21-A001172	Total Nitrate + Nitrite	mg/l	< 0.02	0.97	1.0	97.00 %
21-A001212	Total Nitrate + Nitrite	mg/l	1.4	2.4	1.0	100.00 %
21-A001222	Total Nitrate + Nitrite	mg/l	0.61	1.5	1.0	89.00 %
21-A001223	Total Nitrate + Nitrite	mg/l	< 0.02	0.93	1.0	93.00 %

STANDARD REFERENCE MATERIALS

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
Total Nitrogen (TKN)	mg/l	1.00	0.995	99.5 %
Total Nitrogen (TKN)	mg/l	1.00	0.992	99.2 %
Total Nitrogen (TKN)	mg/l	1.00	0.986	98.6 %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	0.98	98.0 %
Total Nitrate + Nitrite	mg/l	1.0	0.93	93.0 %

QC Summary for sample numbers: 21-A000958 to 21-A000972...

STANDARD REFERENCE MATERIALS continued....

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
Total Nitrate + Nitrite	mg/l	1.0	0.96	96.0 %
Total Nitrate + Nitrite	mg/l	1.0	0.98	98.0 %

BLANKS

ANALYTE	UNITS	RESULT
Fecal Coliform	CFU/100 ml	< 1
Fecal Coliform	CFU/100 ml	< 1
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Laboratory Reference #: 01-208

Laboratory: AmTest Laboratories

Attention: Aaron Young

13600 NE 126th Pl Kirkland, WA 98034

Phone Number: (425) 885-1664

Turnaround Request

1 Day 2 Day 3 Day

Standard

Other:

Project Manager: Blair Goodrow

email: bgoodrow@onsite-env.com

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analyses
1	COLM-20200122 958	1/22/21	12:50	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
2	COUMI-20200122 59	1/22/21	11:15	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
3	COUMO-20200122 60	1/22/21	10:55	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
4	EVAMS-20200122 61	1/22/21	11:25	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
5	EVALSS-20200122 62	1/22/21	11:40	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
6	MONMN-20200122 63	1/22/21	12:50	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
7	MONMS-20200122 64	1/22/21	13:10	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
8	MONM-20200122 65	1/22/21	13:20	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
9	SEIMN-20200122 66	1/22/21	12:20	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
10	SEIMS-20200122 67	1/22/21	13:45	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:		OSE	1/22/21	3:40pm	
Received by:		AMTEST T=5.5	1/22/21	350	**EDDs - CSV**
Relinquished by:					**Reporting Limits:**
Received by:					**Fecal Coliform - 1.0 cfu/100ml**
Relinquished by:					**Total Nitrogen - .10 mg/L**
Received by:					

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Laboratory Reference #: 01-208

Laboratory: AmTest Laboratories

Attention: Aaron Young

13600 NE 126th Pl Kirkland, WA 98034

Phone Number: (425) 885-1664

Turnaround Request

1 Day 2 Day 3 Day

Standard

Other:

Project Manager: Blair Goodrow

email: bgoodrow@onsite-env.com

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analyses
11	TOSMI-20201221 968	1/22/21	11:10	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
12	TOSMO-20201221 69	1/22/21	11:35	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
13	TYLMI-20201221 70	1/22/21	12:25	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
14	TYLMO-20201221 71	1/22/21	12:00	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
15	QA99-2021 72	1/22/21	12:30	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:		OST	1/22/21	3:40 p.m.	
Received by:		AMTEST T=5.5	1/22/21	350	**EDDs - CSV**
Relinquished by:					**Reporting Limits:**
Received by:					**Fecal Coliform - 1.0 cfu/100ml**
Relinquished by:					**Total Nitrogen - .10 mg/L**
Received by:					

CHAIN OF CUSTODY

01 - 208 Page 1 of 1

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants

Project No.: 14-05806-000

Project Name: Redmond Paired Watershed Study

Project Manager: George Iftner

Turnaround Requested:

_____ 1 Day

_____ 2 Day

_____ 3 Day

__X__ Standard

Laboratory No.

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Suspended Solids (SM 2540D)	Turbidity (EPA 181.1)	Hardness (EPA 200.7 / SM 2340B)	Dissolved Organ Carbon (SM 5310B) *	Fecal Coliform (SM 9222D)	Total Phosphorus (EPA 365.1)	Total Nitrogen (SM 4500 N-B)	Total Cu and Zn (EPA 200.8)	Dissolved Cu and Zn (EPA 200.8) *			
1	COLM-2020 0122	1/22/20	12:50	Water	7	X	X	X	X	X	X	X	X	X			
2	COUMI-2020		11:15	Water	7	X	X	X	X	X	X	X	X	X			
3	COUMO-2020		10:55	Water	7	X	X	X	X	X	X	X	X	X			
4	EVAMS-2020		11:25	Water	7	X	X	X	X	X	X	X	X	X			
5	EVALSS-2020		11:40	Water	7	X	X	X	X	X	X	X	X	X			
6	MONMN-2020		12:50	Water	7	X	X	X	X	X	X	X	X	X			
7	MONMS-2020		13:10	Water	7	X	X	X	X	X	X	X	X	X			
8	MONM-2020		13:20	Water	7	X	X	X	X	X	X	X	X	X			
9	SEIMN-2020		12:20	Water	7	X	X	X	X	X	X	X	X	X			
10	SEIMS-2020		13:45	Water	7	X	X	X	X	X	X	X	X	X			
11	TOSMI-2020		11:10	Water	7	X	X	X	X	X	X	X	X	X			
12	TOSMO-2020		11:35	Water	7	X	X	X	X	X	X	X	X	X			
13	TYLMI-2020		12:25	Water	7	X	X	X	X	X	X	X	X	X			
14	TYLMO-2020		12:00	Water	7	X	X	X	X	X	X	X	X	X			
15	QA 99-2020		12:30	Water	7	X	X	X	X	X	X	X	X	X			

Relinquished by James Watson Date 1-22-21 Received by Nicole Blum Date 1/22/21

Firm Herrera Time 14:35 Firm OSE Time 1435

Relinquished by _____ Date _____ Received by _____ Date _____

Firm _____ Time _____ Firm _____ Time _____

Comments:

* - field filtered with 0.45 µm filter within 15 minutes of collecting sample

note: Event occurred 1/22/21.

CHAIN OF CUSTODY

01-208 Page ___of___

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants
Project No.: 14-05806-000
Project Name: Redmond Paired Watershed Study
Project Manager: George Iftner

Turnaround Requested:
_____ 1 Day
_____ 2 Day
_____ 3 Day
__X__ Standard

Laboratory No.

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Suspended Solids (SM 2540D)	Turbidity (EPA 181.1)	Hardness (EPA 200.7 / SM 2340B)	Dissolved Organ Carbon (SM 5310B) *	Fecal Coliform (SM 9222D)	Total Phosphorus (EPA 365.1)	Total Nitrogen (SM 4500 N-B)	Total Cu and Zn (EPA 200.8)	Dissolved Cu and Zn (EPA 200.8) *			
	COLM-2020 0122	1/22/20	12:50	Water	7	X	X	X	X	X	X	X	X	X			
	COUMI-2020		11:15	Water	7	X	X	X	X	X	X	X	X	X			
	COUMO-2020		10:55	Water	7	X	X	X	X	X	X	X	X	X			
	EVAMS-2020		11:25	Water	7	X	X	X	X	X	X	X	X	X			
	EVALSS-2020		11:40	Water	7	X	X	X	X	X	X	X	X	X			
	MONMN-2020		12:50	Water	7	X	X	X	X	X	X	X	X	X			
	MONMS-2020		13:10	Water	7	X	X	X	X	X	X	X	X	X			
	MONM-2020		13:20	Water	7	X	X	X	X	X	X	X	X	X			
	SEIMN-2020		12:20	Water	7	X	X	X	X	X	X	X	X	X			
	SEIMS-2020		13:45	Water	7	X	X	X	X	X	X	X	X	X			
	TOSMI-2020		11:10	Water	7	X	X	X	X	X	X	X	X	X			
	TOSMO-2020		11:35	Water	7	X	X	X	X	X	X	X	X	X			
	TYLMI-2020		12:25	Water	7	X	X	X	X	X	X	X	X	X			
	TYLMO-2020		12:00	Water	7	X	X	X	X	X	X	X	X	X			
	QA 99-2020		12:30	Water	7	X	X	X	X	X	X	X	X	X			

Relinquished by James Watson Date 1-22-21 Received by Nicole Bell Date 1/22/21
Firm Herrera Time 14:35 Firm OSE Time 1435

Relinquished by _____ Date _____ Received by _____ Date _____
Firm _____ Time _____ Firm _____ Time _____

Comments:
* - field filtered with 0.45 µm filter within 15 minutes of collecting sample

METER CALIBRATION LOG - Redmond Paired Watershed Study

Project Number:	14-05806-000
Personnel Performing Calibration:	N. Bartz
Meter:	ProDSS #1
Date/Time:	1/21/21 17:10
Barometric Pressure Start of Day:	mmHg: 765.6 Time: 17:10
Barometric Pressure End of Day:	mmHg: 765.6 Time: 17:30

PRE Field Run CALIBRATION	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	5.6	0	22.7	
Conductivity (µS/cm)	1023	1,000	22.9	
Conductivity (µS/cm)	94.6	100	22.9	
DO % Saturation	100.8	100	22.5	

POST Field Run CHECK	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	1.2	0	20.9	
Conductivity (µS/cm)	104.5	100	21.5	
DO % Saturation	100.6	100	20.7	

Calibration Procedures:

Rinse Multimeter Sonde Between Each Operation

Rinse 3 times with tap water, 3 times with deionized water, then 3 times with the solution to be used for calibrating or testing.

Conductivity Calibration Notes:

1. Dry the conductivity probe with a lab tissue (e.g., KimWipes®) and DI water.
2. Fill calibration cup to within a centimeter of the top of the calibration cup with DI water (0 µS).
3. Fill the calibration cup with 1,000 µS standard so that the temperature/conductivity probe is submerged.
4. Make sure there are no bubbles in the cell; wait 2 minutes.
5. Enter the appropriate standard value (1,000 µS/cm or 1.0 mS/cm) for Sp Cond.
6. Check conductivity using 100 µS/cm standard.

Dissolved Oxygen Calibration Notes:

1. Fill the calibration cup with about 1/2 inch of DI; it should be below the sensor cap.
2. Use KimWipes® to dry any droplets from the sensor cap.
3. Invert calibration cup's cap and gently rest it on the cup.
4. Wait 5 minutes, making sure that temperature stabilizes.
5. Determine local barometric pressure (mm Hg) and enter this value into the meter.
6. Click "Calibrate". "Calibrate Successful" will be displayed.
7. To retain calibration accuracy between measurements, store with the sensor immersed in water or within a water-saturated air environment such as a sealed storage cup with at least 10 ml of water.
8. It is important to have the water-saturated air and the sensor at the same temperature. Therefore, store a jar of DI in the same environment as the sonde and calibrate in a similar air temperature as the water and sonde.
9. Keep probe out of direct sun or wind.

METER CALIBRATION LOG - Redmond Paired Watershed Study

Project Number:	14-05806-000
Personnel Performing Calibration:	KV N. Bartlett
Meter:	Pro DSS #2
Date/Time:	1/21/21 17:10
Barometric Pressure Start of Day:	mmHg: 765.8 Time: 17:10
Barometric Pressure End of Day:	mmHg: 765.9 Time: 17:30

PRE Field Run CALIBRATION	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	11.9	0	23.3	
Conductivity (µS/cm)	1027	1,000	22.9	
Conductivity (µS/cm)	94.0	100	23.5	
DO % Saturation	100.4	100	22.9	

POST Field Run CHECK	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	0.9	0	21.5	
Conductivity (µS/cm)	103.7	100	22.2	
DO % Saturation	93.0	100	21.5	

Calibration Procedures:

Rinse Multimeter Sonde Between Each Operation

Rinse 3 times with tap water, 3 times with deionized water, then 3 times with the solution to be used for calibrating or testing.

Conductivity Calibration Notes:

1. Dry the conductivity probe with a lab tissue (e.g., KimWipes®) and DI water.
2. Fill calibration cup to within a centimeter of the top of the calibration cup with DI water (0 µS).
3. Fill the calibration cup with 1,000 µS standard so that the temperature/conductivity probe is submerged.
4. Make sure there are no bubbles in the cell; wait 2 minutes.
5. Enter the appropriate standard value (1,000 µS/cm or 1.0 mS/cm) for Sp Cond.
6. Check conductivity using 100 µS/cm standard.

Dissolved Oxygen Calibration Notes:

1. Fill the calibration cup with about 1/2 inch of DI; it should be below the sensor cap.
2. Use KimWipes® to dry any droplets from the sensor cap.
3. Invert calibration cup's cap and gently rest it on the cup.
4. Wait 5 minutes, making sure that temperature stabilizes.
5. Determine local barometric pressure (mm Hg) and enter this value into the meter.
6. Click "Calibrate". "Calibrate Successful" will be displayed.
7. To retain calibration accuracy between measurements, store with the sensor immersed in water or within a water-saturated air environment such as a sealed storage cup with at least 10 ml of water.
8. It is important to have the water-saturated air and the sensor at the same temperature. Therefore, store a jar of DI in the same environment as the sonde and calibrate in a similar air temperature as the water and sonde.
9. Keep probe out of direct sun or wind.

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + NB

Sample Date: 01-22-21 **Sample Time:** 13:45 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 13:50 PST:

(Must filter within 15 minutes of collection)

SITE ID: SEIMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Sunny + 45°F

Water Quality Sampling

Sample ID: SEIMS20210122

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	light brown
Odor:	None
Sheen:	None
Floatables:	None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.75

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 5.4

Specific Conductivity (µs/cm) 99.3

Dissolved Oxygen (mg/L) 12.31

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + NB

Sample Date: 01-22-21 **Sample Time:** 10:55 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 11:00 PST:

(Must filter within 15 minutes of collection)

SITE ID: COUMG

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Cloudy + 43°F

Water Quality Sampling

Sample ID: COUMG20210122

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	light brown
Odor:	None
Sheen:	None
Floatables:	None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 1.38

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 6.6

Specific Conductivity (µs/cm) 244.8

Dissolved Oxygen (mg/L) 12.14

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + NB

Sample Date: 01-22-21 **Sample Time:** 11:15 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 11:20 PST:

(Must filter within 15 minutes of collection)

SITE ID: COUMI

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Sunny + 43°F

Water Quality Sampling

Sample ID: COUMI20210122

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	light brown
Odor:	None
Sheen:	None
Floatables:	None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): NA water below SG

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 6.0

Specific Conductivity (µs/cm) 273.8

Dissolved Oxygen (mg/L) 12.36

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + NB

Sample Date: 01-22-21 **Sample Time:** 11:35 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 11:40 PST:

(Must filter within 15 minutes of collection)

SITE ID: TOSMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Sunny + 45°F

Water Quality Sampling

Sample ID: TOSMO20210122

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	light brown
Odor:	None
Sheen:	None
Floatables:	None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.58

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 6.1

Specific Conductivity (µs/cm) 244.0

Dissolved Oxygen (mg/L) 12.50

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JV + NB

Sample Date: 01-22-21 **Sample Time:** 12:00 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 12:05 PST:

(Must filter within 15 minutes of collection)

SITE ID: TYLMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Sunny + 45°F

Water Quality Sampling

Sample ID: TYLMO20210122

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	light brown
Odor:	None
Sheen:	None
Floatables:	None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.9

Reference Point (description): Culvert

Water Quality Measurments

Temperature (°C) 5.9

Specific Conductivity (µs/cm) 170.7

Dissolved Oxygen (mg/L) 12.48

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + NB

Sample Date: 01-22-21 **Sample Time:** 12:25 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 12:30 PST:

(Must filter within 15 minutes of collection)

SITE ID: TYLMI

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Sunny + 45°F

Water Quality Sampling

Sample ID: TYLMI202|0122

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	No
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	light brown
Odor:	None
Sheen:	None
Floatables:	None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 53 in

Reference Point (description): Tape

Water Quality Measurments

Temperature (°C) 6.5

Specific Conductivity (µs/cm) 167.9

Dissolved Oxygen (mg/L) 11.92

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JL + NB

Sample Date: 01-22-21 **Sample Time:** 12:50 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 12:55 PST:

(Must filter within 15 minutes of collection)

SITE ID: MONMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Sunny + 45°F

Water Quality Sampling

Sample ID: MONMN20210122

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	light brown
Odor:	None
Sheen:	None
Floatables:	None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.16

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 5.9

Specific Conductivity (µs/cm) 154.1

Dissolved Oxygen (mg/L) 12.15

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + NB

Sample Date: 01-22-21 **Sample Time:** 13:10 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 13:15 PST:

(Must filter within 15 minutes of collection)

SITE ID: MoNMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Sunny + 45°F

Water Quality Sampling

Sample ID: MONMS20210122

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	light brown
Odor:	None
Sheen:	None
Floatables:	None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): NA

Reference Point (description): NA

Water Quality Measurments

Temperature (°C) 6.3

Specific Conductivity (µs/cm) 247.7

Dissolved Oxygen (mg/L) 10.47

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + TF

Sample Date: 01/22/21 **Sample Time:** 1125 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 1125 PST:

(Must filter within 15 minutes of collection)

SITE ID: EVAMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 41° + Cloudy

Water Quality Sampling

Sample ID: EVAMS 20210122

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: clear - minor turbid

Color: light brown

Odor: NA

Sheen: NA

Floatables: v small amount

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 3.79

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 6.5

Specific Conductivity (µs/cm) 1845

Dissolved Oxygen (mg/L) ~~8.8~~ 11.79

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + TF

Sample Date: 1/22/21 **Sample Time:** 1140 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 1140 PST:

(Must filter within 15 minutes of collection)

SITE ID: EVALSS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 41 + Sunny

Water Quality Sampling

Sample ID: EVALSS20210122

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: small bit turbid

Color: ✓ light yellow/brown

Odor: NA

Sheen: NA

Floatables: ✓ small amount

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.33

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 6.3

Specific Conductivity (µs/cm) 175.7

Dissolved Oxygen (mg/L) 12.36

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK+TF

Sample Date: 1/22 **Sample Time:** 1320 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 1320 PST:

(Must filter within 15 minutes of collection)

SITE ID: MoNM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 43 + Sunny

Water Quality Sampling

Sample ID: MoNM 20210122

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: 6.7 turbid

Color: amber

Odor: NA

Sheen: NA

Floatables: yes

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

~~YSI Pro DSS 2~~

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): NA

Reference Point (description): NA

Water Quality Measurments

Temperature (°C) 6.9

Specific Conductivity (µs/cm) 84.9

Dissolved Oxygen (mg/L) 12.13

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK+TF

Sample Date: 1/22/21 **Sample Time:** 12 50 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 1250 PST:

(Must filter within 15 minutes of collection)

SITE ID: COLM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 42 + sunny

Water Quality Sampling

Sample ID: COLM20210122

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: brt turb:d

Color: amber

Odor: NA

Sheen: NA

Floatables: yes lots

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 5.61

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 4.9

Specific Conductivity (µs/cm) 30.0

Dissolved Oxygen (mg/L) 12.01

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + TF

Sample Date: 1/22/21 **Sample Time:** 1220 / QA 1230 PDT: **Field Filtered Time:** 1220 / 1230 PST:

Base Flow or Storm Event?

(Must filter within 15 minutes of collection)

SITE ID: SEIMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 41° + sunny

Water Quality Sampling

Sample ID: SEIMN2021 0122

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	Yes
DOC *	HDPE	250 ml	1	HCL	|
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	|
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	|
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	|
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	|
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	+

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	QA 99 - 2021 0122
Filter blank sample ID:	1
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	clear
Color:	light yellow
Odor:	NA
Sheen:	NA
Floatables:	small amount

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 8.5 inches

Reference Point (description): Measure down from top of pipe bolt

Water Quality Measurments

Temperature (°C) 5.7

Specific Conductivity (µs/cm) 54.1

Dissolved Oxygen (mg/L) 12.38

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + TF

Sample Date: 01/22/21 **Sample Time:** 1110 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 1110 PST:

(Must filter within 15 minutes of collection)

SITE ID: TOSM1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 41° + Cloudy

Water Quality Sampling

Sample ID: TOSM120210122

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: clear

Color: ✓ light tan

Odor: NA

Sheen: NA

Floatables: NA

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.77

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 7.1

Specific Conductivity (µs/cm) 255.4

Dissolved Oxygen (mg/L) 11.82

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Data Quality Assurance Worksheet

By N. Maas

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 2/22/21 Page 1 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 1/22/21 /All locations, QA99 (SEIMN) Lab Ref No 2101-208

date 2/26/2021

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
TSS	OK / SM 2540D	NA	**NA**	4	**≤7**	≤1.0 mg/L 1.0 mg/L	NA	**NA**	96	**±20**	4	**≤ 25**	D = 0.6	**≤ 25**	OK	NONE
Turbidity	OK / EPA 180.1	NA	**NA**	1	**≤2**	≤0.1 NTU 0.1 NTU	NA	**NA**	NA	**±10**	3	**≤ 25**	6.2	**≤ 25**	OK	NONE
Hardness	OK / SM 2340B	NA	**NA**	3	**≤180**	≤1.0 mg/L 1.0 mg/L	100,102	**±25**	102	**±15**	0 MS 1	**≤ 20**	0	**≤ 20**	OK	NONE
DOC	OK / SM 5310B	≤15	**≤15**	4	**≤28**	≤1.0 mg/L 1.0 mg/L	100	**±25**	104	**±15**	1	**≤ 20**	0	**≤ 20**	OK	NONE
Total Phosphorus	OK / EPA 365.1	NA	**NA**	5	**≤28**	≤0.01 mg/L 0.01 mg/L	94	**±25**	96	**±20**	D=0.002 1	**≤ 0.02**	D = 0.001	**≤ 0.02**	OK	NONE
Total Nitrogen (TKN + N+N)	OK/ SM 4500 N-B	NA	**NA**	12	**≤28**	≤0.1 mg/L 0.1 mg/L	90-105	**±25**	93-100	**±20**	1.1-6.9, D=0	**≤ 20**	3.2,4.9, D = 0.058,	**≤ 20**	OK	NONE

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

Data Quality Assurance Worksheet

By N. Maas

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 2/22/21 Page 2 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 1/22/21 /All locations, QA99 (SEIMN) Lab Ref No 2101-208

date 2/26/2021

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
Total Copper	OK/ EPA 200.8	NA	**NA**	5	**≤180**	≤1.0 µg/L 1.0 µg/L	100	**±25**	NR	**±15**	NC MS 0	**≤ 20**	0	**≤ 20**	OK	NONE
Total Zinc	OK/ EPA 200.8	NA	**NA**	5	**≤180**	≤5.0 µg/L 5.0 µg/L	106,107	**±25**	NR	**±15**	NC MS 1	**≤ 20**	0	**≤ 20**	OK	NONE
Dissolved Copper	OK/ EPA 200.8	≤15	**≤15**	4	**≤180**	≤1.0 µg/L 1.0 µg/L	79,80	**±25**	NR	**±15**	NC MS 2	**≤ 20**	D = 0	**≤ 10**	OK	NONE
Dissolved Zinc	OK/ EPA 200.8	≤15	**≤15**	4	**≤180**	≤5.0 µg/L 5.0 µg/L	87,90	**±25**	NR	**±15**	NC MS 3	**≤ 20**	D = 0	**≤ 10**	OK	NONE
Fecal Coliform	OK / SM 9222D	NA	**NA**	<1	**≤1**	≤1.0 cfu/ 100mL 10 cfu/ 100mL	NA	**NA**	NA	**NA**	18, 67	**≤ 35**	D = 1	**≤ 50**	OK	NO FLAG FOR LAB DUPE EXCEEDANCE, OTHER LAB DUPE OK.

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

April 2, 2021

Jess Brown
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2103-226

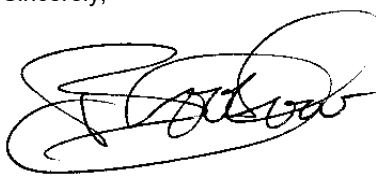
Dear Jess:

Enclosed are the analytical results and associated quality control data for samples submitted on March 19, 2021.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



Blair Goodrow
Project Manager

Enclosures

Date of Report: April 2, 2021
Samples Submitted: March 19, 2021
Laboratory Reference: 2103-226
Project: 14-05806-000

Case Narrative

Samples were collected on March 18, 2021 and received by the laboratory on March 19, 2021. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: April 2, 2021
Samples Submitted: March 19, 2021
Laboratory Reference: 2103-226
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20210318**					
Laboratory ID:	03-226-01					
Total Suspended Solids	**1.8**	1.0	SM 2540D	3-21-21	3-22-21	
Client ID:	**COLMI-20210318**					
Laboratory ID:	03-226-02					
Total Suspended Solids	**16**	2.0	SM 2540D	3-21-21	3-22-21	
Client ID:	**COLMO-20210318**					
Laboratory ID:	03-226-03					
Total Suspended Solids	**42**	5.0	SM 2540D	3-21-21	3-22-21	
Client ID:	**EVAMS-20210318**					
Laboratory ID:	03-226-04					
Total Suspended Solids	**6.0**	2.0	SM 2540D	3-21-21	3-22-21	
Client ID:	**EVALSS-20210318**					
Laboratory ID:	03-226-05					
Total Suspended Solids	**7.6**	1.0	SM 2540D	3-21-21	3-22-21	
Client ID:	**MONMN-20210318**					
Laboratory ID:	03-226-06					
Total Suspended Solids	**3.2**	1.0	SM 2540D	3-21-21	3-22-21	
Client ID:	**MONMS-20210318**					
Laboratory ID:	03-226-07					
Total Suspended Solids	**9.6**	2.0	SM 2540D	3-21-21	3-22-21	
Client ID:	**MONM-20210318**					
Laboratory ID:	03-226-08					
Total Suspended Solids	**11**	2.0	SM 2540D	3-21-21	3-22-21	
Client ID:	**SEIMN-20210318**					
Laboratory ID:	03-226-09					
Total Suspended Solids	**11**	2.0	SM 2540D	3-21-21	3-22-21	

Date of Report: April 2, 2021
Samples Submitted: March 19, 2021
Laboratory Reference: 2103-226
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20210318**					
Laboratory ID:	03-226-10					
Total Suspended Solids	**30**	5.0	SM 2540D	3-21-21	3-22-21	
Client ID:	**TOSMI-20210318**					
Laboratory ID:	03-226-11					
Total Suspended Solids	**150**	5.0	SM 2540D	3-21-21	3-22-21	
Client ID:	**TOSMO-20210318**					
Laboratory ID:	03-226-12					
Total Suspended Solids	**77**	5.0	SM 2540D	3-21-21	3-22-21	
Client ID:	**TYLMI-20210318**					
Laboratory ID:	03-226-13					
Total Suspended Solids	**38**	2.0	SM 2540D	3-21-21	3-22-21	
Client ID:	**TYLMO-20210318**					
Laboratory ID:	03-226-14					
Total Suspended Solids	**15**	2.0	SM 2540D	3-21-21	3-22-21	
Client ID:	**QA-100-20210318**					
Laboratory ID:	03-226-15					
Total Suspended Solids	**5.8**	1.0	SM 2540D	3-21-21	3-22-21	

Date of Report: April 2, 2021
Samples Submitted: March 19, 2021
Laboratory Reference: 2103-226
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0321W2					
Total Suspended Solids	**ND**	1.0	SM 2540D	3-21-21	3-22-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	03-226-10								
	ORIG	DUP							
Total Suspended Solids	**30.0**	**32.0**	NA	NA	NA	NA	6	21	
SPIKE BLANK									
Laboratory ID:	SB0321W2								
	SB		SB		SB				
Total Suspended Solids	**98.0**		100	NA	98	57-126	NA	NA	

Date of Report: April 2, 2021
Samples Submitted: March 19, 2021
Laboratory Reference: 2103-226
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20210318**					
Laboratory ID:	03-226-01					
Turbidity	**1.4**	0.10	EPA 180.1	3-19-21	3-19-21	
Client ID:	**COLMI-20210318**					
Laboratory ID:	03-226-02					
Turbidity	**8.6**	0.10	EPA 180.1	3-19-21	3-19-21	
Client ID:	**COLMO-20210318**					
Laboratory ID:	03-226-03					
Turbidity	**34**	0.10	EPA 180.1	3-19-21	3-19-21	
Client ID:	**EVAMS-20210318**					
Laboratory ID:	03-226-04					
Turbidity	**3.2**	0.10	EPA 180.1	3-19-21	3-19-21	
Client ID:	**EVALSS-20210318**					
Laboratory ID:	03-226-05					
Turbidity	**3.0**	0.10	EPA 180.1	3-19-21	3-19-21	
Client ID:	**MONMN-20210318**					
Laboratory ID:	03-226-06					
Turbidity	**1.8**	0.10	EPA 180.1	3-19-21	3-19-21	
Client ID:	**MONMS-20210318**					
Laboratory ID:	03-226-07					
Turbidity	**3.3**	0.10	EPA 180.1	3-19-21	3-19-21	
Client ID:	**MONM-20210318**					
Laboratory ID:	03-226-08					
Turbidity	**5.1**	0.10	EPA 180.1	3-19-21	3-19-21	
Client ID:	**SEIMN-20210318**					
Laboratory ID:	03-226-09					
Turbidity	**4.7**	0.10	EPA 180.1	3-19-21	3-19-21	

Date of Report: April 2, 2021
Samples Submitted: March 19, 2021
Laboratory Reference: 2103-226
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20210318**					
Laboratory ID:	03-226-10					
Turbidity	**16**	0.10	EPA 180.1	3-19-21	3-19-21	
Client ID:	**TOSMI-20210318**					
Laboratory ID:	03-226-11					
Turbidity	**55**	0.20	EPA 180.1	3-19-21	3-19-21	
Client ID:	**TOSMO-20210318**					
Laboratory ID:	03-226-12					
Turbidity	**37**	0.10	EPA 180.1	3-19-21	3-19-21	
Client ID:	**TYLMI-20210318**					
Laboratory ID:	03-226-13					
Turbidity	**14**	0.10	EPA 180.1	3-19-21	3-19-21	
Client ID:	**TYLMO-20210318**					
Laboratory ID:	03-226-14					
Turbidity	**11**	0.10	EPA 180.1	3-19-21	3-19-21	
Client ID:	**QA-100-20210318**					
Laboratory ID:	03-226-15					
Turbidity	**2.6**	0.10	EPA 180.1	3-19-21	3-19-21	

Date of Report: April 2, 2021
Samples Submitted: March 19, 2021
Laboratory Reference: 2103-226
Project: 14-05806-000

TURBIDITY
EPA 180.1
QUALITY CONTROL

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0319W1					
Turbidity	**ND**	0.10	EPA 180.1	3-19-21	3-19-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	03-224-01								
	ORIG	DUP							
Turbidity	**1.23**	**1.19**	NA	NA	NA	NA	3	14	

Date of Report: April 2, 2021
Samples Submitted: March 19, 2021
Laboratory Reference: 2103-226
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20210318**					
Laboratory ID:	03-226-01					
Hardness	**11**	1.0	EPA 200.7/SM 2340B	3-22-21	3-22-21	
Client ID:	**COLMI-20210318**					
Laboratory ID:	03-226-02					
Hardness	**120**	1.0	EPA 200.7/SM 2340B	3-22-21	3-22-21	
Client ID:	**COLMO-20210318**					
Laboratory ID:	03-226-03					
Hardness	**100**	1.0	EPA 200.7/SM 2340B	3-22-21	3-22-21	
Client ID:	**EVAMS-20210318**					
Laboratory ID:	03-226-04					
Hardness	**92**	1.0	EPA 200.7/SM 2340B	3-22-21	3-22-21	
Client ID:	**EVALSS-20210318**					
Laboratory ID:	03-226-05					
Hardness	**86**	1.0	EPA 200.7/SM 2340B	3-22-21	3-22-21	
Client ID:	**MONMN-20210318**					
Laboratory ID:	03-226-06					
Hardness	**84**	1.0	EPA 200.7/SM 2340B	3-22-21	3-22-21	
Client ID:	**MONMS-20210318**					
Laboratory ID:	03-226-07					
Hardness	**120**	1.0	EPA 200.7/SM 2340B	3-22-21	3-22-21	

Date of Report: April 2, 2021
Samples Submitted: March 19, 2021
Laboratory Reference: 2103-226
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20210318**					
Laboratory ID:	03-226-08					
Hardness	**87**	1.0	EPA 200.7/SM 2340B	3-22-21	3-22-21	
Client ID:	**SEIMN-20210318**					
Laboratory ID:	03-226-09					
Hardness	**25**	1.0	EPA 200.7/SM 2340B	3-22-21	3-22-21	
Client ID:	**SEIMS-20210318**					
Laboratory ID:	03-226-10					
Hardness	**47**	1.0	EPA 200.7/SM 2340B	3-22-21	3-22-21	
Client ID:	**TOSMI-20210318**					
Laboratory ID:	03-226-11					
Hardness	**83**	1.0	EPA 200.7/SM 2340B	3-22-21	3-22-21	
Client ID:	**TOSMO-20210318**					
Laboratory ID:	03-226-12					
Hardness	**120**	1.0	EPA 200.7/SM 2340B	3-22-21	3-22-21	
Client ID:	**TYLMI-20210318**					
Laboratory ID:	03-226-13					
Hardness	**98**	1.0	EPA 200.7/SM 2340B	3-22-21	3-22-21	
Client ID:	**TYLMO-20210318**					
Laboratory ID:	03-226-14					
Hardness	**76**	1.0	EPA 200.7/SM 2340B	3-22-21	3-22-21	

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HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA-100-20210318**					
Laboratory ID:	03-226-15					
Hardness	**100**	1.0	EPA 200.7/SM 2340B	3-22-21	3-22-21	

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HARDNESS
EPA 200.7/SM 2340B
QUALITY CONTROL

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0322WH2					
Hardness	**ND**	1.0	EPA 200.7/SM 2340B	3-22-21	3-22-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-226-01										
	ORIG	DUP									
Hardness	**11.3**	**10.4**	NA		NA	NA		NA	8	20	
MATRIX SPIKES											
Laboratory ID:	03-226-01										
	MS	MSD	MS	MSD		MS	MSD				
Hardness	**139**	**139**	132	132	11.3	97	97	75-125	0	20	
SPIKE BLANK											
Laboratory ID:	SB0322WH2										
	SB		SB			SB					
Hardness	**130**		132		NA	98		85-115	NA	NA	

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DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20210318**					
Laboratory ID:	03-226-01					
Dissolved Organic Carbon	**8.2**	1.0	SM 5310B	3-21-21	3-21-21	
Client ID:	**COLMI-20210318**					
Laboratory ID:	03-226-02					
Dissolved Organic Carbon	**4.0**	1.0	SM 5310B	3-21-21	3-21-21	
Client ID:	**COLMO-20210318**					
Laboratory ID:	03-226-03					
Dissolved Organic Carbon	**6.5**	1.0	SM 5310B	3-21-21	3-21-21	
Client ID:	**EVAMS-20210318**					
Laboratory ID:	03-226-04					
Dissolved Organic Carbon	**3.4**	1.0	SM 5310B	3-21-21	3-21-21	
Client ID:	**EVALSS-20210318**					
Laboratory ID:	03-226-05					
Dissolved Organic Carbon	**3.2**	1.0	SM 5310B	3-21-21	3-21-21	
Client ID:	**MONMN-20210318**					
Laboratory ID:	03-226-06					
Dissolved Organic Carbon	**3.8**	1.0	SM 5310B	3-21-21	3-21-21	
Client ID:	**MONMS-20210318**					
Laboratory ID:	03-226-07					
Dissolved Organic Carbon	**4.9**	1.0	SM 5310B	3-21-21	3-21-21	
Client ID:	**MONM-20210318**					
Laboratory ID:	03-226-08					
Dissolved Organic Carbon	**3.5**	1.0	SM 5310B	3-21-21	3-21-21	
Client ID:	**SEIMN-20210318**					
Laboratory ID:	03-226-09					
Dissolved Organic Carbon	**6.2**	1.0	SM 5310B	3-21-21	3-21-21	

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DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20210318**					
Laboratory ID:	03-226-10					
Dissolved Organic Carbon	**4.3**	1.0	SM 5310B	3-21-21	3-21-21	
Client ID:	**TOSMI-20210318**					
Laboratory ID:	03-226-11					
Dissolved Organic Carbon	**8.0**	1.0	SM 5310B	3-21-21	3-21-21	
Client ID:	**TOSMO-20210318**					
Laboratory ID:	03-226-12					
Dissolved Organic Carbon	**3.1**	1.0	SM 5310B	3-21-21	3-21-21	
Client ID:	**TYLMI-20210318**					
Laboratory ID:	03-226-13					
Dissolved Organic Carbon	**4.2**	1.0	SM 5310B	3-21-21	3-21-21	
Client ID:	**TYLMO-20210318**					
Laboratory ID:	03-226-14					
Dissolved Organic Carbon	**4.8**	1.0	SM 5310B	3-21-21	3-21-21	
Client ID:	**QA-100-20210318**					
Laboratory ID:	03-226-15					
Dissolved Organic Carbon	**3.5**	1.0	SM 5310B	3-21-21	3-21-21	

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DISSOLVED ORGANIC CARBON
SM 5310B
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0321D1					
Dissolved Organic Carbon	**ND**	1.0	SM 5310B	3-21-21	3-21-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	03-226-01								
	ORIG	DUP							
Dissolved Organic Carbon	**8.17**	**8.30**	NA	NA	NA	NA	2	15	
MATRIX SPIKE									
Laboratory ID:	03-226-01								
	MS		MS		MS				
Dissolved Organic Carbon	**17.9**		10.0	8.17	97	72-132	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB0321D1								
	SB		SB		SB				
Dissolved Organic Carbon	**9.13**		10.0	NA	91	82-123	NA	NA	

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TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20210318**					
Laboratory ID:	03-226-01					
Total Phosphorus	**0.014**	0.010	EPA 365.1	3-22-21	3-22-21	
Client ID:	**COLMI-20210318**					
Laboratory ID:	03-226-02					
Total Phosphorus	**0.085**	0.010	EPA 365.1	3-22-21	3-22-21	
Client ID:	**COLMO-20210318**					
Laboratory ID:	03-226-03					
Total Phosphorus	**0.14**	0.010	EPA 365.1	3-22-21	3-22-21	
Client ID:	**EVAMS-20210318**					
Laboratory ID:	03-226-04					
Total Phosphorus	**0.023**	0.010	EPA 365.1	3-22-21	3-22-21	
Client ID:	**EVALSS-20210318**					
Laboratory ID:	03-226-05					
Total Phosphorus	**0.031**	0.010	EPA 365.1	3-22-21	3-22-21	
Client ID:	**MONMN-20210318**					
Laboratory ID:	03-226-06					
Total Phosphorus	**0.045**	0.010	EPA 365.1	3-22-21	3-22-21	
Client ID:	**MONMS-20210318**					
Laboratory ID:	03-226-07					
Total Phosphorus	**0.057**	0.010	EPA 365.1	3-22-21	3-22-21	
Client ID:	**MONM-20210318**					
Laboratory ID:	03-226-08					
Total Phosphorus	**0.048**	0.010	EPA 365.1	3-22-21	3-22-21	
Client ID:	**SEIMN-20210318**					
Laboratory ID:	03-226-09					
Total Phosphorus	**0.044**	0.010	EPA 365.1	3-22-21	3-22-21	

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TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20210318**					
Laboratory ID:	03-226-10					
Total Phosphorus	**0.077**	0.010	EPA 365.1	3-22-21	3-22-21	
Client ID:	**TOSMI-20210318**					
Laboratory ID:	03-226-11					
Total Phosphorus	**0.26**	0.010	EPA 365.1	3-22-21	3-22-21	
Client ID:	**TOSMO-20210318**					
Laboratory ID:	03-226-12					
Total Phosphorus	**0.16**	0.010	EPA 365.1	3-22-21	3-22-21	
Client ID:	**TYLMI-20210318**					
Laboratory ID:	03-226-13					
Total Phosphorus	**0.053**	0.010	EPA 365.1	3-22-21	3-22-21	
Client ID:	**TYLMO-20210318**					
Laboratory ID:	03-226-14					
Total Phosphorus	**0.066**	0.010	EPA 365.1	3-22-21	3-22-21	
Client ID:	**QA-100-20210318**					
Laboratory ID:	03-226-15					
Total Phosphorus	**0.026**	0.010	EPA 365.1	3-22-21	3-22-21	

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TOTAL PHOSPHORUS
EPA 365.1
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0322W1					
Total Phosphorus	**ND**	0.010	EPA 365.1	3-22-21	3-22-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	03-229-01								
	ORIG	DUP							
Total Phosphorus	**0.134**	**0.130**	NA	NA	NA	NA	3	14	
MATRIX SPIKE									
Laboratory ID:	03-229-01								
	MS		MS		MS				
Total Phosphorus	**0.390**		0.250	0.134	102	80-110	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB0322W1								
	SB		SB		SB				
Total Phosphorus	**0.255**		0.250	NA	102	78-110	NA	NA	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20210318**					
Laboratory ID:	03-226-01					
Copper	**ND**	1.0	EPA 200.8	3-23-21	3-29-21	
Zinc	**ND**	5.0	EPA 200.8	3-23-21	3-29-21	
Client ID:	**COLMI-20210318**					
Laboratory ID:	03-226-02					
Copper	**2.9**	1.0	EPA 200.8	3-23-21	3-29-21	
Zinc	**19**	5.0	EPA 200.8	3-23-21	3-29-21	
Client ID:	**COLMO-20210318**					
Laboratory ID:	03-226-03					
Copper	**7.5**	1.0	EPA 200.8	3-23-21	3-29-21	
Zinc	**68**	5.0	EPA 200.8	3-23-21	3-29-21	
Client ID:	**EVAMS-20210318**					
Laboratory ID:	03-226-04					
Copper	**ND**	1.0	EPA 200.8	3-23-21	3-29-21	
Zinc	**ND**	5.0	EPA 200.8	3-23-21	3-29-21	
Client ID:	**EVALSS-20210318**					
Laboratory ID:	03-226-05					
Copper	**ND**	1.0	EPA 200.8	3-23-21	3-29-21	
Zinc	**ND**	5.0	EPA 200.8	3-23-21	3-29-21	
Client ID:	**MONMN-20210318**					
Laboratory ID:	03-226-06					
Copper	**ND**	1.0	EPA 200.8	3-23-21	3-29-21	
Zinc	**7.2**	5.0	EPA 200.8	3-23-21	3-29-21	
Client ID:	**MONMS-20210318**					
Laboratory ID:	03-226-07					
Copper	**1.3**	1.0	EPA 200.8	3-23-21	3-29-21	
Zinc	**ND**	5.0	EPA 200.8	3-23-21	3-29-21	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20210318**					
Laboratory ID:	03-226-08					
Copper	**1.0**	1.0	EPA 200.8	3-23-21	3-29-21	
Zinc	**10**	5.0	EPA 200.8	3-23-21	3-29-21	
Client ID:	**SEIMN-20210318**					
Laboratory ID:	03-226-09					
Copper	**ND**	1.0	EPA 200.8	3-23-21	3-29-21	
Zinc	**ND**	5.0	EPA 200.8	3-23-21	3-29-21	
Client ID:	**SEIMS-20210318**					
Laboratory ID:	03-226-10					
Copper	**1.1**	1.0	EPA 200.8	3-23-21	3-29-21	
Zinc	**ND**	5.0	EPA 200.8	3-23-21	3-29-21	
Client ID:	**TOSMI-20210318**					
Laboratory ID:	03-226-11					
Copper	**15**	1.0	EPA 200.8	3-23-21	3-29-21	
Zinc	**390**	13	EPA 200.8	3-23-21	3-29-21	
Client ID:	**TOSMO-20210318**					
Laboratory ID:	03-226-12					
Copper	**4.4**	1.0	EPA 200.8	3-23-21	3-29-21	
Zinc	**140**	5.0	EPA 200.8	3-23-21	3-29-21	
Client ID:	**TYLMI-20210318**					
Laboratory ID:	03-226-13					
Copper	**2.7**	1.0	EPA 200.8	3-23-21	3-29-21	
Zinc	**30**	5.0	EPA 200.8	3-23-21	3-29-21	
Client ID:	**TYLMO-20210318**					
Laboratory ID:	03-226-14					
Copper	**5.3**	1.0	EPA 200.8	3-23-21	3-29-21	
Zinc	**21**	5.0	EPA 200.8	3-23-21	3-29-21	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA-100-20210318**					
Laboratory ID:	03-226-15					
Copper	**ND**	1.0	EPA 200.8	3-23-21	3-29-21	
Zinc	**ND**	5.0	EPA 200.8	3-23-21	3-29-21	

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TOTAL METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0323WH2					
Copper	**ND**	1.0	EPA 200.8	3-23-21	3-29-21	
Zinc	**ND**	5.0	EPA 200.8	3-23-21	3-29-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE										
Laboratory ID:	03-226-04									
	ORIG	DUP								
Copper	**ND**	**ND**	NA	NA		NA	NA	NA	20	
Zinc	**ND**	**ND**	NA	NA		NA	NA	NA	20	
MATRIX SPIKES										
Laboratory ID:	03-226-04									
	MS	MSD	MS	MSD		MS	MSD			
Copper	**103**	**103**	100	100	ND	**103**	**103**	75-125	1	20
Zinc	**99.0**	**98.8**	100	100	ND	**99**	**99**	75-125	0	20

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20210318**					
Laboratory ID:	03-226-01					
Copper	**ND**	1.0	EPA 200.8		3-29-21	
Zinc	**ND**	5.0	EPA 200.8		3-29-21	
Client ID:	**COLMI-20210318**					
Laboratory ID:	03-226-02					
Copper	**1.5**	1.0	EPA 200.8		3-29-21	
Zinc	**6.6**	5.0	EPA 200.8		3-29-21	
Client ID:	**COLMO-20210318**					
Laboratory ID:	03-226-03					
Copper	**3.0**	1.0	EPA 200.8		3-29-21	
Zinc	**34**	5.0	EPA 200.8		3-29-21	
Client ID:	**EVAMS-20210318**					
Laboratory ID:	03-226-04					
Copper	**ND**	1.0	EPA 200.8		3-29-21	
Zinc	**ND**	5.0	EPA 200.8		3-29-21	
Client ID:	**EVALSS-20210318**					
Laboratory ID:	03-226-05					
Copper	**ND**	1.0	EPA 200.8		3-29-21	
Zinc	**ND**	5.0	EPA 200.8		3-29-21	
Client ID:	**MONMN-20210318**					
Laboratory ID:	03-226-06					
Copper	**ND**	1.0	EPA 200.8		3-29-21	
Zinc	**ND**	5.0	EPA 200.8		3-29-21	
Client ID:	**MONMS-20210318**					
Laboratory ID:	03-226-07					
Copper	**ND**	1.0	EPA 200.8		3-29-21	
Zinc	**ND**	5.0	EPA 200.8		3-29-21	

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20210318**					
Laboratory ID:	03-226-08					
Copper	**ND**	1.0	EPA 200.8		3-29-21	
Zinc	**6.8**	5.0	EPA 200.8		3-29-21	
Client ID:	**SEIMN-20210318**					
Laboratory ID:	03-226-09					
Copper	**ND**	1.0	EPA 200.8		3-29-21	
Zinc	**ND**	5.0	EPA 200.8		3-29-21	
Client ID:	**SEIMS-20210318**					
Laboratory ID:	03-226-10					
Copper	**ND**	1.0	EPA 200.8		3-29-21	
Zinc	**ND**	5.0	EPA 200.8		3-29-21	
Client ID:	**TOSMI-20210318**					
Laboratory ID:	03-226-11					
Copper	**4.2**	1.0	EPA 200.8		3-29-21	
Zinc	**110**	5.0	EPA 200.8		3-29-21	
Client ID:	**TOSMO-20210318**					
Laboratory ID:	03-226-12					
Copper	**ND**	1.0	EPA 200.8		3-29-21	
Zinc	**31**	5.0	EPA 200.8		3-29-21	
Client ID:	**TYLMI-20210318**					
Laboratory ID:	03-226-13					
Copper	**1.2**	1.0	EPA 200.8		3-29-21	
Zinc	**13**	5.0	EPA 200.8		3-29-21	
Client ID:	**TYLMO-20210318**					
Laboratory ID:	03-226-14					
Copper	**3.4**	1.0	EPA 200.8		3-29-21	
Zinc	**9.1**	5.0	EPA 200.8		3-29-21	

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA-100-20210318**					
Laboratory ID:	03-226-15					
Copper	**ND**	1.0	EPA 200.8		3-29-21	
Zinc	**ND**	5.0	EPA 200.8		3-29-21	

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DISSOLVED METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0329D1					
Copper	**ND**	1.0	EPA 200.8		3-29-21	
Zinc	**ND**	5.0	EPA 200.8		3-29-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-226-01										
	ORIG	DUP									
Copper	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Zinc	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	03-226-01										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**72.4**	**72.2**	80.0	80.0	ND	**91**	**90**	75-125	0	20	
Zinc	**73.6**	**73.6**	80.0	80.0	ND	**92**	**92**	75-125	0	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Apr 2 2021
On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister

Dear David Baumeister:

Enclosed please find the analytical data for your REDMOND PAIRED WATERSHED STUDY project.

The following is a cross correlation of client and laboratory identifications for your convenience.

CLIENT ID	MATRIX	AMTEST ID	TEST
COLM-20210318	Water	21-A003336	Micro, NUT
COUMI-20210318	Water	21-A003337	Micro, NUT
COUMO-20210318	Water	21-A003338	Micro, NUT
EVAMS-20210318	Water	21-A003339	Micro, NUT
EVALSS-20210318	Water	21-A003340	Micro, NUT
MONMN-20210318	Water	21-A003341	Micro, NUT
MONMS-20210318	Water	21-A003342	Micro, NUT
MONM-20210318	Water	21-A003343	Micro, NUT
SEIMN-20210318	Water	21-A003344	Micro, NUT
SEIMS-20210318	Water	21-A003345	Micro, NUT
TOSMI-20210318	Water	21-A003346	Micro, NUT
TOSMO-20210318	Water	21-A003347	Micro, NUT
TYLMI-20210318	Water	21-A003348	Micro, NUT
TYLMO-20210318	Water	21-A003349	Micro, NUT
QA-100-20210318	Water	21-A003350	Micro, NUT

Your samples were received on Friday, March 19, 2021. At the time of receipt, the samples were logged in and properly maintained prior to the subsequent analysis.

The analytical procedures used at AmTest are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

Following the analytical data you will find the Quality Control (QC) results.

Please note that the detection limits that are listed in the body of the report refer to the Practical Quantitation Limits (PQL's), as opposed to the Method Detection Limits (MDL's).

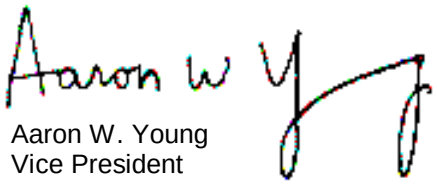
Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Apr 2 2021
On-Site Environmental
continued . . .

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,



Aaron W. Young
Vice President

Project #: 14-05806-000
PO Number: 03-226

BACT = Bacteriological	MET = Metals	NUT=Nutrients	MIN=Minerals
CONV = Conventionals	ORG = Organics	DEM=Demand	

Am Test Inc.
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Professional Analytical Services

ANALYSIS REPORT

On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister
Project Name: REDMOND PAIRED WATERSHED STUDY
Project #: 14-05806-000
PO Number: 03-226
All results reported on an as received basis.

Date Received: 03/19/21
Date Reported: 4/ 2/21

AMTEST Identification Number **21-A003336**
Client Identification **COLM-20210318**
Sampling Date **03/18/21, 19:15**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	7.	CFU/100 ml		1	SM 9222D	JM	03/19/21
Total Nitrogen (NOX&TKN)	0.67	mg/l		0.1			
Total Nitrogen (TKN)	0.582	mg/l		0.2	SM4500N	KS	03/24/21
Total Nitrate + Nitrite	0.091	mg/l		0.02	SM4500NO3	KS	03/25/21

AMTEST Identification Number **21-A003337**
Client Identification **COUMI-20210318**
Sampling Date **03/18/21, 17:40**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	71.	CFU/100 ml		1	SM 9222D	JM	03/19/21
Total Nitrogen (NOX&TKN)	0.90	mg/l		0.1			
Total Nitrogen (TKN)	0.615	mg/l		0.2	SM4500N	KS	03/24/21
Total Nitrate + Nitrite	0.28	mg/l		0.02	SM4500NO3	KS	03/25/21

AMTEST Identification Number **21-A003338**
Client Identification **COUMO-20210318**
Sampling Date **03/18/21, 17:25**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	78.	CFU/100 ml		1	SM 9222D	JM	03/19/21
Total Nitrogen (NOX&TKN)	1.80	mg/l		0.1			
Total Nitrogen (TKN)	1.36	mg/l		0.2	SM4500N	KS	03/24/21
Total Nitrate + Nitrite	0.44	mg/l		0.02	SM4500NO3	KS	03/25/21

AMTEST Identification Number **21-A003339**
Client Identification **EVAMS-20210318**
Sampling Date **03/18/21, 17:50**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	2.	CFU/100 ml		1	SM 9222D	JM	03/19/21
Total Nitrogen (NOX&TKN)	2.69	mg/l		0.1			
Total Nitrogen (TKN)	0.589	mg/l		0.2	SM4500N	KS	03/24/21
Total Nitrate + Nitrite	2.1	mg/l		0.02	SM4500NO3	KS	03/25/21

AMTEST Identification Number **21-A003340**
Client Identification **EVALSS-20210318**
Sampling Date **03/18/21, 18:10**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	6.	CFU/100 ml		1	SM 9222D	JM	03/19/21
Total Nitrogen (NOX&TKN)	2.11	mg/l		0.1			
Total Nitrogen (TKN)	0.514	mg/l		0.2	SM4500N	KS	03/24/21
Total Nitrate + Nitrite	1.6	mg/l		0.02	SM4500NO3	KS	03/25/21

AMTEST Identification Number **21-A003341**
Client Identification **MONMN-20210318**
Sampling Date **03/18/21, 19:05**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	6.	CFU/100 ml		1	SM 9222D	JM	03/19/21
Total Nitrogen (NOX&TKN)	0.62	mg/l		0.1			
Total Nitrogen (TKN)	0.458	mg/l		0.2	SM4500N	KS	03/24/21
Total Nitrate + Nitrite	0.16	mg/l		0.02	SM4500NO3	KS	03/25/21

AMTEST Identification Number **21-A003342**
Client Identification **MONMS-20210318**
Sampling Date **03/18/21, 19:25**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	5.	CFU/100 ml		1	SM 9222D	JM	03/19/21
Total Nitrogen (NOX&TKN)	1.05	mg/l		0.1			
Total Nitrogen (TKN)	0.710	mg/l		0.2	SM4500N	KS	03/24/21
Total Nitrate + Nitrite	0.34	mg/l		0.02	SM4500NO3	KS	03/25/21

AMTEST Identification Number **21-A003343**
Client Identification **MONM-20210318**
Sampling Date **03/18/21, 19:40**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	23.	CFU/100 ml		1	SM 9222D	JM	03/19/21
Total Nitrogen (NOX&TKN)	1.07	mg/l		0.1			
Total Nitrogen (TKN)	0.734	mg/l		0.2	SM4500N	KS	03/24/21
Total Nitrate + Nitrite	0.34	mg/l		0.02	SM4500NO3	KS	03/25/21

AMTEST Identification Number **21-A003344**
Client Identification **SEIMN-20210318**
Sampling Date **03/18/21, 18:35**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	2.	CFU/100 ml		1	SM 9222D	JM	03/19/21
Total Nitrogen (NOX&TKN)	0.84	mg/l		0.1			
Total Nitrogen (TKN)	0.677	mg/l		0.2	SM4500N	KS	03/24/21
Total Nitrate + Nitrite	0.16	mg/l		0.02	SM4500NO3	KS	03/25/21

AMTEST Identification Number **21-A003345**
Client Identification **SEIMS-20210318**
Sampling Date **03/18/21, 19:50**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	13.	CFU/100 ml		1	SM 9222D	JM	03/19/21
Total Nitrogen (NOX&TKN)	1.17	mg/l		0.1			
Total Nitrogen (TKN)	0.944	mg/l		0.2	SM4500N	KS	03/24/21
Total Nitrate + Nitrite	0.23	mg/l		0.02	SM4500NO3	KS	03/25/21

AMTEST Identification Number **21-A003346**
Client Identification **TOSMI-20210318**
Sampling Date **03/18/21, 17:27**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	26.	CFU/100 ml		1	SM 9222D	JM	03/19/21
Total Nitrogen (NOX&TKN)	2.25	mg/l		0.1			
Total Nitrogen (TKN)	1.47	mg/l		0.2	SM4500N	KS	03/24/21
Total Nitrate + Nitrite	0.78	mg/l		0.02	SM4500NO3	KS	03/25/21

AMTEST Identification Number **21-A003347**
Client Identification **TOSMO-20210318**
Sampling Date **03/18/21, 18:00**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	39.	CFU/100 ml		1	SM 9222D	JM	03/19/21
Total Nitrogen (NOX&TKN)	1.32	mg/l		0.1			
Total Nitrogen (TKN)	0.810	mg/l		0.2	SM4500N	KS	03/24/21
Total Nitrate + Nitrite	0.51	mg/l		0.02	SM4500NO3	KS	03/25/21

AMTEST Identification Number **21-A003348**
Client Identification **TYLMI-20210318**
Sampling Date **03/18/21, 18:45**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	7.	CFU/100 ml		1	SM 9222D	JM	03/19/21
Total Nitrogen (NOX&TKN)	1.46	mg/l		0.1			
Total Nitrogen (TKN)	0.727	mg/l		0.2	SM4500N	KS	03/24/21
Total Nitrate + Nitrite	0.73	mg/l		0.02	SM4500NO3	KS	03/25/21

AMTEST Identification Number **21-A003349**
Client Identification **TYLMO-20210318**
Sampling Date **03/18/21, 18:25**

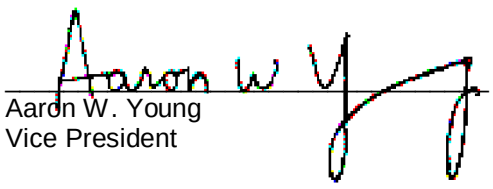
Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	24.	CFU/100 ml		1	SM 9222D	JM	03/19/21
Total Nitrogen (NOX&TKN)	1.39	mg/l		0.1			
Total Nitrogen (TKN)	0.750	mg/l		0.2	SM4500N	KS	03/24/21
Total Nitrate + Nitrite	0.64	mg/l		0.02	SM4500NO3	KS	03/25/21

AMTEST Identification Number **21-A003350**
Client Identification **QA-100-20210318**
Sampling Date **03/18/21, 17:50**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	1.	CFU/100 ml		1	SM 9222D	JM	03/19/21
Total Nitrogen (NOX&TKN)	2.73	mg/l		0.1			
Total Nitrogen (TKN)	0.628	mg/l		0.2	SM4500N	KS	03/24/21
Total Nitrate + Nitrite	2.1	mg/l		0.02	SM4500NO3	KS	03/25/21



Aaron W. Young
Vice President

Am Test Inc.
13600 NE 126th PL
Suite C
Kirkland, WA, 98034
(425) 885-1664
www.amtestlab.com

Professional Analytical Services

QC Summary for sample numbers: 21-A003336 to 21-A003350

DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	DUP VALUE	RPD
21-A003336	Fecal Coliform	CFU/100 ml	7.	4.	55.
21-A003352	Fecal Coliform	CFU/100 ml	< 1	< 1	
21-A003319	Total Nitrogen (TKN)	mg/l	10.0	10.3	3.0
21-A003339	Total Nitrogen (TKN)	mg/l	0.589	0.567	3.8
21-A003349	Total Nitrogen (TKN)	mg/l	0.750	0.735	2.0
21-A003370	Total Nitrogen (TKN)	mg/l	27.1	28.1	3.6
21-A003262	Total Nitrate + Nitrite	mg/l	2.8	3.1	10.
21-A003326	Total Nitrate + Nitrite	mg/l	< 0.02	< 0.02	
21-A003345	Total Nitrate + Nitrite	mg/l	0.23	0.23	0.00
21-A003591	Total Nitrate + Nitrite	mg/l	0.39	0.41	5.0
21-A003633	Total Nitrate + Nitrite	mg/l	0.49	0.58	17.
21-A003647	Total Nitrate + Nitrite	mg/l	< 0.02	< 0.02	

MATRIX SPIKES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	SMPL+ SPK	SPK AMT	RECOVERY
21-A003319	Total Nitrogen (TKN)	mg/l	10.0	31.1	20.0	105.50 %
21-A003339	Total Nitrogen (TKN)	mg/l	0.589	2.43	2.00	92.05 %
21-A003349	Total Nitrogen (TKN)	mg/l	0.750	2.59	2.00	92.00 %
21-A003370	Total Nitrogen (TKN)	mg/l	27.1	47.0	20.0	99.50 %
21-A003262	Total Nitrate + Nitrite	mg/l	2.8	13.	10.	102.00 %
21-A003326	Total Nitrate + Nitrite	mg/l	< 0.02	1.0	1.0	100.00 %
21-A003345	Total Nitrate + Nitrite	mg/l	0.23	1.2	1.0	97.00 %
21-A003591	Total Nitrate + Nitrite	mg/l	0.39	1.3	1.0	91.00 %
21-A003633	Total Nitrate + Nitrite	mg/l	0.49	1.5	1.0	101.00 %
21-A003647	Total Nitrate + Nitrite	mg/l	< 0.02	1.0	1.0	100.00 %

STANDARD REFERENCE MATERIALS

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
Total Nitrogen (TKN)	mg/l	1.00	1.00	100. %
Total Nitrogen (TKN)	mg/l	1.00	1.01	101. %
Total Nitrogen (TKN)	mg/l	1.00	1.01	101. %
Total Nitrogen (TKN)	mg/l	1.00	1.01	101. %
Total Nitrate + Nitrite	mg/l	1.0	0.97	97.0 %
Total Nitrate + Nitrite	mg/l	1.0	0.97	97.0 %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	0.95	95.0 %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %

QC Summary for sample numbers: 21-A003336 to 21-A003350...

STANDARD REFERENCE MATERIALS continued....

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
Total Nitrate + Nitrite	mg/l	1.0	0.97	97.0 %

BLANKS

ANALYTE	UNITS	RESULT
Fecal Coliform	CFU/100 ml	< 1
Fecal Coliform	CFU/100 ml	< 1
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Laboratory Reference #: 03-226

Laboratory: AmTest Laboratories

Attention: Aaron Young

13600 NE 126th Pl Kirkland, WA 98034

Phone Number: (425) 885-1664

Turnaround Request

1 Day 2 Day 3 Day

Standard

Other:

Project Manager: Blair Goodrow

email: bgoodrow@onsite-env.com

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analyses
1	COLM-20210318 3336	3/18/21	19:15	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
2	COUMI-20210318 37	3/18/21	17:40	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
3	COUMO-20210318 38	3/18/21	17:25	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
4	EVAMS-20210318 39	3/18/21	17:50	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
5	EVALSS-20210318 40	3/18/21	18:10	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
6	MONMN-20210318 41	3/18/21	19:05	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
7	MONMS-20210318 42	3/18/21	19:25	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
8	MONM-20210318 43	3/18/21	19:40	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
9	SEIMN-20210318 44	3/18/21	18:35	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
10	SEIMS-20210318 45	3/18/21	19:50	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:		OnSite Env	3/19/21	1140	
Received by:	5	AMTEST T=1.7	3/19/21	1140	**EDDs - CSV**
Relinquished by:					**Reporting Limits:**
Received by:					**Fecal Coliform - 1.0 cfu/100ml**
Relinquished by:					**Total Nitrogen - .10 mg/L**
Received by:					

CLIENT

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Laboratory Reference #: 03-226

Laboratory: AmTest Laboratories

Attention: Aaron Young

13600 NE 126th Pl Kirkland, WA 98034

Phone Number: (425) 885-1664

Turnaround Request

1 Day 2 Day 3 Day

Standard

Other:

Project Manager: Blair Goodrow

email: bgoodrow@onsite-env.com

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analyses
11	TOSMI-20210318 33446	3/18/21	17:27	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
12	TOSMO-20210318 47	3/18/21	18:00	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
13	TYLMI-20210318 48	3/18/21	18:45	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
14	TYLMO-20210318 49	3/18/21	18:25	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
15	QA-100-20210318 50	3/18/21	17:50	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N

Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:	OnSite Env	3/19/21	1140	
Received by:	AMTEST T=1.7	3/19/21	1140	EDDs - CSV
Relinquished by:				Reporting Limits:
Received by:				Fecal Coliform - 1.0 cfu/100ml
Relinquished by:				Total Nitrogen - .10 mg/L
Received by:				

CLIENT

CHAIN OF CUSTODY

03-226

Page 1 of 1

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants

Project No.: 14-05806-000

Project Name: Redmond Paired Watershed Study

Project Manager: George Iftner

Turnaround Requested:

_____ 1 Day

_____ 2 Day

_____ 3 Day

__X__ Standard

Laboratory No.

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Suspended Solids (SM 2540D)	Turbidity (EPA 181.1)	Hardness (EPA 200.7 / SM 2340B)	Dissolved Organ Carbon (SM 5310B) *	Fecal Coliform (SM 9222D)	Total Phosphorus (EPA 365.1)	Total Nitrogen (SM 4500 N-B)	Total Cu and Zn (EPA 200.8)	Dissolved Cu and Zn (EPA 200.8) *			
1	COLM-2020 20210318	3/18/21	19:15	Water	7	X	X	X	X	X	X	X	X	X			
2	COUMI-2020		17:40	Water	7	X	X	X	X	X	X	X	X	X			
3	COUMO-2020		17:25	Water	7	X	X	X	X	X	X	X	X	X			
4	EVAMS-2020		17:50	Water	7	X	X	X	X	X	X	X	X	X			
5	EVALSS-2020		18:10	Water	7	X	X	X	X	X	X	X	X	X			
6	MONMN-2020		19:05	Water	7	X	X	X	X	X	X	X	X	X			
7	MONMS-2020		19:25	Water	7	X	X	X	X	X	X	X	X	X			
8	MONM-2020		19:40	Water	7	X	X	X	X	X	X	X	X	X			
9	SEIMN-2020		18:35	Water	7	X	X	X	X	X	X	X	X	X			
10	SEIMS-2020		19:50	Water	7	X	X	X	X	X	X	X	X	X			
11	TOSMI-2020		17:27	Water	7	X	X	X	X	X	X	X	X	X			
12	TOSMO-2020		18:00	Water	7	X	X	X	X	X	X	X	X	X			
13	TYLMI-2020		18:45	Water	7	X	X	X	X	X	X	X	X	X			
14	TYLMO-2020		18:25	Water	7	X	X	X	X	X	X	X	X	X			
15	QA - 100 -		17:51	Water	7	X	X	X	X	X	X	X	X	X			

Relinquished by Nick Bartish Date 3/19/21 Received by [signature] Date 3/19/21

Firm Herrera Time 8:55 Firm OE Time 0855

Relinquished by _____ Date _____ Received by _____ Date _____

Firm _____ Time _____ Firm _____ Time _____

Comments:
* - field filtered with 0.45 µm filter within 15 minutes of collecting sample

CHAIN OF CUSTODY

03-226 Page 1 of 1

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants

Project No.: 14-05806-000

Project Name: Redmond Paired Watershed Study

Project Manager: George Iftner

Turnaround Requested:

_____ 1 Day

_____ 2 Day

_____ 3 Day

__X__ Standard

Laboratory No.

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Suspended Solids (SM 2540D)	Turbidity (EPA 181.1)	Hardness (EPA 200.7 / SM 2340B)	Dissolved Organ Carbon (SM 5310B) *	Fecal Coliform (SM 9222D)	Total Phosphorus (EPA 365.1)	Total Nitrogen (SM 4500 N-B)	Total Cu and Zn (EPA 200.8)	Dissolved Cu and Zn (EPA 200.8) *			
1	COLM-2020 20210318	3/18/21	19:15	Water	7	X	X	X	X	X	X	X	X	X			
2	COUMI-2020		17:40	Water	7	X	X	X	X	X	X	X	X	X			
3	COUMO-2020		17:25	Water	7	X	X	X	X	X	X	X	X	X			
4	EVAMS-2020		17:50	Water	7	X	X	X	X	X	X	X	X	X			
5	EVALSS-2020		18:10	Water	7	X	X	X	X	X	X	X	X	X			
6	MONMN-2020		19:05	Water	7	X	X	X	X	X	X	X	X	X			
7	MONMS-2020		19:25	Water	7	X	X	X	X	X	X	X	X	X			
8	MONM-2020		19:40	Water	7	X	X	X	X	X	X	X	X	X			
9	SEIMN-2020		18:35	Water	7	X	X	X	X	X	X	X	X	X			
10	SEIMS-2020		19:50	Water	7	X	X	X	X	X	X	X	X	X			
11	TOSMI-2020		17:27	Water	7	X	X	X	X	X	X	X	X	X			
12	TOSMO-2020		18:00	Water	7	X	X	X	X	X	X	X	X	X			
13	TYLMI-2020		18:45	Water	7	X	X	X	X	X	X	X	X	X			
14	TYLMO-2020		18:25	Water	7	X	X	X	X	X	X	X	X	X			
15	QA - 100 -		17:50	Water	7	X	X	X	X	X	X	X	X	X			

Relinquished by Nick Batish Date 3/19/21 Received by [signature] Date 3/19/21

Firm Herrera Time 8:55 Firm OE Time 8:55

Relinquished by Date Received by Date

Firm Time Firm Time

Comments:

* - field filtered with 0.45 µm filter within 15 minutes of collecting sample

METER CALIBRATION LOG - Redmond Paired Watershed Study

Project Number:	14-05806-000
Personnel Performing Calibration:	N. Burton
Meter:	~~Pro DSS #2~~
Date/Time:	3/18/21 13:15
Barometric Pressure Start of Day:	mmHg: 759.7 Time: 13:15
Barometric Pressure End of Day:	mmHg: Time:

PRE Field Run CALIBRATION	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	6.9	0	22.1	
Conductivity (µS/cm)	987	1,000	21.7	
Conductivity (µS/cm)	101.3	100	21.7	
DO % Saturation	99.8	100	21.8	

POST Field Run CHECK	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	1.5	0	20.6	
Conductivity (µS/cm)	94.3	100	20.5	
DO % Saturation	100.2	100	20.5	

Calibration Procedures:

Rinse Multimeter Sonde Between Each Operation

Rinse 3 times with tap water, 3 times with deionized water, then 3 times with the solution to be used for calibrating or testing.

Conductivity Calibration Notes:

1. Dry the conductivity probe with a lab tissue (e.g., KimWipes®) and DI water.
2. Fill calibration cup to within a centimeter of the top of the calibration cup with DI water (0 µS).
3. Fill the calibration cup with 1,000 µS standard so that the temperature/conductivity probe is submerged.
4. Make sure there are no bubbles in the cell; wait 2 minutes.
5. Enter the appropriate standard value (1,000 µS/cm or 1.0 mS/cm) for Sp Cond.
6. Check conductivity using 100 µS/cm standard.

Dissolved Oxygen Calibration Notes:

1. Fill the calibration cup with about 1/2 inch of DI; it should be below the sensor cap.
2. Use KimWipes® to dry any droplets from the sensor cap.
3. Invert calibration cup's cap and gently rest it on the cup.
4. Wait 5 minutes, making sure that temperature stabilizes.
5. Determine local barometric pressure (mm Hg) and enter this value into the meter.
6. Click "Calibrate". "Calibrate Successful" will be displayed.
7. To retain calibration accuracy between measurements, store with the sensor immersed in water or within a water-saturated air environment such as a sealed storage cup with at least 10 m of water.
8. It is important to have the water-saturated air and the sensor at the same temperature. Therefore, store a jar of DI in the same environment as the sonde and calibrate in a similar air temperature as the water and sonde.
9. Keep probe out of direct sun or wind.

HERRERA

METER CALIBRATION LOG - Redmond Paired Watershed Study

Project Number:	14-05806-000
Personnel Performing Calibration:	N. Bartish
Meter:	ProDSS #1
Date/Time:	3/18/21 13:15
Barometric Pressure Start of Day:	mmHg: 760.0 Time: 13:15
Barometric Pressure End of Day:	mmHg: Time:

PRE Field Run CALIBRATION	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	4.3	0	21.5	
Conductivity (µS/cm)	945	1,000	20.9	
Conductivity (µS/cm)	98.8	100	21.0	
DO % Saturation	100.9	100	21.1	

POST Field Run CHECK	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	1.6	0	19.8	
Conductivity (µS/cm)	98.5	100	19.9	
DO % Saturation	100.6	100	19.7	

Calibration Procedures:

Rinse Multimeter Sonde Between Each Operation

Rinse 3 times with tap water, 3 times with deionized water, then 3 times with the solution to be used for calibrating or testing.

Conductivity Calibration Notes:

1. Dry the conductivity probe with a lab tissue (e.g., KimWipes®) and DI water.
2. Fill calibration cup to within a centimeter of the top of the calibration cup with DI water (0 µS).
3. Fill the calibration cup with 1,000 µS standard so that the temperature/conductivity probe is submerged.
4. Make sure there are no bubbles in the cell; wait 2 minutes.
5. Enter the appropriate standard value (1,000 µS/cm or 1.0 mS/cm) for Sp Cond.
6. Check conductivity using 100 µS/cm standard.

Dissolved Oxygen Calibration Notes:

1. Fill the calibration cup with about 1/2 inch of DI; it should be below the sensor cap.
2. Use KimWipes® to dry any droplets from the sensor cap.
3. Invert calibration cup's cap and gently rest it on the cup.
4. Wait 5 minutes, making sure that temperature stabilizes.
5. Determine local barometric pressure (mm Hg) and enter this value into the meter.
6. Click "Calibrate". "Calibrate Successful" will be displayed.
7. To retain calibration accuracy between measurements, store with the sensor immersed in water or within a water-saturated air environment such as a sealed storage cup with at least 10 m of water.
8. It is important to have the water-saturated air and the sensor at the same temperature. Therefore, store a jar of DI in the same environment as the sonde and calibrate in a similar air temperature as the water and sonde.
9. Keep probe out of direct sun or wind.

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW & GK

Sample Date: 3/18/21 **Sample Time:** 1950 PDT:

Base Flow or Storm Event? **Field Filtered Time:** 1955 PST:

(Must filter within 15 minutes of collection)

SITE ID: SE1MS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rainy +47

Water Quality Sampling

Sample ID: SE1MS-20210318

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: light turbidity

Color: light brown

Odor: NA

Sheen: NA

Floatables: v small amount

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.80

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 6.9

Specific Conductivity (µs/cm) 96.5

Dissolved Oxygen (mg/L) 11.81

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + GK

Sample Date: 3/18/21 **Sample Time:** 1925 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: MONMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 47 + Rainy

Water Quality Sampling

Sample ID: MONMS-20210318

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	bit turbid
Color:	light brown
Odor:	yes MA
Sheen:	
Floatables:	v small amount

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 6.75

Reference Point (description): Measure down from top of PVC in box

Water Quality Measurments

Temperature (°C) 7.9

Specific Conductivity (µs/cm) 282.2

Dissolved Oxygen (mg/L) 10.13

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + GK

Sample Date: 3/15/21 **Sample Time:** 1905 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later? (Y) N
(Must filter within 15 minutes of collection)

SITE ID: MoNMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 47 + Rainy

Water Quality Sampling

Sample ID: MoNMN-20210318

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: b-t turbid

Color: Light brown

Odor: NA

Sheen: NA

Floatables: V small amount

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.16

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 7.0

Specific Conductivity (µs/cm) 185.8

Dissolved Oxygen (mg/L) 11.55

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + GK

Sample Date: 3/18/21 **Sample Time:** 1695 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N

(Must filter within 15 minutes of collection)

SITE ID: TYLM1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 47 + Rainy

Water Quality Sampling

Sample ID: TYLM1-20210318

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: bit turbid

Color: light amber

Odor: NA

Sheen: NA

Floatables: v small amount

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 53.0 inches

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 7.5

Specific Conductivity (µs/cm) 201.3

Dissolved Oxygen (mg/L) 11.51

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: DW + GK

Sample Date: 3/18/21 **Sample Time:** 1825 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: TYLMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 47 + Rainy

Water Quality Sampling

Sample ID: TYLMO-20210318

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: brt turbid

Color: amber

Odor: NA

Sheen: NA

Floatables: V small amount

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 33.50 inches

Reference Point (description): measure down from top of culvert

Water Quality Measurments

Temperature (°C) 7.5

Specific Conductivity (µs/cm) 151.8

Dissolved Oxygen (mg/L) 11.61

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + GK

Sample Date: 03/18/21 **Sample Time:** 1800 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: TOSMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 47° + Rainy

Water Quality Sampling

Sample ID: TOSMO-20210318

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Little turbid
Color:	light brown
Odor:	NA
Sheen:	NA
Floatables:	Yes

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.72

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 7.6

Specific Conductivity (µs/cm) 248.5

Dissolved Oxygen (mg/L) 11.97

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW+GK

Sample Date: 03/18/21 **Sample Time:** 1740 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: COUM1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rainy +47°

Water Quality Sampling

Sample ID: COUM1-20210318

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: brt turbid

Color: amber

Odor: NA

Sheen: NA

Floatables: same

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 1.60

Reference Point (description): S6

Water Quality Measurments

Temperature (°C) 7.2

Specific Conductivity (µs/cm) 239.9

Dissolved Oxygen (mg/L) 11.92

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + GK

Sample Date: 3/18/21 **Sample Time:** 1725 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later? (Y) N
(Must filter within 15 minutes of collection)

SITE ID: COUM 0

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rain 47°

Water Quality Sampling

Sample ID: COUM0-20210318

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: turbid

Color: brown

Odor: NA

Sheen: NA

Floatables: some

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 1.90

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 7.8

Specific Conductivity (µs/cm) 705.5

Dissolved Oxygen (mg/L) 11.61

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, NM

Sample Date: 3/18/21 **Sample Time:** 14:40 PDT: PST:

Base Flow or Storm Event? (B) **Field filtered 5 minutes later?** (Y) N
(Must filter within 15 minutes of collection)

SITE ID: MoNM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rain, 50 F

Water Quality Sampling

Sample ID: MoNM20210318

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	low
Color:	light brown
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft):

Reference Point (description): NA

Water Quality Measurments

Temperature (°C) 7.9

Specific Conductivity (µs/cm) 203.1

Dissolved Oxygen (mg/L) 11.64

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NS NM

Sample Date: 3/18/21 **Sample Time:** 19:15 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: COLM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rainy, 50°F

Water Quality Sampling

Sample ID: COLM20210318

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Poor
Color:	light brown
Odor:	none
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 5.49

Reference Point (description): 56

Water Quality Measurments

Temperature (°C) 7.1

Specific Conductivity (µs/cm) 38.0

Dissolved Oxygen (mg/L) 11.32

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB MM

Sample Date: 3/18/21 **Sample Time:** 18:30 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: SEMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

HERRERA

Current Weather and Temp: Rain, 50°F

Water Quality Sampling

Sample ID: SEMN20210318

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity:

Color: light brown

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 8.1

Reference Point (description): Tape

Water Quality Measurments

Temperature (°C) 7.0

Specific Conductivity (µs/cm) 58.6

Dissolved Oxygen (mg/L) 11.95

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, NM

Sample Date: 3/18/21 **Sample Time:** 18:10 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later:** Y / N
(Must filter within 15 minutes of collection)

SITE ID: EVAL55

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

HERRERA

Current Weather and Temp: Rainy, 55°F

Water Quality Sampling

Sample ID: EVAL5520210318

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	light
Color:	light brown
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.34

Reference Point (description): 56

Water Quality Measurments

Temperature (°C) 8.3

Specific Conductivity (µs/cm) 179.7

Dissolved Oxygen (mg/L) 16.69

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, NM

Sample Date: 3/18/21 **Sample Time:** 17:50 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later:** Y N
(Must filter within 15 minutes of collection)

SITE ID: EVANS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rainy, 55°F

Water Quality Sampling

Sample ID: EVANS 20210318

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	Y
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity:

Color:

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 3.78

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 8.3

Specific Conductivity (µs/cm) 192.8

Dissolved Oxygen (mg/L) 11.24

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: N. Bartlett, N. Mills

Sample Date: 3/18/21 **Sample Time:** 17:27 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later? (Y) N
(Must filter within 15 minutes of collection)

SITE ID: TOSM1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rainy, 55°F

Water Quality Sampling

Sample ID: TOSM120210318

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	No
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: ~~Clear~~ low

Color: brown

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.89

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 9.7

Specific Conductivity (µs/cm) ~~[illegible]~~ 131.2

Dissolved Oxygen (mg/L) 11.26

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Data Quality Assurance Worksheet

By N. Maas

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 4/22/21 Page 1 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 3/18/2021 /All locations, QA100 (EVAMS) Lab Ref No 2103-226

date 4/23/2020

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
TSS	OK / SM 2540D	NA	**NA**	4	**≤7**	≤1.0 mg/L 1.0 mg/L	NA	**NA**	98	**±20**	6	**≤ 25**	3.4	**≤ 25**	OK	NONE
Turbidity	OK / EPA 180.1	NA	**NA**	1	**≤2**	≤0.1 NTU 0.1 NTU	NA	**NA**	NA	**±10**	3	**≤ 25**	21	**≤ 25**	OK	NONE
Hardness	OK / SM 2340B	NA	**NA**	4	**≤180**	≤1.0 mg/L 1.0 mg/L	97	**±25**	98	**±15**	8	**≤ 20**	8.3	**≤ 20**	OK	NONE
DOC	OK / SM 5310B	≤15	**≤15**	3	**≤28**	≤1.0 mg/L 1.0 mg/L	97	**±25**	91	**±15**	2	**≤ 20**	D = 0.1	**≤ 2**	OK	NONE
Total Phosphorus	OK / EPA 365.1	NA	**NA**	4	**≤28**	≤0.01 mg/L 0.01 mg/L	102	**±25**	102	**±20**	3	**≤ 20**	D = 0.003	**≤ 0.02**	OK	NONE
Total Nitrogen (TKN + N+N)	OK/ SM 4500 N-B	NA	**NA**	7	**≤28**	≤0.1 mg/L 0.1 mg/L	92-106	**±25**	95-101	**±20**	2-3.8, D=0-0.09	**≤ 20**	0-6.4	**≤ 20**	OK	NONE

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

Data Quality Assurance Worksheet

By N. Maas

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 4/22/21 Page 2 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 3/18/2021 /All locations, QA100 (EVAMS) Lab Ref No 2103-226

date 4/23/2020

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
Total Copper	OK/ EPA 200.8	NA	**NA**	11	**≤180**	≤1.0 µg/L 1.0 µg/L	103	**±25**	NR	**±15**	NC	**≤ 20**	NC	**≤ 20**	OK	NONE
Total Zinc	OK/ EPA 200.8	NA	**NA**	11	**≤180**	≤5.0 µg/L 5.0 µg/L	99	**±25**	NR	**±15**	NC	**≤ 20**	NC	**≤ 20**	OK	NONE
Dissolved Copper	OK/ EPA 200.8	≤15	**≤15**	11	**≤180**	≤1.0 µg/L 1.0 µg/L	90,91	**±25**	NR	**±15**	NC	**≤ 20**	NC	**≤ 20**	OK	NONE
Dissolved Zinc	OK/ EPA 200.8	≤15	**≤15**	11	**≤180**	≤5.0 µg/L 5.0 µg/L	92	**±25**	NR	**±15**	NC	**≤ 20**	NC	**≤ 20**	OK	NONE
Fecal Coliform	OK / SM 9222D	NA	**NA**	1	**≤1**	≤1.0 cfu/ 100mL 10 cfu/ 100mL	NA	**NA**	NA	**NA**	D=0,3	**≤ 2**	D =1	**≤ 2**	OK	NO FLAG, SECOND LAB DUP OK.

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

April 5, 2021

Jess Brown
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2103-303

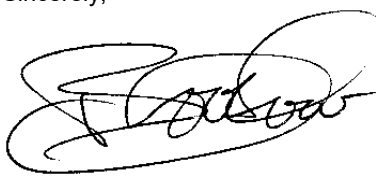
Dear Jess:

Enclosed are the analytical results and associated quality control data for samples submitted on March 25, 2021.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



Blair Goodrow
Project Manager

Enclosures

Date of Report: April 5, 2021
Samples Submitted: March 25, 2021
Laboratory Reference: 2103-303
Project: 14-05806-000

Case Narrative

Samples were collected on March 24, 2021 and received by the laboratory on March 25, 2021. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: April 5, 2021
Samples Submitted: March 25, 2021
Laboratory Reference: 2103-303
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210324**					
Laboratory ID:	03-303-01					
Total Suspended Solids	**24**	2.0	SM 2540D	3-26-21	3-29-21	
Client ID:	**COUMI-20210324**					
Laboratory ID:	03-303-02					
Total Suspended Solids	**20**	2.0	SM 2540D	3-26-21	3-29-21	
Client ID:	**TOSMO-20210324**					
Laboratory ID:	03-303-03					
Total Suspended Solids	**67**	2.0	SM 2540D	3-26-21	3-29-21	
Client ID:	**TYLMO-20210324**					
Laboratory ID:	03-303-04					
Total Suspended Solids	**420**	5.0	SM 2540D	3-26-21	3-29-21	
Client ID:	**TYLMI-20210324**					
Laboratory ID:	03-303-05					
Total Suspended Solids	**19**	2.0	SM 2540D	3-26-21	3-29-21	
Client ID:	**MONMN-20210324**					
Laboratory ID:	03-303-06					
Total Suspended Solids	**9.6**	2.0	SM 2540D	3-26-21	3-29-21	
Client ID:	**MONMS-20210324**					
Laboratory ID:	03-303-07					
Total Suspended Solids	**12**	2.0	SM 2540D	3-26-21	3-29-21	
Client ID:	**MONM-20210324**					
Laboratory ID:	03-303-08					
Total Suspended Solids	**32**	2.0	SM 2540D	3-26-21	3-29-21	
Client ID:	**TOSMI-20210324**					
Laboratory ID:	03-303-09					
Total Suspended Solids	**54**	2.0	SM 2540D	3-26-21	3-29-21	

Date of Report: April 5, 2021
Samples Submitted: March 25, 2021
Laboratory Reference: 2103-303
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVAMS-20210324**					
Laboratory ID:	03-303-10					
Total Suspended Solids	**16**	2.0	SM 2540D	3-26-21	3-29-21	
Client ID:	**EVALSS-20210324**					
Laboratory ID:	03-303-11					
Total Suspended Solids	**30**	2.0	SM 2540D	3-26-21	3-29-21	
Client ID:	**SEIMN-20210324**					
Laboratory ID:	03-303-12					
Total Suspended Solids	**59**	5.0	SM 2540D	3-26-21	3-29-21	
Client ID:	**COLM-20210324**					
Laboratory ID:	03-303-13					
Total Suspended Solids	**2.2**	1.0	SM 2540D	3-26-21	3-29-21	
Client ID:	**SEIMS-20210324**					
Laboratory ID:	03-303-14					
Total Suspended Solids	**97**	5.0	SM 2540D	3-26-21	3-29-21	
Client ID:	**QA101-20210324**					
Laboratory ID:	03-303-15					
Total Suspended Solids	**26**	2.0	SM 2540D	3-26-21	3-29-21	

Date of Report: April 5, 2021
Samples Submitted: March 25, 2021
Laboratory Reference: 2103-303
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0326W1					
Total Suspended Solids	**ND**	1.0	SM 2540D	3-26-21	3-29-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	03-303-04								
	ORIG	DUP							
Total Suspended Solids	**418**	**383**	NA	NA	NA	NA	9	21	
SPIKE BLANK									
Laboratory ID:	SB0326W1								
	SB		SB		SB				
Total Suspended Solids	**112**		100	NA	112	57-126	NA	NA	

Date of Report: April 5, 2021
Samples Submitted: March 25, 2021
Laboratory Reference: 2103-303
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210324**					
Laboratory ID:	03-303-01					
Turbidity	**14**	0.10	EPA 180.1	3-25-21	3-25-21	
Client ID:	**COUMI-20210324**					
Laboratory ID:	03-303-02					
Turbidity	**9.0**	0.10	EPA 180.1	3-25-21	3-25-21	
Client ID:	**TOSMO-20210324**					
Laboratory ID:	03-303-03					
Turbidity	**33**	0.10	EPA 180.1	3-25-21	3-25-21	
Client ID:	**TYLMO-20210324**					
Laboratory ID:	03-303-04					
Turbidity	**150**	0.50	EPA 180.1	3-25-21	3-25-21	
Client ID:	**TYLMI-20210324**					
Laboratory ID:	03-303-05					
Turbidity	**11**	0.10	EPA 180.1	3-25-21	3-25-21	
Client ID:	**MONMN-20210324**					
Laboratory ID:	03-303-06					
Turbidity	**6.5**	0.10	EPA 180.1	3-25-21	3-25-21	
Client ID:	**MONMS-20210324**					
Laboratory ID:	03-303-07					
Turbidity	**5.6**	0.10	EPA 180.1	3-25-21	3-25-21	
Client ID:	**MONM-20210324**					
Laboratory ID:	03-303-08					
Turbidity	**18**	0.10	EPA 180.1	3-25-21	3-25-21	
Client ID:	**TOSMI-20210324**					
Laboratory ID:	03-303-09					
Turbidity	**28**	0.10	EPA 180.1	3-25-21	3-25-21	

Date of Report: April 5, 2021
Samples Submitted: March 25, 2021
Laboratory Reference: 2103-303
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVAMS-20210324**					
Laboratory ID:	03-303-10					
Turbidity	**8.5**	0.10	EPA 180.1	3-25-21	3-25-21	
Client ID:	**EVALSS-20210324**					
Laboratory ID:	03-303-11					
Turbidity	**11**	0.10	EPA 180.1	3-25-21	3-25-21	
Client ID:	**SEIMN-20210324**					
Laboratory ID:	03-303-12					
Turbidity	**28**	0.10	EPA 180.1	3-25-21	3-25-21	
Client ID:	**COLM-20210324**					
Laboratory ID:	03-303-13					
Turbidity	**1.5**	0.10	EPA 180.1	3-25-21	3-25-21	
Client ID:	**SEIMS-20210324**					
Laboratory ID:	03-303-14					
Turbidity	**40**	0.20	EPA 180.1	3-25-21	3-25-21	
Client ID:	**QA101-20210324**					
Laboratory ID:	03-303-15					
Turbidity	**12**	0.10	EPA 180.1	3-25-21	3-25-21	

Date of Report: April 5, 2021
Samples Submitted: March 25, 2021
Laboratory Reference: 2103-303
Project: 14-05806-000

TURBIDITY
EPA 180.1
QUALITY CONTROL

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0325W1					
Turbidity	**ND**	0.10	EPA 180.1	3-25-21	3-25-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	03-293-01								
	ORIG	DUP							
Turbidity	**1.95**	**2.00**	NA	NA	NA	NA	3	14	

Date of Report: April 5, 2021
Samples Submitted: March 25, 2021
Laboratory Reference: 2103-303
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210324**					
Laboratory ID:	03-303-01					
Hardness	**59**	1.0	EPA 200.7/SM 2340B	3-30-21	3-30-21	
Client ID:	**COUMI-20210324**					
Laboratory ID:	03-303-02					
Hardness	**100**	1.0	EPA 200.7/SM 2340B	3-30-21	3-30-21	
Client ID:	**TOSMO-20210324**					
Laboratory ID:	03-303-03					
Hardness	**79**	1.0	EPA 200.7/SM 2340B	3-30-21	3-30-21	
Client ID:	**TYLMO-20210324**					
Laboratory ID:	03-303-04					
Hardness	**33**	1.0	EPA 200.7/SM 2340B	3-30-21	3-30-21	
Client ID:	**TYLMI-20210324**					
Laboratory ID:	03-303-05					
Hardness	**64**	1.0	EPA 200.7/SM 2340B	3-30-21	3-30-21	
Client ID:	**MONMN-20210324**					
Laboratory ID:	03-303-06					
Hardness	**61**	1.0	EPA 200.7/SM 2340B	3-30-21	3-30-21	
Client ID:	**MONMS-20210324**					
Laboratory ID:	03-303-07					
Hardness	**99**	1.0	EPA 200.7/SM 2340B	3-30-21	3-30-21	

Date of Report: April 5, 2021
Samples Submitted: March 25, 2021
Laboratory Reference: 2103-303
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20210324**					
Laboratory ID:	03-303-08					
Hardness	**69**	1.0	EPA 200.7/SM 2340B	3-30-21	3-30-21	
Client ID:	**TOSMI-20210324**					
Laboratory ID:	03-303-09					
Hardness	**71**	1.0	EPA 200.7/SM 2340B	3-30-21	3-30-21	
Client ID:	**EVAMS-20210324**					
Laboratory ID:	03-303-10					
Hardness	**73**	1.0	EPA 200.7/SM 2340B	3-30-21	3-30-21	
Client ID:	**EVALSS-20210324**					
Laboratory ID:	03-303-11					
Hardness	**72**	1.0	EPA 200.7/SM 2340B	3-30-21	3-30-21	
Client ID:	**SEIMN-20210324**					
Laboratory ID:	03-303-12					
Hardness	**23**	1.0	EPA 200.7/SM 2340B	3-30-21	3-30-21	
Client ID:	**COLM-20210324**					
Laboratory ID:	03-303-13					
Hardness	**9.3**	1.0	EPA 200.7/SM 2340B	3-30-21	3-30-21	
Client ID:	**SEIMS-20210324**					
Laboratory ID:	03-303-14					
Hardness	**40**	1.0	EPA 200.7/SM 2340B	3-30-21	3-30-21	

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HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA101-20210324**					
Laboratory ID:	03-303-15					
Hardness	**77**	1.0	EPA 200.7/SM 2340B	3-30-21	3-30-21	

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HARDNESS
EPA 200.7/SM 2340B
QUALITY CONTROL

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0330WH2					
Hardness	**ND**	1.0	EPA 200.7/SM 2340B	3-30-21	3-30-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-303-01										
	ORIG	DUP									
Hardness	**59.2**	**55.9**	NA		NA	NA		NA	6	20	
MATRIX SPIKES											
Laboratory ID:	03-303-01										
	MS	MSD	MS	MSD		MS	MSD				
Hardness	**184**	**185**	132	132	59.2	95	95	75-125	1	20	
SPIKE BLANK											
Laboratory ID:	SB0330WH2										
	SB		SB			SB					
Hardness	**129**		132		NA	98		85-115	NA	NA	

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DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210324**					
Laboratory ID:	03-303-01					
Dissolved Organic Carbon	**4.7**	1.0	SM 5310B	3-25-21	3-25-21	
Client ID:	**COUMI-20210324**					
Laboratory ID:	03-303-02					
Dissolved Organic Carbon	**4.5**	1.0	SM 5310B	3-25-21	3-25-21	
Client ID:	**TOSMO-20210324**					
Laboratory ID:	03-303-03					
Dissolved Organic Carbon	**5.8**	1.0	SM 5310B	3-25-21	3-25-21	
Client ID:	**TYLMO-20210324**					
Laboratory ID:	03-303-04					
Dissolved Organic Carbon	**5.8**	1.0	SM 5310B	3-25-21	3-25-21	
Client ID:	**TYLMI-20210324**					
Laboratory ID:	03-303-05					
Dissolved Organic Carbon	**5.3**	1.0	SM 5310B	3-25-21	3-25-21	
Client ID:	**MONMN-20210324**					
Laboratory ID:	03-303-06					
Dissolved Organic Carbon	**4.9**	1.0	SM 5310B	3-25-21	3-25-21	
Client ID:	**MONMS-20210324**					
Laboratory ID:	03-303-07					
Dissolved Organic Carbon	**5.8**	1.0	SM 5310B	3-25-21	3-25-21	
Client ID:	**MONM-20210324**					
Laboratory ID:	03-303-08					
Dissolved Organic Carbon	**4.7**	1.0	SM 5310B	3-25-21	3-25-21	
Client ID:	**TOSMI-20210324**					
Laboratory ID:	03-303-09					
Dissolved Organic Carbon	**4.8**	1.0	SM 5310B	3-25-21	3-25-21	

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DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVAMS-20210324**					
Laboratory ID:	03-303-10					
Dissolved Organic Carbon	**4.1**	1.0	SM 5310B	3-25-21	3-25-21	
Client ID:	**EVALSS-20210324**					
Laboratory ID:	03-303-11					
Dissolved Organic Carbon	**3.7**	1.0	SM 5310B	3-25-21	3-25-21	
Client ID:	**SEIMN-20210324**					
Laboratory ID:	03-303-12					
Dissolved Organic Carbon	**7.1**	1.0	SM 5310B	3-25-21	3-25-21	
Client ID:	**COLM-20210324**					
Laboratory ID:	03-303-13					
Dissolved Organic Carbon	**8.4**	1.0	SM 5310B	3-25-21	3-25-21	
Client ID:	**SEIMS-20210324**					
Laboratory ID:	03-303-14					
Dissolved Organic Carbon	**8.0**	1.0	SM 5310B	3-25-21	3-25-21	
Client ID:	**QA101-20210324**					
Laboratory ID:	03-303-15					
Dissolved Organic Carbon	**3.7**	1.0	SM 5310B	3-25-21	3-25-21	

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DISSOLVED ORGANIC CARBON
SM 5310B
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0325D1					
Dissolved Organic Carbon	**ND**	1.0	SM 5310B	3-25-21	3-25-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	03-303-01								
	ORIG	DUP							
Dissolved Organic Carbon	**4.66**	**4.15**	NA	NA	NA	NA	12	15	
MATRIX SPIKE									
Laboratory ID:	03-303-01								
	MS		MS		MS				
Dissolved Organic Carbon	**14.5**		10.0	4.66	98	72-132	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB0325D1								
	SB		SB		SB				
Dissolved Organic Carbon	**10.4**		10.0	NA	104	82-123	NA	NA	

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TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210324**					
Laboratory ID:	03-303-01					
Total Phosphorus	**0.074**	0.010	EPA 365.1	3-29-21	3-30-21	
Client ID:	**COUMI-20210324**					
Laboratory ID:	03-303-02					
Total Phosphorus	**0.069**	0.010	EPA 365.1	3-29-21	3-30-21	
Client ID:	**TOSMO-20210324**					
Laboratory ID:	03-303-03					
Total Phosphorus	**0.14**	0.010	EPA 365.1	3-29-21	3-30-21	
Client ID:	**TYLMO-20210324**					
Laboratory ID:	03-303-04					
Total Phosphorus	**0.63**	0.010	EPA 365.1	3-29-21	3-30-21	
Client ID:	**TYLMI-20210324**					
Laboratory ID:	03-303-05					
Total Phosphorus	**0.11**	0.010	EPA 365.1	3-29-21	3-30-21	
Client ID:	**MONMN-20210324**					
Laboratory ID:	03-303-06					
Total Phosphorus	**0.037**	0.010	EPA 365.1	3-29-21	3-30-21	
Client ID:	**MONMS-20210324**					
Laboratory ID:	03-303-07					
Total Phosphorus	**0.052**	0.010	EPA 365.1	3-29-21	3-30-21	
Client ID:	**MONM-20210324**					
Laboratory ID:	03-303-08					
Total Phosphorus	**0.086**	0.010	EPA 365.1	3-29-21	3-30-21	
Client ID:	**TOSMI-20210324**					
Laboratory ID:	03-303-09					
Total Phosphorus	**0.091**	0.010	EPA 365.1	3-29-21	3-30-21	

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TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVAMS-20210324**					
Laboratory ID:	03-303-10					
Total Phosphorus	**0.035**	0.010	EPA 365.1	3-29-21	3-30-21	
Client ID:	**EVALSS-20210324**					
Laboratory ID:	03-303-11					
Total Phosphorus	**0.052**	0.010	EPA 365.1	3-29-21	3-30-21	
Client ID:	**SEIMN-20210324**					
Laboratory ID:	03-303-12					
Total Phosphorus	**0.12**	0.010	EPA 365.1	3-29-21	3-30-21	
Client ID:	**COLM-20210324**					
Laboratory ID:	03-303-13					
Total Phosphorus	**ND**	0.010	EPA 365.1	3-29-21	3-30-21	
Client ID:	**SEIMS-20210324**					
Laboratory ID:	03-303-14					
Total Phosphorus	**0.14**	0.010	EPA 365.1	3-29-21	3-30-21	
Client ID:	**QA101-20210324**					
Laboratory ID:	03-303-15					
Total Phosphorus	**0.049**	0.010	EPA 365.1	3-29-21	3-30-21	

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TOTAL PHOSPHORUS
EPA 365.1
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0329W1					
Total Phosphorus	**ND**	0.010	EPA 365.1	3-29-21	3-30-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	03-303-01								
	ORIG	DUP							
Total Phosphorus	**0.0735**	**0.0757**	NA	NA	NA	NA	3	14	
MATRIX SPIKE									
Laboratory ID:	03-303-01								
	MS		MS		MS				
Total Phosphorus	**0.321**		0.250	0.0735	99	80-110	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB0329W1								
	SB		SB		SB				
Total Phosphorus	**0.238**		0.250	NA	95	78-110	NA	NA	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210324**					
Laboratory ID:	03-303-01					
Copper	**5.4**	1.0	EPA 200.8	3-30-21	4-1-21	
Zinc	**51**	5.0	EPA 200.8	3-30-21	4-1-21	
Client ID:	**COUMI-20210324**					
Laboratory ID:	03-303-02					
Copper	**3.1**	1.0	EPA 200.8	3-30-21	4-1-21	
Zinc	**97**	5.0	EPA 200.8	3-30-21	4-1-21	
Client ID:	**TOSMO-20210324**					
Laboratory ID:	03-303-03					
Copper	**8.1**	1.0	EPA 200.8	3-30-21	4-1-21	
Zinc	**570**	25	EPA 200.8	3-30-21	4-1-21	
Client ID:	**TYLMO-20210324**					
Laboratory ID:	03-303-04					
Copper	**30**	1.0	EPA 200.8	3-30-21	4-1-21	
Zinc	**220**	13	EPA 200.8	3-30-21	4-1-21	
Client ID:	**TYLMI-20210324**					
Laboratory ID:	03-303-05					
Copper	**5.7**	1.0	EPA 200.8	3-30-21	3-30-21	
Zinc	**64**	5.0	EPA 200.8	3-30-21	3-30-21	
Client ID:	**MONMN-20210324**					
Laboratory ID:	03-303-06					
Copper	**1.6**	1.0	EPA 200.8	3-30-21	4-1-21	
Zinc	**23**	5.0	EPA 200.8	3-30-21	4-1-21	
Client ID:	**MONMS-20210324**					
Laboratory ID:	03-303-07					
Copper	**2.5**	1.0	EPA 200.8	3-30-21	4-1-21	
Zinc	**5.9**	5.0	EPA 200.8	3-30-21	4-1-21	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20210324**					
Laboratory ID:	03-303-08					
Copper	**3.0**	1.0	EPA 200.8	3-30-21	4-1-21	
Zinc	**41**	5.0	EPA 200.8	3-30-21	4-1-21	
Client ID:	**TOSMI-20210324**					
Laboratory ID:	03-303-09					
Copper	**9.1**	1.0	EPA 200.8	3-30-21	4-1-21	
Zinc	**2100**	63	EPA 200.8	3-30-21	4-1-21	
Client ID:	**EVAMS-20210324**					
Laboratory ID:	03-303-10					
Copper	**1.2**	1.0	EPA 200.8	3-30-21	4-1-21	
Zinc	**ND**	5.0	EPA 200.8	3-30-21	4-1-21	
Client ID:	**EVALSS-20210324**					
Laboratory ID:	03-303-11					
Copper	**1.4**	1.0	EPA 200.8	3-30-21	4-1-21	
Zinc	**ND**	5.0	EPA 200.8	3-30-21	4-1-21	
Client ID:	**SEIMN-20210324**					
Laboratory ID:	03-303-12					
Copper	**2.9**	1.0	EPA 200.8	3-30-21	4-1-21	
Zinc	**5.1**	5.0	EPA 200.8	3-30-21	4-1-21	
Client ID:	**COLM-20210324**					
Laboratory ID:	03-303-13					
Copper	**ND**	1.0	EPA 200.8	3-30-21	4-1-21	
Zinc	**ND**	5.0	EPA 200.8	3-30-21	4-1-21	
Client ID:	**SEIMS-20210324**					
Laboratory ID:	03-303-14					
Copper	**3.0**	1.0	EPA 200.8	3-30-21	4-1-21	
Zinc	**16**	5.0	EPA 200.8	3-30-21	4-1-21	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA101-20210324**					
Laboratory ID:	03-303-15					
Copper	**1.5**	1.0	EPA 200.8	3-30-21	4-1-21	
Zinc	**ND**	5.0	EPA 200.8	3-30-21	4-1-21	

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TOTAL METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0330WH1					
Copper	**ND**	1.0	EPA 200.8	3-30-21	3-30-21	
Zinc	**ND**	5.0	EPA 200.8	3-30-21	3-30-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-303-05										
	ORIG	DUP									
Copper	**5.72**	**6.08**	NA	NA		NA		NA	6	20	
Zinc	**64.2**	**69.8**	NA	NA		NA		NA	8	20	
MATRIX SPIKES											
Laboratory ID:	03-303-05										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**103**	**103**	100	100	5.72	**98**	**98**	75-125	0	20	
Zinc	**164**	**165**	100	100	64.2	**100**	**101**	75-125	1	20	

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210324**					
Laboratory ID:	03-303-01					
Copper	**2.7**	1.0	EPA 200.8		4-1-21	
Zinc	**21**	5.0	EPA 200.8		4-1-21	
Client ID:	**COUMI-20210324**					
Laboratory ID:	03-303-02					
Copper	**1.6**	1.0	EPA 200.8		4-1-21	
Zinc	**51**	5.0	EPA 200.8		4-1-21	
Client ID:	**TOSMO-20210324**					
Laboratory ID:	03-303-03					
Copper	**3.0**	1.0	EPA 200.8		4-1-21	
Zinc	**350**	13	EPA 200.8		4-1-21	
Client ID:	**TYLMO-20210324**					
Laboratory ID:	03-303-04					
Copper	**4.1**	1.0	EPA 200.8		4-1-21	
Zinc	**10**	5.0	EPA 200.8		4-1-21	
Client ID:	**TYLMI-20210324**					
Laboratory ID:	03-303-05					
Copper	**3.0**	1.0	EPA 200.8		4-1-21	
Zinc	**33**	5.0	EPA 200.8		4-1-21	
Client ID:	**MONMN-20210324**					
Laboratory ID:	03-303-06					
Copper	**1.8**	1.0	EPA 200.8		4-1-21	
Zinc	**16**	5.0	EPA 200.8		4-1-21	
Client ID:	**MONMS-20210324**					
Laboratory ID:	03-303-07					
Copper	**1.5**	1.0	EPA 200.8		4-1-21	
Zinc	**ND**	5.0	EPA 200.8		4-1-21	

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20210324**					
Laboratory ID:	03-303-08					
Copper	**1.0**	1.0	EPA 200.8		4-1-21	
Zinc	**12**	5.0	EPA 200.8		4-1-21	
Client ID:	**TOSMI-20210324**					
Laboratory ID:	03-303-09					
Copper	**3.7**	1.0	EPA 200.8		4-1-21	
Zinc	**1700**	63	EPA 200.8		4-1-21	
Client ID:	**EVAMS-20210324**					
Laboratory ID:	03-303-10					
Copper	**ND**	1.0	EPA 200.8		4-1-21	
Zinc	**ND**	5.0	EPA 200.8		4-1-21	
Client ID:	**EVALSS-20210324**					
Laboratory ID:	03-303-11					
Copper	**ND**	1.0	EPA 200.8		4-1-21	
Zinc	**ND**	5.0	EPA 200.8		4-1-21	
Client ID:	**SEIMN-20210324**					
Laboratory ID:	03-303-12					
Copper	**ND**	1.0	EPA 200.8		4-1-21	
Zinc	**ND**	5.0	EPA 200.8		4-1-21	
Client ID:	**COLM-20210324**					
Laboratory ID:	03-303-13					
Copper	**ND**	1.0	EPA 200.8		4-1-21	
Zinc	**ND**	5.0	EPA 200.8		4-1-21	
Client ID:	**SEIMS-20210324**					
Laboratory ID:	03-303-14					
Copper	**ND**	1.0	EPA 200.8		4-1-21	
Zinc	**ND**	5.0	EPA 200.8		4-1-21	

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA101-20210324**					
Laboratory ID:	03-303-15					
Copper	**1.1**	1.0	EPA 200.8		4-1-21	
Zinc	**ND**	5.0	EPA 200.8		4-1-21	

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DISSOLVED METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0401D1					
Copper	**ND**	1.0	EPA 200.8		4-1-21	
Zinc	**ND**	5.0	EPA 200.8		4-1-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-303-05										
	ORIG	DUP									
Copper	**3.02**	**2.92**	NA	NA		NA		NA	3	20	
Zinc	**33.2**	**32.4**	NA	NA		NA		NA	2	20	
MATRIX SPIKES											
Laboratory ID:	03-303-05										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**77.0**	**78.0**	80.0	80.0	3.02	**93**	**94**	75-125	1	20	
Zinc	**114**	**116**	80.0	80.0	33.2	**101**	**103**	75-125	2	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Apr 2 2021
On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister

Dear David Baumeister:

Enclosed please find the analytical data for your REDMOND PAIRED WATERSHED STUDY project.

The following is a cross correlation of client and laboratory identifications for your convenience.

CLIENT ID	MATRIX	AMTEST ID	TEST
COUMO-20210324	Water	21-A003738	Micro, NUT
COUMI-20210324	Water	21-A003739	Micro, NUT
TOSMO-20210324	Water	21-A003740	Micro, NUT
TYLMO-20210324	Water	21-A003741	Micro, NUT
TYLMI-20210324	Water	21-A003742	Micro, NUT
MONMN-20210324	Water	21-A003743	Micro, NUT
MONMS-20210324	Water	21-A003744	Micro, NUT
MONM-20210324	Water	21-A003745	Micro, NUT
TOSMI-20210324	Water	21-A003746	Micro, NUT
EVAMS-20210324	Water	21-A003747	Micro, NUT
EVALSS-20210324	Water	21-A003748	Micro, NUT
SEIMN-20210324	Water	21-A003749	Micro, NUT
COLM-20210324	Water	21-A003750	Micro, NUT
SEIMS-20210324	Water	21-A003751	Micro, NUT
QA101-20210324	Water	21-A003752	Micro, NUT

Your samples were received on Thursday, March 25, 2021. At the time of receipt, the samples were logged in and properly maintained prior to the subsequent analysis.

The analytical procedures used at AmTest are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

Following the analytical data you will find the Quality Control (QC) results.

Please note that the detection limits that are listed in the body of the report refer to the Practical Quantitation Limits (PQL's), as opposed to the Method Detection Limits (MDL's).

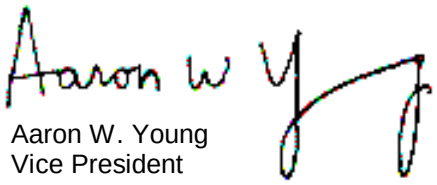
Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Apr 2 2021
On-Site Environmental
continued . . .

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,



Aaron W. Young
Vice President

Project #: 14-05806-000
PO Number: 03-303

BACT = Bacteriological	MET = Metals	NUT=Nutrients	MIN=Minerals
CONV = Conventionals	ORG = Organics	DEM=Demand	

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664
www.amtestlab.com

Professional Analytical Services

ANALYSIS REPORT

On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister
Project Name: REDMOND PAIRED WATERSHED STUDY
Project #: 14-05806-000
PO Number: 03-303
All results reported on an as received basis.

Date Received: 03/25/21
Date Reported: 4/ 2/21

AMTEST Identification Number **21-A003738**
Client Identification **COUMO-20210324**
Sampling Date **03/24/21, 16:50**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	140	CFU/100 ml		1	SM 9222D	JM	03/25/21
Total Nitrogen (NOX&TKN)	1.27	mg/l		0.1			
Total Nitrogen (TKN)	0.949	mg/l		0.2	SM4500N	KS	03/31/21
Total Nitrate + Nitrite	0.32	mg/l		0.02	SM4500NO3	KS	04/01/21

AMTEST Identification Number **21-A003739**
Client Identification **COUMI-20210324**
Sampling Date **03/24/21, 17:05**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	92.	CFU/100 ml		1	SM 9222D	JM	03/25/21
Total Nitrogen (NOX&TKN)	0.78	mg/l		0.1			
Total Nitrogen (TKN)	0.524	mg/l		0.2	SM4500N	KS	03/31/21
Total Nitrate + Nitrite	0.26	mg/l		0.02	SM4500NO3	KS	04/01/21

AMTEST Identification Number **21-A003740**
Client Identification **TOSMO-20210324**
Sampling Date **03/24/21, 17:20**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	4200	CFU/100 ml		1	SM 9222D	JM	03/25/21
Total Nitrogen (NOX&TKN)	1.47	mg/l		0.1			
Total Nitrogen (TKN)	0.908	mg/l		0.2	SM4500N	KS	03/31/21
Total Nitrate + Nitrite	0.56	mg/l		0.02	SM4500NO3	KS	04/01/21

AMTEST Identification Number **21-A003741**
Client Identification **TYLMO-20210324**
Sampling Date **03/24/21, 17:40**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	440	CFU/100 ml		1	SM 9222D	JM	03/25/21
Total Nitrogen (NOX&TKN)	3.12	mg/l		0.1			
Total Nitrogen (TKN)	2.96	mg/l		0.2	SM4500N	KS	03/31/21
Total Nitrate + Nitrite	0.16	mg/l		0.02	SM4500NO3	KS	04/01/21

AMTEST Identification Number **21-A003742**
Client Identification **TYLMI-20210324**
Sampling Date **03/24/21, 18:10**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	13.	CFU/100 ml		1	SM 9222D	JM	03/25/21
Total Nitrogen (NOX&TKN)	1.08	mg/l		0.1			
Total Nitrogen (TKN)	0.619	mg/l		0.2	SM4500N	KS	03/31/21
Total Nitrate + Nitrite	0.46	mg/l		0.02	SM4500NO3	KS	04/01/21

AMTEST Identification Number **21-A003743**
Client Identification **MONMN-20210324**
Sampling Date **03/24/21, 18:35**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	1800	CFU/100 ml		1	SM 9222D	JM	03/25/21
Total Nitrogen (NOX&TKN)	0.63	mg/l		0.1			
Total Nitrogen (TKN)	0.502	mg/l		0.2	SM4500N	KS	03/31/21
Total Nitrate + Nitrite	0.13	mg/l		0.02	SM4500NO3	KS	04/01/21

AMTEST Identification Number **21-A003744**
Client Identification **MONMS-20210324**
Sampling Date **03/24/21, 18:55**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	49.	CFU/100 ml		1	SM 9222D	JM	03/25/21
Total Nitrogen (NOX&TKN)	0.95	mg/l		0.1			
Total Nitrogen (TKN)	0.617	mg/l		0.2	SM4500N	KS	03/31/21
Total Nitrate + Nitrite	0.33	mg/l		0.02	SM4500NO3	KS	04/01/21

AMTEST Identification Number **21-A003745**
Client Identification **MONM-20210324**
Sampling Date **03/24/21, 19:15**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	720	CFU/100 ml		1	SM 9222D	JM	03/25/21
Total Nitrogen (NOX&TKN)	1.21	mg/l		0.1			
Total Nitrogen (TKN)	0.943	mg/l		0.2	SM4500N	KS	03/31/21
Total Nitrate + Nitrite	0.27	mg/l		0.02	SM4500NO3	KS	04/01/21

AMTEST Identification Number **21-A003746**
Client Identification **TOSMI-20210324**
Sampling Date **03/24/21, 17:00**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	5500	CFU/100 ml		1	SM 9222D	JM	03/25/21
Total Nitrogen (NOX&TKN)	1.25	mg/l		0.1			
Total Nitrogen (TKN)	0.781	mg/l		0.2	SM4500N	KS	03/31/21
Total Nitrate + Nitrite	0.47	mg/l		0.02	SM4500NO3	KS	04/01/21

AMTEST Identification Number **21-A003747**
Client Identification **EVAMS-20210324**
Sampling Date **03/24/21, 17:20**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	11.	CFU/100 ml		1	SM 9222D	JM	03/25/21
Total Nitrogen (NOX&TKN)	2.59	mg/l		0.1			
Total Nitrogen (TKN)	0.887	mg/l		0.2	SM4500N	KS	03/31/21
Total Nitrate + Nitrite	1.7	mg/l		0.02	SM4500NO3	KS	04/01/21

AMTEST Identification Number **21-A003748**
Client Identification **EVALSS-20210324**
Sampling Date **03/24/21, 17:30**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	91.	CFU/100 ml		1	SM 9222D	JM	03/25/21
Total Nitrogen (NOX&TKN)	2.13	mg/l		0.1			
Total Nitrogen (TKN)	0.727	mg/l		0.2	SM4500N	KS	03/31/21
Total Nitrate + Nitrite	1.4	mg/l		0.02	SM4500NO3	KS	04/01/21

AMTEST Identification Number **21-A003749**
Client Identification **SEIMN-20210324**
Sampling Date **03/24/21, 18:15**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	180	CFU/100 ml		1	SM 9222D	JM	03/25/21
Total Nitrogen (NOX&TKN)	1.15	mg/l		0.1			
Total Nitrogen (TKN)	1.10	mg/l		0.2	SM4500N	KS	03/31/21
Total Nitrate + Nitrite	0.049	mg/l		0.02	SM4500NO3	KS	04/01/21

AMTEST Identification Number **21-A003750**
Client Identification **COLM-20210324**
Sampling Date **03/24/21, 18:45**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	5.	CFU/100 ml		1	SM 9222D	JM	03/25/21
Total Nitrogen (NOX&TKN)	0.62	mg/l		0.1			
Total Nitrogen (TKN)	0.620	mg/l		0.2	SM4500N	KS	03/31/21
Total Nitrate + Nitrite	< 0.02	mg/l		0.02	SM4500NO3	KS	04/01/21

AMTEST Identification Number **21-A003751**
Client Identification **SEIMS-20210324**
Sampling Date **03/24/21, 19:20**

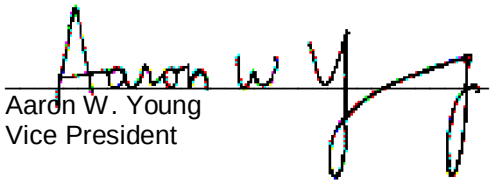
Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	530	CFU/100 ml		1	SM 9222D	JM	03/25/21
Total Nitrogen (NOX&TKN)	1.68	mg/l		0.1			
Total Nitrogen (TKN)	1.53	mg/l		0.2	SM4500N	KS	03/31/21
Total Nitrate + Nitrite	0.15	mg/l		0.02	SM4500NO3	KS	04/01/21

AMTEST Identification Number **21-A003752**
Client Identification **QA101-20210324**
Sampling Date **03/24/21, 17:30**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	88.	CFU/100 ml		1	SM 9222D	JM	03/25/21
Total Nitrogen (NOX&TKN)	1.88	mg/l		0.1			
Total Nitrogen (TKN)	0.675	mg/l		0.2	SM4500N	KS	03/31/21
Total Nitrate + Nitrite	1.2	mg/l		0.02	SM4500NO3	KS	04/01/21



Aaron W. Young
Vice President

Am Test Inc.
13600 NE 126th PL
Suite C
Kirkland, WA, 98034
(425) 885-1664
www.amtestlab.com

Professional Analytical Services

QC Summary for sample numbers: 21-A003738 to 21-A003752

DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	DUP VALUE	RPD
21-A003744	Fecal Coliform	CFU/100 ml	49.	41.	18.
21-A003747	Fecal Coliform	CFU/100 ml	11.	7.	44.
21-A003744	Total Nitrogen (TKN)	mg/l	0.617	0.677	9.3
21-A003798	Total Nitrogen (TKN)	mg/l	40.9	37.2	9.5
21-A003882	Total Nitrogen (TKN)	mg/l	0.880	0.778	12.
21-A003746	Total Nitrate + Nitrite	mg/l	0.47	0.44	6.6
21-A003808	Total Nitrate + Nitrite	mg/l	2.8	2.7	3.6
21-A003818	Total Nitrate + Nitrite	mg/l	0.75	0.76	1.3
21-A003840	Total Nitrate + Nitrite	mg/l	2.7	2.8	3.6
21-A004017	Total Nitrate + Nitrite	mg/l	0.53	0.53	0.00

MATRIX SPIKES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	SMPL+ SPK	SPK AMT	RECOVERY
21-A003744	Total Nitrogen (TKN)	mg/l	0.617	2.45	2.00	91.65 %
21-A003798	Total Nitrogen (TKN)	mg/l	40.9	81.8	40.0	102.25 %
21-A003882	Total Nitrogen (TKN)	mg/l	0.880	2.90	2.00	101.00 %
21-A003746	Total Nitrate + Nitrite	mg/l	0.47	1.4	1.0	93.00 %
21-A003808	Total Nitrate + Nitrite	mg/l	2.8	14.	10.	112.00 %
21-A003818	Total Nitrate + Nitrite	mg/l	0.75	1.8	1.0	105.00 %
21-A003840	Total Nitrate + Nitrite	mg/l	2.7	14.	10.	113.00 %
21-A004017	Total Nitrate + Nitrite	mg/l	0.53	1.6	1.0	107.00 %

STANDARD REFERENCE MATERIALS

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
Total Nitrogen (TKN)	mg/l	1.00	0.992	99.2 %
Total Nitrogen (TKN)	mg/l	1.00	0.995	99.5 %
Total Nitrogen (TKN)	mg/l	1.00	1.02	102. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.1	110. %
Total Nitrate + Nitrite	mg/l	1.0	1.1	110. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %

BLANKS

ANALYTE	UNITS	RESULT
Fecal Coliform	CFU/100 ml	< 1
Fecal Coliform	CFU/100 ml	< 1
Total Nitrogen (TKN)	mg/l	< 0.2

QC Summary for sample numbers: 21-A003738 to 21-A003752...

BLANKS continued....

ANALYTE	UNITS	RESULT
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Laboratory Reference #: 03-303

Laboratory: AmTest Laboratories

Attention: Aaron Young

13600 NE 126th Pl Kirkland, WA 98034

Phone Number: (425) 885-1664

Turnaround Request

1 Day 2 Day 3 Day

Standard

Other: _____

Project Manager: Blair Goodrow

email: bgoodrow@onsite-env.com

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analyses
1	COUMO-20210324 3738	3/24/21	16:50	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
2	COUMI-20210324 39	3/24/21	17:05	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
3	TOSMO-20210324 40	3/24/21	17:20	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
4	TYLMO-20210324 41	3/24/21	17:40	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
5	TYLMI-20210324 42	3/24/21	18:10	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
6	MONMN-20210324 43	3/24/21	18:35	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
7	MONMS-20210324 44	3/24/21	18:55	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
8	MONM-20210324 45	3/24/21	19:15	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
9	TOSMI-20210324 46	3/24/21	17:00	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
10	EVAMS-20210324 47	3/24/21	17:20	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N

Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by: Michelle Lie	OSE	3/25/21	1215	EDDs - CSV
Received by:	Amtest	3/25/21	1215	Reporting Limits:
Relinquished by:				Fecal Coliform - 1.0 cfu/100ml
Received by:				Total Nitrogen - .10 mg/L
Relinquished by:				
Received by:				

Client T=2.0

P.13

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Laboratory Reference #: 03-303

Laboratory: AmTest Laboratories

Attention: Aaron Young

13600 NE 126th Pl Kirkland, WA 98034

Phone Number: (425) 885-1664

Turnaround Request

1 Day 2 Day 3 Day

Standard

Other:

Project Manager: Blair Goodrow

email: bgoodrow@onsite-env.com

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analyses
11	EVALSS-20210324 37 48	3/24/21	17:30	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
12	SEIMN-20210324 49	3/24/21	18:15	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
13	COLM-20210324 50	3/24/21	18:45	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
14	SEIMS-20210324 51	3/24/21	19:20	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
15	QA101-20210324 52	3/24/21	17:30	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N

Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:	OSE	3/24/21	1215	
Received by:	Amtest	3/25/21	1215	EDDs - CSV
Relinquished by:				Reporting Limits:
Received by:				Fecal Coliform - 1.0 cfu/100ml
Relinquished by:				Total Nitrogen - .10 mg/L
Received by:				

Client TAT

P.14

CHAIN OF CUSTODY 03-303

Page 1 of 1

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants

Project No.: 14-05806-000

Project Name: Redmond Paired Watershed Study

Project Manager: George Iftner

Turnaround Requested:

_____ 1 Day

_____ 2 Day

_____ 3 Day

__X__ Standard

Laboratory No.

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Suspended Solids (SM 2540D)	Turbidity (EPA 181.1)	Hardness (EPA 200.7 / SM 2340B)	Dissolved Organ Carbon (SM 5310B) *	Fecal Coliform (SM 9222D)	Total Phosphorus (EPA 365.1)	Total Nitrogen (SM 4500 N-B)	Total Cu and Zn (EPA 200.8)	Dissolved Cu and Zn (EPA 200.8) *	
1	COUMO-2021 0324	03/24/21	16:50	Water	7	X	X	X	X	X	X	X	X	X	
2	COUMI-2021		17:05	Water	7	X	X	X	X	X	X	X	X	X	
3	TOSMO-2021		17:20	Water	7	X	X	X	X	X	X	X	X	X	
4	TYLMO-2021		17:40	Water	7	X	X	X	X	X	X	X	X	X	
5	TYLMI-2021		18:10	Water	7	X	X	X	X	X	X	X	X	X	
6	MONMN-2021		18:35	Water	7	X	X	X	X	X	X	X	X	X	
7	MONMS-2021		18:55	Water	7	X	X	X	X	X	X	X	X	X	
8	MONM-2021		19:15	Water	7	X	X	X	X	X	X	X	X	X	
9	TOSMI-2021		17:00	Water	7	X	X	X	X	X	X	X	X	X	
10	EVAMS-2021		17:20	Water	7	X	X	X	X	X	X	X	X	X	
11	EVALSS-2021		17:30	Water	7	X	X	X	X	X	X	X	X	X	
12	SEIMN-2021		18:15	Water	7	X	X	X	X	X	X	X	X	X	
13	COLM-2021		18:45	Water	7	X	X	X	X	X	X	X	X	X	
14	SEIMS-2021		19:20	Water	7	X	X	X	X	X	X	X	X	X	
15	QA 101-2021		17:30	Water	7	X	X	X	X	X	X	X	X	X	

Relinquished by Rebecca Stebbins Date 3/25/21 Received by _____ Date 3/25/21

Firm Herrera Environ. Time 9:30 Firm OSE Time 9:30

Relinquished by _____ Date _____ Received by _____ Date _____

Firm _____ Time _____ Firm _____ Time _____

Comments:
* - field filtered with 0.45 µm filter within 15 minutes of collecting sample

CHAIN OF CUSTODY 03-303

Page ___of___

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants

Project No.: 14-05806-000

Project Name: Redmond Paired Watershed Study

Project Manager: George Iftner

Turnaround Requested:

_____ 1 Day

_____ 2 Day

_____ 3 Day

___X___ Standard

Laboratory No.

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Suspended Solids (SM 2540D)	Turbidity (EPA 181.1)	Hardness (EPA 200.7 / SM 2340B)	Dissolved Organ Carbon (SM 5310B) *	Fecal Coliform (SM 9222D)	Total Phosphorus (EPA 365.1)	Total Nitrogen (SM 4500 N-B)	Total Cu and Zn (EPA 200.8)	Dissolved Cu and Zn (EPA 200.8) *	
1	COUMO-2021 0324	03/24/21	16:50	Water	7	X	X	X	X	X	X	X	X	X	
2	COUMI-2021		17:05	Water	7	X	X	X	X	X	X	X	X	X	
3	TOSMO-2021		17:20	Water	7	X	X	X	X	X	X	X	X	X	
4	TYLMO-2021		17:40	Water	7	X	X	X	X	X	X	X	X	X	
5	TYLMI-2021		18:10	Water	7	X	X	X	X	X	X	X	X	X	
6	MONMN-2021		18:35	Water	7	X	X	X	X	X	X	X	X	X	
7	MONMS-2021		18:55	Water	7	X	X	X	X	X	X	X	X	X	
8	MONM-2021		19:15	Water	7	X	X	X	X	X	X	X	X	X	
9	TOSMI-2021		17:00	Water	7	X	X	X	X	X	X	X	X	X	
10	EVAMS-2021		17:20	Water	7	X	X	X	X	X	X	X	X	X	
11	EVALSS-2021		17:30	Water	7	X	X	X	X	X	X	X	X	X	
12	SEIMN-2021		18:15	Water	7	X	X	X	X	X	X	X	X	X	
13	COLM-2021		18:45	Water	7	X	X	X	X	X	X	X	X	X	
14	SEIMS-2021		19:20	Water	7	X	X	X	X	X	X	X	X	X	
15	QA 121-2021		17:30	Water	7	X	X	X	X	X	X	X	X	X	

Relinquished by Rebecca Stebbins Date 3/25/21 Received by _____ Date 3/25/21

Firm Herrera Environ. Time 9:30 Firm OSE Time 9:30

Relinquished by _____ Date _____ Received by _____ Date

Firm _____ Time _____ Firm _____ Time _____

Comments:
* - field filtered with 0.45 µm filter within 15 minutes of collecting sample

METER CALIBRATION LOG - Redmond Paired Watershed Study

Project Number:	14-05806-000		
Personnel Performing Calibration:	N. Bartish		
Meter:	AQUA #1		
Date/Time:	3/24/21		13:30
Barometric Pressure Start of Day:	mmHg: 761.0	Time:	13:30
Barometric Pressure End of Day:	mmHg: 760.9	Time:	13:45

PRE Field Run CALIBRATION	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	4.5	0	21.0	
Conductivity (µS/cm)	1010	1,000	21.0	
Conductivity (µS/cm)	97.1	100	20.8	
DO % Saturation	100.6	100	20.9	

POST Field Run CHECK	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	1.4	0	21.2	
Conductivity (µS/cm)	99.6	100	21.5	
DO % Saturation	100.3	100	21.5	

Calibration Procedures:

Rinse Multimeter Sonde Between Each Operation

Rinse 3 times with tap water, 3 times with deionized water, then 3 times with the solution to be used for calibrating or testing.

Conductivity Calibration Notes:

1. Dry the conductivity probe with a lab tissue (e.g., KimWipes®) and DI water.
2. Fill calibration cup to within a centimeter of the top of the calibration cup with DI water (0 µS).
3. Fill the calibration cup with 1,000 µS standard so that the temperature/conductivity probe is submerged.
4. Make sure there are no bubbles in the cell; wait 2 minutes.
5. Enter the appropriate standard value (1,000 µS/cm or 1.0 mS/cm) for Sp Cond.
6. Check conductivity using 100 µS/cm standard.

Dissolved Oxygen Calibration Notes:

1. Fill the calibration cup with about 1/2 inch of DI; it should be below the sensor cap.
2. Use KimWipes® to dry any droplets from the sensor cap.
3. Invert calibration cup's cap and gently rest it on the cup.
4. Wait 5 minutes, making sure that temperature stabilizes.
5. Determine local barometric pressure (mm Hg) and enter this value into the meter.
6. Click "Calibrate". "Calibrate Successful" will be displayed.
7. To retain calibration accuracy between measurements, store with the sensor immersed in water or within a water-saturated air environment such as a sealed storage cup with at least 10 ml of water.
8. It is important to have the water-saturated air and the sensor at the same temperature. Therefore, store a jar of DI in the same environment as the sonde and calibrate in a similar air temperature as the water and sonde.
9. Keep probe out of direct sun or wind.

HERRERA

METER CALIBRATION LOG - Redmond Paired Watershed Study

Project Number:	14-05806-000		
Personnel Performing Calibration:	M. Bartish		
Meter:	ProDSS #2		
Date/Time:	3/24/21		13:30
Barometric Pressure Start of Day:	mmHg: 761.9	Time:	13:30
Barometric Pressure End of Day:	mmHg: 761.0	Time:	18:45

PRE Field Run CALIBRATION	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	2.0	0	21.7	
Conductivity (µS/cm)	986	1,000	21.8	
Conductivity (µS/cm)	97.0	100	21.5	
DO % Saturation	100.5	100	21.6	

POST Field Run CHECK	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	0.9	0	22.0	
Conductivity (µS/cm)	99.3	100	22.0	
DO % Saturation	100.5	100	21.8	

Calibration Procedures:

Rinse Multimeter Sonde Between Each Operation

Rinse 3 times with tap water, 3 times with deionized water, then 3 times with the solution to be used for calibrating or testing.

Conductivity Calibration Notes:

1. Dry the conductivity probe with a lab tissue (e.g., KimWipes®) and DI water.
2. Fill calibration cup to within a centimeter of the top of the calibration cup with DI water (0 µS).
3. Fill the calibration cup with 1,000 µS standard so that the temperature/conductivity probe is submerged.
4. Make sure there are no bubbles in the cell; wait 2 minutes.
5. Enter the appropriate standard value (1,000 µS/cm or 1.0 mS/cm) for Sp Cond.
6. Check conductivity using 100 µS/cm standard.

Dissolved Oxygen Calibration Notes:

1. Fill the calibration cup with about 1/2 inch of DI; it should be below the sensor cap.
2. Use KimWipes® to dry any droplets from the sensor cap.
3. Invert calibration cup's cap and gently rest it on the cup.
4. Wait 5 minutes, making sure that temperature stabilizes.
5. Determine local barometric pressure (mm Hg) and enter this value into the meter.
6. Click "Calibrate". "Calibrate Successful" will be displayed.
7. To retain calibration accuracy between measurements, store with the sensor immersed in water or within a water-saturated air environment such as a sealed storage cup with at least 10 m of water.
8. It is important to have the water-saturated air and the sensor at the same temperature. Therefore, store a jar of DI in the same environment as the sonde and calibrate in a similar air temperature as the water and sonde.
9. Keep probe out of direct sun or wind.

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + NM

Sample Date: 3/29/21 **Sample Time:** 1815 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: SEIMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp:

Water Quality Sampling

Sample ID: SEIMN

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	turbid
Color:	light brownish
Odor:	NA
Sheen:	NA
Floatables:	yes some

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

~~YSI Pro DSS 1~~

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 7.5 inches

Reference Point (description): Measure down from top of bolt

Water Quality Measurments

Temperature (°C) 6.3

Specific Conductivity (µs/cm) 52.3

Dissolved Oxygen (mg/L) 12.26

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NM+GK

Sample Date: 3/24/24 **Sample Time:** 1730 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later? Y N
(Must filter within 15 minutes of collection)

SITE ID: EVALSS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 46 + Rainy

Water Quality Sampling

Sample ID: EVALSS-2024

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	Yes
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	QA101-20240324
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	light tan turbid
Color:	NA
Odor:	NA
Sheen:	NA
Floatables:	NA

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

~~YSI Pro DSS 1~~

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.40

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 7.3

Specific Conductivity (µs/cm) 162.9

Dissolved Oxygen (mg/L) 12.10

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + NM

Sample Date: 3/24/21 **Sample Time:** 1720 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later:** Y N

(Must filter within 15 minutes of collection)

SITE ID: EVAMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 46 + Rainy

Water Quality Sampling

Sample ID: EVAMS-20210324

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: little turbid

Color: light brown

Odor: NA

Sheen: NA

Floatables: same amount

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 3.82

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 7.4

Specific Conductivity (µs/cm) 175.0

Dissolved Oxygen (mg/L) 11.67

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NM + GK

Sample Date: 3/24/21 **Sample Time:** 17:00 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later:** (Y) N
(Must filter within 15 minutes of collection)

SITE ID: TOSM1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 46° + Rainy

Water Quality Sampling

Sample ID: TOSM1 - 20210324

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	bit turbid
Color:	brown
Odor:	NA
Sheen:	NA
Floatables:	yes lots

LABORATORY DELIVERY

Date: **Time:**

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.94

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 9.0

Specific Conductivity (µs/cm) 94.7

Dissolved Oxygen (mg/L) 11.50

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, TF

Sample Date: 6/24/21 **Sample Time:** 19:20 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later:** Y N
(Must filter within 15 minutes of collection)

SITE ID: SEMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Overcast, 50°F

Water Quality Sampling

Sample ID: SEMS2021

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	↓
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	
Color:	
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.93

Reference Point (description): 56

Water Quality Measurments

Temperature (°C) 7.1

Specific Conductivity (µs/cm) 72.6

Dissolved Oxygen (mg/L) 11.35

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, TF

Sample Date: 3/24/21 **Sample Time:** 18:45 PDT: PST:

Base Flow or Storm Event? (B) **Field filtered 5 minutes later:** (Y) N
(Must filter within 15 minutes of collection)

SITE ID: MONNS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: light drizzle, 50°F

Water Quality Sampling

Sample ID: MONNS20210324

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 63.5 ft

Reference Point (description): Tape

Water Quality Measurments

Temperature (°C) 8.5

Specific Conductivity (µs/cm) 241.4

Dissolved Oxygen (mg/L) 10.10

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, TF

Sample Date: 3/24/21 **Sample Time:** 18:35 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later:** Y N

(Must filter within 15 minutes of collection)

SITE ID: MONMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: light rain, 55°F

Water Quality Sampling

Sample ID: MONMN20210324

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	No
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.24

Reference Point (description): S6

Water Quality Measurments

Temperature (°C) 8.0

Specific Conductivity (µs/cm) 145.7

Dissolved Oxygen (mg/L) 11.45

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, TF

Sample Date: 3/24/21 **Sample Time:** 18:10 PDT: PST:

Base Flow or Storm Event? (Base Flow)

Field filtered 5 minutes later: (Y) N

(Must filter within 15 minutes of collection)

SITE ID: TYLM1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rainy, 50°F

Water Quality Sampling

Sample ID: TYLM120210324

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	fair
Color:	light brown
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 53.5 in

Reference Point (description): Tape

Water Quality Measurments

Temperature (°C) 8.3

Specific Conductivity (µs/cm) 1425

Dissolved Oxygen (mg/L) 11.19

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: ND, TF

Sample Date: 3/24/21 **Sample Time:** 17:40 PDT: / PST:

Base Flow or Storm Event? B **Field filtered 5 minutes later:** Y / N

(Must filter within 15 minutes of collection)

SITE ID: TYM0

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rainy, 50°F

Water Quality Sampling

Sample ID: TYM020210324

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Very low
Color:	brush
Odor:	
Sheen:	
Floatables:	Yes

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 30.25 ft

Reference Point (description): Tape

Water Quality Measurments

Temperature (°C) 8.8

Specific Conductivity (µs/cm) 49.9

Dissolved Oxygen (mg/L) 11.38

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: ND, TF

Sample Date: 3/24/21 **Sample Time:** 17:20 PDT: PST:

Base Flow or Storm Event? (B) **Field filtered 5 minutes later:** (Y) N

(Must filter within 15 minutes of collection)

SITE ID: TOSMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rainy, 50°F

Water Quality Sampling

Sample ID: TOSMO 2021-0324

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	low
Color:	brown
Odor:	
Sheen:	
Floatables:	YES

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.77

Reference Point (description): S6

Water Quality Measurments

Temperature (°C) 8.8

Specific Conductivity (µs/cm) 177.4

Dissolved Oxygen (mg/L) 11.52

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NO, TP

Sample Date: 3/22/21 **Sample Time:** 17:05 PDT: PST:

Base Flow or Storm Event? B **Field filtered 5 minutes later:** Y N
(Must filter within 15 minutes of collection)

SITE ID: COUN1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rainy 48°F

Water Quality Sampling

Sample ID: COUN120210324

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	No
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Good

Color: light brown

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.64

Reference Point (description): 56

Water Quality Measurments

Temperature (°C) 8.2

Specific Conductivity (µs/cm) 208.0

Dissolved Oxygen (mg/L) 11.59

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, TF

Sample Date: 3/24/21 **Sample Time:** 16:50 PDT: PST:

Base Flow or Storm Event? (Base Flow)

Field filtered 5 minutes later? (N)
(Must filter within 15 minutes of collection)

SITE ID: COUMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 50°F, Rain

Water Quality Sampling

Sample ID: COUMO20210324

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	ND
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: low

Color: clear

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 1.40

Reference Point (description): 56

Water Quality Measurments

Temperature (°C) 8.9

Specific Conductivity (µs/cm) 138.0

Dissolved Oxygen (mg/L) 11.29

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + NM

Sample Date: 3/29/21 **Sample Time:** 1915 PDT: PST:

Base Flow or ~~Storm Event~~? **Field filtered 5 minutes later:** ~~Y~~ N
(Must filter within 15 minutes of collection)

SITE ID: MONM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

HERRERA

Current Weather and Temp: 46 + rainy

Water Quality Sampling

Sample ID: MONM

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Stream turbid
Color:	
Odor:	NA
Sheen:	NA
Floatables:	Yes some

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

~~YSI Pro DSS 1~~

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): NA

Reference Point (description): NA

Water Quality Measurments

Temperature (°C) 7.6

Specific Conductivity (µs/cm) 179.6

Dissolved Oxygen (mg/L) 11.95

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NM+GK

Sample Date: 3/24/24 **Sample Time:** 1845 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: (Y) N
(Must filter within 15 minutes of collection)

SITE ID: COLM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 47+Rainy

Water Quality Sampling

Sample ID: COLM

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Little Turbid

Color: Light tan

Odor: NA

Sheen: NA

Floatables: NA

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

~~YSI Pro DSS 1~~

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 5.10

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 6.3

Specific Conductivity (µs/cm) 383

Dissolved Oxygen (mg/L) 11.71

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Data Quality Assurance Worksheet

By N. Maas

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 4/23/21 Page 1 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 3/24/2021 /All locations, QA101 (EVALSS) Lab Ref No 2103-303

date 4/23/2021

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
TSS	OK / SM 2540D	NA	**NA**	5	**≤7**	≤1.0 mg/L 1.0 mg/L	NA	**NA**	112	**±20**	9	**≤ 25**	14	**≤ 25**	OK	NONE
Turbidity	OK / EPA 180.1	NA	**NA**	1	**≤2**	≤0.1 NTU 0.1 NTU	NA	**NA**	NA	**±10**	3	**≤ 25**	8.7	**≤ 25**	OK	NONE
Hardness	OK / SM 2340B	NA	**NA**	6	**≤180**	≤1.0 mg/L 1.0 mg/L	1	**±25**	98	**±15**	6	**≤ 20**	6.7	**≤ 20**	OK	NONE
DOC	OK / SM 5310B	≤15	**≤15**	1	**≤28**	≤1.0 mg/L 1.0 mg/L	98	**±25**	104	**±15**	D=0.51	**≤ 2**	D = 0	**≤ 2**	OK	NONE
Total Phosphorus	OK / EPA 365.1	NA	**NA**	6	**≤28**	≤0.01 mg/L 0.01 mg/L	99	**±25**	95	**±20**	3	**≤ 20**	D = 0.003	**≤ 0.02**	OK	NONE
Total Nitrogen (TKN + N+N)	OK/ SM 4500 N-B	NA	**NA**	7	**≤28**	≤0.1 mg/L 0.1 mg/L	92-113	**±25**	99-110	**±20**	0-9.5, D=0.01	**≤ 20**	7.4-15	**≤ 20**	OK	NONE

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

Data Quality Assurance Worksheet

By N. Maas

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 4/23/21 Page 2 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 3/24/2021 /All locations, QA101 (EVALSS) Lab Ref No 2103-303

date 4/23/2021

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
Total Copper	OK/ EPA 200.8	NA	**NA**	7	**≤180**	≤1.0 µg/L 1.0 µg/L	98	**±25**	NR	**±15**	6	**≤ 20**	D = 0.1	**≤ 2**	OK	NONE
Total Zinc	OK/ EPA 200.8	NA	**NA**	7	**≤180**	≤5.0 µg/L 5.0 µg/L	100,101	**±25**	NR	**±15**	8	**≤ 20**	NC	**≤ 20**	OK	NONE
Dissolved Copper	OK/ EPA 200.8	≤15	**≤15**	7	**≤180**	≤1.0 µg/L 1.0 µg/L	93,94	**±25**	NR	**±15**	D = 0.1	**≤ 2**	NC	**≤ 20**	OK	NONE
Dissolved Zinc	OK/ EPA 200.8	≤15	**≤15**	7	**≤180**	≤5.0 µg/L 5.0 µg/L	101,103	**±25**	NR	**±15**	2	**≤ 20**	NC	**≤ 20**	OK	NONE
Fecal Coliform	OK / SM 9222D	NA	**NA**	1	**≤1**	≤1.0 cfu/ 100mL 10 cfu/ 100mL	NA	**NA**	NA	**NA**	18,44	**≤ 35**	3.5	**≤ 50**	OK	NO FLAG, SECOND LAB DUP OK.

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

May 6, 2021

Jess Brown
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2104-215

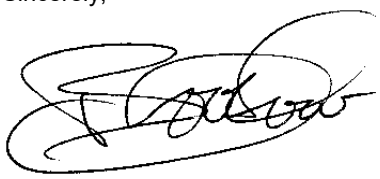
Dear Jess:

Enclosed are the analytical results and associated quality control data for samples submitted on April 22, 2021.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



Blair Goodrow
Project Manager

Enclosures

Date of Report: May 6, 2021
Samples Submitted: April 22, 2021
Laboratory Reference: 2104-215
Project: 14-05806-000

Case Narrative

Samples were collected on April 22, 2021 and received by the laboratory on April 22, 2021. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: May 6, 2021
Samples Submitted: April 22, 2021
Laboratory Reference: 2104-215
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210422**					
Laboratory ID:	04-215-01					
Total Suspended Solids	**7.2**	1.0	SM 2540D	4-26-21	4-27-21	
Client ID:	**COUMI-20210422**					
Laboratory ID:	04-215-02					
Total Suspended Solids	**5.0**	1.0	SM 2540D	4-26-21	4-27-21	
Client ID:	**TOSMO-20210422**					
Laboratory ID:	04-215-03					
Total Suspended Solids	**3.3**	1.0	SM 2540D	4-26-21	4-27-21	
Client ID:	**TYLMO-20210422**					
Laboratory ID:	04-215-04					
Total Suspended Solids	**ND**	1.0	SM 2540D	4-26-21	4-27-21	
Client ID:	**TYLMI-20210422**					
Laboratory ID:	04-215-05					
Total Suspended Solids	**4.0**	1.0	SM 2540D	4-26-21	4-27-21	
Client ID:	**MONMN-20210422**					
Laboratory ID:	04-215-06					
Total Suspended Solids	**9.4**	1.1	SM 2540D	4-26-21	4-27-21	
Client ID:	**MONMS-20210422**					
Laboratory ID:	04-215-07					
Total Suspended Solids	**2.2**	1.0	SM 2540D	4-26-21	4-27-21	
Client ID:	**MONM-20210422**					
Laboratory ID:	04-215-08					
Total Suspended Solids	**7.8**	1.0	SM 2540D	4-26-21	4-27-21	
Client ID:	**TOSMI-20210422**					
Laboratory ID:	04-215-09					
Total Suspended Solids	**2.4**	1.0	SM 2540D	4-26-21	4-27-21	

Date of Report: May 6, 2021
Samples Submitted: April 22, 2021
Laboratory Reference: 2104-215
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVAMS-20210422**					
Laboratory ID:	04-215-10					
Total Suspended Solids	**3.4**	1.0	SM 2540D	4-26-21	4-27-21	
Client ID:	**EVALSS-20210422**					
Laboratory ID:	04-215-11					
Total Suspended Solids	**4.2**	1.0	SM 2540D	4-26-21	4-27-21	
Client ID:	**SEIMN-20210422**					
Laboratory ID:	04-215-12					
Total Suspended Solids	**3.8**	1.0	SM 2540D	4-26-21	4-27-21	
Client ID:	**COLM-20210422**					
Laboratory ID:	04-215-13					
Total Suspended Solids	**2.0**	1.0	SM 2540D	4-26-21	4-27-21	
Client ID:	**SEIMS-20210422**					
Laboratory ID:	04-215-14					
Total Suspended Solids	**8.0**	1.0	SM 2540D	4-26-21	4-27-21	
Client ID:	**QA/02-20210422**					
Laboratory ID:	04-215-15					
Total Suspended Solids	**3.4**	1.0	SM 2540D	4-26-21	4-27-21	

Date of Report: May 6, 2021
Samples Submitted: April 22, 2021
Laboratory Reference: 2104-215
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0426W1					
Total Suspended Solids	**ND**	1.0	SM 2540D	4-26-21	4-27-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	04-215-03								
	ORIG	DUP							
Total Suspended Solids	**3.33**	**3.78**	NA	NA	NA	NA	13	21	
SPIKE BLANK									
Laboratory ID:	SB0426W1								
	SB		SB		SB				
Total Suspended Solids	**84.0**		100	NA	84	57-126	NA	NA	

Date of Report: May 6, 2021
Samples Submitted: April 22, 2021
Laboratory Reference: 2104-215
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210422**					
Laboratory ID:	04-215-01					
Turbidity	**3.6**	0.10	EPA 180.1	4-23-21	4-23-21	
Client ID:	**COUMI-20210422**					
Laboratory ID:	04-215-02					
Turbidity	**2.5**	0.10	EPA 180.1	4-23-21	4-23-21	
Client ID:	**TOSMO-20210422**					
Laboratory ID:	04-215-03					
Turbidity	**1.1**	0.10	EPA 180.1	4-23-21	4-23-21	
Client ID:	**TYLMO-20210422**					
Laboratory ID:	04-215-04					
Turbidity	**1.1**	0.10	EPA 180.1	4-23-21	4-23-21	
Client ID:	**TYLMI-20210422**					
Laboratory ID:	04-215-05					
Turbidity	**2.2**	0.10	EPA 180.1	4-23-21	4-23-21	
Client ID:	**MONMN-20210422**					
Laboratory ID:	04-215-06					
Turbidity	**4.0**	0.10	EPA 180.1	4-23-21	4-23-21	
Client ID:	**MONMS-20210422**					
Laboratory ID:	04-215-07					
Turbidity	**1.3**	0.10	EPA 180.1	4-23-21	4-23-21	
Client ID:	**MONM-20210422**					
Laboratory ID:	04-215-08					
Turbidity	**2.9**	0.10	EPA 180.1	4-23-21	4-23-21	
Client ID:	**TOSMI-20210422**					
Laboratory ID:	04-215-09					
Turbidity	**1.1**	0.10	EPA 180.1	4-23-21	4-23-21	

Date of Report: May 6, 2021
Samples Submitted: April 22, 2021
Laboratory Reference: 2104-215
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVAMS-20210422**					
Laboratory ID:	04-215-10					
Turbidity	**2.2**	0.10	EPA 180.1	4-23-21	4-23-21	
Client ID:	**EVALSS-20210422**					
Laboratory ID:	04-215-11					
Turbidity	**2.2**	0.10	EPA 180.1	4-23-21	4-23-21	
Client ID:	**SEIMN-20210422**					
Laboratory ID:	04-215-12					
Turbidity	**2.6**	0.10	EPA 180.1	4-23-21	4-23-21	
Client ID:	**COLM-20210422**					
Laboratory ID:	04-215-13					
Turbidity	**1.6**	0.10	EPA 180.1	4-23-21	4-23-21	
Client ID:	**SEIMS-20210422**					
Laboratory ID:	04-215-14					
Turbidity	**3.8**	0.10	EPA 180.1	4-23-21	4-23-21	
Client ID:	**QA/02-20210422**					
Laboratory ID:	04-215-15					
Turbidity	**3.3**	0.10	EPA 180.1	4-23-21	4-23-21	

Date of Report: May 6, 2021
Samples Submitted: April 22, 2021
Laboratory Reference: 2104-215
Project: 14-05806-000

TURBIDITY
EPA 180.1
QUALITY CONTROL

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0423W1					
Turbidity	**ND**	0.10	EPA 180.1	4-23-21	4-23-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	04-215-13								
	ORIG	DUP							
Turbidity	**1.64**	**1.75**	NA	NA	NA	NA	6	14	

Date of Report: May 6, 2021
Samples Submitted: April 22, 2021
Laboratory Reference: 2104-215
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210422**					
Laboratory ID:	04-215-01					
Hardness	**140**	1.0	EPA 200.7/SM 2340B	4-27-21	4-27-21	
Client ID:	**COUMI-20210422**					
Laboratory ID:	04-215-02					
Hardness	**160**	1.0	EPA 200.7/SM 2340B	4-27-21	4-27-21	
Client ID:	**TOSMO-20210422**					
Laboratory ID:	04-215-03					
Hardness	**130**	1.0	EPA 200.7/SM 2340B	4-27-21	4-27-21	
Client ID:	**TYLMO-20210422**					
Laboratory ID:	04-215-04					
Hardness	**100**	1.0	EPA 200.7/SM 2340B	4-27-21	4-27-21	
Client ID:	**TYLMI-20210422**					
Laboratory ID:	04-215-05					
Hardness	**110**	1.0	EPA 200.7/SM 2340B	4-27-21	4-27-21	
Client ID:	**MONMN-20210422**					
Laboratory ID:	04-215-06					
Hardness	**95**	1.0	EPA 200.7/SM 2340B	4-27-21	4-27-21	
Client ID:	**MONMS-20210422**					
Laboratory ID:	04-215-07					
Hardness	**130**	1.0	EPA 200.7/SM 2340B	4-27-21	4-27-21	

Date of Report: May 6, 2021
Samples Submitted: April 22, 2021
Laboratory Reference: 2104-215
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20210422**					
Laboratory ID:	04-215-08					
Hardness	**94**	1.0	EPA 200.7/SM 2340B	4-27-21	4-27-21	
Client ID:	**TOSMI-20210422**					
Laboratory ID:	04-215-09					
Hardness	**130**	1.0	EPA 200.7/SM 2340B	4-27-21	4-27-21	
Client ID:	**EVAMS-20210422**					
Laboratory ID:	04-215-10					
Hardness	**100**	1.0	EPA 200.7/SM 2340B	4-27-21	4-27-21	
Client ID:	**EVALSS-20210422**					
Laboratory ID:	04-215-11					
Hardness	**93**	1.0	EPA 200.7/SM 2340B	4-27-21	4-27-21	
Client ID:	**SEIMN-20210422**					
Laboratory ID:	04-215-12					
Hardness	**31**	1.0	EPA 200.7/SM 2340B	4-27-21	4-27-21	
Client ID:	**COLM-20210422**					
Laboratory ID:	04-215-13					
Hardness	**13**	1.0	EPA 200.7/SM 2340B	4-27-21	4-27-21	
Client ID:	**SEIMS-20210422**					
Laboratory ID:	04-215-14					
Hardness	**52**	1.0	EPA 200.7/SM 2340B	4-27-21	4-27-21	

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HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA/02-20210422**					
Laboratory ID:	04-215-15					
Hardness	**140**	1.0	EPA 200.7/SM 2340B	4-27-21	4-27-21	

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Samples Submitted: April 22, 2021
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HARDNESS
EPA 200.7/SM 2340B
QUALITY CONTROL

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0427WH2					
Hardness	**ND**	1.0	EPA 200.7/SM 2340B	4-27-21	4-27-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-215-13										
	ORIG	DUP									
Hardness	**12.6**	**12.7**	NA		NA	NA		NA	1	20	
MATRIX SPIKES											
Laboratory ID:	04-215-13										
	MS	MSD	MS	MSD		MS	MSD				
Hardness	**144**	**141**	132	132	12.6	100	97	75-125	2	20	
SPIKE BLANK											
Laboratory ID:	SB0427WH2										
	SB		SB			SB					
Hardness	**132**		132		NA	100		85-115	NA	NA	

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DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210422**					
Laboratory ID:	04-215-01					
Dissolved Organic Carbon	**3.4**	1.0	SM 5310B	4-26-21	4-26-21	
Client ID:	**COUMI-20210422**					
Laboratory ID:	04-215-02					
Dissolved Organic Carbon	**3.6**	1.0	SM 5310B	4-26-21	4-26-21	
Client ID:	**TOSMO-20210422**					
Laboratory ID:	04-215-03					
Dissolved Organic Carbon	**2.8**	1.0	SM 5310B	4-26-21	4-26-21	
Client ID:	**TYLMO-20210422**					
Laboratory ID:	04-215-04					
Dissolved Organic Carbon	**3.7**	1.0	SM 5310B	4-26-21	4-26-21	
Client ID:	**TYLMI-20210422**					
Laboratory ID:	04-215-05					
Dissolved Organic Carbon	**3.2**	1.0	SM 5310B	4-26-21	4-26-21	
Client ID:	**MONMN-20210422**					
Laboratory ID:	04-215-06					
Dissolved Organic Carbon	**3.9**	1.0	SM 5310B	4-26-21	4-26-21	
Client ID:	**MONMS-20210422**					
Laboratory ID:	04-215-07					
Dissolved Organic Carbon	**5.7**	1.0	SM 5310B	4-26-21	4-26-21	
Client ID:	**MONM-20210422**					
Laboratory ID:	04-215-08					
Dissolved Organic Carbon	**3.8**	1.0	SM 5310B	4-26-21	4-26-21	
Client ID:	**TOSMI-20210422**					
Laboratory ID:	04-215-09					
Dissolved Organic Carbon	**2.9**	1.0	SM 5310B	4-26-21	4-26-21	

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DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVAMS-20210422**					
Laboratory ID:	04-215-10					
Dissolved Organic Carbon	**3.4**	1.0	SM 5310B	4-26-21	4-26-21	
Client ID:	**EVALSS-20210422**					
Laboratory ID:	04-215-11					
Dissolved Organic Carbon	**3.0**	1.0	SM 5310B	4-26-21	4-26-21	
Client ID:	**SEIMN-20210422**					
Laboratory ID:	04-215-12					
Dissolved Organic Carbon	**4.6**	1.0	SM 5310B	4-26-21	4-26-21	
Client ID:	**COLM-20210422**					
Laboratory ID:	04-215-13					
Dissolved Organic Carbon	**11**	1.0	SM 5310B	4-26-21	4-26-21	
Client ID:	**SEIMS-20210422**					
Laboratory ID:	04-215-14					
Dissolved Organic Carbon	**3.7**	1.0	SM 5310B	4-26-21	4-26-21	
Client ID:	**QA/02-20210422**					
Laboratory ID:	04-215-15					
Dissolved Organic Carbon	**3.3**	1.0	SM 5310B	4-26-21	4-26-21	

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DISSOLVED ORGANIC CARBON
SM 5310B
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0426D1					
Dissolved Organic Carbon	**ND**	1.0	SM 5310B	4-26-21	4-26-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	04-215-01								
	ORIG	DUP							
Dissolved Organic Carbon	**3.43**	**3.43**	NA	NA	NA	NA	0	15	
MATRIX SPIKE									
Laboratory ID:	04-215-01								
	MS		MS		MS				
Dissolved Organic Carbon	**13.4**		10.0	3.43	100	72-132	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB0426D1								
	SB		SB		SB				
Dissolved Organic Carbon	**10.5**		10.0	NA	105	82-123	NA	NA	

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TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210422**					
Laboratory ID:	04-215-01					
Total Phosphorus	**0.081**	0.010	EPA 365.1	4-27-21	4-27-21	
Client ID:	**COUMI-20210422**					
Laboratory ID:	04-215-02					
Total Phosphorus	**0.086**	0.010	EPA 365.1	4-27-21	4-27-21	
Client ID:	**TOSMO-20210422**					
Laboratory ID:	04-215-03					
Total Phosphorus	**0.048**	0.010	EPA 365.1	4-27-21	4-27-21	
Client ID:	**TYLMO-20210422**					
Laboratory ID:	04-215-04					
Total Phosphorus	**0.046**	0.010	EPA 365.1	4-27-21	4-27-21	
Client ID:	**TYLMI-20210422**					
Laboratory ID:	04-215-05					
Total Phosphorus	**0.018**	0.010	EPA 365.1	4-27-21	4-27-21	
Client ID:	**MONMN-20210422**					
Laboratory ID:	04-215-06					
Total Phosphorus	**0.056**	0.010	EPA 365.1	4-27-21	4-27-21	
Client ID:	**MONMS-20210422**					
Laboratory ID:	04-215-07					
Total Phosphorus	**0.017**	0.010	EPA 365.1	4-27-21	4-27-21	
Client ID:	**MONM-20210422**					
Laboratory ID:	04-215-08					
Total Phosphorus	**0.029**	0.010	EPA 365.1	4-27-21	4-27-21	
Client ID:	**TOSMI-20210422**					
Laboratory ID:	04-215-09					
Total Phosphorus	**0.045**	0.010	EPA 365.1	4-27-21	4-27-21	

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TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVAMS-20210422**					
Laboratory ID:	04-215-10					
Total Phosphorus	**0.018**	0.010	EPA 365.1	4-27-21	4-27-21	
Client ID:	**EVALSS-20210422**					
Laboratory ID:	04-215-11					
Total Phosphorus	**0.021**	0.010	EPA 365.1	4-27-21	4-27-21	
Client ID:	**SEIMN-20210422**					
Laboratory ID:	04-215-12					
Total Phosphorus	**0.028**	0.010	EPA 365.1	4-27-21	4-27-21	
Client ID:	**COLM-20210422**					
Laboratory ID:	04-215-13					
Total Phosphorus	**0.020**	0.010	EPA 365.1	4-27-21	4-27-21	
Client ID:	**SEIMS-20210422**					
Laboratory ID:	04-215-14					
Total Phosphorus	**0.041**	0.010	EPA 365.1	4-27-21	4-27-21	
Client ID:	**QA/02-20210422**					
Laboratory ID:	04-215-15					
Total Phosphorus	**0.16**	0.010	EPA 365.1	4-27-21	4-27-21	

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TOTAL PHOSPHORUS
EPA 365.1
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0427W1					
Total Phosphorus	**ND**	0.010	EPA 365.1	4-27-21	4-27-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	04-215-01								
	ORIG	DUP							
Total Phosphorus	**0.0807**	**0.0786**	NA	NA	NA	NA	3	14	
MATRIX SPIKE									
Laboratory ID:	04-215-01								
	MS		MS		MS				
Total Phosphorus	**0.319**		0.250	0.0807	95	80-110	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB0427W1								
	SB		SB		SB				
Total Phosphorus	**0.239**		0.250	NA	96	78-110	NA	NA	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210422**					
Laboratory ID:	04-215-01					
Copper	**1.0**	1.0	EPA 200.8	4-27-21	4-27-21	
Zinc	**18**	5.0	EPA 200.8	4-27-21	4-27-21	
Client ID:	**COUMI-20210422**					
Laboratory ID:	04-215-02					
Copper	**ND**	1.0	EPA 200.8	4-27-21	4-27-21	
Zinc	**19**	5.0	EPA 200.8	4-27-21	4-27-21	
Client ID:	**TOSMO-20210422**					
Laboratory ID:	04-215-03					
Copper	**ND**	1.0	EPA 200.8	4-27-21	4-27-21	
Zinc	**27**	5.0	EPA 200.8	4-27-21	4-27-21	
Client ID:	**TYLMO-20210422**					
Laboratory ID:	04-215-04					
Copper	**ND**	1.0	EPA 200.8	4-27-21	4-27-21	
Zinc	**5.5**	5.0	EPA 200.8	4-27-21	4-27-21	
Client ID:	**TYLMI-20210422**					
Laboratory ID:	04-215-05					
Copper	**3.1**	1.0	EPA 200.8	4-27-21	4-27-21	
Zinc	**47**	5.0	EPA 200.8	4-27-21	4-27-21	
Client ID:	**MONMN-20210422**					
Laboratory ID:	04-215-06					
Copper	**2.4**	1.0	EPA 200.8	4-27-21	4-27-21	
Zinc	**7.1**	5.0	EPA 200.8	4-27-21	4-27-21	
Client ID:	**MONMS-20210422**					
Laboratory ID:	04-215-07					
Copper	**ND**	1.0	EPA 200.8	4-27-21	4-27-21	
Zinc	**ND**	5.0	EPA 200.8	4-27-21	4-27-21	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20210422**					
Laboratory ID:	04-215-08					
Copper	**ND**	1.0	EPA 200.8	4-27-21	4-27-21	
Zinc	**11**	5.0	EPA 200.8	4-27-21	4-27-21	
Client ID:	**TOSMI-20210422**					
Laboratory ID:	04-215-09					
Copper	**1.0**	1.0	EPA 200.8	4-27-21	4-27-21	
Zinc	**50**	5.0	EPA 200.8	4-27-21	4-27-21	
Client ID:	**EVAMS-20210422**					
Laboratory ID:	04-215-10					
Copper	**ND**	1.0	EPA 200.8	4-27-21	4-27-21	
Zinc	**ND**	5.0	EPA 200.8	4-27-21	4-27-21	
Client ID:	**EVALSS-20210422**					
Laboratory ID:	04-215-11					
Copper	**ND**	1.0	EPA 200.8	4-27-21	4-27-21	
Zinc	**ND**	5.0	EPA 200.8	4-27-21	4-27-21	
Client ID:	**SEIMN-20210422**					
Laboratory ID:	04-215-12					
Copper	**ND**	1.0	EPA 200.8	4-27-21	4-27-21	
Zinc	**ND**	5.0	EPA 200.8	4-27-21	4-27-21	
Client ID:	**COLM-20210422**					
Laboratory ID:	04-215-13					
Copper	**ND**	1.0	EPA 200.8	4-27-21	4-27-21	
Zinc	**ND**	5.0	EPA 200.8	4-27-21	4-27-21	
Client ID:	**SEIMS-20210422**					
Laboratory ID:	04-215-14					
Copper	**ND**	1.0	EPA 200.8	4-27-21	4-27-21	
Zinc	**ND**	5.0	EPA 200.8	4-27-21	4-27-21	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA/02-20210422**					
Laboratory ID:	04-215-15					
Copper	**ND**	1.0	EPA 200.8	4-27-21	4-27-21	
Zinc	**10**	5.0	EPA 200.8	4-27-21	4-27-21	

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TOTAL METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0427WH1					
Copper	**ND**	1.0	EPA 200.8	4-27-21	4-27-21	
Zinc	**ND**	5.0	EPA 200.8	4-27-21	4-27-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-215-10										
	ORIG	DUP									
Copper	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Zinc	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	04-215-10										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**98.4**	**97.4**	100	100	ND	**98**	**97**	75-125	1	20	
Zinc	**101**	**97.6**	100	100	ND	**101**	**98**	75-125	3	20	

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210422**					
Laboratory ID:	04-215-01					
Copper	**ND**	1.0	EPA 200.8		4-27-21	
Zinc	**7.5**	5.0	EPA 200.8		4-27-21	
Client ID:	**COUMI-20210422**					
Laboratory ID:	04-215-02					
Copper	**ND**	1.0	EPA 200.8		4-27-21	
Zinc	**10**	5.0	EPA 200.8		4-27-21	
Client ID:	**TOSMO-20210422**					
Laboratory ID:	04-215-03					
Copper	**ND**	1.0	EPA 200.8		4-27-21	
Zinc	**23**	5.0	EPA 200.8		4-27-21	
Client ID:	**TYLMO-20210422**					
Laboratory ID:	04-215-04					
Copper	**ND**	1.0	EPA 200.8		4-27-21	
Zinc	**ND**	5.0	EPA 200.8		4-27-21	
Client ID:	**TYLMI-20210422**					
Laboratory ID:	04-215-05					
Copper	**ND**	1.0	EPA 200.8		4-27-21	
Zinc	**8.1**	5.0	EPA 200.8		4-27-21	
Client ID:	**MONMN-20210422**					
Laboratory ID:	04-215-06					
Copper	**ND**	1.0	EPA 200.8		4-27-21	
Zinc	**ND**	5.0	EPA 200.8		4-27-21	
Client ID:	**MONMS-20210422**					
Laboratory ID:	04-215-07					
Copper	**ND**	1.0	EPA 200.8		4-27-21	
Zinc	**ND**	5.0	EPA 200.8		4-27-21	

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20210422**					
Laboratory ID:	04-215-08					
Copper	**ND**	1.0	EPA 200.8		4-27-21	
Zinc	**7.6**	5.0	EPA 200.8		4-27-21	
Client ID:	**TOSMI-20210422**					
Laboratory ID:	04-215-09					
Copper	**ND**	1.0	EPA 200.8		4-27-21	
Zinc	**42**	5.0	EPA 200.8		4-27-21	
Client ID:	**EVAMS-20210422**					
Laboratory ID:	04-215-10					
Copper	**ND**	1.0	EPA 200.8		4-27-21	
Zinc	**ND**	5.0	EPA 200.8		4-27-21	
Client ID:	**EVALSS-20210422**					
Laboratory ID:	04-215-11					
Copper	**ND**	1.0	EPA 200.8		4-27-21	
Zinc	**ND**	5.0	EPA 200.8		4-27-21	
Client ID:	**SEIMN-20210422**					
Laboratory ID:	04-215-12					
Copper	**ND**	1.0	EPA 200.8		4-27-21	
Zinc	**ND**	5.0	EPA 200.8		4-27-21	
Client ID:	**COLM-20210422**					
Laboratory ID:	04-215-13					
Copper	**ND**	1.0	EPA 200.8		4-27-21	
Zinc	**ND**	5.0	EPA 200.8		4-27-21	
Client ID:	**SEIMS-20210422**					
Laboratory ID:	04-215-14					
Copper	**ND**	1.0	EPA 200.8		4-27-21	
Zinc	**ND**	5.0	EPA 200.8		4-27-21	

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA/02-20210422**					
Laboratory ID:	04-215-15					
Copper	**ND**	1.0	EPA 200.8		4-27-21	
Zinc	**6.9**	5.0	EPA 200.8		4-27-21	

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DISSOLVED METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0427D1					
Copper	**ND**	1.0	EPA 200.8		4-27-21	
Zinc	**ND**	5.0	EPA 200.8		4-27-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-215-15										
	ORIG	DUP									
Copper	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Zinc	**6.92**	**6.78**	NA	NA		NA		NA	2	20	
MATRIX SPIKES											
Laboratory ID:	04-215-15										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**75.2**	**72.6**	80.0	80.0	ND	**94**	**91**	75-125	4	20	
Zinc	**86.4**	**85.6**	80.0	80.0	6.92	**99**	**98**	75-125	1	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

May 6 2021
On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister

Dear David Baumeister:

Enclosed please find the analytical data for your REDMOND PAIRED WATERSHED STUDY project.

The following is a cross correlation of client and laboratory identifications for your convenience.

CLIENT ID	MATRIX	AMTEST ID	TEST
COLM-20210422	Water	21-A005279	Micro, NUT
COUMI-20210422	Water	21-A005280	Micro, NUT
COUMO-20210422	Water	21-A005281	Micro, NUT
EVAMS-20210422	Water	21-A005282	Micro, NUT
EVALSS-20210422	Water	21-A005283	Micro, NUT
MONMN-20210422	Water	21-A005284	Micro, NUT
MONMS-20210422	Water	21-A005285	Micro, NUT
MONM-20210422	Water	21-A005286	Micro, NUT
SEIMN-20210422	Water	21-A005287	Micro, NUT
SEIMS-20210422	Water	21-A005288	Micro, NUT
TOSMI-20210422	Water	21-A005289	Micro, NUT
TOSMO-20210422	Water	21-A005290	Micro, NUT
TYLMI-20210422	Water	21-A005291	Micro, NUT
TYLMO-20210422	Water	21-A005292	Micro, NUT
QA-102-20210422	Water	21-A005293	Micro, NUT

Your samples were received on Thursday, April 22, 2021. At the time of receipt, the samples were logged in and properly maintained prior to the subsequent analysis.

The analytical procedures used at AmTest are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

Following the analytical data you will find the Quality Control (QC) results.

Please note that the detection limits that are listed in the body of the report refer to the Practical Quantitation Limits (PQL's), as opposed to the Method Detection Limits (MDL's).

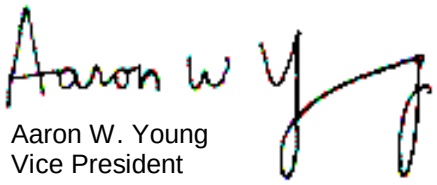
Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

May 6 2021
On-Site Environmental
continued . . .

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,



Aaron W. Young
Vice President

Project #: 14-05806-000
PO Number: 04-215

BACT = Bacteriological	MET = Metals	NUT=Nutrients	MIN=Minerals
CONV = Conventionals	ORG = Organics	DEM=Demand	

Am Test Inc.
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www.amtestlab.com

Professional Analytical Services

ANALYSIS REPORT

On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister
Project Name: REDMOND PAIRED WATERSHED STUDY
Project #: 14-05806-000
PO Number: 04-215
All results reported on an as received basis.

Date Received: 04/22/21
Date Reported: 5/ 6/21

AMTEST Identification Number **21-A005279**
Client Identification **COLM-20210422**
Sampling Date **04/22/21, 10:00**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	1.	CFU/100 ml		1	SM 9222D	OB	04/22/21
Total Nitrogen (NOX&TKN)	0.83	mg/l		0.1			
Total Nitrogen (TKN)	0.798	mg/l		0.2	SM4500N	KS	04/28/21
Total Nitrate + Nitrite	0.031	mg/l		0.02	SM4500NO3	KS	04/29/21

AMTEST Identification Number **21-A005280**
Client Identification **COUMI-20210422**
Sampling Date **04/22/21, 10:25**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	400	CFU/100 ml		1	SM 9222D	OB	04/22/21
Total Nitrogen (NOX&TKN)	1.06	mg/l		0.1			
Total Nitrogen (TKN)	0.838	mg/l		0.2	SM4500N	KS	04/28/21
Total Nitrate + Nitrite	0.22	mg/l		0.02	SM4500NO3	KS	04/29/21

AMTEST Identification Number **21-A005281**
Client Identification **COUMO-20210422**
Sampling Date **04/22/21, 10:40**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	300	CFU/100 ml		1	SM 9222D	OB	04/22/21
Total Nitrogen (NOX&TKN)	0.92	mg/l		0.1			
Total Nitrogen (TKN)	0.564	mg/l		0.2	SM4500N	KS	04/28/21
Total Nitrate + Nitrite	0.36	mg/l		0.02	SM4500NO3	KS	04/29/21

AMTEST Identification Number **21-A005282**
Client Identification **EVAMS-20210422**
Sampling Date **04/22/21, 11:00**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	15.	CFU/100 ml		1	SM 9222D	OB	04/22/21
Total Nitrogen (NOX&TKN)	2.47	mg/l		0.1			
Total Nitrogen (TKN)	0.472	mg/l		0.2	SM4500N	KS	04/28/21
Total Nitrate + Nitrite	2.0	mg/l		0.02	SM4500NO3	KS	04/29/21

AMTEST Identification Number **21-A005283**
Client Identification **EVALSS-20210422**
Sampling Date **04/22/21, 11:10**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	2.	CFU/100 ml		1	SM 9222D	OB	04/22/21
Total Nitrogen (NOX&TKN)	1.94	mg/l		0.1			
Total Nitrogen (TKN)	0.440	mg/l		0.2	SM4500N	KS	04/28/21
Total Nitrate + Nitrite	1.5	mg/l		0.02	SM4500NO3	KS	04/29/21

AMTEST Identification Number **21-A005284**
Client Identification **MONMN-20210422**
Sampling Date **04/22/21, 11:30**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	800	CFU/100 ml		1	SM 9222D	OB	04/22/21
Total Nitrogen (NOX&TKN)	0.63	mg/l		0.1			
Total Nitrogen (TKN)	0.508	mg/l		0.2	SM4500N	KS	04/28/21
Total Nitrate + Nitrite	0.12	mg/l		0.02	SM4500NO3	KS	04/29/21

AMTEST Identification Number **21-A005285**
Client Identification **MONMS-20210422**
Sampling Date **04/22/21, 11:40**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	< 1	CFU/100 ml		1	SM 9222D	OB	04/22/21
Total Nitrogen (NOX&TKN)	0.56	mg/l		0.1			
Total Nitrogen (TKN)	0.500	mg/l		0.2	SM4500N	KS	04/28/21
Total Nitrate + Nitrite	0.062	mg/l		0.02	SM4500NO3	KS	04/29/21

AMTEST Identification Number **21-A005286**
Client Identification **MONM-20210422**
Sampling Date **04/22/21, 12:45**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	300	CFU/100 ml		1	SM 9222D	OB	04/22/21
Total Nitrogen (NOX&TKN)	0.67	mg/l		0.1			
Total Nitrogen (TKN)	0.524	mg/l		0.2	SM4500N	KS	04/28/21
Total Nitrate + Nitrite	0.15	mg/l		0.02	SM4500NO3	KS	04/29/21

AMTEST Identification Number **21-A005287**
Client Identification **SEIMN-20210422**
Sampling Date **04/22/21, 09:55**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	2.	CFU/100 ml		1	SM 9222D	OB	04/22/21
Total Nitrogen (NOX&TKN)	0.76	mg/l		0.1			
Total Nitrogen (TKN)	0.515	mg/l		0.2	SM4500N	KS	04/28/21
Total Nitrate + Nitrite	0.25	mg/l		0.02	SM4500NO3	KS	04/29/21

AMTEST Identification Number **21-A005288**
Client Identification **SEIMS-20210422**
Sampling Date **04/22/21, 10:30**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	5.	CFU/100 ml		1	SM 9222D	OB	04/22/21
Total Nitrogen (NOX&TKN)	0.94	mg/l		0.1			
Total Nitrogen (TKN)	0.655	mg/l		0.2	SM4500N	KS	04/28/21
Total Nitrate + Nitrite	0.29	mg/l		0.02	SM4500NO3	KS	04/29/21

AMTEST Identification Number **21-A005289**
Client Identification **TOSMI-20210422**
Sampling Date **04/22/21, 10:45**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	68.	CFU/100 ml		1	SM 9222D	OB	04/22/21
Total Nitrogen (NOX&TKN)	1.76	mg/l		0.1			
Total Nitrogen (TKN)	0.889	mg/l		0.2	SM4500N	KS	04/28/21
Total Nitrate + Nitrite	0.87	mg/l		0.02	SM4500NO3	KS	04/29/21

AMTEST Identification Number **21-A005290**
Client Identification **TOSMO-20210422**
Sampling Date **04/22/21, 11:30**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	36.	CFU/100 ml		1	SM 9222D	OB	04/22/21
Total Nitrogen (NOX&TKN)	1.08	mg/l		0.1			
Total Nitrogen (TKN)	0.554	mg/l		0.2	SM4500N	KS	04/28/21
Total Nitrate + Nitrite	0.53	mg/l		0.02	SM4500NO3	KS	04/29/21

AMTEST Identification Number **21-A005291**
Client Identification **TYLMI-20210422**
Sampling Date **04/22/21, 12:00**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	3.	CFU/100 ml		1	SM 9222D	OB	04/22/21
Total Nitrogen (NOX&TKN)	1.46	mg/l		0.1			
Total Nitrogen (TKN)	0.485	mg/l		0.2	SM4500N	KS	04/28/21
Total Nitrate + Nitrite	0.97	mg/l		0.02	SM4500NO3	KS	04/29/21

AMTEST Identification Number **21-A005292**
Client Identification **TYLMO-20210422**
Sampling Date **04/22/21, 12:10**

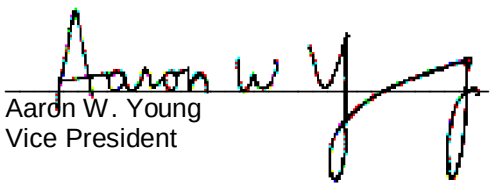
Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	30.	CFU/100 ml		1	SM 9222D	OB	04/22/21
Total Nitrogen (NOX&TKN)	0.83	mg/l		0.1			
Total Nitrogen (TKN)	0.393	mg/l		0.2	SM4500N	KS	04/28/21
Total Nitrate + Nitrite	0.44	mg/l		0.02	SM4500NO3	KS	04/29/21

AMTEST Identification Number **21-A005293**
Client Identification **QA-102-20210422**
Sampling Date **04/22/21, 10:00**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	50.	CFU/100 ml		1	SM 9222D	OB	04/22/21
Total Nitrogen (NOX&TKN)	0.73	mg/l		0.1			
Total Nitrogen (TKN)	0.382	mg/l		0.2	SM4500N	KS	04/28/21
Total Nitrate + Nitrite	0.35	mg/l		0.02	SM4500NO3	KS	04/29/21



Aaron W. Young
Vice President

Am Test Inc.
13600 NE 126th PL
Suite C
Kirkland, WA, 98034
(425) 885-1664
www.amtestlab.com

Professional Analytical Services

QC Summary for sample numbers: 21-A005279 to 21-A005293

DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	DUP VALUE	RPD
21-A005222	Fecal Coliform	CFU/100 ml	230	310	30.
21-A005285	Fecal Coliform	CFU/100 ml	< 1	2.	
21-A005293	Fecal Coliform	CFU/100 ml	50.	60.	18.
21-A005256	Total Nitrogen (TKN)	mg/l	0.665	0.740	11.
21-A005280	Total Nitrogen (TKN)	mg/l	0.838	0.916	8.9
21-A005290	Total Nitrogen (TKN)	mg/l	0.554	0.564	1.8
21-A005467	Total Nitrogen (TKN)	mg/l	2.73	2.54	7.2
21-A005256	Total Nitrate + Nitrite	mg/l	< 0.02	< 0.02	
21-A005280	Total Nitrate + Nitrite	mg/l	0.22	0.22	0.00
21-A005290	Total Nitrate + Nitrite	mg/l	0.53	0.53	0.00
21-A005310	Total Nitrate + Nitrite	mg/l	1.2	1.2	0.00
21-A005470	Total Nitrate + Nitrite	mg/l	2.2	2.2	0.00
21-A005598	Total Nitrate + Nitrite	mg/l	1.0	1.0	0.00
21-A005658	Total Nitrate + Nitrite	mg/l	< 0.02	< 0.02	
21-A005660	Total Nitrate + Nitrite	mg/l	0.061	0.061	0.00

MATRIX SPIKES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	SMPL+ SPK	SPK AMT	RECOVERY
21-A005256	Total Nitrogen (TKN)	mg/l	0.665	2.64	2.00	98.75 %
21-A005280	Total Nitrogen (TKN)	mg/l	0.838	2.80	2.00	98.10 %
21-A005290	Total Nitrogen (TKN)	mg/l	0.554	2.43	2.00	93.80 %
21-A005467	Total Nitrogen (TKN)	mg/l	2.73	4.76	2.00	101.50 %
21-A005256	Total Nitrate + Nitrite	mg/l	< 0.02	0.93	1.0	93.00 %
21-A005280	Total Nitrate + Nitrite	mg/l	0.22	1.1	1.0	88.00 %
21-A005290	Total Nitrate + Nitrite	mg/l	0.53	1.5	1.0	97.00 %
21-A005310	Total Nitrate + Nitrite	mg/l	1.2	2.3	1.0	110.00 %
21-A005470	Total Nitrate + Nitrite	mg/l	2.2	3.2	1.0	100.00 %
21-A005598	Total Nitrate + Nitrite	mg/l	1.0	2.1	1.0	110.00 %
21-A005658	Total Nitrate + Nitrite	mg/l	< 0.02	1.0	1.0	100.00 %
21-A005660	Total Nitrate + Nitrite	mg/l	0.061	1.1	1.0	103.90 %

QC Summary for sample numbers: 21-A005279 to 21-A005293...

STANDARD REFERENCE MATERIALS

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
Total Nitrogen (TKN)	mg/l	1.00	1.02	102. %
Total Nitrogen (TKN)	mg/l	1.00	1.02	102. %
Total Nitrogen (TKN)	mg/l	1.00	1.02	102. %
Total Nitrogen (TKN)	mg/l	1.00	1.04	104. %
Total Nitrate + Nitrite	mg/l	1.0	0.98	98.0 %
Total Nitrate + Nitrite	mg/l	1.0	0.99	99.0 %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %

BLANKS

ANALYTE	UNITS	RESULT
Fecal Coliform	CFU/100 ml	< 1
Fecal Coliform	CFU/100 ml	< 1
Fecal Coliform	CFU/100 ml	< 1
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Laboratory Reference #: 04-215

Laboratory: AmTest Laboratories

Attention: Aaron Young

13600 NE 126th Pl Kirkland, WA 98034

Phone Number: (425) 885-1664

Turnaround Request

1 Day 2 Day 3 Day

Standard

Other: _____

Project Manager: Blair Goodrow

email: bgoodrow@onsite-env.com

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analyses
1	COLM-20210422 5279	4/22/21	10:00	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
2	COUMI-20210422 80	4/22/21	10:25	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
3	COUMO-20210422 81	4/22/21	10:40	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
4	EVAMS-20210422 82	4/22/21	11:00	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
5	EVALSS-20210422 83	4/22/21	11:10	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
6	MONMN-20210422 84	4/22/21	11:30	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
7	MONMS-20210422 85	4/22/21	11:40	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
8	MONM-20210422 86	4/22/21	12:45	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
9	SEIMN-20210422 87	4/22/21	9:55	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
10	SEIMS-20210422 88	4/22/21	10:30	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N

Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:				
Received by:	Amtest	4/22/21	1430	**EDDs - CSV**
Relinquished by:				**Reporting Limits:**
Received by:				**Fecal Coliform - 1.0 cfu/100ml**
Relinquished by:				**Total Nitrogen - .10 mg/L**
Received by:				

Client TES-1

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Laboratory Reference #: 04-215

Laboratory: AmTest Laboratories

Attention: Aaron Young

13600 NE 126th Pl Kirkland, WA 98034

Phone Number: (425) 885-1664

Turnaround Request

1 Day 2 Day 3 Day

Standard

Other:

Project Manager: Blair Goodrow

email: bgoodrow@onsite-env.com

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analyses
11	TOSMI-20210422 5289	4/22/21	10:45	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
12	TOSMO-20210422 90	4/22/21	11:30	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
13	TYLMI-20210422 91	4/22/21	12:00	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
14	TYLMO-20210422 92	4/22/21	12:10	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
15	QA-102-20210422 93	4/22/21	10:00	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N

Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:				
Received by:	Amtest	4/22/21	1430	**EDDs - CSV**
Relinquished by:				**Reporting Limits:**
Received by:				**Fecal Coliform - 1.0 cfu/100ml**
Relinquished by:				**Total Nitrogen - .10 mg/L**
Received by:				

Client

CHAIN OF CUSTODY

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants

Project No.: 14-05806-000

Project Name: Redmond Paired Watershed Study

Project Manager: George Iftner

Turnaround Requested:

_____ 1 Day

_____ 2 Day

_____ 3 Day

__X__ Standard

Laboratory No. 04-215

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Suspended Solids (SM 2540D)	Turbidity (EPA 181.1)	Hardness (EPA 200.7 / SM 2340B)	Dissolved Organ Carbon (SM 5310B) *	Fecal Coliform (SM 9222D)	Total Phosphorus (EPA 365.1)	Total Nitrogen (SM 4500 N-B)	Total Cu and Zn (EPA 200.8)	Dissolved Cu and Zn (EPA 200.8) *	
1	COUMO-2021 0422	4/22/21	10:00	Water	7	X	X	X	X	X	X	X	X	X	
2	COUMI-2021		10:25	Water	7	X	X	X	X	X	X	X	X	X	
3	TOSMO-2021		10:40	Water	7	X	X	X	X	X	X	X	X	X	
4	TYLMO-2021		11:00	Water	7	X	X	X	X	X	X	X	X	X	
5	TYLMI-2021		11:10	Water	7	X	X	X	X	X	X	X	X	X	
6	MONMN-2021		11:30	Water	7	X	X	X	X	X	X	X	X	X	
7	MONMS-2021		11:40	Water	7	X	X	X	X	X	X	X	X	X	
8	MONM-2021		12:45	Water	7	X	X	X	X	X	X	X	X	X	
9	TOSMI-2021		9:55	Water	7	X	X	X	X	X	X	X	X	X	
10	EVAMS-2021		10:30	Water	7	X	X	X	X	X	X	X	X	X	
11	EVALSS-2021		10:45	Water	7	X	X	X	X	X	X	X	X	X	
12	SEIMN-2021		11:30	Water	7	X	X	X	X	X	X	X	X	X	
13	COLM-2021		12:00	Water	7	X	X	X	X	X	X	X	X	X	
14	SEIMS-2021		12:10	Water	7	X	X	X	X	X	X	X	X	X	
15	QA 102-2021		10:00	Water	7	X	X	X	X	X	X	X	X	X	

Relinquished by N. Bartish Date 4/22/21 Received by _____ Date 4/22/21

Firm Herrera Time 13:05 Firm OSE Time 1305

Relinquished by _____ Date _____ Received by _____ Date _____

Firm _____ Time _____ Firm _____ Time _____

Comments:
* - field filtered with 0.45 µm filter within 15 minutes of collecting sample

CHAIN OF CUSTODY

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants
Project No.: 14-05806-000
Project Name: Redmond Paired Watershed Study
Project Manager: George Iftner

Turnaround Requested:

_____ 1 Day
_____ 2 Day
_____ 3 Day
__X__ Standard

Laboratory No. 04-215

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Suspended Solids (SM 2540D)	Turbidity (EPA 181.1)	Hardness (EPA 200.7 / SM 2340B)	Dissolved Organ Carbon (SM 5310B) *	Fecal Coliform (SM 9222D)	Total Phosphorus (EPA 365.1)	Total Nitrogen (SM 4500 N-B)	Total Cu and Zn (EPA 200.8)	Dissolved Cu and Zn (EPA 200.8) *	
						Requested Analyses									
1	COUMO-2021 0422	4/22/21	10:00	Water	7	X	X	X	X	X	X	X	X	X	
2	COUMI-2021		10:25	Water	7	X	X	X	X	X	X	X	X	X	
3	TOSMO-2021		10:40	Water	7	X	X	X	X	X	X	X	X	X	
4	TYLMO-2021		11:00	Water	7	X	X	X	X	X	X	X	X	X	
5	TYLMI-2021		11:10	Water	7	X	X	X	X	X	X	X	X	X	
6	MONMN-2021		11:30	Water	7	X	X	X	X	X	X	X	X	X	
7	MONMS-2021		11:40	Water	7	X	X	X	X	X	X	X	X	X	
8	MONM-2021		12:45	Water	7	X	X	X	X	X	X	X	X	X	
9	TOSMI-2021		9:55	Water	7	X	X	X	X	X	X	X	X	X	
10	EVAMS-2021		10:30	Water	7	X	X	X	X	X	X	X	X	X	
11	EVALSS-2021		10:45	Water	7	X	X	X	X	X	X	X	X	X	
12	SEIMN-2021		11:30	Water	7	X	X	X	X	X	X	X	X	X	
13	COLM-2021		12:00	Water	7	X	X	X	X	X	X	X	X	X	
14	SEIMS-2021		12:10	Water	7	X	X	X	X	X	X	X	X	X	
15	QA 102-2021		10:00	Water	7	X	X	X	X	X	X	X	X	X	

Relinquished by N. Bartish Date 4/22/21 Received by _____ Date 4/22/21

Firm Herrera Time 13:05 Firm OSE Time 1305

Relinquished by _____ Date _____ Received by _____ Date _____

Firm _____ Time _____ Firm _____ Time _____

Comments:
* - field filtered with 0.45 µm filter within 15 minutes of collecting sample

METER CALIBRATION LOG - Redmond Paired Watershed Study

Project Number:	14-05806-000
Personnel Performing Calibration:	N. Smith
Meter:	ProDSS #2
Date/Time:	4/22/21 9:00
Barometric Pressure Start of Day:	mmHg: 764.0 Time: 9:00
Barometric Pressure End of Day:	mmHg: 763.0 Time: 9:15

PRE Field Run CALIBRATION	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	8.2	0	22.6	
Conductivity (µS/cm)	1025	1,000	22.4	
Conductivity (µS/cm)	74.6	100	22.6	
DO % Saturation	99.8	100	22.7	

POST Field Run CHECK	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	3.3	0	22.6	
Conductivity (µS/cm)	91.3	100	22.7	
DO % Saturation	100.4	100	22.5	

Calibration Procedures:

Rinse Multimeter Sonde Between Each Operation

Rinse 3 times with tap water, 3 times with deionized water, then 3 times with the solution to be used for calibrating or testing.

HERRERA

Conductivity Calibration Notes:

1. Dry the conductivity probe with a lab tissue (e.g., KimWipes®) and DI water.
2. Fill calibration cup to within a centimeter of the top of the calibration cup with DI water (0 µS).
3. Fill the calibration cup with 1,000 µS standard so that the temperature/conductivity probe is submerged.
4. Make sure there are no bubbles in the cell; wait 2 minutes.
5. Enter the appropriate standard value (1,000 µS/cm or 1.0 mS/cm) for Sp Cond.
6. Check conductivity using 100 µS/cm standard.

Dissolved Oxygen Calibration Notes:

1. Fill the calibration cup with about 1/2 inch of DI; it should be below the sensor cap.
2. Use KimWipes® to dry any droplets from the sensor cap.
3. Invert calibration cup's cap and gently rest it on the cup.
4. Wait 5 minutes, making sure that temperature stabilizes.
5. Determine local barometric pressure (mm Hg) and enter this value into the meter.
6. Click "Calibrate". "Calibrate Successful" will be displayed.
7. To retain calibration accuracy between measurements, store with the sensor immersed in water or within a water-saturated air environment such as a sealed storage cup with at least 10 ml of water.
8. It is important to have the water-saturated air and the sensor at the same temperature. Therefore, store a jar of DI in the same environment as the sonde and calibrate in a similar air temperature as the water and sonde.
9. Keep probe out of direct sun or wind.

Rental Calibration Form

FIELD ENVIRONMENTAL INSTRUMENTS, INC.
www.fieldenvironmental.com

301 Brushton Ave
Suite A
Pittsburgh, PA 15221
Toll Free (800) 393-4009
Local (412) 436-2600
Fax (412) 436-2616

YSI Pro Plus Calibration Certificate

Cal Standard	Lot #	Expiration	Pre-Cal Reading	Post-Cal Reading	Acceptable Range
PH 7 @ 25C	8012081	12/17/2022	7.23	7.00	(6.86 - 7.14)
			pH mV value	-50.0	(0 mV +/- 50mV)
Cal Standard	Lot #	Expiration	Pre-Cal Reading	Post-Cal Reading	Acceptable Range
PH 4 @ 25C	8012619	1/14/2023	3.99	4.00	(3.92 - 4.08)
			pH mV value	124.0	(115mV to 130mV)
Cal Standard	Lot #	Expiration	Pre-Cal Reading	Post-Cal Reading	Acceptable Range
PH 10 @ 25C	7911113	11/1/2021	10.40	10.00	(9.8 - 10.20)
			pH mV value	-221.6	(-215mV to -230mV)
Cal Standard	Lot #	Expiration	Pre-Cal Reading	Post-Cal Reading	Acceptable Range
Conductivity	7912380	1/1/2022	1.440	1.409	(1.338 to 1.479)
			Cell Constant	4.9	(4.5 to 5.5)

Check Standard ORP	Temp ©	Reading	Acceptable Range
	20.0	220.0	(+/- 2.0mV)

ORP Offset	28.20	(0 +/- 100)

Dissolved Oxygen	% Saturation	mg/L
	100.0	9.30

Barometer	mm Hg	Sensor Value	Acceptable Range
	760.0	2.69	(2.37 - 4.4)

New DO Membrane: ○ Yes ◉ No

Model	Pro Plus
S/N	rfw-22541
Barcode	U90312X
Order #	454460

○ Black ◉ Blue ○ Yellow

Calibrated By: Caitlyn Davis

Date of Calibration: 4/21/2021

*Solutions provided by LabChem (412-826-5230)

All calibrations performed by FEI conform to manufacturer's specifications. Please report any issues within 24 hours of receiving equipment.
All calibration solutions used are traceable to NIST. Additional documentation is available upon request.

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: N. Maas

Sample Date: 4/22/21 **Sample Time:** 1210 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later:** Y N
(Must filter within 15 minutes of collection)

SITE ID: SEIMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Cloudy - 55°

Water Quality Sampling

Sample ID: SEIMS-20210422

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity:

Color:

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.75

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 10.4

Specific Conductivity (µs/cm) 153.3

Dissolved Oxygen (mg/L) 10.79

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: N. Maas, T. Faulk

Sample Date: 4/22/21 Sample Time: 1100 PDT: PST:

Base Flow or Storm Event? Field filtered 5 minutes later? Y N
(Must filter within 15 minutes of collection)

SITE ID: TYLMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp:

Water Quality Sampling

Sample ID: TYLMO-20210422

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	No
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: clear

Color: none

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: Time:

Quality Assurance

Checked By: Signature:

Date Checked: Time:

Data Entered into Database? YES NO initials:

Date Entered: Time:

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 35 in

Reference Point (description): bottom of culvert

Water Quality Measurments

Temperature (°C) 10.4

Specific Conductivity (µs/cm) 290.1

Dissolved Oxygen (mg/L) 11.55

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, RS

Sample Date: 4/22/21 **Sample Time:** 12:45 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later:** Y N
(Must filter within 15 minutes of collection)

SITE ID: MONM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: overcast, 65°

Water Quality Sampling

Sample ID: MONM20210422

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Rental

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft):

Reference Point (description): NA

Water Quality Measurments

Temperature (°C) 10.9

Specific Conductivity (µs/cm) 228.7

Dissolved Oxygen (mg/L) 11.29

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, RS

Sample Date: 4/22/21 **Sample Time:** 12:00 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later:** Y N
(Must filter within 15 minutes of collection)

SITE ID: COLM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

HERRERA

Current Weather and Temp: overcast, 60

Water Quality Sampling

Sample ID: COLM20210422

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Fair

Color: yellow

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2 Rental

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 5.39

Reference Point (description): 56

Water Quality Measurments

Temperature (°C) 11.3

Specific Conductivity (µs/cm) 36.9

Dissolved Oxygen (mg/L) 10.01

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, CS

Sample Date: 4/22/21 **Sample Time:** 11:30 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later:** Y N
(Must filter within 15 minutes of collection)

SITE ID: SELMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 60° overcast

Water Quality Sampling

Sample ID: SELMN20210422

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	N
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Clear

Color:

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2 Rental

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 10.2 in

Reference Point (description): Tape

Water Quality Measurments

Temperature (°C) 10.1

Specific Conductivity (µs/cm) 80.7

Dissolved Oxygen (mg/L) 11.47

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, RS

Sample Date: 4/22/21 **Sample Time:** 10:45 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later:** Y N
(Must filter within 15 minutes of collection)

SITE ID: EVALSS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

HERRERA

Water Quality Sampling

Sample ID: EVALSS20210422

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Current Weather and Temp:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)
YSI Pro DSS 1 Rental
YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.30

Reference Point (description): S 6

Water Quality Measurments

Temperature (°C) 10.6

Specific Conductivity (µs/cm) 198.1

Dissolved Oxygen (mg/L) 11.59

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, RS

Sample Date: 4/22/21 **Sample Time:** 10:30 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later:** Y N
(Must filter within 15 minutes of collection)

SITE ID: EVANS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 60° overcast

Water Quality Sampling

Sample ID: EVANS20210422

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NS
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Clear

Color:

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1 Rental

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 3.75

Reference Point (description): S 6

Water Quality Measurments

Temperature (°C) 10.5

Specific Conductivity (µs/cm) ~~0.211~~ 211.0

Dissolved Oxygen (mg/L) ~~152.5~~ 11.21

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: ND, KS

Sample Date: 4/22/21 **Sample Time:** 9:55 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later?** Y N
(Must filter within 15 minutes of collection)

SITE ID: TOSM1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: overcast, 60°

Water Quality Sampling

Sample ID: TOSM120200422

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	No
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1 Rental
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.76

Reference Point (description): 56

Water Quality Measurments

Temperature (°C) 10.1

Specific Conductivity (µs/cm) ~~0.303~~ 303.0

Dissolved Oxygen (mg/L) 11.49

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: T. Fouik, N. Maas

Sample Date: 4/22/21 **Sample Time:** 11:10 PDT: / PST:

Base Flow or Storm Event? **Field filtered 5 minutes later?** Y / N

(Must filter within 15 minutes of collection)

SITE ID: TYLMI

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

HERRERA

Water Quality Sampling

Sample ID: TYLM1-20210422

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Clear

Color: none

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Current Weather and Temp:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 53.5 in

Reference Point (description): bottom of current

Water Quality Measurments

Temperature (°C) 10.7

Specific Conductivity (µs/cm) 339.8

Dissolved Oxygen (mg/L) 10.78

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: N. Maas, T. Foolf

Sample Date: 4/22/21 **Sample Time:** 1040 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: TOSMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

HERRERA

Water Quality Sampling

Sample ID: TOSMO-20210422

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	↓
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	clear
Color:	none
Odor:	↓
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Current Weather and Temp:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

~~YSI Pro DSS 2~~

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.58

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 10.2

Specific Conductivity (µs/cm) 361.8

Dissolved Oxygen (mg/L) 11.34

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: N. Maas, T. Faulk

Sample Date: 4/22/21 **Sample Time:** 1025 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later?** (Y) N
(Must filter within 15 minutes of collection)

SITE ID: COUMI

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

HERRERA

Current Weather and Temp:

Water Quality Sampling

Sample ID: COUMI-20210422

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:
Filter blank sample ID:
Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Clear
Color: none
Odor:
Sheen:
Floatables:

LABORATORY DELIVERY

Date: **Time:**

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)
YSI Pro DSS 1
~~YSI Pro DSS 2~~

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.5

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 10.0

Specific Conductivity (µs/cm) 448.7

Dissolved Oxygen (mg/L) 11.15

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: N. Moos, T. Foulk

Sample Date: 4/22/21 **Sample Time:** 1000 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: COUMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

HERRERA

Current Weather and Temp: Cloudy, ~55°

Water Quality Sampling

Sample ID: COUMO-20210422

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	YES
DOC *	HDPE	250 ml	1	HCL	↓
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	✓

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID: QA102-20210422

Filter blank sample ID: —

Transfer blank sample ID: —

Visual and Olfactory Conditions:

Clarity: Clear

Color: none

Odor:

Sheen: ↓

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 1.3

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 10.5

Specific Conductivity (µs/cm) 412.7

Dissolved Oxygen (mg/L) 10.85

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: N. Maas, T. Faulk

Sample Date: 4/22/21 **Sample Time:** 1140 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later** (Y) N
(Must filter within 15 minutes of collection)

SITE ID: MONMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp:

Water Quality Sampling

Sample ID: MNS-20210422

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	↓
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	N
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:
Filter blank sample ID:
Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Clear
Color: none
Odor: ↓
Sheen:
Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**
Date Checked: **Time:**
Data Entered into Database? YES NO **initials:**
Date Entered: **Time:**
Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)
YSI Pro DSS 1
YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 6.83

Reference Point (description): top of pipe

Water Quality Measurments

Temperature (°C) 11.1

Specific Conductivity (µs/cm) 426.2

Dissolved Oxygen (mg/L) 8.41

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: N. Maas, T. Foulk

Sample Date: 4/22/24 **Sample Time:** 1130 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: MOMNM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

HERRERA

Water Quality Sampling

Sample ID: MOMNM-20210422

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Clear

Color: none

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Current Weather and Temp:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 9.10

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 10.9

Specific Conductivity (µs/cm) 288.5

Dissolved Oxygen (mg/L) 10.54

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Data Quality Assurance Worksheet

By J. Brown

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 5/18/21 Page 1 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 4/22/2021 /All locations, QA102 (COUMO) Lab Ref No 2104-215

date 5/20/2021

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
TSS	OK / SM 2540D	NA	**NA**	5	**≤7**	≤1.0 mg/L 1.0 mg/L	NA	**NA**	84	**±20**	D=0.5	**≤ 25**	D=3.8	**≤ 25**	OK	FLAG COUMO J DUE TO FIELD DUPE EXCEEDANCE
Turbidity	OK / EPA 180.1	NA	**NA**	1	**≤2**	≤0.1 NTU 0.1 NTU	NA	**NA**	NA	**±10**	6	**≤ 25**	9	**≤ 25**	OK	NONE
Hardness	OK / SM 2340B	NA	**NA**	5	**≤180**	≤1.0 mg/L 1.0 mg/L	100, 97	**±25**	100	**±15**	1 MS 2	**≤ 20**	0	**≤ 20**	OK	NONE
DOC	OK / SM 5310B	≤15	**≤15**	4	**≤28**	≤1.0 mg/L 1.0 mg/L	100	**±25**	105	**±15**	D=0	**≤ 20**	D=0.1	**≤ 20**	OK	NONE
Total Phosphorus	OK / EPA 365.1	NA	**NA**	5	**≤28**	≤0.01 mg/L 0.01 mg/L	95	**±25**	96	**±20**	3	**≤ 20**	66	**≤ 20**	OK	FLAG COUMO J DUE TO FIELD DUPE EXCEEDANCE
Total Nitrogen (TKN + N+N)	OK/ SM 4500 N-B	NA	**NA**	6, 7	**≤28**	≤0.1 mg/L 0.1 mg/L	93-110	**±25**	98-104	**±20**	0, 18, D=0-0.08	**≤ 20**	3, D=0.18	**≤ 20**	OK	NONE

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

Data Quality Assurance Worksheet

By J. Brown

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 5/18/21 Page 2 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 4/22/2021 /All locations, QA102 (COUMO) Lab Ref No 2104-215

date 5/20/2021

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
Total Copper	OK/ EPA 200.8	NA	**NA**	5	**≤180**	≤1.0 µg/L 1.0 µg/L	98, 97	**±25**	NR	**±15**	NC, MS 1	**≤ 20**	NC	**≤ 20**	OK	NONE
Total Zinc	OK/ EPA 200.8	NA	**NA**	5	**≤180**	≤5.0 µg/L 5.0 µg/L	101, 98	**±25**	NR	**±15**	NC, MS 3	**≤ 20**	D=8	**≤ 20**	OK	NONE
Dissolved Copper	OK/ EPA 200.8	≤15	**≤15**	5	**≤180**	≤1.0 µg/L 1.0 µg/L	94, 91	**±25**	NR	**±15**	NC	**≤ 20**	NC	**≤ 20**	OK	NONE
Dissolved Zinc	OK/ EPA 200.8	≤15	**≤15**	5	**≤180**	≤5.0 µg/L 5.0 µg/L	99, 98	**±25**	NR	**±15**	D=2.9	**≤ 20**	D=0.6	**≤ 20**	OK	NONE
Fecal Coliform	OK / SM 9222D	NA	**NA**	1	**≤1**	≤1.0 cfu/ 100mL 10 cfu/ 100mL	NA	**NA**	NA	**NA**	18, 30, NC	**≤ 35**	143	**≤ 50**	OK	FLAG COUMO J DUE TO FIELD DUPE EXCEEDANCE

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

June 10, 2021

Jess Brown
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2105-266

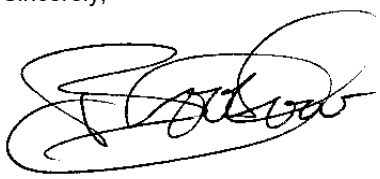
Dear Jess:

Enclosed are the analytical results and associated quality control data for samples submitted on May 27, 2021.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



Blair Goodrow
Project Manager

Enclosures

Date of Report: June 10, 2021
Samples Submitted: May 27, 2021
Laboratory Reference: 2105-266
Project: 14-05806-000

Case Narrative

Samples were collected on May 27, 2021 and received by the laboratory on May 27, 2021. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: June 10, 2021
Samples Submitted: May 27, 2021
Laboratory Reference: 2105-266
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210527**					
Laboratory ID:	05-266-01					
Total Suspended Solids	**16**	2.5	SM 2540D	5-28-21	6-1-21	
Client ID:	**COUMI-20210527**					
Laboratory ID:	05-266-02					
Total Suspended Solids	**23**	2.5	SM 2540D	5-28-21	6-1-21	
Client ID:	**TOSMO-20210527**					
Laboratory ID:	05-266-03					
Total Suspended Solids	**38**	2.5	SM 2540D	5-28-21	6-1-21	
Client ID:	**TYLMO-20210527**					
Laboratory ID:	05-266-04					
Total Suspended Solids	**8.0**	2.0	SM 2540D	5-28-21	6-1-21	
Client ID:	**TYLMI-20210527**					
Laboratory ID:	05-266-05					
Total Suspended Solids	**10**	2.0	SM 2540D	5-28-21	6-1-21	
Client ID:	**MONMN-20210527**					
Laboratory ID:	05-266-06					
Total Suspended Solids	**19**	2.0	SM 2540D	5-28-21	6-1-21	
Client ID:	**MONMS-20210527**					
Laboratory ID:	05-266-07					
Total Suspended Solids	**2.0**	1.0	SM 2540D	5-28-21	6-1-21	
Client ID:	**MONM-20210527**					
Laboratory ID:	05-266-08					
Total Suspended Solids	**16**	2.5	SM 2540D	5-28-21	6-1-21	
Client ID:	**TOSMI-20210527**					
Laboratory ID:	05-266-09					
Total Suspended Solids	**12**	2.0	SM 2540D	5-28-21	6-1-21	

Date of Report: June 10, 2021
Samples Submitted: May 27, 2021
Laboratory Reference: 2105-266
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVAMS-20210527**					
Laboratory ID:	05-266-10					
Total Suspended Solids	**14**	2.5	SM 2540D	5-28-21	6-1-21	
Client ID:	**EVALSS-20210527**					
Laboratory ID:	05-266-11					
Total Suspended Solids	**17**	2.5	SM 2540D	5-28-21	6-1-21	
Client ID:	**SEIMN-20210527**					
Laboratory ID:	05-266-12					
Total Suspended Solids	**6.4**	1.0	SM 2540D	5-28-21	6-1-21	
Client ID:	**COLM-20210527**					
Laboratory ID:	05-266-13					
Total Suspended Solids	**2.4**	1.0	SM 2540D	5-28-21	6-1-21	
Client ID:	**SEIMS-20210527**					
Laboratory ID:	05-266-14					
Total Suspended Solids	**14**	5.0	SM 2540D	5-28-21	6-1-21	
Client ID:	**QA-COLM-20210527**					
Laboratory ID:	05-266-15					
Total Suspended Solids	**1.2**	1.0	SM 2540D	5-28-21	6-1-21	

Date of Report: June 10, 2021
Samples Submitted: May 27, 2021
Laboratory Reference: 2105-266
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0528W1					
Total Suspended Solids	**ND**	1.0	SM 2540D	5-28-21	6-1-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	05-266-11								
	ORIG	DUP							
Total Suspended Solids	**17.0**	**16.0**	NA	NA	NA	NA	6	26	
SPIKE BLANK									
Laboratory ID:	SB0528W1								
	SB		SB		SB				
Total Suspended Solids	**87.0**		100	NA	87	67-118	NA	NA	

Date of Report: June 10, 2021
Samples Submitted: May 27, 2021
Laboratory Reference: 2105-266
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210527**					
Laboratory ID:	05-266-01					
Turbidity	**11**	0.10	EPA 180.1	5-27-21	5-27-21	
Client ID:	**COUMI-20210527**					
Laboratory ID:	05-266-02					
Turbidity	**14**	0.10	EPA 180.1	5-27-21	5-27-21	
Client ID:	**TOSMO-20210527**					
Laboratory ID:	05-266-03					
Turbidity	**19**	0.10	EPA 180.1	5-27-21	5-27-21	
Client ID:	**TYLMO-20210527**					
Laboratory ID:	05-266-04					
Turbidity	**6.9**	0.10	EPA 180.1	5-27-21	5-27-21	
Client ID:	**TYLMI-20210527**					
Laboratory ID:	05-266-05					
Turbidity	**4.5**	0.10	EPA 180.1	5-27-21	5-27-21	
Client ID:	**MONMN-20210527**					
Laboratory ID:	05-266-06					
Turbidity	**9.5**	0.10	EPA 180.1	5-27-21	5-27-21	
Client ID:	**MONMS-20210527**					
Laboratory ID:	05-266-07					
Turbidity	**1.9**	0.10	EPA 180.1	5-27-21	5-27-21	
Client ID:	**MONM-20210527**					
Laboratory ID:	05-266-08					
Turbidity	**8.7**	0.10	EPA 180.1	5-27-21	5-27-21	
Client ID:	**TOSMI-20210527**					
Laboratory ID:	05-266-09					
Turbidity	**6.5**	0.10	EPA 180.1	5-27-21	5-27-21	

Date of Report: June 10, 2021
Samples Submitted: May 27, 2021
Laboratory Reference: 2105-266
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVAMS-20210527**					
Laboratory ID:	05-266-10					
Turbidity	**6.0**	0.10	EPA 180.1	5-27-21	5-27-21	
Client ID:	**EVALSS-20210527**					
Laboratory ID:	05-266-11					
Turbidity	**7.4**	0.10	EPA 180.1	5-27-21	5-27-21	
Client ID:	**SEIMN-20210527**					
Laboratory ID:	05-266-12					
Turbidity	**3.9**	0.10	EPA 180.1	5-27-21	5-27-21	
Client ID:	**COLM-20210527**					
Laboratory ID:	05-266-13					
Turbidity	**2.1**	0.10	EPA 180.1	5-27-21	5-27-21	
Client ID:	**SEIMS-20210527**					
Laboratory ID:	05-266-14					
Turbidity	**7.6**	0.10	EPA 180.1	5-27-21	5-27-21	
Client ID:	**QA-COLM-20210527**					
Laboratory ID:	05-266-15					
Turbidity	**2.1**	0.10	EPA 180.1	5-27-21	5-27-21	

Date of Report: June 10, 2021
Samples Submitted: May 27, 2021
Laboratory Reference: 2105-266
Project: 14-05806-000

TURBIDITY
EPA 180.1
QUALITY CONTROL

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0527W1					
Turbidity	**ND**	0.10	EPA 180.1	5-27-21	5-27-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	05-259-01								
	ORIG	DUP							
Turbidity	**6.31**	**6.20**	NA	NA	NA	NA	2	13	

Date of Report: June 10, 2021
Samples Submitted: May 27, 2021
Laboratory Reference: 2105-266
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210527**					
Laboratory ID:	05-266-01					
Hardness	**61**	1.0	EPA 200.7/SM 2340B	6-1-21	6-1-21	
Client ID:	**COUMI-20210527**					
Laboratory ID:	05-266-02					
Hardness	**130**	1.0	EPA 200.7/SM 2340B	6-1-21	6-1-21	
Client ID:	**TOSMO-20210527**					
Laboratory ID:	05-266-03					
Hardness	**60**	1.0	EPA 200.7/SM 2340B	6-1-21	6-1-21	
Client ID:	**TYLMO-20210527**					
Laboratory ID:	05-266-04					
Hardness	**49**	1.0	EPA 200.7/SM 2340B	6-1-21	6-1-21	
Client ID:	**TYLMI-20210527**					
Laboratory ID:	05-266-05					
Hardness	**98**	1.0	EPA 200.7/SM 2340B	6-1-21	6-1-21	
Client ID:	**MONMN-20210527**					
Laboratory ID:	05-266-06					
Hardness	**88**	1.0	EPA 200.7/SM 2340B	6-1-21	6-1-21	
Client ID:	**MONMS-20210527**					
Laboratory ID:	05-266-07					
Hardness	**120**	1.0	EPA 200.7/SM 2340B	6-1-21	6-1-21	

Date of Report: June 10, 2021
Samples Submitted: May 27, 2021
Laboratory Reference: 2105-266
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20210527**					
Laboratory ID:	05-266-08					
Hardness	**96**	1.0	EPA 200.7/SM 2340B	6-1-21	6-1-21	
Client ID:	**TOSMI-20210527**					
Laboratory ID:	05-266-09					
Hardness	**24**	1.0	EPA 200.7/SM 2340B	6-1-21	6-1-21	
Client ID:	**EVAMS-20210527**					
Laboratory ID:	05-266-10					
Hardness	**94**	1.0	EPA 200.7/SM 2340B	6-1-21	6-1-21	
Client ID:	**EVALSS-20210527**					
Laboratory ID:	05-266-11					
Hardness	**91**	1.0	EPA 200.7/SM 2340B	6-1-21	6-1-21	
Client ID:	**SEIMN-20210527**					
Laboratory ID:	05-266-12					
Hardness	**39**	1.0	EPA 200.7/SM 2340B	6-1-21	6-1-21	
Client ID:	**COLM-20210527**					
Laboratory ID:	05-266-13					
Hardness	**15**	1.0	EPA 200.7/SM 2340B	6-1-21	6-1-21	
Client ID:	**SEIMS-20210527**					
Laboratory ID:	05-266-14					
Hardness	**54**	1.0	EPA 200.7/SM 2340B	6-1-21	6-1-21	

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HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA-COLM-20210527**					
Laboratory ID:	05-266-15					
Hardness	**15**	1.0	EPA 200.7/SM 2340B	6-1-21	6-1-21	

Date of Report: June 10, 2021
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Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B
QUALITY CONTROL

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0601WH1					
Hardness	**ND**	1.0	EPA 200.7/SM 2340B	6-1-21	6-1-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	05-266-15										
	ORIG	DUP									
Hardness	**14.7**	**14.6**	NA		NA	NA		NA	1	20	
MATRIX SPIKES											
Laboratory ID:	05-266-15										
	MS	MSD	MS	MSD		MS	MSD				
Hardness	**152**	**141**	132	132	14.7	104	96	75-125	8	20	
SPIKE BLANK											
Laboratory ID:	SB0601WH1										
	SB		SB			SB					
Hardness	**129**		132		NA	98		85-115	NA	NA	

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DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210527**					
Laboratory ID:	05-266-01					
Dissolved Organic Carbon	**4.5**	1.0	SM 5310B	5-28-21	5-28-21	
Client ID:	**COUMI-20210527**					
Laboratory ID:	05-266-02					
Dissolved Organic Carbon	**4.2**	1.0	SM 5310B	5-28-21	5-28-21	
Client ID:	**TOSMO-20210527**					
Laboratory ID:	05-266-03					
Dissolved Organic Carbon	**5.3**	1.0	SM 5310B	5-28-21	5-28-21	
Client ID:	**TYLMO-20210527**					
Laboratory ID:	05-266-04					
Dissolved Organic Carbon	**4.5**	1.0	SM 5310B	5-28-21	5-28-21	
Client ID:	**TYLMI-20210527**					
Laboratory ID:	05-266-05					
Dissolved Organic Carbon	**3.5**	1.0	SM 5310B	5-28-21	5-28-21	
Client ID:	**MONMN-20210527**					
Laboratory ID:	05-266-06					
Dissolved Organic Carbon	**4.5**	1.0	SM 5310B	5-28-21	5-28-21	
Client ID:	**MONMS-20210527**					
Laboratory ID:	05-266-07					
Dissolved Organic Carbon	**5.5**	1.0	SM 5310B	5-28-21	5-28-21	
Client ID:	**MONM-20210527**					
Laboratory ID:	05-266-08					
Dissolved Organic Carbon	**4.0**	1.0	SM 5310B	5-28-21	5-28-21	
Client ID:	**TOSMI-20210527**					
Laboratory ID:	05-266-09					
Dissolved Organic Carbon	**6.2**	1.0	SM 5310B	5-28-21	5-28-21	

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DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVAMS-20210527**					
Laboratory ID:	05-266-10					
Dissolved Organic Carbon	**3.3**	1.0	SM 5310B	5-28-21	5-28-21	
Client ID:	**EVALSS-20210527**					
Laboratory ID:	05-266-11					
Dissolved Organic Carbon	**2.6**	1.0	SM 5310B	5-28-21	5-28-21	
Client ID:	**SEIMN-20210527**					
Laboratory ID:	05-266-12					
Dissolved Organic Carbon	**3.2**	1.0	SM 5310B	5-28-21	5-28-21	
Client ID:	**COLM-20210527**					
Laboratory ID:	05-266-13					
Dissolved Organic Carbon	**10**	1.0	SM 5310B	5-28-21	5-28-21	
Client ID:	**SEIMS-20210527**					
Laboratory ID:	05-266-14					
Dissolved Organic Carbon	**4.4**	1.0	SM 5310B	5-28-21	5-28-21	
Client ID:	**QA-COLM-20210527**					
Laboratory ID:	05-266-15					
Dissolved Organic Carbon	**11**	1.0	SM 5310B	5-28-21	5-28-21	

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DISSOLVED ORGANIC CARBON
SM 5310B
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0528F2					
Dissolved Organic Carbon	**ND**	1.0	SM 5310B	5-28-21	5-28-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	05-266-01								
	ORIG	DUP							
Dissolved Organic Carbon	**4.52**	**4.61**	NA	NA	NA	NA	2	15	
MATRIX SPIKE									
Laboratory ID:	05-266-01								
	MS		MS		MS				
Dissolved Organic Carbon	**15.1**		10.0	4.52	106	91-117	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB0528F2								
	SB		SB		SB				
Dissolved Organic Carbon	**10.7**		10.0	NA	107	88-116	NA	NA	

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TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210527**					
Laboratory ID:	05-266-01					
Total Phosphorus	**0.10**	0.010	EPA 365.1	6-1-21	6-2-21	
Client ID:	**COUMI-20210527**					
Laboratory ID:	05-266-02					
Total Phosphorus	**0.13**	0.010	EPA 365.1	6-1-21	6-2-21	
Client ID:	**TOSMO-20210527**					
Laboratory ID:	05-266-03					
Total Phosphorus	**0.11**	0.010	EPA 365.1	6-1-21	6-2-21	
Client ID:	**TYLMO-20210527**					
Laboratory ID:	05-266-04					
Total Phosphorus	**0.058**	0.010	EPA 365.1	6-1-21	6-2-21	
Client ID:	**TYLMI-20210527**					
Laboratory ID:	05-266-05					
Total Phosphorus	**0.58**	0.010	EPA 365.1	6-1-21	6-2-21	
Client ID:	**MONMN-20210527**					
Laboratory ID:	05-266-06					
Total Phosphorus	**0.069**	0.010	EPA 365.1	6-1-21	6-2-21	
Client ID:	**MONMS-20210527**					
Laboratory ID:	05-266-07					
Total Phosphorus	**0.015**	0.010	EPA 365.1	6-1-21	6-2-21	
Client ID:	**MONM-20210527**					
Laboratory ID:	05-266-08					
Total Phosphorus	**0.056**	0.010	EPA 365.1	6-1-21	6-2-21	
Client ID:	**TOSMI-20210527**					
Laboratory ID:	05-266-09					
Total Phosphorus	**0.073**	0.010	EPA 365.1	6-1-21	6-2-21	

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TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVAMS-20210527**					
Laboratory ID:	05-266-10					
Total Phosphorus	**0.036**	0.010	EPA 365.1	6-1-21	6-2-21	
Client ID:	**EVALSS-20210527**					
Laboratory ID:	05-266-11					
Total Phosphorus	**0.042**	0.010	EPA 365.1	6-1-21	6-2-21	
Client ID:	**SEIMN-20210527**					
Laboratory ID:	05-266-12					
Total Phosphorus	**0.043**	0.010	EPA 365.1	6-1-21	6-2-21	
Client ID:	**COLM-20210527**					
Laboratory ID:	05-266-13					
Total Phosphorus	**0.020**	0.010	EPA 365.1	6-1-21	6-2-21	
Client ID:	**SEIMS-20210527**					
Laboratory ID:	05-266-14					
Total Phosphorus	**0.055**	0.010	EPA 365.1	6-1-21	6-2-21	
Client ID:	**QA-COLM-20210527**					
Laboratory ID:	05-266-15					
Total Phosphorus	**0.023**	0.010	EPA 365.1	6-1-21	6-2-21	

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TOTAL PHOSPHORUS
EPA 365.1
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0601W1					
Total Phosphorus	**ND**	0.010	EPA 365.1	6-1-21	6-2-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	05-266-01								
	ORIG	DUP							
Total Phosphorus	**0.100**	**0.105**	NA	NA	NA	NA	5	19	
MATRIX SPIKE									
Laboratory ID:	05-266-01								
	MS		MS		MS				
Total Phosphorus	**0.354**		0.250	0.100	102	83-110	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB0601W1								
	SB		SB		SB				
Total Phosphorus	**0.246**		0.250	NA	98	83-110	NA	NA	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210527**					
Laboratory ID:	05-266-01					
Copper	**5.1**	1.0	EPA 200.8	6-2-21	6-2-21	
Zinc	**34**	5.0	EPA 200.8	6-2-21	6-2-21	
Client ID:	**COUMI-20210527**					
Laboratory ID:	05-266-02					
Copper	**2.9**	1.0	EPA 200.8	6-2-21	6-2-21	
Zinc	**42**	5.0	EPA 200.8	6-2-21	6-2-21	
Client ID:	**TOSMO-20210527**					
Laboratory ID:	05-266-03					
Copper	**6.3**	1.0	EPA 200.8	6-2-21	6-2-21	
Zinc	**97**	5.0	EPA 200.8	6-2-21	6-2-21	
Client ID:	**TYLMO-20210527**					
Laboratory ID:	05-266-04					
Copper	**6.4**	1.0	EPA 200.8	6-2-21	6-2-21	
Zinc	**45**	5.0	EPA 200.8	6-2-21	6-2-21	
Client ID:	**TYLMI-20210527**					
Laboratory ID:	05-266-05					
Copper	**4.9**	1.0	EPA 200.8	6-2-21	6-2-21	
Zinc	**41**	5.0	EPA 200.8	6-2-21	6-2-21	
Client ID:	**MONMN-20210527**					
Laboratory ID:	05-266-06					
Copper	**ND**	1.0	EPA 200.8	6-2-21	6-2-21	
Zinc	**8.6**	5.0	EPA 200.8	6-2-21	6-2-21	
Client ID:	**MONMS-20210527**					
Laboratory ID:	05-266-07					
Copper	**1.8**	1.0	EPA 200.8	6-2-21	6-2-21	
Zinc	**ND**	5.0	EPA 200.8	6-2-21	6-2-21	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20210527**					
Laboratory ID:	05-266-08					
Copper	**1.3**	1.0	EPA 200.8	6-2-21	6-2-21	
Zinc	**19**	5.0	EPA 200.8	6-2-21	6-2-21	
Client ID:	**TOSMI-20210527**					
Laboratory ID:	05-266-09					
Copper	**7.6**	1.0	EPA 200.8	6-2-21	6-2-21	
Zinc	**160**	5.0	EPA 200.8	6-2-21	6-2-21	
Client ID:	**EVAMS-20210527**					
Laboratory ID:	05-266-10					
Copper	**ND**	1.0	EPA 200.8	6-2-21	6-2-21	
Zinc	**ND**	5.0	EPA 200.8	6-2-21	6-2-21	
Client ID:	**EVALSS-20210527**					
Laboratory ID:	05-266-11					
Copper	**ND**	1.0	EPA 200.8	6-2-21	6-2-21	
Zinc	**ND**	5.0	EPA 200.8	6-2-21	6-2-21	
Client ID:	**SEIMN-20210527**					
Laboratory ID:	05-266-12					
Copper	**ND**	1.0	EPA 200.8	6-2-21	6-2-21	
Zinc	**ND**	5.0	EPA 200.8	6-2-21	6-2-21	
Client ID:	**COLM-20210527**					
Laboratory ID:	05-266-13					
Copper	**ND**	1.0	EPA 200.8	6-2-21	6-2-21	
Zinc	**ND**	5.0	EPA 200.8	6-2-21	6-2-21	
Client ID:	**SEIMS-20210527**					
Laboratory ID:	05-266-14					
Copper	**ND**	1.0	EPA 200.8	6-2-21	6-2-21	
Zinc	**ND**	5.0	EPA 200.8	6-2-21	6-2-21	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA-COLM-20210527**					
Laboratory ID:	05-266-15					
Copper	**ND**	1.0	EPA 200.8	6-2-21	6-2-21	
Zinc	**ND**	5.0	EPA 200.8	6-2-21	6-2-21	

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TOTAL METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0602WH2					
Copper	**ND**	1.0	EPA 200.8	6-2-21	6-2-21	
Zinc	**ND**	5.0	EPA 200.8	6-2-21	6-2-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	05-266-13										
	ORIG	DUP									
Copper	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Zinc	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	05-266-13										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**97.8**	**94.8**	100	100	ND	**98**	**95**	75-125	3	20	
Zinc	**103**	**101**	100	100	ND	**103**	**101**	75-125	2	20	

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210527**					
Laboratory ID:	05-266-01					
Copper	**3.0**	1.0	EPA 200.8	5-28-21	6-4-21	
Zinc	**14**	5.0	EPA 200.8	5-28-21	6-4-21	
Client ID:	**COUMI-20210527**					
Laboratory ID:	05-266-02					
Copper	**1.6**	1.0	EPA 200.8	5-28-21	6-4-21	
Zinc	**12**	5.0	EPA 200.8	5-28-21	6-4-21	
Client ID:	**TOSMO-20210527**					
Laboratory ID:	05-266-03					
Copper	**3.0**	1.0	EPA 200.8	5-28-21	6-4-21	
Zinc	**27**	5.0	EPA 200.8	5-28-21	6-4-21	
Client ID:	**TYLMO-20210527**					
Laboratory ID:	05-266-04					
Copper	**4.4**	1.0	EPA 200.8	5-28-21	6-4-21	
Zinc	**26**	5.0	EPA 200.8	5-28-21	6-4-21	
Client ID:	**TYLMI-20210527**					
Laboratory ID:	05-266-05					
Copper	**2.4**	1.0	EPA 200.8	5-28-21	6-4-21	
Zinc	**9.2**	5.0	EPA 200.8	5-28-21	6-4-21	
Client ID:	**MONMN-20210527**					
Laboratory ID:	05-266-06					
Copper	**ND**	1.0	EPA 200.8	5-28-21	6-4-21	
Zinc	**ND**	5.0	EPA 200.8	5-28-21	6-4-21	
Client ID:	**MONMS-20210527**					
Laboratory ID:	05-266-07					
Copper	**1.7**	1.0	EPA 200.8	5-28-21	6-4-21	
Zinc	**ND**	5.0	EPA 200.8	5-28-21	6-4-21	

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20210527**					
Laboratory ID:	05-266-08					
Copper	**1.2**	1.0	EPA 200.8	5-28-21	6-4-21	
Zinc	**5.4**	5.0	EPA 200.8	5-28-21	6-4-21	
Client ID:	**TOSMI-20210527**					
Laboratory ID:	05-266-09					
Copper	**4.8**	1.0	EPA 200.8	5-28-21	6-4-21	
Zinc	**100**	5.0	EPA 200.8	5-28-21	6-4-21	
Client ID:	**EVAMS-20210527**					
Laboratory ID:	05-266-10					
Copper	**ND**	1.0	EPA 200.8	5-28-21	6-4-21	
Zinc	**ND**	5.0	EPA 200.8	5-28-21	6-4-21	
Client ID:	**EVALSS-20210527**					
Laboratory ID:	05-266-11					
Copper	**ND**	1.0	EPA 200.8	5-28-21	6-4-21	
Zinc	**ND**	5.0	EPA 200.8	5-28-21	6-4-21	
Client ID:	**SEIMN-20210527**					
Laboratory ID:	05-266-12					
Copper	**ND**	1.0	EPA 200.8	5-28-21	6-4-21	
Zinc	**ND**	5.0	EPA 200.8	5-28-21	6-4-21	
Client ID:	**COLM-20210527**					
Laboratory ID:	05-266-13					
Copper	**ND**	1.0	EPA 200.8	5-28-21	6-4-21	
Zinc	**ND**	5.0	EPA 200.8	5-28-21	6-4-21	
Client ID:	**SEIMS-20210527**					
Laboratory ID:	05-266-14					
Copper	**ND**	1.0	EPA 200.8	5-28-21	6-4-21	
Zinc	**ND**	5.0	EPA 200.8	5-28-21	6-4-21	

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA-COLM-20210527**					
Laboratory ID:	05-266-15					
Copper	**ND**	1.0	EPA 200.8	5-28-21	6-4-21	
Zinc	**ND**	5.0	EPA 200.8	5-28-21	6-4-21	

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DISSOLVED METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0528F1					
Copper	**ND**	1.0	EPA 200.8	5-28-21	6-4-21	
Zinc	**ND**	5.0	EPA 200.8	5-28-21	6-4-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	05-266-01										
	ORIG	DUP									
Copper	**3.04**	**2.88**	NA	NA		NA		NA	5	20	
Zinc	**14.1**	**13.8**	NA	NA		NA		NA	2	20	
MATRIX SPIKES											
Laboratory ID:	05-266-01										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**73.8**	**73.2**	80.0	80.0	3.04	**89**	**88**	75-125	1	20	
Zinc	**96.8**	**97.0**	80.0	80.0	14.1	**103**	**104**	75-125	0	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Jun 7 2021
On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister

Dear David Baumeister:

Enclosed please find the analytical data for your REDMOND PAIRED WATERSHED STUDY project.

The following is a cross correlation of client and laboratory identifications for your convenience.

CLIENT ID	MATRIX	AMTEST ID	TEST
COLM-20210527	Water	21-A007184	Micro, NUT
COUMI-20210527	Water	21-A007185	Micro, NUT
COUMO-20210527	Water	21-A007186	Micro, NUT
EVAMS-20210527	Water	21-A007187	Micro, NUT
EVALSS-20210527	Water	21-A007188	Micro, NUT
MONMN-20210527	Water	21-A007189	Micro, NUT
MONMS-20210527	Water	21-A007190	Micro, NUT
MONM-20210527	Water	21-A007191	Micro, NUT
SEIMN-20210527	Water	21-A007192	Micro, NUT
SEIMS-20210527	Water	21-A007193	Micro, NUT
TOSMI-20210527	Water	21-A007194	Micro, NUT
TOSMO-20210527	Water	21-A007195	Micro, NUT
TYLMI-20210527	Water	21-A007196	Micro, NUT
TYLMO-20210527	Water	21-A007197	Micro, NUT
QA-COLM-20210527	Water	21-A007198	NUT

Your samples were received on Thursday, May 27, 2021. At the time of receipt, the samples were logged in and properly maintained prior to the subsequent analysis.

The analytical procedures used at AmTest are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

Following the analytical data you will find the Quality Control (QC) results.

Please note that the detection limits that are listed in the body of the report refer to the Practical Quantitation Limits (PQL's), as opposed to the Method Detection Limits (MDL's).

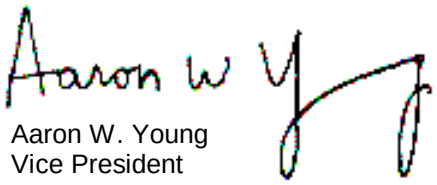
Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Jun 7 2021
On-Site Environmental
continued . . .

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,



Aaron W. Young
Vice President

Project #: 14-05806-000
PO Number: 05-266

BACT = Bacteriological	MET = Metals	NUT=Nutrients	MIN=Minerals
CONV = Conventionals	ORG = Organics	DEM=Demand	

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664
www.amtestlab.com

Professional Analytical Services

ANALYSIS REPORT

On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister
Project Name: REDMOND PAIRED WATERSHED STUDY
Project #: 14-05806-000
PO Number: 05-266
All results reported on an as received basis.

Date Received: 05/27/21
Date Reported: 6/ 7/21

AMTEST Identification Number **21-A007184**
Client Identification **COLM-20210527**
Sampling Date **05/27/21, 07:45**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	21.	CFU/100 ml		1	SM 9222D	OB	05/28/21
Total Nitrogen (NOX&TKN)	0.96	mg/l		0.1			
Total Nitrogen (TKN)	0.959	mg/l		0.2	SM4500N	KS	06/03/21
Total Nitrate + Nitrite	< 0.02	mg/l		0.02	SM4500NO3	KS	05/28/21

AMTEST Identification Number **21-A007185**
Client Identification **COUMI-20210527**
Sampling Date **05/27/21, 08:20**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	260	CFU/100 ml		10	SM 9222D	OB	05/28/21
Total Nitrogen (NOX&TKN)	1.18	mg/l		0.1			
Total Nitrogen (TKN)	0.840	mg/l		0.2	SM4500N	KS	06/03/21
Total Nitrate + Nitrite	0.34	mg/l		0.02	SM4500NO3	KS	05/28/21

AMTEST Identification Number **21-A007186**
Client Identification **COUMO-20210527**
Sampling Date **05/27/21, 08:50**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	680	CFU/100 ml		10	SM 9222D	OB	05/28/21
Total Nitrogen (NOX&TKN)	1.24	mg/l		0.1			
Total Nitrogen (TKN)	0.865	mg/l		0.2	SM4500N	KS	06/03/21
Total Nitrate + Nitrite	0.38	mg/l		0.02	SM4500NO3	KS	05/28/21

AMTEST Identification Number **21-A007187**
Client Identification **EVAMS-20210527**
Sampling Date **05/27/21, 09:15**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	80.	CFU/100 ml		10	SM 9222D	OB	05/28/21
Total Nitrogen (NOX&TKN)	2.63	mg/l		0.1			
Total Nitrogen (TKN)	0.834	mg/l		0.2	SM4500N	KS	06/03/21
Total Nitrate + Nitrite	1.8	mg/l		0.02	SM4500NO3	KS	05/28/21

AMTEST Identification Number **21-A007188**
Client Identification **EVALSS-20210527**
Sampling Date **05/27/21, 09:50**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	29.	CFU/100 ml		1	SM 9222D	OB	05/28/21
Total Nitrogen (NOX&TKN)	2.07	mg/l		0.1			
Total Nitrogen (TKN)	0.670	mg/l		0.2	SM4500N	KS	06/03/21
Total Nitrate + Nitrite	1.4	mg/l		0.02	SM4500NO3	KS	05/28/21

AMTEST Identification Number **21-A007189**
Client Identification **MONMN-20210527**
Sampling Date **05/27/21, 10:20**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	180	CFU/100 ml		1	SM 9222D	OB	05/28/21
Total Nitrogen (NOX&TKN)	0.97	mg/l		0.1			
Total Nitrogen (TKN)	0.890	mg/l		0.2	SM4500N	KS	06/03/21
Total Nitrate + Nitrite	0.080	mg/l		0.02	SM4500NO3	KS	05/28/21

AMTEST Identification Number **21-A007190**
Client Identification **MONMS-20210527**
Sampling Date **05/27/21, 10:40**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	170	CFU/100 ml		1	SM 9222D	OB	05/28/21
Total Nitrogen (NOX&TKN)	0.73	mg/l		0.1			
Total Nitrogen (TKN)	0.710	mg/l		0.2	SM4500N	KS	06/03/21
Total Nitrate + Nitrite	0.023	mg/l		0.02	SM4500NO3	KS	05/28/21

AMTEST Identification Number **21-A007191**
Client Identification **MONM-20210527**
Sampling Date **05/27/21, 12:45**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	100	CFU/100 ml		1	SM 9222D	OB	05/28/21
Total Nitrogen (NOX&TKN)	1.21	mg/l		0.1			
Total Nitrogen (TKN)	0.996	mg/l		0.2	SM4500N	KS	06/03/21
Total Nitrate + Nitrite	0.21	mg/l		0.02	SM4500NO3	KS	05/28/21

AMTEST Identification Number **21-A007192**
Client Identification **SEIMN-20210527**
Sampling Date **05/27/21, 07:35**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	38.	CFU/100 ml		1	SM 9222D	OB	05/28/21
Total Nitrogen (NOX&TKN)	0.71	mg/l		0.1			
Total Nitrogen (TKN)	0.511	mg/l		0.2	SM4500N	KS	06/03/21
Total Nitrate + Nitrite	0.20	mg/l		0.02	SM4500NO3	KS	05/28/21

AMTEST Identification Number **21-A007193**
Client Identification **SEIMS-20210527**
Sampling Date **05/27/21, 08:15**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	120	CFU/100 ml		1	SM 9222D	OB	05/28/21
Total Nitrogen (NOX&TKN)	1.19	mg/l		0.1			
Total Nitrogen (TKN)	0.936	mg/l		0.2	SM4500N	KS	06/03/21
Total Nitrate + Nitrite	0.25	mg/l		0.02	SM4500NO3	KS	05/28/21

AMTEST Identification Number **21-A007194**
Client Identification **TOSMI-20210527**
Sampling Date **05/27/21, 09:20**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	800	CFU/100 ml		10	SM 9222D	OB	05/28/21
Total Nitrogen (NOX&TKN)	1.36	mg/l		0.1			
Total Nitrogen (TKN)	0.979	mg/l		0.2	SM4500N	KS	06/03/21
Total Nitrate + Nitrite	0.38	mg/l		0.02	SM4500NO3	KS	05/28/21

AMTEST Identification Number **21-A007195**
Client Identification **TOSMO-20210527**
Sampling Date **05/27/21, 10:00**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	980	CFU/100 ml		10	SM 9222D	OB	05/28/21
Total Nitrogen (NOX&TKN)	1.45	mg/l		0.1			
Total Nitrogen (TKN)	1.02	mg/l		0.2	SM4500N	KS	06/03/21
Total Nitrate + Nitrite	0.43	mg/l		0.02	SM4500NO3	KS	05/28/21

AMTEST Identification Number **21-A007196**
Client Identification **TYLMI-20210527**
Sampling Date **05/27/21, 11:35**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	6800	CFU/100 ml		10	SM 9222D	OB	05/28/21
Total Nitrogen (NOX&TKN)	1.58	mg/l		0.1			
Total Nitrogen (TKN)	0.774	mg/l		0.2	SM4500N	KS	06/03/21
Total Nitrate + Nitrite	0.81	mg/l		0.02	SM4500NO3	KS	05/28/21

AMTEST Identification Number **21-A007197**
Client Identification **TYLMO-20210527**
Sampling Date **05/27/21, 11:20**

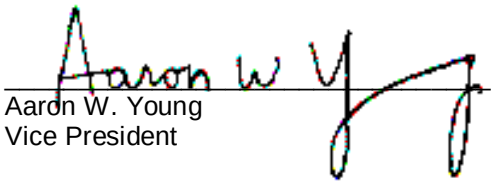
Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	380	CFU/100 ml		10	SM 9222D	OB	05/28/21
Total Nitrogen (NOX&TKN)	0.98	mg/l		0.1			
Total Nitrogen (TKN)	0.774	mg/l		0.2	SM4500N	KS	06/03/21
Total Nitrate + Nitrite	0.21	mg/l		0.02	SM4500NO3	KS	05/28/21

AMTEST Identification Number **21-A007198**
Client Identification **QA-COLM-20210527**
Sampling Date **05/27/21, 11:35**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Nitrogen (NOX&TKN)	0.89	mg/l		0.1			
Total Nitrogen (TKN)	0.887	mg/l		0.2	SM4500N	KS	06/03/21
Total Nitrate + Nitrite	< 0.02	mg/l		0.02	SM4500NO3	KS	05/28/21



Aaron W. Young
Vice President

Am Test Inc.
13600 NE 126th PL
Suite C
Kirkland, WA, 98034
(425) 885-1664
www.amtestlab.com

Professional Analytical Services

QC Summary for sample numbers: 21-A007184 to 21-A007198

DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	DUP VALUE	RPD
21-A007140	Fecal Coliform	CFU/100 ml	500	460	8.3
21-A007197	Fecal Coliform	CFU/100 ml	380	460	19.
21-A006343	Total Nitrogen (TKN)	mg/l	28.1	28.4	1.1
21-A007195	Total Nitrogen (TKN)	mg/l	1.02	0.960	6.1
21-A007222	Total Nitrogen (TKN)	mg/l	52.4	53.9	2.8
21-A007229	Total Nitrogen (TKN)	mg/l	29.5	30.1	2.0
21-A006985	Total Nitrate + Nitrite	mg/l	< 0.02	< 0.02	
21-A007058	Total Nitrate + Nitrite	mg/l	< 0.02	< 0.02	
21-A007066	Total Nitrate + Nitrite	mg/l	< 0.02	< 0.02	
21-A007145	Total Nitrate + Nitrite	mg/l	0.36	0.37	2.7
21-A007190	Total Nitrate + Nitrite	mg/l	0.023	0.023	0.00
21-A007198	Total Nitrate + Nitrite	mg/l	< 0.02	< 0.02	

MATRIX SPIKES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	SMPL+ SPK	SPK AMT	RECOVERY
21-A006343	Total Nitrogen (TKN)	mg/l	28.1	48.6	20.0	102.50 %
21-A007195	Total Nitrogen (TKN)	mg/l	1.02	3.13	2.00	105.50 %
21-A007222	Total Nitrogen (TKN)	mg/l	52.4	95.3	40.0	107.25 %
21-A007229	Total Nitrogen (TKN)	mg/l	29.5	50.1	20.0	103.00 %
21-A006985	Total Nitrate + Nitrite	mg/l	< 0.02	1.0	1.0	100.00 %
21-A007058	Total Nitrate + Nitrite	mg/l	< 0.02	1.0	1.0	100.00 %
21-A007066	Total Nitrate + Nitrite	mg/l	< 0.02	1.0	1.0	100.00 %
21-A007145	Total Nitrate + Nitrite	mg/l	0.36	1.4	1.0	104.00 %
21-A007190	Total Nitrate + Nitrite	mg/l	0.023	1.1	1.0	107.70 %
21-A007198	Total Nitrate + Nitrite	mg/l	< 0.02	1.0	1.0	100.00 %

STANDARD REFERENCE MATERIALS

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
Total Nitrogen (TKN)	mg/l	1.00	1.07	107. %
Total Nitrogen (TKN)	mg/l	1.00	1.06	106. %
Total Nitrogen (TKN)	mg/l	1.00	1.06	106. %
Total Nitrogen (TKN)	mg/l	1.00	1.10	110. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %

QC Summary for sample numbers: 21-A007184 to 21-A007198...

BLANKS

ANALYTE	UNITS	RESULT
Fecal Coliform	CFU/100 ml	< 1
Fecal Coliform	CFU/100 ml	< 1
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Laboratory Reference #: 05-266

Laboratory: AmTest Laboratories

Attention: Aaron Young

13600 NE 126th Pl Kirkland, WA 98034

Phone Number: (425) 885-1664

Turnaround Request

1 Day 2 Day 3 Day

Standard

Other: _____

Project Manager: Blair Goodrow

email: bgoodrow@onsite-env.com

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analyses
1	COLM-20210527 7184	5/27/20	7:45	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
2	COUMI-20210527 85	5/27/20	8:20	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
3	COUMO-20210527 86	5/27/20	8:50	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
4	EVAMS-20210527 87	5/27/20	9:15	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
5	EVALSS-20210527 88	5/27/20	9:50	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
6	MONMN-20210527 89	5/27/20	10:20	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
7	MONMS-20210527 90	5/27/20	10:40	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
8	MONM-20210527 91	5/27/20	12:45	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
9	SEIMN-20210527 92	5/27/20	7:35	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
10	SEIMS-20210527 93	5/27/20	8:15	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N

Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:	OSE	5-27	15:45	
Received by:	AMTEST T=6.6	5/27/21	15:45	**EDDs - CSV**
Relinquished by:				**Reporting Limits:**
Received by:				**Fecal Coliform - 1.0 cfu/100ml**
Relinquished by:				**Total Nitrogen - .10 mg/L**
Received by:				

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Laboratory Reference #: 05-266

Laboratory: AmTest Laboratories

Attention: Aaron Young

13600 NE 126th Pl Kirkland, WA 98034

Phone Number: (425) 885-1664

Turnaround Request

1 Day 2 Day 3 Day

Standard

Other: _____

Project Manager: Blair Goodrow

email: bgoodrow@onsite-env.com

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analyses
11	TOSMI-20210527 7194	5/27/20	9:20	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
12	TOSMO-20210527 95	5/27/20	10:00	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
13	TYLMI-20210527 96	5/27/20	11:35	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
14	TYLMO-20210527 97	5/27/20	11:20	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
15	QA~~9~~7-20210527 98	5/27/20	11:35	Water	1	Total Nitrogen SM 4500-N
	COLM -					

Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:	OSE	5-27	15:45	
Received by:	AMTEST T=6.6	5/27/21	15:45	**EDDs - CSV**
Relinquished by:				**Reporting Limits:**
Received by:				**Fecal Coliform - 1.0 cfu/100ml**
Relinquished by:				**Total Nitrogen - .10 mg/L**
Received by:				

CHAIN OF CUSTODY

05-266

Page 1 of 1

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants

Project No.: 14-05806-000

Project Name: Redmond Paired Watershed Study

Project Manager: George Iftner

Turnaround Requested:

_____ 1 Day

_____ 2 Day

_____ 3 Day

__X__ Standard

Laboratory No.

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Suspended Solids (SM 2540D)	Turbidity (EPA 181.1)	Hardness (EPA 200.7 / SM 2340B)	Dissolved Organ Carbon (SM 5310B) *	Fecal Coliform (SM 9222D)	Total Phosphorus (EPA 365.1)	Total Nitrogen (SM 4500 N-B)	Total Cu and Zn (EPA 200.8)	Dissolved Cu and Zn (EPA 200.8) *	
1	COUMO-20210527	05-27-21	7:45	Water	7	X	X	X	X	X	X	X	X	X	
2	COUMI-20210527		8:20	Water	7	X	X	X	X	X	X	X	X	X	
3	TOSMO-20210527		8:50	Water	7	X	X	X	X	X	X	X	X	X	
4	TYLMO-20210527		9:15	Water	7	X	X	X	X	X	X	X	X	X	
5	TYLMI-20210527		9:50	Water	7	X	X	X	X	X	X	X	X	X	
6	MONMN-20210527		10:20	Water	7	X	X	X	X	X	X	X	X	X	
7	MONMS-20210527		10:40	Water	7	X	X	X	X	X	X	X	X	X	
8	MONM-20210527		12:45	Water	7	X	X	X	X	X	X	X	X	X	
9	TOSMI-20210527		7:35	Water	7	X	X	X	X	X	X	X	X	X	
10	EVAMS-20210527		8:15	Water	7	X	X	X	X	X	X	X	X	X	
11	EVALSS-20210527		9:20	Water	7	X	X	X	X	X	X	X	X	X	
12	SEIMN-20210527		10:00	Water	7	X	X	X	X	X	X	X	X	X	
13	COLM-20210527		11:35	Water	7	X	X	X	X	X	X	X	X	X	
14	SEIMS-20210527		11:20	Water	7	X	X	X	X	X	X	X	X	X	
15	QA-COLM-20210527		11:35	Water	~~7~~ 6	X	X	X	X	~~X~~ ND	X	X	X	X	

Relinquished by James Watson Date 5/27/21 Received by [signature] Date 5/27/21

Firm Herrera Environmental Time 14:10 Firm OSE Time 1410

Relinquished by _____ Date _____ Received by _____ Date _____

Firm _____ Time _____ Firm _____ Time _____

please filter for dissolved metals and dissolved organic carbon upon receipt

Comments:

* - field filtered with 0.45 µm filter within 15 minutes of collecting sample

METER CALIBRATION LOG - Redmond Paired Watershed Study

Project Number:	14-05806-000		
Personnel Performing Calibration:	N. Bartish		
Meter:	Pro DSS #1		
Date/Time:	5/26/21		16:00
Barometric Pressure Start of Day:	mmHg: 766.3	Time:	16:00
Barometric Pressure End of Day:	mmHg: 766.3	Time:	16:20

PRE Field Run CALIBRATION	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	0.7	0	22.2	
Conductivity (µS/cm)	947	1,000	21.7	
Conductivity (µS/cm)	95.0	100	21.7	
DO % Saturation	103.8	100	21.8	

POST Field Run CHECK	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	0.6	0	22.8	
Conductivity (µS/cm)	96.1	100	22.7	
DO % Saturation	99.7	100	22.6	

Calibration Procedures:

Rinse Multimeter Sonde Between Each Operation

Rinse 3 times with tap water, 3 times with deionized water, then 3 times with the solution to be used for calibrating or testing.

Conductivity Calibration Notes:

1. Dry the conductivity probe with a lab tissue (e.g., KimWipes®) and DI water.
2. Fill calibration cup to within a centimeter of the top of the calibration cup with DI water (0 µS).
3. Fill the calibration cup with 1,000 µS standard so that the temperature/conductivity probe is submerged.
4. Make sure there are no bubbles in the cell; wait 2 minutes.
5. Enter the appropriate standard value (1,000 µS/cm or 1.0 mS/cm) for Sp Cond.
6. Check conductivity using 100 µS/cm standard.

Dissolved Oxygen Calibration Notes:

1. Fill the calibration cup with about 1/2 inch of DI; it should be below the sensor cap.
2. Use KimWipes® to dry any droplets from the sensor cap.
3. Invert calibration cup's cap and gently rest it on the cup.
4. Wait 5 minutes, making sure that temperature stabilizes.
5. Determine local barometric pressure (mm Hg) and enter this value into the meter.
6. Click "Calibrate". "Calibrate Successful" will be displayed.
7. To retain calibration accuracy between measurements, store with the sensor immersed in water or within a water-saturated air environment such as a sealed storage cup with at least 10 ml of water.
8. It is important to have the water-saturated air and the sensor at the same temperature. Therefore, store a jar of DI in the same environment as the sonde and calibrate in a similar air temperature as the water and sonde.
9. Keep probe out of direct sun or wind.

HERRERA

METER CALIBRATION LOG - Redmond Paired Watershed Study

Project Number:	14-05806-000		
Personnel Performing Calibration:	N. Bartish		
Meter:	ProDSS #2		
Date/Time:	5/26/21		11:00
Barometric Pressure Start of Day:	mmHg: 766.5	Time:	16:00
Barometric Pressure End of Day:	mmHg: 766.4	Time:	16:20

PRE Field Run CALIBRATION	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	0.3	0	23.0	
Conductivity (µS/cm)	1417	1,000	22.5	High
Conductivity (µS/cm)	93.5	100	22.5	
DO % Saturation	101.5	100	22.5	

POST Field Run CHECK	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	0.4	0	22.9	
Conductivity (µS/cm)	96.7	100	22.3	
DO % Saturation	101.3	100	22.4	

Calibration Procedures:

Rinse Multimeter Sonde Between Each Operation

Rinse 3 times with tap water, 3 times with deionized water, then 3 times with the solution to be used for calibrating or testing.

Conductivity Calibration Notes:

1. Dry the conductivity probe with a lab tissue (e.g., KimWipes®) and DI water.
2. Fill calibration cup to within a centimeter of the top of the calibration cup with DI water (0 µS).
3. Fill the calibration cup with 1,000 µS standard so that the temperature/conductivity probe is submerged.
4. Make sure there are no bubbles in the cell; wait 2 minutes.
5. Enter the appropriate standard value (1,000 µS/cm or 1.0 mS/cm) for Sp Cond.
6. Check conductivity using 100 µS/cm standard.

Dissolved Oxygen Calibration Notes:

1. Fill the calibration cup with about 1/2 inch of DI; it should be below the sensor cap.
2. Use KimWipes® to dry any droplets from the sensor cap.
3. Invert calibration cup's cap and gently rest it on the cup.
4. Wait 5 minutes, making sure that temperature stabilizes.
5. Determine local barometric pressure (mm Hg) and enter this value into the meter.
6. Click "Calibrate". "Calibrate Successful" will be displayed.
7. To retain calibration accuracy between measurements, store with the sensor immersed in water or within a water-saturated air environment such as a sealed storage cup with at least 10 ml of water.
8. It is important to have the water-saturated air and the sensor at the same temperature. Therefore, store a jar of DI in the same environment as the sonde and calibrate in a similar air temperature as the water and sonde.
9. Keep probe out of direct sun or wind.

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: Thea Foulk

Sample Date: 05/27/21 **Sample Time:** 11:20 PDT / PST

Base Flow or Storm Event? (B)

Field filtered 5 minutes later: Y / N (Must filter within 15 minutes of collection)

SITE ID: SEIMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 60° + Clear

Water Quality Sampling

Sample ID: SEIMS

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: CLEAN

Color:

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.75

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 10.3

Specific Conductivity (µs/cm) 116.7

Dissolved Oxygen (mg/L) 10.99

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: Thea Fovik

Sample Date: 05/27/21 **Sample Time:** 1040 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later: Y N**
(Must filter within 15 minutes of collection)

SITE ID: MONMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

HERRERA

Current Weather and Temp: 58° drizzle

Water Quality Sampling

Sample ID: MONMS

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:
Filter blank sample ID:
Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: CLEAN
Color:
Odor:
Sheen:
Floatables:

LABORATORY DELIVERY

Date: 05/27/21 **Time:** 1040

Quality Assurance

Checked By: **Signature:**
Date Checked: **Time:**
Data Entered into Database? YES NO **initials:**
Date Entered: **Time:**
Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)
YSI Pro DSS 1
YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 7.11

Reference Point (description): vault

Water Quality Measurments

Temperature (°C) 11.3

Specific Conductivity (µs/cm) 258.3

Dissolved Oxygen (mg/L) 7.57

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: Thea Povik

Sample Date: 05/27/21 **Sample Time:** 10:20 PDT / PST

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: MONMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

HERRERA

Current Weather and Temp: 58°F + ~~Cloudy~~ drizzle

Water Quality Sampling

Sample ID: MONMN

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: CLEAN

Color:

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: 05/27/21 **Time:** 10:20

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): ? 0.14

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 12.0

Specific Conductivity (µs/cm) 203.6

Dissolved Oxygen (mg/L) 10.17

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: Thea Foulke

Sample Date: 05/27/21 **Sample Time:** 9:50 PDT: PST:

Base Flow or Storm Event? (Storm)

Field filtered 5 minutes later: Y (N)
(Must filter within 15 minutes of collection)

SITE ID: TYLMI

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

HERRERA

Current Weather and Temp: 55° drizzle

Water Quality Sampling

Sample ID: TYLMT

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID: CLE
Filter blank sample ID:
Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: CLEAN
Color:
Odor:
Sheen:
Floatables:

LABORATORY DELIVERY

Date: 05/27/21 **Time:** 950

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 4.46

Reference Point (description): Top of culvert

Water Quality Measurments

Temperature (°C) 11.4

Specific Conductivity (µs/cm) 217.6

Dissolved Oxygen (mg/L) 10.34

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: Thea FOULK

Sample Date: 05/27/21 **Sample Time:** 9:15 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: TYLMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 55° drizzle

Water Quality Sampling

Sample ID: TYLMO

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	
Color:	
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: 05/27/21 **Time:** 9:15

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.94

Reference Point (description): TOP of culvert

Water Quality Measurments

Temperature (°C) 11.7

Specific Conductivity (µs/cm) 119.9

Dissolved Oxygen (mg/L) 10.81

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: Thea Fovik

Sample Date: 05/27/21 **Sample Time:** 8:56 PDT:

Base Flow or Storm Event? PST:

Field filtered 5 minutes later: Y (N)
(Must filter within 15 minutes of collection)

SITE ID: TOSMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

HERRERA

Current Weather and Temp:

Water Quality Sampling

Sample ID: TOSMD

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	CLEAN
Color:	
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: 05/27/21 **Time:** 8:50

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): ~~0.7~~ 0.67

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 11.3

Specific Conductivity (µs/cm) 136.6

Dissolved Oxygen (mg/L) 11.08

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: Mia Fouik

Sample Date: ~~COUM~~ 05/27/21 **Sample Time:** 8:20 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y (N)
(Must filter within 15 minutes of collection)

SITE ID: COUM1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 52°F rain

Water Quality Sampling

Sample ID: COUM1

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: CLEAN

Color:

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: 05/27/21 **Time:** 8:20

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.65

Reference Point (description): S6

Water Quality Measurments

Temperature (°C) 10.5°C

Specific Conductivity (µs/cm) 279.7

Dissolved Oxygen (mg/L) 11.24

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: Tma Fovik

Sample Date: 05/27/2021 **Sample Time:** 7:45 PDT: PST:

Base Flow or Storm Event? (X) (N)

Field filtered 5 minutes later: Y (N)
(Must filter within 15 minutes of collection)

SITE ID: COUMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

HERRERA

Current Weather and Temp: 52°F + rain

Water Quality Sampling

Sample ID: COUMO

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	CLEAN
Color:	
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: 052721 **Time:** 7:45

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 1.41 SG

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 12.1

Specific Conductivity (µs/cm) 143.5

Dissolved Oxygen (mg/L) 10.52

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + JC

Sample Date: 05-27-21 **Sample Time:** 7:35 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: TOSMI

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 55°F and rainy

Water Quality Sampling

Sample ID: TOSMI20210527

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	light brown
Odor:	None
Sheen:	None
Floatables:	None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? **YES** **NO** **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft):

Reference Point (description):

Water Quality Measurments

Temperature (°C) 3.3

Specific Conductivity (µs/cm) 61.9

Dissolved Oxygen (mg/L) 10.31

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + JC

Sample Date: 05-27-21 **Sample Time:** 12:45 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: MONM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 60°F and cloudy

Water Quality Sampling

Sample ID: MONM20210527

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	None
Odor:	None
Sheen:	None
Floatables:	None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): NA

Reference Point (description): NA

Water Quality Measurments

Temperature (°C) 12.2

Specific Conductivity (µs/cm) 218.8

Dissolved Oxygen (mg/L) 10.47

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + JC

Sample Date: 5-27-21 **Sample Time:** 11:35 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: COLM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 58°F + Cloudy

Water Quality Sampling

Sample ID: COLM20210527

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	Y
DOC *	HDPE	250 ml	1	HCL	Y
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	N
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	Y
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	Y
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	Y
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	Y

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	QA-COLM-20210527
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Slightly Turbid
Color:	Brown
Odor:	None
Sheen:	None
Floatables:	None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 5.41

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 12.3

Specific Conductivity (µs/cm) 44.1

Dissolved Oxygen (mg/L) 9.51

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + JC

Sample Date: 05-27-21 **Sample Time:** 10:00 PDT PST

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: SEIMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 60°F + Overcast

Water Quality Sampling

Sample ID: SEIMN20210527

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	light brown
Odor:	none
Sheen:	none
Floatables:	none

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): .67

Reference Point (description): ~~RG~~ Manhole

Water Quality Measurments

Temperature (°C) 10.7

Specific Conductivity (µs/cm) 95.1

Dissolved Oxygen (mg/L) 10.93

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + JC

Sample Date: 05/27/21 **Sample Time:** 8:15 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: EVAMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 55°F + Rain

Water Quality Sampling

Sample ID: EVAMS20210527

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	Clear
Odor:	None
Sheen:	None
Floatables:	None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 3.79

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 11.1

Specific Conductivity (µs/cm) 213.3

Dissolved Oxygen (mg/L) 10.20

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + JC

Sample Date: 05/27/21 **Sample Time:** 9:20 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: EVALSS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 55°F + RAIN

Water Quality Sampling

Sample ID: EVALSS 20210527

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	light brown
Odor:	None
Sheen:	None
Floatables:	None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? **YES** **NO** **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): .31

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 11.2

Specific Conductivity (µs/cm) 201.5

Dissolved Oxygen (mg/L) 10.99

Data Quality Assurance Worksheet

By J. Brown

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 6/23/21 Page 1 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 5/272021 /All locations, QA103 (COLM) Lab Ref No 2105-266

date 6/30/2021

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
TSS	OK / SM 2540D	NA	**NA**	5	**≤7**	≤1.0 mg/L 1.0 mg/L	NA	**NA**	87	**±20**	6	**≤ 25**	D=1.2	**≤ 25**	OK	NONE
Turbidity	OK / EPA 180.1	NA	**NA**	<1	**≤2**	≤0.1 NTU 0.1 NTU	NA	**NA**	NA	**±10**	2	**≤ 25**	0	**≤ 25**	OK	NONE
Hardness	OK / SM 2340B	NA	**NA**	5	**≤180**	≤1.0 mg/L 1.0 mg/L	104, 96	**±25**	98, MS 8	**±15**	1	**≤ 20**	0	**≤ 20**	OK	NONE
DOC	OK / SM 5310B	<1 day	**≤15**	1	**≤28**	≤1.0 mg/L 1.0 mg/L	106	**±25**	107	**±15**	D=0.09	**≤ 20**	10	**≤ 20**	OK	FLAG ALL J FOR FILTRATION HOLDING TIME EXCEEDANCE
Total Phosphorus	OK / EPA 365.1	NA	**NA**	6	**≤28**	≤0.01 mg/L 0.01 mg/L	102	**±25**	98	**±20**	D=0.005	**≤ 20**	D=0.003	**≤ 20**	OK	NONE
Total Nitrogen (TKN + N+N)	OK/ SM 4500 N-B	NA	**NA**	1, 7	**≤28**	≤0.1 mg/L 0.1 mg/L	100-108	**±25**	100-107	**±20**	NC, 1-3, D=0-0.06	**≤ 20**	NC, 8	**≤ 20**	OK	NONE

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

Data Quality Assurance Worksheet

By J. Brown

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 6/23/21 Page 2 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 5/272021 /All locations, QA103 (COLM) Lab Ref No 2105-266

date 6/30/2021

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
Total Copper	OK/ EPA 200.8	NA	**NA**	6	**≤180**	≤1.0 µg/L 1.0 µg/L	98, 95	**±25**	NR	**±15**	NC, MS 3	**≤ 20**	NC	**≤ 20**	OK	NONE
Total Zinc	OK/ EPA 200.8	NA	**NA**	6	**≤180**	≤5.0 µg/L 5.0 µg/L	103, 101	**±25**	NR	**±15**	NC, MS 2	**≤ 20**	NC	**≤ 20**	OK	NONE
Dissolved Copper	OK/ EPA 200.8	<1 day	**≤15**	8	**≤180**	≤1.0 µg/L 1.0 µg/L	89, 88	**±25**	NR	**±15**	D=0.16, MS 1	**≤ 20**	NC	**≤ 20**	OK	FLAG ALL J FOR FILTRATION HOLDING TIME EXCEEDANCE
Dissolved Zinc	OK/ EPA 200.8	<1 day	**≤15**	8	**≤180**	≤5.0 µg/L 5.0 µg/L	103, 104	**±25**	NR	**±15**	D=0.30, MS <1	**≤ 20**	NC	**≤ 20**	OK	FLAG ALL J FOR FILTRATION HOLDING TIME EXCEEDANCE
Fecal Coliform	OK / SM 9222D	NA	**NA**	1	**≤1**	≤1.0 cfu/ 100mL 10 cfu/ 100mL	NA	**NA**	NA	**NA**	8, 19	**≤ 35**	NA	**≤ 50**	OK	NONE

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

June 25, 2021

Jess Brown
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2106-114

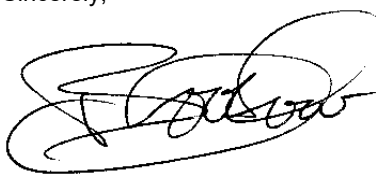
Dear Jess:

Enclosed are the analytical results and associated quality control data for samples submitted on June 14, 2021.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



Blair Goodrow
Project Manager

Enclosures

Date of Report: June 25, 2021
Samples Submitted: June 14, 2021
Laboratory Reference: 2106-114
Project: 14-05806-000

Case Narrative

Samples were collected on June 13, 2021 and received by the laboratory on June 14, 2021. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: June 25, 2021
Samples Submitted: June 14, 2021
Laboratory Reference: 2106-114
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20210613**					
Laboratory ID:	06-114-01					
Total Suspended Solids	**150**	5.0	SM 2540D	6-16-21	6-17-21	
Client ID:	**COUMI-20210613**					
Laboratory ID:	06-114-02					
Total Suspended Solids	**290**	5.0	SM 2540D	6-16-21	6-17-21	
Client ID:	**COUMO-20210613**					
Laboratory ID:	06-114-03					
Total Suspended Solids	**110**	5.0	SM 2540D	6-16-21	6-17-21	
Client ID:	**EVAMS-20210613**					
Laboratory ID:	06-114-04					
Total Suspended Solids	**110**	5.0	SM 2540D	6-16-21	6-17-21	
Client ID:	**EVALSS-20210613**					
Laboratory ID:	06-114-05					
Total Suspended Solids	**150**	5.0	SM 2540D	6-16-21	6-17-21	
Client ID:	**MONMN-20210613**					
Laboratory ID:	06-114-06					
Total Suspended Solids	**120**	5.0	SM 2540D	6-16-21	6-17-21	
Client ID:	**MONMS-20210613**					
Laboratory ID:	06-114-07					
Total Suspended Solids	**3.4**	1.0	SM 2540D	6-16-21	6-17-21	
Client ID:	**MONM-20210613**					
Laboratory ID:	06-114-08					
Total Suspended Solids	**86**	5.0	SM 2540D	6-16-21	6-17-21	
Client ID:	**SEIMN-20210613**					
Laboratory ID:	06-114-09					
Total Suspended Solids	**220**	5.0	SM 2540D	6-16-21	6-17-21	

Date of Report: June 25, 2021
Samples Submitted: June 14, 2021
Laboratory Reference: 2106-114
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20210613**					
Laboratory ID:	06-114-10					
Total Suspended Solids	**160**	5.0	SM 2540D	6-16-21	6-17-21	
Client ID:	**TOSMI-20210613**					
Laboratory ID:	06-114-11					
Total Suspended Solids	**140**	5.0	SM 2540D	6-16-21	6-17-21	
Client ID:	**TOSMO-20210613**					
Laboratory ID:	06-114-12					
Total Suspended Solids	**420**	5.0	SM 2540D	6-16-21	6-17-21	
Client ID:	**TYLMI-20210613**					
Laboratory ID:	06-114-13					
Total Suspended Solids	**69**	5.0	SM 2540D	6-16-21	6-17-21	
Client ID:	**TYLMO-20210613**					
Laboratory ID:	06-114-14					
Total Suspended Solids	**22**	2.5	SM 2540D	6-16-21	6-17-21	
Client ID:	**QA104-20210613**					
Laboratory ID:	06-114-15					
Total Suspended Solids	**140**	5.0	SM 2540D	6-16-21	6-17-21	

Date of Report: June 25, 2021
Samples Submitted: June 14, 2021
Laboratory Reference: 2106-114
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0616W1					
Total Suspended Solids	**ND**	1.0	SM 2540D	6-16-21	6-17-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	06-114-13								
	ORIG	DUP							
Total Suspended Solids	**69.0**	**64.0**	NA	NA	NA	NA	8	26	
SPIKE BLANK									
Laboratory ID:	SB0616W1								
	SB		SB		SB				
Total Suspended Solids	**94.0**		100	NA	94	67-118	NA	NA	

Date of Report: June 25, 2021
Samples Submitted: June 14, 2021
Laboratory Reference: 2106-114
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20210613**					
Laboratory ID:	06-114-01					
Turbidity	**58**	0.50	EPA 180.1	6-14-21	6-14-21	
Client ID:	**COUMI-20210613**					
Laboratory ID:	06-114-02					
Turbidity	**130**	1.0	EPA 180.1	6-14-21	6-14-21	
Client ID:	**COUMO-20210613**					
Laboratory ID:	06-114-03					
Turbidity	**47**	0.20	EPA 180.1	6-14-21	6-14-21	
Client ID:	**EVAMS-20210613**					
Laboratory ID:	06-114-04					
Turbidity	**60**	0.50	EPA 180.1	6-14-21	6-14-21	
Client ID:	**EVALSS-20210613**					
Laboratory ID:	06-114-05					
Turbidity	**60**	1.0	EPA 180.1	6-14-21	6-14-21	
Client ID:	**MONMN-20210613**					
Laboratory ID:	06-114-06					
Turbidity	**63**	1.0	EPA 180.1	6-14-21	6-14-21	
Client ID:	**MONMS-20210613**					
Laboratory ID:	06-114-07					
Turbidity	**3.6**	0.10	EPA 180.1	6-14-21	6-14-21	
Client ID:	**MONM-20210613**					
Laboratory ID:	06-114-08					
Turbidity	**40**	0.10	EPA 180.1	6-14-21	6-14-21	
Client ID:	**SEIMN-20210613**					
Laboratory ID:	06-114-09					
Turbidity	**110**	1.0	EPA 180.1	6-14-21	6-14-21	

Date of Report: June 25, 2021
Samples Submitted: June 14, 2021
Laboratory Reference: 2106-114
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20210613**					
Laboratory ID:	06-114-10					
Turbidity	**81**	0.50	EPA 180.1	6-14-21	6-14-21	
Client ID:	**TOSMI-20210613**					
Laboratory ID:	06-114-11					
Turbidity	**44**	1.0	EPA 180.1	6-14-21	6-14-21	
Client ID:	**TOSMO-20210613**					
Laboratory ID:	06-114-12					
Turbidity	**180**	1.0	EPA 180.1	6-14-21	6-14-21	
Client ID:	**TYLMI-20210613**					
Laboratory ID:	06-114-13					
Turbidity	**34**	0.10	EPA 180.1	6-14-21	6-14-21	
Client ID:	**TYLMO-20210613**					
Laboratory ID:	06-114-14					
Turbidity	**13**	0.10	EPA 180.1	6-14-21	6-14-21	
Client ID:	**QA104-20210613**					
Laboratory ID:	06-114-15					
Turbidity	**92**	0.50	EPA 180.1	6-14-21	6-14-21	

Date of Report: June 25, 2021
Samples Submitted: June 14, 2021
Laboratory Reference: 2106-114
Project: 14-05806-000

TURBIDITY
EPA 180.1
QUALITY CONTROL

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0614W1					
Turbidity	**ND**	0.10	EPA 180.1	6-14-21	6-14-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	06-114-07								
	ORIG	DUP							
Turbidity	**3.56**	**3.84**	NA	NA	NA	NA	8	13	

Date of Report: June 25, 2021
Samples Submitted: June 14, 2021
Laboratory Reference: 2106-114
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20210613**					
Laboratory ID:	06-114-01					
Hardness	**19**	1.0	EPA 200.7/SM 2340B	6-15-21	6-15-21	
Client ID:	**COUMI-20210613**					
Laboratory ID:	06-114-02					
Hardness	**82**	1.0	EPA 200.7/SM 2340B	6-15-21	6-15-21	
Client ID:	**COUMO-20210613**					
Laboratory ID:	06-114-03					
Hardness	**33**	1.0	EPA 200.7/SM 2340B	6-15-21	6-15-21	
Client ID:	**EVAMS-20210613**					
Laboratory ID:	06-114-04					
Hardness	**88**	1.0	EPA 200.7/SM 2340B	6-15-21	6-15-21	
Client ID:	**EVALSS-20210613**					
Laboratory ID:	06-114-05					
Hardness	**85**	1.0	EPA 200.7/SM 2340B	6-15-21	6-15-21	
Client ID:	**MONMN-20210613**					
Laboratory ID:	06-114-06					
Hardness	**54**	1.0	EPA 200.7/SM 2340B	6-15-21	6-15-21	
Client ID:	**MONMS-20210613**					
Laboratory ID:	06-114-07					
Hardness	**68**	1.0	EPA 200.7/SM 2340B	6-15-21	6-15-21	

Date of Report: June 25, 2021
Samples Submitted: June 14, 2021
Laboratory Reference: 2106-114
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20210613**					
Laboratory ID:	06-114-08					
Hardness	**64**	1.0	EPA 200.7/SM 2340B	6-15-21	6-15-21	
Client ID:	**SEIMN-20210613**					
Laboratory ID:	06-114-09					
Hardness	**41**	1.0	EPA 200.7/SM 2340B	6-15-21	6-15-21	
Client ID:	**SEIMS-20210613**					
Laboratory ID:	06-114-10					
Hardness	**52**	1.0	EPA 200.7/SM 2340B	6-15-21	6-15-21	
Client ID:	**TOSMI-20210613**					
Laboratory ID:	06-114-11					
Hardness	**25**	1.0	EPA 200.7/SM 2340B	6-15-21	6-15-21	
Client ID:	**TOSMO-20210613**					
Laboratory ID:	06-114-12					
Hardness	**65**	1.0	EPA 200.7/SM 2340B	6-15-21	6-15-21	
Client ID:	**TYLMI-20210613**					
Laboratory ID:	06-114-13					
Hardness	**53**	1.0	EPA 200.7/SM 2340B	6-15-21	6-15-21	
Client ID:	**TYLMO-20210613**					
Laboratory ID:	06-114-14					
Hardness	**26**	1.0	EPA 200.7/SM 2340B	6-15-21	6-15-21	

Date of Report: June 25, 2021
Samples Submitted: June 14, 2021
Laboratory Reference: 2106-114
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA104-20210613**					
Laboratory ID:	06-114-15					
Hardness	**49**	1.0	EPA 200.7/SM 2340B	6-15-21	6-15-21	

Date of Report: June 25, 2021
Samples Submitted: June 14, 2021
Laboratory Reference: 2106-114
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B
QUALITY CONTROL

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0615WH2					
Hardness	**ND**	1.0	EPA 200.7/SM 2340B	6-15-21	6-15-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	06-114-01										
	ORIG	DUP									
Hardness	**18.9**	**19.0**	NA		NA	NA		NA	1	20	
MATRIX SPIKES											
Laboratory ID:	06-114-01										
	MS	MSD	MS	MSD		MS	MSD				
Hardness	**159**	**157**	132	132	18.9	106	105	75-125	1	20	
SPIKE BLANK											
Laboratory ID:	SB0615WH2										
	SB		SB			SB					
Hardness	**132**		132		NA	100		85-115	NA	NA	

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DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20210613**					
Laboratory ID:	06-114-01					
Dissolved Organic Carbon	**11**	1.0	SM 5310B	6-14-21	6-16-21	
Client ID:	**COUMI-20210613**					
Laboratory ID:	06-114-02					
Dissolved Organic Carbon	**7.9**	1.0	SM 5310B	6-14-21	6-16-21	
Client ID:	**COUMO-20210613**					
Laboratory ID:	06-114-03					
Dissolved Organic Carbon	**4.2**	1.0	SM 5310B	6-14-21	6-16-21	
Client ID:	**EVAMS-20210613**					
Laboratory ID:	06-114-04					
Dissolved Organic Carbon	**6.6**	1.0	SM 5310B	6-14-21	6-16-21	
Client ID:	**EVALSS-20210613**					
Laboratory ID:	06-114-05					
Dissolved Organic Carbon	**5.4**	1.0	SM 5310B	6-14-21	6-16-21	
Client ID:	**MONMN-20210613**					
Laboratory ID:	06-114-06					
Dissolved Organic Carbon	**6.7**	1.0	SM 5310B	6-14-21	6-16-21	
Client ID:	**MONMS-20210613**					
Laboratory ID:	06-114-07					
Dissolved Organic Carbon	**5.6**	1.0	SM 5310B	6-14-21	6-16-21	
Client ID:	**MONM-20210613**					
Laboratory ID:	06-114-08					
Dissolved Organic Carbon	**6.6**	1.0	SM 5310B	6-14-21	6-16-21	
Client ID:	**SEIMN-20210613**					
Laboratory ID:	06-114-09					
Dissolved Organic Carbon	**7.4**	1.0	SM 5310B	6-14-21	6-16-21	

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DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20210613**					
Laboratory ID:	06-114-10					
Dissolved Organic Carbon	**12**	1.0	SM 5310B	6-14-21	6-16-21	
Client ID:	**TOSMI-20210613**					
Laboratory ID:	06-114-11					
Dissolved Organic Carbon	**4.1**	1.0	SM 5310B	6-14-21	6-16-21	
Client ID:	**TOSMO-20210613**					
Laboratory ID:	06-114-12					
Dissolved Organic Carbon	**6.7**	1.0	SM 5310B	6-14-21	6-21-21	
Client ID:	**TYLMI-20210613**					
Laboratory ID:	06-114-13					
Dissolved Organic Carbon	**6.6**	1.0	SM 5310B	6-14-21	6-21-21	
Client ID:	**TYLMO-20210613**					
Laboratory ID:	06-114-14					
Dissolved Organic Carbon	**5.0**	1.0	SM 5310B	6-14-21	6-21-21	
Client ID:	**QA104-20210613**					
Laboratory ID:	06-114-15					
Dissolved Organic Carbon	**13**	1.0	SM 5310B	6-14-21	6-21-21	

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DISSOLVED ORGANIC CARBON
SM 5310B
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0614F1					
Dissolved Organic Carbon	**ND**	1.0	SM 5310B	6-14-21	6-16-21	
Laboratory ID:	MB0614F1					
Dissolved Organic Carbon	**ND**	1.0	SM 5310B	6-14-21	6-21-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	06-114-01								
	ORIG	DUP							
Dissolved Organic Carbon	**11.5**	**11.6**	NA	NA	NA	NA	0	15	
MATRIX SPIKE									
Laboratory ID:	06-114-01								
	MS		MS		MS				
Dissolved Organic Carbon	**21.8**		10.0	11.5	103	91-117	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB0614F1								
	SB		SB		SB				
Dissolved Organic Carbon	**10.9**		10.0	NA	109	88-116	NA	NA	
DUPLICATE									
Laboratory ID:	06-114-12								
	ORIG	DUP							
Dissolved Organic Carbon	**6.71**	**6.71**	NA	NA	NA	NA	0	15	
MATRIX SPIKE									
Laboratory ID:	06-114-12								
	MS		MS		MS				
Dissolved Organic Carbon	**15.8**		10.0	6.71	91	91-117	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB0614F11								
	SB		SB		SB				
Dissolved Organic Carbon	**10.2**		10.0	NA	102	88-116	NA	NA	

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TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20210613**					
Laboratory ID:	06-114-01					
Total Phosphorus	**0.19**	0.010	EPA 365.1	6-18-21	6-21-21	
Client ID:	**COUMI-20210613**					
Laboratory ID:	06-114-02					
Total Phosphorus	**0.43**	0.010	EPA 365.1	6-18-21	6-21-21	
Client ID:	**COUMO-20210613**					
Laboratory ID:	06-114-03					
Total Phosphorus	**0.27**	0.010	EPA 365.1	6-18-21	6-21-21	
Client ID:	**EVAMS-20210613**					
Laboratory ID:	06-114-04					
Total Phosphorus	**0.16**	0.010	EPA 365.1	6-18-21	6-21-21	
Client ID:	**EVALSS-20210613**					
Laboratory ID:	06-114-05					
Total Phosphorus	**0.18**	0.010	EPA 365.1	6-18-21	6-21-21	
Client ID:	**MONMN-20210613**					
Laboratory ID:	06-114-06					
Total Phosphorus	**0.30**	0.010	EPA 365.1	6-18-21	6-21-21	
Client ID:	**MONMS-20210613**					
Laboratory ID:	06-114-07					
Total Phosphorus	**0.038**	0.010	EPA 365.1	6-18-21	6-21-21	
Client ID:	**MONM-20210613**					
Laboratory ID:	06-114-08					
Total Phosphorus	**0.21**	0.010	EPA 365.1	6-18-21	6-21-21	
Client ID:	**SEIMN-20210613**					
Laboratory ID:	06-114-09					
Total Phosphorus	**0.40**	0.010	EPA 365.1	6-18-21	6-21-21	

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TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SEIMS-20210613**					
Laboratory ID:	06-114-10					
Total Phosphorus	**0.28**	0.010	EPA 365.1	6-18-21	6-21-21	
Client ID:	**TOSMI-20210613**					
Laboratory ID:	06-114-11					
Total Phosphorus	**0.19**	0.010	EPA 365.1	6-18-21	6-21-21	
Client ID:	**TOSMO-20210613**					
Laboratory ID:	06-114-12					
Total Phosphorus	**0.52**	0.010	EPA 365.1	6-18-21	6-21-21	
Client ID:	**TYLMI-20210613**					
Laboratory ID:	06-114-13					
Total Phosphorus	**0.17**	0.010	EPA 365.1	6-18-21	6-21-21	
Client ID:	**TYLMO-20210613**					
Laboratory ID:	06-114-14					
Total Phosphorus	**0.082**	0.010	EPA 365.1	6-18-21	6-21-21	
Client ID:	**QA104-20210613**					
Laboratory ID:	06-114-15					
Total Phosphorus	**0.29**	0.010	EPA 365.1	6-18-21	6-21-21	

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TOTAL PHOSPHORUS
EPA 365.1
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0618W1					
Total Phosphorus	**ND**	0.010	EPA 365.1	6-18-21	6-21-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	06-165-01								
	ORIG	DUP							
Total Phosphorus	**0.0231**	**0.0267**	NA	NA	NA	NA	14	19	
MATRIX SPIKE									
Laboratory ID:	06-165-01								
	MS		MS		MS				
Total Phosphorus	**0.261**		0.250	0.0231	95	83-110	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB0618W1								
	SB		SB		SB				
Total Phosphorus	**0.218**		0.250	NA	87	83-110	NA	NA	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20210613**					
Laboratory ID:	06-114-01					
Copper	**3.3**	1.0	EPA 200.8	6-15-21	6-18-21	
Zinc	**20**	5.0	EPA 200.8	6-15-21	6-18-21	
Client ID:	**COUMI-20210613**					
Laboratory ID:	06-114-02					
Copper	**15**	2.5	EPA 200.8	6-15-21	6-23-21	
Zinc	**250**	13	EPA 200.8	6-15-21	6-23-21	
Client ID:	**COUMO-20210613**					
Laboratory ID:	06-114-03					
Copper	**11**	1.0	EPA 200.8	6-15-21	6-23-21	
Zinc	**110**	5.0	EPA 200.8	6-15-21	6-23-21	
Client ID:	**EVAMS-20210613**					
Laboratory ID:	06-114-04					
Copper	**3.6**	1.0	EPA 200.8	6-15-21	6-18-21	
Zinc	**15**	5.0	EPA 200.8	6-15-21	6-18-21	
Client ID:	**EVALSS-20210613**					
Laboratory ID:	06-114-05					
Copper	**4.6**	1.0	EPA 200.8	6-15-21	6-23-21	
Zinc	**17**	5.0	EPA 200.8	6-15-21	6-23-21	
Client ID:	**MONMN-20210613**					
Laboratory ID:	06-114-06					
Copper	**5.7**	1.0	EPA 200.8	6-15-21	6-23-21	
Zinc	**78**	5.0	EPA 200.8	6-15-21	6-23-21	
Client ID:	**MONMS-20210613**					
Laboratory ID:	06-114-07					
Copper	**3.1**	1.0	EPA 200.8	6-15-21	6-23-21	
Zinc	**5.2**	5.0	EPA 200.8	6-15-21	6-23-21	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20210613**					
Laboratory ID:	06-114-08					
Copper	**4.6**	1.0	EPA 200.8	6-15-21	6-23-21	
Zinc	**73**	5.0	EPA 200.8	6-15-21	6-23-21	
Client ID:	**SEIMN-20210613**					
Laboratory ID:	06-114-09					
Copper	**6.1**	1.0	EPA 200.8	6-15-21	6-23-21	
Zinc	**13**	5.0	EPA 200.8	6-15-21	6-23-21	
Client ID:	**SEIMS-20210613**					
Laboratory ID:	06-114-10					
Copper	**4.2**	1.0	EPA 200.8	6-15-21	6-23-21	
Zinc	**16**	5.0	EPA 200.8	6-15-21	6-23-21	
Client ID:	**TOSMI-20210613**					
Laboratory ID:	06-114-11					
Copper	**3.2**	1.0	EPA 200.8	6-15-21	6-23-21	
Zinc	**95**	5.0	EPA 200.8	6-15-21	6-23-21	
Client ID:	**TOSMO-20210613**					
Laboratory ID:	06-114-12					
Copper	**4.4**	1.0	EPA 200.8	6-15-21	6-23-21	
Zinc	**140**	5.0	EPA 200.8	6-15-21	6-23-21	
Client ID:	**TYLMI-20210613**					
Laboratory ID:	06-114-13					
Copper	**10**	1.0	EPA 200.8	6-15-21	6-23-21	
Zinc	**75**	5.0	EPA 200.8	6-15-21	6-23-21	
Client ID:	**TYLMO-20210613**					
Laboratory ID:	06-114-14					
Copper	**6.4**	1.0	EPA 200.8	6-15-21	6-23-21	
Zinc	**31**	5.0	EPA 200.8	6-15-21	6-23-21	

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TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA104-20210613**					
Laboratory ID:	06-114-15					
Copper	**3.9**	1.0	EPA 200.8	6-15-21	6-23-21	
Zinc	**14**	5.0	EPA 200.8	6-15-21	6-23-21	

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TOTAL METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0615WH1					
Copper	**ND**	1.0	EPA 200.8	6-15-21	6-18-21	
Zinc	**ND**	5.0	EPA 200.8	6-15-21	6-18-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE										
Laboratory ID:	06-114-04									
	ORIG	DUP								
Copper	**3.62**	**3.54**	NA	NA		NA	NA	2	20	
Zinc	**15.0**	**14.9**	NA	NA		NA	NA	1	20	
MATRIX SPIKES										
Laboratory ID:	06-114-04									
	MS	MSD	MS	MSD		MS	MSD			
Copper	**110**	**110**	100	100	3.62	**107**	**106**	75-125	0	20
Zinc	**124**	**123**	100	100	15.0	**109**	**108**	75-125	1	20

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COLM-20210613**					
Laboratory ID:	06-114-01					
Copper	**ND**	1.0	EPA 200.8	6-14-21	6-23-21	
Zinc	**10**	5.0	EPA 200.8	6-14-21	6-23-21	
Client ID:	**COUMI-20210613**					
Laboratory ID:	06-114-02					
Copper	**2.3**	1.0	EPA 200.8	6-14-21	6-23-21	
Zinc	**13**	5.0	EPA 200.8	6-14-21	6-23-21	
Client ID:	**COUMO-20210613**					
Laboratory ID:	06-114-03					
Copper	**2.1**	1.0	EPA 200.8	6-14-21	6-23-21	
Zinc	**11**	5.0	EPA 200.8	6-14-21	6-23-21	
Client ID:	**EVAMS-20210613**					
Laboratory ID:	06-114-04					
Copper	**ND**	1.0	EPA 200.8	6-14-21	6-23-21	
Zinc	**ND**	5.0	EPA 200.8	6-14-21	6-23-21	
Client ID:	**EVALSS-20210613**					
Laboratory ID:	06-114-05					
Copper	**ND**	1.0	EPA 200.8	6-14-21	6-23-21	
Zinc	**ND**	5.0	EPA 200.8	6-14-21	6-23-21	
Client ID:	**MONMN-20210613**					
Laboratory ID:	06-114-06					
Copper	**2.0**	1.0	EPA 200.8	6-14-21	6-23-21	
Zinc	**5.8**	5.0	EPA 200.8	6-14-21	6-23-21	
Client ID:	**MONMS-20210613**					
Laboratory ID:	06-114-07					
Copper	**2.7**	1.0	EPA 200.8	6-14-21	6-23-21	
Zinc	**ND**	5.0	EPA 200.8	6-14-21	6-23-21	

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20210613**					
Laboratory ID:	06-114-08					
Copper	**1.9**	1.0	EPA 200.8	6-14-21	6-23-21	
Zinc	**8.4**	5.0	EPA 200.8	6-14-21	6-23-21	
Client ID:	**SEIMN-20210613**					
Laboratory ID:	06-114-09					
Copper	**1.1**	1.0	EPA 200.8	6-14-21	6-23-21	
Zinc	**ND**	5.0	EPA 200.8	6-14-21	6-23-21	
Client ID:	**SEIMS-20210613**					
Laboratory ID:	06-114-10					
Copper	**1.2**	1.0	EPA 200.8	6-14-21	6-23-21	
Zinc	**ND**	5.0	EPA 200.8	6-14-21	6-23-21	
Client ID:	**TOSMI-20210613**					
Laboratory ID:	06-114-11					
Copper	**3.0**	1.0	EPA 200.8	6-14-21	6-23-21	
Zinc	**66**	5.0	EPA 200.8	6-14-21	6-23-21	
Client ID:	**TOSMO-20210613**					
Laboratory ID:	06-114-12					
Copper	**3.3**	1.0	EPA 200.8	6-14-21	6-23-21	
Zinc	**61**	5.0	EPA 200.8	6-14-21	6-23-21	
Client ID:	**TYLMI-20210613**					
Laboratory ID:	06-114-13					
Copper	**4.5**	1.0	EPA 200.8	6-14-21	6-23-21	
Zinc	**15**	5.0	EPA 200.8	6-14-21	6-23-21	
Client ID:	**TYLMO-20210613**					
Laboratory ID:	06-114-14					
Copper	**4.1**	1.0	EPA 200.8	6-14-21	6-23-21	
Zinc	**12**	5.0	EPA 200.8	6-14-21	6-23-21	

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DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA104-20210613**					
Laboratory ID:	06-114-15					
Copper	**ND**	1.0	EPA 200.8	6-14-21	6-23-21	
Zinc	**ND**	5.0	EPA 200.8	6-14-21	6-23-21	

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DISSOLVED METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0614F2					
Copper	**ND**	1.0	EPA 200.8	6-14-21	6-23-21	
Zinc	**ND**	5.0	EPA 200.8	6-14-21	6-23-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	06-114-04										
	ORIG	DUP									
Copper	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Zinc	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	06-114-04										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**78.6**	**81.6**	80.0	80.0	ND	**98**	**102**	75-125	4	20	
Zinc	**82.0**	**85.6**	80.0	80.0	ND	**103**	**107**	75-125	4	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Jun 25 2021
On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister

Dear David Baumeister:

Enclosed please find the analytical data for your REDMOND PAIRED WATERSHED STUDY project.

The following is a cross correlation of client and laboratory identifications for your convenience.

CLIENT ID	MATRIX	AMTEST ID	TEST
COLM-20210613	Water	21-A008033	Micro, NUT
COUMI-20210613	Water	21-A008034	Micro, NUT
COUMO-20210613	Water	21-A008035	Micro, NUT
EVAMS-20210613	Water	21-A008036	Micro, NUT
EVALSS-20210613	Water	21-A008037	Micro, NUT
MONMN-20210613	Water	21-A008038	Micro, NUT
MONMS-20210613	Water	21-A008039	Micro, NUT
MONM-20210613	Water	21-A008040	Micro, NUT
SEIMN-20210613	Water	21-A008041	Micro, NUT
SEIMS-20210613	Water	21-A008042	Micro, NUT
TOSMI-20210613	Water	21-A008043	Micro, NUT
TOSMO-20210613	Water	21-A008044	Micro, NUT
TYLMI-20210613	Water	21-A008045	Micro, NUT
TYLMO-20210613	Water	21-A008046	Micro, NUT
QA104-20210613	Water	21-A008047	Micro, NUT

Your samples were received on Monday, June 14, 2021. At the time of receipt, the samples were logged in and properly maintained prior to the subsequent analysis.

The analytical procedures used at AmTest are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

Following the analytical data you will find the Quality Control (QC) results.

Please note that the detection limits that are listed in the body of the report refer to the Practical Quantitation Limits (PQL's), as opposed to the Method Detection Limits (MDL's).

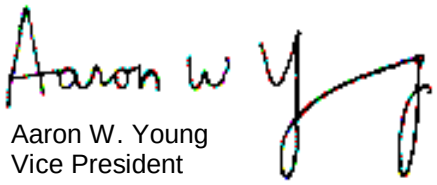
Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Jun 25 2021
On-Site Environmental
continued . . .

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,



Aaron W. Young
Vice President

Project #: 14-05806-000
PO Number: 06-114

BACT = Bacteriological	MET = Metals	NUT=Nutrients	MIN=Minerals
CONV = Conventionals	ORG = Organics	DEM=Demand	

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664
www.amtestlab.com

Professional Analytical Services

ANALYSIS REPORT

On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister
Project Name: REDMOND PAIRED WATERSHED STUDY
Project #: 14-05806-000
PO Number: 06-114
All results reported on an as received basis.

Date Received: 06/14/21
Date Reported: 6/25/21

AMTEST Identification Number **21-A008033**
Client Identification **COLM-20210613**
Sampling Date **06/13/21, 19:15**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	160	CFU/100 ml		10	SM 9222D	OB	06/14/21
Total Nitrogen (NOX&TKN)	2.90	mg/l		0.1			
Total Nitrogen (TKN)	2.87	mg/l		0.2	SM4500N	KS	06/17/21
Total Nitrate + Nitrite	0.030	mg/l		0.02	SM4500NO3	KS	06/17/21

AMTEST Identification Number **21-A008034**
Client Identification **COUMI-20210613**
Sampling Date **06/13/21, 17:45**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	2800	CFU/100 ml		100	SM 9222D	OB	06/14/21
Total Nitrogen (NOX&TKN)	3.26	mg/l		0.1			
Total Nitrogen (TKN)	2.96	mg/l		0.2	SM4500N	KS	06/17/21
Total Nitrate + Nitrite	0.30	mg/l		0.02	SM4500NO3	KS	06/17/21

AMTEST Identification Number **21-A008035**
Client Identification **COUMO-20210613**
Sampling Date **06/13/21, 17:30**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	2200	CFU/100 ml		100	SM 9222D	OB	06/14/21
Total Nitrogen (NOX&TKN)	1.94	mg/l		0.1			
Total Nitrogen (TKN)	1.74	mg/l		0.2	SM4500N	KS	06/17/21
Total Nitrate + Nitrite	0.20	mg/l		0.02	SM4500NO3	KS	06/17/21

AMTEST Identification Number **21-A008036**
Client Identification **EVAMS-20210613**
Sampling Date **06/13/21, 18:00**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	1500	CFU/100 ml		100	SM 9222D	OB	06/14/21
Total Nitrogen (NOX&TKN)	3.21	mg/l		0.1			
Total Nitrogen (TKN)	2.21	mg/l		0.2	SM4500N	KS	06/17/21
Total Nitrate + Nitrite	1.0	mg/l		0.02	SM4500NO3	KS	06/17/21

AMTEST Identification Number **21-A008037**
Client Identification **EVALSS-20210613**
Sampling Date **06/13/21, 18:10**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	700	CFU/100 ml		100	SM 9222D	OB	06/14/21
Total Nitrogen (NOX&TKN)	2.87	mg/l		0.1			
Total Nitrogen (TKN)	1.97	mg/l		0.2	SM4500N	KS	06/17/21
Total Nitrate + Nitrite	0.90	mg/l		0.02	SM4500NO3	KS	06/17/21

AMTEST Identification Number **21-A008038**
Client Identification **MONMN-20210613**
Sampling Date **06/13/21, 18:45**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	1900	CFU/100 ml		100	SM 9222D	OB	06/14/21
Total Nitrogen (NOX&TKN)	1.96	mg/l		0.1			
Total Nitrogen (TKN)	1.90	mg/l		0.2	SM4500N	KS	06/17/21
Total Nitrate + Nitrite	0.065	mg/l		0.02	SM4500NO3	KS	06/17/21

AMTEST Identification Number **21-A008039**
Client Identification **MONMS-20210613**
Sampling Date **06/13/21, 19:00**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	83.	CFU/100 ml		10	SM 9222D	OB	06/14/21
Total Nitrogen (NOX&TKN)	0.65	mg/l		0.1			
Total Nitrogen (TKN)	0.603	mg/l		0.2	SM4500N	KS	06/17/21
Total Nitrate + Nitrite	0.047	mg/l		0.02	SM4500NO3	KS	06/17/21

AMTEST Identification Number **21-A008040**
Client Identification **MONM-20210613**
Sampling Date **06/13/21, 19:50**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	140	CFU/100 ml		10	SM 9222D	OB	06/14/21
Total Nitrogen (NOX&TKN)	1.44	mg/l		0.1			
Total Nitrogen (TKN)	1.31	mg/l		0.2	SM4500N	KS	06/17/21
Total Nitrate + Nitrite	0.13	mg/l		0.02	SM4500NO3	KS	06/17/21

AMTEST Identification Number **21-A008041**
Client Identification **SEIMN-20210613**
Sampling Date **06/13/21, 18:45**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	1700	CFU/100 ml		100	SM 9222D	OB	06/14/21
Total Nitrogen (NOX&TKN)	1.89	mg/l		0.1			
Total Nitrogen (TKN)	1.74	mg/l		0.2	SM4500N	KS	06/17/21
Total Nitrate + Nitrite	0.15	mg/l		0.02	SM4500NO3	KS	06/17/21

AMTEST Identification Number **21-A008042**
Client Identification **SEIMS-20210613**
Sampling Date **06/13/21, 19:35**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	500	CFU/100 ml		100	SM 9222D	OB	06/14/21
Total Nitrogen (NOX&TKN)	2.99	mg/l		0.1			
Total Nitrogen (TKN)	2.75	mg/l		0.2	SM4500N	KS	06/17/21
Total Nitrate + Nitrite	0.24	mg/l		0.02	SM4500NO3	KS	06/17/21

AMTEST Identification Number **21-A008043**
Client Identification **TOSMI-20210613**
Sampling Date **06/13/21, 17:35**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	4500	CFU/100 ml		100	SM 9222D	OB	06/14/21
Total Nitrogen (NOX&TKN)	1.27	mg/l		0.1			
Total Nitrogen (TKN)	1.11	mg/l		0.2	SM4500N	KS	06/17/21
Total Nitrate + Nitrite	0.16	mg/l		0.02	SM4500NO3	KS	06/17/21

AMTEST Identification Number **21-A008044**
Client Identification **TOSMO-20210613**
Sampling Date **06/13/21, 18:00**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	7300	CFU/100 ml		100	SM 9222D	OB	06/14/21
Total Nitrogen (NOX&TKN)	2.78	mg/l		0.1			
Total Nitrogen (TKN)	2.60	mg/l		0.2	SM4500N	KS	06/17/21
Total Nitrate + Nitrite	0.18	mg/l		0.02	SM4500NO3	KS	06/17/21

AMTEST Identification Number **21-A008045**
Client Identification **TYLMI-20210613**
Sampling Date **06/13/21, 18:30**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	550	CFU/100 ml		10	SM 9222D	OB	06/14/21
Total Nitrogen (NOX&TKN)	1.98	mg/l		0.1			
Total Nitrogen (TKN)	1.31	mg/l		0.2	SM4500N	KS	06/17/21
Total Nitrate + Nitrite	0.67	mg/l		0.02	SM4500NO3	KS	06/17/21

AMTEST Identification Number **21-A008046**
Client Identification **TYLMO-20210613**
Sampling Date **06/13/21, 18:15**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	3900	CFU/100 ml		100	SM 9222D	OB	06/14/21
Total Nitrogen (NOX&TKN)	0.91	mg/l		0.1			
Total Nitrogen (TKN)	0.717	mg/l		0.2	SM4500N	KS	06/17/21
Total Nitrate + Nitrite	0.19	mg/l		0.02	SM4500NO3	KS	06/17/21

AMTEST Identification Number **21-A008047**
Client Identification **QA104-20210613**
Sampling Date **06/13/21, 19:45**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	1000	CFU/100 ml		100	SM 9222D	OB	06/14/21
Total Nitrogen (NOX&TKN)	2.91	mg/l		0.1			
Total Nitrogen (TKN)	2.64	mg/l		0.2	SM4500N	KS	06/17/21
Total Nitrate + Nitrite	0.27	mg/l		0.02	SM4500NO3	KS	06/17/21

Aaron W. Young
Vice President

Am Test Inc.
13600 NE 126th PL
Suite C
Kirkland, WA, 98034
(425) 885-1664
www.amtestlab.com

Professional Analytical Services

QC Summary for sample numbers: 21-A008033 to 21-A008047

DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	DUP VALUE	RPD
21-A008035	Fecal Coliform	CFU/100 ml	2200	2600	17.
21-A008046	Fecal Coliform	CFU/100 ml	3900	3100	23.
21-A008042	Total Nitrogen (TKN)	mg/l	2.75	2.56	7.2
21-A008047	Total Nitrogen (TKN)	mg/l	2.64	2.43	8.3
21-A008035	Total Nitrate + Nitrite	mg/l	0.20	0.20	0.00
21-A008045	Total Nitrate + Nitrite	mg/l	0.67	0.68	1.5
21-A008103	Total Nitrate + Nitrite	mg/l	< 0.02	< 0.02	
21-A008208	Total Nitrate + Nitrite	mg/l	0.042	0.040	4.9
21-A008255	Total Nitrate + Nitrite	mg/l	0.35	0.35	0.00
21-A008265	Total Nitrate + Nitrite	mg/l	1.5	1.5	0.00
21-A008266	Total Nitrate + Nitrite	mg/l	< 0.02	< 0.02	

MATRIX SPIKES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	SMPL+ SPK	SPK AMT	RECOVERY
21-A008042	Total Nitrogen (TKN)	mg/l	2.75	4.83	2.00	104.00 %
21-A008047	Total Nitrogen (TKN)	mg/l	2.64	4.52	2.00	94.00 %
21-A008035	Total Nitrate + Nitrite	mg/l	0.20	1.2	1.0	100.00 %
21-A008045	Total Nitrate + Nitrite	mg/l	0.67	1.7	1.0	103.00 %
21-A008103	Total Nitrate + Nitrite	mg/l	< 0.02	1.0	1.0	100.00 %
21-A008208	Total Nitrate + Nitrite	mg/l	0.042	1.1	1.0	105.80 %
21-A008255	Total Nitrate + Nitrite	mg/l	0.35	1.4	1.0	105.00 %
21-A008265	Total Nitrate + Nitrite	mg/l	1.5	2.5	1.0	100.00 %
21-A008266	Total Nitrate + Nitrite	mg/l	< 0.02	0.99	1.0	99.00 %

STANDARD REFERENCE MATERIALS

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
Total Nitrogen (TKN)	mg/l	1.00	1.04	104. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	0.98	98.0 %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %

BLANKS

ANALYTE	UNITS	RESULT
Fecal Coliform	CFU/100 ml	< 1
Fecal Coliform	CFU/100 ml	< 1
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrate + Nitrite	mg/l	< 0.02

QC Summary for sample numbers: 21-A008033 to 21-A008047...

BLANKS continued....

ANALYTE	UNITS	RESULT
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02

CHAIN OF CUSTODY

06-114 Page 1 of 1

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants
Project No.: 14-05806-000
Project Name: Redmond Paired Watershed Study
Project Manager: George Iftner

Turnaround Requested:
_____ 1 Day
_____ 2 Day
_____ 3 Day
__X__ Standard

Laboratory No.

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Suspended Solids (SM 2540D)	Turbidity (EPA 181.1)	Hardness (EPA 200.7 / SM 2340B)	Dissolved Organ Carbon (SM 5310B) *	Fecal Coliform (SM 9222D)	Total Phosphorus (EPA 365.1)	Total Nitrogen (SM 4500 N-B)	Total Cu and Zn (EPA 200.8)	Dissolved Cu and Zn (EPA 200.8) *			
1	COLM-2020 0613	6/13/21	1915	Water	7	X	X	X	X	X	X	X	X	X			
2	COUMI-2020 0613		1745	Water	7	X	X	X	X	X	X	X	X	X			
3	COUMO-2020 0613		1736	Water	7	X	X	X	X	X	X	X	X	X			
4	EVAMS-2020 0613		1800	Water	7	X	X	X	X	X	X	X	X	X			
5	EVALSS-2020 0613		1810	Water	7	X	X	X	X	X	X	X	X	X			
6	MONMN-2020 0613		1845	Water	7	X	X	X	X	X	X	X	X	X			
7	MONMS-2020 0613		1900	Water	7	X	X	X	X	X	X	X	X	X			
8	MONM-2020 0613		1950	Water	7	X	X	X	X	X	X	X	X	X			
9	SEIMN-2020 0613	~~1935~~	~~1845~~ 1845	Water	7	X	X	X	X	X	X	X	X	X			
10	SEIMS-2020 0613	1935	~~1845~~	Water	7	X	X	X	X	X	X	X	X	X			
11	TOSMI-2020 0613		1735	Water	7	X	X	X	X	X	X	X	X	X			
12	TOSMO-2020 0613		1800	Water	7	X	X	X	X	X	X	X	X	X			
13	TYLMI-2020 0613		1830	Water	7	X	X	X	X	X	X	X	X	X			
14	TYLMO-2020 0613		1815	Water	7	X	X	X	X	X	X	X	X	X			
15	QA104-20210613		1945	Water	7	X	X	X	X	X	X	X	X	X			

Relinquished by _____ Date 6/14/21 Received by _____ Date 6/14/21
Firm Herrera Time 0800 Firm OSE Time 0810

Relinquished by _____ Date _____ Received by _____ Date _____
Firm _____ Time _____ Firm _____ Time _____

Comments:
~~* - field filtered with 0.45 µm filter within 15 minutes of collecting sample~~
NOT FIELD FILTERED.
Please filter ASAP

METER CALIBRATION LOG - Redmond Paired Watershed Study

Project Number:	14-05806-000
Personnel Performing Calibration:	N. Maas
Meter:	ProDSS #1
Date/Time:	6/11/21 1430
Barometric Pressure Start of Day:	mmHg: Time:
Barometric Pressure End of Day:	mmHg: Time:

PRE Field Run CALIBRATION	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	0.8	0	23.2	
Conductivity (µS/cm)	1050	1,000	22.6	
Conductivity (µS/cm)	98.4	100	22.5	
DO % Saturation	102.4	100	23.1	

POST Field Run CHECK	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	1.5	0		
Conductivity (µS/cm)	97.2	100		
DO % Saturation	101.4	100	20.1	

Calibration Procedures:

Rinse Multimeter Sonde Between Each Operation

Rinse 3 times with tap water, 3 times with deionized water, then 3 times with the solution to be used for calibrating or testing.

Conductivity Calibration Notes:

1. Dry the conductivity probe with a lab tissue (e.g., KimWipes®) and DI water.
2. Fill calibration cup to within a centimeter of the top of the calibration cup with DI water (0 µS).
3. Fill the calibration cup with 1,000 µS standard so that the temperature/conductivity probe is submerged.
4. Make sure there are no bubbles in the cell; wait 2 minutes.
5. Enter the appropriate standard value (1,000 µS/cm or 1.0 mS/cm) for Sp Cond.
6. Check conductivity using 100 µS/cm standard.

Dissolved Oxygen Calibration Notes:

1. Fill the calibration cup with about 1/2 inch of DI; it should be below the sensor cap.
2. Use KimWipes® to dry any droplets from the sensor cap.
3. Invert calibration cup's cap and gently rest it on the cup.
4. Wait 5 minutes, making sure that temperature stabilizes.
5. Determine local barometric pressure (mm Hg) and enter this value into the meter.
6. Click "Calibrate". "Calibrate Successful" will be displayed.
7. To retain calibration accuracy between measurements, store with the sensor immersed in water or within a water-saturated air environment such as a sealed storage cup with at least 10 ml of water.
8. It is important to have the water-saturated air and the sensor at the same temperature. Therefore, store a jar of DI in the same environment as the sonde and calibrate in a similar air temperature as the water and sonde.
9. Keep probe out of direct sun or wind.

HERRERA

METER CALIBRATION LOG - Redmond Paired Watershed Study

Project Number:	14-05806-000
Personnel Performing Calibration:	N. Maas
Meter:	PROPSS #2
Date/Time:	6/11/21 1430
Barometric Pressure Start of Day:	mmHg: Time:
Barometric Pressure End of Day:	mmHg: Time:

PRE Field Run CALIBRATION	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	1.6	0	23.9	
Conductivity (µS/cm)	1048	1,000	23.2	
Conductivity (µS/cm)	100.1	100	23.2	
DO % Saturation	100.8	100	23.5	

POST Field Run CHECK	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	1.8	0	22.5	
Conductivity (µS/cm)	100.0	100		
DO % Saturation	101.4	100	21.3	

Calibration Procedures:

Rinse Multimeter Sonde Between Each Operation

Rinse 3 times with tap water, 3 times with deionized water, then 3 times with the solution to be used for calibrating or testing.

Conductivity Calibration Notes:

1. Dry the conductivity probe with a lab tissue (e.g., KimWipes®) and DI water.
2. Fill calibration cup to within a centimeter of the top of the calibration cup with DI water (0 µS).
3. Fill the calibration cup with 1,000 µS standard so that the temperature/conductivity probe is submerged.
4. Make sure there are no bubbles in the cell; wait 2 minutes.
5. Enter the appropriate standard value (1,000 µS/cm or 1.0 mS/cm) for Sp Cond.
6. Check conductivity using 100 µS/cm standard.

Dissolved Oxygen Calibration Notes:

1. Fill the calibration cup with about 1/2 inch of DI; it should be below the sensor cap.
2. Use KimWipes® to dry any droplets from the sensor cap.
3. Invert calibration cup's cap and gently rest it on the cup.
4. Wait 5 minutes, making sure that temperature stabilizes.
5. Determine local barometric pressure (mm Hg) and enter this value into the meter.
6. Click "Calibrate". "Calibrate Successful" will be displayed.
7. To retain calibration accuracy between measurements, store with the sensor immersed in water or within a water-saturated air environment such as a sealed storage cup with at least 10 ml of water.
8. It is important to have the water-saturated air and the sensor at the same temperature. Therefore, store a jar of DI in the same environment as the sonde and calibrate in a similar air temperature as the water and sonde.
9. Keep probe out of direct sun or wind.

HERRERA

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + RZ

Sample Date: 6-13-21 **Sample Time:** 17:45 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: COUMI

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rain + 55°F

Water Quality Sampling

Sample ID: COUMI20210613

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	Clear
Odor:	None
Sheen:	None
Floatables:	None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.74

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 14.8

Specific Conductivity (µs/cm) 127.5

Dissolved Oxygen (mg/L) 10.05

Rinsed H_2SO_4 out of AmTest bottle by accident

No filtration

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + RZ

Sample Date: 6-13-21 **Sample Time:** 18:00 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: TOSM0

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rain + 55°

Water Quality Sampling

Sample ID: TOSM020210613

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	light brown
Odor:	None
Sheen:	None
Floatables:	None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.87

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 15.7

Specific Conductivity (µs/cm) 82.8

Dissolved Oxygen (mg/L) 9.92

No filtration

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JV + RZ

Sample Date: 6-13-21 **Sample Time:** 18:15 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: TYLM0

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rain + 55

Water Quality Sampling

Sample ID: TYLM0202/0613

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	light brown
Odor:	None
Sheen:	None
Floatables:	None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 1.7

Reference Point (description): Tape measurement

Water Quality Measurments

Temperature (°C) 16.8

Specific Conductivity (µs/cm) 57.9

Dissolved Oxygen (mg/L) 9.43

No filtration

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + RZ

Sample Date: 6-13-21 **Sample Time:** 18:30 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: TYLMI

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rain + 55° F

Water Quality Sampling

Sample ID: TYLMI20210613

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Clear
Color: light brown
Odor: None
Sheen: None
Floatables: None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 53 in

Reference Point (description): Tape

Water Quality Measurments

Temperature (°C) 14.7

Specific Conductivity (µs/cm) 110.2

Dissolved Oxygen (mg/L) 9.44

No filtration

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + RZ

Sample Date: 6-13-21 **Sample Time:** 18:45 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: MONMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rain + 55°F

Water Quality Sampling

Sample ID: MONMN 20210613

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	Clear
Odor:	None
Sheen:	None
Floatables:	None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.35

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 15.7

Specific Conductivity (µs/cm) 101.7

Dissolved Oxygen (mg/L) 9.08

No filtration

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + RZ

Sample Date: 6-13-21 **Sample Time:** 19:35 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: SEIMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rain + 55 °F

Water Quality Sampling

Sample ID: SEIMS20210613

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	✓
DOC *	HDPE	250 ml	1	HCL	✓
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	✓
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	✓
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	✓
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	✓
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	✓

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID: QA104-2021-0613

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity:

Color:

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft):

Reference Point (description):

Water Quality Measurments

Temperature (°C) 12.6

Specific Conductivity (µs/cm) 80.8

Dissolved Oxygen (mg/L) 10.07

No Filtration

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: N. Maas

Sample Date: 6/13/21 **Sample Time:** 1845 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: SEIMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp:

Water Quality Sampling

Sample ID: SEIMN-20210613

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	N
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: turbid

Color: brown/light brown

Odor:

Sheen: none

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 7.51 in

Reference Point (description): top of bolt

Water Quality Measurments

Temperature (°C) 12

Specific Conductivity (µs/cm) 62.9

Dissolved Oxygen (mg/L) 10.65

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: N. Maas

Sample Date: 6/13/21 **Sample Time:** 1915 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y (N)
(Must filter within 15 minutes of collection)

SITE ID: COLM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 65 RAINY

Water Quality Sampling

Sample ID: COLM-20210613

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	N
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: turbid

Color: red/brown

Odor:

Sheen: none

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 5.56

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 14.3

Specific Conductivity (µs/cm) 39.2

Dissolved Oxygen (mg/L) 9.38

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: N. MAAS

Sample Date: 6/13/21 **Sample Time:** 1810 PDT:

Base Flow or Storm Event? **~~Field Filtered Time:~~** NO PST:

(Must filter within 15 minutes of collection)

SITE ID: EVALSS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 65° Rainy

Water Quality Sampling

Sample ID: EVALSS-20210613

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: turbid

Color: brown/ light brown

Odor:

Sheen: none

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.46

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 12.9

Specific Conductivity (µs/cm) 149.8

Dissolved Oxygen (mg/L) 10.63

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: D. MAAS

Sample Date: 6/13/21 **Sample Time:** 1800 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y (N)
(Must filter within 15 minutes of collection)

SITE ID: EVAMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp:

Water Quality Sampling

Sample ID: EVAMS-20210613

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	turbid
Color:	brown/light brown
Odor:	
Sheen:	none
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 3.90

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 13.1

Specific Conductivity (µs/cm) ~~15~~ 155.8

Dissolved Oxygen (mg/L) 10.19

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: N. Maas

Sample Date: 6/13/21 **Sample Time:** 1735 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later:** Y N
(Must filter within 15 minutes of collection)

SITE ID: TOSMI

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp:

Water Quality Sampling

Sample ID: TOSMI-20210613

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Brown/light brown
Color:	
Odor:	none
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft):

Reference Point (description):

Water Quality Measurments

Temperature (°C) 17

Specific Conductivity (µs/cm) 37.5

Dissolved Oxygen (mg/L) 9.68

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: N. Maas

Sample Date: 6/13/21 **Sample Time:** 1950 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y (N)
(Must filter within 15 minutes of collection)

SITE ID: MONM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

HERRERA

Current Weather and Temp:

Water Quality Sampling

Sample ID: MONM-20210613B

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	N
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Slight turbid

Color: light brown

Odor: light odor

Sheen:

Floatables: none

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft):

Reference Point (description):

Water Quality Measurments

Temperature (°C) 14.4

Specific Conductivity (µs/cm) 117.9

Dissolved Oxygen (mg/L) 10.26

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + RZ

Sample Date: 06-13-21 **Sample Time:** 17:35 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: COUMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rain + 55°F

Water Quality Sampling

Sample ID: COUMO20210613

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	Clear
Odor:	None
Sheen:	None
Floatables:	None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 1.59

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 17.03

Specific Conductivity (µs/cm) 60.5

Dissolved Oxygen (mg/L) 9.40

Rinsed H_2SO_4 out of Am Test bottle by accident

No filtration

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: JW + RZ

Sample Date: 6-13-21 **Sample Time:** 19:00 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: MONMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rain + 55°F

Water Quality Sampling

Sample ID: MONMS 20210613

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Clear
Color: Clear
Odor: None
Sheen: None
Floatables: None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): PVC 2in = 7.03 / PVC 1in = 6.54

Reference Point (description):

Water Quality Measurments

Temperature (°C) 15.6

Specific Conductivity (µs/cm) 148.3

Dissolved Oxygen (mg/L) 6.77

No filtration

Data Quality Assurance Worksheet

By J. Brown

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 7/2/21 Page 1 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 6/13/21 /All locations, QA104 (SEIMS) Lab Ref No 2106-114

date 7/27/2021

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
TSS	OK / SM 2540D	NA	**NA**	4	**≤7**	≤1.0 mg/L 1.0 mg/L	NA	**NA**	94	**±20**	8	**≤ 25**	13	**≤ 25**	OK	NONE
Turbidity	OK / EPA 180.1	NA	**NA**	1	**≤2**	≤0.1 NTU 0.1 NTU	NA	**NA**	NR	**±10**	8	**≤ 25**	13	**≤ 25**	OK	NONE
Hardness	OK / SM 2340B	NA	**NA**	2	**≤180**	≤1.0 mg/L 1.0 mg/L	106, 105	**±25**	100	**±15**	1 MS 1	**≤ 20**	6	**≤ 20**	OK	NONE
DOC	OK / SM 5310B	1 day	**≤15**	3	**≤28**	≤1.0 mg/L 1.0 mg/L	103, 91	**±25**	109, 102	**±15**	<1, <1	**≤ 20**	8	**≤ 20**	OK	FLAG ALL J DUE TO FILTRATION HOLDING TIME EXCEEDANCE
Total Phosphorus	OK / EPA 365.1	NA	**NA**	8	**≤28**	≤0.01 mg/L 0.01 mg/L	95	**±25**	87	**±20**	D=0.004	**≤ 20**	4	**≤ 20**	OK	NONE
Total Nitrogen (TKN + N+N)	OK/ SM 4500 N-B	NA	**NA**	4	**≤28**	≤0.1 mg/L 0.1 mg/L	94-105	**±25**	98-104	**±20**	NC, 0-8	**≤ 20**	4, 12	**≤ 20**	OK	NONE

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

Data Quality Assurance Worksheet

By J. Brown

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 7/2/21 Page 2 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 6/13/21 /All locations, QA104 (SEIMS) Lab Ref No 2106-114

date 7/27/2021

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
Total Copper	OK/ EPA 200.8	NA	**NA**	5, 10	**≤180**	≤1.0 µg/L 1.0 µg/L	107, 106	**±25**	NR	**±15**	D=0.08, MS <1	**≤ 20**	D=0.3	**≤ 20**	OK	NONE
Total Zinc	OK/ EPA 200.8	NA	**NA**	5, 10	**≤180**	≤5.0 µg/L 5.0 µg/L	109, 108	**±25**	NR	**±15**	D=0.10, MS 1	**≤ 20**	D=2	**≤ 20**	OK	NONE
Dissolved Copper	OK/ EPA 200.8	1 day	**≤15**	10	**≤180**	≤1.0 µg/L 1.0 µg/L	98, 102	**±25**	NR	**±15**	NC, MS 4	**≤ 20**	NC	**≤ 20**	OK	FLAG ALL J DUE TO FILTRATION HOLDING TIME EXCEEDANCE
Dissolved Zinc	OK/ EPA 200.8	1 day	**≤15**	10	**≤180**	≤5.0 µg/L 5.0 µg/L	103, 107	**±25**	NR	**±15**	NC, MS 4	**≤ 20**	NC	**≤ 20**	OK	FLAG ALL J DUE TO FILTRATION HOLDING TIME EXCEEDANCE
Fecal Coliform	OK / SM 9222D	NA	**NA**	1	**≤1**	≤1.0 cfu/ 100mL 10 cfu/ 100mL	NA	**NA**	NA	**NA**	17, 23	**≤ 35**	67	**≤ 50**	OK	FLAG SEIMS J DUE TO FIELD DUPE EXCEEDANCE

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

July 29, 2021

Jess Brown
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2107-068

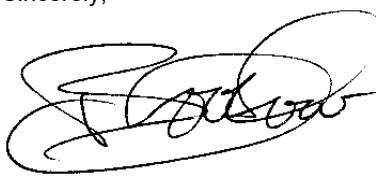
Dear Jess:

Enclosed are the analytical results and associated quality control data for samples submitted on July 8, 2021.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



Blair Goodrow
Project Manager

Enclosures

Date of Report: July 29, 2021
Samples Submitted: July 8, 2021
Laboratory Reference: 2107-068
Project: 14-05806-000

Case Narrative

Samples were collected on July 8, 2021 and received by the laboratory on July 8, 2021. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: July 29, 2021
Samples Submitted: July 8, 2021
Laboratory Reference: 2107-068
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210708**					
Laboratory ID:	07-068-01					
Total Suspended Solids	**4.2**	1.0	SM 2540D	7-13-21	7-14-21	
Client ID:	**COUMI-20210708**					
Laboratory ID:	07-068-02					
Total Suspended Solids	**6.4**	2.0	SM 2540D	7-13-21	7-14-21	
Client ID:	**TOSMO-20210708**					
Laboratory ID:	07-068-03					
Total Suspended Solids	**3.8**	1.0	SM 2540D	7-13-21	7-14-21	
Client ID:	**TYLMO-20210708**					
Laboratory ID:	07-068-04					
Total Suspended Solids	**37**	2.0	SM 2540D	7-13-21	7-14-21	
Client ID:	**TYLMI-20210708**					
Laboratory ID:	07-068-05					
Total Suspended Solids	**12**	2.0	SM 2540D	7-13-21	7-14-21	
Client ID:	**MONMN-20210708**					
Laboratory ID:	07-068-06					
Total Suspended Solids	**44**	2.0	SM 2540D	7-13-21	7-14-21	
Client ID:	**MONMS-20210708**					
Laboratory ID:	07-068-07					
Total Suspended Solids	**18**	2.0	SM 2540D	7-13-21	7-14-21	
Client ID:	**MONM-20210708**					
Laboratory ID:	07-068-08					
Total Suspended Solids	**2.0**	1.0	SM 2540D	7-13-21	7-14-21	
Client ID:	**TOSMI-20210708**					
Laboratory ID:	07-068-09					
Total Suspended Solids	**12**	1.0	SM 2540D	7-13-21	7-14-21	

Date of Report: July 29, 2021
Samples Submitted: July 8, 2021
Laboratory Reference: 2107-068
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVAMS-20210708**					
Laboratory ID:	07-068-10					
Total Suspended Solids	**10**	2.0	SM 2540D	7-13-21	7-14-21	
Client ID:	**EVALSS-20210708**					
Laboratory ID:	07-068-11					
Total Suspended Solids	**7.6**	2.0	SM 2540D	7-13-21	7-14-21	
Client ID:	**SEIMN-20210708**					
Laboratory ID:	07-068-12					
Total Suspended Solids	**4.6**	1.0	SM 2540D	7-13-21	7-14-21	
Client ID:	**COLM-20210708**					
Laboratory ID:	07-068-13					
Total Suspended Solids	**2.8**	2.0	SM 2540D	7-13-21	7-14-21	
Client ID:	**SEIMS-20210708**					
Laboratory ID:	07-068-14					
Total Suspended Solids	**14**	5.0	SM 2540D	7-13-21	7-14-21	
Client ID:	**QA106-20210708**					
Laboratory ID:	07-068-16					
Total Suspended Solids	**ND**	1.0	SM 2540D	7-13-21	7-14-21	
Client ID:	**QA107-20210708**					
Laboratory ID:	07-068-17					
Total Suspended Solids	**8.0**	2.0	SM 2540D	7-13-21	7-14-21	

Date of Report: July 29, 2021
Samples Submitted: July 8, 2021
Laboratory Reference: 2107-068
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0713W1					
Total Suspended Solids	**ND**	1.0	SM 2540D	7-13-21	7-14-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	07-068-17								
	ORIG	DUP							
Total Suspended Solids	**8.00**	**8.00**	NA	NA	NA	NA	0	26	
SPIKE BLANK									
Laboratory ID:	SB0713W1								
	SB		SB		SB				
Total Suspended Solids	**89.0**		100	NA	89	67-118	NA	NA	

Date of Report: July 29, 2021
Samples Submitted: July 8, 2021
Laboratory Reference: 2107-068
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210708**					
Laboratory ID:	07-068-01					
Turbidity	**2.6**	0.10	EPA 180.1	7-9-21	7-9-21	
Client ID:	**COUMI-20210708**					
Laboratory ID:	07-068-02					
Turbidity	**4.4**	0.10	EPA 180.1	7-9-21	7-9-21	
Client ID:	**TOSMO-20210708**					
Laboratory ID:	07-068-03					
Turbidity	**2.6**	0.10	EPA 180.1	7-9-21	7-9-21	
Client ID:	**TYLMO-20210708**					
Laboratory ID:	07-068-04					
Turbidity	**8.2**	0.10	EPA 180.1	7-9-21	7-9-21	
Client ID:	**TYLMI-20210708**					
Laboratory ID:	07-068-05					
Turbidity	**3.2**	0.10	EPA 180.1	7-9-21	7-9-21	
Client ID:	**MONMN-20210708**					
Laboratory ID:	07-068-06					
Turbidity	**11**	0.10	EPA 180.1	7-9-21	7-9-21	
Client ID:	**MONMS-20210708**					
Laboratory ID:	07-068-07					
Turbidity	**2.9**	0.10	EPA 180.1	7-9-21	7-9-21	
Client ID:	**MONM-20210708**					
Laboratory ID:	07-068-08					
Turbidity	**1.1**	0.10	EPA 180.1	7-9-21	7-9-21	
Client ID:	**TOSMI-20210708**					
Laboratory ID:	07-068-09					
Turbidity	**2.4**	0.10	EPA 180.1	7-9-21	7-9-21	

Date of Report: July 29, 2021
Samples Submitted: July 8, 2021
Laboratory Reference: 2107-068
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVAMS-20210708**					
Laboratory ID:	07-068-10					
Turbidity	**3.8**	0.10	EPA 180.1	7-9-21	7-9-21	
Client ID:	**EVALSS-20210708**					
Laboratory ID:	07-068-11					
Turbidity	**3.2**	0.10	EPA 180.1	7-9-21	7-9-21	
Client ID:	**SEIMN-20210708**					
Laboratory ID:	07-068-12					
Turbidity	**2.2**	0.10	EPA 180.1	7-9-21	7-9-21	
Client ID:	**COLM-20210708**					
Laboratory ID:	07-068-13					
Turbidity	**1.1**	0.10	EPA 180.1	7-9-21	7-9-21	
Client ID:	**SEIMS-20210708**					
Laboratory ID:	07-068-14					
Turbidity	**6.1**	0.10	EPA 180.1	7-9-21	7-9-21	
Client ID:	**QA106-20210708**					
Laboratory ID:	07-068-16					
Turbidity	**ND**	0.10	EPA 180.1	7-9-21	7-9-21	
Client ID:	**QA107-20210708**					
Laboratory ID:	07-068-17					
Turbidity	**4.2**	0.10	EPA 180.1	7-9-21	7-9-21	

Date of Report: July 29, 2021
Samples Submitted: July 8, 2021
Laboratory Reference: 2107-068
Project: 14-05806-000

TURBIDITY
EPA 180.1
QUALITY CONTROL

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0709W1					
Turbidity	**ND**	0.10	EPA 180.1	7-9-21	7-9-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	07-068-01								
	ORIG	DUP							
Turbidity	**2.63**	**2.65**	NA	NA	NA	NA	1	13	

Date of Report: July 29, 2021
Samples Submitted: July 8, 2021
Laboratory Reference: 2107-068
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210708**					
Laboratory ID:	07-068-01					
Hardness	**140**	1.0	EPA 200.7/SM 2340B	7-13-21	7-13-21	
Client ID:	**COUMI-20210708**					
Laboratory ID:	07-068-02					
Hardness	**150**	1.0	EPA 200.7/SM 2340B	7-13-21	7-13-21	
Client ID:	**TOSMO-20210708**					
Laboratory ID:	07-068-03					
Hardness	**120**	1.0	EPA 200.7/SM 2340B	7-13-21	7-13-21	
Client ID:	**TYLMO-20210708**					
Laboratory ID:	07-068-04					
Hardness	**97**	1.0	EPA 200.7/SM 2340B	7-13-21	7-13-21	
Client ID:	**TYLMI-20210708**					
Laboratory ID:	07-068-05					
Hardness	**99**	1.0	EPA 200.7/SM 2340B	7-13-21	7-13-21	
Client ID:	**MONMN-20210708**					
Laboratory ID:	07-068-06					
Hardness	**110**	1.0	EPA 200.7/SM 2340B	7-13-21	7-13-21	
Client ID:	**MONMS-20210708**					
Laboratory ID:	07-068-07					
Hardness	**150**	1.0	EPA 200.7/SM 2340B	7-13-21	7-13-21	

Date of Report: July 29, 2021
Samples Submitted: July 8, 2021
Laboratory Reference: 2107-068
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20210708**					
Laboratory ID:	07-068-08					
Hardness	**100**	1.0	EPA 200.7/SM 2340B	7-13-21	7-13-21	
Client ID:	**TOSMI-20210708**					
Laboratory ID:	07-068-09					
Hardness	**120**	1.0	EPA 200.7/SM 2340B	7-13-21	7-13-21	
Client ID:	**EVAMS-20210708**					
Laboratory ID:	07-068-10					
Hardness	**99**	1.0	EPA 200.7/SM 2340B	7-13-21	7-13-21	
Client ID:	**EVALSS-20210708**					
Laboratory ID:	07-068-11					
Hardness	**91**	1.0	EPA 200.7/SM 2340B	7-13-21	7-13-21	
Client ID:	**SEIMN-20210708**					
Laboratory ID:	07-068-12					
Hardness	**43**	1.0	EPA 200.7/SM 2340B	7-13-21	7-13-21	
Client ID:	**COLM-20210708**					
Laboratory ID:	07-068-13					
Hardness	**22**	1.0	EPA 200.7/SM 2340B	7-13-21	7-13-21	
Client ID:	**SEIMS-20210708**					
Laboratory ID:	07-068-14					
Hardness	**54**	1.0	EPA 200.7/SM 2340B	7-13-21	7-13-21	

Date of Report: July 29, 2021
Samples Submitted: July 8, 2021
Laboratory Reference: 2107-068
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA106-20210708**					
Laboratory ID:	07-068-16					
Hardness	**ND**	1.0	EPA 200.7/SM 2340B	7-13-21	7-14-21	
Client ID:	**QA107-20210708**					
Laboratory ID:	07-068-17					
Hardness	**176**	1.0	EPA 200.7/SM 2340B	7-13-21	7-19-21	

Date of Report: July 29, 2021
Samples Submitted: July 8, 2021
Laboratory Reference: 2107-068
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B
QUALITY CONTROL

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0713WH2					
Hardness	**ND**	1.0	EPA 200.7/SM 2340B	7-13-21	7/13&14/2021	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	07-068-13										
	ORIG	DUP									
Hardness	**21.7**	**21.6**	NA		NA	NA		NA	0	20	
MATRIX SPIKES											
Laboratory ID:	07-068-13										
	MS	MSD	MS	MSD		MS	MSD				
Hardness	**152**	**154**	132	132	21.7	99	100	75-125	1	20	
SPIKE BLANK											
Laboratory ID:	SB0713WH2										
	SB		SB			SB					
Hardness	**133**		132		NA	101		85-115	NA	NA	

Date of Report: July 29, 2021
Samples Submitted: July 8, 2021
Laboratory Reference: 2107-068
Project: 14-05806-000

DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210708**					
Laboratory ID:	07-068-01					
Dissolved Organic Carbon	**3.5**	1.0	SM 5310B	7-19-21	7-19-21	
Client ID:	**COUMI-20210708**					
Laboratory ID:	07-068-02					
Dissolved Organic Carbon	**3.3**	1.0	SM 5310B	7-19-21	7-19-21	
Client ID:	**TOSMO-20210708**					
Laboratory ID:	07-068-03					
Dissolved Organic Carbon	**2.5**	1.0	SM 5310B	7-19-21	7-19-21	
Client ID:	**TYLMO-20210708**					
Laboratory ID:	07-068-04					
Dissolved Organic Carbon	**3.9**	1.0	SM 5310B	7-19-21	7-19-21	
Client ID:	**TYLMI-20210708**					
Laboratory ID:	07-068-05					
Dissolved Organic Carbon	**2.5**	1.0	SM 5310B	7-19-21	7-19-21	
Client ID:	**MONMN-20210708**					
Laboratory ID:	07-068-06					
Dissolved Organic Carbon	**3.1**	1.0	SM 5310B	7-28-21	7-28-21	
Client ID:	**MONMS-20210708**					
Laboratory ID:	07-068-07					
Dissolved Organic Carbon	**4.9**	1.0	SM 5310B	7-28-21	7-28-21	
Client ID:	**MONM-20210708**					
Laboratory ID:	07-068-08					
Dissolved Organic Carbon	**3.5**	1.0	SM 5310B	7-28-21	7-28-21	
Client ID:	**TOSMI-20210708**					
Laboratory ID:	07-068-09					
Dissolved Organic Carbon	**2.6**	1.0	SM 5310B	7-28-21	7-28-21	

Date of Report: July 29, 2021
Samples Submitted: July 8, 2021
Laboratory Reference: 2107-068
Project: 14-05806-000

DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVAMS-20210708**					
Laboratory ID:	07-068-10					
Dissolved Organic Carbon	**2.2**	1.0	SM 5310B	7-28-21	7-28-21	
Client ID:	**EVALSS-20210708**					
Laboratory ID:	07-068-11					
Dissolved Organic Carbon	**2.1**	1.0	SM 5310B	7-28-21	7-28-21	
Client ID:	**SEIMN-20210708**					
Laboratory ID:	07-068-12					
Dissolved Organic Carbon	**1.4**	1.0	SM 5310B	7-28-21	7-28-21	
Client ID:	**COLM-20210708**					
Laboratory ID:	07-068-13					
Dissolved Organic Carbon	**14**	1.0	SM 5310B	7-28-21	7-28-21	
Client ID:	**SEIMS-20210708**					
Laboratory ID:	07-068-14					
Dissolved Organic Carbon	**3.0**	1.0	SM 5310B	7-28-21	7-28-21	
Client ID:	**QA105-20210708**					
Laboratory ID:	07-068-15					
Dissolved Organic Carbon	**ND**	1.0	SM 5310B	7-28-21	7-28-21	
Client ID:	**QA107-20210708**					
Laboratory ID:	07-068-17					
Dissolved Organic Carbon	**3.2**	1.0	SM 5310B	7-28-21	7-28-21	

Date of Report: July 29, 2021
Samples Submitted: July 8, 2021
Laboratory Reference: 2107-068
Project: 14-05806-000

DISSOLVED ORGANIC CARBON
SM 5310B
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0719D1					
Dissolved Organic Carbon	**ND**	1.0	SM 5310B	7-19-21	7-19-21	
Laboratory ID:	MB0728D1					
Dissolved Organic Carbon	**ND**	1.0	SM 5310B	7-28-21	7-28-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	07-068-05								
	ORIG	DUP							
Dissolved Organic Carbon	**2.46**	**2.55**	NA	NA	NA	NA	3	15	
Laboratory ID:	07-068-06								
	ORIG	DUP							
Dissolved Organic Carbon	**3.11**	**3.10**	NA	NA	NA	NA	0	15	
MATRIX SPIKE									
Laboratory ID:	07-068-05								
	MS		MS		MS				
Dissolved Organic Carbon	**12.3**		10.0	2.46	98	91-117	NA	NA	
Laboratory ID:	07-068-06								
	MS		MS		MS				
Dissolved Organic Carbon	**12.7**		10.0	3.11	96	91-117	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB0719D1								
	SB		SB		SB				
Dissolved Organic Carbon	**10.7**		10.0	NA	107	88-116	NA	NA	
Laboratory ID:	SB0728D1								
	SB		SB		SB				
Dissolved Organic Carbon	**10.1**		10.0	NA	101	88-116	NA	NA	

Date of Report: July 29, 2021
Samples Submitted: July 8, 2021
Laboratory Reference: 2107-068
Project: 14-05806-000

TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210708**					
Laboratory ID:	07-068-01					
Total Phosphorus	**0.084**	0.010	EPA 365.1	7-12-21	7-12-21	
Client ID:	**COUMI-20210708**					
Laboratory ID:	07-068-02					
Total Phosphorus	**0.15**	0.010	EPA 365.1	7-12-21	7-12-21	
Client ID:	**TOSMO-20210708**					
Laboratory ID:	07-068-03					
Total Phosphorus	**0.067**	0.010	EPA 365.1	7-12-21	7-12-21	
Client ID:	**TYLMO-20210708**					
Laboratory ID:	07-068-04					
Total Phosphorus	**0.16**	0.010	EPA 365.1	7-12-21	7-12-21	
Client ID:	**TYLMI-20210708**					
Laboratory ID:	07-068-05					
Total Phosphorus	**0.078**	0.010	EPA 365.1	7-12-21	7-12-21	
Client ID:	**MONMN-20210708**					
Laboratory ID:	07-068-06					
Total Phosphorus	**0.18**	0.010	EPA 365.1	7-12-21	7-12-21	
Client ID:	**MONMS-20210708**					
Laboratory ID:	07-068-07					
Total Phosphorus	**0.48**	0.010	EPA 365.1	7-12-21	7-12-21	
Client ID:	**MONM-20210708**					
Laboratory ID:	07-068-08					
Total Phosphorus	**0.048**	0.010	EPA 365.1	7-12-21	7-12-21	
Client ID:	**TOSMI-20210708**					
Laboratory ID:	07-068-09					
Total Phosphorus	**0.061**	0.010	EPA 365.1	7-12-21	7-12-21	

Date of Report: July 29, 2021
Samples Submitted: July 8, 2021
Laboratory Reference: 2107-068
Project: 14-05806-000

TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVAMS-20210708**					
Laboratory ID:	07-068-10					
Total Phosphorus	**0.025**	0.010	EPA 365.1	7-12-21	7-12-21	
Client ID:	**EVALSS-20210708**					
Laboratory ID:	07-068-11					
Total Phosphorus	**0.033**	0.010	EPA 365.1	7-12-21	7-12-21	
Client ID:	**SEIMN-20210708**					
Laboratory ID:	07-068-12					
Total Phosphorus	**0.036**	0.010	EPA 365.1	7-12-21	7-12-21	
Client ID:	**COLM-20210708**					
Laboratory ID:	07-068-13					
Total Phosphorus	**0.028**	0.010	EPA 365.1	7-12-21	7-12-21	
Client ID:	**SEIMS-20210708**					
Laboratory ID:	07-068-14					
Total Phosphorus	**0.060**	0.010	EPA 365.1	7-12-21	7-12-21	
Client ID:	**QA106-20210708**					
Laboratory ID:	07-068-16					
Total Phosphorus	**ND**	0.010	EPA 365.1	7-12-21	7-12-21	
Client ID:	**QA107-20210708**					
Laboratory ID:	07-068-17					
Total Phosphorus	**0.22**	0.010	EPA 365.1	7-12-21	7-12-21	

Date of Report: July 29, 2021
Samples Submitted: July 8, 2021
Laboratory Reference: 2107-068
Project: 14-05806-000

TOTAL PHOSPHORUS
EPA 365.1
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0712W1					
Total Phosphorus	**ND**	0.010	EPA 365.1	7-12-21	7-12-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	07-068-01								
	ORIG	DUP							
Total Phosphorus	**0.0836**	**0.0874**	NA	NA	NA	NA	4	19	
MATRIX SPIKE									
Laboratory ID:	07-068-01								
	MS		MS		MS				
Total Phosphorus	**0.311**		0.250	0.0836	91	83-110	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB0712W1								
	SB		SB		SB				
Total Phosphorus	**0.220**		0.250	NA	88	83-110	NA	NA	

Date of Report: July 29, 2021
Samples Submitted: July 8, 2021
Laboratory Reference: 2107-068
Project: 14-05806-000

TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210708**					
Laboratory ID:	07-068-01					
Copper	**ND**	1.0	EPA 200.8	7-15-21	7-15-21	
Zinc	**11**	5.0	EPA 200.8	7-15-21	7-15-21	
Client ID:	**COUMI-20210708**					
Laboratory ID:	07-068-02					
Copper	**1.1**	1.0	EPA 200.8	7-15-21	7-15-21	
Zinc	**16**	5.0	EPA 200.8	7-15-21	7-15-21	
Client ID:	**TOSMO-20210708**					
Laboratory ID:	07-068-03					
Copper	**1.1**	1.0	EPA 200.8	7-15-21	7-15-21	
Zinc	**24**	5.0	EPA 200.8	7-15-21	7-15-21	
Client ID:	**TYLMO-20210708**					
Laboratory ID:	07-068-04					
Copper	**6.0**	1.0	EPA 200.8	7-15-21	7-15-21	
Zinc	**23**	5.0	EPA 200.8	7-15-21	7-15-21	
Client ID:	**TYLMI-20210708**					
Laboratory ID:	07-068-05					
Copper	**2.0**	1.0	EPA 200.8	7-15-21	7-15-21	
Zinc	**12**	5.0	EPA 200.8	7-15-21	7-15-21	
Client ID:	**MONMN-20210708**					
Laboratory ID:	07-068-06					
Copper	**2.8**	1.0	EPA 200.8	7-15-21	7-15-21	
Zinc	**33**	5.0	EPA 200.8	7-15-21	7-15-21	
Client ID:	**MONMS-20210708**					
Laboratory ID:	07-068-07					
Copper	**3.7**	1.0	EPA 200.8	7-15-21	7-15-21	
Zinc	**20**	5.0	EPA 200.8	7-15-21	7-15-21	

Date of Report: July 29, 2021
Samples Submitted: July 8, 2021
Laboratory Reference: 2107-068
Project: 14-05806-000

TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20210708**					
Laboratory ID:	07-068-08					
Copper	**ND**	1.0	EPA 200.8	7-15-21	7-15-21	
Zinc	**11**	5.0	EPA 200.8	7-15-21	7-15-21	
Client ID:	**TOSMI-20210708**					
Laboratory ID:	07-068-09					
Copper	**3.3**	1.0	EPA 200.8	7-15-21	7-15-21	
Zinc	**71**	5.0	EPA 200.8	7-15-21	7-15-21	
Client ID:	**EVAMS-20210708**					
Laboratory ID:	07-068-10					
Copper	**ND**	1.0	EPA 200.8	7-15-21	7-15-21	
Zinc	**ND**	5.0	EPA 200.8	7-15-21	7-15-21	
Client ID:	**EVALSS-20210708**					
Laboratory ID:	07-068-11					
Copper	**ND**	1.0	EPA 200.8	7-15-21	7-15-21	
Zinc	**ND**	5.0	EPA 200.8	7-15-21	7-15-21	
Client ID:	**SEIMN-20210708**					
Laboratory ID:	07-068-12					
Copper	**ND**	1.0	EPA 200.8	7-15-21	7-15-21	
Zinc	**ND**	5.0	EPA 200.8	7-15-21	7-15-21	
Client ID:	**COLM-20210708**					
Laboratory ID:	07-068-13					
Copper	**ND**	1.0	EPA 200.8	7-15-21	7-15-21	
Zinc	**ND**	5.0	EPA 200.8	7-15-21	7-15-21	
Client ID:	**SEIMS-20210708**					
Laboratory ID:	07-068-14					
Copper	**1.7**	1.0	EPA 200.8	7-15-21	7-15-21	
Zinc	**6.5**	5.0	EPA 200.8	7-15-21	7-15-21	

Date of Report: July 29, 2021
Samples Submitted: July 8, 2021
Laboratory Reference: 2107-068
Project: 14-05806-000

TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA106-20210708**					
Laboratory ID:	07-068-16					
Copper	**ND**	1.0	EPA 200.8	7-15-21	7-15-21	
Zinc	**ND**	5.0	EPA 200.8	7-15-21	7-15-21	
Client ID:	**QA107-20210708**					
Laboratory ID:	07-068-17					
Copper	**1.1**	1.0	EPA 200.8	7-15-21	7-15-21	
Zinc	**15**	5.0	EPA 200.8	7-15-21	7-15-21	

Date of Report: July 29, 2021
Samples Submitted: July 8, 2021
Laboratory Reference: 2107-068
Project: 14-05806-000

TOTAL METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0715WH1					
Copper	**ND**	1.0	EPA 200.8	7-15-21	7-15-21	
Zinc	**ND**	5.0	EPA 200.8	7-15-21	7-15-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	07-068-12										
	ORIG	DUP									
Copper	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Zinc	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	07-068-12										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**102**	**102**	100	100	ND	**102**	**102**	75-125	1	20	
Zinc	**108**	**109**	100	100	ND	**108**	**109**	75-125	1	20	

Date of Report: July 29, 2021
Samples Submitted: July 8, 2021
Laboratory Reference: 2107-068
Project: 14-05806-000

DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210708**					
Laboratory ID:	07-068-01					
Copper	**ND**	1.0	EPA 200.8		7-19-21	
Zinc	**ND**	5.0	EPA 200.8		7-19-21	
Client ID:	**COUMI-20210708**					
Laboratory ID:	07-068-02					
Copper	**ND**	1.0	EPA 200.8		7-19-21	
Zinc	**ND**	5.0	EPA 200.8		7-19-21	
Client ID:	**TOSMO-20210708**					
Laboratory ID:	07-068-03					
Copper	**ND**	1.0	EPA 200.8		7-19-21	
Zinc	**15**	5.0	EPA 200.8		7-19-21	
Client ID:	**TYLMO-20210708**					
Laboratory ID:	07-068-04					
Copper	**ND**	1.0	EPA 200.8		7-19-21	
Zinc	**ND**	5.0	EPA 200.8		7-19-21	
Client ID:	**TYLMI-20210708**					
Laboratory ID:	07-068-05					
Copper	**1.3**	1.0	EPA 200.8		7-19-21	
Zinc	**5.3**	5.0	EPA 200.8		7-19-21	
Client ID:	**MONMN-20210708**					
Laboratory ID:	07-068-06					
Copper	**ND**	1.0	EPA 200.8		7-19-21	
Zinc	**ND**	5.0	EPA 200.8		7-19-21	
Client ID:	**MONMS-20210708**					
Laboratory ID:	07-068-07					
Copper	**ND**	1.0	EPA 200.8		7-19-21	
Zinc	**ND**	5.0	EPA 200.8		7-19-21	

Date of Report: July 29, 2021
Samples Submitted: July 8, 2021
Laboratory Reference: 2107-068
Project: 14-05806-000

DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20210708**					
Laboratory ID:	07-068-08					
Copper	**ND**	1.0	EPA 200.8		7-19-21	
Zinc	**7.0**	5.0	EPA 200.8		7-19-21	
Client ID:	**TOSMI-20210708**					
Laboratory ID:	07-068-09					
Copper	**1.4**	1.0	EPA 200.8		7-19-21	
Zinc	**31**	5.0	EPA 200.8		7-19-21	
Client ID:	**EVAMS-20210708**					
Laboratory ID:	07-068-10					
Copper	**ND**	1.0	EPA 200.8		7-19-21	
Zinc	**ND**	5.0	EPA 200.8		7-19-21	
Client ID:	**EVALSS-20210708**					
Laboratory ID:	07-068-11					
Copper	**ND**	1.0	EPA 200.8		7-19-21	
Zinc	**ND**	5.0	EPA 200.8		7-19-21	
Client ID:	**SEIMN-20210708**					
Laboratory ID:	07-068-12					
Copper	**ND**	1.0	EPA 200.8		7-19-21	
Zinc	**ND**	5.0	EPA 200.8		7-19-21	
Client ID:	**COLM-20210708**					
Laboratory ID:	07-068-13					
Copper	**ND**	1.0	EPA 200.8		7-19-21	
Zinc	**ND**	5.0	EPA 200.8		7-19-21	
Client ID:	**SEIMS-20210708**					
Laboratory ID:	07-068-14					
Copper	**ND**	1.0	EPA 200.8		7-19-21	
Zinc	**ND**	5.0	EPA 200.8		7-19-21	

Date of Report: July 29, 2021
Samples Submitted: July 8, 2021
Laboratory Reference: 2107-068
Project: 14-05806-000

DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA105-20210708**					
Laboratory ID:	07-068-15					
Copper	**ND**	1.0	EPA 200.8		7-19-21	
Zinc	**ND**	5.0	EPA 200.8		7-19-21	
Client ID:	**QA107-20210708**					
Laboratory ID:	07-068-17					
Copper	**ND**	1.0	EPA 200.8		7-19-21	
Zinc	**ND**	5.0	EPA 200.8		7-19-21	

Date of Report: July 29, 2021
Samples Submitted: July 8, 2021
Laboratory Reference: 2107-068
Project: 14-05806-000

DISSOLVED METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0719D1					
Copper	**ND**	1.0	EPA 200.8		7-19-21	
Zinc	**ND**	5.0	EPA 200.8		7-19-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	07-068-13										
	ORIG	DUP									
Copper	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Zinc	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	07-068-13										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**80.0**	**79.8**	80.0	80.0	ND	**100**	**100**	75-125	0	20	
Zinc	**83.2**	**81.6**	80.0	80.0	ND	**104**	**102**	75-125	2	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Jul 29 2021
On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister

Dear David Baumeister:

Enclosed please find the analytical data for your REDMOND PAIRED WATERSHED STUDY project.

The following is a cross correlation of client and laboratory identifications for your convenience.

CLIENT ID	MATRIX	AMTEST ID	TEST
COLM-20210708	Water	21-A009728	Micro, NUT
COUMI-20210708	Water	21-A009729	Micro, NUT
COUMO-20210708	Water	21-A009730	Micro, NUT
EVAMS-20210708	Water	21-A009731	Micro, NUT
EVALSS-20210708	Water	21-A009732	Micro, NUT
MONMN-20210708	Water	21-A009733	Micro, NUT
MONMS-20210708	Water	21-A009734	Micro, NUT
MONM-20210708	Water	21-A009735	Micro, NUT
SEIMN-20210708	Water	21-A009736	Micro, NUT
SEIMS-20210708	Water	21-A009737	Micro, NUT
TOSMI-20210708	Water	21-A009738	Micro, NUT
TOSMO-20210708	Water	21-A009739	Micro, NUT
TYLMI-20210708	Water	21-A009740	Micro, NUT
TYLMO-20210708	Water	21-A009741	Micro, NUT
QA106-20210708	Water	21-A009742	Micro, NUT
QA107-20210708	Water	21-A009743	Micro, NUT

Your samples were received on Friday, July 9, 2021. At the time of receipt, the samples were logged in and properly maintained prior to the subsequent analysis.

The analytical procedures used at AmTest are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

Following the analytical data you will find the Quality Control (QC) results.

Please note that the detection limits that are listed in the body of the report refer to the Practical Quantitation Limits (PQL's), as opposed to the Method Detection Limits (MDL's).

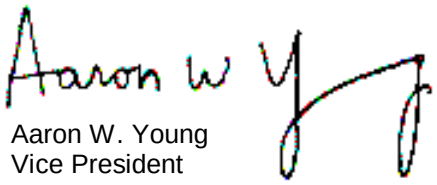
Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Jul 29 2021
On-Site Environmental
continued . . .

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,



Aaron W. Young
Vice President

Project #: 14-05806-000
PO Number: 07-068

BACT = Bacteriological	MET = Metals	NUT=Nutrients	MIN=Minerals
CONV = Conventionals	ORG = Organics	DEM=Demand	

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664
www.amtestlab.com

Professional Analytical Services

ANALYSIS REPORT

On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister
Project Name: REDMOND PAIRED WATERSHED STUDY
Project #: 14-05806-000
PO Number: 07-068
All results reported on an as received basis.

Date Received: 07/09/21
Date Reported: 7/29/21

AMTEST Identification Number **21-A009728**
Client Identification **COLM-20210708**
Sampling Date **07/08/21, 11:45**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	34.	CFU/100 ml		1	SM 9222D	OB	07/09/21
Total Nitrogen (NOX&TKN)	0.90	mg/l		0.1			
Total Nitrogen (TKN)	0.838	mg/l		0.2	SM4500N	KS	07/16/21
Total Nitrate + Nitrite	0.059	mg/l		0.02	SM4500NO3	KS	07/15/21

On-Site Environmental
Project Name: REDMOND PAIRED WATERSHED STUDY
AmTest ID: 21-A009729

AMTEST Identification Number **21-A009729**
Client Identification **COUMI-20210708**
Sampling Date **07/08/21, 12:00**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	920	CFU/100 ml		1	SM 9222D	OB	07/09/21
Total Nitrogen (NOX&TKN)	0.91	mg/l		0.1			
Total Nitrogen (TKN)	0.647	mg/l		0.2	SM4500N	KS	07/16/21
Total Nitrate + Nitrite	0.26	mg/l		0.02	SM4500NO3	KS	07/15/21

AMTEST Identification Number **21-A009730**
Client Identification **COUMO-20210708**
Sampling Date **07/08/21, 12:25**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	260	CFU/100 ml		1	SM 9222D	OB	07/09/21
Total Nitrogen (NOX&TKN)	0.88	mg/l		0.1			
Total Nitrogen (TKN)	0.473	mg/l		0.2	SM4500N	KS	07/16/21
Total Nitrate + Nitrite	0.41	mg/l		0.02	SM4500NO3	KS	07/15/21

On-Site Environmental
Project Name: REDMOND PAIRED WATERSHED STUDY
AmTest ID: 21-A009731

AMTEST Identification Number **21-A009731**
Client Identification **EVAMS-20210708**
Sampling Date **07/08/21, 13:00**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	240	CFU/100 ml		1	SM 9222D	OB	07/09/21
Total Nitrogen (NOX&TKN)	2.54	mg/l		0.1			
Total Nitrogen (TKN)	0.544	mg/l		0.2	SM4500N	KS	07/16/21
Total Nitrate + Nitrite	2.0	mg/l		0.02	SM4500NO3	KS	07/15/21

AMTEST Identification Number **21-A009732**
Client Identification **EVALSS-20210708**
Sampling Date **07/08/21, 13:30**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	1000	CFU/100 ml		1	SM 9222D	OB	07/09/21
Total Nitrogen (NOX&TKN)	1.83	mg/l		0.1			
Total Nitrogen (TKN)	0.434	mg/l		0.2	SM4500N	KS	07/16/21
Total Nitrate + Nitrite	1.4	mg/l		0.02	SM4500NO3	KS	07/15/21

On-Site Environmental
Project Name: REDMOND PAIRED WATERSHED STUDY
AmTest ID: 21-A009733

AMTEST Identification Number **21-A009733**
Client Identification **MONMN-20210708**
Sampling Date **07/08/21, 13:50**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	440	CFU/100 ml		1	SM 9222D	OB	07/09/21
Total Nitrogen (NOX&TKN)	1.10	mg/l		0.1			
Total Nitrogen (TKN)	0.954	mg/l		0.2	SM4500N	KS	07/16/21
Total Nitrate + Nitrite	0.15	mg/l		0.02	SM4500NO3	KS	07/15/21

AMTEST Identification Number **21-A009734**
Client Identification **MONMS-20210708**
Sampling Date **07/08/21, 14:05**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	100	CFU/100 ml		1	SM 9222D	OB	07/09/21
Total Nitrogen (NOX&TKN)	0.65	mg/l		0.1			
Total Nitrogen (TKN)	0.526	mg/l		0.2	SM4500N	KS	07/16/21
Total Nitrate + Nitrite	0.12	mg/l		0.02	SM4500NO3	KS	07/15/21

On-Site Environmental
Project Name: REDMOND PAIRED WATERSHED STUDY
AmTest ID: 21-A009735

AMTEST Identification Number **21-A009735**
Client Identification **MONM-20210708**
Sampling Date **07/08/21, 14:25**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	400	CFU/100 ml		1	SM 9222D	OB	07/09/21
Total Nitrogen (NOX&TKN)	0.72	mg/l		0.1			
Total Nitrogen (TKN)	0.343	mg/l		0.2	SM4500N	KS	07/16/21
Total Nitrate + Nitrite	0.38	mg/l		0.02	SM4500NO3	KS	07/15/21

AMTEST Identification Number **21-A009736**
Client Identification **SEIMN-20210708**
Sampling Date **07/08/21, 12:00**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	420	CFU/100 ml		1	SM 9222D	OB	07/09/21
Total Nitrogen (NOX&TKN)	0.54	mg/l		0.1			
Total Nitrogen (TKN)	0.291	mg/l		0.2	SM4500N	KS	07/16/21
Total Nitrate + Nitrite	0.25	mg/l		0.02	SM4500NO3	KS	07/15/21

On-Site Environmental
Project Name: REDMOND PAIRED WATERSHED STUDY
AmTest ID: 21-A009737

AMTEST Identification Number **21-A009737**
Client Identification **SEIMS-20210708**
Sampling Date **07/08/21, 12:30**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	120	CFU/100 ml		1	SM 9222D	OB	07/09/21
Total Nitrogen (NOX&TKN)	0.82	mg/l		0.1			
Total Nitrogen (TKN)	0.514	mg/l		0.2	SM4500N	KS	07/16/21
Total Nitrate + Nitrite	0.31	mg/l		0.02	SM4500NO3	KS	07/15/21

AMTEST Identification Number **21-A009738**
Client Identification **TOSMI-20210708**
Sampling Date **07/08/21, 12:45**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	560	CFU/100 ml		1	SM 9222D	OB	07/09/21
Total Nitrogen (NOX&TKN)	1.55	mg/l		0.1			
Total Nitrogen (TKN)	0.449	mg/l		0.2	SM4500N	KS	07/16/21
Total Nitrate + Nitrite	1.1	mg/l		0.02	SM4500NO3	KS	07/15/21

On-Site Environmental
Project Name: REDMOND PAIRED WATERSHED STUDY
AmTest ID: 21-A009739

AMTEST Identification Number **21-A009739**
Client Identification **TOSMO-20210708**
Sampling Date **07/08/21, 13:15**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	210	CFU/100 ml		1	SM 9222D	OB	07/09/21
Total Nitrogen (NOX&TKN)	0.96	mg/l		0.1			
Total Nitrogen (TKN)	0.331	mg/l		0.2	SM4500N	KS	07/16/21
Total Nitrate + Nitrite	0.63	mg/l		0.02	SM4500NO3	KS	07/15/21

AMTEST Identification Number **21-A009740**
Client Identification **TYLMI-20210708**
Sampling Date **07/08/21, 13:50**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	200	CFU/100 ml		1	SM 9222D	OB	07/09/21
Total Nitrogen (NOX&TKN)	1.63	mg/l		0.1			
Total Nitrogen (TKN)	0.529	mg/l		0.2	SM4500N	KS	07/16/21
Total Nitrate + Nitrite	1.1	mg/l		0.02	SM4500NO3	KS	07/15/21

On-Site Environmental
Project Name: REDMOND PAIRED WATERSHED STUDY
AmTest ID: 21-A009741

AMTEST Identification Number **21-A009741**
Client Identification **TYLMO-20210708**
Sampling Date **07/08/21, 14:50**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	510	CFU/100 ml		1	SM 9222D	OB	07/09/21
Total Nitrogen (NOX&TKN)	0.82	mg/l		0.1			
Total Nitrogen (TKN)	0.373	mg/l		0.2	SM4500N	KS	07/16/21
Total Nitrate + Nitrite	0.45	mg/l		0.02	SM4500NO3	KS	07/15/21

AMTEST Identification Number **21-A009742**
Client Identification **QA106-20210708**
Sampling Date **07/08/21, 11:00**

Results

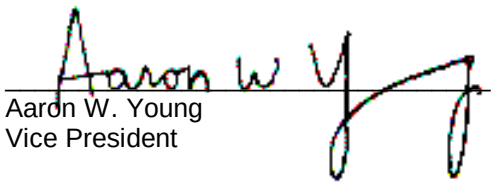
PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	< 1	CFU/100 ml		1	SM 9222D	OB	07/09/21
Total Nitrogen (NOX&TKN)	0.37	mg/l		0.1			
Total Nitrogen (TKN)	0.374	mg/l		0.2	SM4500N	KS	07/16/21
Total Nitrate + Nitrite	< 0.02	mg/l		0.02	SM4500NO3	KS	07/15/21

On-Site Environmental
Project Name: REDMOND PAIRED WATERSHED STUDY
AmTest ID: 21-A009743

AMTEST Identification Number **21-A009743**
Client Identification **QA107-20210708**
Sampling Date **07/08/21, 12:25**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	1000	CFU/100 ml		1	SM 9222D	OB	07/09/21
Total Nitrogen (NOX&TKN)	0.80	mg/l		0.1			
Total Nitrogen (TKN)	0.544	mg/l		0.2	SM4500N	KS	07/16/21
Total Nitrate + Nitrite	0.26	mg/l		0.02	SM4500NO3	KS	07/15/21



Aaron W. Young
Vice President

Am Test Inc.
13600 NE 126th PL
Suite C
Kirkland, WA, 98034
(425) 885-1664
www.amtestlab.com

Professional Analytical Services

QC Summary for sample numbers: 21-A009728 to 21-A009743

DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	DUP VALUE	RPD
21-A009730	Fecal Coliform	CFU/100 ml	260	270	3.8
21-A009739	Fecal Coliform	CFU/100 ml	210	250	17.
21-A009536	Total Nitrogen (TKN)	mg/l	20.1	21.7	7.7
21-A009665	Total Nitrogen (TKN)	mg/l	0.467	0.476	1.9
21-A009730	Total Nitrogen (TKN)	mg/l	0.473	0.499	5.3
21-A009740	Total Nitrogen (TKN)	mg/l	0.529	0.436	19.
21-A009785	Total Nitrogen (TKN)	mg/l	16.6	16.2	2.4
21-A009737	Total Nitrate + Nitrite	mg/l	0.31	0.31	0.00
21-A009756	Total Nitrate + Nitrite	mg/l	1.4	1.4	0.00
21-A009766	Total Nitrate + Nitrite	mg/l	0.26	0.23	12.
21-A009971	Total Nitrate + Nitrite	mg/l	0.55	0.55	0.00
21-A009994	Total Nitrate + Nitrite	mg/l	5.6	5.1	9.3
21-A010020	Total Nitrate + Nitrite	mg/l	1.0	1.0	0.00
21-A010034	Total Nitrate + Nitrite	mg/l	< 0.02	< 0.02	

MATRIX SPIKES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	SMPL+ SPK	SPK AMT	RECOVERY
21-A009536	Total Nitrogen (TKN)	mg/l	20.1	40.2	20.0	100.50 %
21-A009665	Total Nitrogen (TKN)	mg/l	0.467	2.59	2.00	106.15 %
21-A009730	Total Nitrogen (TKN)	mg/l	0.473	2.57	2.00	104.85 %
21-A009740	Total Nitrogen (TKN)	mg/l	0.529	2.52	2.00	99.55 %
21-A009785	Total Nitrogen (TKN)	mg/l	16.6	54.5	40.0	94.75 %
21-A009737	Total Nitrate + Nitrite	mg/l	0.31	1.3	1.0	99.00 %
21-A009756	Total Nitrate + Nitrite	mg/l	1.4	2.4	1.0	100.00 %
21-A009766	Total Nitrate + Nitrite	mg/l	0.26	1.2	1.0	94.00 %
21-A009971	Total Nitrate + Nitrite	mg/l	0.55	1.5	1.0	95.00 %
21-A009994	Total Nitrate + Nitrite	mg/l	5.6	15.	10.	94.00 %
21-A010020	Total Nitrate + Nitrite	mg/l	1.0	2.1	1.0	110.00 %
21-A010034	Total Nitrate + Nitrite	mg/l	< 0.02	0.99	1.0	99.00 %

STANDARD REFERENCE MATERIALS

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
Total Nitrogen (TKN)	mg/l	1.00	0.969	96.9 %
Total Nitrogen (TKN)	mg/l	1.00	1.01	101. %
Total Nitrogen (TKN)	mg/l	1.00	0.983	98.3 %
Total Nitrogen (TKN)	mg/l	1.00	0.973	97.3 %
Total Nitrogen (TKN)	mg/l	1.00	0.931	93.1 %
Total Nitrate + Nitrite	mg/l	1.0	0.98	98.0 %

QC Summary for sample numbers: 21-A009728 to 21-A009743...

STANDARD REFERENCE MATERIALS continued....

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
Total Nitrate + Nitrite	mg/l	1.0	0.98	98.0 %
Total Nitrate + Nitrite	mg/l	1.0	0.98	98.0 %

BLANKS

ANALYTE	UNITS	RESULT
Fecal Coliform	CFU/100 ml	< 1
Fecal Coliform	CFU/100 ml	< 1
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02

CHAIN OF CUSTODY 07-068

Page 1 of 1

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants

Project No.: 14-05806-000

Project Name: Redmond Paired Watershed Study

Project Manager: George Iftner

Turnaround Requested:

_____ 1 Day

_____ 2 Day

_____ 3 Day

__X__ Standard

Laboratory No.

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Suspended Solids (SM 2540D)	Turbidity (EPA 181.1)	Hardness (EPA 200.7 / SM 2340B)	Dissolved Organ Carbon (SM 5310B) *	Fecal Coliform (SM 9222D)	Total Phosphorus (EPA 365.1)	Total Nitrogen (SM 4500 N-B)	Total Cu and Zn (EPA 200.8)	Dissolved Cu and Zn (EPA 200.8) *	
1	COUMO-2021 0708	7/8/21	11:45	Water	7	X	X	X	X	X	X	X	X	X	
2	COUMI-2021 0708		12:00	Water	7	X	X	X	X	X	X	X	X	X	
3	TOSMO-2021 0708		12:25	Water	7	X	X	X	X	X	X	X	X	X	
4	TYLMO-2021 0708		13:00	Water	7	X	X	X	X	X	X	X	X	X	
5	TYLMI-2021 0708		13:30	Water	7	X	X	X	X	X	X	X	X	X	
6	MONMN-2021 0708		13:50	Water	7	X	X	X	X	X	X	X	X	X	
7	MONMS-2021 0708		14:05	Water	7	X	X	X	X	X	X	X	X	X	
8	MONM-2021 0708		14:25	Water	7	X	X	X	X	X	X	X	X	X	
9	TOSMI-2021 0708		12:00	Water	7	X	X	X	X	X	X	X	X	X	
10	EVAMS-2021 0708		12:30	Water	7	X	X	X	X	X	X	X	X	X	
11	EVALSS-2021 0708		12:45	Water	7	X	X	X	X	X	X	X	X	X	
12	SEIMN-2021 0708		13:15	Water	7	X	X	X	X	X	X	X	X	X	
13	COLM-2021 0708		13:50	Water	7	X	X	X	X	X	X	X	X	X	
14	SEIMS-2021 0708		14:50	Water	7	X	X	X	X	X	X	X	X	X	
15	QA 105 · 20210708		11:00	Water	12	X NO	X NO	X NO	X	X NO	X NO	X NO	X NO	X	
16	BA 106 · 20210708		11:00	↓	5	X	X	X	X NO	X	X	X	X	X NFG	
17	BA 107 · 20210708		12:05	↓	7	X	X	X	X	X	X	X	X	X	

Relinquished by_____ Date_____ Received by_____ Date_____

Firm_____ Time_____ Firm_____ Time_____

Relinquished by N. Bartish Date 7/8/21 Received by [signature] Date 7/8/21

Firm Herrera Time 15:35 Firm OSE Time 1535

Comments:

* - field filtered with 0.45 µm filter within 15 minutes of collecting sample

CHAIN OF CUSTODY 07-068

Page 1 of 1

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants

Project No.: 14-05806-000

Project Name: Redmond Paired Watershed Study

Project Manager: George Iftner

Turnaround Requested:

_____ 1 Day

_____ 2 Day

_____ 3 Day

__X__ Standard

Laboratory No.

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Suspended Solids (SM 2540D)	Turbidity (EPA 181.1)	Hardness (EPA 200.7 / SM 2340B)	Dissolved Organ Carbon (SM 5310B) *	Fecal Coliform (SM 9222D)	Total Phosphorus (EPA 365.1)	Total Nitrogen (SM 4500 N-B)	Total Cu and Zn (EPA 200.8)	Dissolved Cu and Zn (EPA 200.8) *	
1	COUMO-2021	7/8/21	11:45	Water	7	X	X	X	X	X	X	X	X	X	
2	COUMI-2021		12:00	Water	7	X	X	X	X	X	X	X	X	X	
3	TOSMO-2021		12:25	Water	7	X	X	X	X	X	X	X	X	X	
4	TYLMO-2021		13:00	Water	7	X	X	X	X	X	X	X	X	X	
5	TYLMI-2021		13:30	Water	7	X	X	X	X	X	X	X	X	X	
6	MONMN-2021		13:50	Water	7	X	X	X	X	X	X	X	X	X	
7	MONMS-2021		14:05	Water	7	X	X	X	X	X	X	X	X	X	
8	MONM-2021		14:25	Water	7	X	X	X	X	X	X	X	X	X	
9	TOSMI-2021		12:00	Water	7	X	X	X	X	X	X	X	X	X	
10	EVAMS-2021		12:30	Water	7	X	X	X	X	X	X	X	X	X	
11	EVALSS-2021		12:45	Water	7	X	X	X	X	X	X	X	X	X	
12	SEIMN-2021		13:15	Water	7	X	X	X	X	X	X	X	X	X	
13	COLM-2021		13:50	Water	7	X	X	X	X	X	X	X	X	X	
14	SEIMS-2021		14:50	Water	7	X	X	X	X	X	X	X	X	X	
15	QA105 · 20210708		11:00	Water	#2	X	X	X	X	X	X	X	X	X	
16	QA106.20210708		11:00	↓	5	X	X	X	X	X	X	X	X	X	
17	QA107.20210708		12:05	↓	7	X	X	X	X	X	X	X	X	X	

Relinquished by_____ Date_____ Received by_____ Date_____

Firm_____ Time_____ Firm_____ Time_____

Relinquished by N. Bartish Date 7/8/21 Received by [signature] Date 7/8/21

Firm Herrera Time 15:35 Firm OSE Time 1535

Comments:
* - field filtered with 0.45 µm filter within 15 minutes of collecting sample

METER CALIBRATION LOG - Redmond Paired Watershed Study

Project Number:	14-05806-000		
Personnel Performing Calibration:	N. Bartish		
Meter:	ProDSS #1		
Date/Time:	7/8/21		9:55
Barometric Pressure Start of Day:	mmHg: 765.7	Time:	9:55
Barometric Pressure End of Day:	mmHg: 765.2	Time:	10:05

PRE Field Run CALIBRATION	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	1.4	0	23.6	
Conductivity (µS/cm)	994	1,000	23.1	
Conductivity (µS/cm)	97.1	100	22.8	
DO % Saturation	101.4	100	23.4	

POST Field Run CHECK	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	0.7	0	23.4	
Conductivity (µS/cm)	94.9	100	23.1	
DO % Saturation	101.4	100	22.2	

Note: ProDSS 2 calibrated prior to sampling by field support staff. Calibration values were not recorded.

Calibration Procedures:

Rinse Multimeter Sonde Between Each Operation

Rinse 3 times with tap water, 3 times with deionized water, then 3 times with the solution to be used for calibrating or testing.

Conductivity Calibration Notes:

1. Dry the conductivity probe with a lab tissue (e.g., KimWipes®) and DI water.
2. Fill calibration cup to within a centimeter of the top of the calibration cup with DI water (0 µS).
3. Fill the calibration cup with 1,000 µS standard so that the temperature/conductivity probe is submerged.
4. Make sure there are no bubbles in the cell; wait 2 minutes.
5. Enter the appropriate standard value (1,000 µS/cm or 1.0 mS/cm) for Sp Cond.
6. Check conductivity using 100 µS/cm standard.

Dissolved Oxygen Calibration Notes:

1. Fill the calibration cup with about 1/2 inch of DI; it should be below the sensor cap.
2. Use KimWipes® to dry any droplets from the sensor cap.
3. Invert calibration cup's cap and gently rest it on the cup.
4. Wait 5 minutes, making sure that temperature stabilizes.
5. Determine local barometric pressure (mm Hg) and enter this value into the meter.
6. Click "Calibrate". "Calibrate Successful" will be displayed.
7. To retain calibration accuracy between measurements, store with the sensor immersed in water or within a water-saturated air environment such as a sealed storage cup with at least 10 ml of water.
8. It is important to have the water-saturated air and the sensor at the same temperature. Therefore, store a jar of DI in the same environment as the sonde and calibrate in a similar air temperature as the water and sonde.
9. Keep probe out of direct sun or wind.

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, NM

Sample Date: 7/8/21 **Sample Time:** 12:00 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later:** Y / N
(Must filter within 15 minutes of collection)

SITE ID: TOSM1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Overcast, 65° F

Water Quality Sampling

Sample ID: TOSM20210708

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	No
DOC *	HDPE	250 ml	1	HCL	↓
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	↓
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	↓
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	↓
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	↓
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	↓

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	↓
Odor:	↓
Sheen:	↓
Floatables:	↓

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft):

Reference Point (description): NA

Water Quality Measurments

Temperature (°C) 14.7

Specific Conductivity (µs/cm) 293.4

Dissolved Oxygen (mg/L) 9.90

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GR + TF

Sample Date: 07/08/21 **Sample Time:** 1450 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later?** Y N
(Must filter within 15 minutes of collection)

SITE ID: SEIMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 70+ ~~Sunny~~ cloudy

Water Quality Sampling

Sample ID: SEIMS - 20210708

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: ~~Little~~ clear

Color: light brown

Odor: NA

Sheen: NA

Floatables: NA

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

~~YSI Pro DSS 1~~

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.72

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 12.6

Specific Conductivity (µs/cm) 126.7

Dissolved Oxygen (mg/L) 10.33

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + TF

Sample Date: 7/8/21 **Sample Time:** 1405 PDT: PST:

SITE ID: MoNMS

~~Base Flow~~ or Storm Event? **Field filtered 5 minutes later?** Y N

(Must filter within 15 minutes of collection)

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 70 + cloudy

Water Quality Sampling

Sample ID: MoNMS

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Lt turbid (grass)
Color:	V light brown
Odor:	NA
Sheen:	NA
Floatables:	NA

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

~~YSI Pro DSS 1~~

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): X

Reference Point (description): X

Water Quality Measurments

Temperature (°C) 14.4

Specific Conductivity (µs/cm) 356.6

Dissolved Oxygen (mg/L) 6.08

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + TF

Sample Date: 07/08/21 **Sample Time:** 1350 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later?** Y N
(Must filter within 15 minutes of collection)

SITE ID: MoNMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 70 + cloudy

Water Quality Sampling

Sample ID: MoNMN

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Slight turbid

Color: light brown

Odor: NA

Sheen: NA

Floatables: NA

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.08

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 14.5

Specific Conductivity (µs/cm) 248.5

Dissolved Oxygen (mg/L) 8.61

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + TF

Sample Date: 07/08/21 **Sample Time:** 1330 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later: Y N**
(Must filter within 15 minutes of collection)

SITE ID: TYLM1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 70 + cloudy

Water Quality Sampling

Sample ID: TYLM1 - 20210708

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Grt turbid

Color: v light brown/black

Odor: NA

Sheen: NA

Floatables: NA

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

~~YSI Pro DSS 1~~

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): ~~4~~ 53.5"

Reference Point (description): measure down from top of culvert

Water Quality Measurments

Temperature (°C) 14.7

Specific Conductivity (µs/cm) ~~2~~ 234.0

Dissolved Oxygen (mg/L) 9.68

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + TP

Sample Date: 07/08/21 **Sample Time:** 1300 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later? (Y) N
(Must filter within 15 minutes of collection)

SITE ID: TYLMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 65+ & overcast

Water Quality Sampling

Sample ID: TYLMO-20210708

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Lt turbid

Color: Light Brown

Odor: NA

Sheen: NA

Floatables: NA

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

~~YSI Pro DSS 1~~

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 3.51

Reference Point (description): Measure down from top of culvert

Water Quality Measurments

Temperature (°C) 13.8

Specific Conductivity (µs/cm) 222.9

Dissolved Oxygen (mg/L) 10.29

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + TR

Sample Date: 07/08/21 **Sample Time:** 1225 PDT:

Base Flow or Storm Event? **Field filtered 5 minutes later?** Y N PST:
(Must filter within 15 minutes of collection)

SITE ID: TOSMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 65 + overcast

Water Quality Sampling

Sample ID: TOSMO - 20210708

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	clear
Color:	light brown
Odor:	NA
Sheen:	NA
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

~~YSI Pro DSS 1~~

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.54

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 12.8

Specific Conductivity (µs/cm) 267.7

Dissolved Oxygen (mg/L) 10.57

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK+TF

Sample Date: 071812

Sample Time: 1209 / 1205 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later? Y N

(Must filter within 15 minutes of collection)

SITE ID: COUM1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 65 + overcast

Water Quality Sampling

Sample ID: COUM1-20210708

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	Yes
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	QA107-20210708
Filter blank sample ID:	1
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	√ (little turbid)
Color:	light brown / orange
Odor:	NA
Sheen:	NA
Floatables:	NA

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 1.52

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 13.4

Specific Conductivity (µs/cm) 304.3

Dissolved Oxygen (mg/L) 10.33

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + TF

Sample Date: 07/08/21 **Sample Time:** 1145 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later:** Y N
(Must filter within 15 minutes of collection)

SITE ID: COUMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 65° + overcast

Water Quality Sampling

Sample ID: COUMO-20210708

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: clear

Color: light brown

Odor: NA

Sheen: NA

Floatables: NA

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

~~YSI Pro Plus (15D100020)~~

~~YSI Pro DSS 1~~

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest .001 of a foot)

Stream Stage (ft): 1.33

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 14.2

Specific Conductivity (µs/cm) 312.2

Dissolved Oxygen (mg/L) 9.97

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: N. Bartish, N. Maas

Sample Date: 7/8/21 **Sample Time:** 14:25 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later:** Y N
(Must filter within 15 minutes of collection)

SITE ID: MoNM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: overcast, 65°

Water Quality Sampling

Sample ID: MoNM20210708

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID: NO

Filter blank sample ID: QA10520210708

Transfer blank sample ID: QA10620210708

Visual and Olfactory Conditions:

Clarity: clear
Color: none
Odor:
Sheen:
Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft):

Reference Point (description): NA

Water Quality Measurments

Temperature (°C) 14.6

Specific Conductivity (µs/cm) 244.5

Dissolved Oxygen (mg/L) 9.99

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, NM

Sample Date: 7/8/21 **Sample Time:** 15:50 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later?** Y N
(Must filter within 15 minutes of collection)

SITE ID: COLM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: overcast, 65°F

Water Quality Sampling

Sample ID: COLM20210708

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: fair

Color: light brown

Odor: none

Sheen: none

Floatables: none

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 5.31

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 16.0

Specific Conductivity (µs/cm) 57.3

Dissolved Oxygen (mg/L) 6.70

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, NM

Sample Date: 7/8/21 **Sample Time:** 13:15 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later:** (Y) N
(Must filter within 15 minutes of collection)

SITE ID: SEIMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

HERRERA

Current Weather and Temp: overcast, 65 F

Water Quality Sampling

Sample ID: SEIMN

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS (2)

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 10.0

Reference Point (description): Tape

Water Quality Measurments

Temperature (°C) 12.8

Specific Conductivity (µs/cm) 112.1

Dissolved Oxygen (mg/L) 10.42

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: ND, NM

Sample Date: 7/8/21 **Sample Time:** 12:45 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later:** Y N
(Must filter within 15 minutes of collection)

SITE ID: EVALS5

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

HERRERA

Current Weather and Temp: overcast, 65°F

Water Quality Sampling

Sample ID: EVALS520210708

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	No
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.26

Reference Point (description): S6

Water Quality Measurments

Temperature (°C) 13.8

Specific Conductivity (µs/cm) 198.1

Dissolved Oxygen (mg/L) 10.38

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: NB, NM

Sample Date: 7/8/21 **Sample Time:** 12:30 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later:** Y N
(Must filter within 15 minutes of collection)

SITE ID: EVAMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Overcast, 65

Water Quality Sampling

Sample ID: EVAMS 20210708

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	NO
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:	
Filter blank sample ID:	
Transfer blank sample ID:	

Visual and Olfactory Conditions:

Clarity:	Clear
Color:	
Odor:	
Sheen:	
Floatables:	

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 3.75

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 13.6

Specific Conductivity (µs/cm) 2239

Dissolved Oxygen (mg/L) 10.15

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Data Quality Assurance Worksheet

By J. Brown

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 7/30/21 Page 1 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 7/8/21 /All locations, QA107 (COUMI) Lab Ref No 2107-068

date 8/17/2021

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
TSS	OK / SM 2540D	NA	**NA**	6	**≤7**	≤1.0 mg/L 1.0 mg/L	NA	**NA**	89	**±20**	0	**≤ 25**	D=1.6	**≤ 25**	OK	NONE
Turbidity	OK / EPA 180.1	NA	**NA**	1	**≤2**	≤0.1 NTU 0.1 NTU	NA	**NA**	NA	**±10**	1	**≤ 25**	5	**≤ 25**	OK	NONE
Hardness	OK / SM 2340B	NA	**NA**	5	**≤180**	≤1.0 mg/L 1.0 mg/L	99, 100	**±25**	101	**±15**	0, MS 1	**≤ 20**	18	**≤ 20**	OK	NONE
DOC	OK / SM 5310B	≤15	**≤15**	11, 20	**≤28**	≤1.0 mg/L 1.0 mg/L	98, 96	**±25**	107, 101	**±15**	D=0.01-0.09	**≤ 20**	D=0.1	**≤ 20**	OK	NONE
Total Phosphorus	OK / EPA 365.1	NA	**NA**	4	**≤28**	≤0.01 mg/L 0.01 mg/L	91	**±25**	88	**±20**	4	**≤ 20**	38	**≤ 20**	OK	FLAG COUMI J DUE TO FIELD DUPE EXCEEDANCE
Total Nitrogen (TKN + N+N)	OK/ SM 4500 N-B	NA	**NA**	7, 8	**≤28**	≤0.1 mg/L 0.1 mg/L	94-106	**±25**	93-101	**±20**	NC, 0-17 D=0.01-0.1	**≤ 20**	0, D=0.1	**≤ 20**	OK	NONE

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

Data Quality Assurance Worksheet

By J. Brown

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 7/30/21 Page 2 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 7/8/21 /All locations, QA107 (COUMI) Lab Ref No 2107-068

date 8/17/2021

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
Total Copper	OK/ EPA 200.8	NA	**NA**	7	**≤180**	≤1.0 µg/L 1.0 µg/L	102, 102	**±25**	NR	**±15**	NC, MS 1	**≤ 20**	D=0	**≤ 20**	OK	NONE
Total Zinc	OK/ EPA 200.8	NA	**NA**	7	**≤180**	≤5.0 µg/L 5.0 µg/L	108, 109	**±25**	NR	**±15**	NC, MS 1	**≤ 20**	D=1	**≤ 20**	OK	NONE
Dissolved Copper	OK/ EPA 200.8	≤15	**≤15**	11	**≤180**	≤1.0 µg/L 1.0 µg/L	100, 100	**±25**	NR	**±15**	NC, MS 0	**≤ 20**	NC	**≤ 20**	OK	NONE
Dissolved Zinc	OK/ EPA 200.8	≤15	**≤15**	11	**≤180**	≤5.0 µg/L 5.0 µg/L	104, 102	**±25**	NR	**±15**	NC, MS 2	**≤ 20**	NC	**≤ 20**	OK	NONE
Fecal Coliform	OK / SM 9222D	NA	**NA**	1	**≤1**	≤1.0 cfu/ 100mL 10 cfu/ 100mL	NA	**NA**	NA	**NA**	4, 17	**≤ 35**	8	**≤ 50**	OK	NONE

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

October 13, 2021

Jess Brown
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2109-357

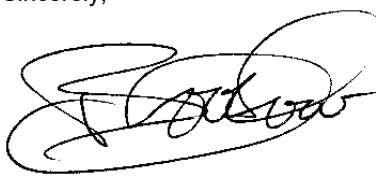
Dear Jess:

Enclosed are the analytical results and associated quality control data for samples submitted on September 30, 2021.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



Blair Goodrow
Project Manager

Enclosures

Date of Report: October 13, 2021
Samples Submitted: September 30, 2021
Laboratory Reference: 2109-357
Project: 14-05806-000

Case Narrative

Samples were collected on September 30, 2021 and received by the laboratory on September 30, 2021. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: October 13, 2021
Samples Submitted: September 30, 2021
Laboratory Reference: 2109-357
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210930**					
Laboratory ID:	09-357-01					
Total Suspended Solids	**35**	2.5	SM 2540D	10-6-21	10-7-21	
Client ID:	**COUMI-20210930**					
Laboratory ID:	09-357-02					
Total Suspended Solids	**56**	5.0	SM 2540D	10-6-21	10-7-21	
Client ID:	**TOSMO-20210930**					
Laboratory ID:	09-357-03					
Total Suspended Solids	**160**	5.0	SM 2540D	10-6-21	10-7-21	
Client ID:	**TYLMO-20210930**					
Laboratory ID:	09-357-04					
Total Suspended Solids	**42**	2.0	SM 2540D	10-6-21	10-7-21	
Client ID:	**TYLMI-20210930**					
Laboratory ID:	09-357-05					
Total Suspended Solids	**37**	2.0	SM 2540D	10-6-21	10-7-21	
Client ID:	**MONMN-20210930**					
Laboratory ID:	09-357-06					
Total Suspended Solids	**32**	2.0	SM 2540D	10-6-21	10-7-21	
Client ID:	**MONMS-20210930**					
Laboratory ID:	09-357-07					
Total Suspended Solids	**5.4**	1.0	SM 2540D	10-6-21	10-7-21	
Client ID:	**MONM-20210930**					
Laboratory ID:	09-357-08					
Total Suspended Solids	**50**	5.0	SM 2540D	10-6-21	10-7-21	
Client ID:	**TOSMI-20210930**					
Laboratory ID:	09-357-09					
Total Suspended Solids	**65**	2.5	SM 2540D	10-6-21	10-7-21	

Date of Report: October 13, 2021
Samples Submitted: September 30, 2021
Laboratory Reference: 2109-357
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVAMS-20210930**					
Laboratory ID:	09-357-10					
Total Suspended Solids	**61**	5.0	SM 2540D	10-6-21	10-7-21	
Client ID:	**EVALSS-20210930**					
Laboratory ID:	09-357-11					
Total Suspended Solids	**94**	5.0	SM 2540D	10-6-21	10-7-21	
Client ID:	**SEIMN-20210930**					
Laboratory ID:	09-357-12					
Total Suspended Solids	**100**	2.5	SM 2540D	10-6-21	10-7-21	
Client ID:	**COLM-20210930**					
Laboratory ID:	09-357-13					
Total Suspended Solids	**ND**	1.0	SM 2540D	10-6-21	10-7-21	
Client ID:	**SEIMS-20210930**					
Laboratory ID:	09-357-14					
Total Suspended Solids	**59**	5.0	SM 2540D	10-6-21	10-7-21	
Client ID:	**QA108-20210930**					
Laboratory ID:	09-357-15					
Total Suspended Solids	**47**	5.0	SM 2540D	10-6-21	10-7-21	

Date of Report: October 13, 2021
Samples Submitted: September 30, 2021
Laboratory Reference: 2109-357
Project: 14-05806-000

TOTAL SUSPENDED SOLIDS
SM 2540D
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1006W1					
Total Suspended Solids	**ND**	1.0	SM 2540D	10-6-21	10-7-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	09-357-01								
	ORIG	DUP							
Total Suspended Solids	**35.0**	**37.5**	NA	NA	NA	NA	7	26	
SPIKE BLANK									
Laboratory ID:	SB1006W1								
	SB		SB		SB				
Total Suspended Solids	**84.0**		100	NA	84	67-118	NA	NA	

Date of Report: October 13, 2021
Samples Submitted: September 30, 2021
Laboratory Reference: 2109-357
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210930**					
Laboratory ID:	09-357-01					
Turbidity	**16**	0.10	EPA 180.1	10-1-21	10-1-21	
Client ID:	**COUMI-20210930**					
Laboratory ID:	09-357-02					
Turbidity	**28**	0.10	EPA 180.1	10-1-21	10-1-21	
Client ID:	**TOSMO-20210930**					
Laboratory ID:	09-357-03					
Turbidity	**53**	0.50	EPA 180.1	10-1-21	10-1-21	
Client ID:	**TYLMO-20210930**					
Laboratory ID:	09-357-04					
Turbidity	**15**	0.10	EPA 180.1	10-1-21	10-1-21	
Client ID:	**TYLMI-20210930**					
Laboratory ID:	09-357-05					
Turbidity	**14**	0.10	EPA 180.1	10-1-21	10-1-21	
Client ID:	**MONMN-20210930**					
Laboratory ID:	09-357-06					
Turbidity	**16**	0.10	EPA 180.1	10-1-21	10-1-21	
Client ID:	**MONMS-20210930**					
Laboratory ID:	09-357-07					
Turbidity	**3.9**	0.10	EPA 180.1	10-1-21	10-1-21	
Client ID:	**MONM-20210930**					
Laboratory ID:	09-357-08					
Turbidity	**24**	0.10	EPA 180.1	10-1-21	10-1-21	
Client ID:	**TOSMI-20210930**					
Laboratory ID:	09-357-09					
Turbidity	**19**	0.10	EPA 180.1	10-1-21	10-1-21	

Date of Report: October 13, 2021
Samples Submitted: September 30, 2021
Laboratory Reference: 2109-357
Project: 14-05806-000

TURBIDITY
EPA 180.1

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVAMS-20210930**					
Laboratory ID:	09-357-10					
Turbidity	**28**	0.10	EPA 180.1	10-1-21	10-1-21	
Client ID:	**EVALSS-20210930**					
Laboratory ID:	09-357-11					
Turbidity	**45**	0.50	EPA 180.1	10-1-21	10-1-21	
Client ID:	**SEIMN-20210930**					
Laboratory ID:	09-357-12					
Turbidity	**54**	0.50	EPA 180.1	10-1-21	10-1-21	
Client ID:	**COLM-20210930**					
Laboratory ID:	09-357-13					
Turbidity	**0.65**	0.10	EPA 180.1	10-1-21	10-1-21	
Client ID:	**SEIMS-20210930**					
Laboratory ID:	09-357-14					
Turbidity	**25**	0.10	EPA 180.1	10-1-21	10-1-21	
Client ID:	**QA108-20210930**					
Laboratory ID:	09-357-15					
Turbidity	**21**	0.10	EPA 180.1	10-1-21	10-1-21	

Date of Report: October 13, 2021
Samples Submitted: September 30, 2021
Laboratory Reference: 2109-357
Project: 14-05806-000

TURBIDITY
EPA 180.1
QUALITY CONTROL

Matrix: Water
Units: NTU

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1001W1					
Turbidity	**ND**	0.10	EPA 180.1	10-1-21	10-1-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	10-009-01								
	ORIG	DUP							
Turbidity	**28.7**	**29.1**	NA	NA	NA	NA	1	13	

Date of Report: October 13, 2021
Samples Submitted: September 30, 2021
Laboratory Reference: 2109-357
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210930**					
Laboratory ID:	09-357-01					
Hardness	**48**	1.0	EPA 200.7/SM 2340B	10-7-21	10-7-21	
Client ID:	**COUMI-20210930**					
Laboratory ID:	09-357-02					
Hardness	**70**	1.0	EPA 200.7/SM 2340B	10-7-21	10-7-21	
Client ID:	**TOSMO-20210930**					
Laboratory ID:	09-357-03					
Hardness	**64**	1.0	EPA 200.7/SM 2340B	10-7-21	10-7-21	
Client ID:	**TYLMO-20210930**					
Laboratory ID:	09-357-04					
Hardness	**29**	1.0	EPA 200.7/SM 2340B	10-7-21	10-7-21	
Client ID:	**TYLMI-20210930**					
Laboratory ID:	09-357-05					
Hardness	**55**	1.0	EPA 200.7/SM 2340B	10-7-21	10-7-21	
Client ID:	**MONMN-20210930**					
Laboratory ID:	09-357-06					
Hardness	**80**	1.0	EPA 200.7/SM 2340B	10-7-21	10-7-21	
Client ID:	**MONMS-20210930**					
Laboratory ID:	09-357-07					
Hardness	**78**	1.0	EPA 200.7/SM 2340B	10-7-21	10-7-21	

Date of Report: October 13, 2021
Samples Submitted: September 30, 2021
Laboratory Reference: 2109-357
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20210930**					
Laboratory ID:	09-357-08					
Hardness	**83**	1.0	EPA 200.7/SM 2340B	10-7-21	10-7-21	
Client ID:	**TOSMI-20210930**					
Laboratory ID:	09-357-09					
Hardness	**36**	1.0	EPA 200.7/SM 2340B	10-7-21	10-7-21	
Client ID:	**EVAMS-20210930**					
Laboratory ID:	09-357-10					
Hardness	**95**	1.0	EPA 200.7/SM 2340B	10-7-21	10-7-21	
Client ID:	**EVALSS-20210930**					
Laboratory ID:	09-357-11					
Hardness	**96**	1.0	EPA 200.7/SM 2340B	10-7-21	10-7-21	
Client ID:	**SEIMN-20210930**					
Laboratory ID:	09-357-12					
Hardness	**49**	1.0	EPA 200.7/SM 2340B	10-7-21	10-7-21	
Client ID:	**COLM-20210930**					
Laboratory ID:	09-357-13					
Hardness	**20**	1.0	EPA 200.7/SM 2340B	10-7-21	10-7-21	
Client ID:	**SEIMS-20210930**					
Laboratory ID:	09-357-14					
Hardness	**54**	1.0	EPA 200.7/SM 2340B	10-7-21	10-7-21	

Date of Report: October 13, 2021
Samples Submitted: September 30, 2021
Laboratory Reference: 2109-357
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA108-20210930**					
Laboratory ID:	09-357-15					
Hardness	**85**	1.0	EPA 200.7/SM 2340B	10-7-21	10-7-21	

Date of Report: October 13, 2021
Samples Submitted: September 30, 2021
Laboratory Reference: 2109-357
Project: 14-05806-000

HARDNESS
EPA 200.7/SM 2340B
QUALITY CONTROL

Matrix: Water
Units: mg eqt. CaCO3/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1007WH1					
Hardness	**ND**	1.0	EPA 200.7/SM 2340B	10-7-21	10-7-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-357-01										
	ORIG	DUP									
Hardness	**48.2**	**46.0**	NA		NA	NA		NA	5	20	
MATRIX SPIKES											
Laboratory ID:	09-357-01										
	MS	MSD	MS	MSD		MS	MSD				
Hardness	**184**	**190**	132	132	48.2	103	107	75-125	3	20	
SPIKE BLANK											
Laboratory ID:	SB1007WH1										
	SB		SB			SB					
Hardness	**145**		132		NA	110		85-115	NA	NA	

Date of Report: October 13, 2021
Samples Submitted: September 30, 2021
Laboratory Reference: 2109-357
Project: 14-05806-000

DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210930**					
Laboratory ID:	09-357-01					
Dissolved Organic Carbon	**9.2**	1.0	SM 5310B	10-4-21	10-4-21	
Client ID:	**COUMI-20210930**					
Laboratory ID:	09-357-02					
Dissolved Organic Carbon	**8.3**	1.0	SM 5310B	10-4-21	10-4-21	
Client ID:	**TOSMO-20210930**					
Laboratory ID:	09-357-03					
Dissolved Organic Carbon	**7.7**	1.0	SM 5310B	10-4-21	10-4-21	
Client ID:	**TYLMO-20210930**					
Laboratory ID:	09-357-04					
Dissolved Organic Carbon	**6.3**	1.0	SM 5310B	10-4-21	10-4-21	
Client ID:	**TYLMI-20210930**					
Laboratory ID:	09-357-05					
Dissolved Organic Carbon	**6.5**	1.0	SM 5310B	10-4-21	10-4-21	
Client ID:	**MONMN-20210930**					
Laboratory ID:	09-357-06					
Dissolved Organic Carbon	**12**	1.0	SM 5310B	10-4-21	10-4-21	
Client ID:	**MONMS-20210930**					
Laboratory ID:	09-357-07					
Dissolved Organic Carbon	**5.9**	1.0	SM 5310B	10-4-21	10-4-21	
Client ID:	**MONM-20210930**					
Laboratory ID:	09-357-08					
Dissolved Organic Carbon	**8.3**	1.0	SM 5310B	10-4-21	10-4-21	
Client ID:	**TOSMI-20210930**					
Laboratory ID:	09-357-09					
Dissolved Organic Carbon	**6.1**	1.0	SM 5310B	10-4-21	10-4-21	

Date of Report: October 13, 2021
Samples Submitted: September 30, 2021
Laboratory Reference: 2109-357
Project: 14-05806-000

DISSOLVED ORGANIC CARBON
SM 5310B

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVAMS-20210930**					
Laboratory ID:	09-357-10					
Dissolved Organic Carbon	**7.1**	1.0	SM 5310B	10-4-21	10-4-21	
Client ID:	**EVALSS-20210930**					
Laboratory ID:	09-357-11					
Dissolved Organic Carbon	**5.9**	1.0	SM 5310B	10-4-21	10-4-21	
Client ID:	**SEIMN-20210930**					
Laboratory ID:	09-357-12					
Dissolved Organic Carbon	**7.7**	1.0	SM 5310B	10-4-21	10-4-21	
Client ID:	**COLM-20210930**					
Laboratory ID:	09-357-13					
Dissolved Organic Carbon	**9.3**	1.0	SM 5310B	10-4-21	10-4-21	
Client ID:	**SEIMS-20210930**					
Laboratory ID:	09-357-14					
Dissolved Organic Carbon	**17**	1.0	SM 5310B	10-4-21	10-4-21	
Client ID:	**QA108-20210930**					
Laboratory ID:	09-357-15					
Dissolved Organic Carbon	**8.2**	1.0	SM 5310B	10-4-21	10-4-21	
Client ID:	**QA109-20210930**					
Laboratory ID:	09-357-16					
Dissolved Organic Carbon	**ND**	1.0	SM 5310B	10-4-21	10-4-21	

Date of Report: October 13, 2021
Samples Submitted: September 30, 2021
Laboratory Reference: 2109-357
Project: 14-05806-000

DISSOLVED ORGANIC CARBON
SM 5310B
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1004D1					
Dissolved Organic Carbon	**ND**	1.0	SM 5310B	10-4-21	10-4-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	09-357-11								
	ORIG	DUP							
Dissolved Organic Carbon	**5.87**	**5.88**	NA	NA	NA	NA	0	15	
MATRIX SPIKE									
Laboratory ID:	09-357-11								
	MS		MS		MS				
Dissolved Organic Carbon	**17.3**		10.0	5.87	114	91-117	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB1004D1								
	SB		SB		SB				
Dissolved Organic Carbon	**11.1**		10.0	NA	111	88-116	NA	NA	

Date of Report: October 13, 2021
Samples Submitted: September 30, 2021
Laboratory Reference: 2109-357
Project: 14-05806-000

TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210930**					
Laboratory ID:	09-357-01					
Total Phosphorus	**0.13**	0.010	EPA 365.1	10-5-21	10-6-21	
Client ID:	**COUMI-20210930**					
Laboratory ID:	09-357-02					
Total Phosphorus	**0.21**	0.010	EPA 365.1	10-5-21	10-6-21	
Client ID:	**TOSMO-20210930**					
Laboratory ID:	09-357-03					
Total Phosphorus	**0.21**	0.010	EPA 365.1	10-5-21	10-6-21	
Client ID:	**TYLMO-20210930**					
Laboratory ID:	09-357-04					
Total Phosphorus	**0.11**	0.010	EPA 365.1	10-5-21	10-6-21	
Client ID:	**TYLMI-20210930**					
Laboratory ID:	09-357-05					
Total Phosphorus	**0.11**	0.010	EPA 365.1	10-5-21	10-6-21	
Client ID:	**MONMN-20210930**					
Laboratory ID:	09-357-06					
Total Phosphorus	**0.13**	0.010	EPA 365.1	10-5-21	10-6-21	
Client ID:	**MONMS-20210930**					
Laboratory ID:	09-357-07					
Total Phosphorus	**0.071**	0.010	EPA 365.1	10-5-21	10-6-21	
Client ID:	**MONM-20210930**					
Laboratory ID:	09-357-08					
Total Phosphorus	**0.16**	0.010	EPA 365.1	10-5-21	10-6-21	
Client ID:	**TOSMI-20210930**					
Laboratory ID:	09-357-09					
Total Phosphorus	**0.12**	0.010	EPA 365.1	10-5-21	10-6-21	

Date of Report: October 13, 2021
Samples Submitted: September 30, 2021
Laboratory Reference: 2109-357
Project: 14-05806-000

TOTAL PHOSPHORUS
EPA 365.1

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVAMS-20210930**					
Laboratory ID:	09-357-10					
Total Phosphorus	**0.11**	0.010	EPA 365.1	10-5-21	10-6-21	
Client ID:	**EVALSS-20210930**					
Laboratory ID:	09-357-11					
Total Phosphorus	**0.14**	0.010	EPA 365.1	10-5-21	10-6-21	
Client ID:	**SEIMN-20210930**					
Laboratory ID:	09-357-12					
Total Phosphorus	**0.26**	0.010	EPA 365.1	10-5-21	10-6-21	
Client ID:	**COLM-20210930**					
Laboratory ID:	09-357-13					
Total Phosphorus	**0.018**	0.010	EPA 365.1	10-5-21	10-6-21	
Client ID:	**SEIMS-20210930**					
Laboratory ID:	09-357-14					
Total Phosphorus	**0.14**	0.010	EPA 365.1	10-5-21	10-6-21	
Client ID:	**QA108-20210930**					
Laboratory ID:	09-357-15					
Total Phosphorus	**0.17**	0.010	EPA 365.1	10-5-21	10-6-21	

Date of Report: October 13, 2021
Samples Submitted: September 30, 2021
Laboratory Reference: 2109-357
Project: 14-05806-000

TOTAL PHOSPHORUS
EPA 365.1
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1005W1					
Total Phosphorus	**ND**	0.010	EPA 365.1	10-5-21	10-6-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	09-330-01								
	ORIG	DUP							
Total Phosphorus	**0.0115**	**0.0130**	NA	NA	NA	NA	12	19	
MATRIX SPIKE									
Laboratory ID:	09-330-01								
	MS		MS		MS				
Total Phosphorus	**0.259**		0.250	0.0115	99	83-110	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB1005W1								
	SB		SB		SB				
Total Phosphorus	**0.231**		0.250	NA	92	83-110	NA	NA	

Date of Report: October 13, 2021
Samples Submitted: September 30, 2021
Laboratory Reference: 2109-357
Project: 14-05806-000

TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210930**					
Laboratory ID:	09-357-01					
Copper	**6.2**	1.0	EPA 200.8	10-12-21	10-12-21	
Zinc	**54**	5.0	EPA 200.8	10-12-21	10-12-21	
Client ID:	**COUMI-20210930**					
Laboratory ID:	09-357-02					
Copper	**6.9**	1.0	EPA 200.8	10-12-21	10-12-21	
Zinc	**73**	5.0	EPA 200.8	10-12-21	10-12-21	
Client ID:	**TOSMO-20210930**					
Laboratory ID:	09-357-03					
Copper	**9.4**	1.0	EPA 200.8	10-12-21	10-12-21	
Zinc	**130**	5.0	EPA 200.8	10-12-21	10-12-21	
Client ID:	**TYLMO-20210930**					
Laboratory ID:	09-357-04					
Copper	**7.4**	1.0	EPA 200.8	10-12-21	10-12-21	
Zinc	**36**	5.0	EPA 200.8	10-12-21	10-12-21	
Client ID:	**TYLMI-20210930**					
Laboratory ID:	09-357-05					
Copper	**12**	1.0	EPA 200.8	10-12-21	10-12-21	
Zinc	**47**	5.0	EPA 200.8	10-12-21	10-12-21	
Client ID:	**MONMN-20210930**					
Laboratory ID:	09-357-06					
Copper	**3.9**	1.0	EPA 200.8	10-12-21	10-12-21	
Zinc	**19**	5.0	EPA 200.8	10-12-21	10-12-21	
Client ID:	**MONMS-20210930**					
Laboratory ID:	09-357-07					
Copper	**2.5**	1.0	EPA 200.8	10-12-21	10-12-21	
Zinc	**ND**	5.0	EPA 200.8	10-12-21	10-12-21	

Date of Report: October 13, 2021
Samples Submitted: September 30, 2021
Laboratory Reference: 2109-357
Project: 14-05806-000

TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20210930**					
Laboratory ID:	09-357-08					
Copper	**6.2**	1.0	EPA 200.8	10-12-21	10-12-21	
Zinc	**98**	5.0	EPA 200.8	10-12-21	10-12-21	
Client ID:	**TOSMI-20210930**					
Laboratory ID:	09-357-09					
Copper	**7.9**	1.0	EPA 200.8	10-12-21	10-12-21	
Zinc	**100**	5.0	EPA 200.8	10-12-21	10-12-21	
Client ID:	**EVAMS-20210930**					
Laboratory ID:	09-357-10					
Copper	**2.1**	1.0	EPA 200.8	10-12-21	10-12-21	
Zinc	**7.6**	5.0	EPA 200.8	10-12-21	10-12-21	
Client ID:	**EVALSS-20210930**					
Laboratory ID:	09-357-11					
Copper	**3.1**	1.0	EPA 200.8	10-12-21	10-12-21	
Zinc	**10**	5.0	EPA 200.8	10-12-21	10-12-21	
Client ID:	**SEIMN-20210930**					
Laboratory ID:	09-357-12					
Copper	**4.5**	1.0	EPA 200.8	10-12-21	10-12-21	
Zinc	**9.5**	5.0	EPA 200.8	10-12-21	10-12-21	
Client ID:	**COLM-20210930**					
Laboratory ID:	09-357-13					
Copper	**1.5**	1.0	EPA 200.8	10-12-21	10-12-21	
Zinc	**ND**	5.0	EPA 200.8	10-12-21	10-12-21	
Client ID:	**SEIMS-20210930**					
Laboratory ID:	09-357-14					
Copper	**2.9**	1.0	EPA 200.8	10-12-21	10-12-21	
Zinc	**7.1**	5.0	EPA 200.8	10-12-21	10-12-21	

Date of Report: October 13, 2021
Samples Submitted: September 30, 2021
Laboratory Reference: 2109-357
Project: 14-05806-000

TOTAL METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA108-20210930**					
Laboratory ID:	09-357-15					
Copper	**5.2**	1.0	EPA 200.8	10-12-21	10-12-21	
Zinc	**80**	5.0	EPA 200.8	10-12-21	10-12-21	

Date of Report: October 13, 2021
Samples Submitted: September 30, 2021
Laboratory Reference: 2109-357
Project: 14-05806-000

TOTAL METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1012WH3					
Copper	**ND**	1.0	EPA 200.8	10-12-21	10-12-21	
Zinc	**ND**	5.0	EPA 200.8	10-12-21	10-12-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-357-06										
	ORIG	DUP									
Copper	**3.92**	**2.96**	NA	NA		NA		NA	28	20	
Zinc	**18.6**	**18.1**	NA	NA		NA		NA	2	20	
MATRIX SPIKES											
Laboratory ID:	09-357-06										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**97.0**	**97.6**	100	100	3.92	**93**	**94**	75-125	1	20	
Zinc	**114**	**115**	100	100	18.6	**95**	**97**	75-125	1	20	

Date of Report: October 13, 2021
Samples Submitted: September 30, 2021
Laboratory Reference: 2109-357
Project: 14-05806-000

DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**COUMO-20210930**					
Laboratory ID:	09-357-01					
Copper	**3.4**	1.0	EPA 200.8		10-12-21	
Zinc	**25**	5.0	EPA 200.8		10-12-21	
Client ID:	**COUMI-20210930**					
Laboratory ID:	09-357-02					
Copper	**3.5**	1.0	EPA 200.8		10-12-21	
Zinc	**19**	5.0	EPA 200.8		10-12-21	
Client ID:	**TOSMO-20210930**					
Laboratory ID:	09-357-03					
Copper	**3.2**	1.0	EPA 200.8		10-12-21	
Zinc	**17**	5.0	EPA 200.8		10-12-21	
Client ID:	**TYLMO-20210930**					
Laboratory ID:	09-357-04					
Copper	**4.2**	1.0	EPA 200.8		10-12-21	
Zinc	**12**	5.0	EPA 200.8		10-12-21	
Client ID:	**TYLMI-20210930**					
Laboratory ID:	09-357-05					
Copper	**6.4**	1.0	EPA 200.8		10-12-21	
Zinc	**9.7**	5.0	EPA 200.8		10-12-21	
Client ID:	**MONMN-20210930**					
Laboratory ID:	09-357-06					
Copper	**1.7**	1.0	EPA 200.8		10-12-21	
Zinc	**ND**	5.0	EPA 200.8		10-12-21	
Client ID:	**MONMS-20210930**					
Laboratory ID:	09-357-07					
Copper	**1.7**	1.0	EPA 200.8		10-12-21	
Zinc	**ND**	5.0	EPA 200.8		10-12-21	

Date of Report: October 13, 2021
Samples Submitted: September 30, 2021
Laboratory Reference: 2109-357
Project: 14-05806-000

DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONM-20210930**					
Laboratory ID:	09-357-08					
Copper	**1.7**	1.0	EPA 200.8		10-12-21	
Zinc	**11**	5.0	EPA 200.8		10-12-21	
Client ID:	**TOSMI-20210930**					
Laboratory ID:	09-357-09					
Copper	**4.0**	1.0	EPA 200.8		10-12-21	
Zinc	**34**	5.0	EPA 200.8		10-12-21	
Client ID:	**EVAMS-20210930**					
Laboratory ID:	09-357-10					
Copper	**ND**	1.0	EPA 200.8		10-12-21	
Zinc	**ND**	5.0	EPA 200.8		10-12-21	
Client ID:	**EVALSS-20210930**					
Laboratory ID:	09-357-11					
Copper	**ND**	1.0	EPA 200.8		10-12-21	
Zinc	**ND**	5.0	EPA 200.8		10-12-21	
Client ID:	**SEIMN-20210930**					
Laboratory ID:	09-357-12					
Copper	**1.4**	1.0	EPA 200.8		10-12-21	
Zinc	**ND**	5.0	EPA 200.8		10-12-21	
Client ID:	**COLM-20210930**					
Laboratory ID:	09-357-13					
Copper	**ND**	1.0	EPA 200.8		10-12-21	
Zinc	**ND**	5.0	EPA 200.8		10-12-21	
Client ID:	**SEIMS-20210930**					
Laboratory ID:	09-357-14					
Copper	**ND**	1.0	EPA 200.8		10-12-21	
Zinc	**ND**	5.0	EPA 200.8		10-12-21	

Date of Report: October 13, 2021
Samples Submitted: September 30, 2021
Laboratory Reference: 2109-357
Project: 14-05806-000

DISSOLVED METALS
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**QA108-20210930**					
Laboratory ID:	09-357-15					
Copper	**1.7**	1.0	EPA 200.8		10-12-21	
Zinc	**11**	5.0	EPA 200.8		10-12-21	
Client ID:	**QA109-20210930**					
Laboratory ID:	09-357-16					
Copper	**ND**	1.0	EPA 200.8		10-12-21	
Zinc	**ND**	5.0	EPA 200.8		10-12-21	

Date of Report: October 13, 2021
Samples Submitted: September 30, 2021
Laboratory Reference: 2109-357
Project: 14-05806-000

DISSOLVED METALS
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1005F1					
Copper	**ND**	1.0	EPA 200.8	10-5-21	10-12-21	
Zinc	**ND**	5.0	EPA 200.8	10-5-21	10-12-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	10-034-02										
	ORIG	DUP									
Copper	**10.2**	**9.80**	NA	NA		NA		NA	4	20	
Zinc	**77.6**	**76.0**	NA	NA		NA		NA	2	20	
MATRIX SPIKES											
Laboratory ID:	10-034-02										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**87.8**	**89.0**	80.0	80.0	10.2	**97**	**99**	75-125	1	20	
Zinc	**155**	**156**	80.0	80.0	77.6	**97**	**98**	75-125	1	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Oct 13 2021
On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister

Dear David Baumeister:

Enclosed please find the analytical data for your REDMOND PAIRED WATERSHED STUDY project.

The following is a cross correlation of client and laboratory identifications for your convenience.

CLIENT ID	MATRIX	AMTEST ID	TEST
COUMO-20210930	Water	21-A014733	Micro, NUT
COUMI-20210930	Water	21-A014734	Micro, NUT
TOSMO-20210930	Water	21-A014735	Micro, NUT
TYLMO-20210930	Water	21-A014736	Micro, NUT
TYLMI-20210930	Water	21-A014737	Micro, NUT
MONMN-20210930	Water	21-A014738	Micro, NUT
MONMS-20210930	Water	21-A014739	Micro, NUT
MONM-20210930	Water	21-A014740	Micro, NUT
TOSMI-20210930	Water	21-A014741	Micro, NUT
EVAMS-20210930	Water	21-A014742	Micro, NUT
EVALSS-20210930	Water	21-A014743	Micro, NUT
SEIMN-20210930	Water	21-A014744	Micro, NUT
COLM-20210930	Water	21-A014745	Micro, NUT
SEIMS-20210930	Water	21-A014746	Micro, NUT
QA108-20210930	Water	21-A014747	Micro, NUT

Your samples were received on Friday, October 1, 2021. At the time of receipt, the samples were logged in and properly maintained prior to the subsequent analysis.

The analytical procedures used at AmTest are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

Following the analytical data you will find the Quality Control (QC) results.

Please note that the detection limits that are listed in the body of the report refer to the Practical Quantitation Limits (PQL's), as opposed to the Method Detection Limits (MDL's).

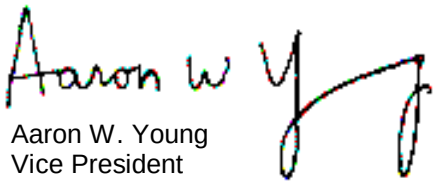
Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional Analytical Services

Oct 13 2021
On-Site Environmental
continued . . .

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,



Aaron W. Young
Vice President

Project #: 14-05806-000
SDG #: 2121310
PO Number: 09-357

BACT = Bacteriological	MET = Metals	NUT=Nutrients	MIN=Minerals
CONV = Conventionals	ORG = Organics	DEM=Demand	

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664
www.amtestlab.com

Professional Analytical Services

ANALYSIS REPORT

On-Site Environmental
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister
Project Name: REDMOND PAIRED WATERSHED STUDY
SDG Number: 2121310
Project #: 14-05806-000
PO Number: 09-357
All results reported on an as received basis.

Date Received: 10/01/21
Date Reported: 10/13/21

AMTEST Identification Number **21-A014733**
Client Identification **COUMO-20210930**
Sampling Date **09/30/21, 12:45**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	2900	CFU/100 ml		20	SM 9222D	JM	10/01/21
Total Nitrogen (NOX&TKN)	0.89	mg/l		0.1			
Total Nitrogen (TKN)	0.682	mg/l		0.2	SM4500N	KS	10/06/21
Total Nitrate + Nitrite	0.21	mg/l		0.02	SM4500NO3	KS	10/07/21

AMTEST Identification Number **21-A014734**
Client Identification **COUMI-20210930**
Sampling Date **09/30/21, 13:15**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	470	CFU/100 ml		10	SM 9222D	JM	10/01/21
Total Nitrogen (NOX&TKN)	1.42	mg/l		0.1			
Total Nitrogen (TKN)	1.03	mg/l		0.2	SM4500N	KS	10/06/21
Total Nitrate + Nitrite	0.39	mg/l		0.02	SM4500NO3	KS	10/07/21

AMTEST Identification Number **21-A014735**
Client Identification **TOSMO-20210930**
Sampling Date **09/30/21, 13:35**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	840	CFU/100 ml		10	SM 9222D	JM	10/01/21
Total Nitrogen (NOX&TKN)	1.39	mg/l		0.1			
Total Nitrogen (TKN)	1.08	mg/l		0.2	SM4500N	KS	10/06/21
Total Nitrate + Nitrite	0.31	mg/l		0.02	SM4500NO3	KS	10/07/21

AMTEST Identification Number **21-A014736**
Client Identification **TYLMO-20210930**
Sampling Date **09/30/21, 14:05**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	2200	CFU/100 ml		100	SM 9222D	JM	10/01/21
Total Nitrogen (NOX&TKN)	1.06	mg/l		0.1			
Total Nitrogen (TKN)	0.742	mg/l		0.2	SM4500N	KS	10/06/21
Total Nitrate + Nitrite	0.32	mg/l		0.02	SM4500NO3	KS	10/07/21

AMTEST Identification Number **21-A014737**
Client Identification **TYLMI-20210930**
Sampling Date **09/30/21, 14:25**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	280	CFU/100 ml		20	SM 9222D	JM	10/01/21
Total Nitrogen (NOX&TKN)	1.36	mg/l		0.1			
Total Nitrogen (TKN)	0.934	mg/l		0.2	SM4500N	KS	10/06/21
Total Nitrate + Nitrite	0.43	mg/l		0.02	SM4500NO3	KS	10/07/21

AMTEST Identification Number **21-A014738**
Client Identification **MONMN-20210930**
Sampling Date **09/30/21, 14:55**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	1400	CFU/100 ml		20	SM 9222D	JM	10/01/21
Total Nitrogen (NOX&TKN)	1.20	mg/l		0.1			
Total Nitrogen (TKN)	1.00	mg/l		0.2	SM4500N	KS	10/06/21
Total Nitrate + Nitrite	0.20	mg/l		0.02	SM4500NO3	KS	10/07/21

AMTEST Identification Number **21-A014739**
Client Identification **MONMS-20210930**
Sampling Date **09/30/21, 15:20**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	680	CFU/100 ml		20	SM 9222D	JM	10/01/21
Total Nitrogen (NOX&TKN)	0.76	mg/l		0.1			
Total Nitrogen (TKN)	0.620	mg/l		0.2	SM4500N	KS	10/06/21
Total Nitrate + Nitrite	0.14	mg/l		0.02	SM4500NO3	KS	10/07/21

AMTEST Identification Number **21-A014740**
Client Identification **MONM-20210930**
Sampling Date **09/30/21, 15:30**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	1200	CFU/100 ml		10	SM 9222D	JM	10/01/21
Total Nitrogen (NOX&TKN)	2.00	mg/l		0.1			
Total Nitrogen (TKN)	1.79	mg/l		0.2	SM4500N	KS	10/06/21
Total Nitrate + Nitrite	0.21	mg/l		0.02	SM4500NO3	KS	10/07/21

AMTEST Identification Number **21-A014741**
Client Identification **TOSMI-20210930**
Sampling Date **09/30/21, 13:00**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	920	CFU/100 ml		20	SM 9222D	JM	10/01/21
Total Nitrogen (NOX&TKN)	0.92	mg/l		0.1			
Total Nitrogen (TKN)	0.613	mg/l		0.2	SM4500N	KS	10/06/21
Total Nitrate + Nitrite	0.31	mg/l		0.02	SM4500NO3	KS	10/07/21

AMTEST Identification Number **21-A014742**
Client Identification **EVAMS-20210930**
Sampling Date **09/30/21, 13:25**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	2500	CFU/100 ml		100	SM 9222D	JM	10/01/21
Total Nitrogen (NOX&TKN)	2.51	mg/l		0.1			
Total Nitrogen (TKN)	1.21	mg/l		0.2	SM4500N	KS	10/06/21
Total Nitrate + Nitrite	1.3	mg/l		0.02	SM4500NO3	KS	10/07/21

AMTEST Identification Number **21-A014743**
Client Identification **EVALSS-20210930**
Sampling Date **09/30/21, 13:40**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	600	CFU/100 ml		20	SM 9222D	JM	10/01/21
Total Nitrogen (NOX&TKN)	2.58	mg/l		0.1			
Total Nitrogen (TKN)	1.38	mg/l		0.2	SM4500N	KS	10/06/21
Total Nitrate + Nitrite	1.2	mg/l		0.02	SM4500NO3	KS	10/07/21

AMTEST Identification Number **21-A014744**
Client Identification **SEIMN-20210930**
Sampling Date **09/30/21, 14:20**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	110	CFU/100 ml		10	SM 9222D	JM	10/01/21
Total Nitrogen (NOX&TKN)	1.57	mg/l		0.1			
Total Nitrogen (TKN)	1.22	mg/l		0.2	SM4500N	KS	10/06/21
Total Nitrate + Nitrite	0.35	mg/l		0.02	SM4500NO3	KS	10/07/21

AMTEST Identification Number **21-A014745**
Client Identification **COLM-20210930**
Sampling Date **09/30/21, 15:00**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	96.	CFU/100 ml		2	SM 9222D	JM	10/01/21
Total Nitrogen (NOX&TKN)	0.62	mg/l		0.1			
Total Nitrogen (TKN)	0.565	mg/l		0.2	SM4500N	KS	10/06/21
Total Nitrate + Nitrite	0.058	mg/l		0.02	SM4500NO3	KS	10/07/21

AMTEST Identification Number **21-A014746**
Client Identification **SEIMS-20210930**
Sampling Date **09/30/21, 15:45**

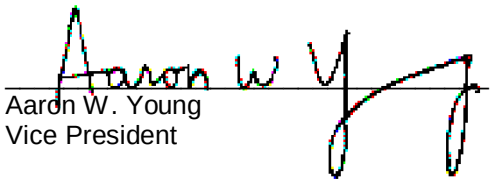
Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	120	CFU/100 ml		10	SM 9222D	JM	10/01/21
Total Nitrogen (NOX&TKN)	1.97	mg/l		0.1			
Total Nitrogen (TKN)	1.51	mg/l		0.2	SM4500N	KS	10/06/21
Total Nitrate + Nitrite	0.46	mg/l		0.02	SM4500NO3	KS	10/07/21

AMTEST Identification Number **21-A014747**
Client Identification **QA108-20210930**
Sampling Date **09/30/21, 15:40**

Results

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliform	780	CFU/100 ml		20	SM 9222D	JM	10/01/21
Total Nitrogen (NOX&TKN)	1.38	mg/l		0.1			
Total Nitrogen (TKN)	1.15	mg/l		0.2	SM4500N	KS	10/06/21
Total Nitrate + Nitrite	0.23	mg/l		0.02	SM4500NO3	KS	10/07/21



Aaron W. Young
Vice President

Am Test Inc.
13600 NE 126th PL
Suite C
Kirkland, WA, 98034
(425) 885-1664
www.amtestlab.com

Professional Analytical Services

QC Summary for sample numbers: 21-A014733 to 21-A014747

DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	DUP VALUE	RPD
21-A014730	Fecal Coliform	CFU/100 ml	< 1	< 1	
21-A014739	Fecal Coliform	CFU/100 ml	680	880	26.
21-A014745	Fecal Coliform	CFU/100 ml	96.	120	22.
21-A014539	Total Nitrogen (TKN)	mg/l	0.734	0.708	3.6
21-A014684	Total Nitrogen (TKN)	mg/l	0.437	0.489	11.
21-A014621	Total Nitrogen (TKN)	mg/l	0.601	0.639	6.1
21-A014606	Total Nitrate + Nitrite	mg/l	< 0.02	< 0.02	
21-A014621	Total Nitrate + Nitrite	mg/l	0.42	0.43	2.4
21-A014684	Total Nitrate + Nitrite	mg/l	1.1	1.1	0.00
21-A014992	Total Nitrate + Nitrite	mg/l	9.3	9.7	4.2
21-A015048	Total Nitrate + Nitrite	mg/l	2.8	2.8	0.00
21-A015127	Total Nitrate + Nitrite	mg/l	5.6	5.6	0.00

MATRIX SPIKES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	SMPL+ SPK	SPK AMT	RECOVERY
21-A014539	Total Nitrogen (TKN)	mg/l	0.734	2.76	2.00	101.30 %
21-A014684	Total Nitrogen (TKN)	mg/l	0.437	2.44	2.00	100.15 %
21-A014621	Total Nitrogen (TKN)	mg/l	0.601	2.62	2.00	100.95 %
21-A014606	Total Nitrate + Nitrite	mg/l	< 0.02	0.96	1.0	96.00 %
21-A014621	Total Nitrate + Nitrite	mg/l	0.42	1.5	1.0	108.00 %
21-A014684	Total Nitrate + Nitrite	mg/l	1.1	2.2	1.0	110.00 %
21-A014992	Total Nitrate + Nitrite	mg/l	9.3	20.	10.	107.00 %
21-A015048	Total Nitrate + Nitrite	mg/l	2.8	13.	10.	102.00 %
21-A015127	Total Nitrate + Nitrite	mg/l	5.6	16.	10.	104.00 %

STANDARD REFERENCE MATERIALS

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
Total Nitrogen (TKN)	mg/l	1.00	0.996	99.6 %
Total Nitrogen (TKN)	mg/l	1.00	1.00	100. %
Total Nitrogen (TKN)	mg/l	1.00	1.01	101. %
Total Nitrate + Nitrite	mg/l	1.0	1.0	100. %
Total Nitrate + Nitrite	mg/l	1.0	0.99	99.0 %

BLANKS

ANALYTE	UNITS	RESULT
Fecal Coliform	CFU/100 ml	< 1
Fecal Coliform	CFU/100 ml	< 1
Fecal Coliform	CFU/100 ml	< 1

QC Summary for sample numbers: 21-A014733 to 21-A014747...

BLANKS continued....

ANALYTE	UNITS	RESULT
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrogen (TKN)	mg/l	< 0.2
Total Nitrate + Nitrite	mg/l	< 0.02
Total Nitrate + Nitrite	mg/l	< 0.02

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Laboratory Reference #: 09-357

Laboratory: AmTest Laboratories

Attention: Aaron Young

13600 NE 126th Pl Kirkland, WA 98034

Phone Number: (425) 885-1664

Turnaround Request

1 Day 2 Day 3 Day

Standard

Other:

Project Manager: Blair Goodrow

email: bgoodrow@onsite-env.com

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analyses
1	COUMO-20210930 14733	9/30/21	12:45	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
2	COUMI-20210930 34	9/30/21	13:15	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
3	TOSMO-20210930 35	9/30/21	13:35	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
4	TYLMO-20210930 36	9/30/21	14:05	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
5	TYLMI-20210930 37	9/30/21	14:25	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
6	MONMN-20210930 38	9/30/21	14:55	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
7	MONMS-20210930 39	9/30/21	15:20	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
8	MONM-20210930 40	9/30/21	15:30	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
9	TOSMI-20210930 41	9/30/21	13:00	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
10	EVAMS-20210930 42	9/30/21	13:25	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N

Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:	OnSite Env	10/1/21	815	
Received by: Amanda J	AmTest	10/1/21	815	**EDDs - CSV**
Relinquished by:				**Reporting Limits:**
Received by:				**Fecal Coliform - 1.0 cfu/100ml**
Relinquished by:				**Total Nitrogen - .10 mg/L**
Received by:				

T=1.5

P.13

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Laboratory Reference #: 09-357

Laboratory: AmTest Laboratories

Attention: Aaron Young

13600 NE 126th Pl Kirkland, WA 98034

Phone Number: (425) 885-1664

Turnaround Request

1 Day 2 Day 3 Day

Standard

Other:

Project Manager: Blair Goodrow

email: bgoodrow@onsite-env.com

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analyses
11	EVALSS-20210930 14743	9/30/21	13:40	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
12	SEIMN-20210930 44	9/30/21	14:20	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
13	COLM-20210930 45	9/30/21	15:00	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
14	SEIMS-20210930 46	9/30/21	15:45	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N
15	QA108-20210930 47	9/30/21	15:40	Water	2	Fecal Coliform SM 9222D, Total Nitrogen SM 4500-N

Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:	OnSite Env	10/1/21	815	
Received by: Aaron W Young	AmTest	10/1/21	815	**EDDs - CSV**
Relinquished by:				**Reporting Limits:**
Received by:				**Fecal Coliform - 1.0 cfu/100ml**
Relinquished by:				**Total Nitrogen - .10 mg/L**
Received by:				

T=1.5

CHAIN OF CUSTODY

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants

Project No.: 14-05806-000

Project Name: Redmond Paired Watershed Study

Project Manager: George Iftner

Turnaround Requested:

_____ 1 Day

_____ 2 Day

_____ 3 Day

__X__ Standard

Laboratory No. 09-357

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Suspended Solids (SM 2540D)	Turbidity (EPA 181.1)	Hardness (EPA 200.7 / SM 2340B)	Dissolved Organ Carbon (SM 5310B) *	Fecal Coliform (SM 9222D)	Total Phosphorus (EPA 365.1)	Total Nitrogen (SM 4500 N-B)	Total Cu and Zn (EPA 200.8)	Dissolved Cu and Zn (EPA 200.8) *	
1	COUMO-20210930	9/30/21	1245	Water	7	X	X	X	X	X	X	X	X	X	
2	COUMI-20210930	↑	1315	Water	7	X	X	X	X	X	X	X	X	X	
3	TOSMO-20210930		1335	Water	7	X	X	X	X	X	X	X	X	X	
4	TYLMO-20210930		1405	Water	7	X	X	X	X	X	X	X	X	X	
5	TYLMI-20210930		1425	Water	7	X	X	X	X	X	X	X	X	X	
6	MONMN-20210930		1455	Water	7	X	X	X	X	X	X	X	X	X	
7	MONMS-20210930		1520	Water	7	X	X	X	X	X	X	X	X	X	
8	MONM-20210930		1530	Water	7	X	X	X	X	X	X	X	X	X	
9	TOSMI-20210930		1360	Water	7	X	X	X	X	X	X	X	X	X	
10	EVAMS-20210930		1325	Water	7	X	X	X	X	X	X	X	X	X	
11	EVALSS-20210930		1340	Water	7	X	X	X	X	X	X	X	X	X	
12	SEIMN-20210930		1420	Water	7	X	X	X	X	X	X	X	X	X	
13	COLM-20210930		1500	Water	7	X	X	X	X	X	X	X	X	X	
14	SEIMS-20210930		1545	Water	7	X	X	X	X	X	X	X	X	X	
15	QA 108 · 20210930	↓	1540	Water	7	X	X	X	X	X	X	X	X	X	
16	QA109 · 20210930	9/30/21	12:00	Water	2				X					X	

Relinquished by Gretchen Kayser Date 9/30/21 Received by _____ Date 9/30/21

Firm Herrera Env. Con. Time 1637 Firm QSE Time 1637

Relinquished by _____ Date _____ Received by _____ Date _____

Firm _____ Time _____ Firm _____ Time _____

Comments:
* - field filtered with 0.45 µm filter within 15 minutes of collecting sample

METER CALIBRATION LOG - Redmond Paired Watershed Study

Project Number:	14-05806-000
Personnel Performing Calibration:	GK + SP
Meter:	YSI ProDSS #1
Date/Time:	9/30/21 11:15
Barometric Pressure Start of Day:	mmHg: 767.8 Time: 1130
Barometric Pressure End of Day:	mmHg: Time:

PRE Field Run CALIBRATION	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	5.8	0	23.4	5.9 cal'd at cal.
Conductivity (µS/cm)	888	1,000	22.7	
Conductivity (µS/cm)	95.1	100	22.8	
DO % Saturation	~~102.4~~ 107.6	100	22.3	cal to 5 101.2

POST Field Run CHECK	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	1.5	0	22.1	
Conductivity (µS/cm)	104.5	100	22.5	
DO % Saturation	99.4	100	21.9	

Calibration Procedures:

Rinse Multimeter Sonde Between Each Operation

Rinse 3 times with tap water, 3 times with deionized water, then 3 times with the solution to be used for calibrating or testing.

Conductivity Calibration Notes:

1. Dry the conductivity probe with a lab tissue (e.g., KimWipes®) and DI water.
2. Fill calibration cup to within a centimeter of the top of the calibration cup with DI water (0 µS).
3. Fill the calibration cup with 1,000 µS standard so that the temperature/conductivity probe is submerged.
4. Make sure there are no bubbles in the cell; wait 2 minutes.
5. Enter the appropriate standard value (1,000 µS/cm or 1.0 mS/cm) for Sp Cond.
6. Check conductivity using 100 µS/cm standard.

Dissolved Oxygen Calibration Notes:

1. Fill the calibration cup with about 1/2 inch of DI; it should be below the sensor cap.
2. Use KimWipes® to dry any droplets from the sensor cap.
3. Invert calibration cup's cap and gently rest it on the cup.
4. Wait 5 minutes, making sure that temperature stabilizes.
5. Determine local barometric pressure (mm Hg) and enter this value into the meter.
6. Click "Calibrate". "Calibrate Successful" will be displayed.
7. To retain calibration accuracy between measurements, store with the sensor immersed in water or within a water-saturated air environment such as a sealed storage cup with at least 10 ml of water.
8. It is important to have the water-saturated air and the sensor at the same temperature. Therefore, store a jar of DI in the same environment as the sonde and calibrate in a similar air temperature as the water and sonde.
9. Keep probe out of direct sun or wind.

METER CALIBRATION LOG - Redmond Paired Watershed Study

Project Number:	14-05806-000
Personnel Performing Calibration:	GK + SP
Meter:	YSI Pro DSS #2
Date/Time:	9/30/21 11:15
Barometric Pressure Start of Day:	mmHg: 768.0 Time: 1630
Barometric Pressure End of Day:	mmHg: Time:

PRE Field Run CALIBRATION	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	18.4	0	22.7	18.6 carbon + cal
Conductivity (µS/cm)	923	1,000	23.4	
Conductivity (µS/cm)	101.2	100	23.1	
DO % Saturation	102.4	100	22.9	cal. to: 101.0

POST Field Run CHECK	Meter Reading	Buffer / Cal Std	Temp °C	Comments
Conductivity (µS/cm)	1.0	0	22.9	
Conductivity (µS/cm)	102.5	100	23.3	
DO % Saturation	100	100	22.8	

Calibration Procedures:

Rinse Multimeter Sonde Between Each Operation

Rinse 3 times with tap water, 3 times with deionized water, then 3 times with the solution to be used for calibrating or testing.

Conductivity Calibration Notes:

1. Dry the conductivity probe with a lab tissue (e.g., KimWipes®) and DI water.
2. Fill calibration cup to within a centimeter of the top of the calibration cup with DI water (0 µS).
3. Fill the calibration cup with 1,000 µS standard so that the temperature/conductivity probe is submerged.
4. Make sure there are no bubbles in the cell; wait 2 minutes.
5. Enter the appropriate standard value (1,000 µS/cm or 1.0 mS/cm) for Sp Cond.
6. Check conductivity using 100 µS/cm standard.

Dissolved Oxygen Calibration Notes:

1. Fill the calibration cup with about 1/2 inch of DI; it should be below the sensor cap.
2. Use KimWipes® to dry any droplets from the sensor cap.
3. Invert calibration cup's cap and gently rest it on the cup.
4. Wait 5 minutes, making sure that temperature stabilizes.
5. Determine local barometric pressure (mm Hg) and enter this value into the meter.
6. Click "Calibrate". "Calibrate Successful" will be displayed.
7. To retain calibration accuracy between measurements, store with the sensor immersed in water or within a water-saturated air environment such as a sealed storage cup with at least 10 ml of water.
8. It is important to have the water-saturated air and the sensor at the same temperature. Therefore, store a jar of DI in the same environment as the sonde and calibrate in a similar air temperature as the water and sonde.
9. Keep probe out of direct sun or wind.

HERRERA

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: Thia F, Allison N

Sample Date: 09/30/21 **Sample Time:** 15:20 PDT: PST:

Base Flow or Storm Event? (5)

Field filtered 5 minutes later: Y (N)
(Must filter within 15 minutes of collection)

SITE ID: MONMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 60° no rain

Water Quality Sampling

Sample ID: MONMS

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Clear

Color:

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft):

Reference Point (description): A

Water Quality Measurments

Temperature (°C) 13.4

Specific Conductivity (µs/cm) 199.1

Dissolved Oxygen (mg/L) 7.41

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: Mea F, Allison N

Sample Date: 09/30/21 **Sample Time:** 15:45 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: SIEMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 60 no rain

Water Quality Sampling

Sample ID: SIEMS

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity:
Color: Clean
Odor:
Sheen:
Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

~~YSI Pro DSS 1~~

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.85

Reference Point (description): staff gauge

Water Quality Measurments

Temperature (°C) 11.5

Specific Conductivity (µs/cm) 113.0

Dissolved Oxygen (mg/L) 10.02

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: Thea Foulk, Allison Nichols

Sample Date: 09/30/21 **Sample Time:** 13:15 PDT: PST:

Base Flow or Storm Event? (Storm)

Field filtered 5 minutes later: Y (N)
(Must filter within 15 minutes of collection)

SITE ID: COUMI

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

HERRERA

Current Weather and Temp: 60° rain

Water Quality Sampling

Sample ID:

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Clear

Color:

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.9

Reference Point (description): staff gauge

Water Quality Measurments

Temperature (°C) 13.4

Specific Conductivity (µs/cm) 154.4

Dissolved Oxygen (mg/L) 10.32

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: Thea Poulk, Allison McNicol

Sample Date: **Sample Time:** 12:45 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later:** Y (N)
(Must filter within 15 minutes of collection)

SITE ID: COUMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 60° rain

Water Quality Sampling

Sample ID: COUMO 20210930

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: clear

Color: clear

Odor: clean

Sheen: clean

Floatables: clean

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 1.48

Reference Point (description): staff gauge

Water Quality Measurments

Temperature (°C) 14.9

Specific Conductivity (µs/cm) 102.5

Dissolved Oxygen (mg/L) 9.66

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: Mia Rourke, Allison N

Sample Date: 04/30/21 **Sample Time:** 13:35 PDT: / PST:

Base Flow or Storm Event? **Field filtered 5 minutes later:** Y N
(Must filter within 15 minutes of collection)

SITE ID: TOSMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 60° rain

Water Quality Sampling

Sample ID: TOSMO

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: clear

Color:

Odor:

Sheen: ↓

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.7

Reference Point (description): staff gauge

Water Quality Measurments

Temperature (°C) 13.2

Specific Conductivity (µs/cm) 132.9

Dissolved Oxygen (mg/L) 10.48

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: Allison N, Thea F

Sample Date: 09/30/21 **Sample Time:** 14:05 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: TYLMO

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 60° rain

Water Quality Sampling

Sample ID: TYLMO

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Clear

Color:

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.8

Reference Point (description): top of culvert

Water Quality Measurments

Temperature (°C) 14.1

Specific Conductivity (µs/cm) 71.1

Dissolved Oxygen (mg/L) 10.03

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: Thea Foulk, Allison N

Sample Date: 09/30/21 **Sample Time:** 14:25 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: TYLMI

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 60° rain

Water Quality Sampling

Sample ID: TYLMI

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: Urn

Color:

Odor:

Sheen:

Floatables: Trash

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

- YSI Pro Plus (15D100020)
- YSI Pro DSS 1
- YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 4.45

Reference Point (description): top of culvert

Water Quality Measurments

Temperature (°C) 14.0

Specific Conductivity (µs/cm) 130.4

Dissolved Oxygen (mg/L) 9.55

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: Dave F., Allison N

Sample Date: 09/30/21 **Sample Time:** 14:55 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later: Y N
(Must filter within 15 minutes of collection)

SITE ID: MONMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: 60° + light rain

Water Quality Sampling

Sample ID: MONMN

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: ~~Clear~~ clean

Color:

Odor:

Sheen:

Floatables:

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 9.82

Reference Point (description): staff gauge

Water Quality Measurments

Temperature (°C) 13.0

Specific Conductivity (µs/cm) 191.2

Dissolved Oxygen (mg/L) 9.84

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + SP

Sample Date: 9/30/21 **Sample Time:** ~~1130~~ 1530 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later?** Y N
(Must filter within 15 minutes of collection)

SITE ID: MONM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Clear + 57°

Water Quality Sampling

Sample ID: MONM20210930

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	Yes
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID: QA108 - 20210930

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: turbid

Color: brown

Odor: NA

Sheen: NA

Floatables: lots

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft):

Reference Point (description):

Water Quality Measurments

Temperature (°C) 14.1

Specific Conductivity (µs/cm) 178.3

Dissolved Oxygen (mg/L) 10.32

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GL + SP

Sample Date: 9/30/21 **Sample Time:** 1500 PDT:

Base Flow or Storm Event? PST:

Field filtered 5 minutes later: Y / N

(Must filter within 15 minutes of collection)

SITE ID: COLM

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: SS + mostly

Water Quality Sampling

Sample ID: COLM20210930

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: fairly clear

Color: light tan

Odor: N/A

Sheen: N/A

Floatables: N/A

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

~~YSI Pro DSS 1~~

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 5.37

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 12.7

Specific Conductivity (µs/cm) 63.9

Dissolved Oxygen (mg/L) 7.62

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + SP

Sample Date: 9/30/21 **Sample Time:** 1420 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later:** (Y) N
(Must filter within 15 minutes of collection)

SITE ID: SEIMN

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

HERRERA

Current Weather and Temp: Rainy + 57°

Water Quality Sampling

Sample ID: SEIMN20210930

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: turbid

Color: light brown

Odor: N/A

Sheen: N/A

Floatables: None

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 10 inches

Reference Point (description): measure down from top of bolt

Water Quality Measurments

Temperature (°C) 11.9

Specific Conductivity (µs/cm) 98.3

Dissolved Oxygen (mg/L) 10.65

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + SP

Sample Date: 9/30/21 **Sample Time:** 1340 PDT: PST:

Base Flow or Storm Event?

Field filtered 5 minutes later? Y N
(Must filter within 15 minutes of collection)

SITE ID: EVALSS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

HERRERA

Current Weather and Temp:

Water Quality Sampling

Sample ID: EVALSS 20210930

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: little turbid

Color: brown

Odor: N/A

Sheen: N/A

Floatables: some

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 2.37

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 12.8

Specific Conductivity (µs/cm) 192.3

Dissolved Oxygen (mg/L) 10.68

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + SP

Sample Date: 9/30/2021 **Sample Time:** 1325 PDT: PST:

Base Flow or (Storm Event) **Field filtered 5 minutes later: (Y) N**
(Must filter within 15 minutes of collection)

SITE ID: EVAMS

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

HERRERA

Current Weather and Temp: Rainy + 57°

Water Quality Sampling

Sample ID: EVAMS20210930

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: turbid

Color: brown

Odor: N/A

Sheen: N/A

Floatables: some

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

(YSI Pro DSS 2)

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 1.80

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 12.7

Specific Conductivity (µs/cm) 201.2

Dissolved Oxygen (mg/L) 10.32

FIELD SAMPLING SHEET - Redmond Paired Watershed Study

Field Personnel: GK + SP

Sample Date: 9/30/21 **Sample Time:** 13:00 PDT: PST:

Base Flow or Storm Event? **Field filtered 5 minutes later:** Y N
(Must filter within 15 minutes of collection)

SITE ID: TOSM1

Project Number: 14-05806-000

Project Name: Redmond Paired Watershed Study

Current Weather and Temp: Rainy 60°

Water Quality Sampling

Sample ID: TOSM120210930

Parameter	Bottle Type	Bottle Volume	# Bottles	Preservative	Duplicated?
TSS and Turbidity	HDPE	1L	1	NA	
DOC *	HDPE	250 ml	1	HCL	
Fecal Col. Bact.	HDPE	250 ml	1	EDTA	
T. Phosphorous	HDPE	250 ml	1	H_2SO_4	
T. Nitrogen	HDPE	250 ml	1	H_2SO_4	
Diss. Cu and Zn *	HDPE	250 ml	1	HNO3	
Hardness, Total Cu and Zn	HDPE	500 ml	1	HNO_3	

* - field filtered with Nalgene 250 ml SFCA 0.45 µm filter and vacuum hand pump

Duplicate sample ID:

Filter blank sample ID:

Transfer blank sample ID:

Visual and Olfactory Conditions:

Clarity: turbid

Color: brownish gray

Odor: NA

Sheen: NA

Floatables: some

LABORATORY DELIVERY

Date: **Time:**

Quality Assurance

Checked By: **Signature:**

Date Checked: **Time:**

Data Entered into Database? YES NO **initials:**

Date Entered: **Time:**

Notes:

Field Meter Calibration

Check which field meter was used and complete the meter calibration form

YSI Pro Plus (15D100020)

YSI Pro DSS 1

YSI Pro DSS 2

Stream Stage Measurement

Indicate reference point for measurement (to nearest 100th of a foot)

Stream Stage (ft): 0.94

Reference Point (description): SG

Water Quality Measurments

Temperature (°C) 15.4

Specific Conductivity (µs/cm) 83.7

Dissolved Oxygen (mg/L) 9.94

CHAIN OF CUSTODY

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants
Project No.: 14-05806-000
Project Name: Redmond Paired Watershed Study
Project Manager: George Iftner

Turnaround Requested:

_____ 1 Day
_____ 2 Day
_____ 3 Day
__X__ Standard

Laboratory No. 09+357

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Suspended Solids (SM 2540D)	Turbidity (EPA 181.1)	Hardness (EPA 200.7 / SM 2340B)	Dissolved Organ Carbon (SM 5310B) *	Fecal Coliform (SM 9222D)	Total Phosphorus (EPA 365.1)	Total Nitrogen (SM 4500 N-B)	Total Cu and Zn (EPA 200.8)	Dissolved Cu and Zn (EPA 200.8) *	
1	COUMO-20210930	9/30/21	1245	Water	7	X	X	X	X	X	X	X	X	X	
2	COUMI-20210930	↑	1315	Water	7	X	X	X	X	X	X	X	X	X	
3	TOSMO-20210930		1335	Water	7	X	X	X	X	X	X	X	X	X	
4	TYLMO-20210930		1405	Water	7	X	X	X	X	X	X	X	X	X	
5	TYLMI-20210930		1425	Water	7	X	X	X	X	X	X	X	X	X	
6	MONMN-20210930		1455	Water	7	X	X	X	X	X	X	X	X	X	
7	MONMS-20210930		1520	Water	7	X	X	X	X	X	X	X	X	X	
8	MONM-20210930		1530	Water	7	X	X	X	X	X	X	X	X	X	
9	TOSMI-20210930		1360	Water	7	X	X	X	X	X	X	X	X	X	
10	EVAMS-20210930		1325	Water	7	X	X	X	X	X	X	X	X	X	
11	EVALSS-20210930		1340	Water	7	X	X	X	X	X	X	X	X	X	
12	SEIMN-20210930		1420	Water	7	X	X	X	X	X	X	X	X	X	
13	COLM-20210930		1500	Water	7	X	X	X	X	X	X	X	X	X	
14	SEIMS-20210930		1595	Water	7	X	X	X	X	X	X	X	X	X	
15	QA 108 · 20210930	↓	1540	Water	7	X	X	X	X	X	X	X	X	X	
16	QA109 · 20210930	9/30/21	12:00	Water	2				X					X	

Relinquished by Gretchen Kayser Date 9/30/21 Received by _____ Date 9/30/21
Firm Herrera Env. Con. Time 1637 Firm ORSL Time 1637
Relinquished by _____ Date _____ Received by _____ Date _____
Firm _____ Time _____ Firm _____ Time _____

Comments:
* - field filtered with 0.45 µm filter within 15 minutes of collecting sample

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Data Quality Assurance Worksheet

By J. Lenth

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 10/29/21 Page 1 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 9/30/21 /All locations, QA107 (COUMI) Lab Ref No 2107-068

date 11/29/2021

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
TSS	OK / SM 2540D	NA	**NA**	7	**≤7**	≤1.0 mg/L 1.0 mg/L	NA	**NA**	84	**±20**	7	**≤ 25**	D=1.6	**≤ 25**	OK	NONE
Turbidity	OK / EPA 180.1	NA	**NA**	1	**≤2**	≤0.1 NTU 0.1 NTU	NA	**NA**	NA	**±10**	1	**≤ 25**	5	**≤ 25**	OK	NONE
Hardness	OK / SM 2340B	NA	**NA**	7	**≤180**	≤1.0 mg/L 1.0 mg/L	99, 100	**±25**	101	**±15**	0, MS 1	**≤ 20**	18	**≤ 20**	OK	NONE
DOC	OK / SM 5310B	≤15	**≤15**	11, 20	**≤28**	≤1.0 mg/L 1.0 mg/L	98, 96	**±25**	107, 101	**±15**	D=0.01-0.09	**≤ 20**	D=0.1	**≤ 20**	OK	NONE
Total Phosphorus	OK / EPA 365.1	NA	**NA**	4	**≤28**	≤0.01 mg/L 0.01 mg/L	91	**±25**	88	**±20**	4	**≤ 20**	38	**≤ 20**	OK	FLAG COUMI J DUE TO FIELD DUPE EXCEEDANCE
Total Nitrogen (TKN + N+N)	OK/ SM 4500 N-B	NA	**NA**	7, 8	**≤28**	≤0.1 mg/L 0.1 mg/L	94-106	**±25**	93-101	**±20**	NC, 0-17 D=0.01-0.1	**≤ 20**	0, D=0.1	**≤ 20**	OK	NONE

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

Data Quality Assurance Worksheet

By J. Lenth

Project Name/No./Client: Redmond Paired Watershed Study / 14-05806-000 / City of Redmond

Date 10/29/21 Page 2 of 2

Laboratory/Parameters: OnSite Environmental: TSS, turbidity, hardness, DOC, TP, Dissolved & Total Cu, Zn / AmTest: Total nitrogen, fecal coliform bacteria

Checked: initials JL

Sample Date/Sample ID: 9/30/21 /All locations, QA107 (COUMI) Lab Ref No 2107-068

date 11/29/2021

Parameter	Completeness/ Methodology	Pre-preservation Holding Times (minutes)		Total Holding Times (days)		Method Blanks Reporting Limit	Matrix Spikes/ Surrogate Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal	Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal[1]	Reported	Goal[1]		
Total Copper	OK/ EPA 200.8	NA	**NA**	7	**≤180**	≤1.0 µg/L 1.0 µg/L	102, 102	**±25**	NR	**±15**	NC, MS 1	**≤ 20**	D=0	**≤ 20**	OK	NONE
Total Zinc	OK/ EPA 200.8	NA	**NA**	7	**≤180**	≤5.0 µg/L 5.0 µg/L	108, 109	**±25**	NR	**±15**	NC, MS 1	**≤ 20**	D=1	**≤ 20**	OK	NONE
Dissolved Copper	OK/ EPA 200.8	≤15	**≤15**	11	**≤180**	≤1.0 µg/L 1.0 µg/L	100, 100	**±25**	NR	**±15**	NC, MS 0	**≤ 20**	NC	**≤ 20**	OK	NONE
Dissolved Zinc	OK/ EPA 200.8	≤15	**≤15**	11	**≤180**	≤5.0 µg/L 5.0 µg/L	104, 102	**±25**	NR	**±15**	NC, MS 2	**≤ 20**	NC	**≤ 20**	OK	NONE
Fecal Coliform	OK / SM 9222D	NA	**NA**	1	**≤1**	≤1.0 cfu/ 100mL 10 cfu/ 100mL	NA	**NA**	NA	**NA**	4, 17	**≤ 35**	8	**≤ 50**	OK	NONE

[1] If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

NA – not applicable or not available; NC – not calculable due to one or more values below the detection limit; NS – field duplicate not sampled; NR – not reported

APPENDIX H

Data Validation Memorandum for Water Quality Monitoring

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Herrera Environmental Consultants, Inc.

Internal Memorandum

Date: March 31, 2022

To: Project File 14-05806-019

Copy To:

From: Gina Catarra

Subject: Data Quality Assurance Review of the Redmond Paired Watershed Stormwater Retrofit Effectiveness Water Quality Monitoring Data

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This memorandum presents a review of data quality for 212 water samples (including 14 field duplicates, 1 filter blank, and 1 transfer blank) collected for the Redmond Paired Watershed Stormwater Retrofit Effectiveness Study between October 7, 2020, and September 30, 2021. OnSite Environmental, Inc., of Redmond, Washington, analyzed the samples for:

- Total suspended solids (TSS) by Standard Method 2540D
- Turbidity by EPA Method 180.1
- Hardness by Standard Method 2340B
- Dissolved organic carbon (DOC) by Standard Method 5310B
- Total phosphorus by EPA Method 365.1
- Total and dissolved metals (copper and zinc) by EPA Method 200.8.

In addition, AmTest Inc., of Kirkland, Washington, analyzed the samples for:

- Total nitrogen (total Kjeldahl nitrogen [TKN] and nitrate + nitrite nitrogen) by Standard Method 4500-N and 4500-NO3, respectively
- Fecal coliform by Standard Method 9222D.

Results for the following samples were validated.

Date Collected	Lab SDG	Samples Collected	QC Samples Collected
10/07/20	2010-075	All 14 stations	1 field duplicate
10/13/20	2010-144	All 14 stations	1 field duplicate
11/03/20	2011-021	All 14 stations	1 field duplicate
12/08/20	2012-089	All 14 stations	1 field duplicate
12/21/20	2012-220	All 14 stations	1 field duplicate
1/05/21	2101-026	All 14 stations	1 field duplicate
1/22/21	2101-208	All 14 stations	1 field duplicate
3/18/21	2103-226	All 14 stations	1 field duplicate
3/24/21	2103-303	All 14 stations	1 field duplicate
4/22/21	2104-215	All 14 stations	1 field duplicate
5/27/21	2105-266	All 14 stations	1 field duplicate
6/13/21	2106-114	All 14 stations	1 field duplicate
7/08/21	2107-068	All 14 stations	1 field duplicate, 1 transfer blank, and 1 filter blank
9/30/21	2109-357	All 14 stations	1 field duplicate

The laboratory's performance was reviewed in accordance with quality control (QC) criteria established in the *Redmond Paired Watershed Study Quality Assurance Project Plan* (QAPP) (Herrera 2015), by the laboratory, and in the specified methods.

Quality control data summaries submitted by the laboratory were reviewed; raw data were not submitted by the laboratory. Data Quality Assurance Worksheets were completed for each laboratory report and are included as an Attachment to this memorandum. Data qualifiers (flags) were added to the sample results in the laboratory reports. Data validation results are summarized below, followed by definitions of data qualifiers.

Custody, Preservation, Holding Times, and Completeness—Acceptable with Qualification

The samples were properly preserved and sample custody was maintained from sample collection to receipt at the laboratory. Samples were analyzed within the required method holding times, with the exception noted below. The laboratory reports were complete and contained results for all samples and tests requested on the chain-of-custody (COC) forms.

The filtration holding time (15 minutes) was exceeded by less than 1 day for all samples collected on May 27 and June 13, 2021, for dissolved metals and DOC. Samples were not filtered at the time of collection and were qualified as estimated (flagged J) due to the filtration holding time exceedance, as shown in the table below.

Date Collected	Lab SDG	Sample Location	Parameter	Reason for Qualification	Flag
5/27/21	2105-266	All locations	Dissolved Organic Carbon Dissolved copper Dissolved zinc	Filtration holding time exceeded	J
6/13/21	2106-114	All locations	Dissolved Organic Carbon Dissolved copper Dissolved zinc	Filtration holding time exceeded	J

Laboratory Reporting Limits—Acceptable

The laboratory reporting limits met those established in the QAPP. No data were qualified based on laboratory reporting limits.

Method Blank Analysis—Acceptable

Method blanks were analyzed at the required frequency. Method blanks did not contain levels of target analytes above the laboratory reporting limits.

Filter Blank Analysis—Acceptable

A filter blank was collected on July 8, 2021, and analyzed for DOC and dissolved copper and zinc, as required by the QAPP. The filter blanks did not contain levels of target analytes above the laboratory reporting limits.

Transfer Blank Analysis—Acceptable with Discussion

A transfer blank was collected on July 8, 2021, and analyzed for all parameters, as required by the QAPP. With the exception noted below, the transfer blank did not contain levels of target analytes above the laboratory reporting limits.

The transfer blank had a reported result for TKN (0.374 mg/L) that exceeded the 0.20 reporting limit. However, because the reported result was less than 2X the reporting limit, no data were qualified.

Laboratory Control Sample Analysis—Acceptable

Laboratory control samples (LCS) were analyzed with project samples for TSS, hardness, DOC, total phosphorus, and total nitrogen at the required frequency. The percent recovery values for all parameters met the criteria established in the QAPP.

Matrix Spike Analysis—Acceptable

Matrix spike samples were analyzed for hardness, DOC, total phosphorus, total nitrogen, total copper and zinc, and dissolved copper and zinc. The percent recovery values for all parameters met the control limits established in the QAPP.

Laboratory Duplicate Analysis—Acceptable with Discussion

Laboratory duplicate samples were analyzed for all parameters. For project samples, the relative percent difference (RPD) was calculated for each analyte where both duplicate values were greater than five times the reporting limit (RL). The difference between duplicate values was calculated if the detected compound concentration was less than five times the RL in either the sample or the duplicate. The RPD values or difference values met the control limits established by the laboratory or specified method, with the exceptions noted below.

A laboratory duplicate was analyzed for sample MONM collected on January 22, 2021, for fecal coliform. The RPD between the sample and laboratory duplicate (68 percent) exceeded the less than 35 percent criterion. However, no data were qualified because the sample and duplicate results were low (16 and 8 CFU/100 mL), and the other laboratory duplicate analysis for fecal coliform met the less than 35 percent criterion.

A laboratory duplicate was analyzed for sample COLM collected on March 18, 2021, for fecal coliform. The RPD between the sample and laboratory duplicate (55 percent) exceeded the less than 35 percent criterion. However, no data were qualified because the sample and duplicate results were low (7 and 4 CFU/100 mL), and the other laboratory duplicate analysis for fecal coliform met the less than 35 percent criterion.

A laboratory duplicate was analyzed for sample EVAMS collected on March 24, 2021, for fecal coliform. The RPD between the sample and laboratory duplicate (44 percent) exceeded the less than 35 percent criterion. However, no data were qualified because the sample and duplicate results were low (11 and 7 CFU/100 mL), and the other laboratory duplicate analysis for fecal coliform met the less than 35 percent criterion.

Field Duplicate Analysis—Acceptable with Qualification

Field duplicates were analyzed for all parameters at the required frequency (16 field duplicates analyzed in total). The RPD was calculated for each analyte where both the values were greater than five times the RL. The difference between the duplicate values was calculated if the detected compound concentration was less than five times the RL in either the sample or the field duplicate. With the exceptions noted below, the RPD values or difference values met the control limits established in the QAPP.

As shown in the table below, several field duplicate values did not meet the criteria established in the QAPP. The sample and associated duplicate were qualified as estimated (flagged J) due to the field duplicate exceedance.

Date Collected	Lab SDG	Sample Location	Duplicate ID	Parameter	Reason for Qualification	Flag
10/07/20	2010-075	EVAMS	QA93	Turbidity fecal coliform	Field duplicate exceedance	J
10/13/20	2010-144	TOSMI	QA94	Fecal coliform	Field duplicate exceedance	J
11/03/20	2011-021	COLM	QA95	Fecal coliform	Field duplicate exceedance	J
12/08/20	2012-089	MONMN	QA96	Fecal coliform	Field duplicate exceedance	J
12/21/20	2012-220	MONMS	QA97	Total phosphorus	Field duplicate exceedance	J
1/05/21	2101-026	TOSMO	QA98	Fecal coliform	Field duplicate exceedance	J
4/22/21	2104-215	COUMO	QA102	TSS Total phosphorus Fecal coliform	Field duplicate exceedance	J
6/13/21	2106-114	SEIMS	QA104	Fecal coliform	Field duplicate exceedance	J
7/08/21	2107-068	COUMI	QA107	Total phosphorus	Field duplicate exceedance	J
9/30/21	2109-357	MONM	QA108	TKN	Field duplicate exceedance	J

The field duplicate collected on October 7, 2020, at station EVAMS (QA93) had RPD values for TSS (30 percent) and total nitrogen (21 percent) that exceeded the less than 20 percent criterion. However, no data were qualified because the exceedances were marginal (less than 5 percent) and all other criteria were met for TSS and total nitrogen.

Definition of Data Qualifiers

The following are data qualifier definitions applied for this project.

Data Qualifier	Definition
J	Value is an estimate based on analytical results
R	Value is rejected based on analytical results
U	Value is below the reporting limit
UJ	Value is below the reporting limit and is an estimate based on analytical results

References

Herrera. 2015. Redmond Paired Watershed Study Quality Assurance Project Plan. Prepared by Herrera Environmental Consultants, Inc., Seattle, Washington. December 31.

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APPENDIX I

Summary Statistics for Pollutant Concentrations Measured in Storm Event and Base Flow Samples

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Table I-1. Summary Statistics for Dissolved Oxygen Concentrations Measured in Storm Event and Base Flow Samples.

Station	n	Mininum (mg/L)	25th Percentile (mg/L)	Median (mg/L)	75th Percentile (mg/L)	Maximum (mg/L)	Interquartile Range (mg/L)	Percent Detected	Percent Violating Criteria[a]
Base Flow Samples									
EVALSS	4	9.9	10.2	11.0	12.0	12.4	1.8	100%	25%
EVAMS	4	9.7	9.9	10.7	11.5	11.8	1.6	100%	25%
MONM	4	9.6	9.8	10.6	11.7	12.1	1.9	100%	50%
MONMN	4	8.6	9.1	10.0	11.3	12.2	2.3	100%	50%
MONMS	4	6.1	6.7	7.9	9.4	10.5	2.8	100%	75%
TOSMO	4	10.6	10.7	11.1	11.9	12.5	1.3	100%	0%
TOSMI	4	9.4	9.7	10.7	11.7	11.8	2.0	100%	50%
COLM	4	6.7	7.1	8.7	11.0	12.0	4.0	100%	50%
SEIMN	4	9.8	10.1	11.0	11.9	12.4	1.8	100%	25%
SEIMS	4	10.3	10.3	10.6	11.6	12.3	1.2	100%	0%
COUMO	4	10.0	10.0	10.4	11.5	12.1	1.5	100%	50%
COUMI	4	10.3	10.4	10.8	11.8	12.4	1.3	100%	0%
TYLMO	4	10.3	10.5	11.1	12.0	12.5	1.5	100%	0%
TYLMI	4	9.6	9.6	10.2	11.4	11.9	1.7	100%	50%
Storm Event Samples									
EVALSS	10	10.1	10.7	11.4	11.8	12.3	1.2	100%	0%
EVAMS	10	9.8	10.2	11.0	11.3	11.8	1.1	100%	10%
MONM	10	9.8	10.3	11.7	12.0	12.3	1.6	100%	10%
MONMN	10	9.1	10.2	10.8	11.4	11.6	1.2	100%	20%
MONMS	10	6.8	7.6	9.1	9.8	10.1	2.2	100%	80%
TOSMO	10	9.9	10.8	11.0	11.5	12.0	0.7	100%	10%
TOSMI	10	9.7	10.0	11.1	11.5	11.9	1.5	100%	30%
COLM	10	7.6	9.4	10.8	11.3	11.9	1.9	100%	40%
SEIMN	10	9.9	10.7	11.4	12.0	12.3	1.3	100%	10%
SEIMS	10	10.0	10.1	10.6	11.0	11.8	0.9	100%	0%
COUMO	10	9.4	10.5	10.6	11.3	11.6	0.8	100%	20%
COUMI	10	10.1	10.8	11.1	11.6	11.9	0.8	100%	0%
TYLMO	10	9.4	10.4	10.9	11.3	11.8	1.0	100%	10%
TYLMI	10	9.4	10.0	10.7	11.1	11.5	1.1	100%	20%

mg/L: milligrams per liter

All summary statistics were calculated using values of half the reporting limit for non-detect values.

Table I-2. Summary Statistics for Specific Conductivity Measured in Storm Event and Base Flow Samples.

Station	n	Mininum (µS/cm)	25th Percentile (µS/cm)	Median (µS/cm)	75th Percentile (µS/cm)	Maximum (µS/cm)	Interquartile Range (µS/cm)	Percent Detected	Percent Violating Criteria[a]
Base Flow Samples									
EVALSS	4	175.7	186.5	197.7	198.1	198.1	11.6	100%	NA
EVAMS	4	184.5	197.8	211.6	218.0	223.9	20.3	100%	NA
MONM	4	189.9	209.3	234.5	242.4	244.5	33.1	100%	NA
MONMN	4	154.1	200.2	247.4	268.5	288.5	68.4	100%	NA
MONMS	4	247.7	302.2	359.3	394.1	426.2	91.9	100%	NA
TOSMO	4	244.0	255.5	267.4	314.8	361.8	59.3	100%	NA
TOSMI	4	255.4	272.3	291.3	298.2	303.0	25.9	100%	NA
COLM	4	30.0	33.5	38.1	48.3	57.3	14.8	100%	NA
SEIMN	4	54.1	67.4	94.1	109.8	112.1	42.4	100%	NA
SEIMS	4	99.3	112.7	126.4	140.0	153.3	27.3	100%	NA
COUMO	4	244.8	260.9	294.6	362.5	412.7	101.6	100%	NA
COUMI	4	273.8	289.1	322.7	394.9	448.7	105.8	100%	NA
TYLMO	4	170.7	196.8	223.4	257.0	290.1	60.2	100%	NA
TYLMI	4	167.9	201.0	243.9	296.8	339.8	95.8	100%	NA
Storm Event Samples									
EVALSS	10	121.6	149.8	162.3	192.3	363.9	42.5	100%	NA
EVAMS	10	133.5	155.8	169.6	201.2	378.6	45.4	100%	NA
MONM	10	83.0	110.7	146.3	203.1	240.0	92.4	100%	NA
MONMN	10	46.6	94.3	116.4	185.8	203.6	91.5	100%	NA
MONMS	10	129.5	148.3	186.7	241.4	282.2	93.1	100%	NA
TOSMO	10	71.0	88.2	112.6	136.6	245.5	48.4	100%	NA
TOSMI	10	37.5	61.9	88.8	94.7	131.2	32.8	100%	NA
COLM	10	27.3	38.0	39.9	44.1	87.8	6.1	100%	NA
SEIMN	10	40.1	52.3	65.7	95.1	140.0	42.8	100%	NA
SEIMS	10	49.1	72.6	95.9	110.9	116.7	38.3	100%	NA
COUMO	10	52.2	68.3	101.2	138.0	205.5	69.7	100%	NA
COUMI	10	103.3	110.3	143.9	208.0	279.7	97.7	100%	NA
TYLMO	10	48.2	49.9	64.5	86.8	151.8	36.9	100%	NA
TYLMI	10	84.5	87.9	107.3	142.5	217.6	54.6	100%	NA

µS/cm: microsiemens per centimeter

All summary statistics were calculated using values of half the reporting limit for non-detect values.

Table I-3. Summary Statistics for Water Temperature Measured in Storm Event and Base Flow Samples.

Station	n	Mininum (deg C)	25th Percentile (deg C)	Median (deg C)	75th Percentile (deg C)	Maximum (deg C)	Interquartile Range (deg C)	Percent Detected	Percent Violating Criteria[a]
Base Flow Samples									
EVALSS	4	6.3	8.5	11.5	13.1	13.8	4.6	100%	NA
EVAMS	4	6.5	8.5	11.4	12.9	13.6	4.4	100%	NA
MONM	4	6.9	8.9	12.0	13.8	14.6	4.9	100%	NA
MONMN	4	5.9	8.4	11.9	13.7	14.5	5.3	100%	NA
MONMS	4	6.3	8.7	12.0	13.7	14.4	5.0	100%	NA
TOSMO	4	6.1	8.2	11.0	12.3	12.8	4.1	100%	NA
TOSMI	4	7.1	8.6	11.8	14.1	14.7	5.5	100%	NA
COLM	4	4.9	8.1	12.3	14.1	15.0	6.0	100%	NA
SEIMN	4	5.7	7.9	11.0	12.4	12.8	4.5	100%	NA
SEIMS	4	5.4	7.9	11.0	12.1	12.6	4.2	100%	NA
COUMO	4	6.6	8.6	11.8	13.6	14.2	5.1	100%	NA
COUMI	4	6.0	8.0	11.0	12.7	13.4	4.7	100%	NA
TYLMO	4	5.9	8.2	11.3	13.0	13.8	4.9	100%	NA
TYLMI	4	6.5	8.6	12.0	14.0	14.7	5.4	100%	NA
Storm Event Samples									
EVALSS	10	6.7	8.3	9.0	11.3	12.9	3.0	100%	NA
EVAMS	10	6.7	8.3	8.9	11.4	13.1	3.1	100%	NA
MONM	10	6.7	7.7	8.6	12.9	14.4	5.2	100%	NA
MONMN	10	7.0	8.0	8.7	12.0	15.7	4.0	100%	NA
MONMS	10	7.1	8.5	9.2	11.5	15.6	3.0	100%	NA
TOSMO	10	7.6	8.8	9.6	11.3	15.7	2.5	100%	NA
TOSMI	10	3.3	8.9	9.8	11.9	17.0	3.0	100%	NA
COLM	10	5.0	7.0	7.8	12.3	14.3	5.3	100%	NA
SEIMN	10	6.1	7.0	8.4	11.2	12.0	4.2	100%	NA
SEIMS	10	6.4	7.1	8.4	10.7	12.6	3.6	100%	NA
COUMO	10	7.8	8.9	9.9	12.1	17.3	3.2	100%	NA
COUMI	10	7.2	8.2	9.6	11.2	14.8	3.0	100%	NA
TYLMO	10	7.1	8.8	9.6	11.9	16.8	3.1	100%	NA
TYLMI	10	7.0	8.3	9.2	12.2	14.7	3.9	100%	NA

deg C: degrees Celsius

All summary statistics were calculated using values of half the reporting limit for non-detect values.

Table I-4. Summary Statistics for Total Suspended Solids Concentrations Measured in Storm Event and Base Flow Samples.

Station	n	Mininum (mg/L)	25th Percentile (mg/L)	Median (mg/L)	75th Percentile (mg/L)	Maximum (mg/L)	Interquartile Range (mg/L)	Percent Detected	Percent Violating Criteria[a]
Base Flow Samples									
EVALSS	4	3.2	3.7	5.6	7.3	7.6	3.6	100%	NA
EVAMS	4	3.2	3.3	6.7	33.5	57.0	30.2	100%	NA
MONM	4	1.0	1.3	1.8	4.9	7.8	3.6	100%	NA
MONMN	4	1.8	2.6	6.4	26.7	44.0	24.1	100%	NA
MONMS	4	2.2	2.7	7.6	15.0	18.0	12.3	100%	NA
TOSMO	4	2.2	2.8	3.6	4.0	4.2	1.3	100%	NA
TOSMI	4	2.4	4.9	9.7	19.0	26.0	14.1	100%	NA
COLM	4	0.5	1.3	2.4	3.9	5.0	2.7	75%	NA
SEIMN	4	3.0	3.4	4.2	7.8	11.0	4.4	100%	NA
SEIMS	4	3.6	4.5	6.7	11.0	14.0	6.5	100%	NA
COUMO	4	2.4	3.3	5.0	6.5	7.2	3.2	100%	NA
COUMI	4	5.0	5.7	10.2	32.5	51.0	26.8	100%	NA
TYLMO	4	0.5	1.7	7.9	25.0	37.0	23.4	75%	NA
TYLMI	4	1.4	2.7	8.0	54.0	96.0	51.3	100%	NA
Storm Event Samples									
EVALSS	10	7.6	30.0	56.5	94.0	150.0	64.0	100%	NA
EVAMS	10	5.6	9.2	20.5	59.0	110.0	49.8	100%	NA
MONM	10	11.0	16.0	28.5	50.0	290.0	34.0	100%	NA
MONMN	10	3.2	14.0	23.5	120.0	370.0	106.0	100%	NA
MONMS	10	2.0	3.4	5.3	8.4	12.0	5.0	100%	NA
TOSMO	10	38.0	67.0	125.0	160.0	420.0	93.0	100%	NA
TOSMI	10	12.0	54.0	63.5	140.0	270.0	86.0	100%	NA
COLM	10	0.5	1.8	2.7	8.4	150.0	6.6	90%	NA
SEIMN	10	6.4	27.0	54.5	150.0	420.0	123.0	100%	NA
SEIMS	10	14.0	26.0	46.5	97.0	360.0	71.0	100%	NA
COUMO	10	7.4	24.0	34.5	110.0	150.0	86.0	100%	NA
COUMI	10	16.0	23.0	72.5	290.0	320.0	267.0	100%	NA
TYLMO	10	7.4	14.0	32.0	49.0	420.0	35.0	100%	NA
TYLMI	10	10.0	12.0	29.0	65.0	140.0	53.0	100%	NA

mg/L: milligrams per liter

All summary statistics were calculated using values of half the reporting limit for non-detect values.

Table I-5. Summary Statistics for Total Turbidity Concentrations Measured in Storm Event and Base Flow Samples.

Station	n	Mininum (NTU)	25th Percentile (NTU)	Median (NTU)	75th Percentile (NTU)	Maximum (NTU)	Interquartile Range (NTU)	Percent Detected	Percent Violating Criteria[a]
Base Flow Samples									
EVALSS	4	1.5	1.9	2.4	2.9	3.2	1.0	100%	NA
EVAMS	4	1.5	1.9	3.0	13.4	23.0	11.6	100%	NA
MONM	4	0.9	1.0	1.1	2.0	2.9	1.0	100%	NA
MONMN	4	1.2	1.7	3.1	7.5	11.0	5.9	100%	NA
MONMS	4	1.3	1.3	2.1	4.0	5.0	2.7	100%	NA
TOSMO	4	1.1	1.1	1.9	3.0	3.4	1.9	100%	NA
TOSMI	4	1.1	1.8	2.7	6.3	9.5	4.5	100%	NA
COLM	4	0.8	0.9	1.3	1.5	1.6	0.6	100%	NA
SEIMN	4	2.1	2.2	2.4	3.0	3.3	0.8	100%	NA
SEIMS	4	1.6	2.4	3.5	5.0	6.1	2.6	100%	NA
COUMO	4	1.4	1.6	2.2	3.1	3.6	1.6	100%	NA
COUMI	4	2.3	2.4	3.5	8.7	13.0	6.3	100%	NA
TYLMO	4	1.1	1.2	2.8	6.3	8.2	5.2	100%	NA
TYLMI	4	2.0	2.1	2.7	19.6	36.0	17.5	100%	NA
Storm Event Samples									
EVALSS	10	3.0	11.0	26.5	45.0	68.0	34.0	100%	NA
EVAMS	10	3.2	6.0	13.3	28.0	60.0	22.0	100%	NA
MONM	10	5.1	8.7	16.0	29.0	160.0	20.3	100%	NA
MONMN	10	1.8	7.9	11.5	63.0	180.0	55.1	100%	NA
MONMS	10	1.9	3.3	4.6	5.9	6.7	2.6	100%	NA
TOSMO	10	19.0	33.0	47.0	70.0	230.0	37.0	100%	NA
TOSMI	10	6.5	19.0	19.5	44.0	100.0	25.0	100%	NA
COLM	10	0.7	1.4	2.0	3.6	58.0	2.2	100%	NA
SEIMN	10	3.9	12.0	27.0	63.0	160.0	51.0	100%	NA
SEIMS	10	6.2	14.0	21.5	40.0	160.0	26.0	100%	NA
COUMO	10	5.5	14.0	18.0	38.0	68.0	24.0	100%	NA
COUMI	10	8.6	14.0	29.5	120.0	160.0	106.0	100%	NA
TYLMO	10	4.8	8.4	14.0	23.0	150.0	14.6	100%	NA
TYLMI	10	4.5	9.1	13.0	34.0	78.0	24.9	100%	NA

NTU: Nephelometric Turbidity Unit

All summary statistics were calculated using values of half the reporting limit for non-detect values.

Table I-6. Summary Statistics for Total Hardness Concentrations Measured in Storm Event and Base Flow Samples.

Station	n	Mininum (mg/L)	25th Percentile (mg/L)	Median (mg/L)	75th Percentile (mg/L)	Maximum (mg/L)	Interquartile Range (mg/L)	Percent Detected	Percent Violating Criteria[a]
Base Flow Samples									
EVALSS	4	81	86	92	95	97	9	100%	NA
EVAMS	4	84	92	100	100	100	9	100%	NA
MONM	4	86	90	97	110	120	20	100%	NA
MONMN	4	69	82	103	115	120	33	100%	NA
MONMS	4	110	120	140	160	170	40	100%	NA
TOSMO	4	110	115	125	130	130	15	100%	NA
TOSMI	4	120	120	125	135	140	15	100%	NA
COLM	4	9	11	15	19	22	8	100%	NA
SEIMN	4	22	27	37	46	49	20	100%	NA
SEIMS	4	44	48	53	56	58	8	100%	NA
COUMO	4	110	120	135	140	140	20	100%	NA
COUMI	4	120	135	155	165	170	30	100%	NA
TYLMO	4	78	88	99	105	110	18	100%	NA
TYLMI	4	74	87	105	120	130	34	100%	NA
Storm Event Samples									
EVALSS	10	57	72	82	86	96	14	100%	NA
EVAMS	10	57	73	81	92	95	19	100%	NA
MONM	10	44	58	64	83	96	25	100%	NA
MONMN	10	41	48	61	80	88	32	100%	NA
MONMS	10	52	68	74	99	120	31	100%	NA
TOSMO	10	39	54	62	67	120	13	100%	NA
TOSMI	10	22	25	34	56	83	31	100%	NA
COLM	10	8	11	13	15	20	4	100%	NA
SEIMN	10	18	25	33	39	49	14	100%	NA
SEIMS	10	29	40	46	52	54	12	100%	NA
COUMO	10	32	34	51	59	100	25	100%	NA
COUMI	10	50	70	78	100	130	30	100%	NA
TYLMO	10	24	26	31	39	76	13	100%	NA
TYLMI	10	39	41	48	64	98	23	100%	NA

mg/L: milligrams per liter

All summary statistics were calculated using values of half the reporting limit for non-detect values.

Table I-7. Summary Statistics for Dissolved Organic Carbon Concentrations Measured in Storm Event and Base Flow Samples.

Station	n	Mininum (mg/L)	25th Percentile (mg/L)	Median (mg/L)	75th Percentile (mg/L)	Maximum (mg/L)	Interquartile Range (mg/L)	Percent Detected	Percent Violating Criteria[a]
Base Flow Samples									
EVALSS	4	2.1	2.5	2.9	3.6	4.1	1.1	100%	NA
EVAMS	4	2.2	2.8	3.5	4.0	4.4	1.2	100%	NA
MONM	4	3.5	3.7	3.9	4.1	4.1	0.4	100%	NA
MONMN	4	3.1	3.5	3.9	4.2	4.4	0.7	100%	NA
MONMS	4	4.9	5.1	5.5	5.7	5.7	0.6	100%	NA
TOSMO	4	2.5	2.6	2.7	3.1	3.4	0.6	100%	NA
TOSMI	4	2.6	2.7	2.8	3.4	3.9	0.8	100%	NA
COLM	4	11.0	11.0	11.5	13.0	14.0	2.0	100%	NA
SEIMN	4	1.4	1.7	3.3	5.6	6.6	3.9	100%	NA
SEIMS	4	3.0	3.4	3.9	4.3	4.4	0.9	100%	NA
COUMO	4	3.2	3.3	3.5	3.9	4.3	0.6	100%	NA
COUMI	4	3.3	3.4	3.5	4.0	4.3	0.6	100%	NA
TYLMO	4	3.7	3.8	3.9	4.2	4.5	0.5	100%	NA
TYLMI	4	2.5	2.8	3.1	4.3	5.4	1.6	100%	NA
Storm Event Samples									
EVALSS	10	2.6	3.7	5.9	8.9	12.0	5.2	100%	NA
EVAMS	10	3.3	4.1	7.4	10.0	13.0	5.9	100%	NA
MONM	10	3.5	4.7	6.3	8.3	9.8	3.6	100%	NA
MONMN	10	3.8	4.9	6.6	7.0	12.0	2.1	100%	NA
MONMS	10	4.9	5.6	5.9	6.2	8.8	0.6	100%	NA
TOSMO	10	3.1	5.7	6.3	7.7	8.9	2.0	100%	NA
TOSMI	10	3.5	4.2	5.6	6.3	8.0	2.1	100%	NA
COLM	10	8.2	9.3	11.0	14.0	16.0	4.7	100%	NA
SEIMN	10	3.2	7.1	7.9	8.8	11.0	1.7	100%	NA
SEIMS	10	4.3	8.0	11.0	14.0	17.0	6.0	100%	NA
COUMO	10	4.2	4.7	5.2	6.0	9.2	1.3	100%	NA
COUMI	10	4.0	4.4	6.7	8.3	11.0	3.9	100%	NA
TYLMO	10	4.0	4.6	5.0	5.8	6.3	1.2	100%	NA
TYLMI	10	3.5	5.3	6.8	7.3	8.9	2.0	100%	NA

mg/L: milligrams per liter

All summary statistics were calculated using values of half the reporting limit for non-detect values.

Table I-8. Summary Statistics for Fecal Coliform Concentrations Measured in Storm Event and Base Flow Samples.

Station	n	Mininum (CFU/100 mL)	25th Percentile (CFU/100 mL)	Median (CFU/100 mL)	75th Percentile (CFU/100 mL)	Maximum (CFU/100 mL)	Interquartile Range (CFU/100 mL)	Percent Detected	Percent Violating Criteria[a]
Base Flow Samples									
EVALSS	4	2	3	46	544	1,000	542	100%	25%
EVAMS	4	1	8	25	137	240	129	100%	25%
MONM	4	16	52	194	350	400	299	100%	50%
MONMN	4	37	204	405	620	800	417	100%	75%
MONMS	4	1	1	6	56	100	56	50%	0%
TOSMO	4	5	21	123	225	240	205	100%	50%
TOSMI	4	1	35	249	495	560	461	100%	50%
COLM	4	1	2	4	20	34	18	100%	0%
SEIMN	4	2	3	5	213	420	210	100%	25%
SEIMS	4	2	4	35	93	120	89	100%	0%
COUMO	4	6	43	170	280	300	237	100%	50%
COUMI	4	21	23	212	660	920	638	100%	50%
TYLMO	4	30	63	173	380	510	318	100%	50%
TYLMI	4	3	25	123	210	220	186	100%	25%
Storm Event Samples									
EVALSS	10	6	90	150	700	3,200	610	100%	40%
EVAMS	10	2	80	100	520	2,500	440	100%	40%
MONM	10	23	100	275	720	1,200	620	100%	50%
MONMN	10	6	180	765	1,400	1,900	1,220	100%	60%
MONMS	10	5	49	81	610	1,100	561	100%	30%
TOSMO	10	24	380	910	2,300	7,300	1,920	100%	80%
TOSMI	10	20	150	860	1,500	5,500	1,350	100%	70%
COLM	10	5	12	51	160	800	148	100%	20%
SEIMN	10	2	38	135	200	1,700	162	100%	20%
SEIMS	10	13	120	235	530	740	410	100%	50%
COUMO	10	78	140	460	2,100	2,900	1,960	100%	70%
COUMI	10	71	260	545	1,500	3,300	1,240	100%	80%
TYLMO	10	24	250	670	930	3,900	680	100%	80%
TYLMI	10	7	21	380	600	6,800	579	100%	60%

CFU/100 mL: Coliform forming units per 100 milliliters

All summary statistics were calculated using values of half the reporting limit for non-detect values.

[a] Percentage of samples violating criteria (<=200 CFU/100 ml) for primacy contract recreation in fresh water from Washington Adminstrative Code 173-201A.

Table I-9. Summary Statistics for Total Phosphorus Concentrations Measured in Storm Event and Base Flow Samples.

Station	n	Mininum (mg/L)	25th Percentile (mg/L)	Median (mg/L)	75th Percentile (mg/L)	Maximum (mg/L)	Interquartile Range (mg/L)	Percent Detected	Percent Violating Criteria[a]
Base Flow Samples									
EVALSS	4	0.021	0.027	0.033	0.034	0.034	0.007	100%	NA
EVAMS	4	0.018	0.022	0.029	0.036	0.039	0.015	100%	NA
MONM	4	0.029	0.030	0.038	0.047	0.048	0.018	100%	NA
MONMN	4	0.029	0.043	0.062	0.124	0.180	0.082	100%	NA
MONMS	4	0.017	0.023	0.032	0.257	0.480	0.234	100%	NA
TOSMO	4	0.048	0.048	0.058	0.069	0.071	0.021	100%	NA
TOSMI	4	0.045	0.053	0.068	0.078	0.081	0.025	100%	NA
COLM	4	0.016	0.018	0.024	0.034	0.039	0.016	100%	NA
SEIMN	4	0.028	0.029	0.033	0.038	0.040	0.010	100%	NA
SEIMS	4	0.035	0.038	0.044	0.053	0.060	0.015	100%	NA
COUMO	4	0.048	0.062	0.078	0.083	0.084	0.021	100%	NA
COUMI	4	0.077	0.082	0.108	0.140	0.150	0.059	100%	NA
TYLMO	4	0.042	0.044	0.061	0.118	0.160	0.074	100%	NA
TYLMI	4	0.018	0.027	0.057	0.199	0.320	0.173	100%	NA
Storm Event Samples									
EVALSS	10	0.031	0.052	0.095	0.140	0.220	0.088	100%	NA
EVAMS	10	0.023	0.035	0.055	0.110	0.160	0.075	100%	NA
MONM	10	0.048	0.061	0.084	0.160	0.670	0.099	100%	NA
MONMN	10	0.037	0.047	0.087	0.300	0.770	0.253	100%	NA
MONMS	10	0.015	0.048	0.053	0.057	0.073	0.009	100%	NA
TOSMO	10	0.110	0.120	0.185	0.240	0.520	0.120	100%	NA
TOSMI	10	0.073	0.091	0.140	0.190	0.400	0.099	100%	NA
COLM	10	0.005	0.015	0.023	0.049	0.190	0.034	90%	NA
SEIMN	10	0.043	0.076	0.120	0.260	0.580	0.184	100%	NA
SEIMS	10	0.055	0.076	0.119	0.140	0.580	0.064	100%	NA
COUMO	10	0.050	0.100	0.125	0.210	0.310	0.110	100%	NA
COUMI	10	0.069	0.100	0.200	0.430	0.520	0.330	100%	NA
TYLMO	10	0.058	0.066	0.082	0.150	0.630	0.084	100%	NA
TYLMI	10	0.050	0.069	0.110	0.210	0.580	0.141	100%	NA

mg/L: milligrams per liter

All summary statistics were calculated using values of half the reporting limit for non-detect values.

Table I-10. Summary Statistics for Total Nitrogen Concentrations Measured in Storm Event and Base Flow Samples.

Station	n	Mininum (mg/L)	25th Percentile (mg/L)	Median (mg/L)	75th Percentile (mg/L)	Maximum (mg/L)	Interquartile Range (mg/L)	Percent Detected	Percent Violating Criteria[a]
Base Flow Samples									
EVALSS	4	1.83	1.89	2.08	2.40	2.59	0.52	100%	NA
EVAMS	4	2.47	2.47	2.51	2.61	2.67	0.14	100%	NA
MONM	4	0.67	0.70	0.83	1.01	1.08	0.32	100%	NA
MONMN	4	0.63	0.83	1.04	1.08	1.10	0.25	100%	NA
MONMS	4	0.56	0.61	0.70	0.99	1.24	0.39	100%	NA
TOSMO	4	0.96	0.97	1.03	1.12	1.15	0.15	100%	NA
TOSMI	4	1.39	1.43	1.51	1.66	1.76	0.23	100%	NA
COLM	4	0.70	0.77	0.87	1.01	1.12	0.25	100%	NA
SEIMN	4	0.54	0.65	0.79	0.85	0.88	0.20	100%	NA
SEIMS	4	0.75	0.79	0.88	0.99	1.03	0.20	100%	NA
COUMO	4	0.88	0.90	1.01	1.11	1.11	0.21	100%	NA
COUMI	4	0.91	0.94	1.00	1.05	1.06	0.11	100%	NA
TYLMO	4	0.82	0.83	0.90	1.13	1.30	0.31	100%	NA
TYLMI	4	1.33	1.40	1.55	2.29	2.94	0.89	100%	NA
Storm Event Samples									
EVALSS	10	2.07	2.13	2.42	2.58	3.01	0.45	100%	NA
EVAMS	10	2.25	2.41	2.55	2.69	3.21	0.28	100%	NA
MONM	10	0.91	1.07	1.28	1.49	4.12	0.42	100%	NA
MONMN	10	0.62	0.97	1.24	1.96	4.34	0.99	100%	NA
MONMS	10	0.65	0.76	0.92	1.05	1.32	0.29	100%	NA
TOSMO	10	1.13	1.32	1.46	2.17	2.78	0.85	100%	NA
TOSMI	10	0.92	1.25	1.39	1.78	4.19	0.53	100%	NA
COLM	10	0.62	0.67	0.92	1.45	2.90	0.78	100%	NA
SEIMN	10	0.71	1.05	1.39	1.88	2.93	0.83	100%	NA
SEIMS	10	1.17	1.32	1.56	1.99	5.33	0.67	100%	NA
COUMO	10	0.89	1.24	1.38	1.80	1.94	0.56	100%	NA
COUMI	10	0.78	1.18	1.64	2.43	3.26	1.25	100%	NA
TYLMO	10	0.91	0.98	1.13	1.39	3.12	0.41	100%	NA
TYLMI	10	1.08	1.26	1.42	1.68	2.37	0.42	100%	NA

mg/L: milligrams per liter

All summary statistics were calculated using values of half the reporting limit for non-detect values.

Total Nitrogen values were calculated by adding the Total Nitrate + Nitrite and Total Kjeldahl Nitrogen values.

Table I-11. Summary Statistics for Nitrate + Nitrite (N+N) Concentrations Measured in Storm Event and Base Flow Samples.

Station	n	Mininum (mg/L)	25th Percentile (mg/L)	Median (mg/L)	75th Percentile (mg/L)	Maximum (mg/L)	Interquartile Range (mg/L)	Percent Detected	Percent Violating Criteria[a]
Base Flow Samples									
EVALSS	4	1.40	1.40	1.45	1.55	1.60	0.15	100%	NA
EVAMS	4	1.70	1.85	2.00	2.00	2.00	0.15	100%	NA
MONM	4	0.15	0.18	0.29	0.45	0.52	0.28	100%	NA
MONMN	4	0.12	0.13	0.15	0.18	0.21	0.05	100%	NA
MONMS	4	0.04	0.05	0.09	0.38	0.64	0.33	100%	NA
TOSMO	4	0.53	0.55	0.58	0.62	0.63	0.07	100%	NA
TOSMI	4	0.78	0.80	0.85	0.99	1.10	0.19	100%	NA
COLM	4	0.03	0.04	0.06	0.07	0.09	0.03	100%	NA
SEIMN	4	0.25	0.25	0.26	0.28	0.28	0.03	100%	NA
SEIMS	4	0.29	0.30	0.31	0.32	0.32	0.02	100%	NA
COUMO	4	0.36	0.38	0.41	0.46	0.51	0.08	100%	NA
COUMI	4	0.22	0.23	0.25	0.29	0.32	0.07	100%	NA
TYLMO	4	0.35	0.40	0.45	0.59	0.73	0.20	100%	NA
TYLMI	4	0.66	0.80	0.95	1.04	1.10	0.24	100%	NA
Storm Event Samples									
EVALSS	10	0.90	1.10	1.30	1.40	1.60	0.30	100%	NA
EVAMS	10	1.00	1.20	1.45	1.70	2.10	0.50	100%	NA
MONM	10	0.13	0.21	0.25	0.34	0.63	0.13	100%	NA
MONMN	10	0.07	0.12	0.18	0.25	0.75	0.13	100%	NA
MONMS	10	0.02	0.08	0.19	0.34	0.68	0.26	100%	NA
TOSMO	10	0.18	0.26	0.37	0.51	0.59	0.25	100%	NA
TOSMI	10	0.16	0.31	0.38	0.49	0.79	0.18	100%	NA
COLM	10	0.01	0.03	0.10	0.20	0.36	0.17	80%	NA
SEIMN	10	0.05	0.16	0.24	0.35	0.69	0.19	100%	NA
SEIMS	10	0.15	0.24	0.29	0.34	0.49	0.10	100%	NA
COUMO	10	0.19	0.21	0.33	0.44	0.70	0.23	100%	NA
COUMI	10	0.25	0.28	0.35	0.39	0.51	0.11	100%	NA
TYLMO	10	0.16	0.21	0.27	0.32	0.64	0.11	100%	NA
TYLMI	10	0.30	0.43	0.53	0.67	0.81	0.24	100%	NA

mg/L: milligrams per liter

All summary statistics were calculated using values of half the reporting limit for non-detect values.

Table I-12. Summary Statistics for Total Kjeldahl Nitrogen (TKN) Concentrations Measured in Storm Event and Base Flow Samples.

Station	n	Mininum (mg/L)	25th Percentile (mg/L)	Median (mg/L)	75th Percentile (mg/L)	Maximum (mg/L)	Interquartile Range (mg/L)	Percent Detected	Percent Violating Criteria[a]
Base Flow Samples									
EVALSS	4	0.43	0.44	0.53	0.90	1.19	0.46	100%	NA
EVAMS	4	0.47	0.51	0.61	0.72	0.77	0.21	100%	NA
MONM	4	0.34	0.38	0.47	0.70	0.88	0.32	100%	NA
MONMN	4	0.51	0.67	0.87	0.93	0.95	0.27	100%	NA
MONMS	4	0.50	0.51	0.56	0.65	0.70	0.14	100%	NA
TOSMO	4	0.33	0.35	0.47	0.57	0.59	0.22	100%	NA
TOSMI	4	0.45	0.53	0.63	0.77	0.89	0.24	100%	NA
COLM	4	0.61	0.70	0.82	0.95	1.07	0.25	100%	NA
SEIMN	4	0.29	0.40	0.52	0.57	0.61	0.17	100%	NA
SEIMS	4	0.43	0.47	0.58	0.69	0.72	0.22	100%	NA
COUMO	4	0.47	0.52	0.58	0.65	0.71	0.13	100%	NA
COUMI	4	0.65	0.68	0.73	0.79	0.84	0.11	100%	NA
TYLMO	4	0.37	0.38	0.48	0.59	0.61	0.20	100%	NA
TYLMI	4	0.49	0.51	0.60	1.34	2.01	0.83	100%	NA
Storm Event Samples									
EVALSS	10	0.51	0.73	1.16	1.55	1.97	0.82	100%	NA
EVAMS	10	0.59	0.83	1.00	1.40	2.21	0.57	100%	NA
MONM	10	0.71	0.73	0.97	1.31	3.72	0.58	100%	NA
MONMN	10	0.46	0.58	0.95	1.90	3.98	1.32	100%	NA
MONMS	10	0.59	0.62	0.67	0.78	0.89	0.17	100%	NA
TOSMO	10	0.74	0.87	1.05	1.91	2.60	1.04	100%	NA
TOSMI	10	0.61	0.81	0.99	1.28	3.81	0.47	100%	NA
COLM	10	0.57	0.62	0.76	1.09	2.87	0.47	100%	NA
SEIMN	10	0.51	0.76	1.08	1.51	2.58	0.75	100%	NA
SEIMS	10	0.94	0.99	1.31	1.53	5.04	0.54	100%	NA
COUMO	10	0.56	0.84	0.94	1.36	1.74	0.52	100%	NA
COUMI	10	0.52	0.84	1.22	2.18	2.96	1.34	100%	NA
TYLMO	10	0.70	0.74	0.77	0.94	2.96	0.20	100%	NA
TYLMI	10	0.62	0.77	0.84	1.26	1.77	0.49	100%	NA

mg/L: milligrams per liter

All summary statistics were calculated using values of half the reporting limit for non-detect values.

Table I-13. Summary Statistics for Dissolved Copper Concentrations Measured in Storm Event and Base Flow Samples.

Station	n	Mininum (ug/L)	25th Percentile (ug/L)	Median (ug/L)	75th Percentile (ug/L)	Maximum (ug/L)	Interquartile Range (ug/L)	Percent Detected	Percent Violating Criteria[a]
Base Flow Samples									
EVALSS	4	0.5	0.5	0.5	0.5	0.5	0.0	0%	0%
EVAMS	4	0.5	0.5	0.5	0.5	0.5	0.0	0%	0%
MONM	4	0.5	0.5	0.5	0.5	0.5	0.0	0%	0%
MONMN	4	0.5	0.5	0.5	0.5	0.5	0.0	0%	0%
MONMS	4	0.5	0.5	0.5	0.5	0.5	0.0	0%	0%
TOSMO	4	0.5	0.5	0.5	0.5	0.5	0.0	0%	0%
TOSMI	4	0.5	0.5	0.5	1.0	1.4	0.5	25%	0%
COLM	4	0.5	0.5	0.5	0.5	0.5	0.0	0%	0%
SEIMN	4	0.5	0.5	0.5	0.5	0.5	0.0	0%	0%
SEIMS	4	0.5	0.5	0.5	0.5	0.5	0.0	0%	0%
COUMO	4	0.5	0.5	0.5	0.5	0.5	0.0	0%	0%
COUMI	4	0.5	0.5	0.5	0.5	0.5	0.0	0%	0%
TYLMO	4	0.5	0.5	0.5	0.8	1.1	0.3	25%	0%
TYLMI	4	0.5	0.5	0.9	1.6	1.9	1.1	50%	0%
Storm Event Samples									
EVALSS	10	0.5	0.5	0.5	0.5	1.1	0.0	10%	0%
EVAMS	10	0.5	0.5	0.5	0.5	0.5	0.0	0%	0%
MONM	10	0.5	1.1	1.4	1.4	1.9	0.3	90%	0%
MONMN	10	0.5	1.2	1.3	1.7	2.0	0.5	80%	0%
MONMS	10	0.5	1.4	1.6	1.7	2.7	0.3	90%	0%
TOSMO	10	0.5	1.9	2.4	3.0	3.3	1.1	90%	0%
TOSMI	10	1.7	2.1	3.4	4.0	4.8	1.9	100%	10%
COLM	10	0.5	0.5	0.5	0.5	0.5	0.0	0%	0%
SEIMN	10	0.5	0.5	0.5	1.1	1.4	0.6	40%	0%
SEIMS	10	0.5	0.5	0.5	0.5	1.2	0.0	10%	0%
COUMO	10	1.6	1.7	2.1	3.0	3.4	1.3	100%	0%
COUMI	10	1.5	1.5	1.6	2.1	3.5	0.6	100%	0%
TYLMO	10	1.8	2.2	3.3	4.1	4.4	1.9	100%	0%
TYLMI	10	1.2	2.4	2.8	3.7	6.4	1.3	100%	0%

µg/L: micrograms per liter

All summary statistics were calculated using values of half the reporting limit for non-detect values.

[a] Percentage of base flow and storm event samples violating chronic and acute criteria for fresh water aquatic life protection, respectively, from Washington Adminstrative Code 173-201A. Criterion were derived using measured hardness at each station (see Table I-6).

Table I-14. Summary Statistics for Total Copper Concentrations Measured in Storm Event and Base Flow Samples.

Station	n	Mininum (ug/L)	25th Percentile (ug/L)	Median (ug/L)	75th Percentile (ug/L)	Maximum (ug/L)	Interquartile Range (ug/L)	Percent Detected	Percent Violating Criteria[a]
Base Flow Samples									
EVALSS	4	0.5	0.5	0.5	3.0	5.5	2.5	0%	NA
EVAMS	4	0.5	0.5	0.5	3.0	5.5	2.5	0%	NA
MONM	4	0.5	0.5	0.5	3.0	5.5	2.5	0%	NA
MONMN	4	0.5	1.5	2.6	4.2	5.5	2.7	50%	NA
MONMS	4	0.5	0.5	2.1	4.6	5.5	4.1	25%	NA
TOSMO	4	0.5	0.5	0.8	3.3	5.5	2.8	25%	NA
TOSMI	4	1.0	1.1	2.3	4.4	5.5	3.3	75%	NA
COLM	4	0.5	0.5	0.5	3.0	5.5	2.5	0%	NA
SEIMN	4	0.5	0.5	0.5	3.0	5.5	2.5	0%	NA
SEIMS	4	0.5	0.5	1.1	3.6	5.5	3.1	25%	NA
COUMO	4	0.5	0.5	0.8	3.3	5.5	2.8	25%	NA
COUMI	4	0.5	0.5	0.8	3.3	5.5	2.8	25%	NA
TYLMO	4	0.5	0.8	3.3	5.8	6.0	5.0	50%	NA
TYLMI	4	2.0	2.6	4.3	13.3	21.0	10.7	75%	NA
Storm Event Samples									
EVALSS	10	0.5	1.4	2.2	3.1	4.6	1.7	80%	NA
EVAMS	10	0.5	1.1	1.4	2.1	3.6	1.0	80%	NA
MONM	10	1.0	1.9	2.5	4.6	12.0	2.7	100%	NA
MONMN	10	0.5	1.6	2.1	5.7	11.0	4.1	80%	NA
MONMS	10	1.3	1.8	2.0	2.5	3.1	0.7	100%	NA
TOSMO	10	4.2	4.4	6.9	8.1	17.0	3.7	100%	NA
TOSMI	10	3.2	5.0	7.6	9.1	15.0	4.1	100%	NA
COLM	10	0.5	0.5	0.5	1.5	3.3	1.0	30%	NA
SEIMN	10	0.5	1.9	2.7	4.6	11.0	2.7	80%	NA
SEIMS	10	0.5	1.0	1.8	3.0	7.5	2.0	80%	NA
COUMO	10	2.0	4.4	5.8	7.5	11.0	3.1	100%	NA
COUMI	10	2.9	3.1	5.7	8.8	15.0	5.7	100%	NA
TYLMO	10	3.6	3.7	6.4	7.4	30.0	3.7	100%	NA
TYLMI	10	2.5	4.3	5.4	10.0	12.0	5.7	100%	NA

µg/L: micrograms per liter

All summary statistics were calculated using values of half the reporting limit for non-detect values.

Table I-15. Summary Statistics for Dissolved Zinc Concentrations Measured in Storm Event and Base Flow Samples.

Station	n	Mininum (ug/L)	25th Percentile (ug/L)	Median (ug/L)	75th Percentile (ug/L)	Maximum (ug/L)	Interquartile Range (ug/L)	Percent Detected	Percent Violating Criteria[a]
Base Flow Samples									
EVALSS	4	2.5	2.5	2.5	2.5	2.5	0.0	0%	0%
EVAMS	4	2.5	2.5	2.5	2.5	2.5	0.0	0%	0%
MONM	4	5.2	5.3	6.2	7.3	7.6	2.0	100%	0%
MONMN	4	2.5	2.5	2.5	2.5	2.5	0.0	0%	0%
MONMS	4	2.5	2.5	2.5	2.5	2.5	0.0	0%	0%
TOSMO	4	6.2	10.6	19.0	35.5	48.0	24.9	100%	0%
TOSMI	4	10.0	20.5	36.5	58.0	74.0	37.5	100%	0%
COLM	4	2.5	2.5	2.5	2.5	2.5	0.0	0%	0%
SEIMN	4	2.5	2.5	2.5	2.5	2.5	0.0	0%	0%
SEIMS	4	2.5	2.5	2.5	2.5	2.5	0.0	0%	0%
COUMO	4	2.5	4.5	7.0	11.3	15.0	6.8	75%	0%
COUMI	4	2.5	2.5	6.3	15.5	21.0	13.0	50%	0%
TYLMO	4	2.5	2.5	2.5	16.8	31.0	14.3	25%	0%
TYLMI	4	5.3	6.7	11.6	167.5	320.0	160.8	100%	25%
Storm Event Samples									
EVALSS	10	2.5	2.5	2.5	2.5	2.5	0.0	0%	0%
EVAMS	10	2.5	2.5	2.5	2.5	2.5	0.0	0%	0%
MONM	10	5.4	8.4	11.0	11.0	13.0	2.6	100%	0%
MONMN	10	2.5	2.5	7.3	11.0	16.0	8.5	70%	0%
MONMS	10	2.5	2.5	2.5	2.5	2.5	0.0	0%	0%
TOSMO	10	11.0	17.0	28.0	61.0	350.0	44.0	100%	20%
TOSMI	10	17.0	26.0	43.0	100.0	1700.0	74.0	100%	40%
COLM	10	2.5	2.5	2.5	2.5	10.0	0.0	10%	0%
SEIMN	10	2.5	2.5	2.5	2.5	8.6	0.0	10%	0%
SEIMS	10	2.5	2.5	2.5	2.5	5.3	0.0	10%	0%
COUMO	10	11.0	18.0	25.5	34.0	94.0	16.0	100%	10%
COUMI	10	6.6	13.0	16.0	40.0	51.0	27.0	100%	0%
TYLMO	10	9.1	11.0	12.0	18.0	28.0	7.0	100%	0%
TYLMI	10	9.2	13.0	25.5	43.0	160.0	30.0	100%	10%

µg/L: micrograms per liter

All summary statistics were calculated using values of half the reporting limit for non-detect values.

[a] Percentage of base flow and storm event samples violating chronic and acute criteria for fresh water aquatic life protection, respectively, from Washington Adminstrative Code 173-201A. Criterion were derived using measured hardness at each station (see Table I-6).

Table I-16. Summary Statistics for Total Zinc Concentrations Measured in Storm Event and Base Flow Samples.

Station	n	Mininum (ug/L)	25th Percentile (ug/L)	Median (ug/L)	75th Percentile (ug/L)	Maximum (ug/L)	Interquartile Range (ug/L)	Percent Detected	Percent Violating Criteria[a]
Base Flow Samples									
EVALSS	4	2.5	2.5	2.5	8.3	14.0	5.8	0%	NA
EVAMS	4	2.5	2.5	2.5	8.3	14.0	5.8	0%	NA
MONM	4	9.3	10.2	11.0	12.5	14.0	2.4	75%	NA
MONMN	4	2.5	4.8	10.6	23.5	33.0	18.7	50%	NA
MONMS	4	2.5	2.5	8.3	17.0	20.0	14.5	25%	NA
TOSMO	4	5.5	14.8	25.5	45.0	63.0	30.3	100%	NA
TOSMI	4	15.0	32.5	60.5	90.5	110.0	58.0	100%	NA
COLM	4	2.5	2.5	2.5	8.3	14.0	5.8	0%	NA
SEIMN	4	2.5	2.5	2.5	8.3	14.0	5.8	0%	NA
SEIMS	4	2.5	2.5	4.5	10.3	14.0	7.8	25%	NA
COUMO	4	11.0	12.5	15.5	17.5	18.0	5.0	75%	NA
COUMI	4	5.7	10.9	17.5	28.5	38.0	17.7	100%	NA
TYLMO	4	5.5	6.7	15.4	35.5	48.0	28.9	100%	NA
TYLMI	4	12.0	13.0	30.5	1023.5	2000.0	1010.5	75%	NA
Storm Event Samples									
EVALSS	10	2.5	2.5	6.4	10.0	17.0	7.5	70%	NA
EVAMS	10	2.5	2.5	3.9	7.6	15.0	5.1	50%	NA
MONM	10	10.0	20.0	32.0	73.0	160.0	53.0	100%	NA
MONMN	10	7.2	9.6	19.5	78.0	140.0	68.4	100%	NA
MONMS	10	2.5	2.5	2.5	2.5	5.9	0.0	20%	NA
TOSMO	10	63.0	76.0	135.0	160.0	570.0	84.0	100%	NA
TOSMI	10	47.0	81.0	97.5	160.0	2100.0	79.0	100%	NA
COLM	10	2.5	2.5	2.5	2.5	20.0	0.0	20%	NA
SEIMN	10	2.5	2.5	5.3	9.5	23.0	7.0	60%	NA
SEIMS	10	2.5	2.5	4.5	16.0	24.0	13.5	50%	NA
COUMO	10	32.0	51.0	73.0	110.0	160.0	59.0	100%	NA
COUMI	10	19.0	42.0	68.0	140.0	250.0	98.0	100%	NA
TYLMO	10	21.0	31.0	38.0	54.0	220.0	23.0	100%	NA
TYLMI	10	20.0	41.0	69.5	200.0	210.0	159.0	100%	NA

µg/L: micrograms per liter

All summary statistics were calculated using values of half the reporting limit for non-detect values.

APPENDIX J

Box and Whisker Plots Showing Pollutant Concentrations Measured in Storm Event and Base Flow Samples

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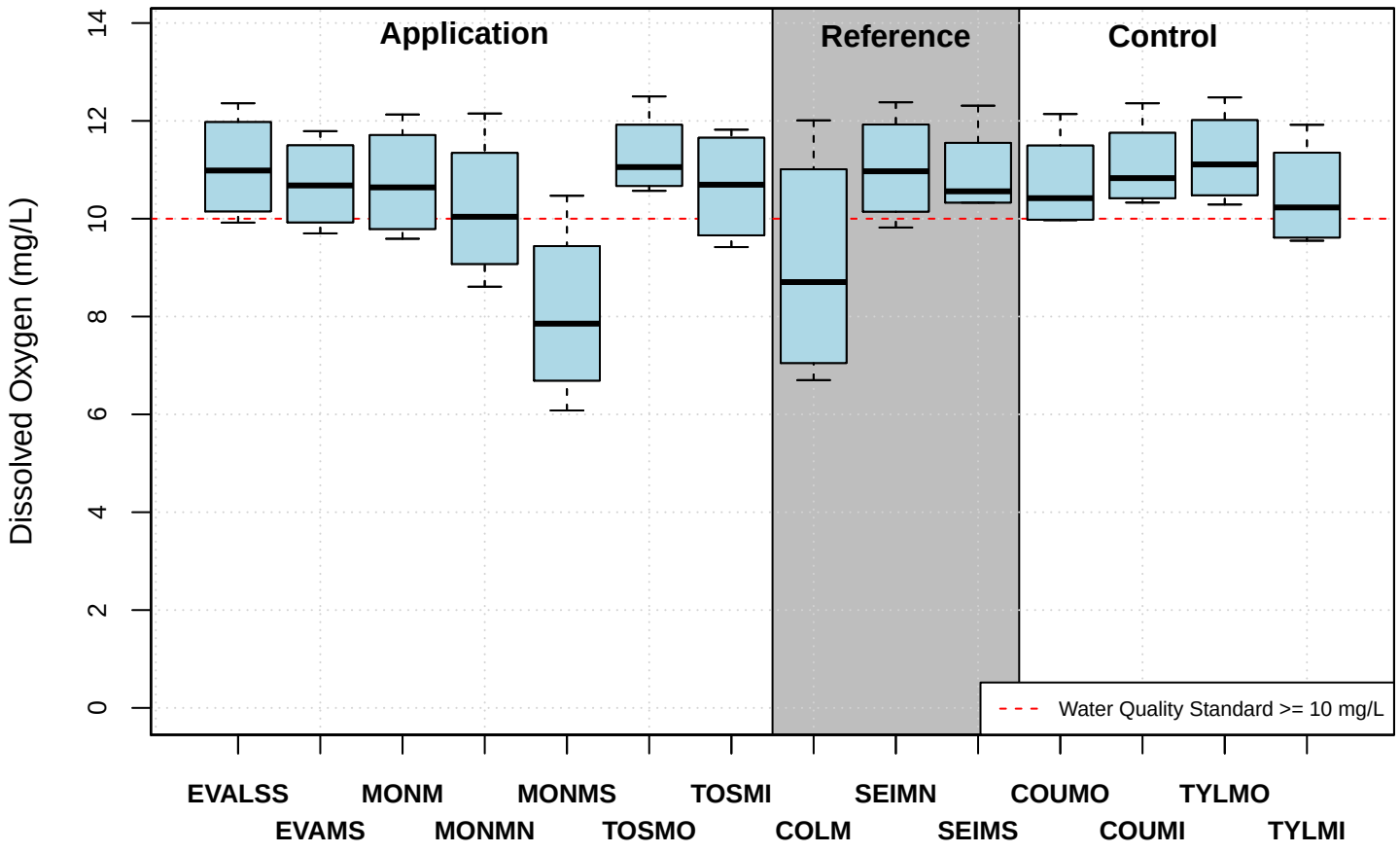
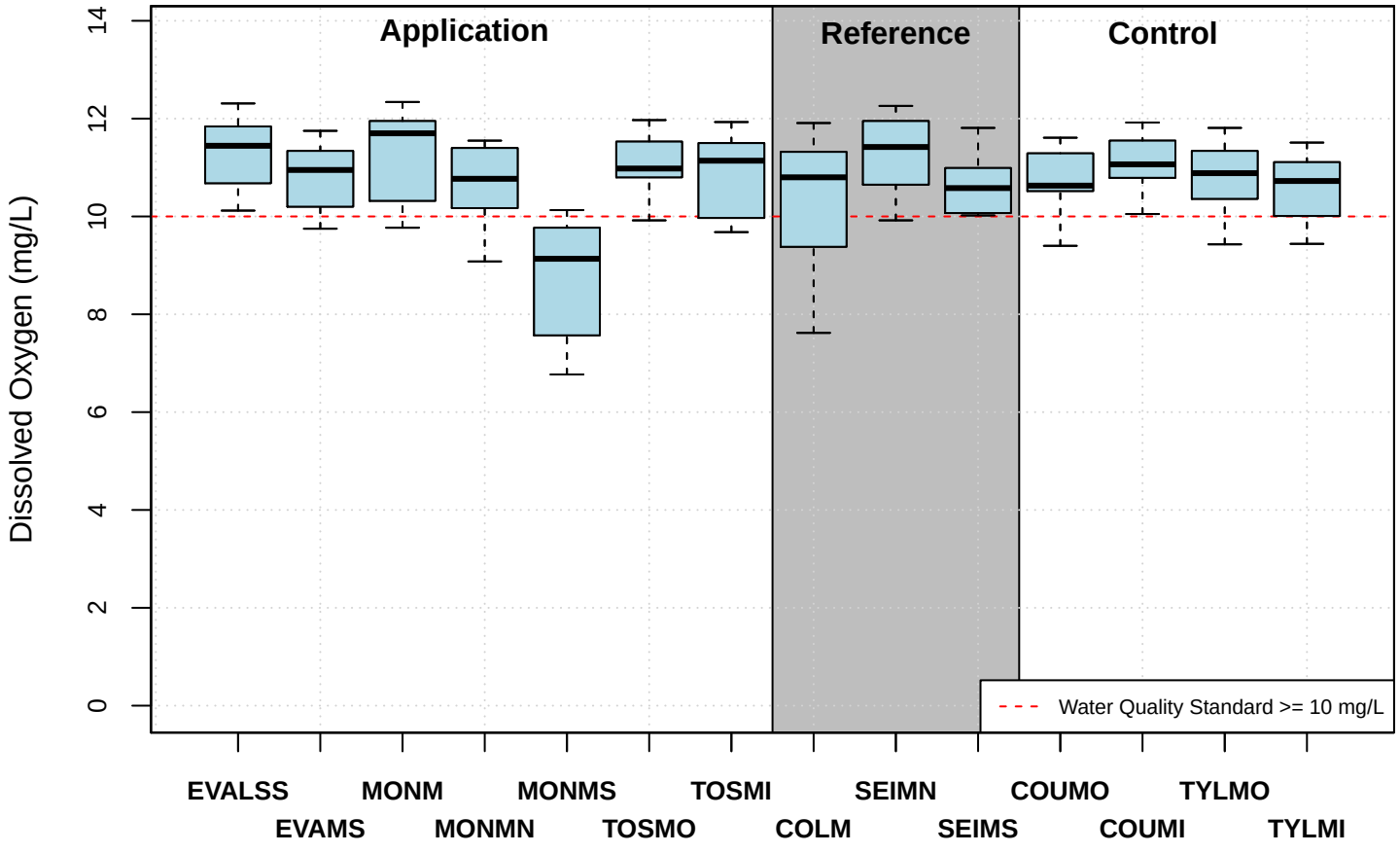
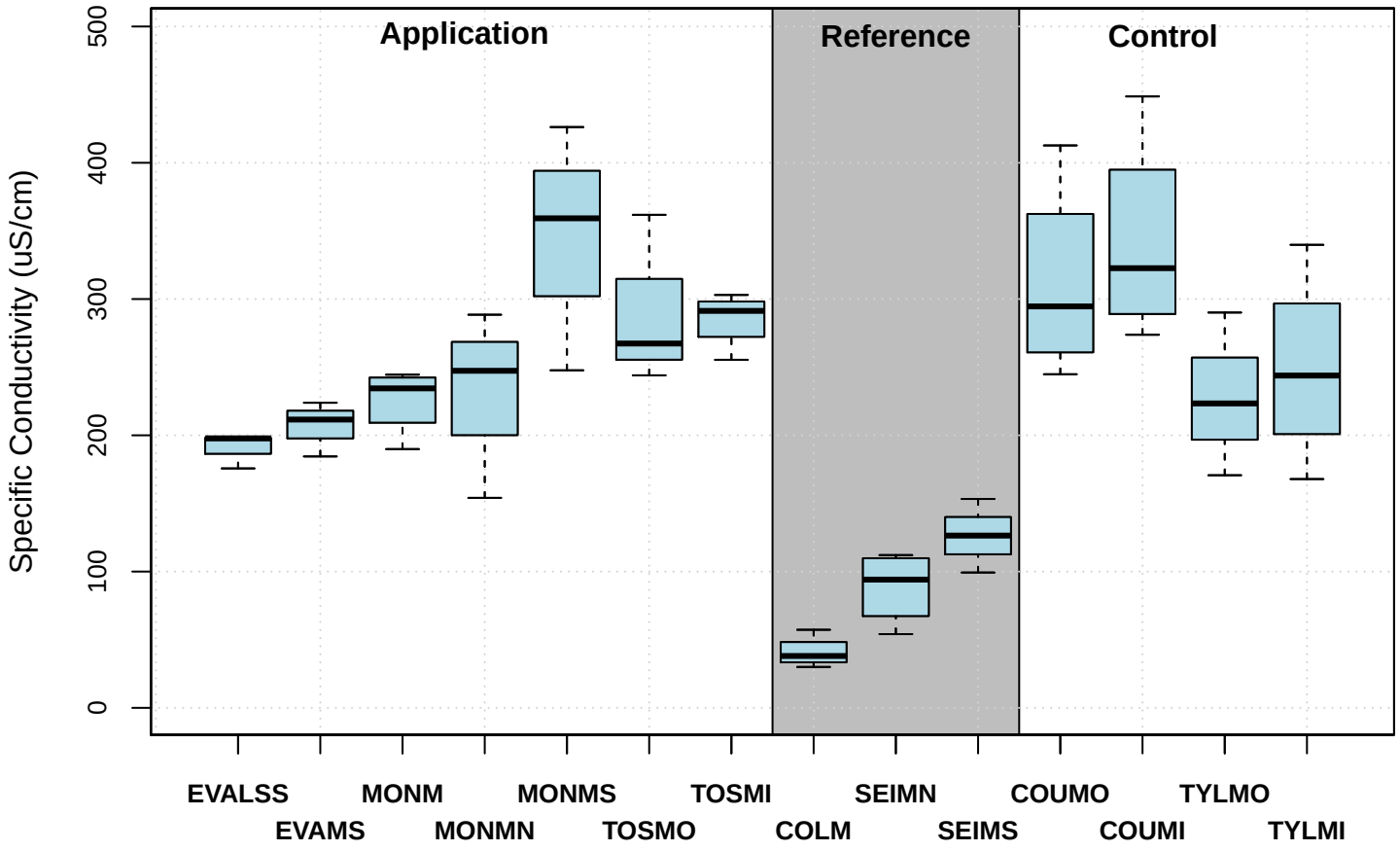
Base Flow



Storm Events



Base Flow



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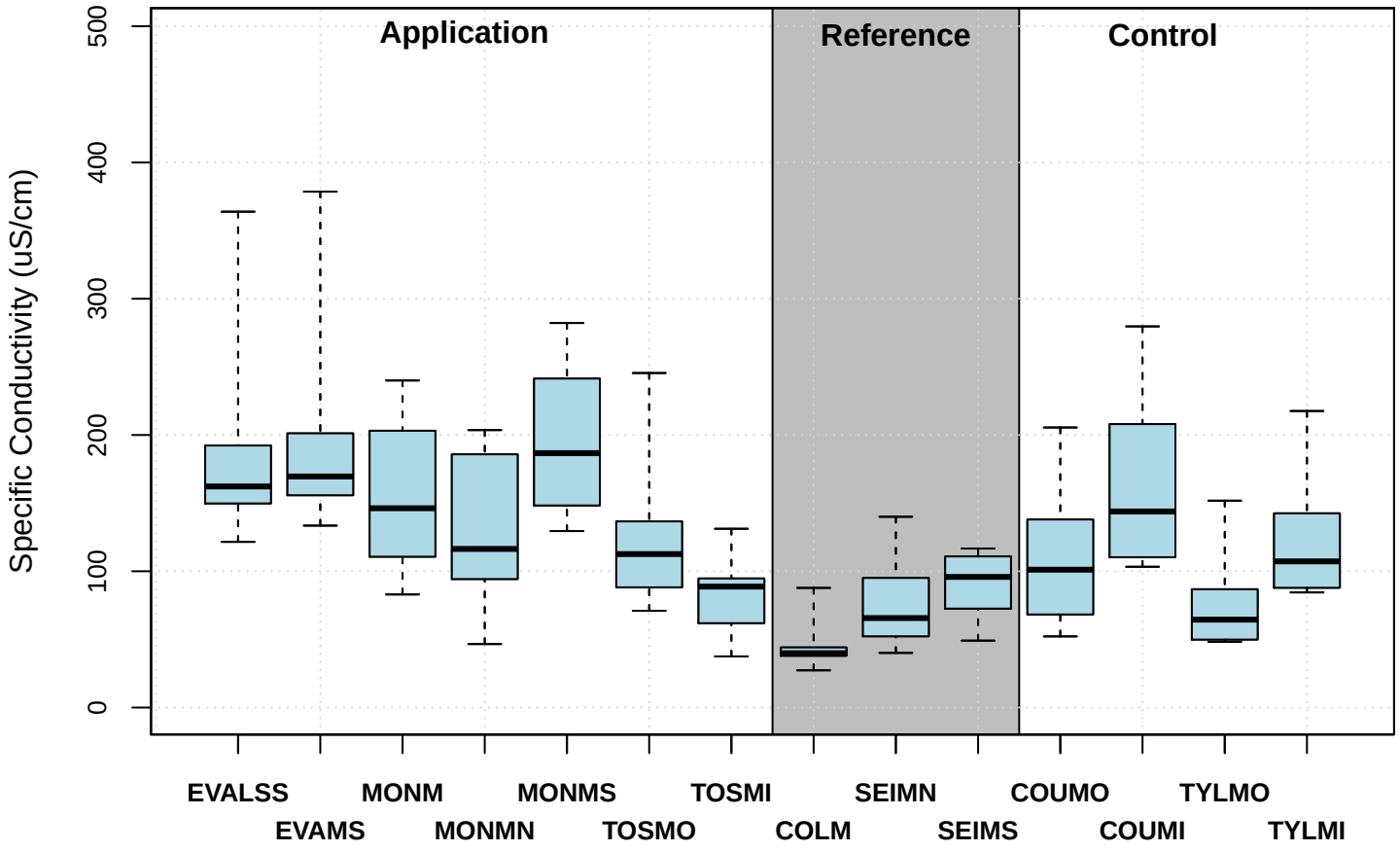
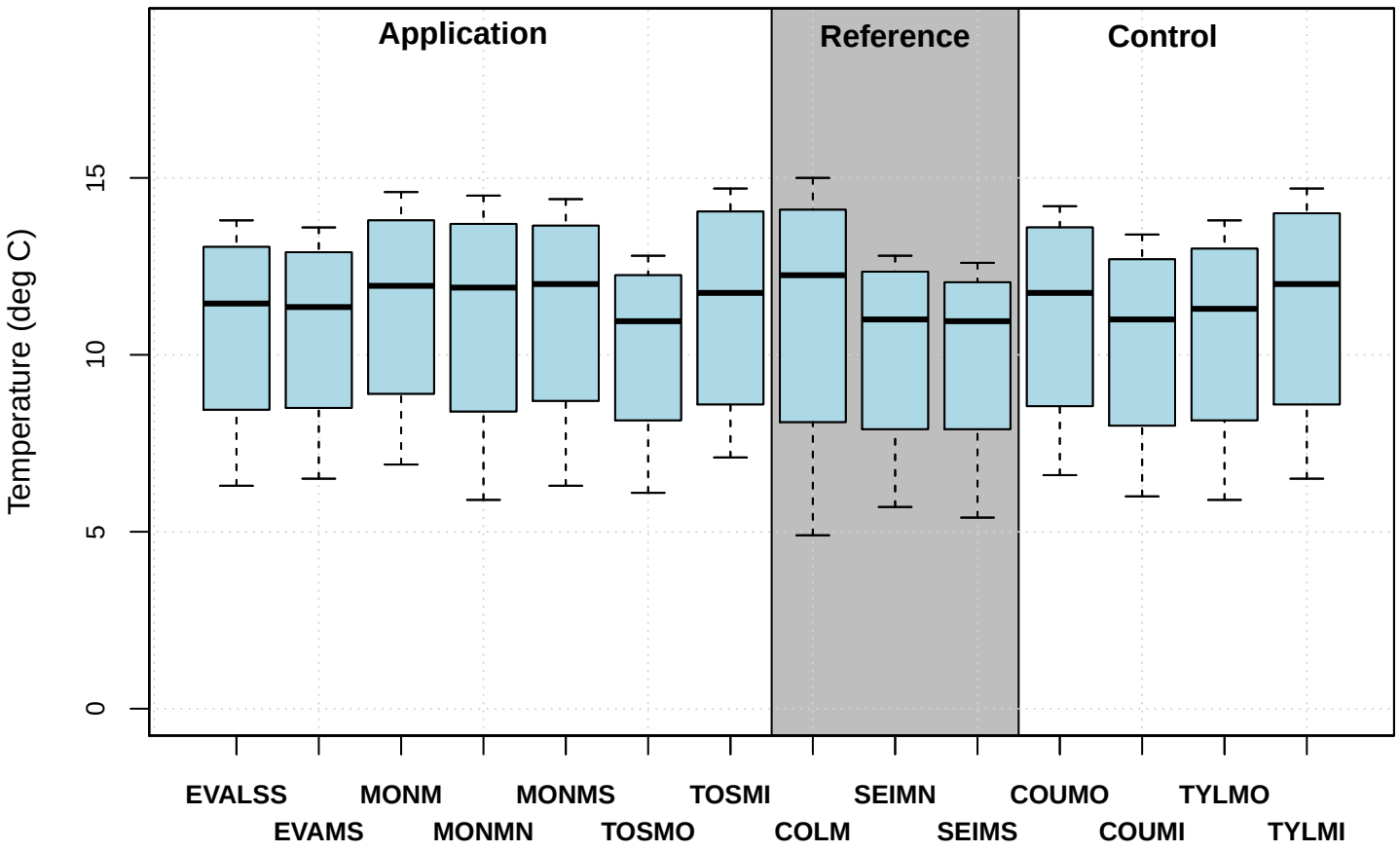


Base Flow



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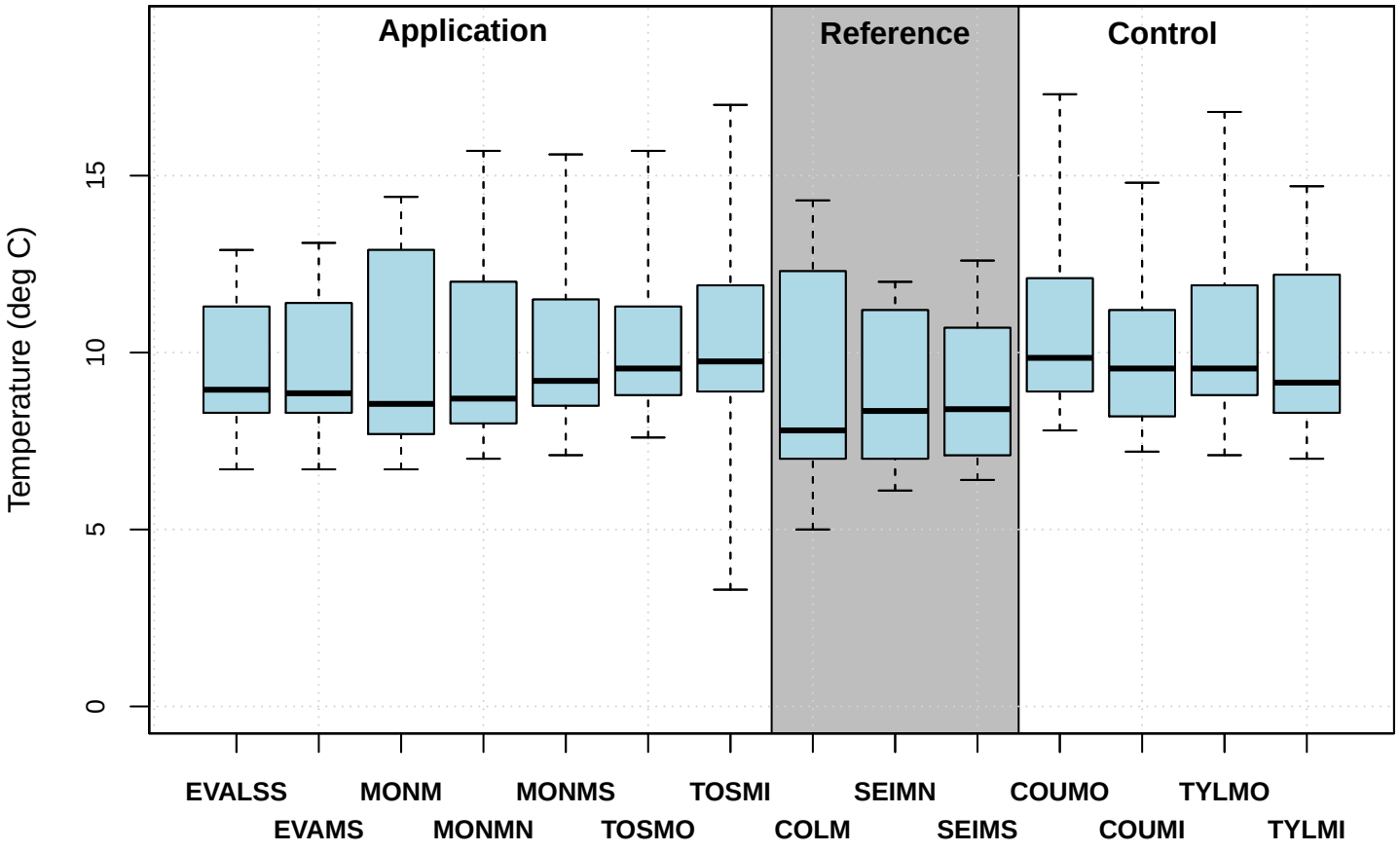

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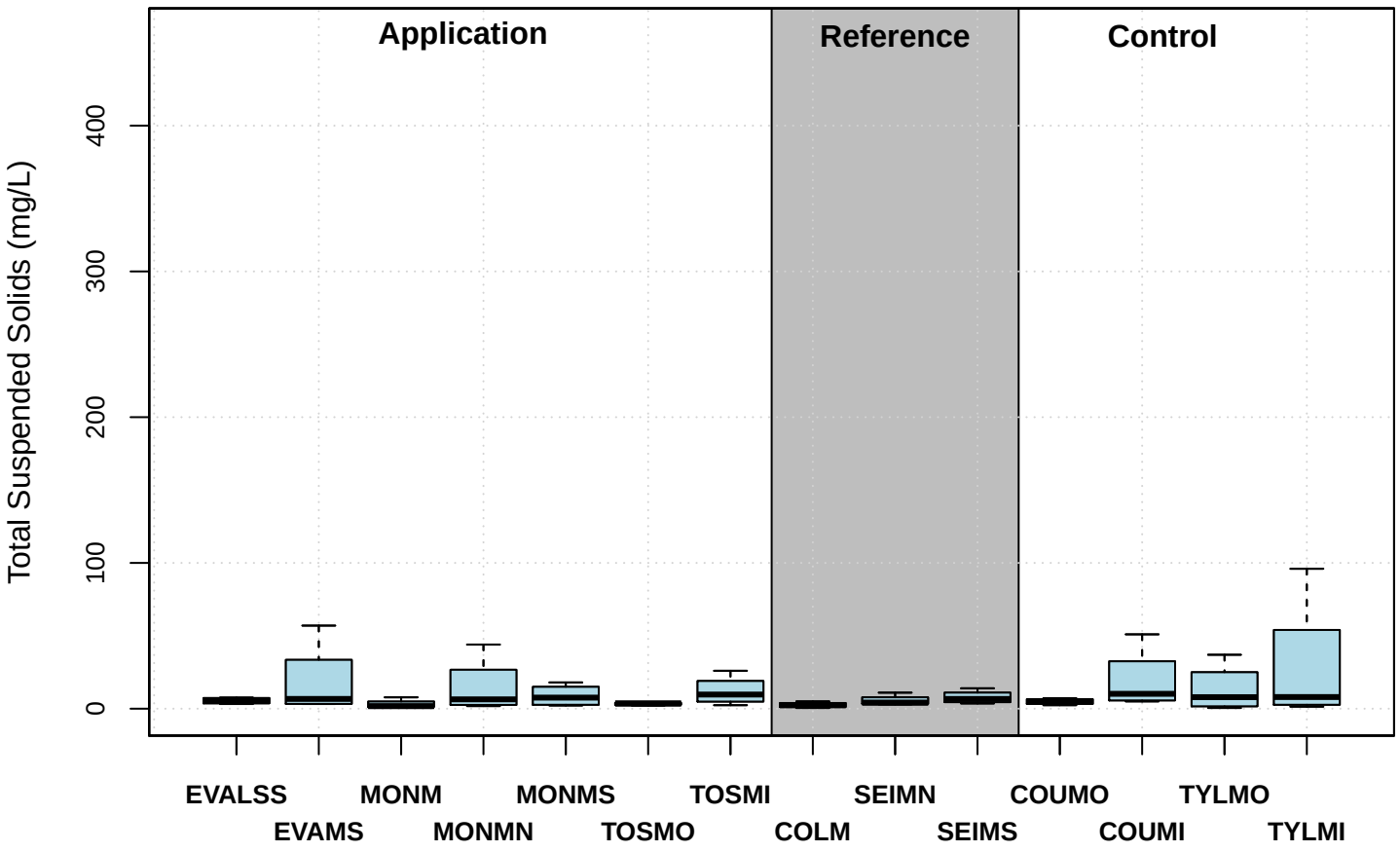

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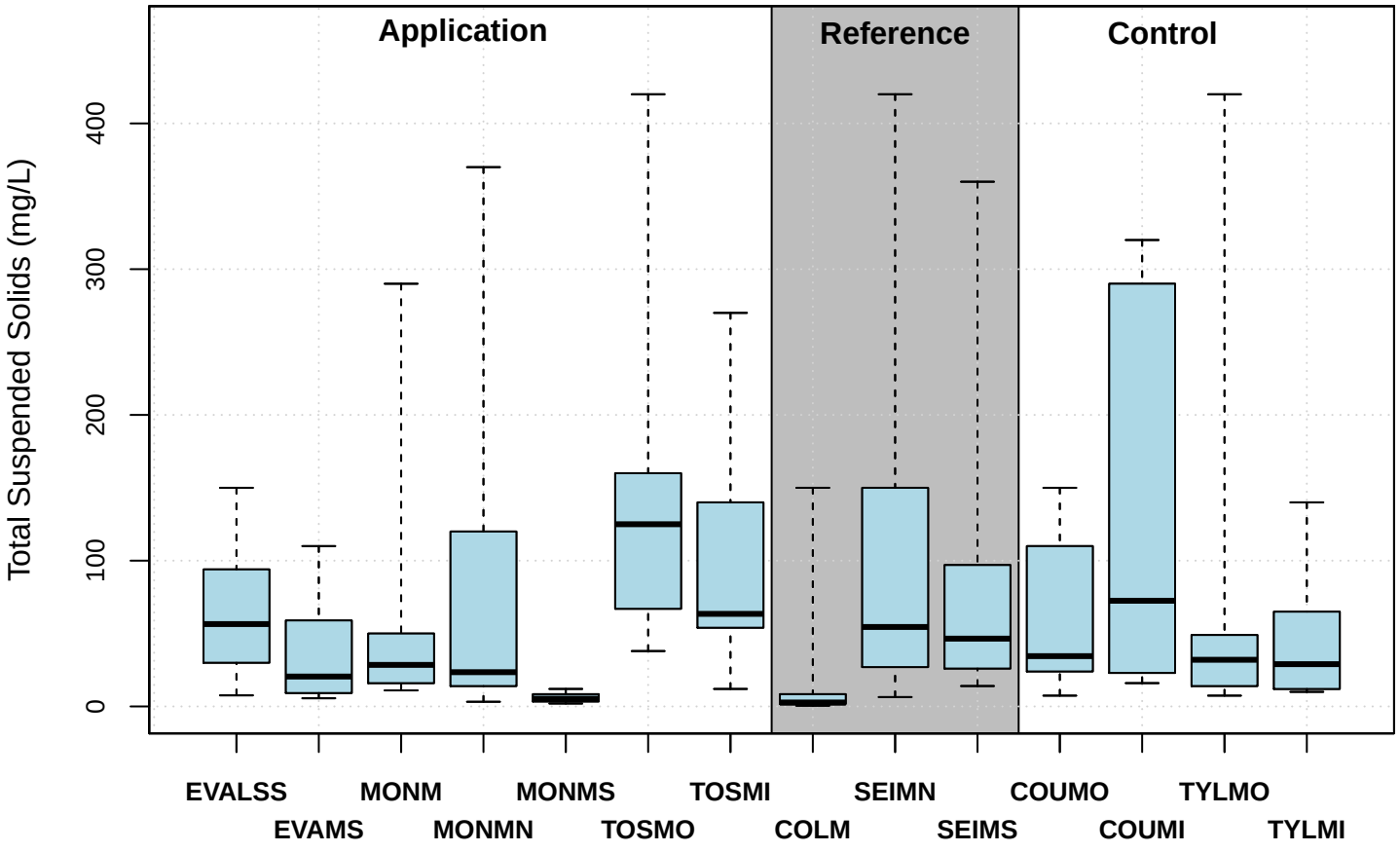
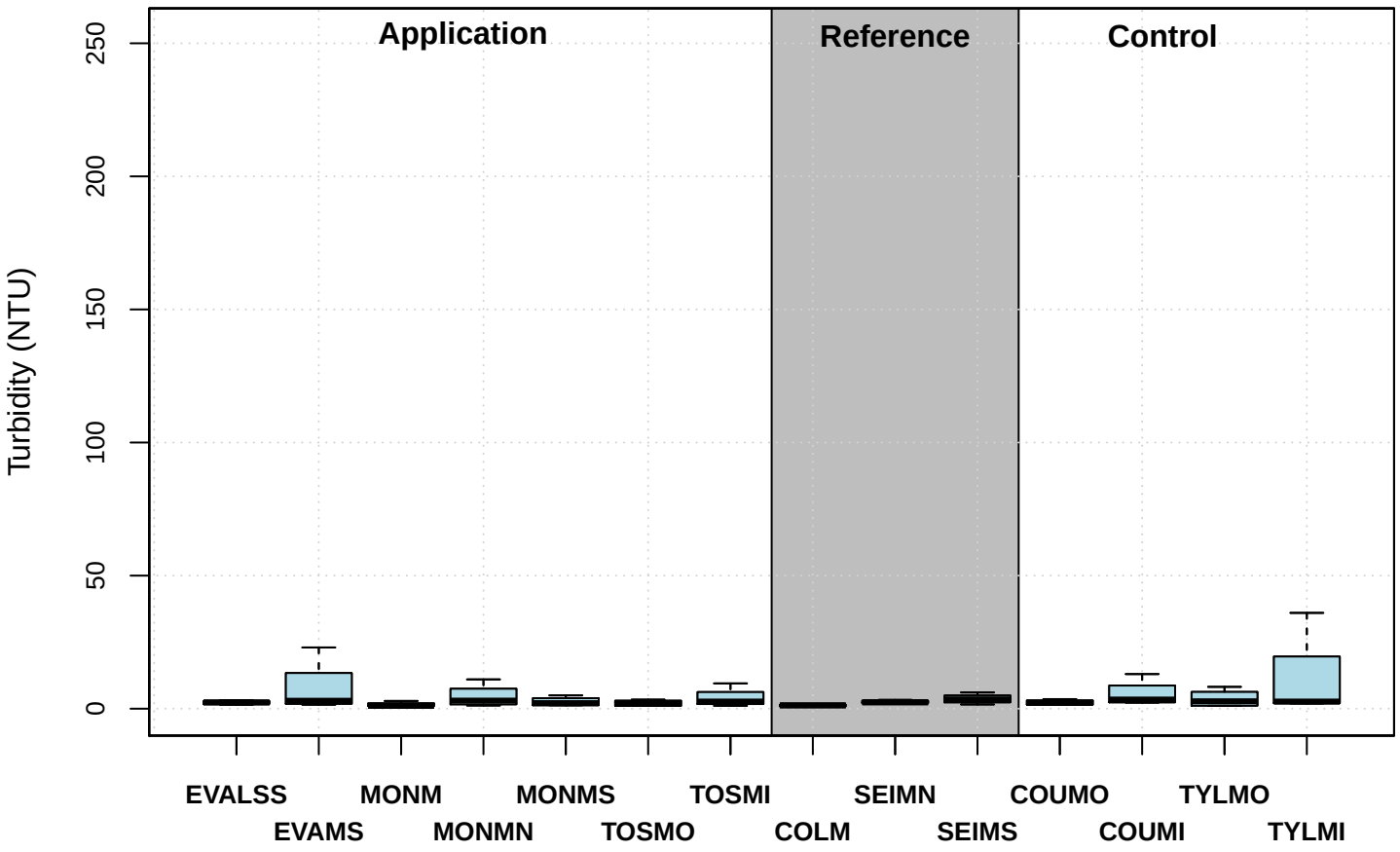


Base Flow



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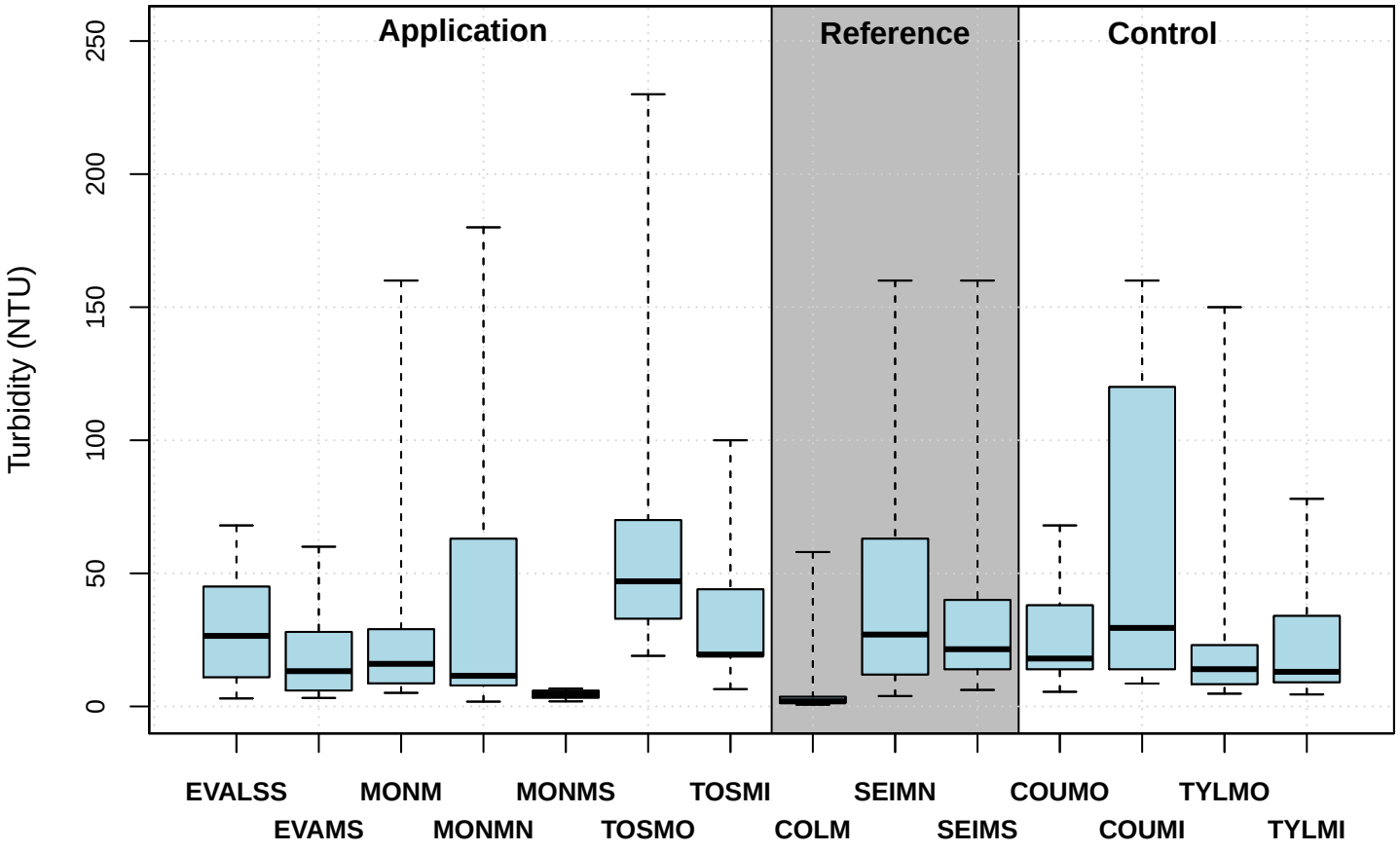
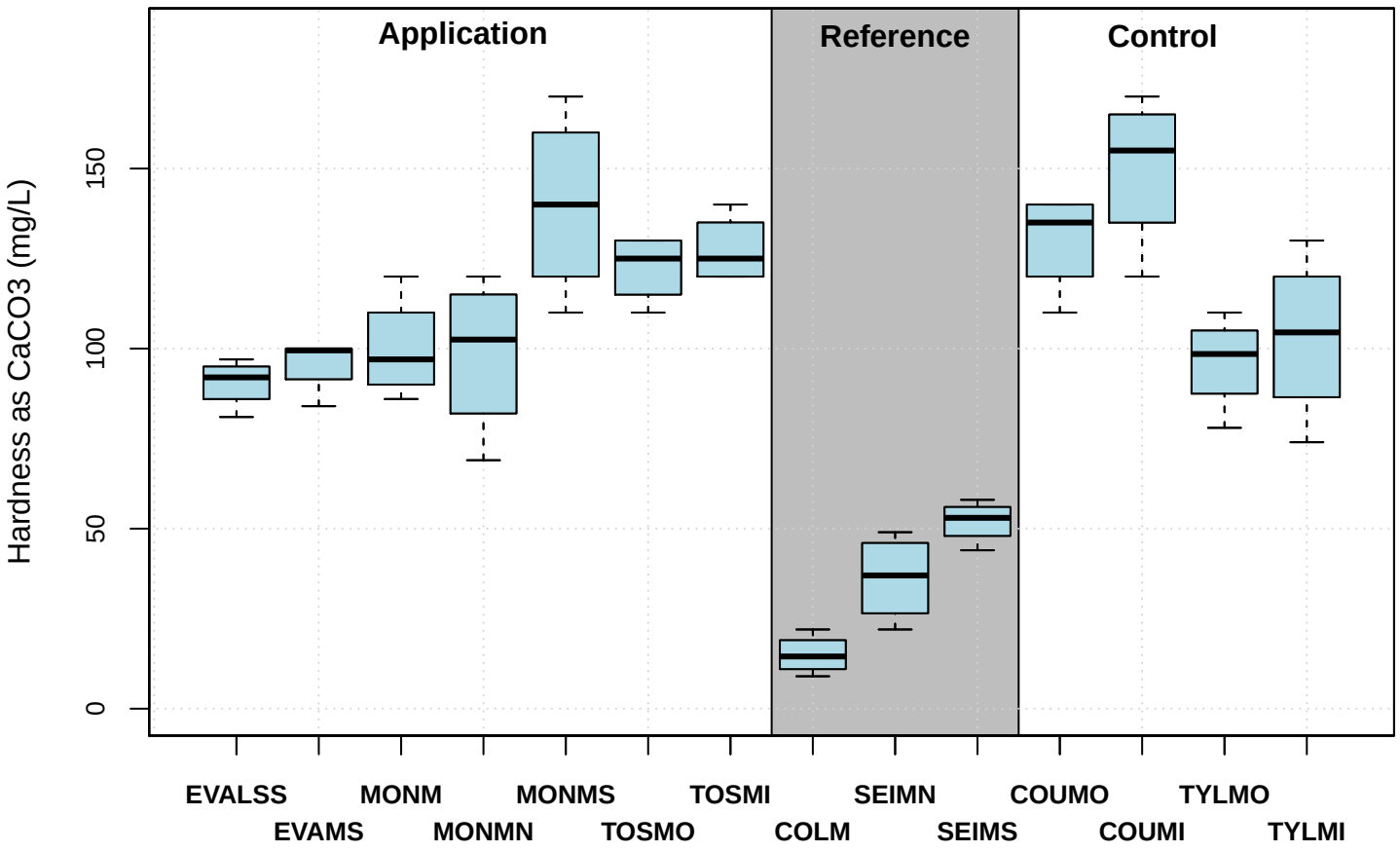


Base Flow



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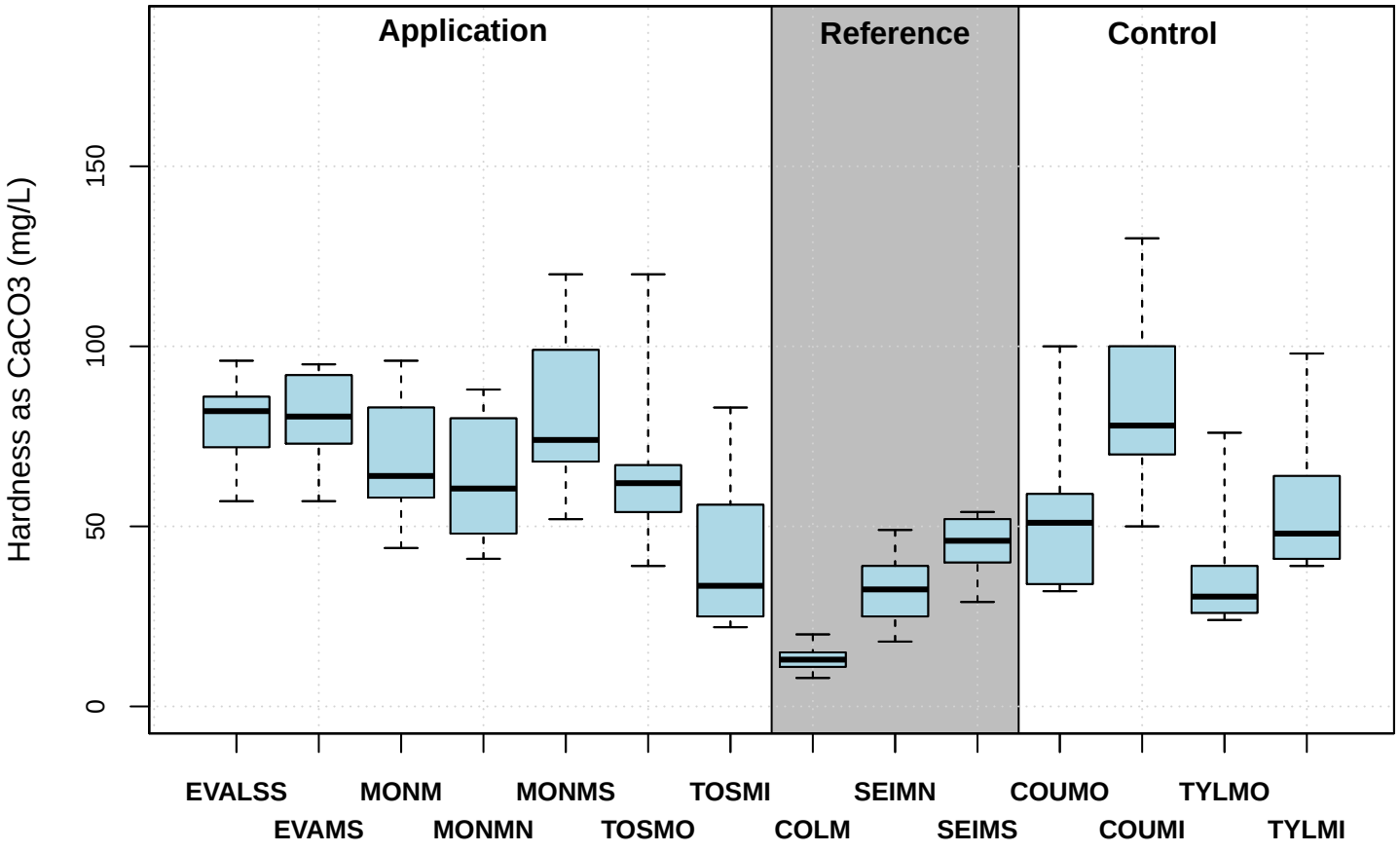
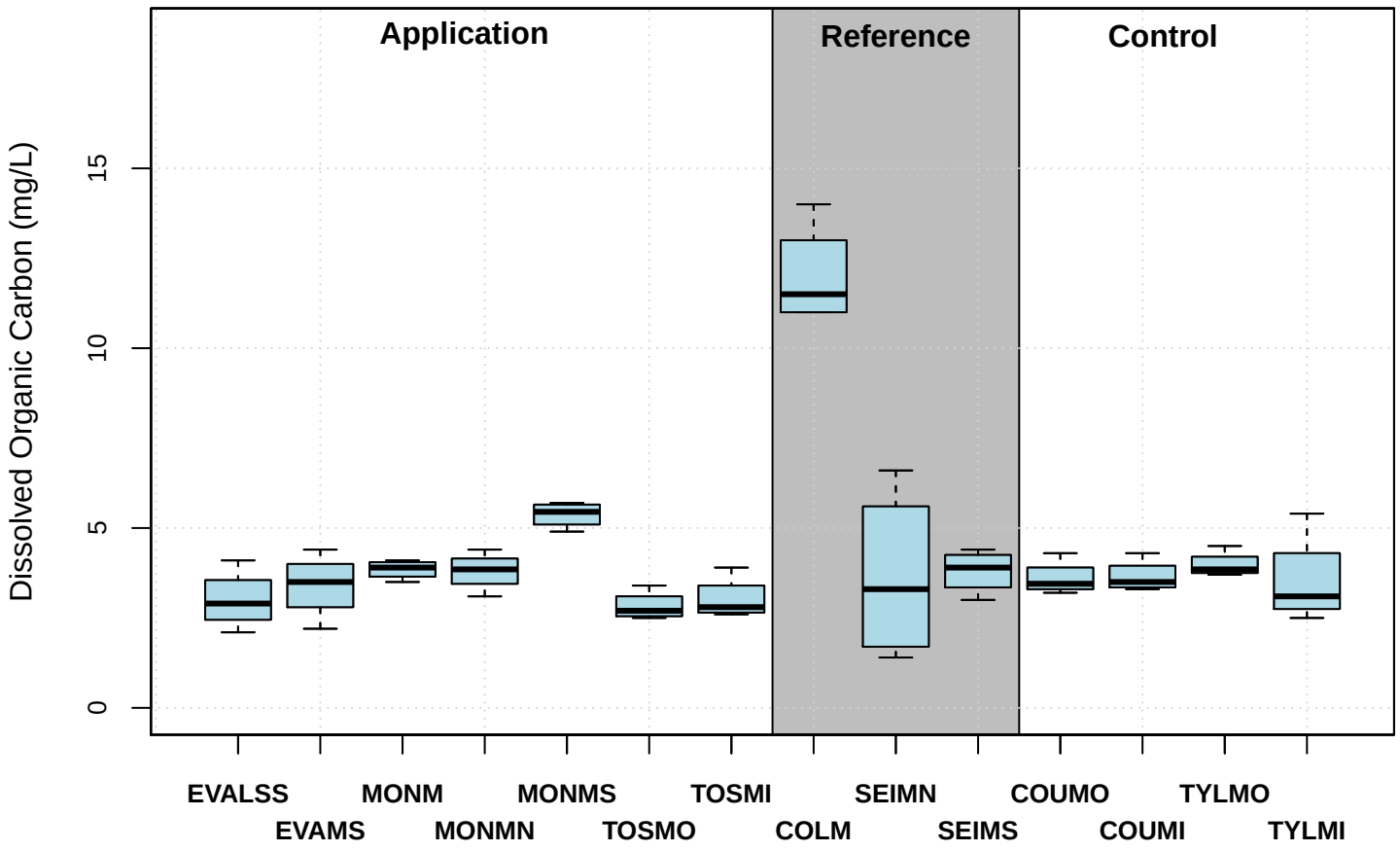


Base Flow



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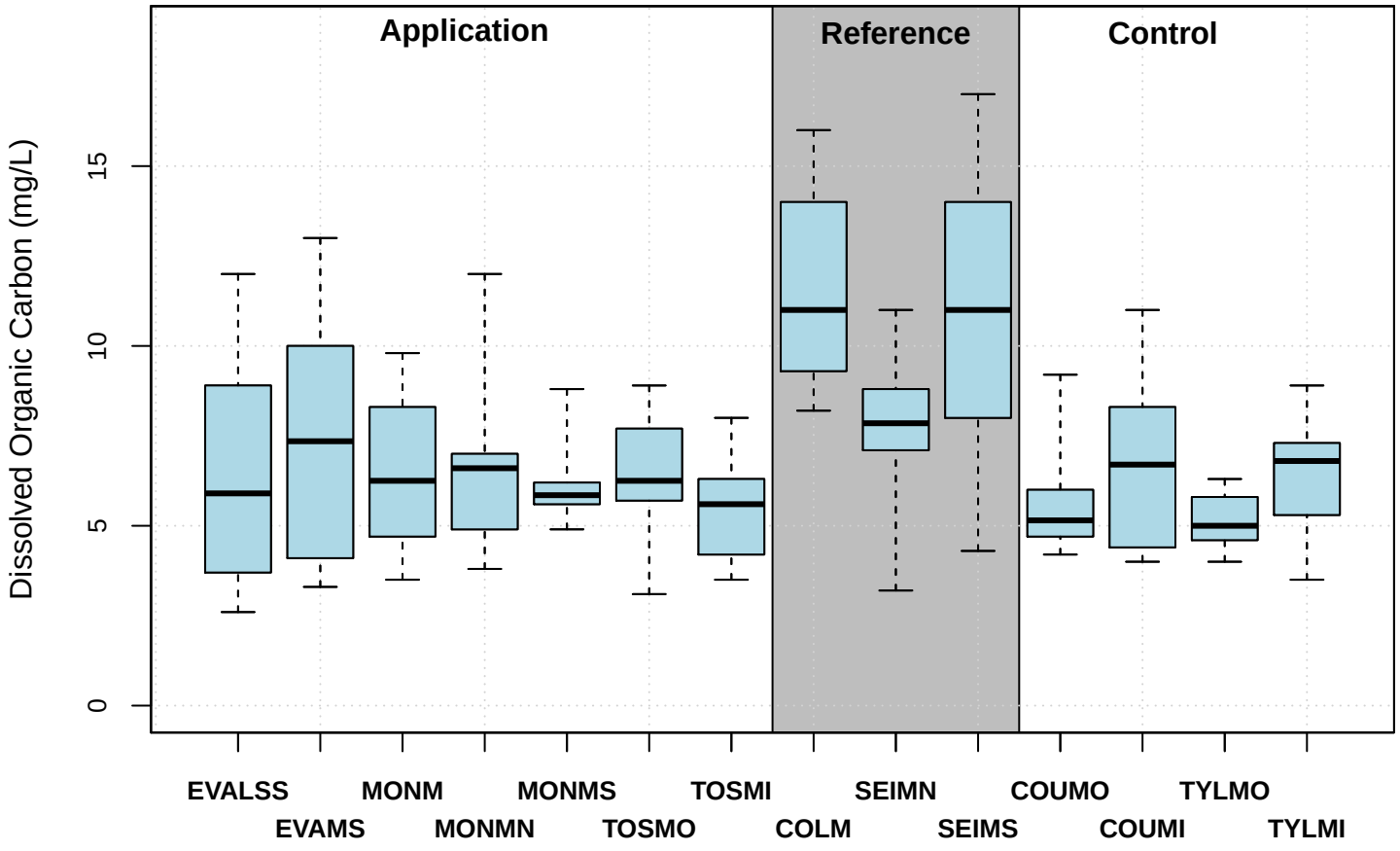
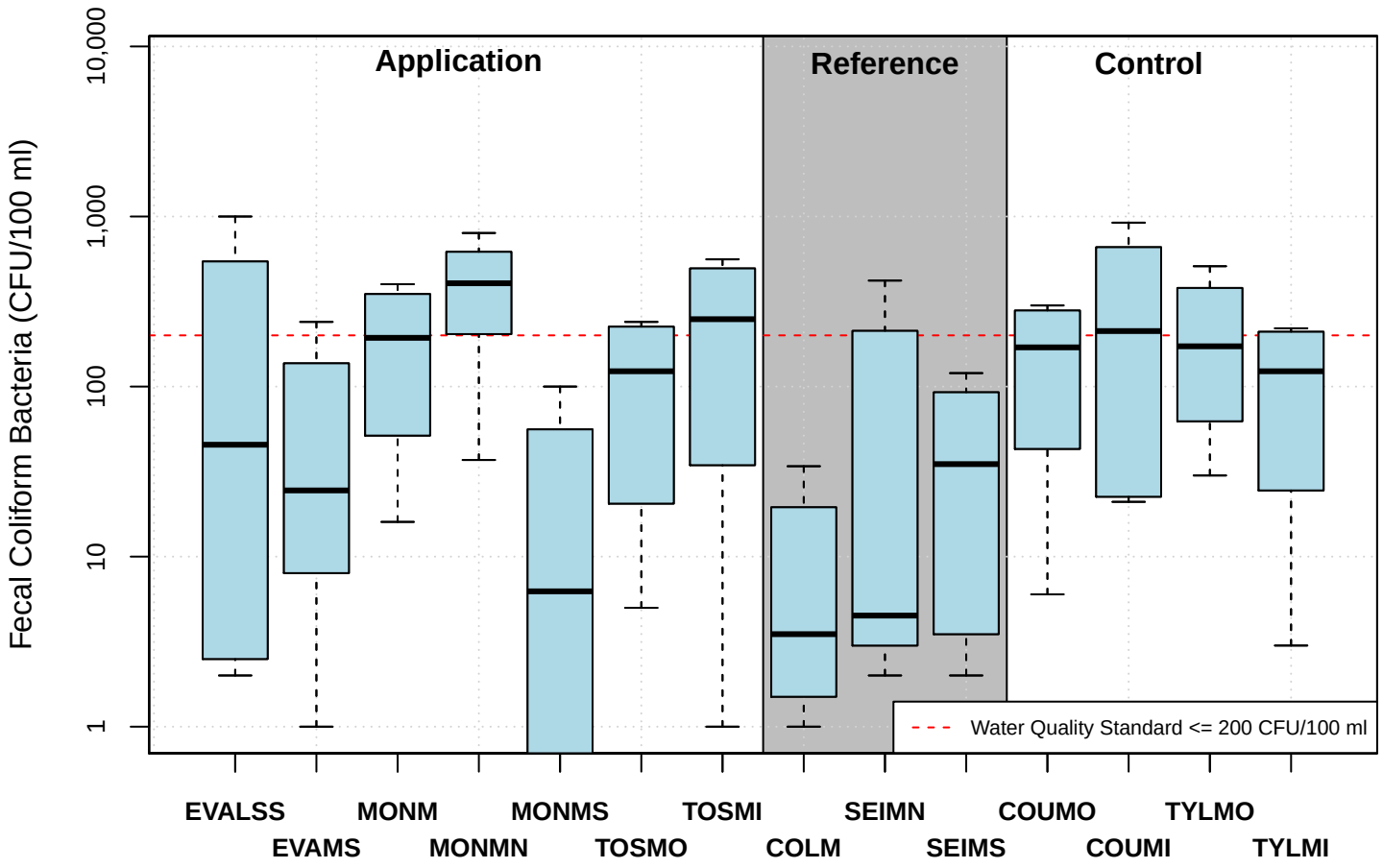
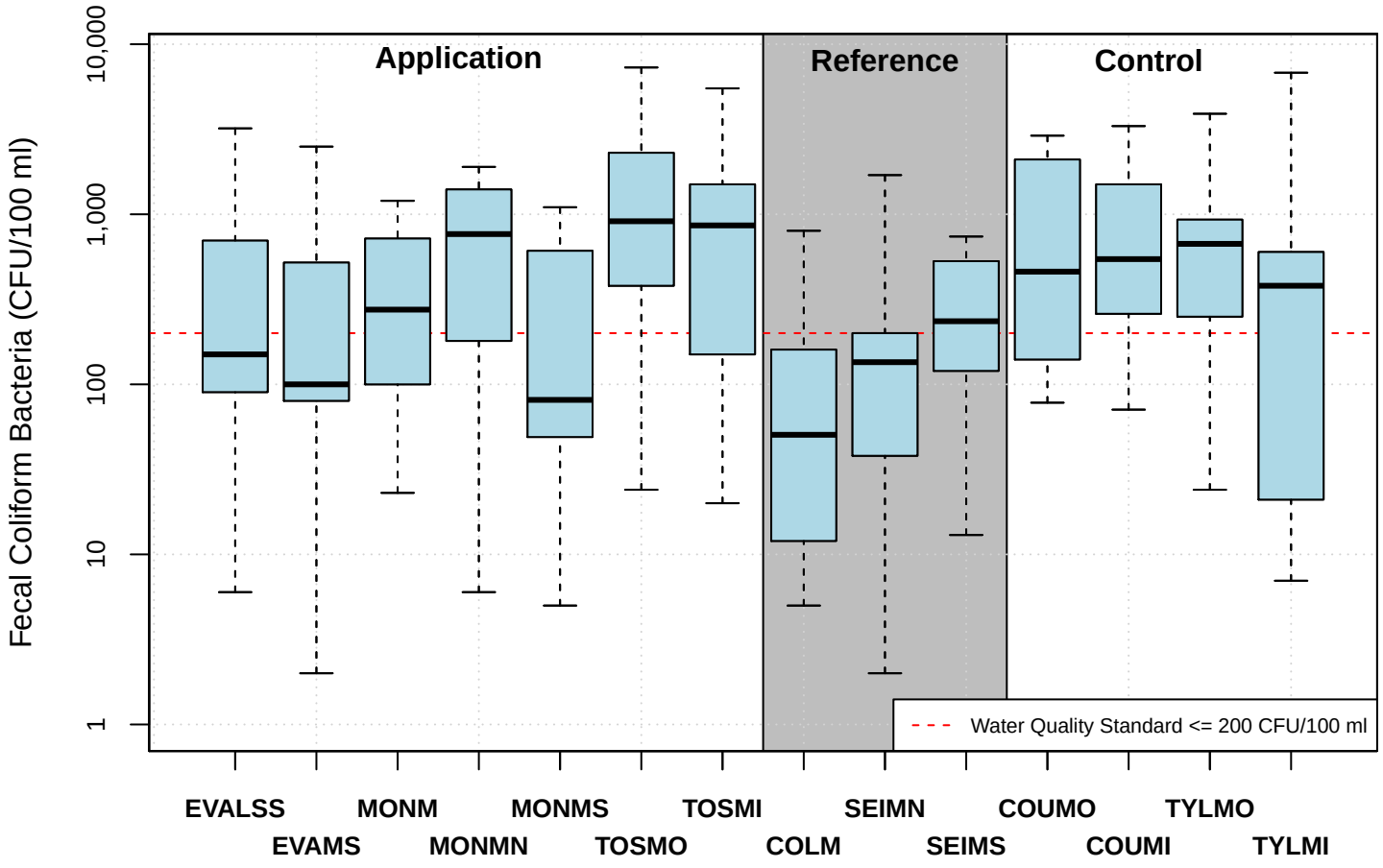


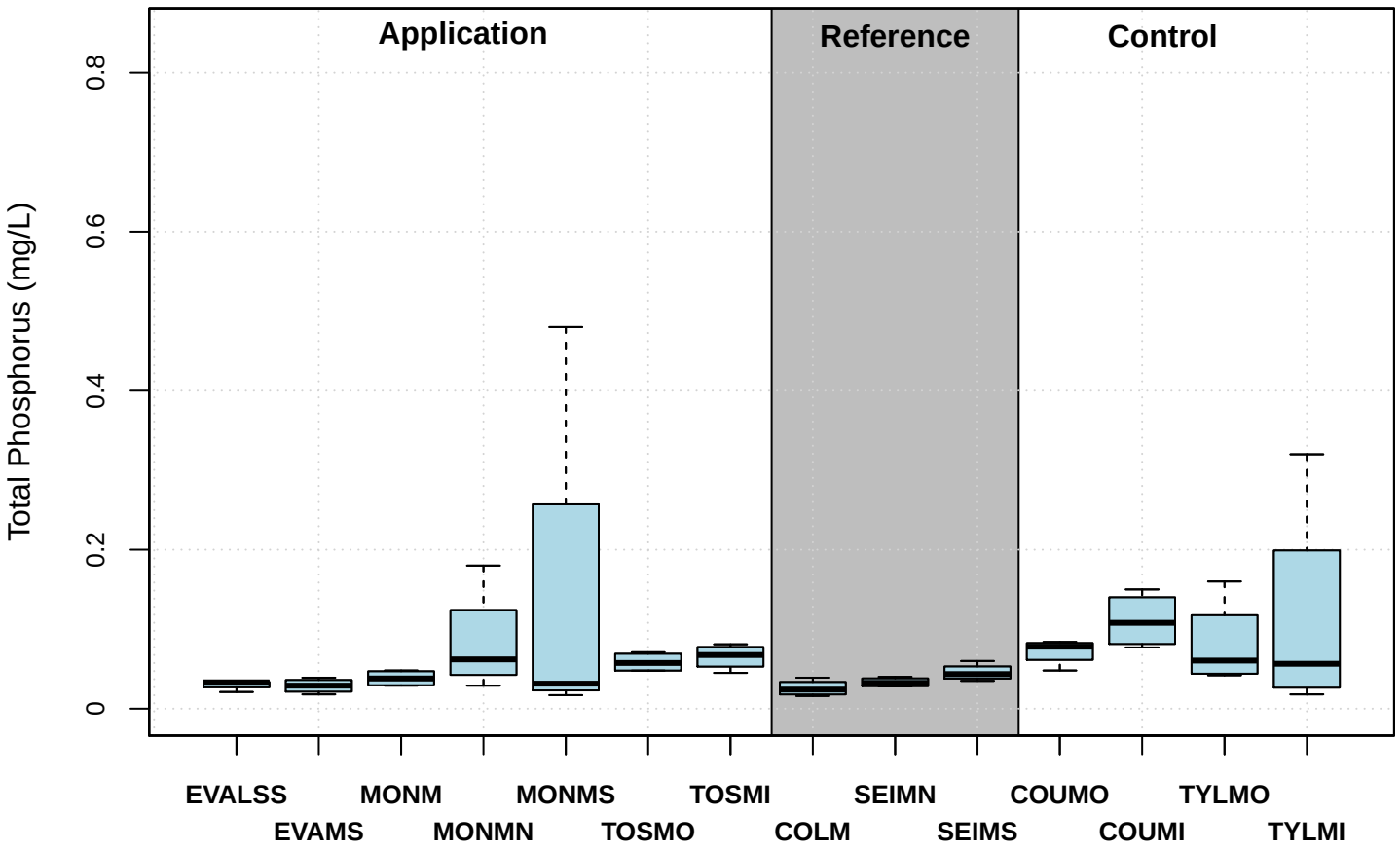
Base Flow



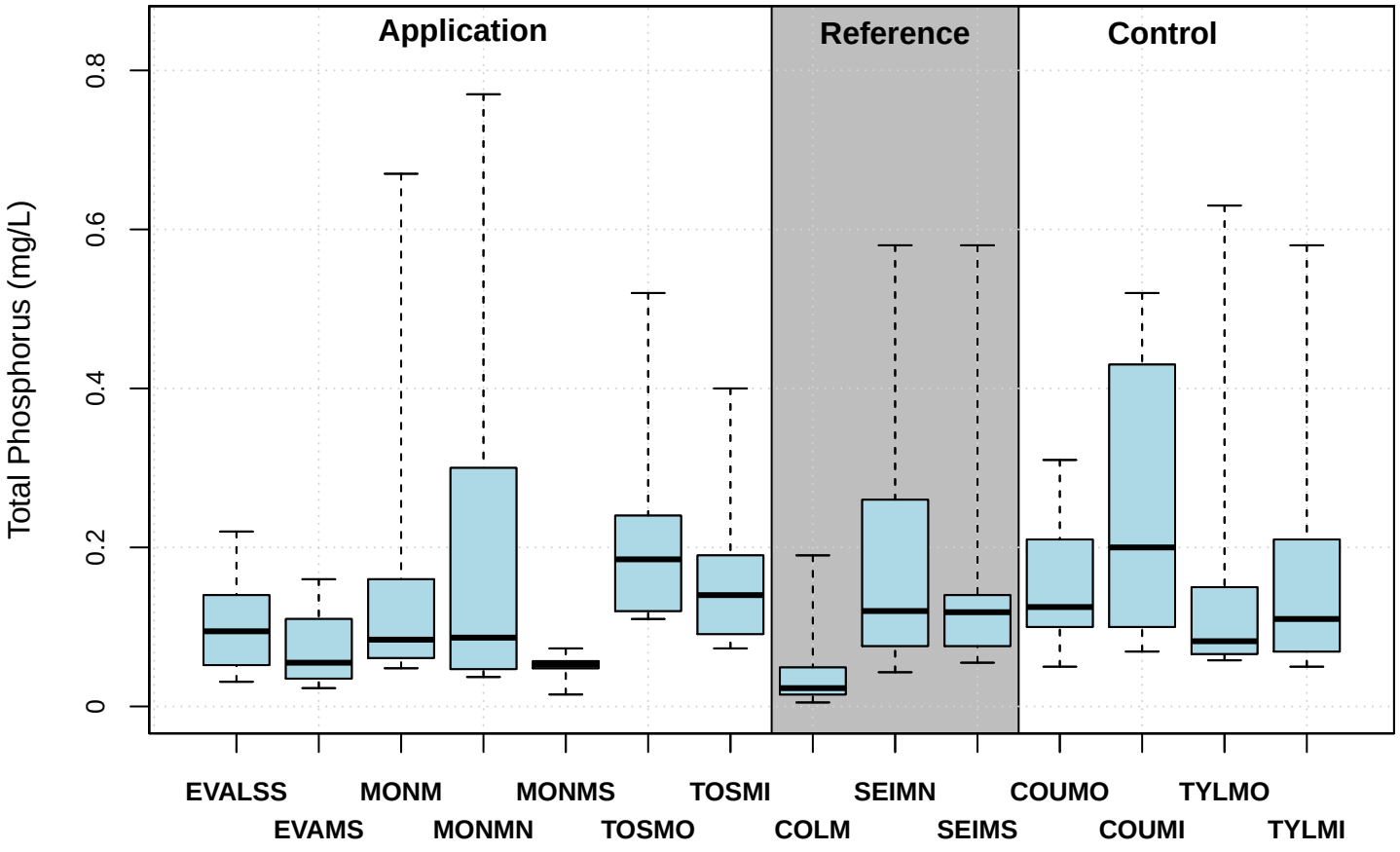
Storm Events

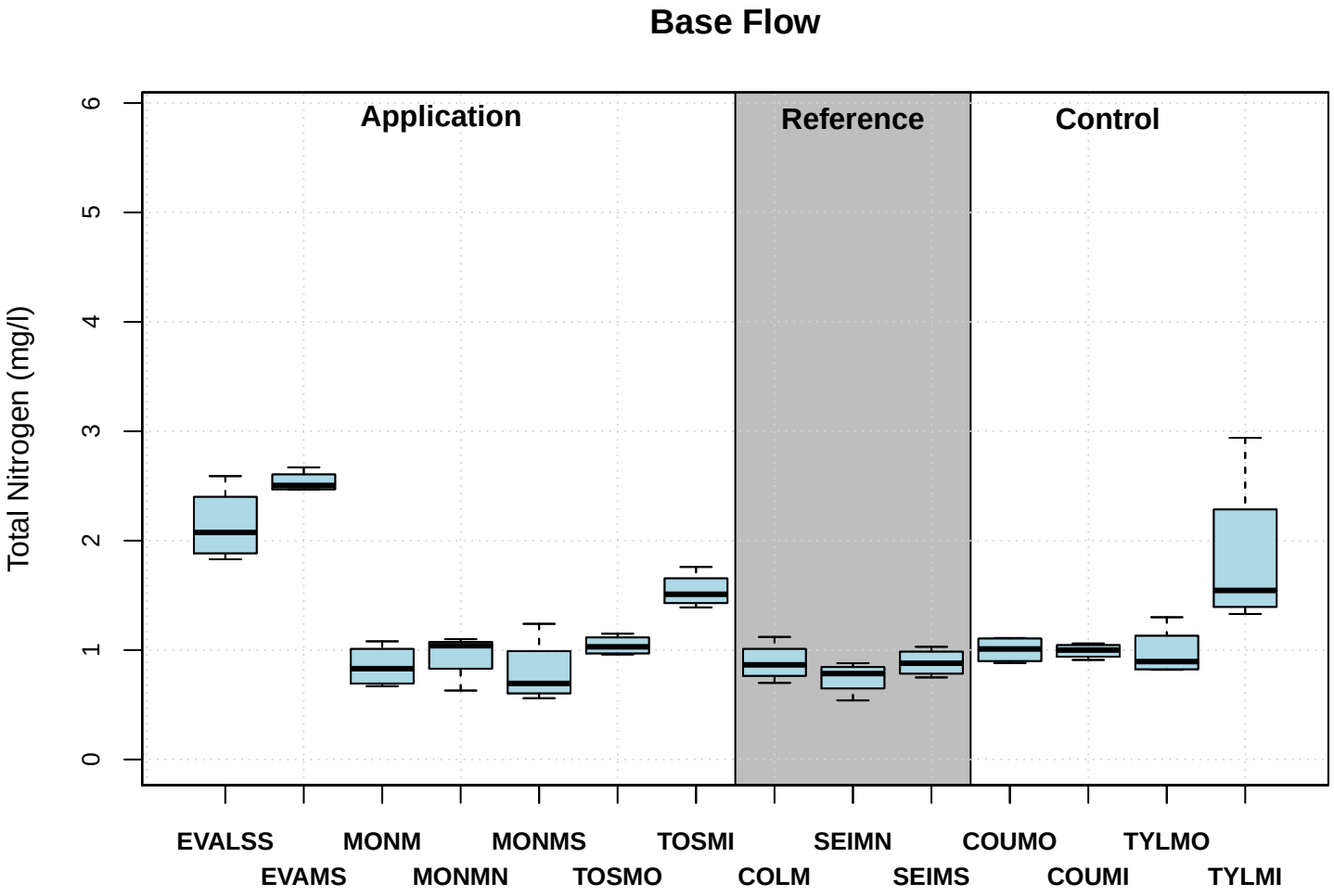


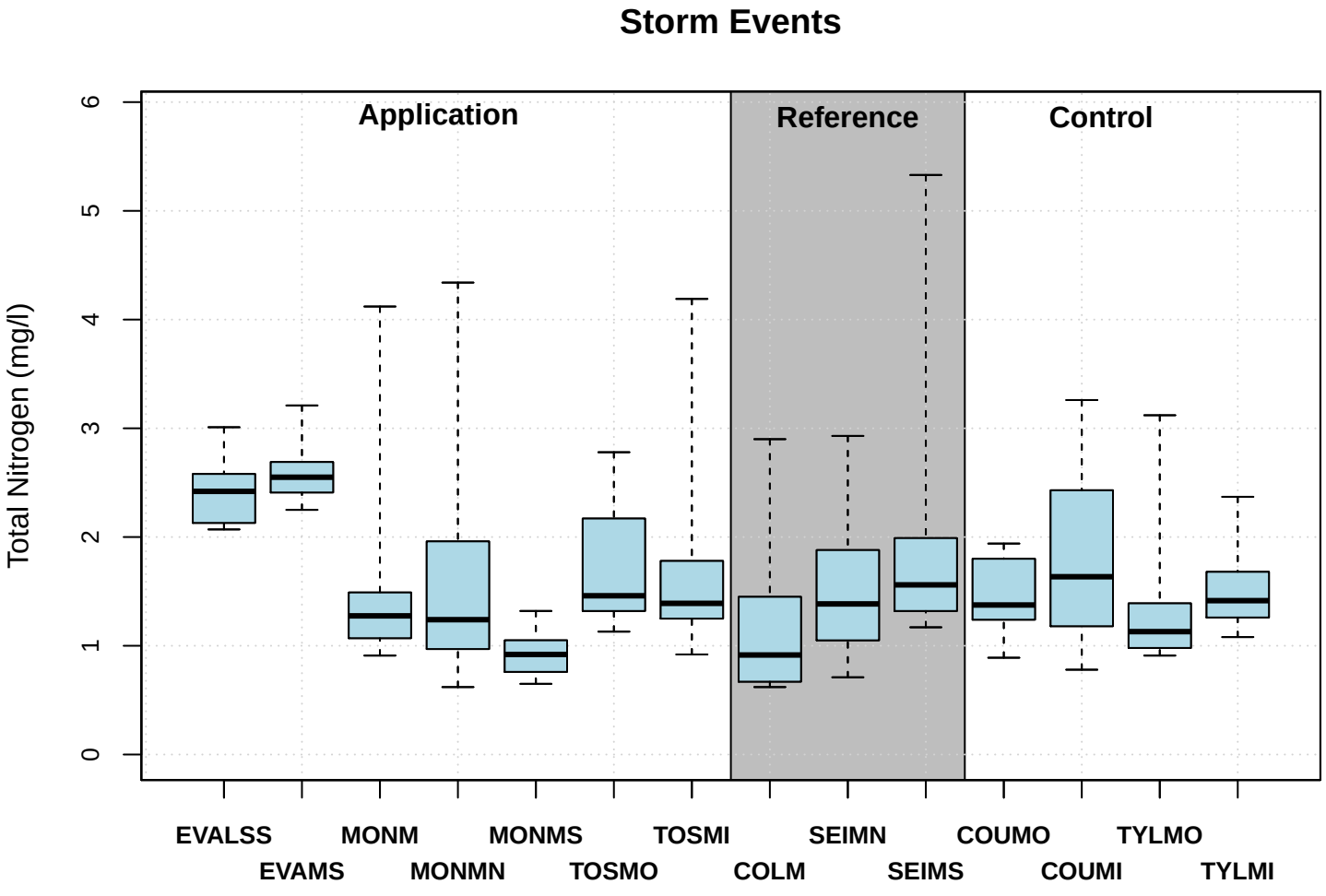
Base Flow



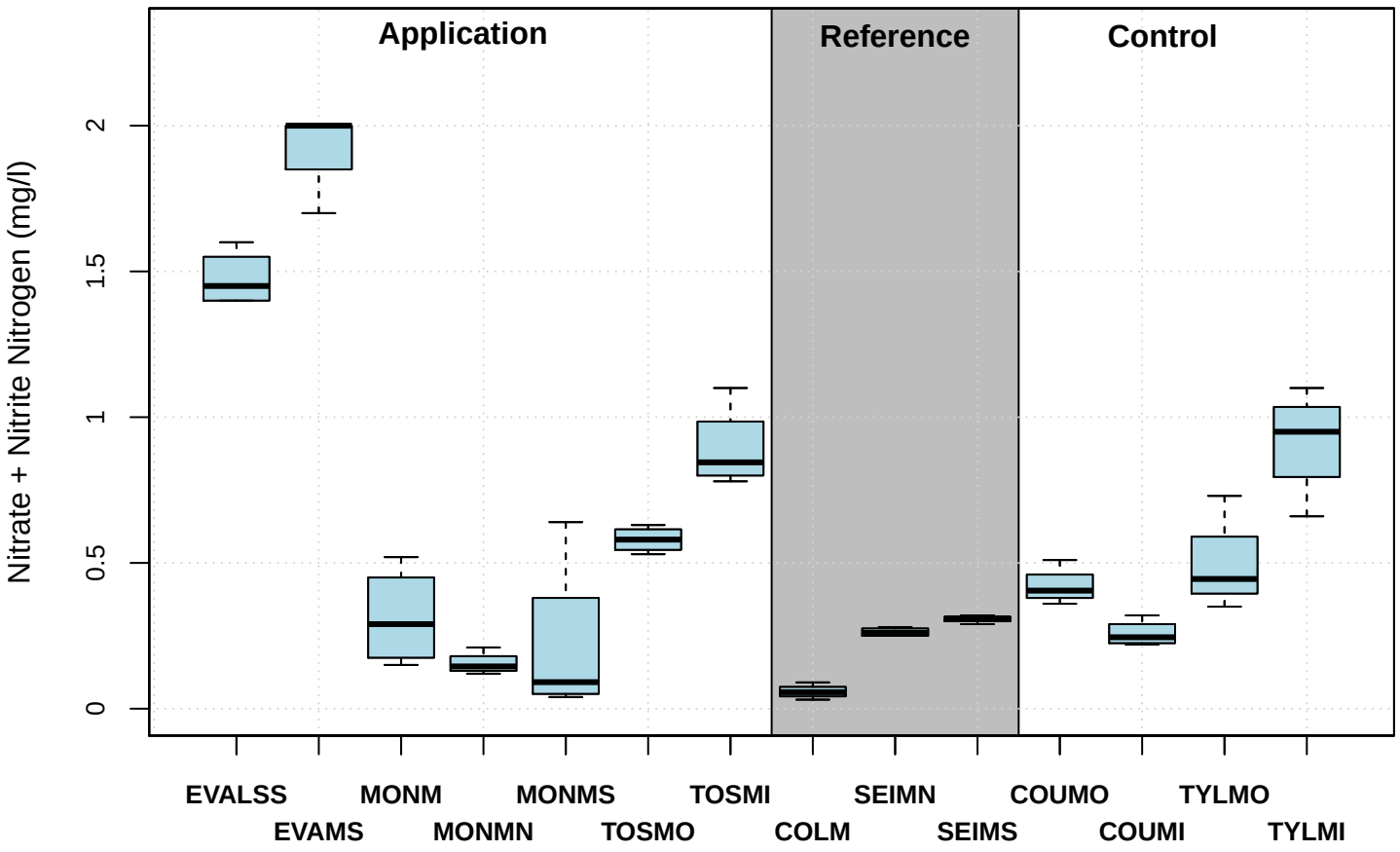
Storm Events



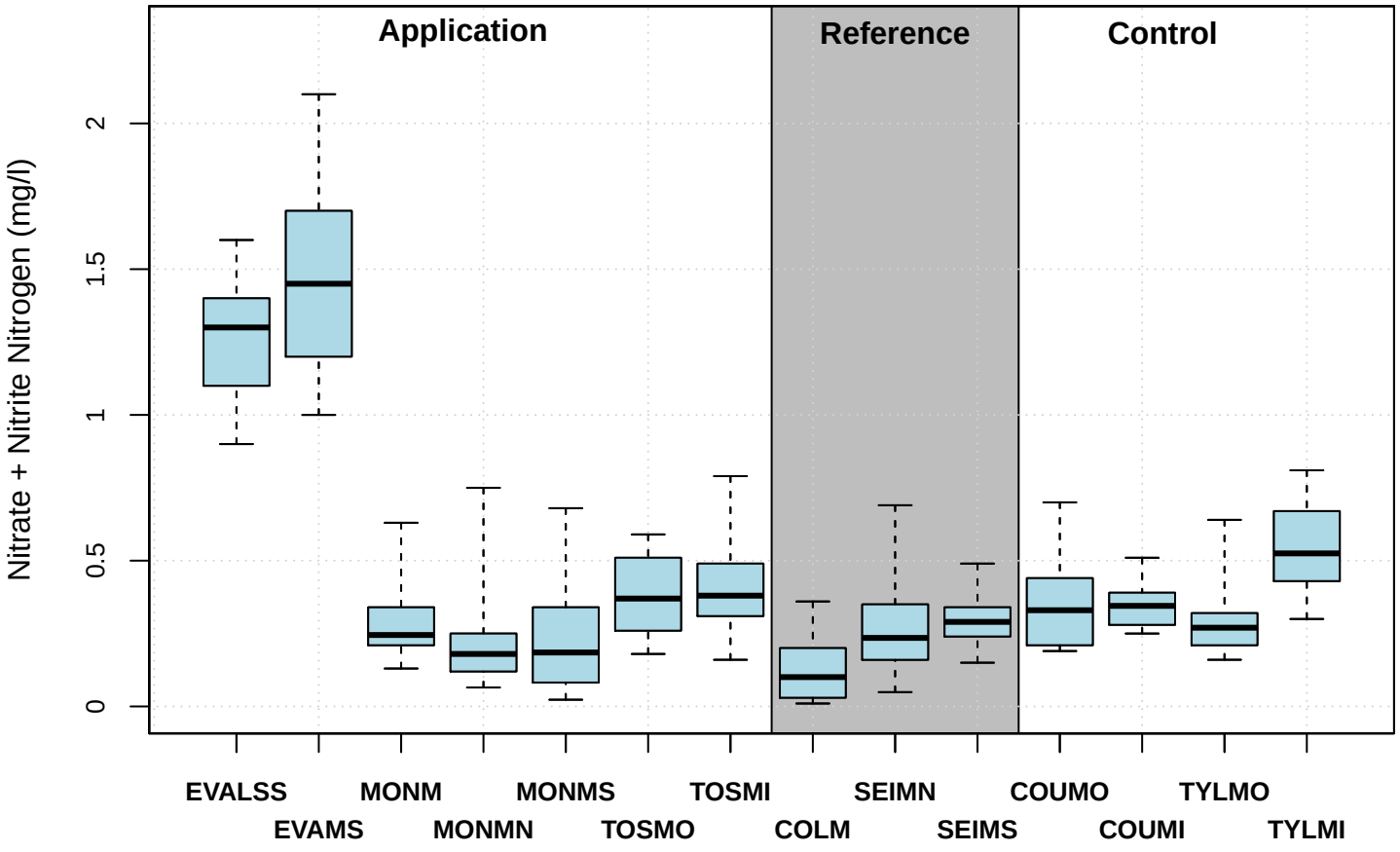

Base Flow
Application
Reference
Control
Total Nitrogen (mg/l)
0
1
2
3
4
5
6
EVALSS
EVAMS
MONM
MONMN
MONMS
TOSMO
TOSMI
COLM
SEIMN
SEIMS
COUMO
COUMI
TYLMO
TYLMI


Storm Events
Application
Reference
Control
Total Nitrogen (mg/l)
0
1
2
3
4
5
6
EVALSS
EVAMS
MONM
MONMN
MONMS
TOSMO
TOSMI
COLM
SEIMN
SEIMS
COUMO
COUMI
TYLMO
TYLMI

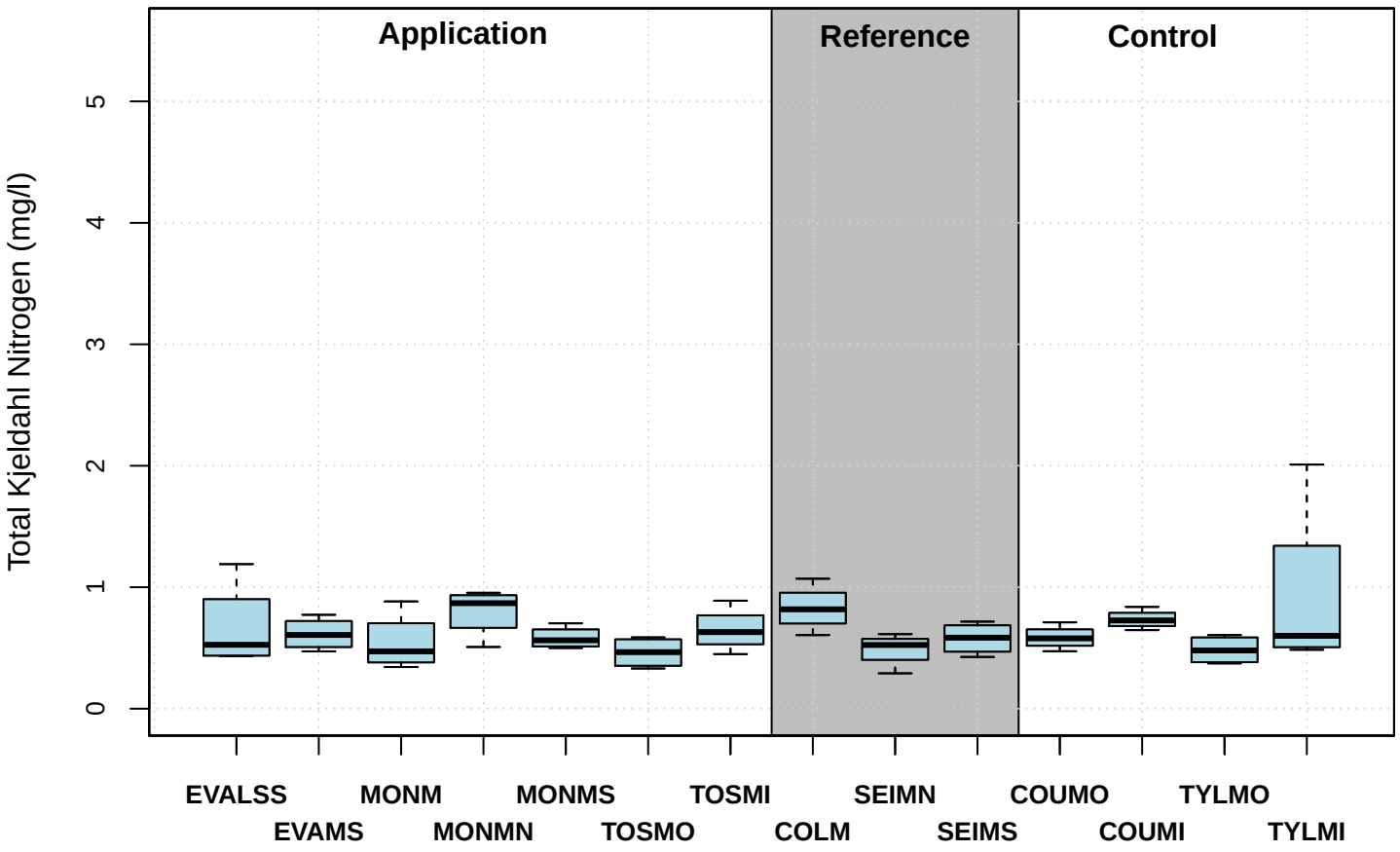
Base Flow



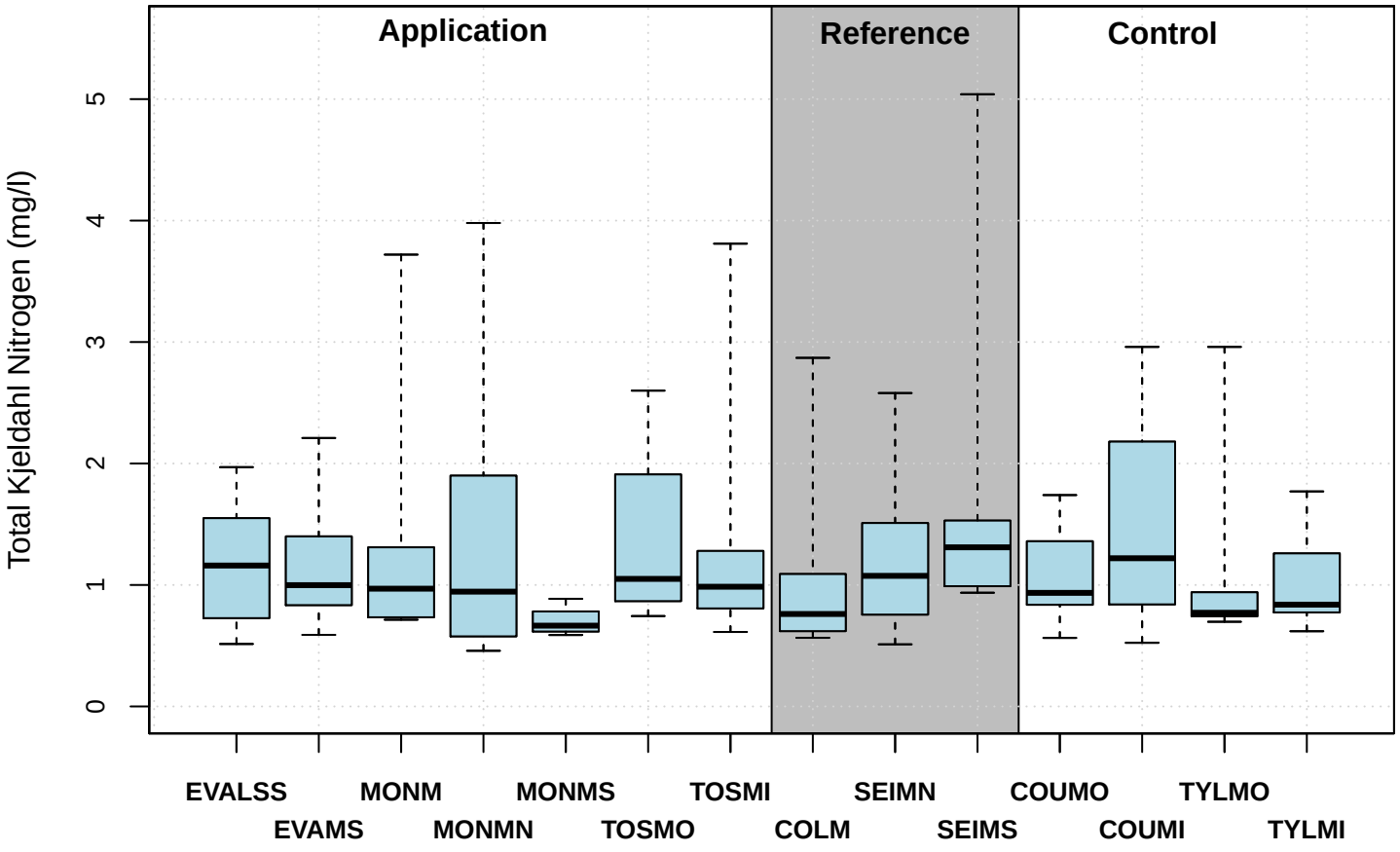
Storm Events



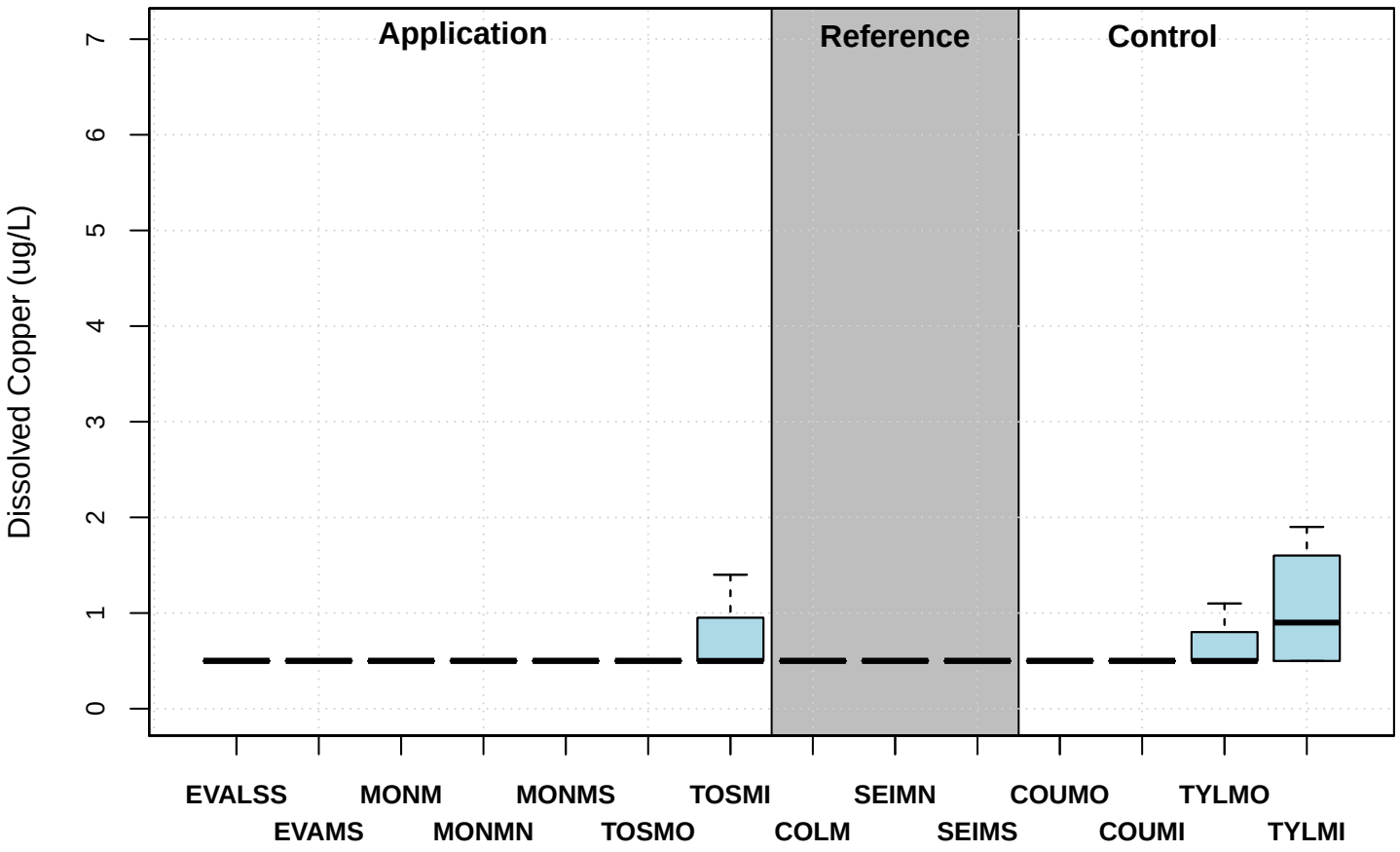
Base Flow



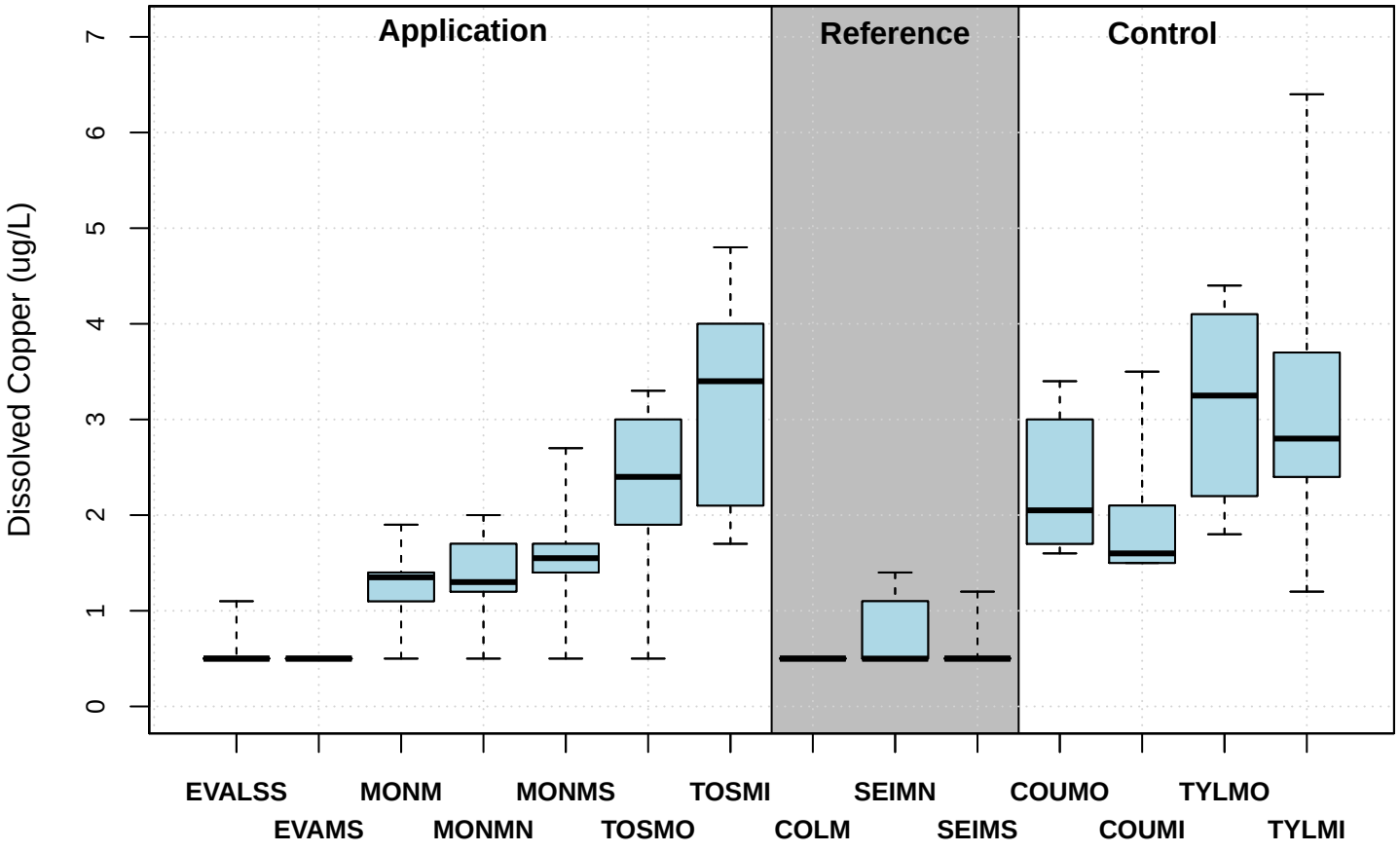
Storm Events



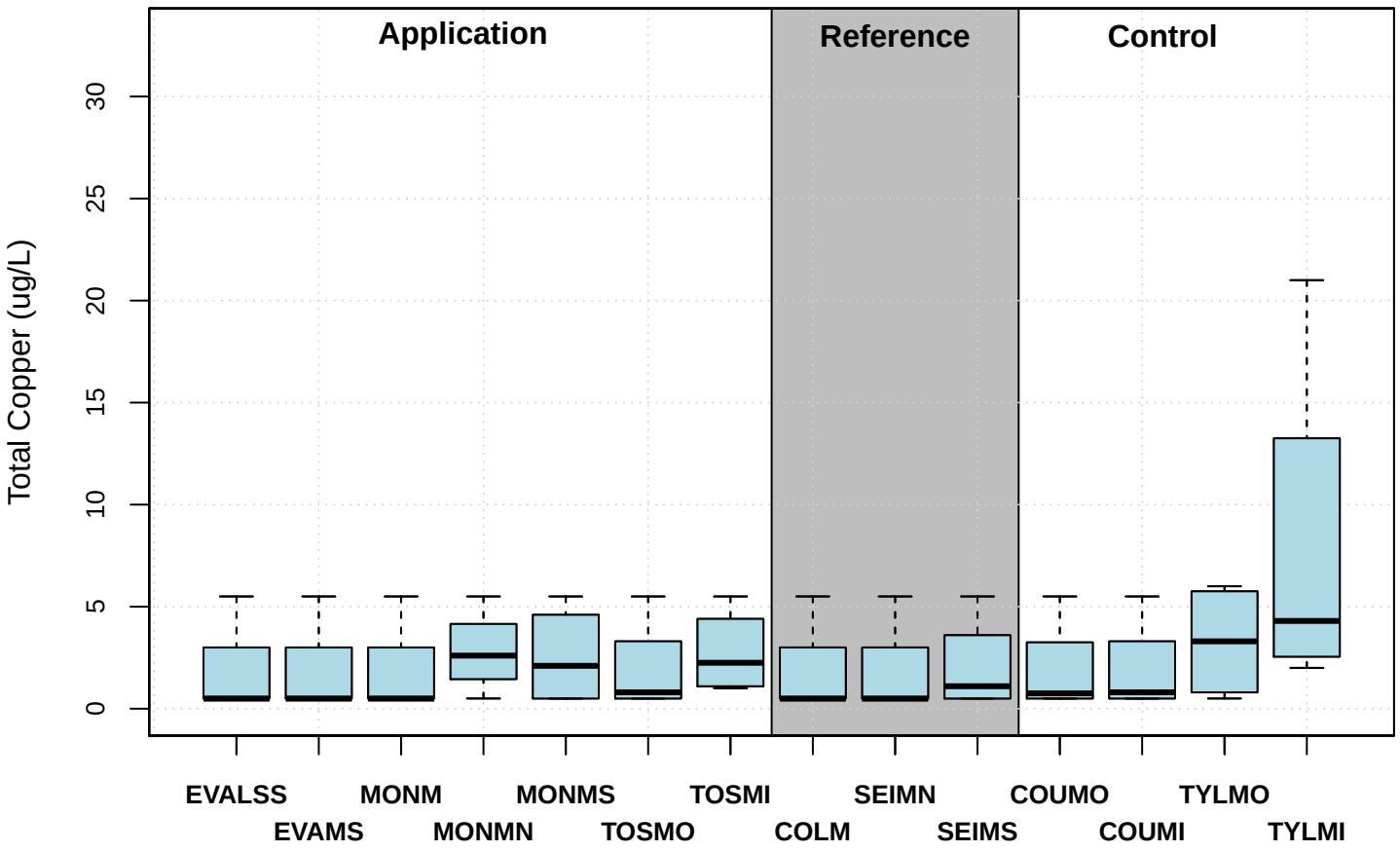
Base Flow



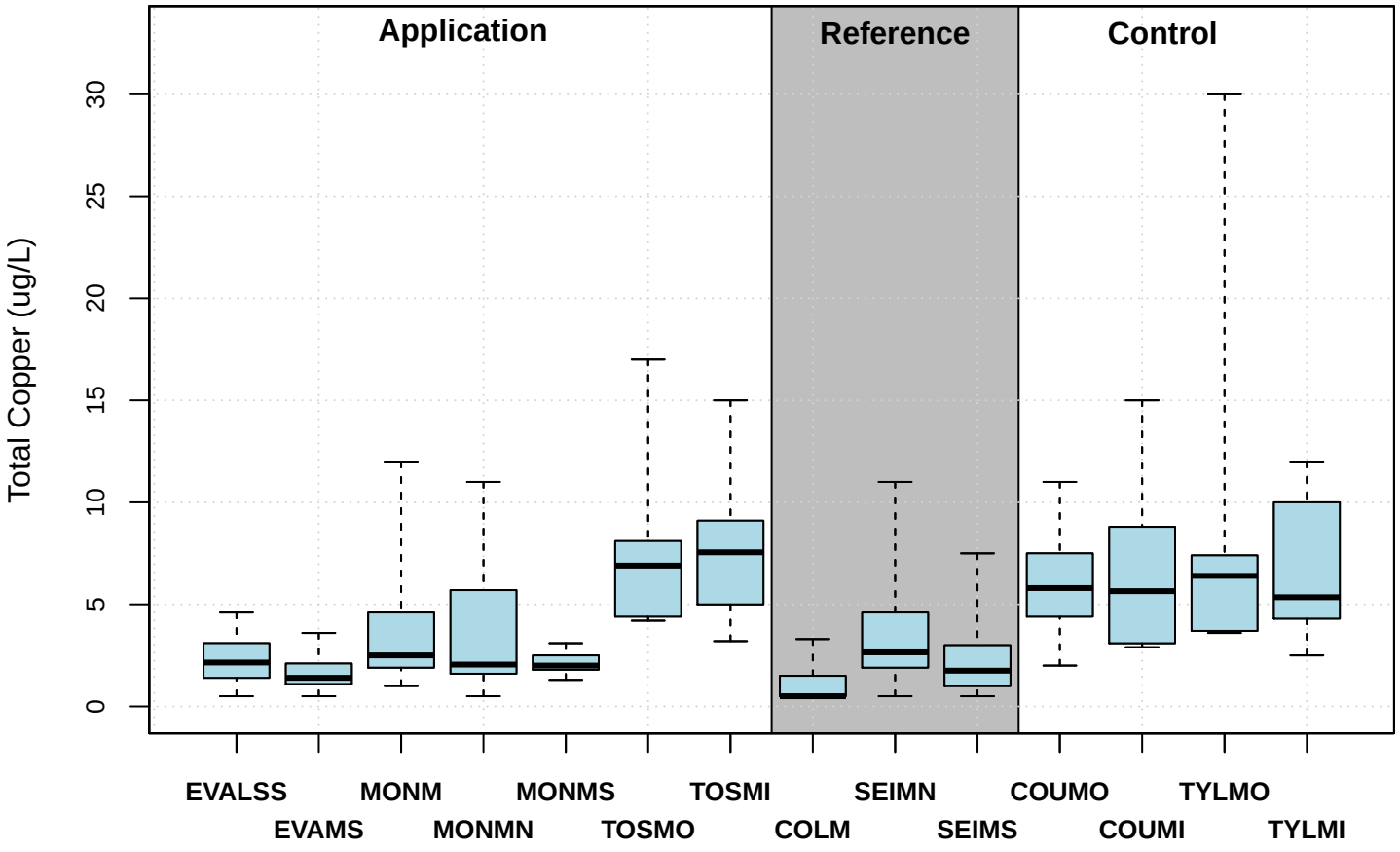
Storm Events



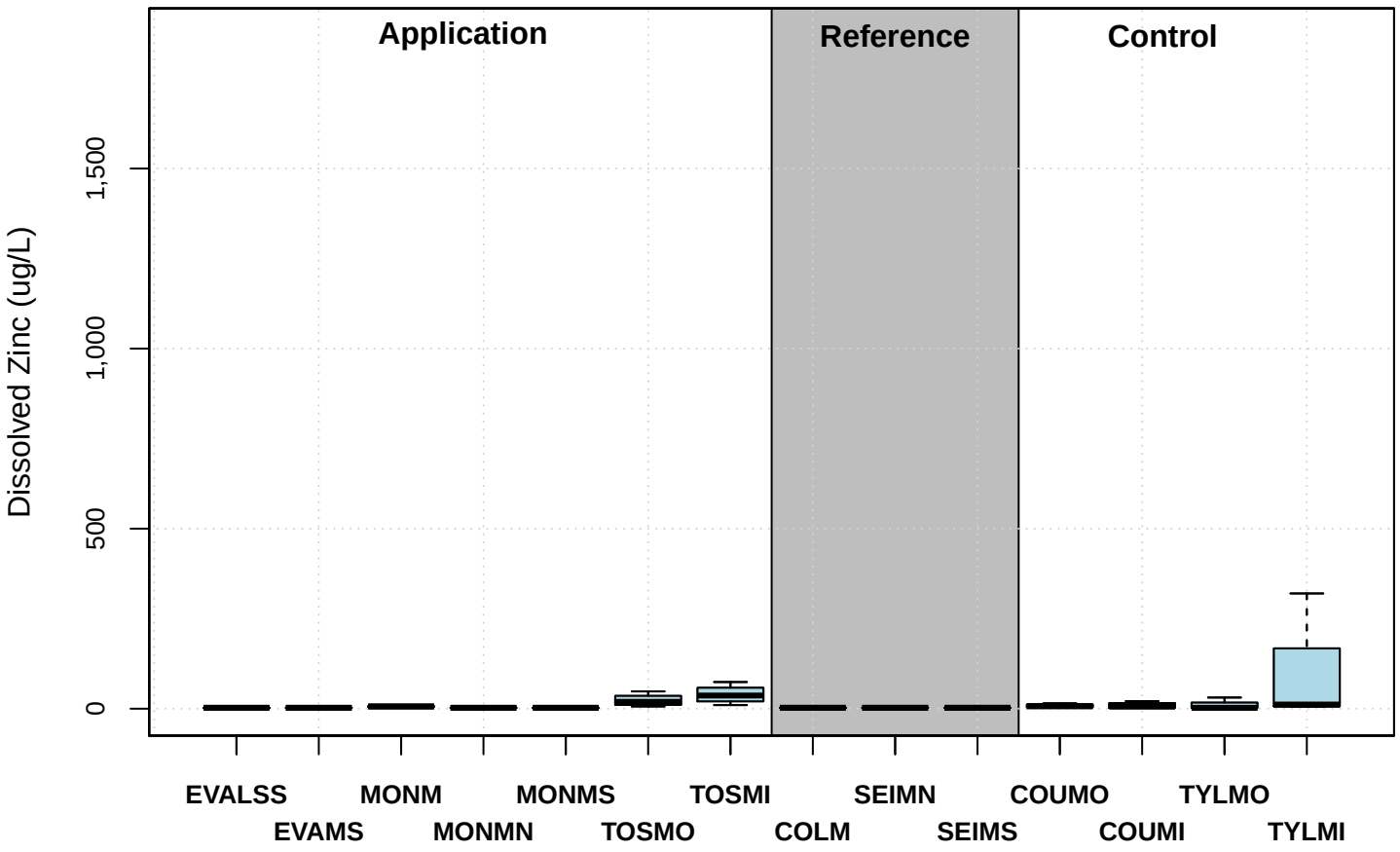
Base Flow



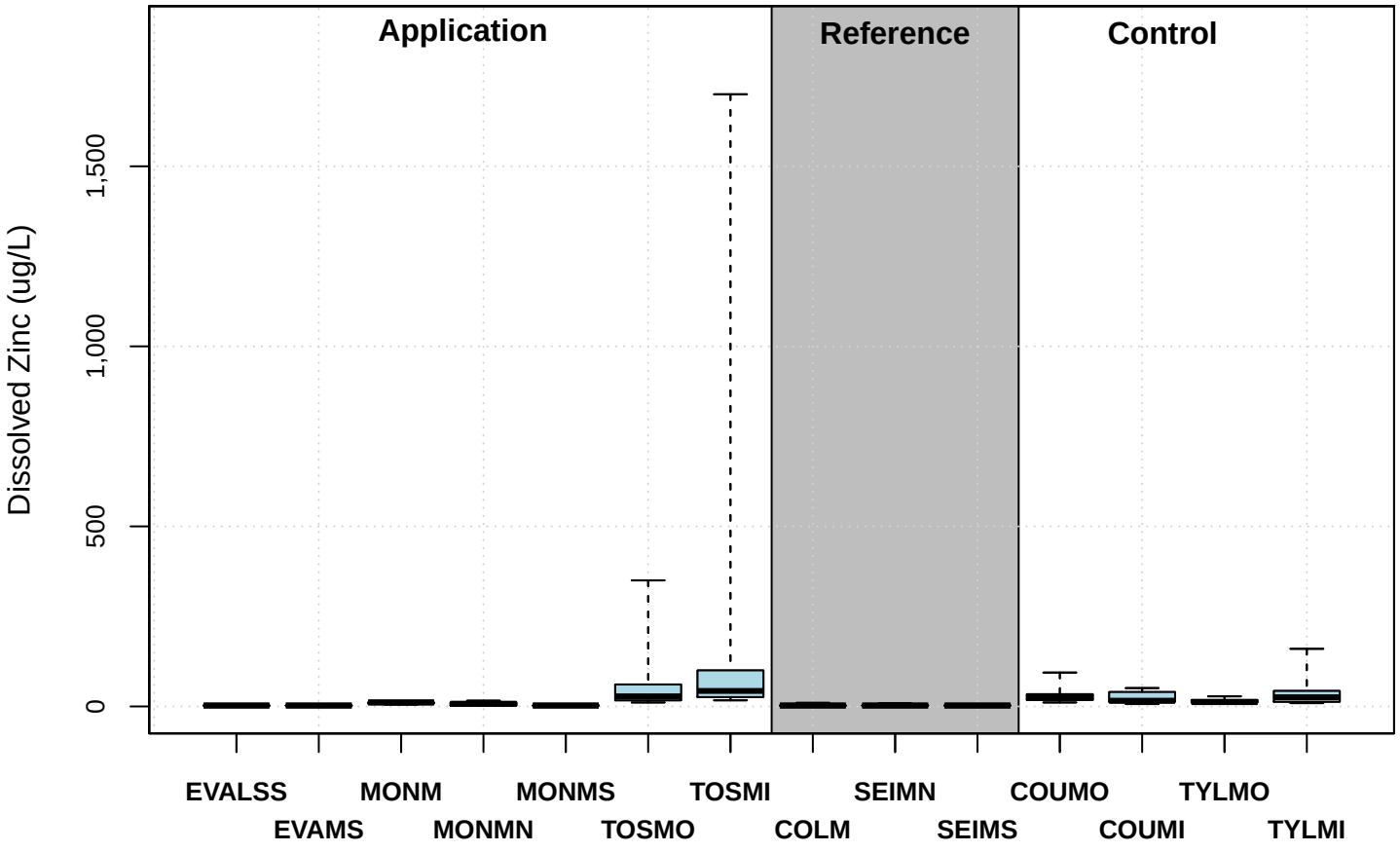
Storm Events



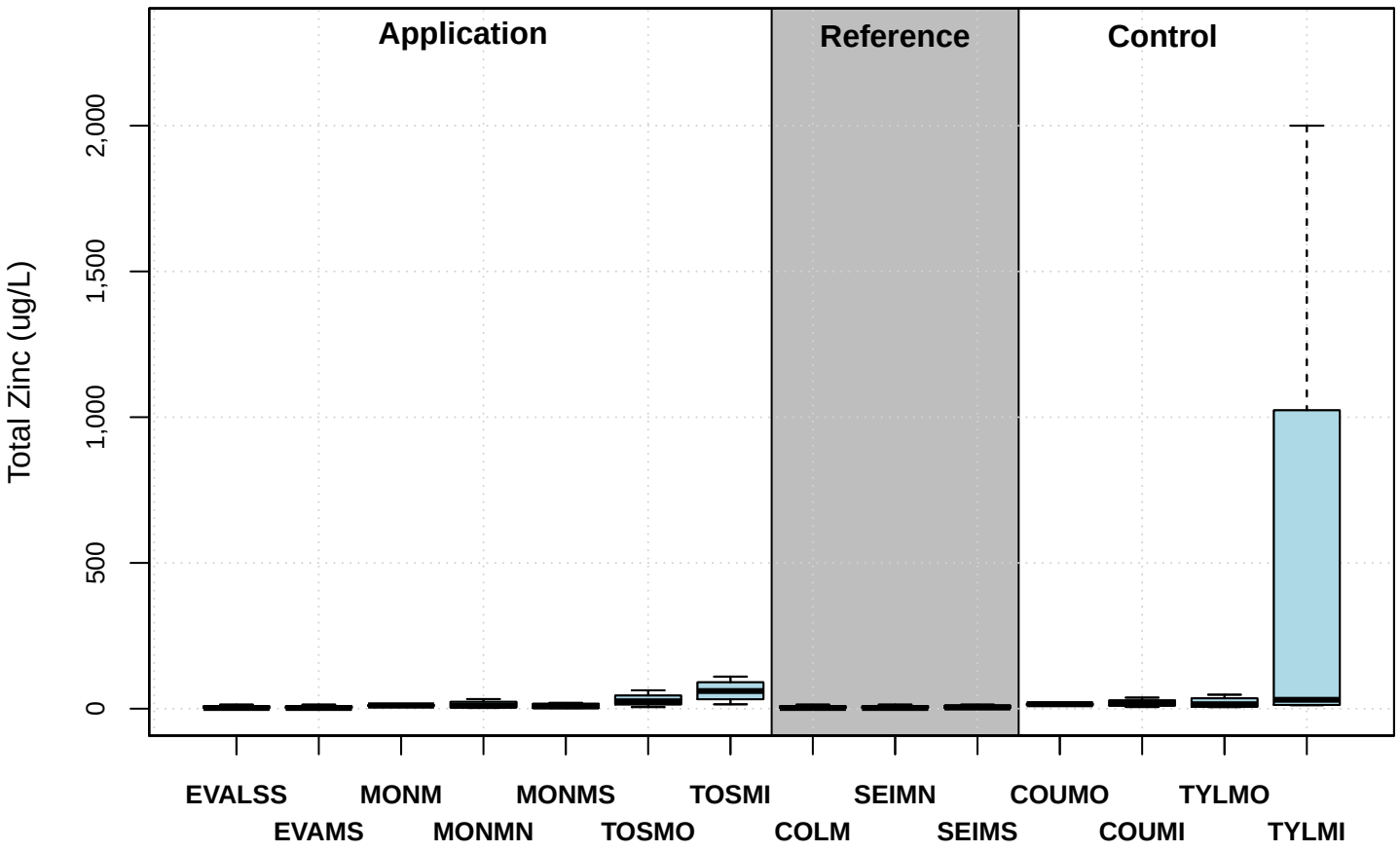
Base Flow



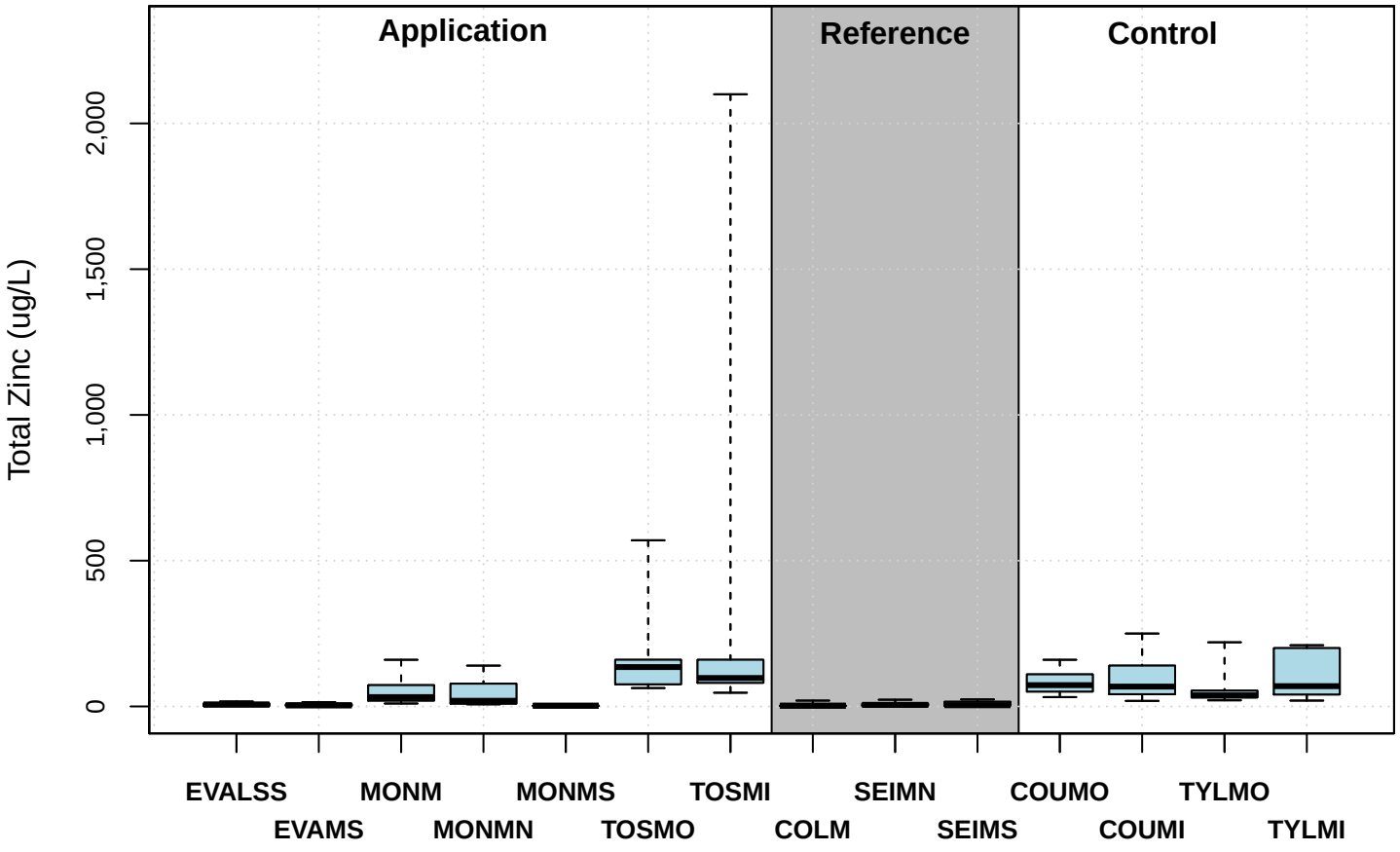
Storm Events



Base Flow



Storm Events



APPENDIX K

Line Plots Showing Continuous Temperature Data

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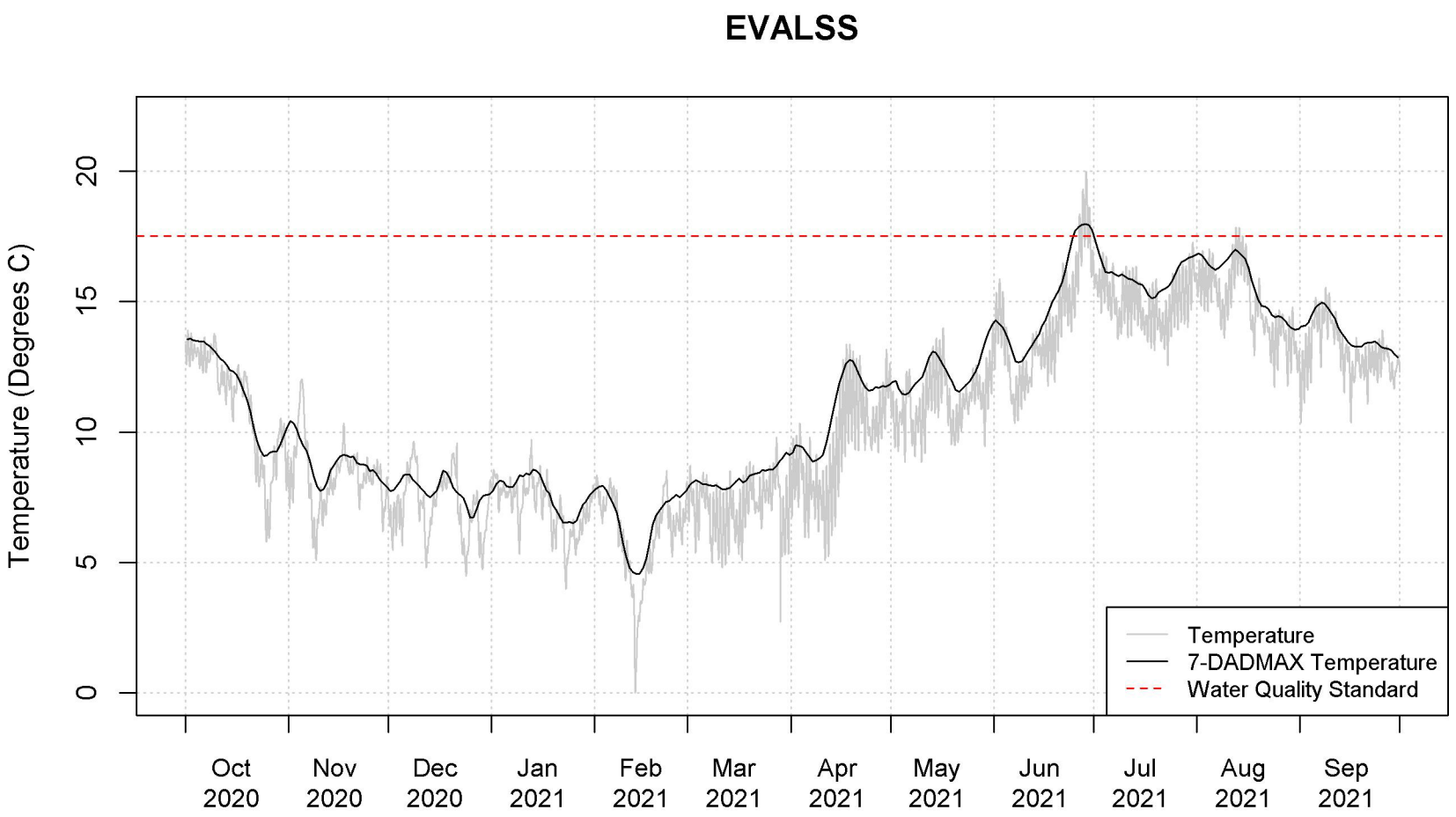

Figure K-1. Continuous Temperature and 7-DADMAX Measured at the EVALSS Station.

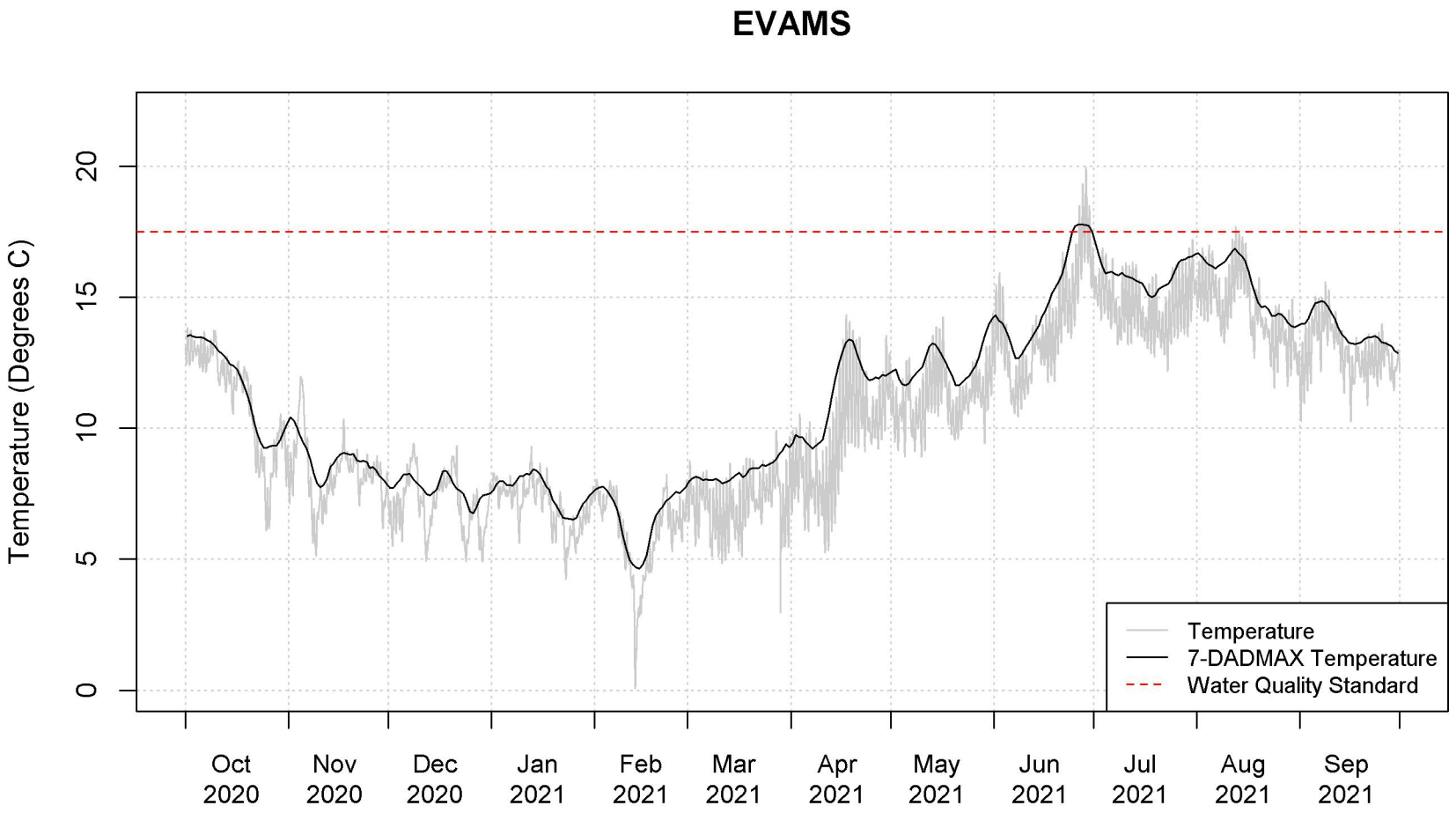

Figure K-2. Continuous Temperature and 7-DADMAX Measured at the EVAMS Station.

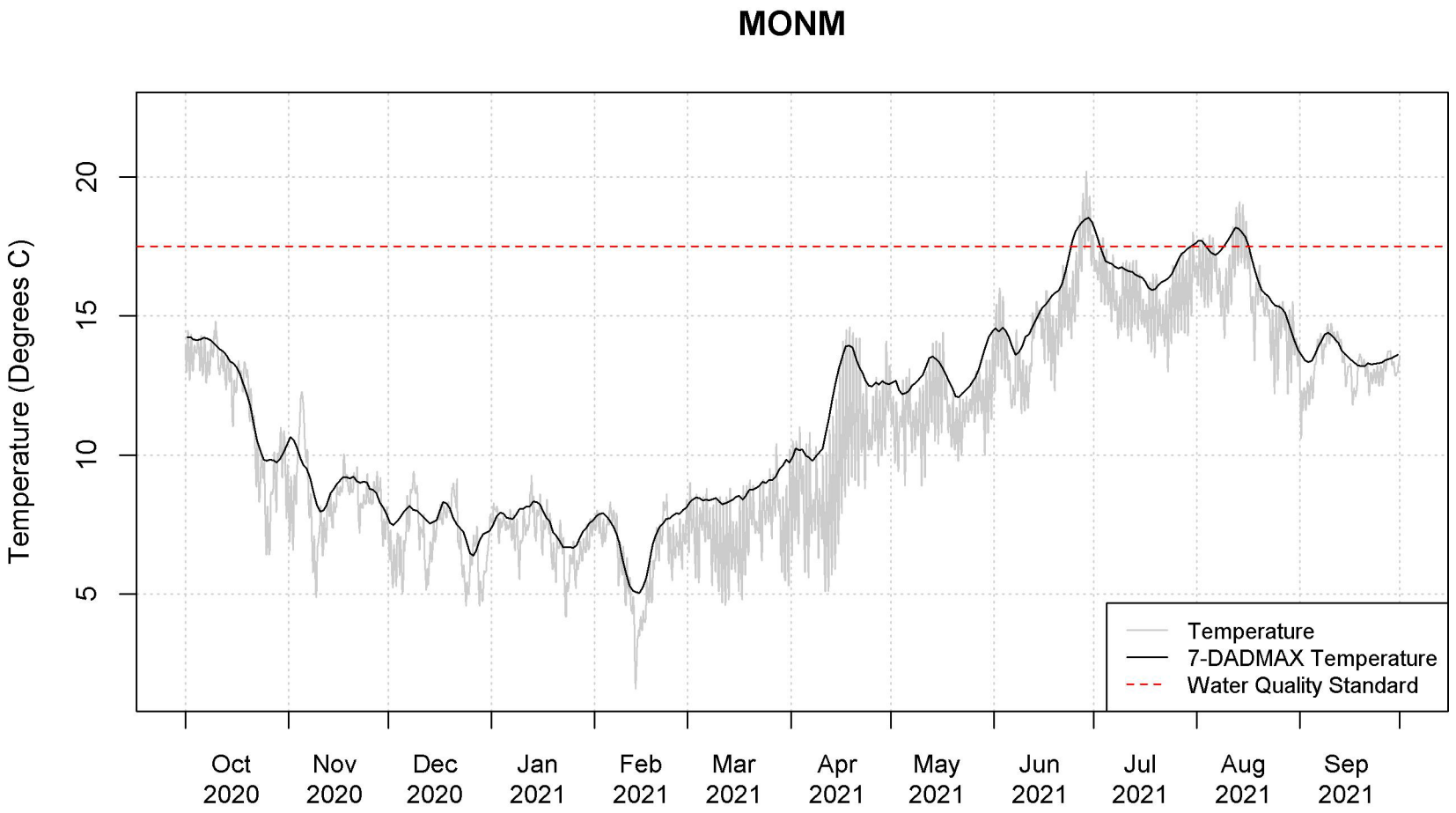

Figure K-3. Continuous Temperature and 7-DADMAX Measured at the MONM Station.

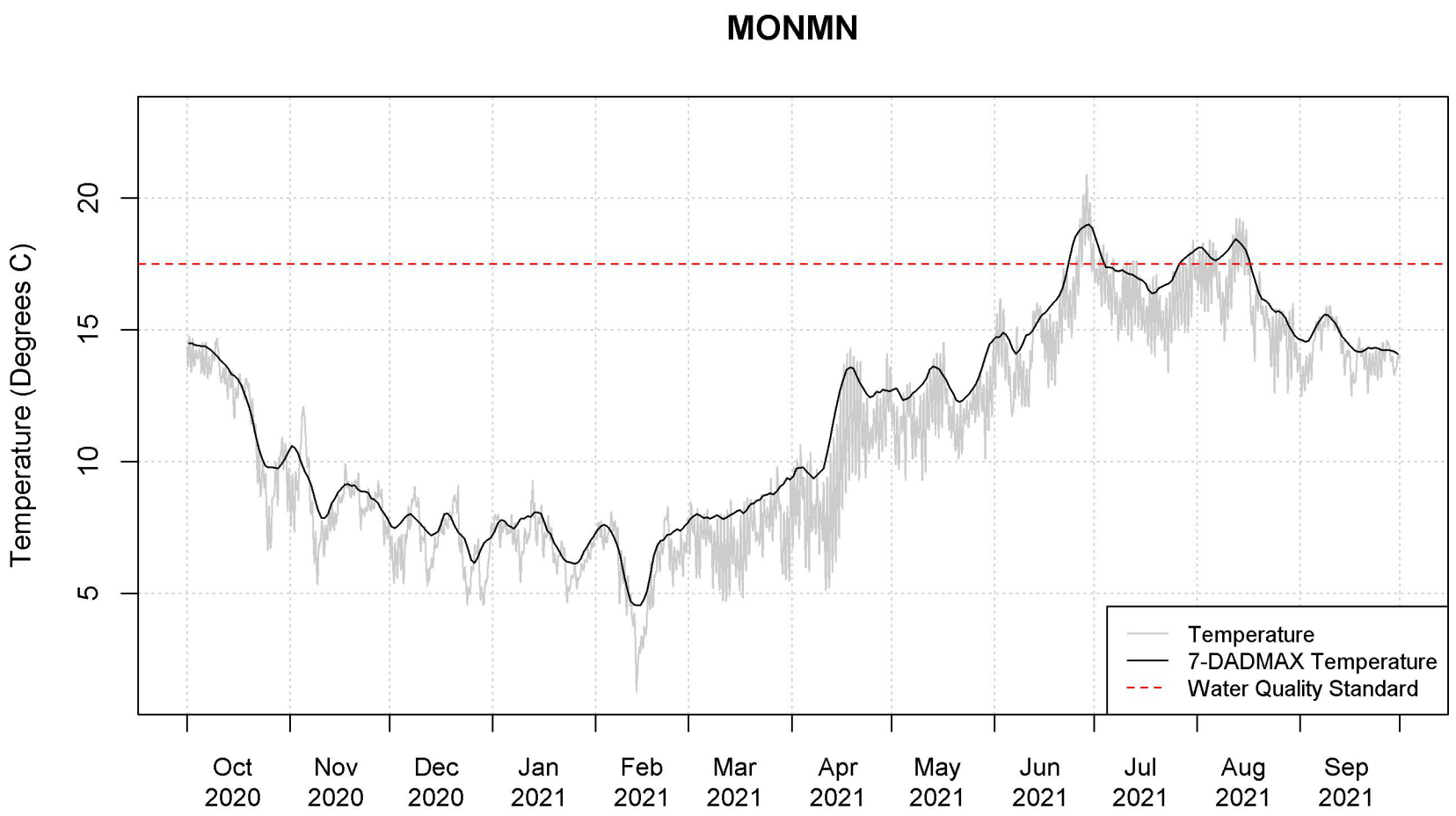

Figure K-4. Continuous Temperature and 7-DADMAX Measured at the MONMN Station.

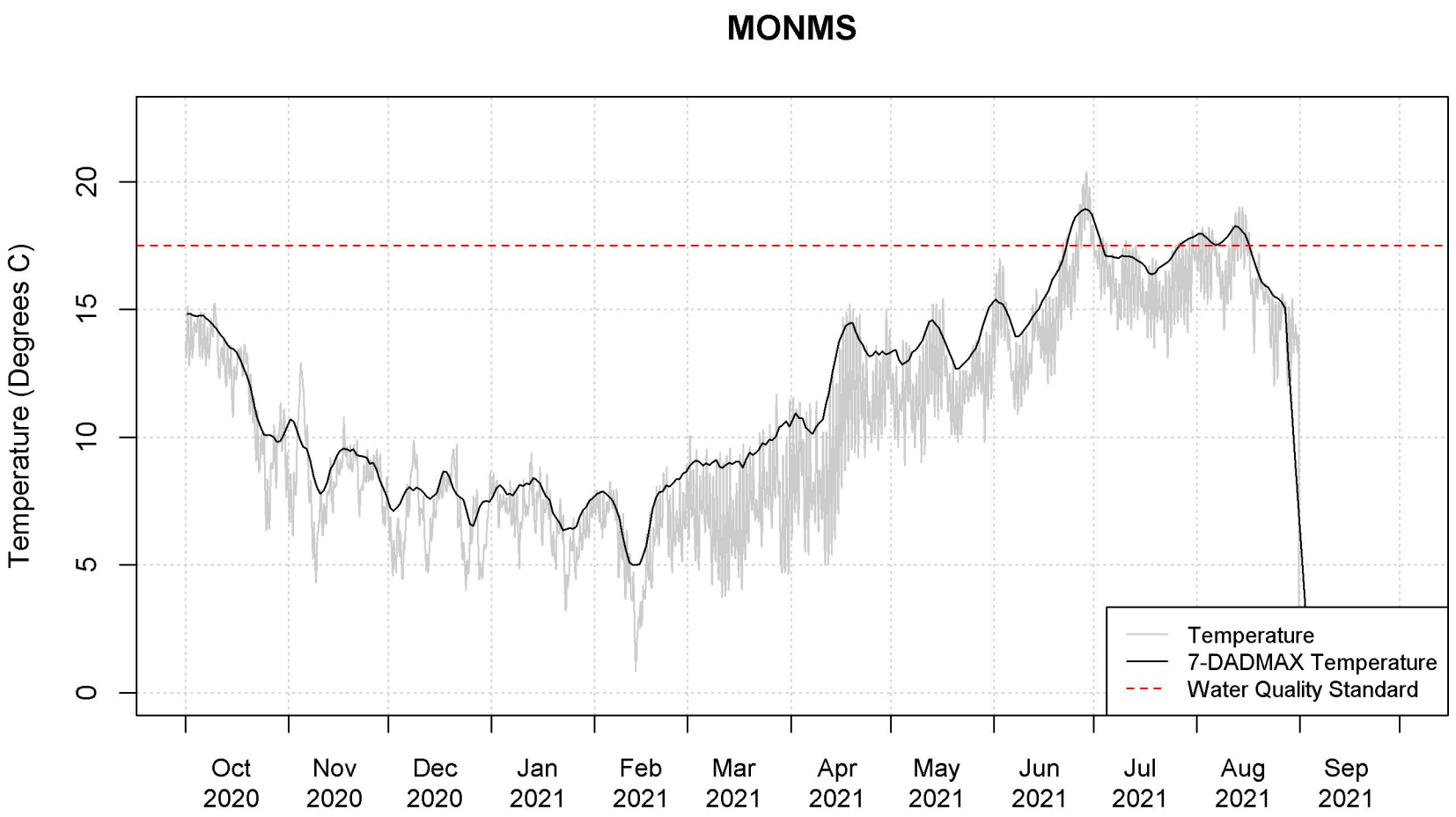

Figure K-5. Continuous Temperature and 7-DADMAX Measured at the MONMS Station.

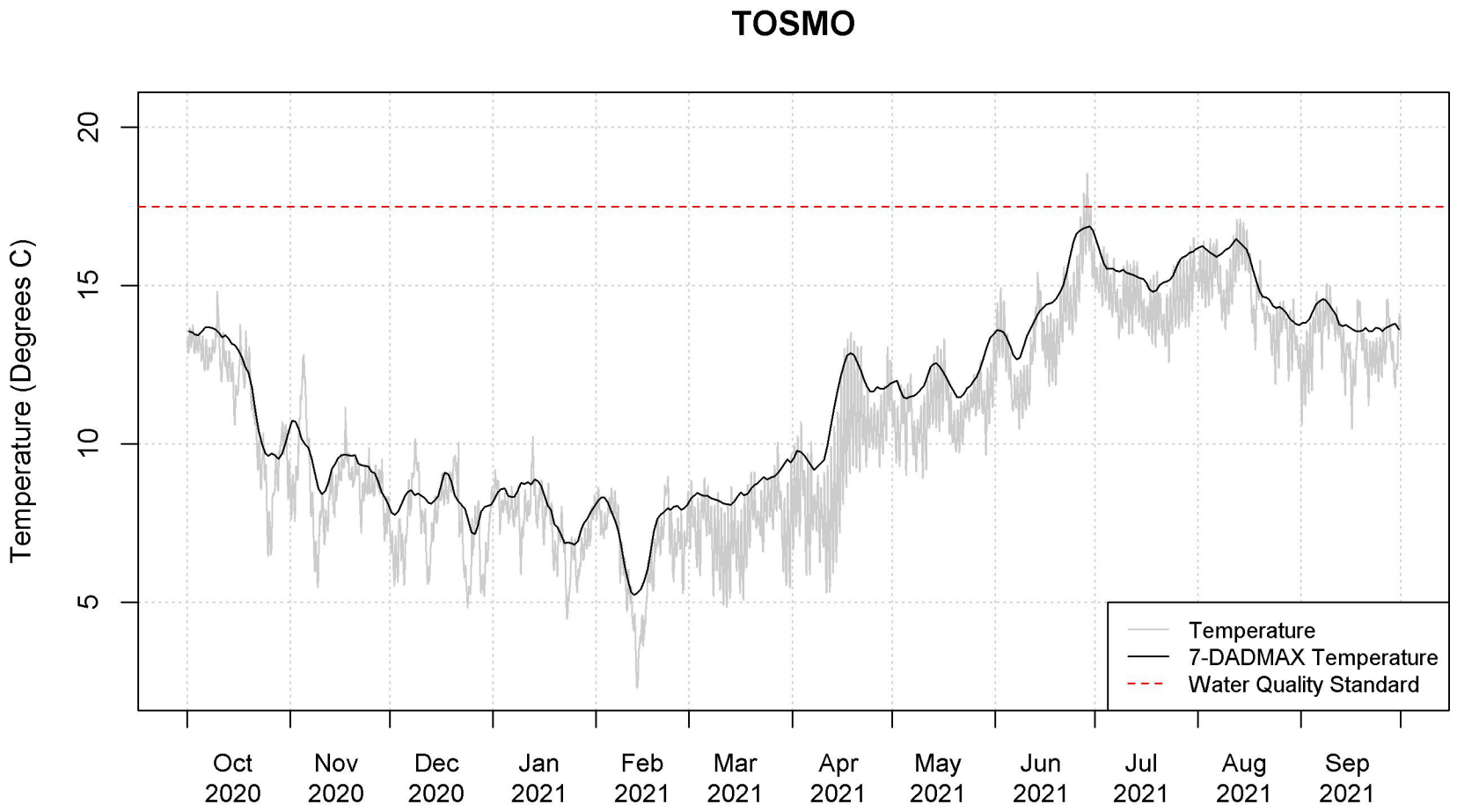

Figure K-6. Continuous Temperature and 7-DADMAX Measured at the TOSMO Station.

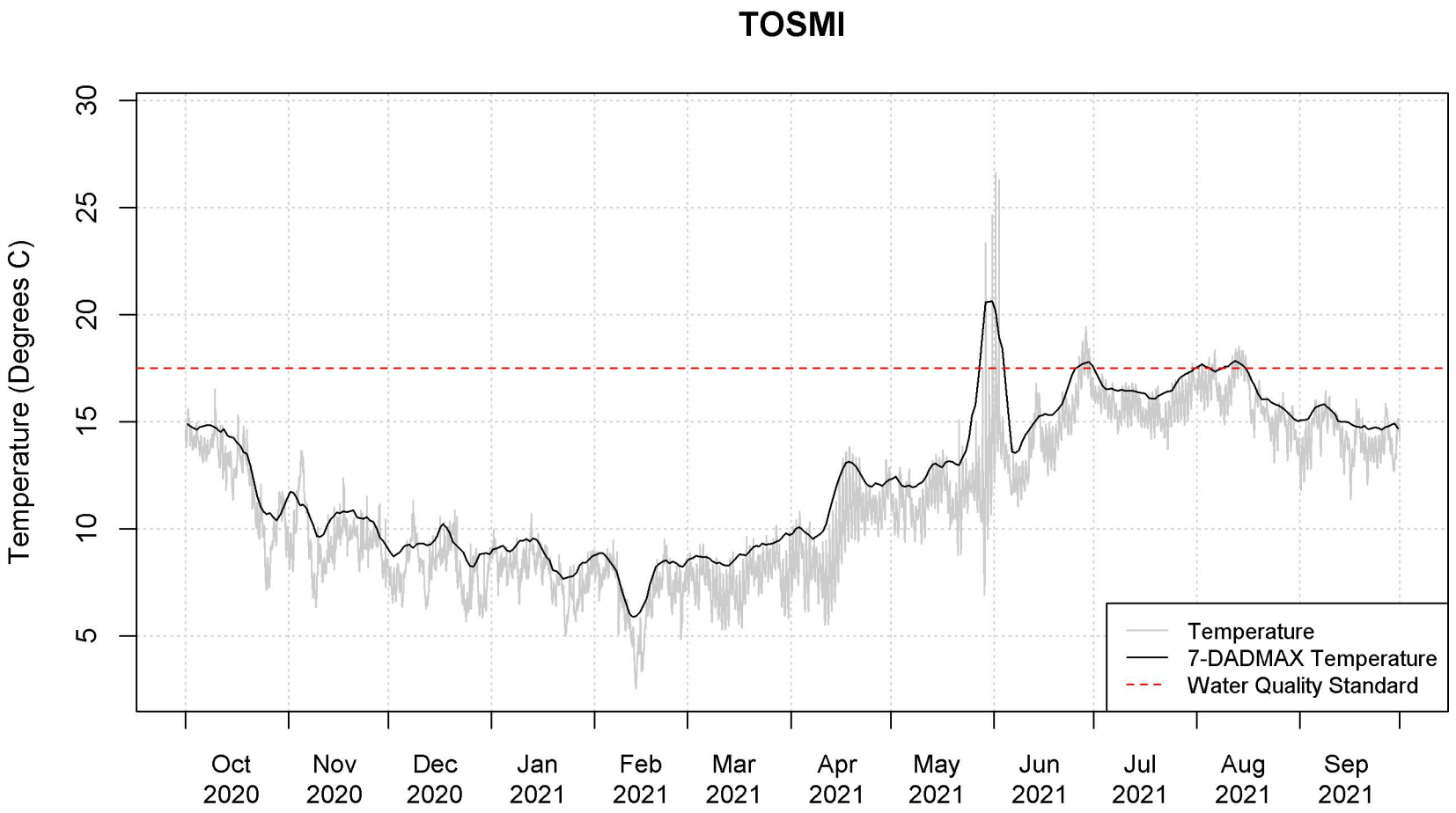

Figure K-7. Continuous Temperature and 7-DADMAX Measured at the TOSMI Station.

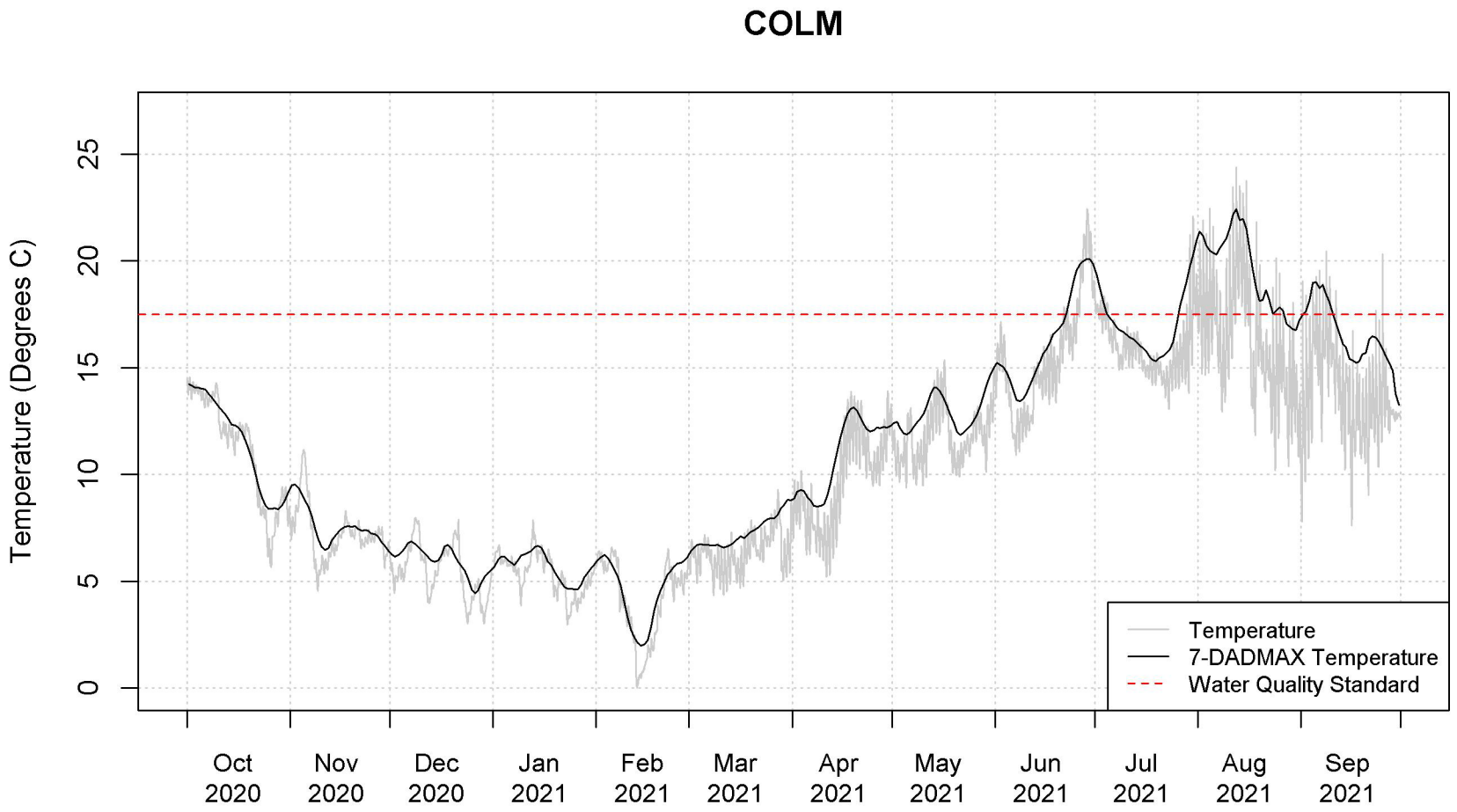

Figure K-8. Continuous Temperature and 7-DADMAX Measured at the COLM Station.

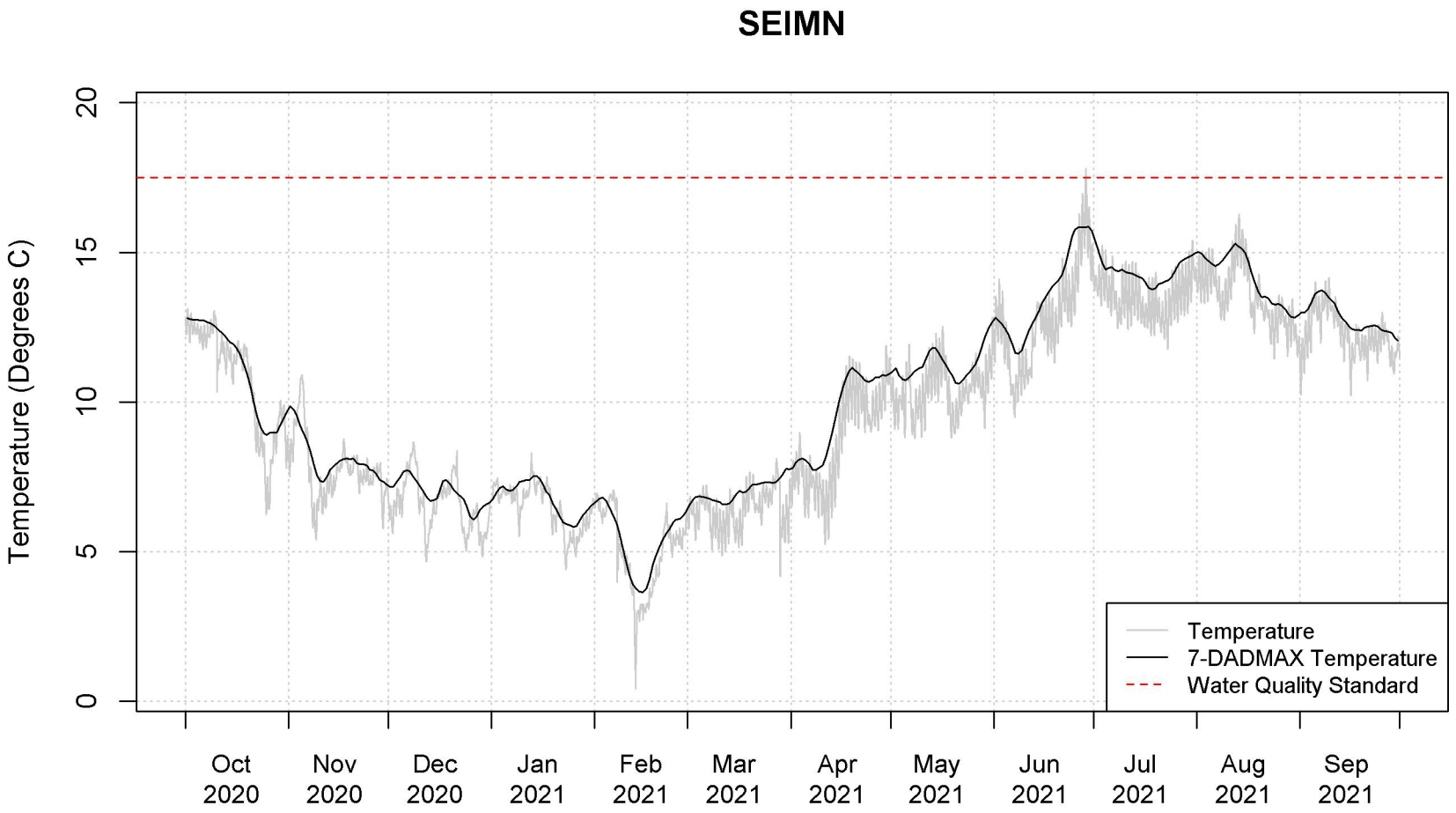

Figure K-9. Continuous Temperature and 7-DADMAX Measured at the SEIMN Station.

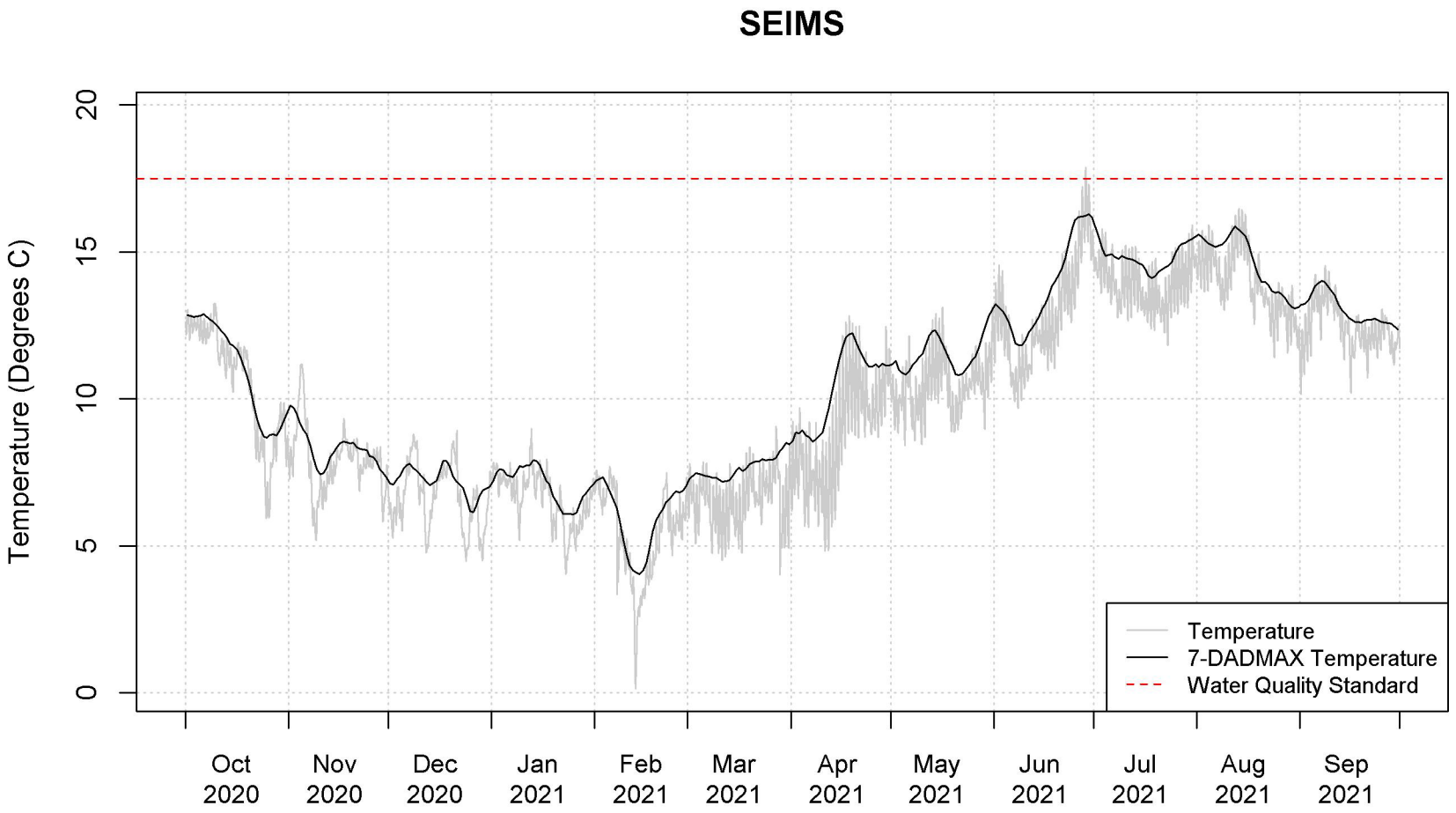

Figure K-10. Continuous Temperature and 7-DADMAX Measured at the SEIMS Station.

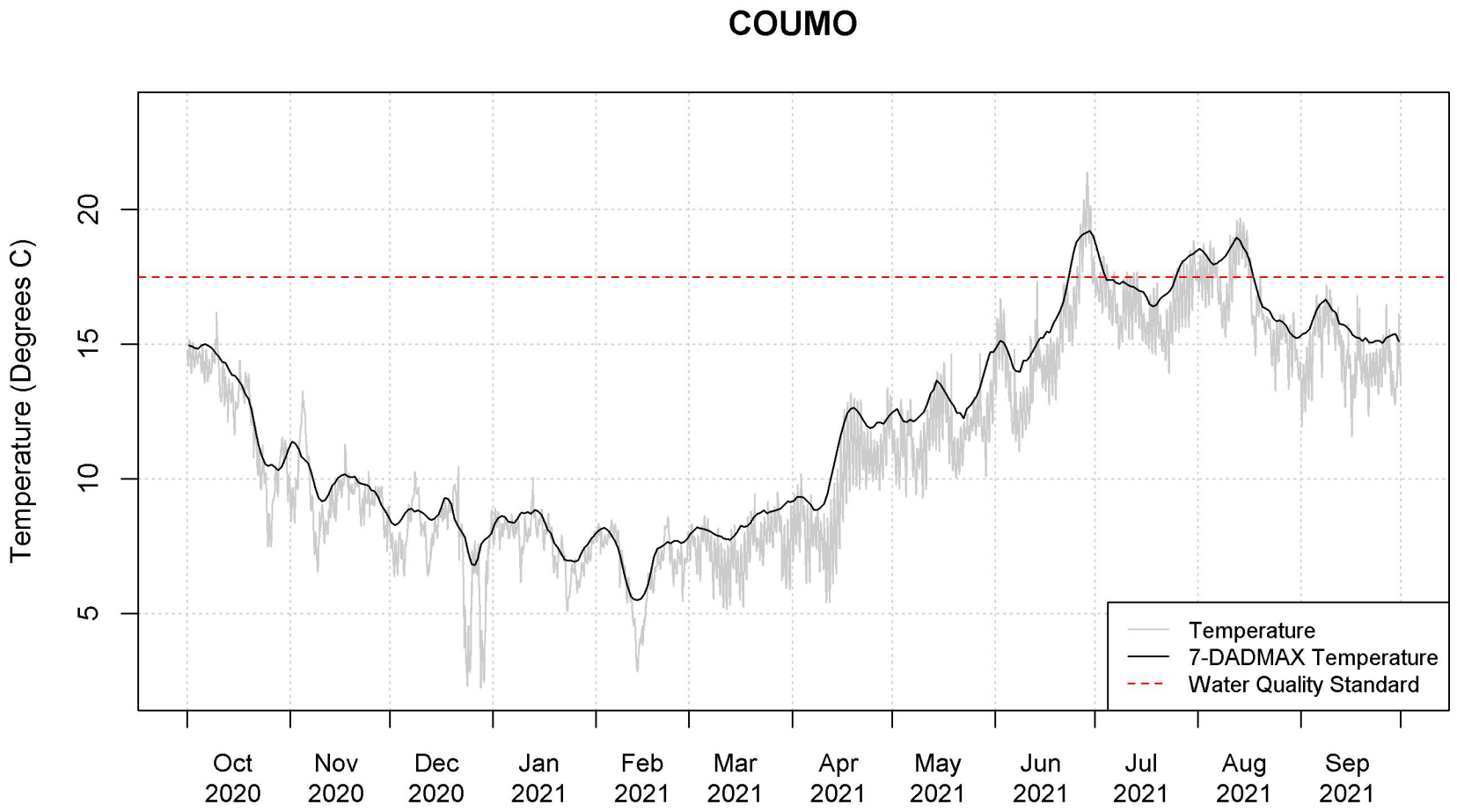

Figure K-11. Continuous Temperature and 7-DADMAX Measured at the COUMO Station.

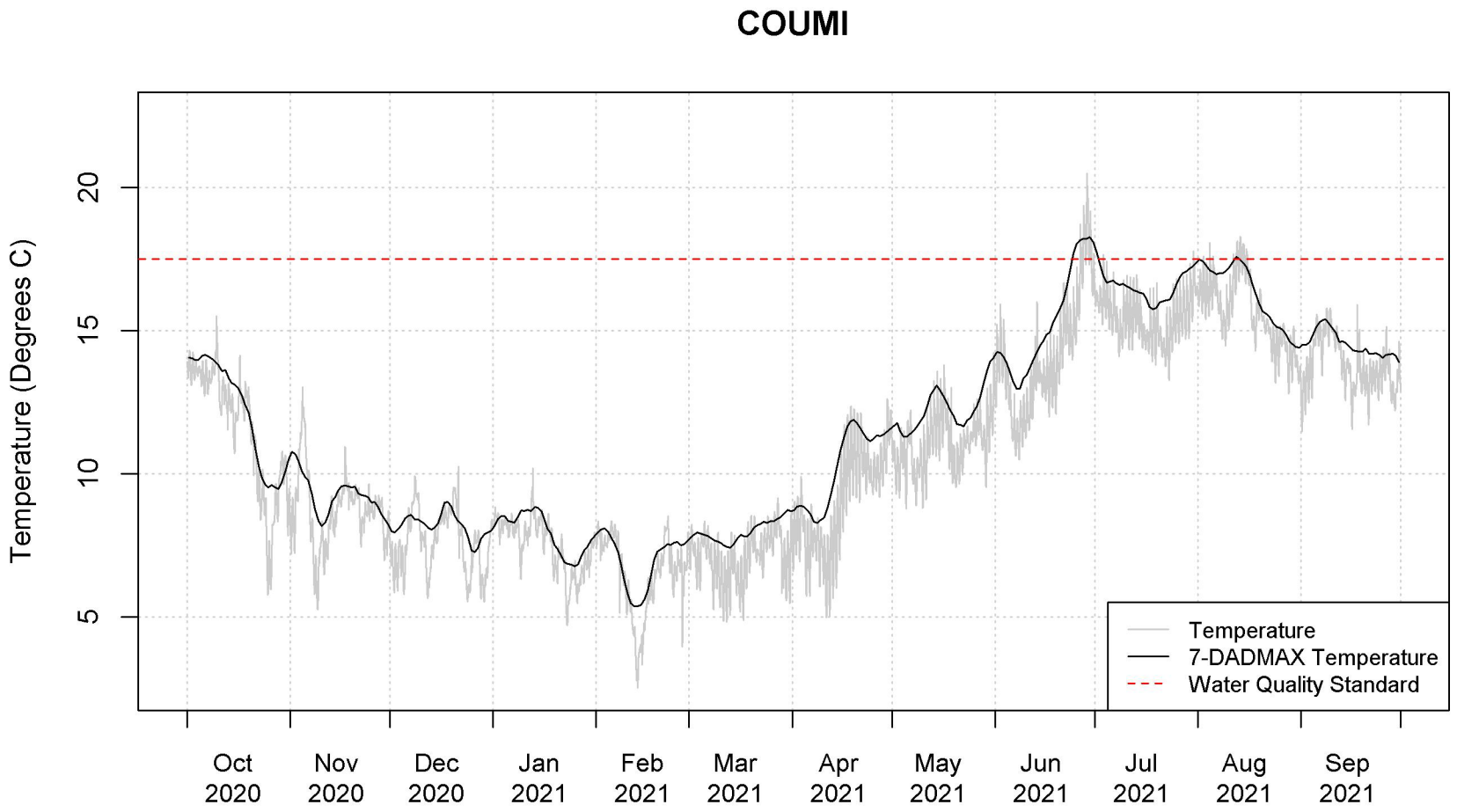

Figure K-12. Continuous Temperature and 7-DADMAX Measured at the COUMI Station.

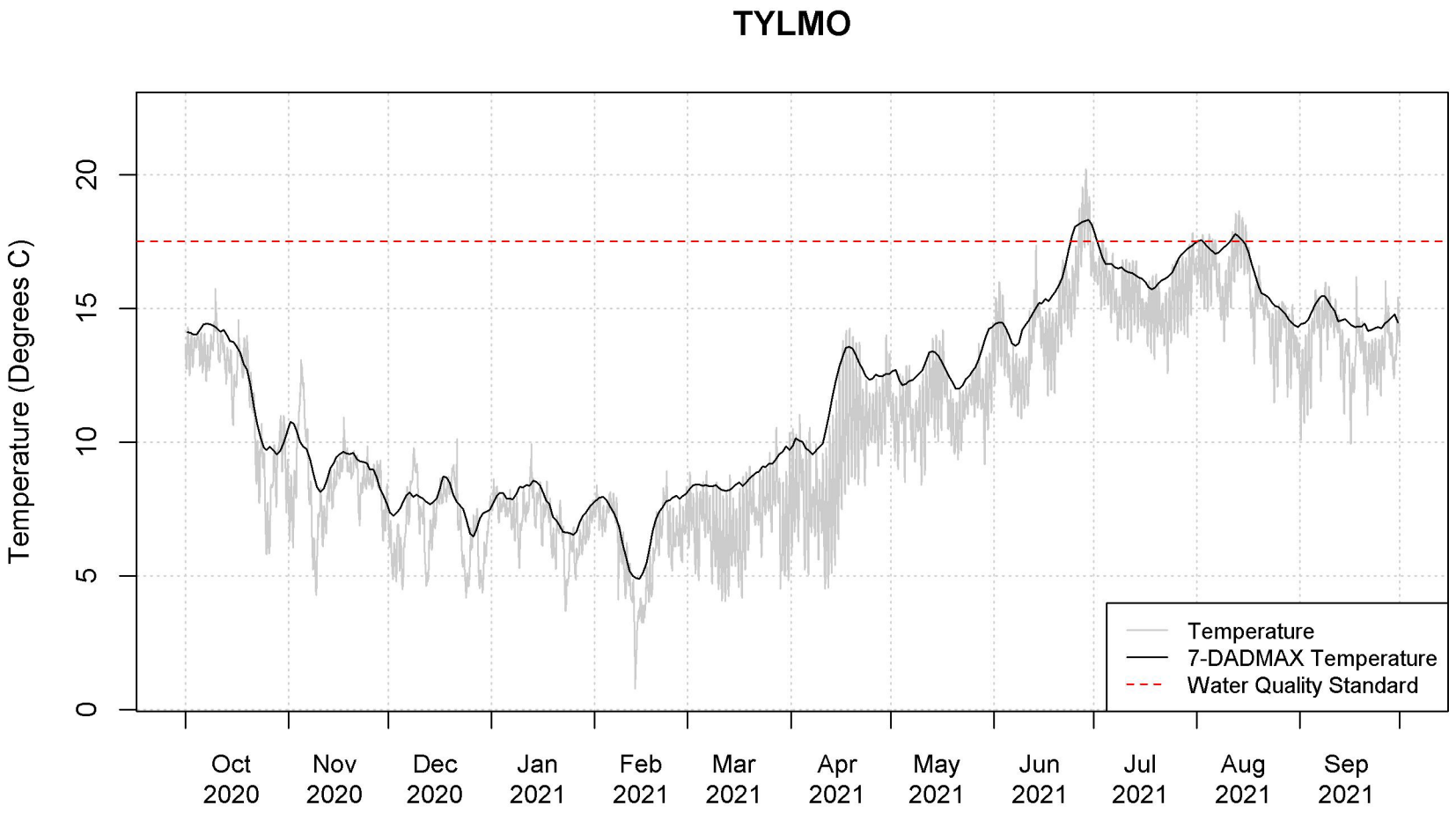

Figure K-13. Continuous Temperature and 7-DADMAX Measured at the TYLMO Station.

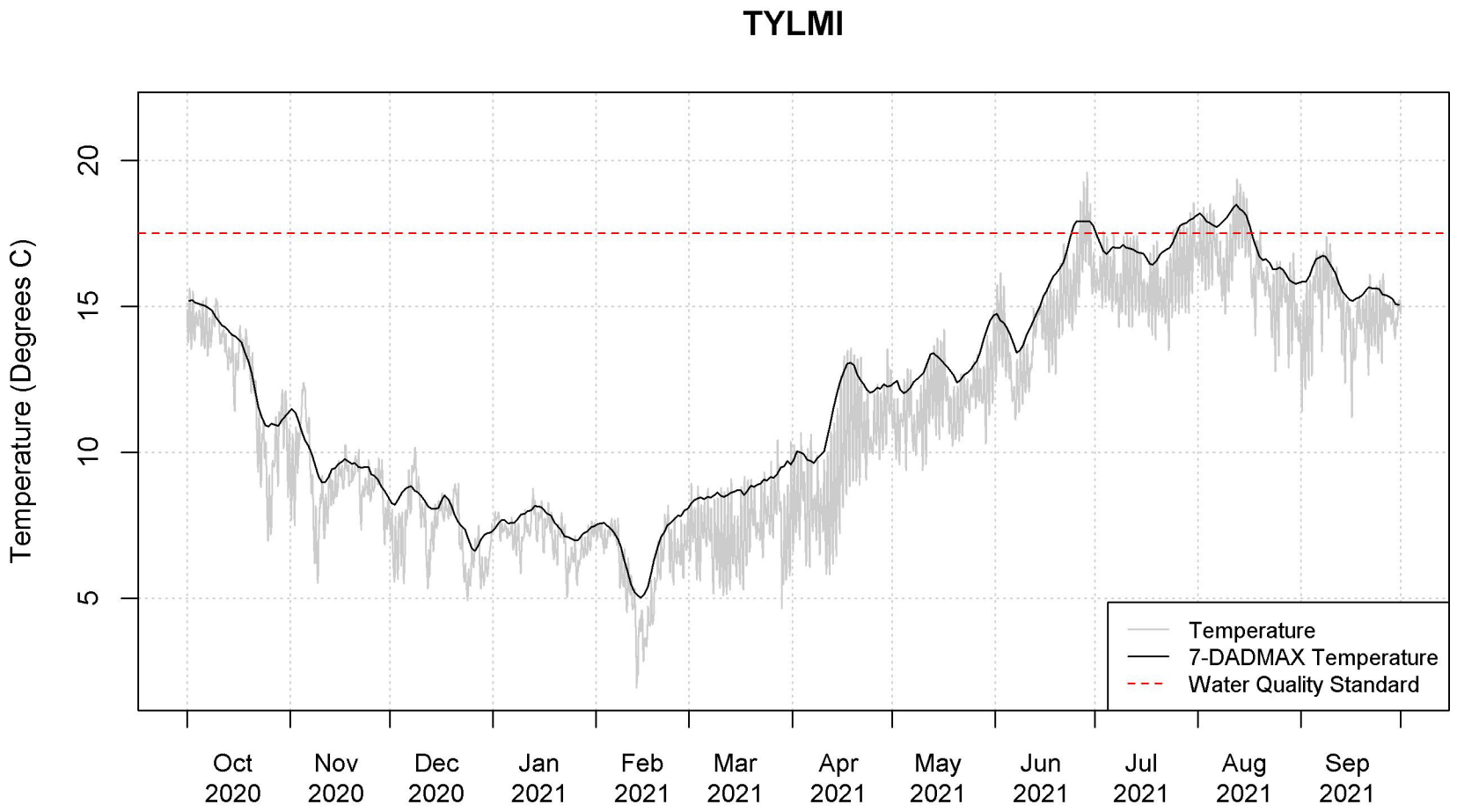

Figure K-14. Continuous Temperature and 7-DADMAX Measured at the TYLMI Station.

APPENDIX L

Line Plots Showing Continuous Conductivity Data

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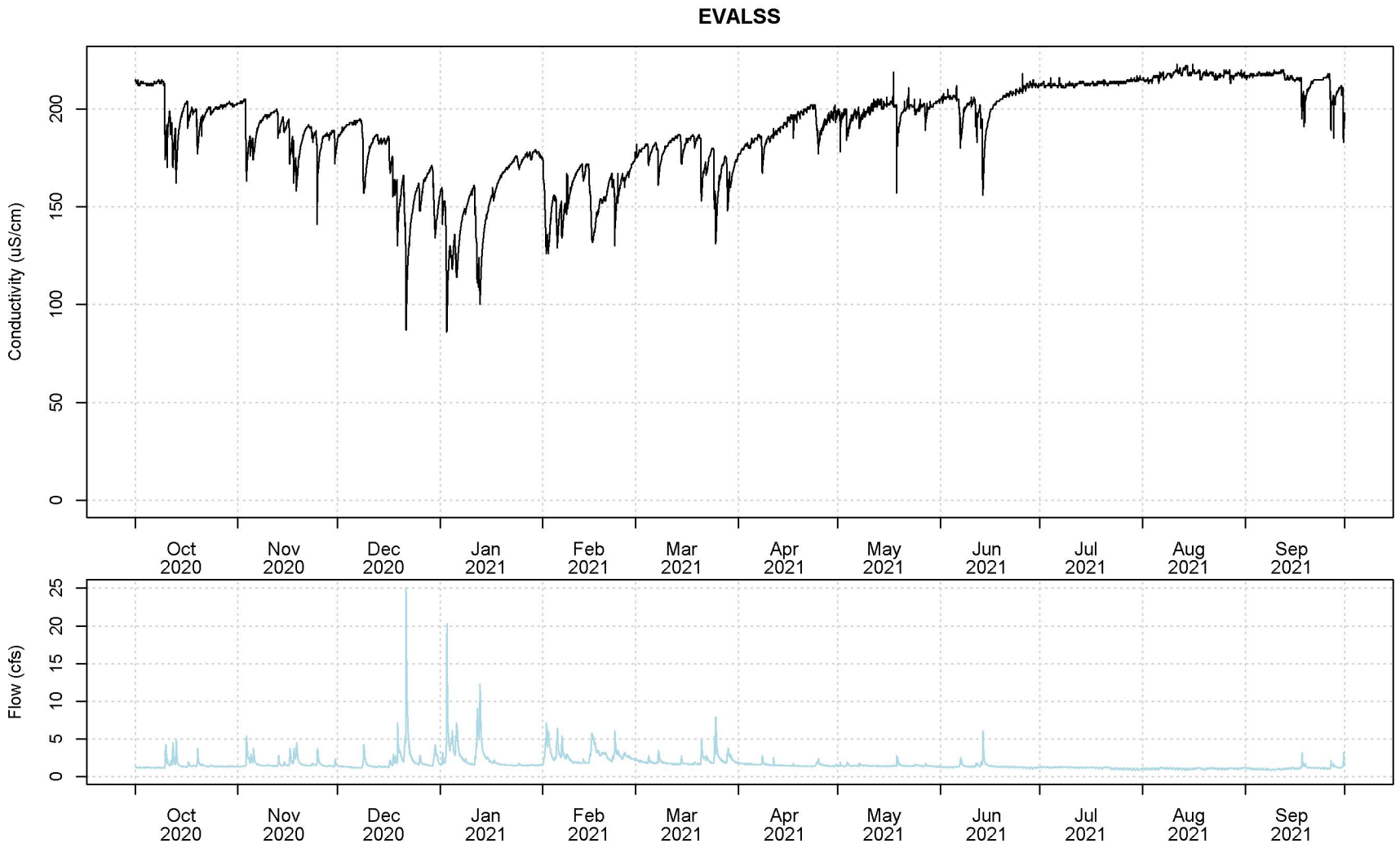

Figure L-1. Continuous Conductivity Measured at the EVALSS Station.

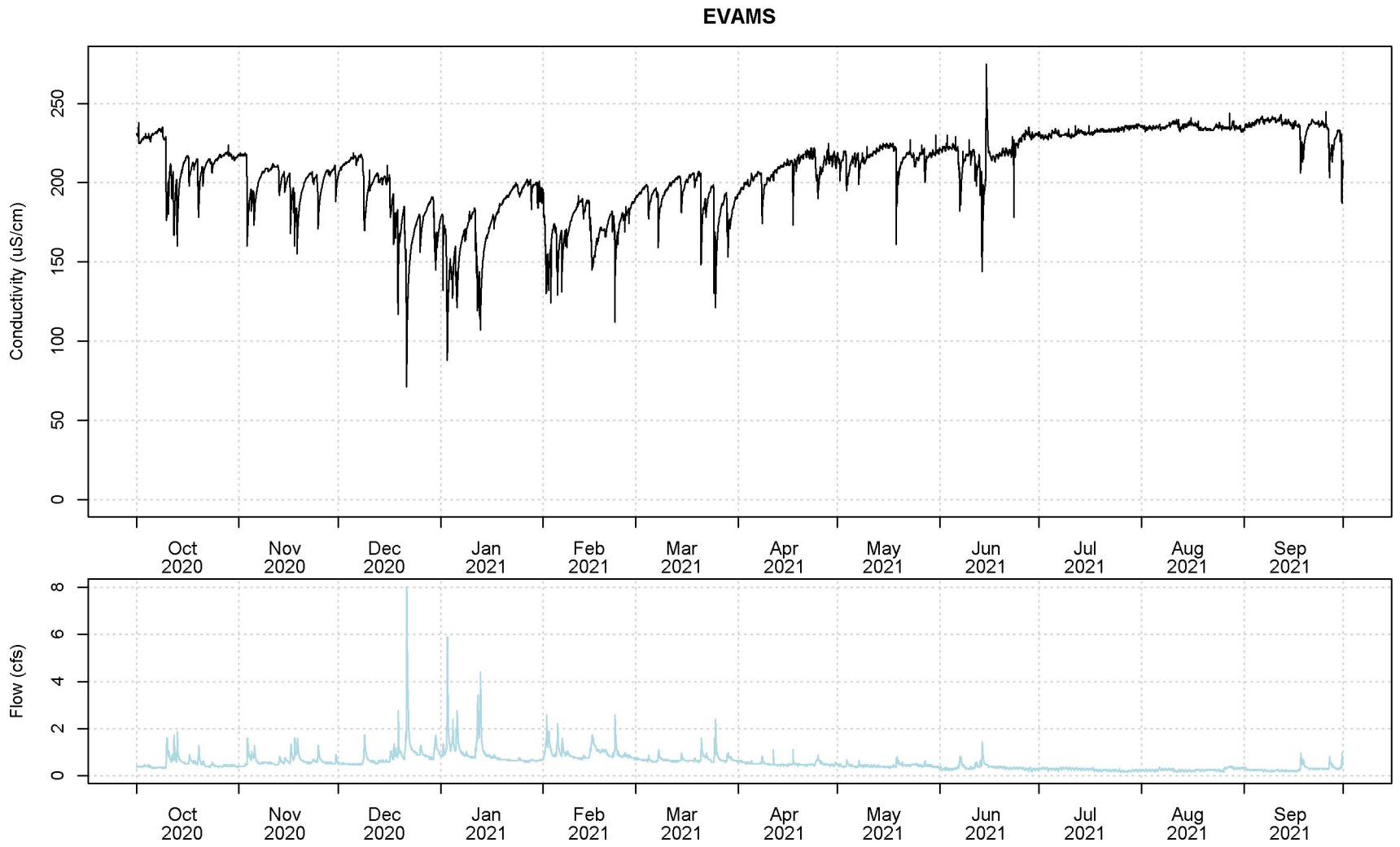

Figure L-2. Continuous Conductivity Measured at the EVAMS Station.

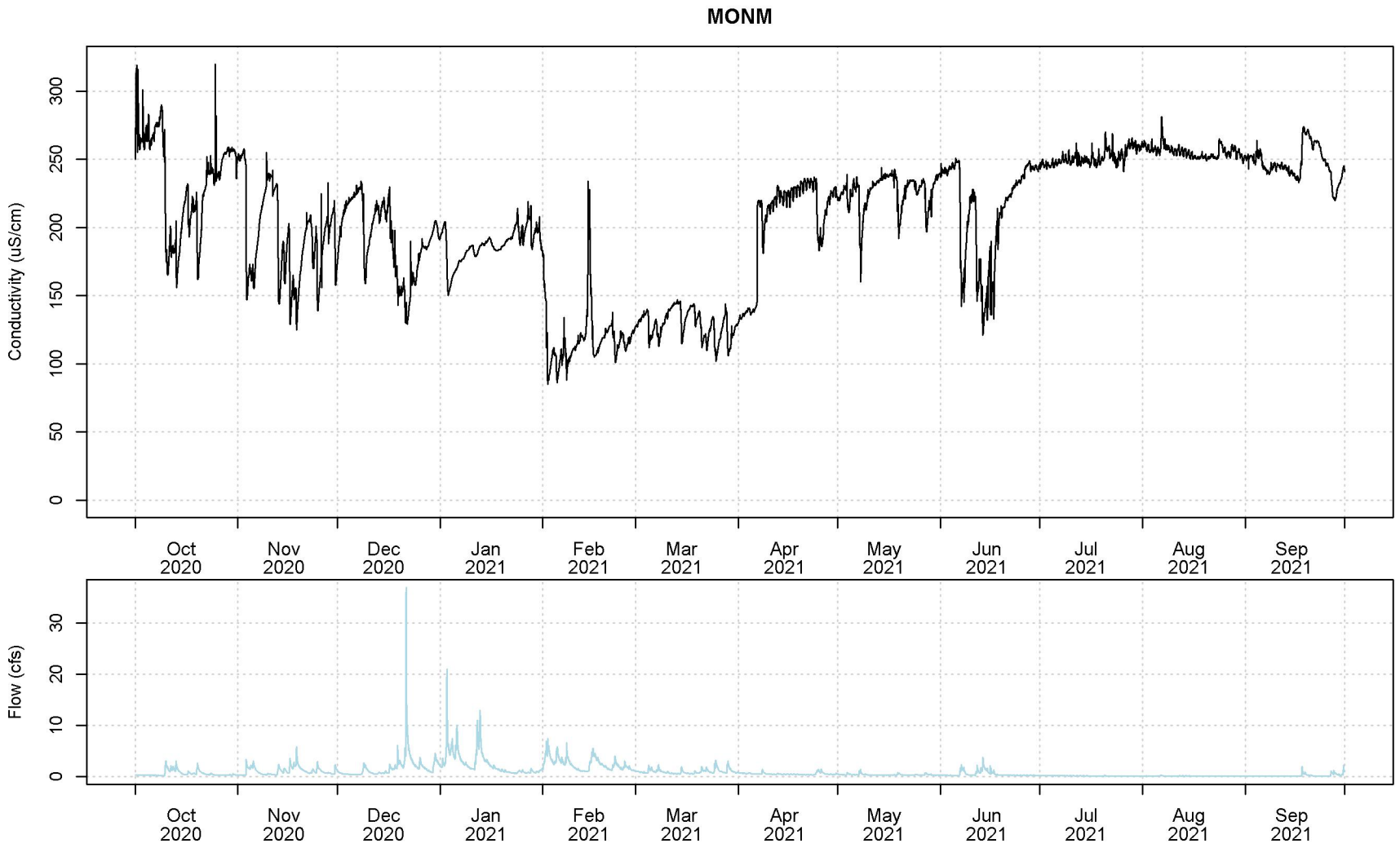

Figure L-3. Continuous Conductivity Measured at the MONM Station.

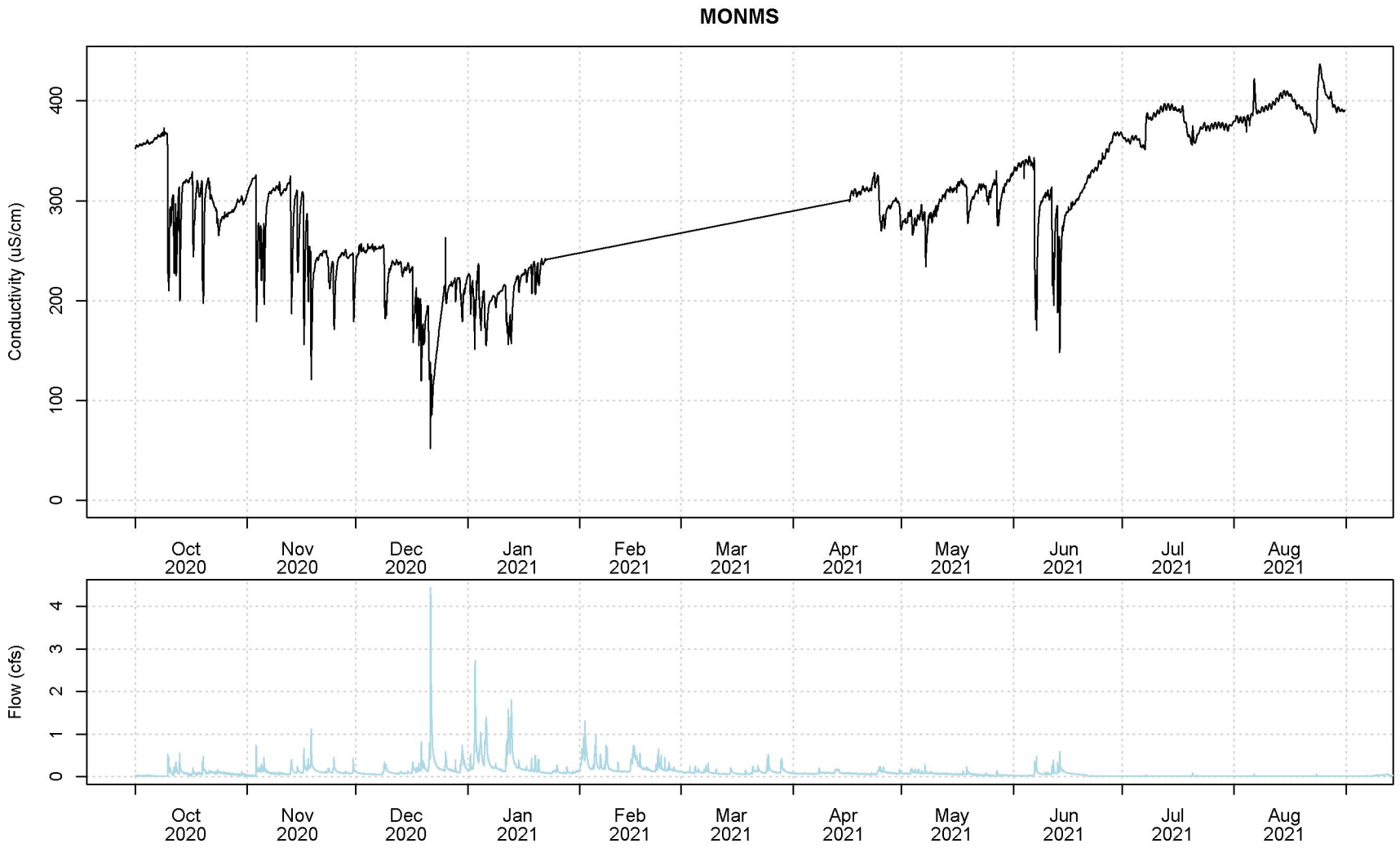

Figure L-4. Continuous Conductivity Measured at the MONMS Station.

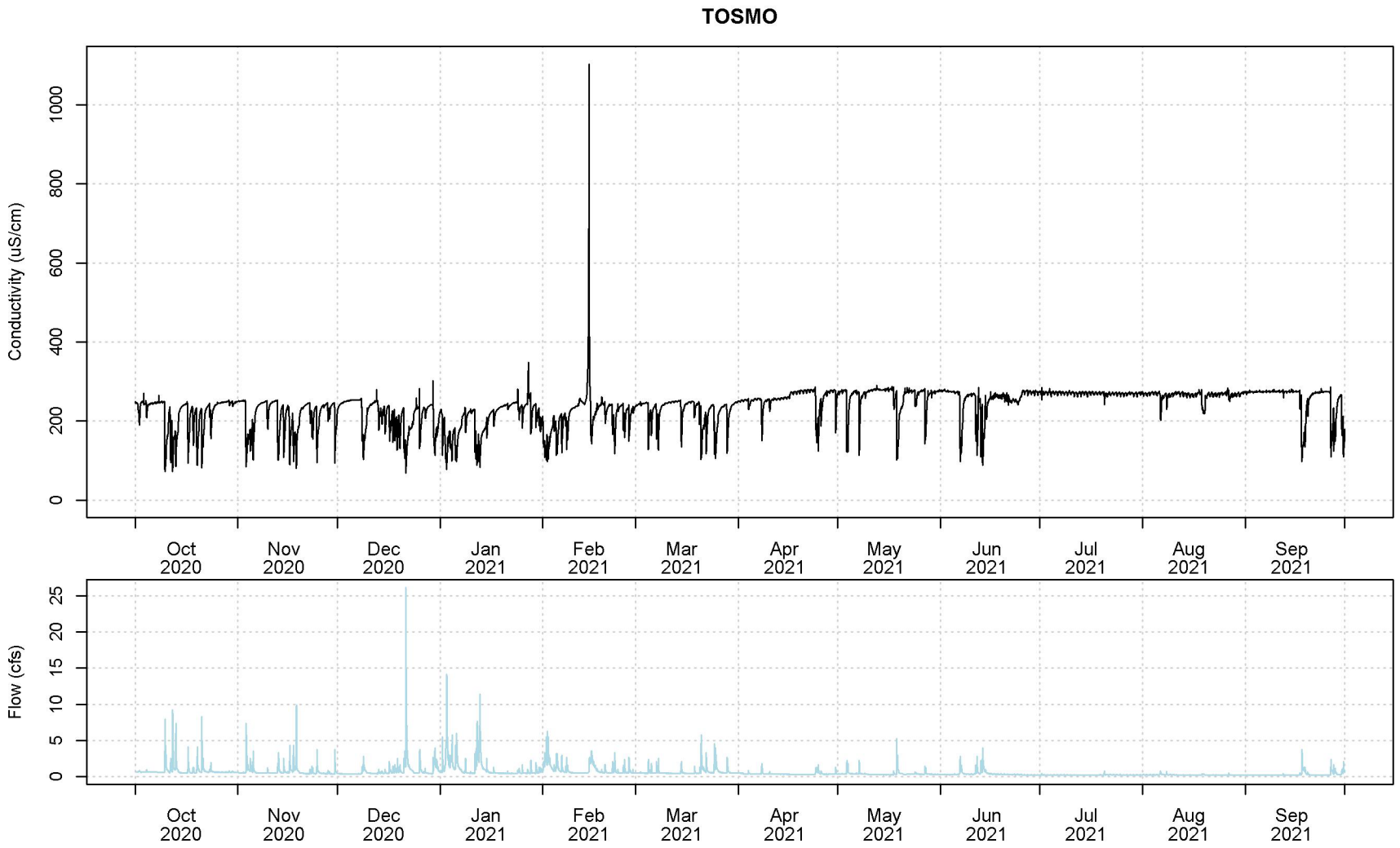

Figure L-5. Continuous Conductivity Measured at the TOSMO Station.

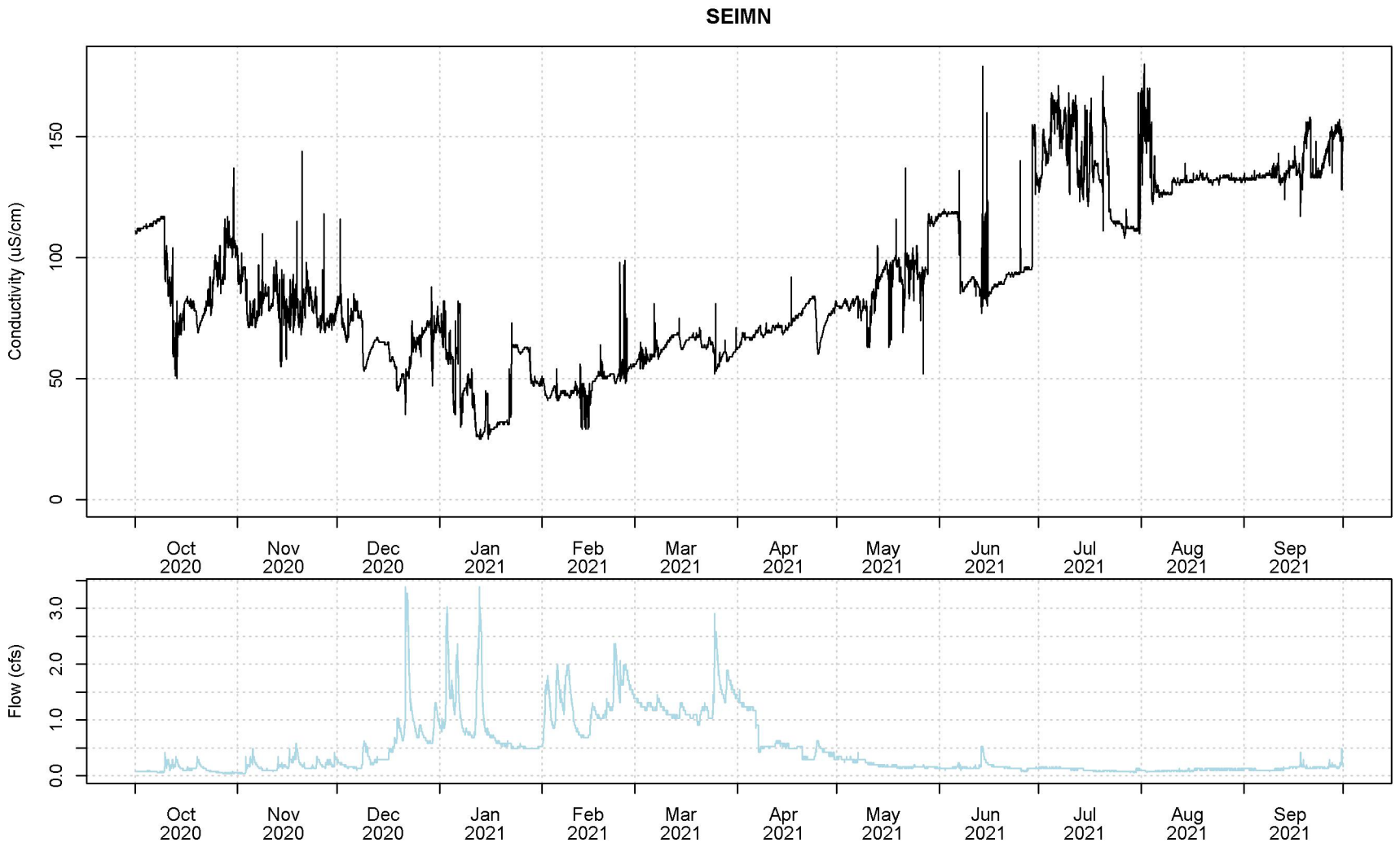

Figure L-6. Continuous Conductivity Measured at the SEIMN Station.

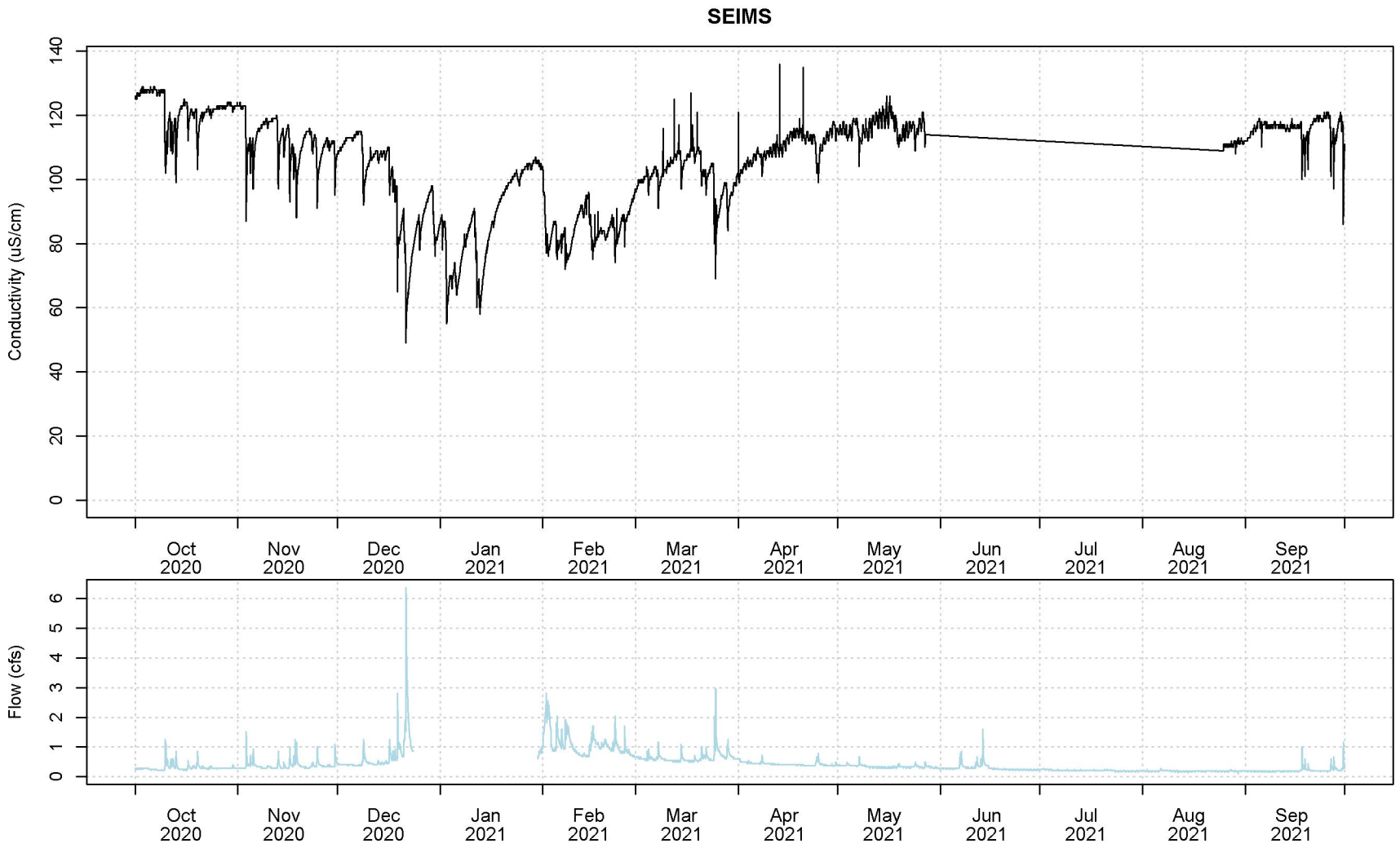

Figure L-7. Continuous Conductivity Measured at the SEIMS Station.

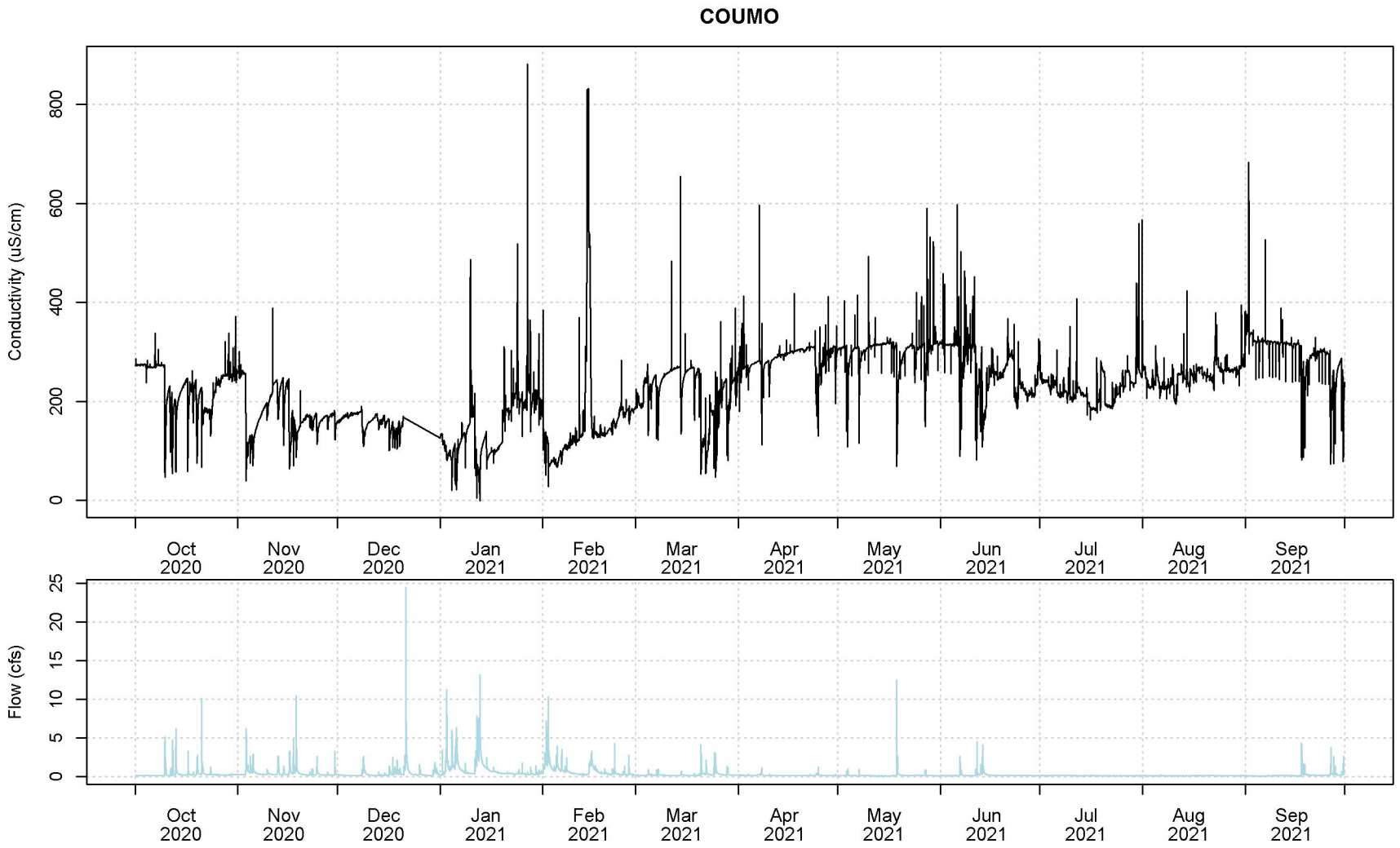

Figure L-8. Continuous Conductivity Measured at the COUMO Station.

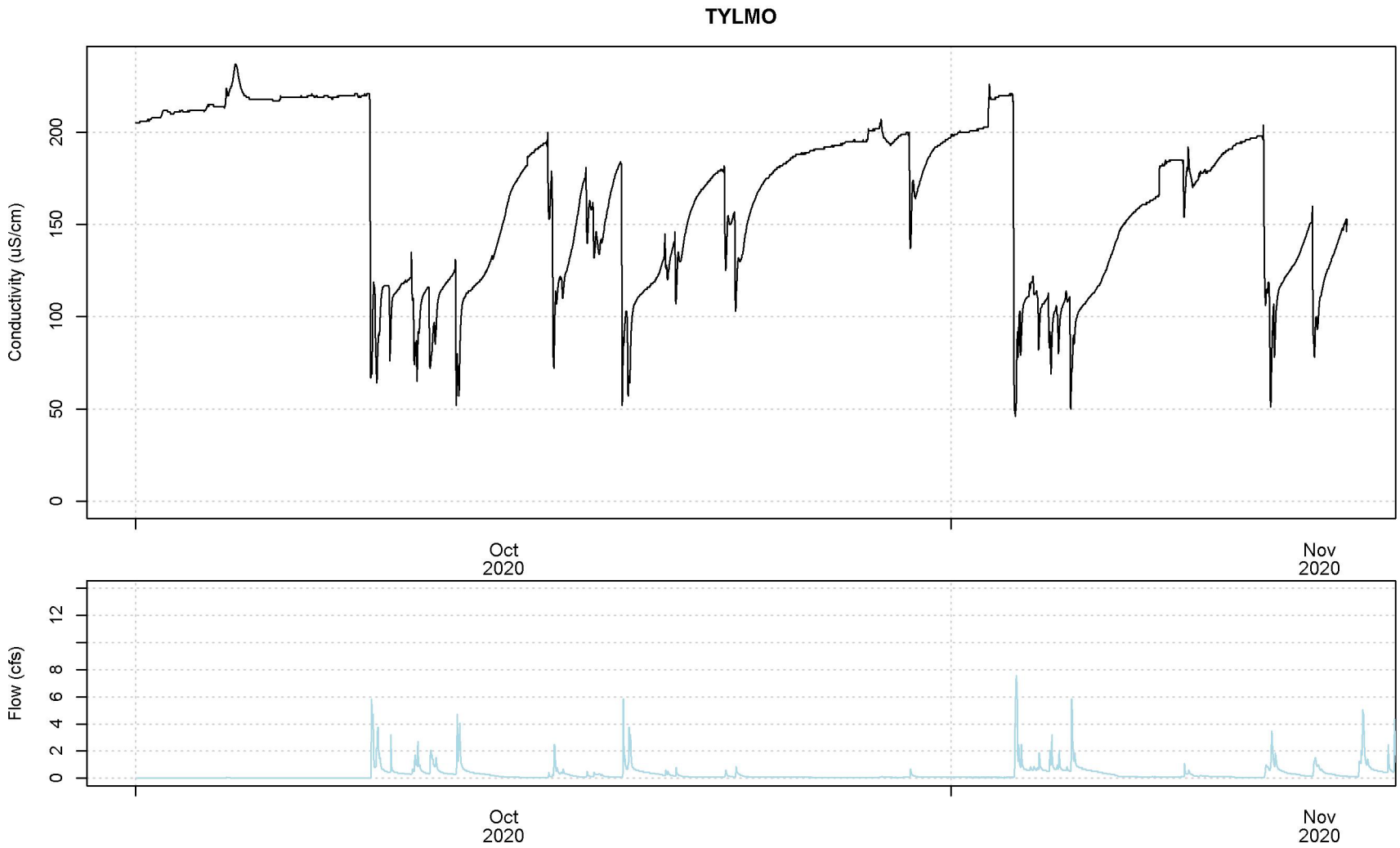

Figure L-9. Continuous Conductivity Measured at the TYLMO Station.

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APPENDIX M

Compiled Field Data from Physical Habitat Monitoring

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The contents of this appendix are provided in a separate electronic file.

APPENDIX N

Computed Physical Habitat Quality Indicators

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The contents of this appendix are provided in a separate electronic file.

APPENDIX O

Summary Statistics for Evaluating Physical Habitat Quality Indicators

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The contents of this appendix are provided in a separate electronic file.

APPENDIX P

Laboratory Reports and Data Quality Assurance Audit Forms for Sediment Quality Monitoring

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OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 23, 2021

John Lenth
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2107-057

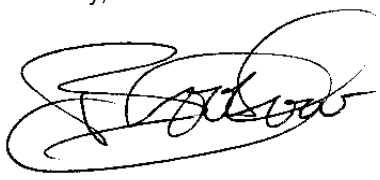
Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on July 7, 2021.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



Blair Goodrow
Project Manager

Enclosures

Date of Report: September 23, 2021
Samples Submitted: July 7, 2021
Laboratory Reference: 2107-057
Project: 14-05806-000

Case Narrative

Samples were collected on July 7, 2021 and received by the laboratory on July 7, 2021. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Total Metals EPA 6010D Analysis

The liquid portion of the sample was decanted and only the solid portion was analyzed.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 23, 2021
Samples Submitted: July 7, 2021
Laboratory Reference: 2107-057
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A

Matrix: Sediment
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONT-4R-2021**					
Laboratory ID:	07-057-01					
Total Organic Carbon	**0.50**	0.062	EPA 9060A	7-22-21	7-22-21	

Date of Report: September 23, 2021
Samples Submitted: July 7, 2021
Laboratory Reference: 2107-057
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A
QUALITY CONTROL

Matrix: Solid
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0722S1					
Total Organic Carbon	**ND**	0.042	EPA 9060A	7-22-21	7-22-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	07-195-02								
	ORIG	DUP							
Total Organic Carbon	**0.0619**	**0.0608**	NA	NA	NA	NA	2	23	
SPIKE BLANK									
Laboratory ID:	SB0722S1								
	SB		SB		SB				
Total Organic Carbon	**42.0**		42.1	NA	100	89-111	NA	NA	

Date of Report: September 23, 2021
Samples Submitted: July 7, 2021
Laboratory Reference: 2107-057
Project: 14-05806-000

TOTAL METALS
EPA 6010D

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONT-4M-2021**					
Laboratory ID:	07-057-02					
Copper	**54**	7.1	EPA 6010D	9-20-21	9-20-21	
Zinc	**270**	18	EPA 6010D	9-20-21	9-20-21	

Date of Report: September 23, 2021
Samples Submitted: July 7, 2021
Laboratory Reference: 2107-057
Project: 14-05806-000

TOTAL METALS
EPA 6010D
QUALITY CONTROL

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0920SM1					
Copper	**ND**	1.0	EPA 6010D	9-20-21	9-20-21	
Zinc	**ND**	2.5	EPA 6010D	9-20-21	9-20-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-124-01										
	ORIG	DUP									
Copper	**3.97**	**4.13**	NA	NA		NA		NA	4	20	
Zinc	**10.7**	**11.2**	NA	NA		NA		NA	5	20	
MATRIX SPIKES											
Laboratory ID:	08-124-01										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**58.1**	**57.2**	50.0	50.0	3.97	**108**	**106**	75-125	2	20	
Zinc	**110**	**109**	100	100	10.7	**100**	**99**	75-125	1	20	

Date of Report: September 23, 2021
Samples Submitted: July 7, 2021
Laboratory Reference: 2107-057
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM

Matrix: Sediment
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONT-4R-2021**					
Laboratory ID:	07-057-01					
Naphthalene	**ND**	0.0063	EPA 8270E/SIM	7-15-21	7-15-21	
2-Methylnaphthalene	**ND**	0.0063	EPA 8270E/SIM	7-15-21	7-15-21	
1-Methylnaphthalene	**ND**	0.0063	EPA 8270E/SIM	7-15-21	7-15-21	
Dimethylphthalate	**ND**	0.031	EPA 8270E	7-15-21	7-15-21	
Acenaphthylene	**ND**	0.0063	EPA 8270E/SIM	7-15-21	7-15-21	
Acenaphthene	**ND**	0.0063	EPA 8270E/SIM	7-15-21	7-15-21	
Diethylphthalate	**ND**	0.031	EPA 8270E	7-15-21	7-15-21	
Fluorene	**ND**	0.0063	EPA 8270E/SIM	7-15-21	7-15-21	
Phenanthrene	**ND**	0.0063	EPA 8270E/SIM	7-15-21	7-15-21	
Anthracene	**ND**	0.0063	EPA 8270E/SIM	7-15-21	7-15-21	
Di-n-butylphthalate	**ND**	0.031	EPA 8270E	7-15-21	7-15-21	
Fluoranthene	**ND**	0.0063	EPA 8270E/SIM	7-15-21	7-15-21	
Pyrene	**ND**	0.0063	EPA 8270E/SIM	7-15-21	7-15-21	
Butylbenzylphthalate	**ND**	0.031	EPA 8270E	7-15-21	7-15-21	
Benzo[a]anthracene	**ND**	0.0063	EPA 8270E/SIM	7-15-21	7-15-21	
Chrysene	**ND**	0.0063	EPA 8270E/SIM	7-15-21	7-15-21	
bis(2-Ethylhexyl)phthalate	**0.044**	0.031	EPA 8270E	7-15-21	7-15-21	
Di-n-octylphthalate	**ND**	0.031	EPA 8270E	7-15-21	7-15-21	
Benzo[b]fluoranthene	**ND**	0.0063	EPA 8270E/SIM	7-15-21	7-15-21	
Benzo(j,k)fluoranthene	**ND**	0.0063	EPA 8270E/SIM	7-15-21	7-15-21	
Benzo[a]pyrene	**ND**	0.0063	EPA 8270E/SIM	7-15-21	7-15-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.0063	EPA 8270E/SIM	7-15-21	7-15-21	
Dibenz[a,h]anthracene	**ND**	0.0063	EPA 8270E/SIM	7-15-21	7-15-21	
Benzo[g,h,i]perylene	**ND**	0.0063	EPA 8270E/SIM	7-15-21	7-15-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*50*	*26 - 109*				
Phenol-d6	*66*	*33 - 113*				
Nitrobenzene-d5	*54*	*31 - 110*				
2-Fluorobiphenyl	*62*	*42 - 107*				
2,4,6-Tribromophenol	*96*	*42 - 123*				
Terphenyl-d14	*97*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: July 7, 2021
Laboratory Reference: 2107-057
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0715S1					
Naphthalene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
2-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
1-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Dimethylphthalate	**ND**	0.020	EPA 8270E	7-15-21	7-15-21	
Acenaphthylene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Acenaphthene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Diethylphthalate	**ND**	0.020	EPA 8270E	7-15-21	7-15-21	
Fluorene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Phenanthrene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Anthracene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Di-n-butylphthalate	**ND**	0.020	EPA 8270E	7-15-21	7-15-21	
Fluoranthene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Pyrene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Butylbenzylphthalate	**ND**	0.020	EPA 8270E	7-15-21	7-15-21	
Benzo[a]anthracene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Chrysene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
bis(2-Ethylhexyl)phthalate	**ND**	0.020	EPA 8270E	7-15-21	7-15-21	
Di-n-octylphthalate	**ND**	0.020	EPA 8270E	7-15-21	7-15-21	
Benzo[b]fluoranthene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Benzo(j,k)fluoranthene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Benzo[a]pyrene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Dibenz[a,h]anthracene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Benzo[g,h,i]perylene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*63*	*26 - 109*				
Phenol-d6	*76*	*33 - 113*				
Nitrobenzene-d5	*70*	*31 - 110*				
2-Fluorobiphenyl	*80*	*42 - 107*				
2,4,6-Tribromophenol	*100*	*42 - 123*				
Terphenyl-d14	*83*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: July 7, 2021
Laboratory Reference: 2107-057
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0715S1									
	SB	SBD	SB	SBD	SB	SBD				
Phenol	**0.550**	**0.581**	0.800	0.800	69	73	47 - 106	5	30	
2-Chlorophenol	**0.542**	**0.560**	0.800	0.800	68	70	51 - 105	3	31	
1,4-Dichlorobenzene	**0.256**	**0.269**	0.400	0.400	64	67	49 - 101	5	33	
n-Nitroso-di-n-propylamine	**0.266**	**0.288**	0.400	0.400	67	72	50 - 105	8	26	
1,2,4-Trichlorobenzene	**0.273**	**0.292**	0.400	0.400	68	73	50 - 107	7	31	
4-Chloro-3-methylphenol	**0.618**	**0.644**	0.800	0.800	77	81	58 - 114	4	22	
Acenaphthene	**0.265**	**0.273**	0.400	0.400	66	68	52 - 102	3	22	
4-Nitrophenol	**0.694**	**0.730**	0.800	0.800	87	91	51 - 126	5	20	
2,4-Dinitrotoluene	**0.322**	**0.353**	0.400	0.400	81	88	54 - 108	9	19	
Pentachlorophenol	**0.802**	**0.798**	0.800	0.800	100	100	20 - 148	1	30	
Pyrene	**0.290**	**0.306**	0.400	0.400	73	77	55 - 112	5	19	
Surrogate:										
2-Fluorophenol					*67*	*69*	*26 - 109*			
Phenol-d6					*78*	*79*	*33 - 113*			
Nitrobenzene-d5					*71*	*75*	*31 - 110*			
2-Fluorobiphenyl					*78*	*78*	*42 - 107*			
2,4,6-Tribromophenol					*96*	*101*	*42 - 123*			
Terphenyl-d14					*80*	*85*	*41 - 115*			

Date of Report: September 23, 2021
Samples Submitted: July 7, 2021
Laboratory Reference: 2107-057
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G

Matrix: Sediment
Units: % Solids

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONT-4R-2021**					
Laboratory ID:	07-057-01					
Total Solids	**64**	0.50	SM 2540G	7-15-21	7-16-21	
Client ID:	**MONT-4M-2021**					
Laboratory ID:	07-057-02					
Total Solids	**14**	0.50	SM 2540G	9-20-21	9-21-21	

Date of Report: September 23, 2021
Samples Submitted: July 7, 2021
Laboratory Reference: 2107-057
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G
QUALITY CONTROL

Matrix: Sediment
Units: % Solids

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	07-057-01								
	ORIG	DUP							
Total Solids	**63.7**	**74.2**	NA	NA	NA	NA	15	20	
Laboratory ID:	07-108-02								
	ORIG	DUP							
Total Solids	**24.2**	**24.0**	NA	NA	NA	NA	1	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: Herrera
Project Number: 14-05806-000
Project Name: RPWS
Project Manager: John Lenth
Sampled by: Nick Bartish

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ _____ (other)

Laboratory Number: 07-057

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260D	Halogenated Volatiles 8260D	EDB EPA 8011 (Waters Only)	Semivolatiles 8270E/SIM (with low-level PAHs)	PAHs 8270E/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270E/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Total organic carbon	Copper	Zinc	Phthalates	% Moisture 25406
1	MONT-4R-2021	7.7.21	1100	sed	1									X									X			X	X
2	MONT-4M-2021	↓	↓	↓	1																			X	X		↓

	Signature	Company	Date	Time
Relinquished		Herrera	7.7.21	1440
Received		OSE	7/7/21	1440
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

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OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 23, 2021

John Lenth
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2107-107

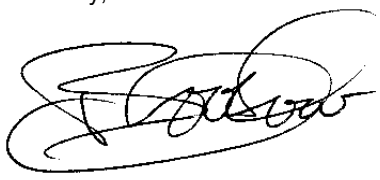
Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on July 13, 2021.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



Blair Goodrow
Project Manager

Enclosures

Date of Report: September 23, 2021
Samples Submitted: July 13, 2021
Laboratory Reference: 2107-107
Project: 14-05806-000

Case Narrative

Samples were collected on July 13, 2021 and received by the laboratory on July 13, 2021. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Total Metals EPA 6010D Analysis

The liquid portion of the sample was decanted and only the solid portion was analyzed.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 23, 2021
Samples Submitted: July 13, 2021
Laboratory Reference: 2107-107
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A

Matrix: Sediment
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVAMS-1R-2021**					
Laboratory ID:	07-107-02					
Total Organic Carbon	**5.0**	0.35	EPA 9060A	7-29-21	7-29-21	

Date of Report: September 23, 2021
Samples Submitted: July 13, 2021
Laboratory Reference: 2107-107
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A
QUALITY CONTROL

Matrix: Solid
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0729S1					
Total Organic Carbon	**ND**	0.042	EPA 9060A	7-29-21	7-29-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	07-107-02								
	ORIG	DUP							
Total Organic Carbon	**5.00**	**4.70**	NA	NA	NA	NA	6	23	
SPIKE BLANK									
Laboratory ID:	SB0729S1								
	SB		SB		SB				
Total Organic Carbon	**41.0**		42.1	NA	97	89-111	NA	NA	

Date of Report: September 23, 2021
Samples Submitted: July 13, 2021
Laboratory Reference: 2107-107
Project: 14-05806-000

TOTAL METALS
EPA 6010D

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVAMS-1M-2021**					
Laboratory ID:	07-107-01					
Copper	**21**	6.1	EPA 6010D	9-20-21	9-20-21	
Zinc	**110**	15	EPA 6010D	9-20-21	9-20-21	

Date of Report: September 23, 2021
Samples Submitted: July 13, 2021
Laboratory Reference: 2107-107
Project: 14-05806-000

TOTAL METALS
EPA 6010D
QUALITY CONTROL

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0920SM1					
Copper	**ND**	1.0	EPA 6010D	9-20-21	9-20-21	
Zinc	**ND**	2.5	EPA 6010D	9-20-21	9-20-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE										
Laboratory ID:	08-124-01									
	ORIG	DUP								
Copper	**3.97**	**4.13**	NA	NA		NA	NA	4	20	
Zinc	**10.7**	**11.2**	NA	NA		NA	NA	5	20	
MATRIX SPIKES										
Laboratory ID:	08-124-01									
	MS	MSD	MS	MSD		MS	MSD			
Copper	**58.1**	**57.2**	50.0	50.0	3.97	**108**	**106**	75-125	2	20
Zinc	**110**	**109**	100	100	10.7	**100**	**99**	75-125	1	20

Date of Report: September 23, 2021
Samples Submitted: July 13, 2021
Laboratory Reference: 2107-107
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM

Matrix: Sediment
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVAMS-1R-2021**					
Laboratory ID:	07-107-02					
Naphthalene	**ND**	0.0079	EPA 8270E/SIM	7-15-21	7-15-21	
2-Methylnaphthalene	**ND**	0.0079	EPA 8270E/SIM	7-15-21	7-15-21	
1-Methylnaphthalene	**ND**	0.0079	EPA 8270E/SIM	7-15-21	7-15-21	
Dimethylphthalate	**ND**	0.039	EPA 8270E	7-15-21	7-15-21	
Acenaphthylene	**ND**	0.0079	EPA 8270E/SIM	7-15-21	7-15-21	
Acenaphthene	**ND**	0.0079	EPA 8270E/SIM	7-15-21	7-15-21	
Diethylphthalate	**ND**	0.039	EPA 8270E	7-15-21	7-15-21	
Fluorene	**ND**	0.0079	EPA 8270E/SIM	7-15-21	7-15-21	
Phenanthrene	**0.0086**	0.0079	EPA 8270E/SIM	7-15-21	7-15-21	
Anthracene	**ND**	0.0079	EPA 8270E/SIM	7-15-21	7-15-21	
Di-n-butylphthalate	**ND**	0.039	EPA 8270E	7-15-21	7-15-21	
Fluoranthene	**0.018**	0.0079	EPA 8270E/SIM	7-15-21	7-15-21	
Pyrene	**0.016**	0.0079	EPA 8270E/SIM	7-15-21	7-15-21	
Butylbenzylphthalate	**ND**	0.039	EPA 8270E	7-15-21	7-15-21	
Benzo[a]anthracene	**0.0090**	0.0079	EPA 8270E/SIM	7-15-21	7-15-21	
Chrysene	**ND**	0.0079	EPA 8270E/SIM	7-15-21	7-15-21	
bis(2-Ethylhexyl)phthalate	**ND**	0.039	EPA 8270E	7-15-21	7-15-21	
Di-n-octylphthalate	**ND**	0.039	EPA 8270E	7-15-21	7-15-21	
Benzo[b]fluoranthene	**0.013**	0.0079	EPA 8270E/SIM	7-15-21	7-15-21	
Benzo(j,k)fluoranthene	**ND**	0.0079	EPA 8270E/SIM	7-15-21	7-15-21	
Benzo[a]pyrene	**0.0081**	0.0079	EPA 8270E/SIM	7-15-21	7-15-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.0079	EPA 8270E/SIM	7-15-21	7-15-21	
Dibenz[a,h]anthracene	**ND**	0.0079	EPA 8270E/SIM	7-15-21	7-15-21	
Benzo[g,h,i]perylene	**ND**	0.0079	EPA 8270E/SIM	7-15-21	7-15-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*50*	*26 - 109*				
Phenol-d6	*60*	*33 - 113*				
Nitrobenzene-d5	*56*	*31 - 110*				
2-Fluorobiphenyl	*60*	*42 - 107*				
2,4,6-Tribromophenol	*80*	*42 - 123*				
Terphenyl-d14	*88*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: July 13, 2021
Laboratory Reference: 2107-107
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0715S1					
Naphthalene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
2-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
1-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Dimethylphthalate	**ND**	0.020	EPA 8270E	7-15-21	7-15-21	
Acenaphthylene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Acenaphthene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Diethylphthalate	**ND**	0.020	EPA 8270E	7-15-21	7-15-21	
Fluorene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Phenanthrene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Anthracene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Di-n-butylphthalate	**ND**	0.020	EPA 8270E	7-15-21	7-15-21	
Fluoranthene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Pyrene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Butylbenzylphthalate	**ND**	0.020	EPA 8270E	7-15-21	7-15-21	
Benzo[a]anthracene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Chrysene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
bis(2-Ethylhexyl)phthalate	**ND**	0.020	EPA 8270E	7-15-21	7-15-21	
Di-n-octylphthalate	**ND**	0.020	EPA 8270E	7-15-21	7-15-21	
Benzo[b]fluoranthene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Benzo(j,k)fluoranthene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Benzo[a]pyrene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Dibenz[a,h]anthracene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Benzo[g,h,i]perylene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*63*	*26 - 109*				
Phenol-d6	*76*	*33 - 113*				
Nitrobenzene-d5	*70*	*31 - 110*				
2-Fluorobiphenyl	*80*	*42 - 107*				
2,4,6-Tribromophenol	*100*	*42 - 123*				
Terphenyl-d14	*83*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: July 13, 2021
Laboratory Reference: 2107-107
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0715S1									
	SB	SBD	SB	SBD	SB	SBD				
Phenol	**0.550**	**0.581**	0.800	0.800	69	73	47 - 106	5	30	
2-Chlorophenol	**0.542**	**0.560**	0.800	0.800	68	70	51 - 105	3	31	
1,4-Dichlorobenzene	**0.256**	**0.269**	0.400	0.400	64	67	49 - 101	5	33	
n-Nitroso-di-n-propylamine	**0.266**	**0.288**	0.400	0.400	67	72	50 - 105	8	26	
1,2,4-Trichlorobenzene	**0.273**	**0.292**	0.400	0.400	68	73	50 - 107	7	31	
4-Chloro-3-methylphenol	**0.618**	**0.644**	0.800	0.800	77	81	58 - 114	4	22	
Acenaphthene	**0.265**	**0.273**	0.400	0.400	66	68	52 - 102	3	22	
4-Nitrophenol	**0.694**	**0.730**	0.800	0.800	87	91	51 - 126	5	20	
2,4-Dinitrotoluene	**0.322**	**0.353**	0.400	0.400	81	88	54 - 108	9	19	
Pentachlorophenol	**0.802**	**0.798**	0.800	0.800	100	100	20 - 148	1	30	
Pyrene	**0.290**	**0.306**	0.400	0.400	73	77	55 - 112	5	19	
Surrogate:										
2-Fluorophenol					*67*	*69*	*26 - 109*			
Phenol-d6					*78*	*79*	*33 - 113*			
Nitrobenzene-d5					*71*	*75*	*31 - 110*			
2-Fluorobiphenyl					*78*	*78*	*42 - 107*			
2,4,6-Tribromophenol					*96*	*101*	*42 - 123*			
Terphenyl-d14					*80*	*85*	*41 - 115*			

Date of Report: September 23, 2021
Samples Submitted: July 13, 2021
Laboratory Reference: 2107-107
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G

Matrix: Sediment
Units: % Solids

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVAMS-1M-2021**					
Laboratory ID:	07-107-01					
Total Solids	**16**	0.50	SM 2540G	9-20-21	9-21-21	
Client ID:	**EVAMS-1R-2021**					
Laboratory ID:	07-107-02					
Total Solids	**51**	0.50	SM 2540G	7-15-21	7-16-21	

Date of Report: September 23, 2021
Samples Submitted: July 13, 2021
Laboratory Reference: 2107-107
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G
QUALITY CONTROL

Matrix: Sediment
Units: % Solids

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	07-057-01								
	ORIG	DUP							
Total Solids	**63.7**	**74.2**	NA	NA	NA	NA	15	20	
Laboratory ID:	07-108-02								
	ORIG	DUP							
Total Solids	**24.2**	**24.0**	NA	NA	NA	NA	1	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: Herrera
Project Number: 14-05806-000
Project Name: RPWS
Project Manager: John Lorth
Sampled by: Nick Burtish

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☐ 1 Day
- ☐ 2 Days
- ☐ 3 Days
- ☐ Standard (7 Days)
- ☒ can hold for other samples (other)

Laboratory Number: 07-107

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260D	Halogenated Volatiles 8260D	EDB EPA 8011 (Waters Only)	Semivolatiles 8270E/SIM (with low-level PAHs)	PAHs 8270E/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270E/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Metals (Cu, Zn) EPA 6020	TOC - EPA 9060A	PAHs - EPA 8270 D/SIM	pH Bicarbonate - EPA 8270D	% Moisture 2540 G
1	EVAMS-LM-2021	7/13/21	10:30	Soil	1																		X				X
2	EVAMS-IR-2021	7/13/21	10:30	Soil	1																			X	X	X	X

	Signature	Company	Date	Time
Relinquished		HEC	7/13	1350
Received		OSE	7/13/21	1350
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

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OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 23, 2021

John Lenth
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2107-108

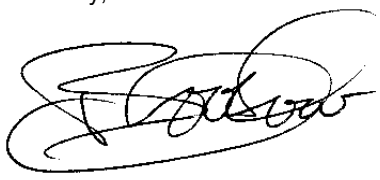
Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on July 13, 2021.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



Blair Goodrow
Project Manager

Enclosures

Date of Report: September 23, 2021
Samples Submitted: July 13, 2021
Laboratory Reference: 2107-108
Project: 14-05806-000

Case Narrative

Samples were collected on July 13, 2021 and received by the laboratory on July 13, 2021. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Total Metals EPA 6010D Analysis

The liquid portion of the sample was decanted and only the solid portion was analyzed.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 23, 2021
Samples Submitted: July 13, 2021
Laboratory Reference: 2107-108
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A

Matrix: Sediment
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONT1-1R-2021**					
Laboratory ID:	07-108-01					
Total Organic Carbon	**1.3**	0.083	EPA 9060A	7-22-21	7-22-21	

Date of Report: September 23, 2021
Samples Submitted: July 13, 2021
Laboratory Reference: 2107-108
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A
QUALITY CONTROL

Matrix: Solid
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0722S1					
Total Organic Carbon	**ND**	0.042	EPA 9060A	7-22-21	7-22-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	07-195-02								
	ORIG	DUP							
Total Organic Carbon	**0.0619**	**0.0608**	NA	NA	NA	NA	2	23	
SPIKE BLANK									
Laboratory ID:	SB0722S1								
	SB		SB		SB				
Total Organic Carbon	**42.0**		42.1	NA	100	89-111	NA	NA	

Date of Report: September 23, 2021
Samples Submitted: July 13, 2021
Laboratory Reference: 2107-108
Project: 14-05806-000

TOTAL METALS
EPA 6010D

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONT1-1M-2021**					
Laboratory ID:	07-108-02					
Copper	**37**	4.1	EPA 6010D	9-20-21	9-20-21	
Zinc	**540**	10	EPA 6010D	9-20-21	9-20-21	

Date of Report: September 23, 2021
Samples Submitted: July 13, 2021
Laboratory Reference: 2107-108
Project: 14-05806-000

TOTAL METALS
EPA 6010D
QUALITY CONTROL

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0920SM1					
Copper	**ND**	1.0	EPA 6010D	9-20-21	9-20-21	
Zinc	**ND**	2.5	EPA 6010D	9-20-21	9-20-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-124-01										
	ORIG	DUP									
Copper	**3.97**	**4.13**	NA	NA		NA		NA	4	20	
Zinc	**10.7**	**11.2**	NA	NA		NA		NA	5	20	
MATRIX SPIKES											
Laboratory ID:	08-124-01										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**58.1**	**57.2**	50.0	50.0	3.97	**108**	**106**	75-125	2	20	
Zinc	**110**	**109**	100	100	10.7	**100**	**99**	75-125	1	20	

Date of Report: September 23, 2021
Samples Submitted: July 13, 2021
Laboratory Reference: 2107-108
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM

Matrix: Sediment
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONT1-1R-2021**					
Laboratory ID:	07-108-01					
Naphthalene	**ND**	0.0066	EPA 8270E/SIM	7-15-21	7-15-21	
2-Methylnaphthalene	**ND**	0.0066	EPA 8270E/SIM	7-15-21	7-15-21	
1-Methylnaphthalene	**ND**	0.0066	EPA 8270E/SIM	7-15-21	7-15-21	
Dimethylphthalate	**ND**	0.033	EPA 8270E	7-15-21	7-15-21	
Acenaphthylene	**ND**	0.0066	EPA 8270E/SIM	7-15-21	7-15-21	
Acenaphthene	**ND**	0.0066	EPA 8270E/SIM	7-15-21	7-15-21	
Diethylphthalate	**ND**	0.033	EPA 8270E	7-15-21	7-15-21	
Fluorene	**ND**	0.0066	EPA 8270E/SIM	7-15-21	7-15-21	
Phenanthrene	**ND**	0.0066	EPA 8270E/SIM	7-15-21	7-15-21	
Anthracene	**ND**	0.0066	EPA 8270E/SIM	7-15-21	7-15-21	
Di-n-butylphthalate	**ND**	0.033	EPA 8270E	7-15-21	7-15-21	
Fluoranthene	**ND**	0.0066	EPA 8270E/SIM	7-15-21	7-15-21	
Pyrene	**ND**	0.0066	EPA 8270E/SIM	7-15-21	7-15-21	
Butylbenzylphthalate	**ND**	0.033	EPA 8270E	7-15-21	7-15-21	
Benzo[a]anthracene	**ND**	0.0066	EPA 8270E/SIM	7-15-21	7-15-21	
Chrysene	**ND**	0.0066	EPA 8270E/SIM	7-15-21	7-15-21	
bis(2-Ethylhexyl)phthalate	**0.12**	0.033	EPA 8270E	7-15-21	7-15-21	
Di-n-octylphthalate	**ND**	0.033	EPA 8270E	7-15-21	7-15-21	
Benzo[b]fluoranthene	**ND**	0.0066	EPA 8270E/SIM	7-15-21	7-15-21	
Benzo(j,k)fluoranthene	**ND**	0.0066	EPA 8270E/SIM	7-15-21	7-15-21	
Benzo[a]pyrene	**ND**	0.0066	EPA 8270E/SIM	7-15-21	7-15-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.0066	EPA 8270E/SIM	7-15-21	7-15-21	
Dibenz[a,h]anthracene	**ND**	0.0066	EPA 8270E/SIM	7-15-21	7-15-21	
Benzo[g,h,i]perylene	**ND**	0.0066	EPA 8270E/SIM	7-15-21	7-15-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*58*	*26 - 109*				
Phenol-d6	*68*	*33 - 113*				
Nitrobenzene-d5	*69*	*31 - 110*				
2-Fluorobiphenyl	*77*	*42 - 107*				
2,4,6-Tribromophenol	*93*	*42 - 123*				
Terphenyl-d14	*115*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: July 13, 2021
Laboratory Reference: 2107-108
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0715S1					
Naphthalene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
2-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
1-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Dimethylphthalate	**ND**	0.020	EPA 8270E	7-15-21	7-15-21	
Acenaphthylene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Acenaphthene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Diethylphthalate	**ND**	0.020	EPA 8270E	7-15-21	7-15-21	
Fluorene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Phenanthrene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Anthracene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Di-n-butylphthalate	**ND**	0.020	EPA 8270E	7-15-21	7-15-21	
Fluoranthene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Pyrene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Butylbenzylphthalate	**ND**	0.020	EPA 8270E	7-15-21	7-15-21	
Benzo[a]anthracene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Chrysene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
bis(2-Ethylhexyl)phthalate	**ND**	0.020	EPA 8270E	7-15-21	7-15-21	
Di-n-octylphthalate	**ND**	0.020	EPA 8270E	7-15-21	7-15-21	
Benzo[b]fluoranthene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Benzo(j,k)fluoranthene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Benzo[a]pyrene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Dibenz[a,h]anthracene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Benzo[g,h,i]perylene	**ND**	0.0040	EPA 8270E/SIM	7-15-21	7-15-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*63*	*26 - 109*				
Phenol-d6	*76*	*33 - 113*				
Nitrobenzene-d5	*70*	*31 - 110*				
2-Fluorobiphenyl	*80*	*42 - 107*				
2,4,6-Tribromophenol	*100*	*42 - 123*				
Terphenyl-d14	*83*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: July 13, 2021
Laboratory Reference: 2107-108
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0715S1									
	SB	SBD	SB	SBD	SB	SBD				
Phenol	**0.550**	**0.581**	0.800	0.800	69	73	47 - 106	5	30	
2-Chlorophenol	**0.542**	**0.560**	0.800	0.800	68	70	51 - 105	3	31	
1,4-Dichlorobenzene	**0.256**	**0.269**	0.400	0.400	64	67	49 - 101	5	33	
n-Nitroso-di-n-propylamine	**0.266**	**0.288**	0.400	0.400	67	72	50 - 105	8	26	
1,2,4-Trichlorobenzene	**0.273**	**0.292**	0.400	0.400	68	73	50 - 107	7	31	
4-Chloro-3-methylphenol	**0.618**	**0.644**	0.800	0.800	77	81	58 - 114	4	22	
Acenaphthene	**0.265**	**0.273**	0.400	0.400	66	68	52 - 102	3	22	
4-Nitrophenol	**0.694**	**0.730**	0.800	0.800	87	91	51 - 126	5	20	
2,4-Dinitrotoluene	**0.322**	**0.353**	0.400	0.400	81	88	54 - 108	9	19	
Pentachlorophenol	**0.802**	**0.798**	0.800	0.800	100	100	20 - 148	1	30	
Pyrene	**0.290**	**0.306**	0.400	0.400	73	77	55 - 112	5	19	
Surrogate:										
2-Fluorophenol					*67*	*69*	*26 - 109*			
Phenol-d6					*78*	*79*	*33 - 113*			
Nitrobenzene-d5					*71*	*75*	*31 - 110*			
2-Fluorobiphenyl					*78*	*78*	*42 - 107*			
2,4,6-Tribromophenol					*96*	*101*	*42 - 123*			
Terphenyl-d14					*80*	*85*	*41 - 115*			

Date of Report: September 23, 2021
Samples Submitted: July 13, 2021
Laboratory Reference: 2107-108
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G

Matrix: Sediment
Units: % Solids

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONT1-1R-2021**					
Laboratory ID:	07-108-01					
Total Solids	**60**	0.50	SM 2540G	7-15-21	7-16-21	
Client ID:	**MONT1-1M-2021**					
Laboratory ID:	07-108-02					
Total Solids	**24**	0.50	SM 2540G	9-20-21	9-21-21	

Date of Report: September 23, 2021
Samples Submitted: July 13, 2021
Laboratory Reference: 2107-108
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G
QUALITY CONTROL

Matrix: Sediment
Units: % Solids

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	07-057-01								
	ORIG	DUP							
Total Solids	**63.7**	**74.2**	NA	NA	NA	NA	15	20	
Laboratory ID:	07-108-02								
	ORIG	DUP							
Total Solids	**24.2**	**24.0**	NA	NA	NA	NA	1	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page 1 of 1

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Laboratory Number: 07-108

Company: Herrera
Project Number: ~~RM~~
Project Name: RPWS
Project Manager:
Sampled by: N. Maas, B. Blad

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☑ Standard (7 Days)
☐ _____ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260D	Halogenated Volatiles 8260D	EDB EPA 8011 (Waters Only)	Semivolatiles 8270E/SIM (with low-level PAHs)	PAHs 8270E/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270E/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	TOC	Phthalates	Total Copper/Zinc		~~% Moisture~~ 2540 G Total Solids
1	MONT1-1R-2021	7/13/21	0930	SED	1									X									X	X			X
2	MONT1-1~~R~~-2021	↓	↓	↓	1																				X		X

	Signature	Company	Date	Time
Relinquished		Herrera	7/13/21	1400
Received		OSE	7/13/21	1400
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

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OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 23, 2021

John Lenth
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2107-202

Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on July 21, 2021.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

Blair Goodrow
Project Manager

Enclosures

Date of Report: September 23, 2021
Samples Submitted: July 21, 2021
Laboratory Reference: 2107-202
Project: 14-05806-000

Case Narrative

Samples were collected on July 21, 2021 and received by the laboratory on July 21, 2021. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Total Metals EPA 6010D Analysis

The liquid portion of the sample was decanted and only the solid portion was analyzed.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 23, 2021
Samples Submitted: July 21, 2021
Laboratory Reference: 2107-202
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A

Matrix: Sediment
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TYLR-1R-2021**					
Laboratory ID:	07-202-02					
Total Organic Carbon	**1.6**	0.070	EPA 9060A	8-12-21	8-12-21	

Date of Report: September 23, 2021
Samples Submitted: July 21, 2021
Laboratory Reference: 2107-202
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A
QUALITY CONTROL

Matrix: Solid
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0812S1					
Total Organic Carbon	**ND**	0.042	EPA 9060A	8-12-21	8-12-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	07-202-02								
	ORIG	DUP							
Total Organic Carbon	**1.57**	**1.60**	NA	NA	NA	NA	2	23	
SPIKE BLANK									
Laboratory ID:	SB0812S1								
	SB		SB		SB				
Total Organic Carbon	**41.5**		42.1	NA	99	89-111	NA	NA	

Date of Report: September 23, 2021
Samples Submitted: July 21, 2021
Laboratory Reference: 2107-202
Project: 14-05806-000

TOTAL METALS
EPA 6010D

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TYLR-1M-2021**					
Laboratory ID:	07-202-01					
Copper	**70**	3.9	EPA 6010D	9-20-21	9-20-21	
Zinc	**720**	9.6	EPA 6010D	9-20-21	9-20-21	

Date of Report: September 23, 2021
Samples Submitted: July 21, 2021
Laboratory Reference: 2107-202
Project: 14-05806-000

TOTAL METALS
EPA 6010D
QUALITY CONTROL

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0920SM1					
Copper	**ND**	1.0	EPA 6010D	9-20-21	9-20-21	
Zinc	**ND**	2.5	EPA 6010D	9-20-21	9-20-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-124-01										
	ORIG	DUP									
Copper	**3.97**	**4.13**	NA	NA		NA		NA	4	20	
Zinc	**10.7**	**11.2**	NA	NA		NA		NA	5	20	
MATRIX SPIKES											
Laboratory ID:	08-124-01										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**58.1**	**57.2**	50.0	50.0	3.97	**108**	**106**	75-125	2	20	
Zinc	**110**	**109**	100	100	10.7	**100**	**99**	75-125	1	20	

Date of Report: September 23, 2021
Samples Submitted: July 21, 2021
Laboratory Reference: 2107-202
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM

Matrix: Sediment
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TYLR-1R-2021**					
Laboratory ID:	07-202-02					
Naphthalene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
2-Methylnaphthalene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
1-Methylnaphthalene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Dimethylphthalate	**ND**	0.032	EPA 8270E	8-2-21	8-2-21	
Acenaphthylene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Acenaphthene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Diethylphthalate	**ND**	0.032	EPA 8270E	8-2-21	8-2-21	
Fluorene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Phenanthrene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Anthracene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Di-n-butylphthalate	**ND**	0.032	EPA 8270E	8-2-21	8-2-21	
Fluoranthene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Pyrene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Butylbenzylphthalate	**ND**	0.032	EPA 8270E	8-2-21	8-2-21	
Benzo[a]anthracene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Chrysene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
bis(2-Ethylhexyl)phthalate	**0.087**	0.032	EPA 8270E	8-2-21	8-2-21	
Di-n-octylphthalate	**ND**	0.032	EPA 8270E	8-2-21	8-2-21	
Benzo[b]fluoranthene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Benzo(j,k)fluoranthene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Benzo[a]pyrene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Dibenz[a,h]anthracene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Benzo[g,h,i]perylene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*48*	*26 - 109*				
Phenol-d6	*59*	*33 - 113*				
Nitrobenzene-d5	*60*	*31 - 110*				
2-Fluorobiphenyl	*71*	*42 - 107*				
2,4,6-Tribromophenol	*93*	*42 - 123*				
Terphenyl-d14	*100*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: July 21, 2021
Laboratory Reference: 2107-202
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0802S1					
Naphthalene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
2-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
1-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Dimethylphthalate	**ND**	0.020	EPA 8270E	8-2-21	8-2-21	
Acenaphthylene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Acenaphthene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Diethylphthalate	**ND**	0.020	EPA 8270E	8-2-21	8-2-21	
Fluorene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Phenanthrene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Anthracene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Di-n-butylphthalate	**ND**	0.020	EPA 8270E	8-2-21	8-2-21	
Fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Pyrene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Butylbenzylphthalate	**ND**	0.020	EPA 8270E	8-2-21	8-2-21	
Benzo[a]anthracene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Chrysene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
bis(2-Ethylhexyl)phthalate	**ND**	0.020	EPA 8270E	8-2-21	8-2-21	
Di-n-octylphthalate	**ND**	0.020	EPA 8270E	8-2-21	8-2-21	
Benzo[b]fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Benzo(j,k)fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Benzo[a]pyrene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Dibenz[a,h]anthracene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Benzo[g,h,i]perylene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*49*	*26 - 109*				
Phenol-d6	*56*	*33 - 113*				
Nitrobenzene-d5	*58*	*31 - 110*				
2-Fluorobiphenyl	*68*	*42 - 107*				
2,4,6-Tribromophenol	*89*	*42 - 123*				
Terphenyl-d14	*79*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: July 21, 2021
Laboratory Reference: 2107-202
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0802S1									
	SB	SBD	SB	SBD	SB	SBD				
Phenol	**0.816**	**0.652**	1.33	1.33	61	49	47 - 106	22	30	
2-Chlorophenol	**0.874**	**0.687**	1.33	1.33	66	52	51 - 105	24	31	
1,4-Dichlorobenzene	**0.439**	**0.343**	0.667	0.667	66	51	49 - 101	25	33	
n-Nitroso-di-n-propylamine	**0.424**	**0.348**	0.667	0.667	64	52	50 - 105	20	26	
1,2,4-Trichlorobenzene	**0.474**	**0.371**	0.667	0.667	71	56	50 - 107	24	31	
4-Chloro-3-methylphenol	**0.994**	**0.868**	1.33	1.33	75	65	58 - 114	14	22	
Acenaphthene	**0.435**	**0.394**	0.667	0.667	65	59	52 - 102	10	22	
4-Nitrophenol	**1.03**	**0.974**	1.33	1.33	77	73	51 - 126	6	20	
2,4-Dinitrotoluene	**0.537**	**0.494**	0.667	0.667	81	74	54 - 108	8	19	
Pentachlorophenol	**1.01**	**0.942**	1.33	1.33	76	71	20 - 148	7	30	
Pyrene	**0.461**	**0.431**	0.667	0.667	69	65	55 - 112	7	19	
Surrogate:										
2-Fluorophenol					*60*	*46*	*26 - 109*			
Phenol-d6					*68*	*54*	*33 - 113*			
Nitrobenzene-d5					*69*	*54*	*31 - 110*			
2-Fluorobiphenyl					*73*	*66*	*42 - 107*			
2,4,6-Tribromophenol					*96*	*86*	*42 - 123*			
Terphenyl-d14					*79*	*75*	*41 - 115*			

Date of Report: September 23, 2021
Samples Submitted: July 21, 2021
Laboratory Reference: 2107-202
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G

Matrix: Sediment
Units: % Solids

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TYLR-1M-2021**					
Laboratory ID:	07-202-01					
Total Solids	**26**	0.50	SM 2540G	9-20-21	9-21-21	
Client ID:	**TYLR-1R-2021**					
Laboratory ID:	07-202-02					
Total Solids	**62**	0.50	SM 2540G	8-2-21	8-3-21	

Date of Report: September 23, 2021
Samples Submitted: July 21, 2021
Laboratory Reference: 2107-202
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G
QUALITY CONTROL

Matrix: Sediment
Units: % Solids

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	07-262-01								
	ORIG	DUP							
Total Solids	**62.9**	**66.8**	NA	NA	NA	NA	6	20	
Laboratory ID:	07-108-02								
	ORIG	DUP							
Total Solids	**24.2**	**24.0**	NA	NA	NA	NA	1	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

CHAIN OF CUSTODY

07-202

Page 1 of 1

Company: Herrera Environmental Consultants

Project No.: 14-05806-000

Project Name: Redmond Paired Watershed Study

Project Manager: John Lenth

Turnaround Requested:

_____ 1 Day
_____ 2 Day
_____ 3 Day
__X__ Standard

Laboratory No.

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Organic Carbon	Copper	Zinc	Polycyclic aromatic hydrocarbons	Phthalates							Total Solids 25406
1	TYLR-1M-2021	7/21/21	1000	Sediment	1		X	X									X
2	TYLR-1R-2021	↓	↓	Sediment	1	X			X	X							X
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												

Relinquished by Rebecca Stebbing Date 7/21/21 Received by Nichole Blum Date 7/21/21

Firm Herrera Time 14:15 Firm OSE Time 1415

Relinquished by _____ Date _____ Received by _____ Date _____

Firm _____ Time _____ Firm _____ Time _____

Comments:

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OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 23, 2021

John Lenth
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2107-212

Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on July 22, 2021.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

Blair Goodrow
Project Manager

Enclosures

Date of Report: September 23, 2021
Samples Submitted: July 22, 2021
Laboratory Reference: 2107-212
Project: 14-05806-000

Case Narrative

Samples were collected on July 22, 2021 and received by the laboratory on July 22, 2021. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Total Metals EPA 6010D Analysis

The liquid portion of the sample was decanted and only the solid portion was analyzed.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 23, 2021
Samples Submitted: July 22, 2021
Laboratory Reference: 2107-212
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A

Matrix: Sediment
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVALSS-1R-2021**					
Laboratory ID:	07-212-01					
Total Organic Carbon	**2.5**	0.11	EPA 9060A	8-12-21	8-12-21	

Date of Report: September 23, 2021
Samples Submitted: July 22, 2021
Laboratory Reference: 2107-212
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A
QUALITY CONTROL

Matrix: Solid
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0812S1					
Total Organic Carbon	**ND**	0.042	EPA 9060A	8-12-21	8-12-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	07-202-02								
	ORIG	DUP							
Total Organic Carbon	**1.57**	**1.60**	NA	NA	NA	NA	2	23	
SPIKE BLANK									
Laboratory ID:	SB0812S1								
	SB		SB		SB				
Total Organic Carbon	**41.5**		42.1	NA	99	89-111	NA	NA	

Date of Report: September 23, 2021
Samples Submitted: July 22, 2021
Laboratory Reference: 2107-212
Project: 14-05806-000

TOTAL METALS
EPA 6010D

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVALSS-1M-2021**					
Laboratory ID:	07-212-02					
Copper	**29**	4.7	EPA 6010D	9-20-21	9-20-21	
Zinc	**93**	12	EPA 6010D	9-20-21	9-20-21	

Date of Report: September 23, 2021
Samples Submitted: July 22, 2021
Laboratory Reference: 2107-212
Project: 14-05806-000

TOTAL METALS
EPA 6010D
QUALITY CONTROL

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0920SM1					
Copper	**ND**	1.0	EPA 6010D	9-20-21	9-20-21	
Zinc	**ND**	2.5	EPA 6010D	9-20-21	9-20-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-124-01										
	ORIG	DUP									
Copper	**3.97**	**4.13**	NA	NA		NA		NA	4	20	
Zinc	**10.7**	**11.2**	NA	NA		NA		NA	5	20	
MATRIX SPIKES											
Laboratory ID:	08-124-01										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**58.1**	**57.2**	50.0	50.0	3.97	**108**	**106**	75-125	2	20	
Zinc	**110**	**109**	100	100	10.7	**100**	**99**	75-125	1	20	

Date of Report: September 23, 2021
Samples Submitted: July 22, 2021
Laboratory Reference: 2107-212
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM

Matrix: Sediment
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVALSS-1R-2021**					
Laboratory ID:	07-212-01					
Naphthalene	**ND**	0.0071	EPA 8270E/SIM	8-2-21	8-2-21	
2-Methylnaphthalene	**ND**	0.0071	EPA 8270E/SIM	8-2-21	8-2-21	
1-Methylnaphthalene	**ND**	0.0071	EPA 8270E/SIM	8-2-21	8-2-21	
Dimethylphthalate	**ND**	0.036	EPA 8270E	8-2-21	8-2-21	
Acenaphthylene	**ND**	0.0071	EPA 8270E/SIM	8-2-21	8-2-21	
Acenaphthene	**ND**	0.0071	EPA 8270E/SIM	8-2-21	8-2-21	
Diethylphthalate	**ND**	0.036	EPA 8270E	8-2-21	8-2-21	
Fluorene	**ND**	0.0071	EPA 8270E/SIM	8-2-21	8-2-21	
Phenanthrene	**ND**	0.0071	EPA 8270E/SIM	8-2-21	8-2-21	
Anthracene	**ND**	0.0071	EPA 8270E/SIM	8-2-21	8-2-21	
Di-n-butylphthalate	**ND**	0.036	EPA 8270E	8-2-21	8-2-21	
Fluoranthene	**0.035**	0.0071	EPA 8270E/SIM	8-2-21	8-2-21	
Pyrene	**0.045**	0.036	EPA 8270E	8-2-21	8-2-21	
Butylbenzylphthalate	**ND**	0.036	EPA 8270E	8-2-21	8-2-21	
Benzo[a]anthracene	**0.036**	0.036	EPA 8270E	8-2-21	8-2-21	
Chrysene	**0.040**	0.0071	EPA 8270E/SIM	8-2-21	8-2-21	
bis(2-Ethylhexyl)phthalate	**0.038**	0.036	EPA 8270E	8-2-21	8-2-21	
Di-n-octylphthalate	**ND**	0.036	EPA 8270E	8-2-21	8-2-21	
Benzo[b]fluoranthene	**0.057**	0.0071	EPA 8270E/SIM	8-2-21	8-2-21	
Benzo(j,k)fluoranthene	**0.015**	0.0071	EPA 8270E/SIM	8-2-21	8-2-21	
Benzo[a]pyrene	**0.041**	0.0071	EPA 8270E/SIM	8-2-21	8-2-21	
Indeno[1,2,3-cd]pyrene	**0.020**	0.0071	EPA 8270E/SIM	8-2-21	8-2-21	
Dibenz[a,h]anthracene	**ND**	0.0071	EPA 8270E/SIM	8-2-21	8-2-21	
Benzo[g,h,i]perylene	**0.016**	0.0071	EPA 8270E/SIM	8-2-21	8-2-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*47*	*26 - 109*				
Phenol-d6	*55*	*33 - 113*				
Nitrobenzene-d5	*56*	*31 - 110*				
2-Fluorobiphenyl	*67*	*42 - 107*				
2,4,6-Tribromophenol	*89*	*42 - 123*				
Terphenyl-d14	*98*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: July 22, 2021
Laboratory Reference: 2107-212
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0802S1					
Naphthalene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
2-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
1-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Dimethylphthalate	**ND**	0.020	EPA 8270E	8-2-21	8-2-21	
Acenaphthylene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Acenaphthene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Diethylphthalate	**ND**	0.020	EPA 8270E	8-2-21	8-2-21	
Fluorene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Phenanthrene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Anthracene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Di-n-butylphthalate	**ND**	0.020	EPA 8270E	8-2-21	8-2-21	
Fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Pyrene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Butylbenzylphthalate	**ND**	0.020	EPA 8270E	8-2-21	8-2-21	
Benzo[a]anthracene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Chrysene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
bis(2-Ethylhexyl)phthalate	**ND**	0.020	EPA 8270E	8-2-21	8-2-21	
Di-n-octylphthalate	**ND**	0.020	EPA 8270E	8-2-21	8-2-21	
Benzo[b]fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Benzo(j,k)fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Benzo[a]pyrene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Dibenz[a,h]anthracene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Benzo[g,h,i]perylene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*49*	*26 - 109*				
Phenol-d6	*56*	*33 - 113*				
Nitrobenzene-d5	*58*	*31 - 110*				
2-Fluorobiphenyl	*68*	*42 - 107*				
2,4,6-Tribromophenol	*89*	*42 - 123*				
Terphenyl-d14	*79*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: July 22, 2021
Laboratory Reference: 2107-212
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0802S1									
	SB	SBD	SB	SBD	SB	SBD				
Phenol	**0.816**	**0.652**	1.33	1.33	61	49	47 - 106	22	30	
2-Chlorophenol	**0.874**	**0.687**	1.33	1.33	66	52	51 - 105	24	31	
1,4-Dichlorobenzene	**0.439**	**0.343**	0.667	0.667	66	51	49 - 101	25	33	
n-Nitroso-di-n-propylamine	**0.424**	**0.348**	0.667	0.667	64	52	50 - 105	20	26	
1,2,4-Trichlorobenzene	**0.474**	**0.371**	0.667	0.667	71	56	50 - 107	24	31	
4-Chloro-3-methylphenol	**0.994**	**0.868**	1.33	1.33	75	65	58 - 114	14	22	
Acenaphthene	**0.435**	**0.394**	0.667	0.667	65	59	52 - 102	10	22	
4-Nitrophenol	**1.03**	**0.974**	1.33	1.33	77	73	51 - 126	6	20	
2,4-Dinitrotoluene	**0.537**	**0.494**	0.667	0.667	81	74	54 - 108	8	19	
Pentachlorophenol	**1.01**	**0.942**	1.33	1.33	76	71	20 - 148	7	30	
Pyrene	**0.461**	**0.431**	0.667	0.667	69	65	55 - 112	7	19	
Surrogate:										
2-Fluorophenol					*60*	*46*	*26 - 109*			
Phenol-d6					*68*	*54*	*33 - 113*			
Nitrobenzene-d5					*69*	*54*	*31 - 110*			
2-Fluorobiphenyl					*73*	*66*	*42 - 107*			
2,4,6-Tribromophenol					*96*	*86*	*42 - 123*			
Terphenyl-d14					*79*	*75*	*41 - 115*			

Date of Report: September 23, 2021
Samples Submitted: July 22, 2021
Laboratory Reference: 2107-212
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G

Matrix: Sediment
Units: % Solids

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EVALSS-1R-2021**					
Laboratory ID:	07-212-01					
Total Solids	**56**	0.50	SM 2540G	8-2-21	8-3-21	
Client ID:	**EVALSS-1M-2021**					
Laboratory ID:	07-212-02					
Total Solids	**21**	0.50	SM 2540G	9-20-21	9-21-21	

Date of Report: September 23, 2021
Samples Submitted: July 22, 2021
Laboratory Reference: 2107-212
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G
QUALITY CONTROL

Matrix: Sediment
Units: % Solids

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	07-262-01								
	ORIG	DUP							
Total Solids	**62.9**	**66.8**	NA	NA	NA	NA	6	20	
Laboratory ID:	07-108-02								
	ORIG	DUP							
Total Solids	**24.2**	**24.0**	NA	NA	NA	NA	1	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: Herrera
Project Number: 14-05806-000
Project Name: RPWS
Project Manager: John Loth
Sampled by: Nick Bartish

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ can hold for other samples
(other)

Laboratory Number: 07-212

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260D	Halogenated Volatiles 8260D	EDB EPA 8011 (Waters Only)	Semivolatiles 8270E/SIM (with low-level PAHs)	PAHs 8270E/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270E/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Metals (As, Zn) EPA 6020	TOC - EPA 9060A	PAHs - EPA 8270 D/SIM	Phthalates - EPA 8270 D	% Moisture Total Solids 2540 G
1	EVALSS · 1R · 2021	7/22/21	10:00	soil	1																		X	X	X	X	X
2	EVALSS · 1M · 2021	7/22/21	10:00	soil	1																		X				X

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished	Rebecca Fletcher	Herrera	7/22/21	13:45	
Received	Nelwell Ibris	OSE	7/22/21	1345	
Relinquished					
Received					
Relinquished					
Received					Data Package: Standard ☐ Level III ☐ Level IV ☐
Reviewed/Date		Reviewed/Date			Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

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OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 23, 2021

John Lenth
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2107-262

Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on July 27, 2021.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

Blair Goodrow
Project Manager

Enclosures

Date of Report: September 23, 2021
Samples Submitted: July 27, 2021
Laboratory Reference: 2107-262
Project: 14-05806-000

Case Narrative

Samples were collected on July 27, 2021 and received by the laboratory on July 27, 2021. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Total Metals EPA 6010D Analysis

The liquid portion of the sample was decanted and only the solid portion was analyzed.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 23, 2021
Samples Submitted: July 27, 2021
Laboratory Reference: 2107-262
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A

Matrix: Sediment
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SIDL-2-1R-2021**					
Laboratory ID:	07-262-01					
Total Organic Carbon	**0.82**	0.061	EPA 9060A	8-12-21	8-12-21	

Date of Report: September 23, 2021
Samples Submitted: July 27, 2021
Laboratory Reference: 2107-262
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A
QUALITY CONTROL

Matrix: Solid
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0812S1					
Total Organic Carbon	**ND**	0.042	EPA 9060A	8-12-21	8-12-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	07-202-02								
	ORIG	DUP							
Total Organic Carbon	**1.57**	**1.60**	NA	NA	NA	NA	2	23	
SPIKE BLANK									
Laboratory ID:	SB0812S1								
	SB		SB		SB				
Total Organic Carbon	**41.5**		42.1	NA	99	89-111	NA	NA	

Date of Report: September 23, 2021
Samples Submitted: July 27, 2021
Laboratory Reference: 2107-262
Project: 14-05806-000

TOTAL METALS
EPA 6010D

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SIDL-2-IM-2021**					
Laboratory ID:	07-262-02					
Copper	**36**	4.6	EPA 6010D	9-20-21	9-20-21	
Zinc	**70**	11	EPA 6010D	9-20-21	9-20-21	

Date of Report: September 23, 2021
Samples Submitted: July 27, 2021
Laboratory Reference: 2107-262
Project: 14-05806-000

TOTAL METALS
EPA 6010D
QUALITY CONTROL

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0920SM1					
Copper	**ND**	1.0	EPA 6010D	9-20-21	9-20-21	
Zinc	**ND**	2.5	EPA 6010D	9-20-21	9-20-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-124-01										
	ORIG	DUP									
Copper	**3.97**	**4.13**	NA	NA		NA		NA	4	20	
Zinc	**10.7**	**11.2**	NA	NA		NA		NA	5	20	
MATRIX SPIKES											
Laboratory ID:	08-124-01										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**58.1**	**57.2**	50.0	50.0	3.97	**108**	**106**	75-125	2	20	
Zinc	**110**	**109**	100	100	10.7	**100**	**99**	75-125	1	20	

Date of Report: September 23, 2021
Samples Submitted: July 27, 2021
Laboratory Reference: 2107-262
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM

Matrix: Sediment
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SIDL-2-1R-2021**					
Laboratory ID:	07-262-01					
Naphthalene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
2-Methylnaphthalene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
1-Methylnaphthalene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Dimethylphthalate	**ND**	0.032	EPA 8270E	8-2-21	8-2-21	
Acenaphthylene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Acenaphthene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Diethylphthalate	**ND**	0.032	EPA 8270E	8-2-21	8-2-21	
Fluorene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Phenanthrene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Anthracene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Di-n-butylphthalate	**ND**	0.032	EPA 8270E	8-2-21	8-2-21	
Fluoranthene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Pyrene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Butylbenzylphthalate	**ND**	0.032	EPA 8270E	8-2-21	8-2-21	
Benzo[a]anthracene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Chrysene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
bis(2-Ethylhexyl)phthalate	**0.040**	0.032	EPA 8270E	8-2-21	8-2-21	
Di-n-octylphthalate	**ND**	0.032	EPA 8270E	8-2-21	8-2-21	
Benzo[b]fluoranthene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Benzo(j,k)fluoranthene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Benzo[a]pyrene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Dibenz[a,h]anthracene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Benzo[g,h,i]perylene	**ND**	0.0064	EPA 8270E/SIM	8-2-21	8-2-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*52*	*26 - 109*				
Phenol-d6	*59*	*33 - 113*				
Nitrobenzene-d5	*62*	*31 - 110*				
2-Fluorobiphenyl	*53*	*42 - 107*				
2,4,6-Tribromophenol	*82*	*42 - 123*				
Terphenyl-d14	*68*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: July 27, 2021
Laboratory Reference: 2107-262
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0802S1					
Naphthalene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
2-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
1-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Dimethylphthalate	**ND**	0.020	EPA 8270E	8-2-21	8-2-21	
Acenaphthylene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Acenaphthene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Diethylphthalate	**ND**	0.020	EPA 8270E	8-2-21	8-2-21	
Fluorene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Phenanthrene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Anthracene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Di-n-butylphthalate	**ND**	0.020	EPA 8270E	8-2-21	8-2-21	
Fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Pyrene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Butylbenzylphthalate	**ND**	0.020	EPA 8270E	8-2-21	8-2-21	
Benzo[a]anthracene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Chrysene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
bis(2-Ethylhexyl)phthalate	**ND**	0.020	EPA 8270E	8-2-21	8-2-21	
Di-n-octylphthalate	**ND**	0.020	EPA 8270E	8-2-21	8-2-21	
Benzo[b]fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Benzo(j,k)fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Benzo[a]pyrene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Dibenz[a,h]anthracene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Benzo[g,h,i]perylene	**ND**	0.0040	EPA 8270E/SIM	8-2-21	8-2-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*49*	*26 - 109*				
Phenol-d6	*56*	*33 - 113*				
Nitrobenzene-d5	*58*	*31 - 110*				
2-Fluorobiphenyl	*68*	*42 - 107*				
2,4,6-Tribromophenol	*89*	*42 - 123*				
Terphenyl-d14	*79*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: July 27, 2021
Laboratory Reference: 2107-262
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0802S1									
	SB	SBD	SB	SBD	SB	SBD				
Phenol	**0.816**	**0.652**	1.33	1.33	61	49	47 - 106	22	30	
2-Chlorophenol	**0.874**	**0.687**	1.33	1.33	66	52	51 - 105	24	31	
1,4-Dichlorobenzene	**0.439**	**0.343**	0.667	0.667	66	51	49 - 101	25	33	
n-Nitroso-di-n-propylamine	**0.424**	**0.348**	0.667	0.667	64	52	50 - 105	20	26	
1,2,4-Trichlorobenzene	**0.474**	**0.371**	0.667	0.667	71	56	50 - 107	24	31	
4-Chloro-3-methylphenol	**0.994**	**0.868**	1.33	1.33	75	65	58 - 114	14	22	
Acenaphthene	**0.435**	**0.394**	0.667	0.667	65	59	52 - 102	10	22	
4-Nitrophenol	**1.03**	**0.974**	1.33	1.33	77	73	51 - 126	6	20	
2,4-Dinitrotoluene	**0.537**	**0.494**	0.667	0.667	81	74	54 - 108	8	19	
Pentachlorophenol	**1.01**	**0.942**	1.33	1.33	76	71	20 - 148	7	30	
Pyrene	**0.461**	**0.431**	0.667	0.667	69	65	55 - 112	7	19	
Surrogate:										
2-Fluorophenol					*60*	*46*	*26 - 109*			
Phenol-d6					*68*	*54*	*33 - 113*			
Nitrobenzene-d5					*69*	*54*	*31 - 110*			
2-Fluorobiphenyl					*73*	*66*	*42 - 107*			
2,4,6-Tribromophenol					*96*	*86*	*42 - 123*			
Terphenyl-d14					*79*	*75*	*41 - 115*			

Date of Report: September 23, 2021
Samples Submitted: July 27, 2021
Laboratory Reference: 2107-262
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G

Matrix: Sediment
Units: % Solids

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SIDL-2-1R-2021**					
Laboratory ID:	07-262-01					
Total Solids	**63**	0.50	SM 2540G	8-2-21	8-3-21	
Client ID:	**SIDL-2-IM-2021**					
Laboratory ID:	07-262-02					
Total Solids	**22**	0.50	SM 2540G	9-20-21	9-21-21	

Date of Report: September 23, 2021
Samples Submitted: July 27, 2021
Laboratory Reference: 2107-262
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G
QUALITY CONTROL

Matrix: Sediment
Units: % Solids

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	07-262-01								
	ORIG	DUP							
Total Solids	**62.9**	**66.8**	NA	NA	NA	NA	6	20	
Laboratory ID:	07-108-02								
	ORIG	DUP							
Total Solids	**24.2**	**24.0**	NA	NA	NA	NA	1	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: Hewitt
Project Number: 14-05806-000
Project Name: RPWS
Project Manager: John Lenth
Sampled by: Nick Barbish

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ can will Run other samples (other)

Laboratory Number: '07-262

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260D	Halogenated Volatiles 8260D	EDB EPA 8011 (Waters Only)	Semivolatiles 8270E/SIM (with low-level PAHs)	PAHs 8270E/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270E/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Metals (Cu, Zn) EPA 6020	TOC - EPA 9060A	PAHs - EPA 8270 P/SIM	Ph thalates - EPA 8270D	% Moisture
1	SIDL-2-1R.2021	7/27/21	10:30	soil	1																			X	X	X	X
2	SIDL-2-1M.2021	7/27/21	10:30	soil	1																		X				X

	Signature	Company	Date	Time
Relinquished		HEC	7/27/21	13:35
Received		OSE	7-27-21	13:35
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

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OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 23, 2021

John Lenth
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2107-298

Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on July 29, 2021.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

Blair Goodrow
Project Manager

Enclosures

Date of Report: September 23, 2021
Samples Submitted: July 29, 2021
Laboratory Reference: 2107-298
Project: 14-05806-000

Case Narrative

Samples were collected on July 29, 2021 and received by the laboratory on July 29, 2021. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Total Metals EPA 6010D Analysis

The liquid portion of the sample was decanted and only the solid portion was analyzed.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 23, 2021
Samples Submitted: July 29, 2021
Laboratory Reference: 2107-298
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A

Matrix: Sediment
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TOSH-3R-2021**					
Laboratory ID:	07-298-02					
Total Organic Carbon	**2.5**	0.15	EPA 9060A	8-16-21	8-16-21	

Date of Report: September 23, 2021
Samples Submitted: July 29, 2021
Laboratory Reference: 2107-298
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A
QUALITY CONTROL

Matrix: Solid
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0816S1					
Total Organic Carbon	**ND**	0.042	EPA 9060A	8-16-21	8-16-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	08-144-01								
	ORIG	DUP							
Total Organic Carbon	**1.02**	**1.18**	NA	NA	NA	NA	14	23	
SPIKE BLANK									
Laboratory ID:	SB0816S1								
	SB		SB		SB				
Total Organic Carbon	**40.8**		42.1	NA	97	89-111	NA	NA	

Date of Report: September 23, 2021
Samples Submitted: July 29, 2021
Laboratory Reference: 2107-298
Project: 14-05806-000

TOTAL METALS
EPA 6010D

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TOSH-3M-2021**					
Laboratory ID:	07-298-01					
Copper	**50**	2.4	EPA 6010D	9-20-21	9-20-21	
Zinc	**1300**	6.0	EPA 6010D	9-20-21	9-20-21	

Date of Report: September 23, 2021
Samples Submitted: July 29, 2021
Laboratory Reference: 2107-298
Project: 14-05806-000

TOTAL METALS
EPA 6010D
QUALITY CONTROL

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0920SM1					
Copper	**ND**	1.0	EPA 6010D	9-20-21	9-20-21	
Zinc	**ND**	2.5	EPA 6010D	9-20-21	9-20-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-124-01										
	ORIG	DUP									
Copper	**3.97**	**4.13**	NA	NA		NA		NA	4	20	
Zinc	**10.7**	**11.2**	NA	NA		NA		NA	5	20	
MATRIX SPIKES											
Laboratory ID:	08-124-01										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**58.1**	**57.2**	50.0	50.0	3.97	**108**	**106**	75-125	2	20	
Zinc	**110**	**109**	100	100	10.7	**100**	**99**	75-125	1	20	

Date of Report: September 23, 2021
Samples Submitted: July 29, 2021
Laboratory Reference: 2107-298
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM

Matrix: Sediment
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TOSH-3R-2021**					
Laboratory ID:	07-298-02					
Naphthalene	**ND**	0.0067	EPA 8270E/SIM	8-12-21	8-12-21	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270E/SIM	8-12-21	8-12-21	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270E/SIM	8-12-21	8-12-21	
Dimethylphthalate	**ND**	0.067	EPA 8270E	8-12-21	8-12-21	
Acenaphthylene	**ND**	0.0067	EPA 8270E/SIM	8-12-21	8-12-21	
Acenaphthene	**ND**	0.0067	EPA 8270E/SIM	8-12-21	8-12-21	
Diethylphthalate	**ND**	0.067	EPA 8270E	8-12-21	8-12-21	
Fluorene	**ND**	0.0067	EPA 8270E/SIM	8-12-21	8-12-21	
Phenanthrene	**0.047**	0.0067	EPA 8270E/SIM	8-12-21	8-12-21	
Anthracene	**0.0072**	0.0067	EPA 8270E/SIM	8-12-21	8-12-21	
Di-n-butylphthalate	**ND**	0.067	EPA 8270E	8-12-21	8-12-21	
Fluoranthene	**0.088**	0.067	EPA 8270E	8-12-21	8-12-21	
Pyrene	**0.078**	0.067	EPA 8270E	8-12-21	8-12-21	
Butylbenzylphthalate	**ND**	0.067	EPA 8270E	8-12-21	8-12-21	
Benzo[a]anthracene	**0.032**	0.0067	EPA 8270E/SIM	8-12-21	8-12-21	
Chrysene	**0.046**	0.0067	EPA 8270E/SIM	8-12-21	8-12-21	
bis(2-Ethylhexyl)phthalate	**0.38**	0.067	EPA 8270E	8-12-21	8-12-21	
Di-n-octylphthalate	**ND**	0.067	EPA 8270E	8-12-21	8-12-21	
Benzo[b]fluoranthene	**0.059**	0.0067	EPA 8270E/SIM	8-12-21	8-12-21	
Benzo(j,k)fluoranthene	**0.021**	0.0067	EPA 8270E/SIM	8-12-21	8-12-21	
Benzo[a]pyrene	**0.042**	0.0067	EPA 8270E/SIM	8-12-21	8-12-21	
Indeno[1,2,3-cd]pyrene	**0.030**	0.0067	EPA 8270E/SIM	8-12-21	8-12-21	
Dibenz[a,h]anthracene	**0.0068**	0.0067	EPA 8270E/SIM	8-12-21	8-12-21	
Benzo[g,h,i]perylene	**0.032**	0.0067	EPA 8270E/SIM	8-12-21	8-12-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*66*	*26 - 109*				
Phenol-d6	*82*	*33 - 113*				
Nitrobenzene-d5	*77*	*31 - 110*				
2-Fluorobiphenyl	*67*	*42 - 107*				
2,4,6-Tribromophenol	*84*	*42 - 123*				
Terphenyl-d14	*70*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: July 29, 2021
Laboratory Reference: 2107-298
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0812S1					
Naphthalene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
2-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
1-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Dimethylphthalate	**ND**	0.020	EPA 8270E	8-12-21	8-12-21	
Acenaphthylene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Acenaphthene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Diethylphthalate	**ND**	0.020	EPA 8270E	8-12-21	8-12-21	
Fluorene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Phenanthrene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Anthracene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Di-n-butylphthalate	**ND**	0.020	EPA 8270E	8-12-21	8-12-21	
Fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Pyrene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Butylbenzylphthalate	**ND**	0.020	EPA 8270E	8-12-21	8-12-21	
Benzo[a]anthracene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Chrysene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
bis(2-Ethylhexyl)phthalate	**ND**	0.020	EPA 8270E	8-12-21	8-12-21	
Di-n-octylphthalate	**ND**	0.020	EPA 8270E	8-12-21	8-12-21	
Benzo[b]fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Benzo(j,k)fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Benzo[a]pyrene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Dibenz[a,h]anthracene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Benzo[g,h,i]perylene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*54*	*26 - 109*				
Phenol-d6	*65*	*33 - 113*				
Nitrobenzene-d5	*60*	*31 - 110*				
2-Fluorobiphenyl	*60*	*42 - 107*				
2,4,6-Tribromophenol	*84*	*42 - 123*				
Terphenyl-d14	*76*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: July 29, 2021
Laboratory Reference: 2107-298
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0812S1									
	SB	SBD	SB	SBD	SB	SBD				
Phenol	**1.02**	**1.01**	1.33	1.33	77	76	47 - 106	1	30	
2-Chlorophenol	**0.862**	**0.855**	1.33	1.33	65	64	51 - 105	1	31	
1,4-Dichlorobenzene	**0.382**	**0.390**	0.667	0.667	57	58	49 - 101	2	33	
n-Nitroso-di-n-propylamine	**0.565**	**0.546**	0.667	0.667	85	82	50 - 105	3	26	
1,2,4-Trichlorobenzene	**0.392**	**0.390**	0.667	0.667	59	58	50 - 107	1	31	
4-Chloro-3-methylphenol	**1.04**	**1.03**	1.33	1.33	78	77	58 - 114	1	22	
Acenaphthene	**0.391**	**0.377**	0.667	0.667	59	57	52 - 102	4	22	
4-Nitrophenol	**1.49**	**1.57**	1.33	1.33	112	118	51 - 126	5	20	
2,4-Dinitrotoluene	**0.407**	**0.422**	0.667	0.667	61	63	54 - 108	4	19	
Pentachlorophenol	**1.05**	**1.03**	1.33	1.33	79	77	20 - 148	2	30	
Pyrene	**0.494**	**0.513**	0.667	0.667	74	77	55 - 112	4	19	
Surrogate:										
2-Fluorophenol					*65*	*66*	*26 - 109*			
Phenol-d6					*77*	*75*	*33 - 113*			
Nitrobenzene-d5					*74*	*69*	*31 - 110*			
2-Fluorobiphenyl					*65*	*60*	*42 - 107*			
2,4,6-Tribromophenol					*87*	*87*	*42 - 123*			
Terphenyl-d14					*71*	*74*	*41 - 115*			

Date of Report: September 23, 2021
Samples Submitted: July 29, 2021
Laboratory Reference: 2107-298
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G

Matrix: Sediment
Units: % Solids

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TOSH-3M-2021**					
Laboratory ID:	07-298-01					
Total Solids	**42**	0.50	SM 2540G	9-20-21	9-21-21	
Client ID:	**TOSH-3R-2021**					
Laboratory ID:	07-298-02					
Total Solids	**60**	0.50	SM 2540G	8-13-21	8-14-21	

Date of Report: September 23, 2021
Samples Submitted: July 29, 2021
Laboratory Reference: 2107-298
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G
QUALITY CONTROL

Matrix: Sediment
Units: % Solids

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	07-298-02								
	ORIG	DUP							
Total Solids	**60.0**	**61.0**	NA	NA	NA	NA	2	20	
Laboratory ID:	07-108-02								
	ORIG	DUP							
Total Solids	**24.2**	**24.0**	NA	NA	NA	NA	1	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

CHAIN OF CUSTODY

07-298

Page 1 of 1

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants

Project No.: 14-05806-000

Project Name: Redmond Paired Watershed Study

Project Manager: John Lenth

Turnaround Requested:

_____ 1 Day

_____ 2 Day

_____ 3 Day

__X__ Standard

Laboratory No.

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Organic Carbon	Copper	Zinc	Polycyclic aromatic hydrocarbons	Phthalates							Total Solids 2540 G
1	TOSH-3M-2021	7/29/21	1000	Sediment	1		X	X									X
2	TOSH-3R-2021	↓	↓	Sediment	1	X			X	X							X
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												

Relinquished by Nina Maas Date 7/29/21 Received by [signature] Date 7/29/21

Firm Herrera Time 1310 Firm OSE Time 1310

Relinquished by _____ Date _____ Received by _____ Date _____

Firm _____ Time _____ Firm _____ Time _____

Comments:

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OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 23, 2021

John Lenth
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2108-007

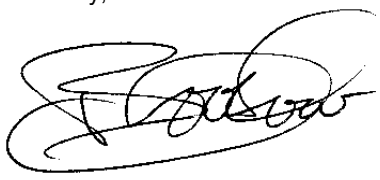
Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on August 2, 2021.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



Blair Goodrow
Project Manager

Enclosures

Date of Report: September 23, 2021
Samples Submitted: August 2, 2021
Laboratory Reference: 2108-007
Project: 14-05806-000

Case Narrative

Samples were collected on August 2, 2021 and received by the laboratory on August 2, 2021. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Total Metals EPA 6010D Analysis

The liquid portion of the sample was decanted and only the solid portion was analyzed.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 23, 2021
Samples Submitted: August 2, 2021
Laboratory Reference: 2108-007
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A

Matrix: Sediment
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SIOL-3-1R-2021**					
Laboratory ID:	08-007-01					
Total Organic Carbon	**4.7**	0.15	EPA 9060A	8-18-21	8-18-21	

Date of Report: September 23, 2021
Samples Submitted: August 2, 2021
Laboratory Reference: 2108-007
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A
QUALITY CONTROL

Matrix: Solid
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0818S1					
Total Organic Carbon	**ND**	0.042	EPA 9060A	8-18-21	8-18-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	08-156-05								
	ORIG	DUP							
Total Organic Carbon	**1.06**	**1.00**	NA	NA	NA	NA	6	23	
SPIKE BLANK									
Laboratory ID:	SB0818S1								
	SB		SB		SB				
Total Organic Carbon	**45.3**		42.1	NA	108	89-111	NA	NA	

Date of Report: September 23, 2021
Samples Submitted: August 2, 2021
Laboratory Reference: 2108-007
Project: 14-05806-000

TOTAL METALS
EPA 6010D

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SIOL-3-1M-2021**					
Laboratory ID:	08-007-02					
Copper	**21**	6.0	EPA 6010D	9-20-21	9-20-21	
Zinc	**93**	15	EPA 6010D	9-20-21	9-20-21	

Date of Report: September 23, 2021
Samples Submitted: August 2, 2021
Laboratory Reference: 2108-007
Project: 14-05806-000

TOTAL METALS
EPA 6010D
QUALITY CONTROL

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0920SM1					
Copper	**ND**	1.0	EPA 6010D	9-20-21	9-20-21	
Zinc	**ND**	2.5	EPA 6010D	9-20-21	9-20-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE										
Laboratory ID:	08-124-01									
	ORIG	DUP								
Copper	**3.97**	**4.13**	NA	NA		NA	NA	4	20	
Zinc	**10.7**	**11.2**	NA	NA		NA	NA	5	20	
MATRIX SPIKES										
Laboratory ID:	08-124-01									
	MS	MSD	MS	MSD		MS	MSD			
Copper	**58.1**	**57.2**	50.0	50.0	3.97	**108**	**106**	75-125	2	20
Zinc	**110**	**109**	100	100	10.7	**100**	**99**	75-125	1	20

Date of Report: September 23, 2021
Samples Submitted: August 2, 2021
Laboratory Reference: 2108-007
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM

Matrix: Sediment
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SIOL-3-1R-2021**					
Laboratory ID:	08-007-01					
Naphthalene	**ND**	0.011	EPA 8270E/SIM	8-12-21	8-12-21	
2-Methylnaphthalene	**ND**	0.011	EPA 8270E/SIM	8-12-21	8-12-21	
1-Methylnaphthalene	**ND**	0.011	EPA 8270E/SIM	8-12-21	8-12-21	
Dimethylphthalate	**ND**	0.057	EPA 8270E	8-12-21	8-12-21	
Acenaphthylene	**ND**	0.011	EPA 8270E/SIM	8-12-21	8-12-21	
Acenaphthene	**ND**	0.011	EPA 8270E/SIM	8-12-21	8-12-21	
Diethylphthalate	**ND**	0.057	EPA 8270E	8-12-21	8-12-21	
Fluorene	**ND**	0.011	EPA 8270E/SIM	8-12-21	8-12-21	
Phenanthrene	**ND**	0.011	EPA 8270E/SIM	8-12-21	8-12-21	
Anthracene	**ND**	0.011	EPA 8270E/SIM	8-12-21	8-12-21	
Di-n-butylphthalate	**ND**	0.057	EPA 8270E	8-12-21	8-12-21	
Fluoranthene	**ND**	0.011	EPA 8270E/SIM	8-12-21	8-12-21	
Pyrene	**ND**	0.011	EPA 8270E/SIM	8-12-21	8-12-21	
Butylbenzylphthalate	**ND**	0.057	EPA 8270E	8-12-21	8-12-21	
Benzo[a]anthracene	**ND**	0.011	EPA 8270E/SIM	8-12-21	8-12-21	
Chrysene	**ND**	0.011	EPA 8270E/SIM	8-12-21	8-12-21	
bis(2-Ethylhexyl)phthalate	**0.16**	0.057	EPA 8270E	8-12-21	8-12-21	
Di-n-octylphthalate	**ND**	0.057	EPA 8270E	8-12-21	8-12-21	
Benzo[b]fluoranthene	**ND**	0.011	EPA 8270E/SIM	8-12-21	8-12-21	
Benzo(j,k)fluoranthene	**ND**	0.011	EPA 8270E/SIM	8-12-21	8-12-21	
Benzo[a]pyrene	**ND**	0.011	EPA 8270E/SIM	8-12-21	8-12-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.011	EPA 8270E/SIM	8-12-21	8-12-21	
Dibenz[a,h]anthracene	**ND**	0.011	EPA 8270E/SIM	8-12-21	8-12-21	
Benzo[g,h,i]perylene	**ND**	0.011	EPA 8270E/SIM	8-12-21	8-12-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*65*	*26 - 109*				
Phenol-d6	*83*	*33 - 113*				
Nitrobenzene-d5	*71*	*31 - 110*				
2-Fluorobiphenyl	*56*	*42 - 107*				
2,4,6-Tribromophenol	*81*	*42 - 123*				
Terphenyl-d14	*62*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: August 2, 2021
Laboratory Reference: 2108-007
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM

Matrix: Solid
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0812S1					
Naphthalene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
2-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
1-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Dimethylphthalate	**ND**	0.020	EPA 8270E	8-12-21	8-12-21	
Acenaphthylene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Acenaphthene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Diethylphthalate	**ND**	0.020	EPA 8270E	8-12-21	8-12-21	
Fluorene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Phenanthrene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Anthracene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Di-n-butylphthalate	**ND**	0.020	EPA 8270E	8-12-21	8-12-21	
Fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Pyrene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Butylbenzylphthalate	**ND**	0.020	EPA 8270E	8-12-21	8-12-21	
Benzo[a]anthracene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Chrysene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
bis(2-Ethylhexyl)phthalate	**ND**	0.020	EPA 8270E	8-12-21	8-12-21	
Di-n-octylphthalate	**ND**	0.020	EPA 8270E	8-12-21	8-12-21	
Benzo[b]fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Benzo(j,k)fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Benzo[a]pyrene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Dibenz[a,h]anthracene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Benzo[g,h,i]perylene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*54*	*26 - 109*				
Phenol-d6	*65*	*33 - 113*				
Nitrobenzene-d5	*60*	*31 - 110*				
2-Fluorobiphenyl	*60*	*42 - 107*				
2,4,6-Tribromophenol	*84*	*42 - 123*				
Terphenyl-d14	*76*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: August 2, 2021
Laboratory Reference: 2108-007
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0812S1									
	SB	SBD	SB	SBD	SB	SBD				
Phenol	**1.02**	**1.01**	1.33	1.33	77	76	47 - 106	1	30	
2-Chlorophenol	**0.862**	**0.855**	1.33	1.33	65	64	51 - 105	1	31	
1,4-Dichlorobenzene	**0.382**	**0.390**	0.667	0.667	57	58	49 - 101	2	33	
n-Nitroso-di-n-propylamine	**0.565**	**0.546**	0.667	0.667	85	82	50 - 105	3	26	
1,2,4-Trichlorobenzene	**0.392**	**0.390**	0.667	0.667	59	58	50 - 107	1	31	
4-Chloro-3-methylphenol	**1.04**	**1.03**	1.33	1.33	78	77	58 - 114	1	22	
Acenaphthene	**0.391**	**0.377**	0.667	0.667	59	57	52 - 102	4	22	
4-Nitrophenol	**1.49**	**1.57**	1.33	1.33	112	118	51 - 126	5	20	
2,4-Dinitrotoluene	**0.407**	**0.422**	0.667	0.667	61	63	54 - 108	4	19	
Pentachlorophenol	**1.05**	**1.03**	1.33	1.33	79	77	20 - 148	2	30	
Pyrene	**0.494**	**0.513**	0.667	0.667	74	77	55 - 112	4	19	
Surrogate:										
2-Fluorophenol					*65*	*66*	*26 - 109*			
Phenol-d6					*77*	*75*	*33 - 113*			
Nitrobenzene-d5					*74*	*69*	*31 - 110*			
2-Fluorobiphenyl					*65*	*60*	*42 - 107*			
2,4,6-Tribromophenol					*87*	*87*	*42 - 123*			
Terphenyl-d14					*71*	*74*	*41 - 115*			

Date of Report: September 23, 2021
Samples Submitted: August 2, 2021
Laboratory Reference: 2108-007
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G

Matrix: Sediment
Units: % Solids

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SIOL-3-1R-2021**					
Laboratory ID:	08-007-01					
Total Solids	**35**	0.50	SM 2540G	8-13-21	8-14-21	
Client ID:	**SIOL-3-1M-2021**					
Laboratory ID:	08-007-02					
Total Solids	**17**	0.50	SM 2540G	9-20-21	9-21-21	

Date of Report: September 23, 2021
Samples Submitted: August 2, 2021
Laboratory Reference: 2108-007
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G
QUALITY CONTROL

Matrix: Sediment
Units: % Solids

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	07-298-02								
	ORIG	DUP							
Total Solids	**60.0**	**61.0**	NA	NA	NA	NA	2	20	
Laboratory ID:	07-108-02								
	ORIG	DUP							
Total Solids	**24.2**	**24.0**	NA	NA	NA	NA	1	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page 1 of 1

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Laboratory Number: 08-007

Company:	Hart Crowser
Project Number:	14-05806-000
Project Name:	RPWS
Project Manager:	John Zenk
Sampled by:	N. Battin

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ can hold for other samples (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers
1	SLOL-3-1R-2021	8/2/21	10:00	~~sed~~	1
2	SLOL-3-1M-2021	8/2/21	10:00	~~sed~~	1

Lab ID	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260D	Halogenated Volatiles 8260D	EDB EPA 8011 (Waters Only)	Semivolatiles 8270E/SIM (with low-level PAHs)	PAHs 8270E/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270E/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Metals (Cu,Zn) EPA 6020	TOL - EPA 9060A	PAHs - EPA 8270 0/5m	Phthalates - EPA 8270	~~% Moisture~~ 2540G TOTAL Solids
1																		X	X	X	X	X
2																		X				X

	Signature	Company	Date	Time
Relinquished		HC	8/2	12:45
Received		OSE	8/2/21	1245
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

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OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 23, 2021

John Lenth
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2108-039

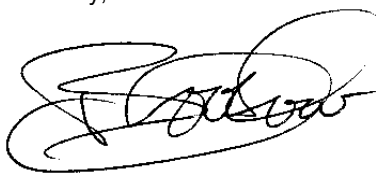
Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on August 4, 2021.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



Blair Goodrow
Project Manager

Enclosures

Date of Report: September 23, 2021
Samples Submitted: August 4, 2021
Laboratory Reference: 2108-039
Project: 14-05806-000

Case Narrative

Samples were collected on August 4, 2021 and received by the laboratory on August 4, 2021. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Total Metals EPA 6010D Analysis

The liquid portion of the sample was decanted and only the solid portion was analyzed.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 23, 2021
Samples Submitted: August 4, 2021
Laboratory Reference: 2108-039
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A

Matrix: Sediment
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**CTRY-1R-2021**					
Laboratory ID:	08-039-02					
Total Organic Carbon	**3.2**	0.29	EPA 9060A	8-24-21	8-24-21	

Date of Report: September 23, 2021
Samples Submitted: August 4, 2021
Laboratory Reference: 2108-039
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A
QUALITY CONTROL

Matrix: Solid
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0824S1					
Total Organic Carbon	**ND**	0.042	EPA 9060A	8-24-21	8-24-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	08-039-02								
	ORIG	DUP							
Total Organic Carbon	**3.23**	**3.30**	NA	NA	NA	NA	2	23	
SPIKE BLANK									
Laboratory ID:	SB0824S1								
	SB		SB		SB				
Total Organic Carbon	**44.1**		42.1	NA	105	89-111	NA	NA	

Date of Report: September 23, 2021
Samples Submitted: August 4, 2021
Laboratory Reference: 2108-039
Project: 14-05806-000

TOTAL METALS
EPA 6010D

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**CTRY-1M-2021**					
Laboratory ID:	08-039-01					
Copper	**58**	4.5	EPA 6010D	9-20-21	9-20-21	
Zinc	**890**	11	EPA 6010D	9-20-21	9-20-21	

Date of Report: September 23, 2021
Samples Submitted: August 4, 2021
Laboratory Reference: 2108-039
Project: 14-05806-000

TOTAL METALS
EPA 6010D
QUALITY CONTROL

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0920SM1					
Copper	**ND**	1.0	EPA 6010D	9-20-21	9-20-21	
Zinc	**ND**	2.5	EPA 6010D	9-20-21	9-20-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-124-01										
	ORIG	DUP									
Copper	**3.97**	**4.13**	NA	NA		NA		NA	4	20	
Zinc	**10.7**	**11.2**	NA	NA		NA		NA	5	20	
MATRIX SPIKES											
Laboratory ID:	08-124-01										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**58.1**	**57.2**	50.0	50.0	3.97	**108**	**106**	75-125	2	20	
Zinc	**110**	**109**	100	100	10.7	**100**	**99**	75-125	1	20	

Date of Report: September 23, 2021
Samples Submitted: August 4, 2021
Laboratory Reference: 2108-039
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM

Matrix: Sediment
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**CTRY-1R-2021**					
Laboratory ID:	08-039-02					
Naphthalene	**ND**	0.0071	EPA 8270E/SIM	8-12-21	8-12-21	
2-Methylnaphthalene	**ND**	0.0071	EPA 8270E/SIM	8-12-21	8-12-21	
1-Methylnaphthalene	**ND**	0.0071	EPA 8270E/SIM	8-12-21	8-12-21	
Dimethylphthalate	**ND**	0.18	EPA 8270E	8-12-21	8-12-21	
Acenaphthylene	**ND**	0.0071	EPA 8270E/SIM	8-12-21	8-12-21	
Acenaphthene	**ND**	0.0071	EPA 8270E/SIM	8-12-21	8-12-21	
Diethylphthalate	**ND**	0.18	EPA 8270E	8-12-21	8-12-21	
Fluorene	**ND**	0.0071	EPA 8270E/SIM	8-12-21	8-12-21	
Phenanthrene	**0.13**	0.0071	EPA 8270E/SIM	8-12-21	8-12-21	
Anthracene	**0.025**	0.0071	EPA 8270E/SIM	8-12-21	8-12-21	
Di-n-butylphthalate	**ND**	0.18	EPA 8270E	8-12-21	8-12-21	
Fluoranthene	**0.27**	0.18	EPA 8270E	8-12-21	8-12-21	
Pyrene	**0.25**	0.18	EPA 8270E	8-12-21	8-12-21	
Butylbenzylphthalate	**ND**	0.18	EPA 8270E	8-12-21	8-12-21	
Benzo[a]anthracene	**0.11**	0.0071	EPA 8270E/SIM	8-12-21	8-12-21	
Chrysene	**0.13**	0.0071	EPA 8270E/SIM	8-12-21	8-12-21	
bis(2-Ethylhexyl)phthalate	**0.25**	0.18	EPA 8270E	8-12-21	8-12-21	
Di-n-octylphthalate	**ND**	0.18	EPA 8270E	8-12-21	8-12-21	
Benzo[b]fluoranthene	**0.17**	0.0071	EPA 8270E/SIM	8-12-21	8-12-21	
Benzo(j,k)fluoranthene	**0.059**	0.0071	EPA 8270E/SIM	8-12-21	8-12-21	
Benzo[a]pyrene	**0.13**	0.0071	EPA 8270E/SIM	8-12-21	8-12-21	
Indeno[1,2,3-cd]pyrene	**0.087**	0.0071	EPA 8270E/SIM	8-12-21	8-12-21	
Dibenz[a,h]anthracene	**0.017**	0.0071	EPA 8270E/SIM	8-12-21	8-12-21	
Benzo[g,h,i]perylene	**0.086**	0.0071	EPA 8270E/SIM	8-12-21	8-12-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*68*	*26 - 109*				
Phenol-d6	*83*	*33 - 113*				
Nitrobenzene-d5	*75*	*31 - 110*				
2-Fluorobiphenyl	*62*	*42 - 107*				
2,4,6-Tribromophenol	*80*	*42 - 123*				
Terphenyl-d14	*69*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: August 4, 2021
Laboratory Reference: 2108-039
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0812S1					
Naphthalene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
2-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
1-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Dimethylphthalate	**ND**	0.020	EPA 8270E	8-12-21	8-12-21	
Acenaphthylene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Acenaphthene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Diethylphthalate	**ND**	0.020	EPA 8270E	8-12-21	8-12-21	
Fluorene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Phenanthrene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Anthracene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Di-n-butylphthalate	**ND**	0.020	EPA 8270E	8-12-21	8-12-21	
Fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Pyrene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Butylbenzylphthalate	**ND**	0.020	EPA 8270E	8-12-21	8-12-21	
Benzo[a]anthracene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Chrysene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
bis(2-Ethylhexyl)phthalate	**ND**	0.020	EPA 8270E	8-12-21	8-12-21	
Di-n-octylphthalate	**ND**	0.020	EPA 8270E	8-12-21	8-12-21	
Benzo[b]fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Benzo(j,k)fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Benzo[a]pyrene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Dibenz[a,h]anthracene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Benzo[g,h,i]perylene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*54*	*26 - 109*				
Phenol-d6	*65*	*33 - 113*				
Nitrobenzene-d5	*60*	*31 - 110*				
2-Fluorobiphenyl	*60*	*42 - 107*				
2,4,6-Tribromophenol	*84*	*42 - 123*				
Terphenyl-d14	*76*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: August 4, 2021
Laboratory Reference: 2108-039
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0812S1									
	SB	SBD	SB	SBD	SB	SBD				
Phenol	**1.02**	**1.01**	1.33	1.33	77	76	47 - 106	1	30	
2-Chlorophenol	**0.862**	**0.855**	1.33	1.33	65	64	51 - 105	1	31	
1,4-Dichlorobenzene	**0.382**	**0.390**	0.667	0.667	57	58	49 - 101	2	33	
n-Nitroso-di-n-propylamine	**0.565**	**0.546**	0.667	0.667	85	82	50 - 105	3	26	
1,2,4-Trichlorobenzene	**0.392**	**0.390**	0.667	0.667	59	58	50 - 107	1	31	
4-Chloro-3-methylphenol	**1.04**	**1.03**	1.33	1.33	78	77	58 - 114	1	22	
Acenaphthene	**0.391**	**0.377**	0.667	0.667	59	57	52 - 102	4	22	
4-Nitrophenol	**1.49**	**1.57**	1.33	1.33	112	118	51 - 126	5	20	
2,4-Dinitrotoluene	**0.407**	**0.422**	0.667	0.667	61	63	54 - 108	4	19	
Pentachlorophenol	**1.05**	**1.03**	1.33	1.33	79	77	20 - 148	2	30	
Pyrene	**0.494**	**0.513**	0.667	0.667	74	77	55 - 112	4	19	
Surrogate:										
2-Fluorophenol					*65*	*66*	*26 - 109*			
Phenol-d6					*77*	*75*	*33 - 113*			
Nitrobenzene-d5					*74*	*69*	*31 - 110*			
2-Fluorobiphenyl					*65*	*60*	*42 - 107*			
2,4,6-Tribromophenol					*87*	*87*	*42 - 123*			
Terphenyl-d14					*71*	*74*	*41 - 115*			

Date of Report: September 23, 2021
Samples Submitted: August 4, 2021
Laboratory Reference: 2108-039
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G

Matrix: Sediment
Units: % Solids

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**CTRY-1M-2021**					
Laboratory ID:	08-039-01					
Total Solids	**22**	0.50	SM 2540G	9-20-21	9-21-21	
Client ID:	**CTRY-1R-2021**					
Laboratory ID:	08-039-02					
Total Solids	**56**	0.50	SM 2540G	8-13-21	8-14-21	

Date of Report: September 23, 2021
Samples Submitted: August 4, 2021
Laboratory Reference: 2108-039
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G
QUALITY CONTROL

Matrix: Sediment
Units: % Solids

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	07-298-02								
	ORIG	DUP							
Total Solids	**60.0**	**61.0**	NA	NA	NA	NA	2	20	
Laboratory ID:	08-039-01								
	ORIG	DUP							
Total Solids	**22.2**	**24.7**	NA	NA	NA	NA	11	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

CHAIN OF CUSTODY

08-039

Page 1 of 1

Company: Herrera Environmental Consultants

Project No.: 14-05806-000

Project Name: Redmond Paired Watershed Study

Project Manager: John Lenth

Turnaround Requested:

_____ 1 Day
_____ 2 Day
_____ 3 Day
__X__ Standard

Laboratory No.

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Organic Carbon	Copper	Zinc	Polycyclic aromatic hydrocarbons	Phthalates							Total Solids 2540 G
1	CTRY-1M-2021	8/4/21	0830	Sediment	1		X	X									X
2	CTRY-1R-2021		0830	Sediment	1	X			X	X							X
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												

Relinquished by _____ Date 8/4/21 Received by _____ Date 8/4/21

Firm Herrera Time 1205 Firm OSE Time 1205

Relinquished by _____ Date _____ Received by _____ Date _____

Firm _____ Time _____ Firm _____ Time _____

Comments:

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OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 23, 2021

John Lenth
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2108-057

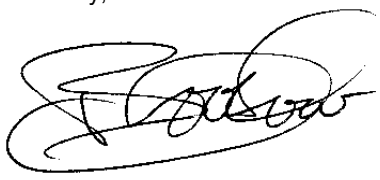
Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on August 5, 2021.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



Blair Goodrow
Project Manager

Enclosures

Date of Report: September 23, 2021
Samples Submitted: August 5, 2021
Laboratory Reference: 2108-057
Project: 14-05806-000

Case Narrative

Samples were collected on August 5, 2021 and received by the laboratory on August 5, 2021. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Total Metals EPA 6010D Analysis

The liquid portion of the sample was decanted and only the solid portion was analyzed.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 23, 2021
Samples Submitted: August 5, 2021
Laboratory Reference: 2108-057
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A

Matrix: Sediment
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TOSH-2-1R-2021**					
Laboratory ID:	08-057-02					
Total Organic Carbon	**3.4**	0.15	EPA 9060A	8-24-21	8-24-21	

Date of Report: September 23, 2021
Samples Submitted: August 5, 2021
Laboratory Reference: 2108-057
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A
QUALITY CONTROL

Matrix: Solid
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0824S1					
Total Organic Carbon	**ND**	0.042	EPA 9060A	8-24-21	8-24-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	08-039-02								
	ORIG	DUP							
Total Organic Carbon	**3.23**	**3.30**	NA	NA	NA	NA	2	23	
SPIKE BLANK									
Laboratory ID:	SB0824S1								
	SB		SB		SB				
Total Organic Carbon	**44.1**		42.1	NA	105	89-111	NA	NA	

Date of Report: September 23, 2021
Samples Submitted: August 5, 2021
Laboratory Reference: 2108-057
Project: 14-05806-000

TOTAL METALS
EPA 6010D

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TOSH-2-IM-2021**					
Laboratory ID:	08-057-01					
Copper	**48**	2.9	EPA 6010D	9-20-21	9-20-21	
Zinc	**1200**	7.3	EPA 6010D	9-20-21	9-20-21	

Date of Report: September 23, 2021
Samples Submitted: August 5, 2021
Laboratory Reference: 2108-057
Project: 14-05806-000

TOTAL METALS
EPA 6010D
QUALITY CONTROL

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0920SM1					
Copper	**ND**	1.0	EPA 6010D	9-20-21	9-20-21	
Zinc	**ND**	2.5	EPA 6010D	9-20-21	9-20-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-124-01										
	ORIG	DUP									
Copper	**3.97**	**4.13**	NA	NA		NA		NA	4	20	
Zinc	**10.7**	**11.2**	NA	NA		NA		NA	5	20	
MATRIX SPIKES											
Laboratory ID:	08-124-01										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**58.1**	**57.2**	50.0	50.0	3.97	**108**	**106**	75-125	2	20	
Zinc	**110**	**109**	100	100	10.7	**100**	**99**	75-125	1	20	

Date of Report: September 23, 2021
Samples Submitted: August 5, 2021
Laboratory Reference: 2108-057
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM

Matrix: Sediment
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TOSH-2-1R-2021**					
Laboratory ID:	08-057-02					
Naphthalene	**ND**	0.0077	EPA 8270E/SIM	8-12-21	8-12-21	
2-Methylnaphthalene	**ND**	0.0077	EPA 8270E/SIM	8-12-21	8-12-21	
1-Methylnaphthalene	**ND**	0.0077	EPA 8270E/SIM	8-12-21	8-12-21	
Dimethylphthalate	**ND**	0.077	EPA 8270E	8-12-21	8-12-21	
Acenaphthylene	**ND**	0.0077	EPA 8270E/SIM	8-12-21	8-12-21	
Acenaphthene	**ND**	0.0077	EPA 8270E/SIM	8-12-21	8-12-21	
Diethylphthalate	**ND**	0.077	EPA 8270E	8-12-21	8-12-21	
Fluorene	**ND**	0.0077	EPA 8270E/SIM	8-12-21	8-12-21	
Phenanthrene	**0.062**	0.0077	EPA 8270E/SIM	8-12-21	8-12-21	
Anthracene	**0.010**	0.0077	EPA 8270E/SIM	8-12-21	8-12-21	
Di-n-butylphthalate	**ND**	0.077	EPA 8270E	8-12-21	8-12-21	
Fluoranthene	**0.13**	0.077	EPA 8270E	8-12-21	8-12-21	
Pyrene	**0.10**	0.077	EPA 8270E	8-12-21	8-12-21	
Butylbenzylphthalate	**ND**	0.077	EPA 8270E	8-12-21	8-12-21	
Benzo[a]anthracene	**0.046**	0.0077	EPA 8270E/SIM	8-12-21	8-12-21	
Chrysene	**0.056**	0.0077	EPA 8270E/SIM	8-12-21	8-12-21	
bis(2-Ethylhexyl)phthalate	**0.25**	0.077	EPA 8270E	8-12-21	8-12-21	
Di-n-octylphthalate	**ND**	0.077	EPA 8270E	8-12-21	8-12-21	
Benzo[b]fluoranthene	**0.078**	0.077	EPA 8270E	8-12-21	8-12-21	
Benzo(j,k)fluoranthene	**0.029**	0.0077	EPA 8270E/SIM	8-12-21	8-12-21	
Benzo[a]pyrene	**0.055**	0.0077	EPA 8270E/SIM	8-12-21	8-12-21	
Indeno[1,2,3-cd]pyrene	**0.037**	0.0077	EPA 8270E/SIM	8-12-21	8-12-21	
Dibenz[a,h]anthracene	**ND**	0.0077	EPA 8270E/SIM	8-12-21	8-12-21	
Benzo[g,h,i]perylene	**0.037**	0.0077	EPA 8270E/SIM	8-12-21	8-12-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*71*	*26 - 109*				
Phenol-d6	*85*	*33 - 113*				
Nitrobenzene-d5	*72*	*31 - 110*				
2-Fluorobiphenyl	*48*	*42 - 107*				
2,4,6-Tribromophenol	*76*	*42 - 123*				
Terphenyl-d14	*53*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: August 5, 2021
Laboratory Reference: 2108-057
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0812S1					
Naphthalene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
2-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
1-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Dimethylphthalate	**ND**	0.020	EPA 8270E	8-12-21	8-12-21	
Acenaphthylene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Acenaphthene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Diethylphthalate	**ND**	0.020	EPA 8270E	8-12-21	8-12-21	
Fluorene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Phenanthrene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Anthracene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Di-n-butylphthalate	**ND**	0.020	EPA 8270E	8-12-21	8-12-21	
Fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Pyrene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Butylbenzylphthalate	**ND**	0.020	EPA 8270E	8-12-21	8-12-21	
Benzo[a]anthracene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Chrysene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
bis(2-Ethylhexyl)phthalate	**ND**	0.020	EPA 8270E	8-12-21	8-12-21	
Di-n-octylphthalate	**ND**	0.020	EPA 8270E	8-12-21	8-12-21	
Benzo[b]fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Benzo(j,k)fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Benzo[a]pyrene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Dibenz[a,h]anthracene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Benzo[g,h,i]perylene	**ND**	0.0040	EPA 8270E/SIM	8-12-21	8-12-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*54*	*26 - 109*				
Phenol-d6	*65*	*33 - 113*				
Nitrobenzene-d5	*60*	*31 - 110*				
2-Fluorobiphenyl	*60*	*42 - 107*				
2,4,6-Tribromophenol	*84*	*42 - 123*				
Terphenyl-d14	*76*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: August 5, 2021
Laboratory Reference: 2108-057
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0812S1									
	SB	SBD	SB	SBD	SB	SBD				
Phenol	**1.02**	**1.01**	1.33	1.33	77	76	47 - 106	1	30	
2-Chlorophenol	**0.862**	**0.855**	1.33	1.33	65	64	51 - 105	1	31	
1,4-Dichlorobenzene	**0.382**	**0.390**	0.667	0.667	57	58	49 - 101	2	33	
n-Nitroso-di-n-propylamine	**0.565**	**0.546**	0.667	0.667	85	82	50 - 105	3	26	
1,2,4-Trichlorobenzene	**0.392**	**0.390**	0.667	0.667	59	58	50 - 107	1	31	
4-Chloro-3-methylphenol	**1.04**	**1.03**	1.33	1.33	78	77	58 - 114	1	22	
Acenaphthene	**0.391**	**0.377**	0.667	0.667	59	57	52 - 102	4	22	
4-Nitrophenol	**1.49**	**1.57**	1.33	1.33	112	118	51 - 126	5	20	
2,4-Dinitrotoluene	**0.407**	**0.422**	0.667	0.667	61	63	54 - 108	4	19	
Pentachlorophenol	**1.05**	**1.03**	1.33	1.33	79	77	20 - 148	2	30	
Pyrene	**0.494**	**0.513**	0.667	0.667	74	77	55 - 112	4	19	
Surrogate:										
2-Fluorophenol					*65*	*66*	*26 - 109*			
Phenol-d6					*77*	*75*	*33 - 113*			
Nitrobenzene-d5					*74*	*69*	*31 - 110*			
2-Fluorobiphenyl					*65*	*60*	*42 - 107*			
2,4,6-Tribromophenol					*87*	*87*	*42 - 123*			
Terphenyl-d14					*71*	*74*	*41 - 115*			

Date of Report: September 23, 2021
Samples Submitted: August 5, 2021
Laboratory Reference: 2108-057
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G

Matrix: Sediment
Units: % Solids

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TOSH-2-IM-2021**					
Laboratory ID:	08-057-01					
Total Solids	**34**	0.50	SM 2540G	9-20-21	9-21-21	
Client ID:	**TOSH-2-1R-2021**					
Laboratory ID:	08-057-02					
Total Solids	**52**	0.50	SM 2540G	8-13-21	8-14-21	

Date of Report: September 23, 2021
Samples Submitted: August 5, 2021
Laboratory Reference: 2108-057
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G
QUALITY CONTROL

Matrix: Sediment
Units: % Solids

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	07-298-02								
	ORIG	DUP							
Total Solids	**60.0**	**61.0**	NA	NA	NA	NA	2	20	
Laboratory ID:	08-039-01								
	ORIG	DUP							
Total Solids	**22.2**	**24.7**	NA	NA	NA	NA	11	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page 1 of 1

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: Herrera
Project Number: 14-05806-000
Project Name: RPWS
Project Manager: John Lenth
Sampled by: Nick Bartish

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ can hold for other samples (other)

Laboratory Number: 08-057

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260D	Halogenated Volatiles 8260D	EDB EPA 8011 (Waters Only)	Semivolatiles 8270E/SIM (with low-level PAHs)	PAHs 8270E/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270E/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	metals (a, zn) EPA	T6C-EPA	PAHs-EPA	Phthalates-EPA	% Moisture 2540G
1	TOSH-2-1M-2021	8-5-21	10:00	Soil	1																		X				X
2	TOSH-2-1R-2021	8-5-21	10:00	Soil	1																			X	X	X	X

	Signature	Company	Date	Time
Relinquished	Rebecca Stebling	HEC	8-5-21	12:25
Received	Nicholas Ochs	OSE	8/5/21	12 25
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

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OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 23, 2021

John Lenth
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2108-124

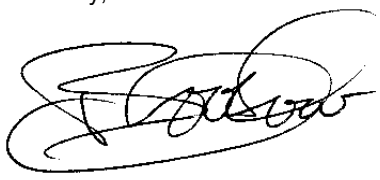
Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on August 11, 2021.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



Blair Goodrow
Project Manager

Enclosures

Date of Report: September 23, 2021
Samples Submitted: August 11, 2021
Laboratory Reference: 2108-124
Project: 14-05806-000

Case Narrative

Samples were collected on August 11, 2021 and received by the laboratory on August 11, 2021. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Total Metals EPA 6010D Analysis

The liquid portion of the sample was decanted and only the solid portion was analyzed.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 23, 2021
Samples Submitted: August 11, 2021
Laboratory Reference: 2108-124
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A

Matrix: Sediment
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SIDL-1R-2021**					
Laboratory ID:	08-124-02					
Total Organic Carbon	**1.9**	0.19	EPA 9060A	8-24-21	8-24-21	

Date of Report: September 23, 2021
Samples Submitted: August 11, 2021
Laboratory Reference: 2108-124
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A
QUALITY CONTROL

Matrix: Solid
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0824S1					
Total Organic Carbon	**ND**	0.042	EPA 9060A	8-24-21	8-24-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	08-039-02								
	ORIG	DUP							
Total Organic Carbon	**3.23**	**3.30**	NA	NA	NA	NA	2	23	
SPIKE BLANK									
Laboratory ID:	SB0824S1								
	SB		SB		SB				
Total Organic Carbon	**44.1**		42.1	NA	105	89-111	NA	NA	

Date of Report: September 23, 2021
Samples Submitted: August 11, 2021
Laboratory Reference: 2108-124
Project: 14-05806-000

TOTAL METALS
EPA 6010D

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SIDL-1M-2021**					
Laboratory ID:	08-124-01					
Copper	**35**	8.8	EPA 6010D	9-20-21	9-20-21	
Zinc	**94**	22	EPA 6010D	9-20-21	9-20-21	

Date of Report: September 23, 2021
Samples Submitted: August 11, 2021
Laboratory Reference: 2108-124
Project: 14-05806-000

TOTAL METALS
EPA 6010D
QUALITY CONTROL

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0920SM1					
Copper	**ND**	1.0	EPA 6010D	9-20-21	9-20-21	
Zinc	**ND**	2.5	EPA 6010D	9-20-21	9-20-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-124-01										
	ORIG	DUP									
Copper	**3.97**	**4.13**	NA	NA		NA		NA	4	20	
Zinc	**10.7**	**11.2**	NA	NA		NA		NA	5	20	
MATRIX SPIKES											
Laboratory ID:	08-124-01										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**58.1**	**57.2**	50.0	50.0	3.97	**108**	**106**	75-125	2	20	
Zinc	**110**	**109**	100	100	10.7	**100**	**99**	75-125	1	20	

Date of Report: September 23, 2021
Samples Submitted: August 11, 2021
Laboratory Reference: 2108-124
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM

Matrix: Sediment
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SIDL-1R-2021**					
Laboratory ID:	08-124-02					
Naphthalene	**ND**	0.0083	EPA 8270E/SIM	8-18-21	8-18-21	
2-Methylnaphthalene	**ND**	0.0083	EPA 8270E/SIM	8-18-21	8-18-21	
1-Methylnaphthalene	**ND**	0.0083	EPA 8270E/SIM	8-18-21	8-18-21	
Dimethylphthalate	**ND**	0.042	EPA 8270E	8-18-21	8-18-21	
Acenaphthylene	**0.011**	0.0083	EPA 8270E/SIM	8-18-21	8-18-21	
Acenaphthene	**ND**	0.0083	EPA 8270E/SIM	8-18-21	8-18-21	
Diethylphthalate	**ND**	0.042	EPA 8270E	8-18-21	8-18-21	
Fluorene	**ND**	0.0083	EPA 8270E/SIM	8-18-21	8-18-21	
Phenanthrene	**0.013**	0.0083	EPA 8270E/SIM	8-18-21	8-18-21	
Anthracene	**0.012**	0.0083	EPA 8270E/SIM	8-18-21	8-18-21	
Di-n-butylphthalate	**ND**	0.042	EPA 8270E	8-18-21	8-18-21	
Fluoranthene	**0.021**	0.0083	EPA 8270E/SIM	8-18-21	8-18-21	
Pyrene	**0.031**	0.0083	EPA 8270E/SIM	8-18-21	8-18-21	
Butylbenzylphthalate	**ND**	0.042	EPA 8270E	8-18-21	8-18-21	
Benzo[a]anthracene	**0.020**	0.0083	EPA 8270E/SIM	8-18-21	8-18-21	
Chrysene	**0.021**	0.0083	EPA 8270E/SIM	8-18-21	8-18-21	
bis(2-Ethylhexyl)phthalate	**1.3**	0.042	EPA 8270E	8-18-21	8-18-21	
Di-n-octylphthalate	**ND**	0.042	EPA 8270E	8-18-21	8-18-21	
Benzo[b]fluoranthene	**0.022**	0.0083	EPA 8270E/SIM	8-18-21	8-18-21	
Benzo(j,k)fluoranthene	**ND**	0.0083	EPA 8270E/SIM	8-18-21	8-18-21	
Benzo[a]pyrene	**0.026**	0.0083	EPA 8270E/SIM	8-18-21	8-18-21	
Indeno[1,2,3-cd]pyrene	**0.012**	0.0083	EPA 8270E/SIM	8-18-21	8-18-21	
Dibenz[a,h]anthracene	**ND**	0.0083	EPA 8270E/SIM	8-18-21	8-18-21	
Benzo[g,h,i]perylene	**0.012**	0.0083	EPA 8270E/SIM	8-18-21	8-18-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*50*	*26 - 109*				
Phenol-d6	*61*	*33 - 113*				
Nitrobenzene-d5	*48*	*31 - 110*				
2-Fluorobiphenyl	*46*	*42 - 107*				
2,4,6-Tribromophenol	*76*	*42 - 123*				
Terphenyl-d14	*54*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: August 11, 2021
Laboratory Reference: 2108-124
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0818S1					
Naphthalene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
2-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
1-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Dimethylphthalate	**ND**	0.020	EPA 8270E	8-18-21	8-18-21	
Acenaphthylene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Acenaphthene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Diethylphthalate	**ND**	0.020	EPA 8270E	8-18-21	8-18-21	
Fluorene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Phenanthrene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Anthracene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Di-n-butylphthalate	**ND**	0.020	EPA 8270E	8-18-21	8-18-21	
Fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Pyrene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Butylbenzylphthalate	**ND**	0.020	EPA 8270E	8-18-21	8-18-21	
Benzo[a]anthracene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Chrysene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
bis(2-Ethylhexyl)phthalate	**ND**	0.020	EPA 8270E	8-18-21	8-18-21	
Di-n-octylphthalate	**ND**	0.020	EPA 8270E	8-18-21	8-18-21	
Benzo[b]fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Benzo(j,k)fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Benzo[a]pyrene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Dibenz[a,h]anthracene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Benzo[g,h,i]perylene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*50*	*26 - 109*				
Phenol-d6	*56*	*33 - 113*				
Nitrobenzene-d5	*49*	*31 - 110*				
2-Fluorobiphenyl	*60*	*42 - 107*				
2,4,6-Tribromophenol	*92*	*42 - 123*				
Terphenyl-d14	*76*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: August 11, 2021
Laboratory Reference: 2108-124
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0818S1									
	SB	SBD	SB	SBD	SB	SBD				
Phenol	**0.809**	**0.878**	1.33	1.33	61	66	47 - 106	8	30	
2-Chlorophenol	**0.838**	**0.900**	1.33	1.33	63	68	51 - 105	7	31	
1,4-Dichlorobenzene	**0.394**	**0.420**	0.667	0.667	59	63	49 - 101	6	33	
n-Nitroso-di-n-propylamine	**0.415**	**0.449**	0.667	0.667	62	67	50 - 105	8	26	
1,2,4-Trichlorobenzene	**0.437**	**0.467**	0.667	0.667	66	70	50 - 107	7	31	
4-Chloro-3-methylphenol	**1.02**	**1.16**	1.33	1.33	77	87	58 - 114	13	22	
Acenaphthene	**0.389**	**0.437**	0.667	0.667	58	66	52 - 102	12	22	
4-Nitrophenol	**1.13**	**1.25**	1.33	1.33	85	94	51 - 126	10	20	
2,4-Dinitrotoluene	**0.505**	**0.555**	0.667	0.667	76	83	54 - 108	9	19	
Pentachlorophenol	**1.12**	**1.23**	1.33	1.33	84	92	20 - 148	9	30	
Pyrene	**0.538**	**0.616**	0.667	0.667	81	92	55 - 112	14	19	
Surrogate:										
2-Fluorophenol					*60*	*63*	*26 - 109*			
Phenol-d6					*66*	*71*	*33 - 113*			
Nitrobenzene-d5					*61*	*64*	*31 - 110*			
2-Fluorobiphenyl					*67*	*73*	*42 - 107*			
2,4,6-Tribromophenol					*83*	*91*	*42 - 123*			
Terphenyl-d14					*83*	*94*	*41 - 115*			

Date of Report: September 23, 2021
Samples Submitted: August 11, 2021
Laboratory Reference: 2108-124
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G

Matrix: Sediment
Units: % Solids

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SIDL-1M-2021**					
Laboratory ID:	08-124-01					
Total Solids	**11**	0.50	SM 2540G	9-20-21	9-21-21	
Client ID:	**SIDL-1R-2021**					
Laboratory ID:	08-124-02					
Total Solids	**48**	0.50	SM 2540G	8-19-21	8-20-21	

Date of Report: September 23, 2021
Samples Submitted: August 11, 2021
Laboratory Reference: 2108-124
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G
QUALITY CONTROL

Matrix: Sediment
Units: % Solids

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	08-122-01								
	ORIG	DUP							
Total Solids	**80.3**	**81.8**	NA	NA	NA	NA	2	20	
Laboratory ID:	08-039-01								
	ORIG	DUP							
Total Solids	**22.2**	**24.7**	NA	NA	NA	NA	11	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

CHAIN OF CUSTODY

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants
Project No.: 14-05806-000
Project Name: Redmond Paired Watershed Study
Project Manager: John Lenth

Turnaround Requested:
_____ 1 Day
_____ 2 Day
_____ 3 Day
__X__ Standard

Laboratory No. 08-124

Page 1 of 1

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Organic Carbon	Copper	Zinc	Polycyclic aromatic hydrocarbons	Phthalates							Total Solids 25406
1	SIDL-1M-2021	8/11/21	1000	Sediment	1		X	X									X
2	SIDL-1R-2021	↓	1000	Sediment	1	X			X	X							X
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												

Relinquished by [signature] Date 8/11/21 Received by [signature] Date 8.11.21
Firm Herrera Time 1340 Firm OSE Time 1340

Relinquished by _____ Date _____ Received by _____ Date _____
Firm _____ Time _____ Firm _____ Time _____

Comments:

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OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 23, 2021

John Lenth
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2108-127

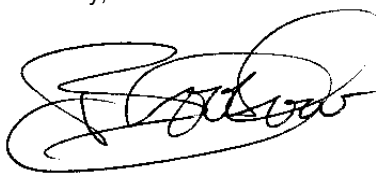
Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on August 11, 2021.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



Blair Goodrow
Project Manager

Enclosures

Date of Report: September 23, 2021
Samples Submitted: August 11, 2021
Laboratory Reference: 2108-127
Project: 14-05806-000

Case Narrative

Samples were collected on August 11, 2021 and received by the laboratory on August 11, 2021. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Total Metals EPA 6010D Analysis

The liquid portion of the sample was decanted and only the solid portion was analyzed.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 23, 2021
Samples Submitted: August 11, 2021
Laboratory Reference: 2108-127
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A

Matrix: Sediment
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TOSH-4-1R-2021**					
Laboratory ID:	08-127-01					
Total Organic Carbon	**3.1**	0.20	EPA 9060A	9-2-21	9-2-21	

Date of Report: September 23, 2021
Samples Submitted: August 11, 2021
Laboratory Reference: 2108-127
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A
QUALITY CONTROL

Matrix: Solid
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0902S1					
Total Organic Carbon	**ND**	0.042	EPA 9060A	9-2-21	9-2-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	08-268-06								
	ORIG	DUP							
Total Organic Carbon	**2.83**	**3.00**	NA	NA	NA	NA	6	23	
SPIKE BLANK									
Laboratory ID:	SB0902S1								
	SB		SB		SB				
Total Organic Carbon	**42.9**		42.1	NA	102	89-111	NA	NA	

Date of Report: September 23, 2021
Samples Submitted: August 11, 2021
Laboratory Reference: 2108-127
Project: 14-05806-000

TOTAL METALS
EPA 6010D

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TOSH-4-1M-2021**					
Laboratory ID:	08-127-02					
Copper	**60**	3.1	EPA 6010D	9-20-21	9-20-21	
Zinc	**1800**	7.7	EPA 6010D	9-20-21	9-20-21	

Date of Report: September 23, 2021
Samples Submitted: August 11, 2021
Laboratory Reference: 2108-127
Project: 14-05806-000

TOTAL METALS
EPA 6010D
QUALITY CONTROL

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0920SM1					
Copper	**ND**	1.0	EPA 6010D	9-20-21	9-20-21	
Zinc	**ND**	2.5	EPA 6010D	9-20-21	9-20-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-124-01										
	ORIG	DUP									
Copper	**3.97**	**4.13**	NA	NA		NA		NA	4	20	
Zinc	**10.7**	**11.2**	NA	NA		NA		NA	5	20	
MATRIX SPIKES											
Laboratory ID:	08-124-01										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**58.1**	**57.2**	50.0	50.0	3.97	**108**	**106**	75-125	2	20	
Zinc	**110**	**109**	100	100	10.7	**100**	**99**	75-125	1	20	

Date of Report: September 23, 2021
Samples Submitted: August 11, 2021
Laboratory Reference: 2108-127
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM

Matrix: Sediment
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TOSH-4-1R-2021**					
Laboratory ID:	08-127-01					
Naphthalene	**ND**	0.0076	EPA 8270E/SIM	8-18-21	8-18-21	
2-Methylnaphthalene	**ND**	0.0076	EPA 8270E/SIM	8-18-21	8-18-21	
1-Methylnaphthalene	**ND**	0.0076	EPA 8270E/SIM	8-18-21	8-18-21	
Dimethylphthalate	**ND**	0.076	EPA 8270E	8-18-21	8-18-21	
Acenaphthylene	**ND**	0.0076	EPA 8270E/SIM	8-18-21	8-18-21	
Acenaphthene	**ND**	0.0076	EPA 8270E/SIM	8-18-21	8-18-21	
Diethylphthalate	**ND**	0.076	EPA 8270E	8-18-21	8-18-21	
Fluorene	**ND**	0.0076	EPA 8270E/SIM	8-18-21	8-18-21	
Phenanthrene	**ND**	0.0076	EPA 8270E/SIM	8-18-21	8-18-21	
Anthracene	**ND**	0.0076	EPA 8270E/SIM	8-18-21	8-18-21	
Di-n-butylphthalate	**ND**	0.076	EPA 8270E	8-18-21	8-18-21	
Fluoranthene	**0.0081**	0.0076	EPA 8270E/SIM	8-18-21	8-18-21	
Pyrene	**0.0090**	0.0076	EPA 8270E/SIM	8-18-21	8-18-21	
Butylbenzylphthalate	**ND**	0.076	EPA 8270E	8-18-21	8-18-21	
Benzo[a]anthracene	**ND**	0.0076	EPA 8270E/SIM	8-18-21	8-18-21	
Chrysene	**0.0080**	0.0076	EPA 8270E/SIM	8-18-21	8-18-21	
bis(2-Ethylhexyl)phthalate	**1.3**	0.076	EPA 8270E	8-18-21	8-18-21	
Di-n-octylphthalate	**ND**	0.076	EPA 8270E	8-18-21	8-18-21	
Benzo[b]fluoranthene	**0.0094**	0.0076	EPA 8270E/SIM	8-18-21	8-18-21	
Benzo(j,k)fluoranthene	**ND**	0.0076	EPA 8270E/SIM	8-18-21	8-18-21	
Benzo[a]pyrene	**ND**	0.0076	EPA 8270E/SIM	8-18-21	8-18-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.0076	EPA 8270E/SIM	8-18-21	8-18-21	
Dibenz[a,h]anthracene	**ND**	0.0076	EPA 8270E/SIM	8-18-21	8-18-21	
Benzo[g,h,i]perylene	**0.0095**	0.0076	EPA 8270E/SIM	8-18-21	8-18-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*73*	*26 - 109*				
Phenol-d6	*78*	*33 - 113*				
Nitrobenzene-d5	*72*	*31 - 110*				
2-Fluorobiphenyl	*68*	*42 - 107*				
2,4,6-Tribromophenol	*84*	*42 - 123*				
Terphenyl-d14	*65*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: August 11, 2021
Laboratory Reference: 2108-127
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0818S1					
Naphthalene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
2-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
1-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Dimethylphthalate	**ND**	0.020	EPA 8270E	8-18-21	8-18-21	
Acenaphthylene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Acenaphthene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Diethylphthalate	**ND**	0.020	EPA 8270E	8-18-21	8-18-21	
Fluorene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Phenanthrene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Anthracene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Di-n-butylphthalate	**ND**	0.020	EPA 8270E	8-18-21	8-18-21	
Fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Pyrene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Butylbenzylphthalate	**ND**	0.020	EPA 8270E	8-18-21	8-18-21	
Benzo[a]anthracene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Chrysene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
bis(2-Ethylhexyl)phthalate	**ND**	0.020	EPA 8270E	8-18-21	8-18-21	
Di-n-octylphthalate	**ND**	0.020	EPA 8270E	8-18-21	8-18-21	
Benzo[b]fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Benzo(j,k)fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Benzo[a]pyrene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Dibenz[a,h]anthracene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Benzo[g,h,i]perylene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*50*	*26 - 109*				
Phenol-d6	*56*	*33 - 113*				
Nitrobenzene-d5	*49*	*31 - 110*				
2-Fluorobiphenyl	*60*	*42 - 107*				
2,4,6-Tribromophenol	*92*	*42 - 123*				
Terphenyl-d14	*76*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: August 11, 2021
Laboratory Reference: 2108-127
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0818S1									
	SB	SBD	SB	SBD	SB	SBD				
Phenol	**0.809**	**0.878**	1.33	1.33	61	66	47 - 106	8	30	
2-Chlorophenol	**0.838**	**0.900**	1.33	1.33	63	68	51 - 105	7	31	
1,4-Dichlorobenzene	**0.394**	**0.420**	0.667	0.667	59	63	49 - 101	6	33	
n-Nitroso-di-n-propylamine	**0.415**	**0.449**	0.667	0.667	62	67	50 - 105	8	26	
1,2,4-Trichlorobenzene	**0.437**	**0.467**	0.667	0.667	66	70	50 - 107	7	31	
4-Chloro-3-methylphenol	**1.02**	**1.16**	1.33	1.33	77	87	58 - 114	13	22	
Acenaphthene	**0.389**	**0.437**	0.667	0.667	58	66	52 - 102	12	22	
4-Nitrophenol	**1.13**	**1.25**	1.33	1.33	85	94	51 - 126	10	20	
2,4-Dinitrotoluene	**0.505**	**0.555**	0.667	0.667	76	83	54 - 108	9	19	
Pentachlorophenol	**1.12**	**1.23**	1.33	1.33	84	92	20 - 148	9	30	
Pyrene	**0.538**	**0.616**	0.667	0.667	81	92	55 - 112	14	19	
Surrogate:										
2-Fluorophenol					*60*	*63*	*26 - 109*			
Phenol-d6					*66*	*71*	*33 - 113*			
Nitrobenzene-d5					*61*	*64*	*31 - 110*			
2-Fluorobiphenyl					*67*	*73*	*42 - 107*			
2,4,6-Tribromophenol					*83*	*91*	*42 - 123*			
Terphenyl-d14					*83*	*94*	*41 - 115*			

Date of Report: September 23, 2021
Samples Submitted: August 11, 2021
Laboratory Reference: 2108-127
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G

Matrix: Sediment
Units: % Solids

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TOSH-4-1R-2021**					
Laboratory ID:	08-127-01					
Total Solids	**53**	0.50	SM 2540G	8-19-21	8-20-21	
Client ID:	**TOSH-4-1M-2021**					
Laboratory ID:	08-127-02					
Total Solids	**32**	0.50	SM 2540G	9-20-21	9-21-21	

Date of Report: September 23, 2021
Samples Submitted: August 11, 2021
Laboratory Reference: 2108-127
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G
QUALITY CONTROL

Matrix: Sediment
Units: % Solids

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	08-122-01								
	ORIG	DUP							
Total Solids	**80.3**	**81.8**	NA	NA	NA	NA	2	20	
Laboratory ID:	08-039-01								
	ORIG	DUP							
Total Solids	**22.2**	**24.7**	NA	NA	NA	NA	11	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page 1 of 1

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: HEL
Project Number: 14-05806-000
Project Name: 2PWS
Project Manager: John Lenth
Sampled by: Nick Bartish

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ Can hold for other samples (other)

Laboratory Number: 08-127

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260D	Halogenated Volatiles 8260D	EDB EPA 8011 (Waters Only)	Semivolatiles 8270E/SIM (with low-level PAHs)	PAHs 8270E/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270E/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Metals (Cu, Zn) EPA 6020	TOL - EPA 8260A	PAHs - EPA 8270 D/SIM	Ph Chlorides - EPA 8270 D	% Moisture
1	TOSH-U-1R-2021	8/11/21	10:00	soil	1																			X	X	X	X
2	TOSH-U-1M-2021	8/11/21	10:00	soil	1																		X					X

	Signature	Company	Date	Time
Relinquished		HEL	8/11/21	2:10
Received		OSE	8/11/21	1410
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

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OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 23, 2021

John Lenth
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2108-167

Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on August 17, 2021.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

Blair Goodrow
Project Manager

Enclosures

Date of Report: September 23, 2021
Samples Submitted: August 17, 2021
Laboratory Reference: 2108-167
Project: 14-05806-000

Case Narrative

Samples were collected on August 17, 2021 and received by the laboratory on August 17, 2021. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Total Metals EPA 6010D Analysis

The liquid portion of the sample was decanted and only the solid portion was analyzed.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 23, 2021
Samples Submitted: August 17, 2021
Laboratory Reference: 2108-167
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A

Matrix: Sediment
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TYLR-2-1R-2021**					
Laboratory ID:	08-167-01					
Total Organic Carbon	**3.8**	0.39	EPA 9060A	9-7-21	9-7-21	

Date of Report: September 23, 2021
Samples Submitted: August 17, 2021
Laboratory Reference: 2108-167
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A
QUALITY CONTROL

Matrix: Solid
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0907S1					
Total Organic Carbon	**ND**	0.042	EPA 9060A	9-7-21	9-7-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	08-167-01								
	ORIG	DUP							
Total Organic Carbon	**3.77**	**4.26**	NA	NA	NA	NA	12	23	
SPIKE BLANK									
Laboratory ID:	SB0907S1								
	SB		SB		SB				
Total Organic Carbon	**42.4**		42.1	NA	101	89-111	NA	NA	

Date of Report: September 23, 2021
Samples Submitted: August 17, 2021
Laboratory Reference: 2108-167
Project: 14-05806-000

TOTAL METALS
EPA 6010D

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TYLR-2-1M-2021**					
Laboratory ID:	08-167-02					
Copper	**100**	4.4	EPA 6010D	9-20-21	9-20-21	
Zinc	**940**	11	EPA 6010D	9-20-21	9-20-21	

Date of Report: September 23, 2021
Samples Submitted: August 17, 2021
Laboratory Reference: 2108-167
Project: 14-05806-000

TOTAL METALS
EPA 6010D
QUALITY CONTROL

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0920SM1					
Copper	**ND**	1.0	EPA 6010D	9-20-21	9-20-21	
Zinc	**ND**	2.5	EPA 6010D	9-20-21	9-20-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-124-01										
	ORIG	DUP									
Copper	**3.97**	**4.13**	NA	NA		NA		NA	4	20	
Zinc	**10.7**	**11.2**	NA	NA		NA		NA	5	20	
MATRIX SPIKES											
Laboratory ID:	08-124-01										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**58.1**	**57.2**	50.0	50.0	3.97	**108**	**106**	75-125	2	20	
Zinc	**110**	**109**	100	100	10.7	**100**	**99**	75-125	1	20	

Date of Report: September 23, 2021
Samples Submitted: August 17, 2021
Laboratory Reference: 2108-167
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM

Matrix: Sediment
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TYLR-2-1R-2021**					
Laboratory ID:	08-167-01					
Naphthalene	**ND**	0.0080	EPA 8270E/SIM	8-18-21	8-18-21	
2-Methylnaphthalene	**ND**	0.0080	EPA 8270E/SIM	8-18-21	8-18-21	
1-Methylnaphthalene	**ND**	0.0080	EPA 8270E/SIM	8-18-21	8-18-21	
Dimethylphthalate	**ND**	0.040	EPA 8270E	8-18-21	8-18-21	
Acenaphthylene	**ND**	0.0080	EPA 8270E/SIM	8-18-21	8-18-21	
Acenaphthene	**ND**	0.0080	EPA 8270E/SIM	8-18-21	8-18-21	
Diethylphthalate	**ND**	0.040	EPA 8270E	8-18-21	8-18-21	
Fluorene	**ND**	0.0080	EPA 8270E/SIM	8-18-21	8-18-21	
Phenanthrene	**ND**	0.0080	EPA 8270E/SIM	8-18-21	8-18-21	
Anthracene	**ND**	0.0080	EPA 8270E/SIM	8-18-21	8-18-21	
Di-n-butylphthalate	**ND**	0.040	EPA 8270E	8-18-21	8-18-21	
Fluoranthene	**ND**	0.0080	EPA 8270E/SIM	8-18-21	8-18-21	
Pyrene	**ND**	0.0080	EPA 8270E/SIM	8-18-21	8-18-21	
Butylbenzylphthalate	**ND**	0.040	EPA 8270E	8-18-21	8-18-21	
Benzo[a]anthracene	**ND**	0.0080	EPA 8270E/SIM	8-18-21	8-18-21	
Chrysene	**ND**	0.0080	EPA 8270E/SIM	8-18-21	8-18-21	
bis(2-Ethylhexyl)phthalate	**0.38**	0.040	EPA 8270E	8-18-21	8-18-21	
Di-n-octylphthalate	**ND**	0.040	EPA 8270E	8-18-21	8-18-21	
Benzo[b]fluoranthene	**ND**	0.0080	EPA 8270E/SIM	8-18-21	8-18-21	
Benzo(j,k)fluoranthene	**ND**	0.0080	EPA 8270E/SIM	8-18-21	8-18-21	
Benzo[a]pyrene	**ND**	0.0080	EPA 8270E/SIM	8-18-21	8-18-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.0080	EPA 8270E/SIM	8-18-21	8-18-21	
Dibenz[a,h]anthracene	**ND**	0.0080	EPA 8270E/SIM	8-18-21	8-18-21	
Benzo[g,h,i]perylene	**ND**	0.0080	EPA 8270E/SIM	8-18-21	8-18-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*50*	*26 - 109*				
Phenol-d6	*65*	*33 - 113*				
Nitrobenzene-d5	*58*	*31 - 110*				
2-Fluorobiphenyl	*59*	*42 - 107*				
2,4,6-Tribromophenol	*83*	*42 - 123*				
Terphenyl-d14	*58*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: August 17, 2021
Laboratory Reference: 2108-167
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0818S1					
Naphthalene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
2-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
1-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Dimethylphthalate	**ND**	0.020	EPA 8270E	8-18-21	8-18-21	
Acenaphthylene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Acenaphthene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Diethylphthalate	**ND**	0.020	EPA 8270E	8-18-21	8-18-21	
Fluorene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Phenanthrene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Anthracene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Di-n-butylphthalate	**ND**	0.020	EPA 8270E	8-18-21	8-18-21	
Fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Pyrene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Butylbenzylphthalate	**ND**	0.020	EPA 8270E	8-18-21	8-18-21	
Benzo[a]anthracene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Chrysene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
bis(2-Ethylhexyl)phthalate	**ND**	0.020	EPA 8270E	8-18-21	8-18-21	
Di-n-octylphthalate	**ND**	0.020	EPA 8270E	8-18-21	8-18-21	
Benzo[b]fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Benzo(j,k)fluoranthene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Benzo[a]pyrene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Dibenz[a,h]anthracene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Benzo[g,h,i]perylene	**ND**	0.0040	EPA 8270E/SIM	8-18-21	8-18-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*50*	*26 - 109*				
Phenol-d6	*56*	*33 - 113*				
Nitrobenzene-d5	*49*	*31 - 110*				
2-Fluorobiphenyl	*60*	*42 - 107*				
2,4,6-Tribromophenol	*92*	*42 - 123*				
Terphenyl-d14	*76*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: August 17, 2021
Laboratory Reference: 2108-167
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0818S1									
	SB	SBD	SB	SBD	SB	SBD				
Phenol	**0.809**	**0.878**	1.33	1.33	61	66	47 - 106	8	30	
2-Chlorophenol	**0.838**	**0.900**	1.33	1.33	63	68	51 - 105	7	31	
1,4-Dichlorobenzene	**0.394**	**0.420**	0.667	0.667	59	63	49 - 101	6	33	
n-Nitroso-di-n-propylamine	**0.415**	**0.449**	0.667	0.667	62	67	50 - 105	8	26	
1,2,4-Trichlorobenzene	**0.437**	**0.467**	0.667	0.667	66	70	50 - 107	7	31	
4-Chloro-3-methylphenol	**1.02**	**1.16**	1.33	1.33	77	87	58 - 114	13	22	
Acenaphthene	**0.389**	**0.437**	0.667	0.667	58	66	52 - 102	12	22	
4-Nitrophenol	**1.13**	**1.25**	1.33	1.33	85	94	51 - 126	10	20	
2,4-Dinitrotoluene	**0.505**	**0.555**	0.667	0.667	76	83	54 - 108	9	19	
Pentachlorophenol	**1.12**	**1.23**	1.33	1.33	84	92	20 - 148	9	30	
Pyrene	**0.538**	**0.616**	0.667	0.667	81	92	55 - 112	14	19	
Surrogate:										
2-Fluorophenol					*60*	*63*	*26 - 109*			
Phenol-d6					*66*	*71*	*33 - 113*			
Nitrobenzene-d5					*61*	*64*	*31 - 110*			
2-Fluorobiphenyl					*67*	*73*	*42 - 107*			
2,4,6-Tribromophenol					*83*	*91*	*42 - 123*			
Terphenyl-d14					*83*	*94*	*41 - 115*			

Date of Report: September 23, 2021
Samples Submitted: August 17, 2021
Laboratory Reference: 2108-167
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G

Matrix: Sediment
Units: % Solids

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TYLR-2-1R-2021**					
Laboratory ID:	08-167-01					
Total Solids	**50**	0.50	SM 2540G	8-19-21	8-20-21	
Client ID:	**TYLR-2-1M-2021**					
Laboratory ID:	08-167-02					
Total Solids	**23**	0.50	SM 2540G	9-20-21	9-21-21	

Date of Report: September 23, 2021
Samples Submitted: August 17, 2021
Laboratory Reference: 2108-167
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G
QUALITY CONTROL

Matrix: Sediment
Units: % Solids

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	08-122-01								
	ORIG	DUP							
Total Solids	**80.3**	**81.8**	NA	NA	NA	NA	2	20	
Laboratory ID:	08-039-01								
	ORIG	DUP							
Total Solids	**22.2**	**24.7**	NA	NA	NA	NA	11	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page 1 of 1

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: HEC
Project Number: 14-05806-000
Project Name: RDWS
Project Manager: John Lovett
Sampled by: N. Bartol

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)

☆ can hold for other samples (other)

Laboratory Number: 08-167

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260D	Halogenated Volatiles 8260D	EDB EPA 8011 (Waters Only)	Semivolatiles 8270E/SIM (with low-level PAHs)	PAHs 8270E/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270E/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Metals (Cu, Zn) EPA 6020	TOC EPA 9060A	PAHs - EPA 8270 D/SIM	phthalates - EPA 8270D	~~% Moisture~~ TPH 2540G SOLIDS
1	TYLR-2-1R-2021	8/17/21	10:00	~~sed~~	1																			X	X	X	X
2	TYLR-2-1M-2021	8/17/21	10:00	~~sed~~																		X					X

	Signature	Company	Date	Time
Relinquished		HEC	8/17/21	12:25
Received		OSE	8.17.21	12:25
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

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OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 23, 2021

John Lenth
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2108-280

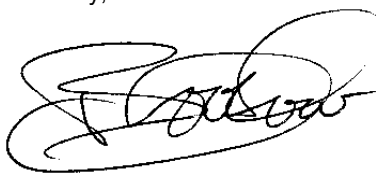
Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on August 26, 2021.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



Blair Goodrow
Project Manager

Enclosures

Date of Report: September 23, 2021
Samples Submitted: August 26, 2021
Laboratory Reference: 2108-280
Project: 14-05806-000

Case Narrative

Samples were collected on August 26, 2021 and received by the laboratory on August 26, 2021. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Total Metals EPA 6010D Analysis

The liquid portion of the sample was decanted and only the solid portion was analyzed.

Semivolatiles EPA 8270E/SIM Analysis

Sample MONT-3R-2021 had two surrogate recoveries outside of control limits. The sample was re-extracted and re-analyzed with similar results, indicating probable matrix interference.

Please note that any other QA/QC issues associated with these extractions and analyses will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 23, 2021
Samples Submitted: August 26, 2021
Laboratory Reference: 2108-280
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A

Matrix: Sediment
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONT-3R-2021**					
Laboratory ID:	08-280-01					
Total Organic Carbon	**12**	0.81	EPA 9060A	9-7-21	9-7-21	

Date of Report: September 23, 2021
Samples Submitted: August 26, 2021
Laboratory Reference: 2108-280
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A
QUALITY CONTROL

Matrix: Solid
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0907S1					
Total Organic Carbon	**ND**	0.042	EPA 9060A	9-7-21	9-7-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	08-167-01								
	ORIG	DUP							
Total Organic Carbon	**3.77**	**4.26**	NA	NA	NA	NA	12	23	
SPIKE BLANK									
Laboratory ID:	SB0907S1								
	SB		SB		SB				
Total Organic Carbon	**42.4**		42.1	NA	101	89-111	NA	NA	

Date of Report: September 23, 2021
Samples Submitted: August 26, 2021
Laboratory Reference: 2108-280
Project: 14-05806-000

TOTAL METALS
EPA 6010D

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONT-3M-2021**					
Laboratory ID:	08-280-02					
Copper	**63**	6.1	EPA 6010D	9-20-21	9-20-21	
Zinc	**1400**	15	EPA 6010D	9-20-21	9-20-21	

Date of Report: September 23, 2021
Samples Submitted: August 26, 2021
Laboratory Reference: 2108-280
Project: 14-05806-000

TOTAL METALS
EPA 6010D
QUALITY CONTROL

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0920SM1					
Copper	**ND**	1.0	EPA 6010D	9-20-21	9-20-21	
Zinc	**ND**	2.5	EPA 6010D	9-20-21	9-20-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE										
Laboratory ID:	08-124-01									
	ORIG	DUP								
Copper	**3.97**	**4.13**	NA	NA		NA	NA	4	20	
Zinc	**10.7**	**11.2**	NA	NA		NA	NA	5	20	
MATRIX SPIKES										
Laboratory ID:	08-124-01									
	MS	MSD	MS	MSD		MS	MSD			
Copper	**58.1**	**57.2**	50.0	50.0	3.97	**108**	**106**	75-125	2	20
Zinc	**110**	**109**	100	100	10.7	**100**	**99**	75-125	1	20

Date of Report: September 23, 2021
Samples Submitted: August 26, 2021
Laboratory Reference: 2108-280
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM

Matrix: Sediment
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONT-3R-2021**					
Laboratory ID:	08-280-01					
Naphthalene	**ND**	0.020	EPA 8270E/SIM	9-2-21	9-3-21	
2-Methylnaphthalene	**ND**	0.020	EPA 8270E/SIM	9-2-21	9-3-21	
1-Methylnaphthalene	**ND**	0.020	EPA 8270E/SIM	9-2-21	9-3-21	
Dimethylphthalate	**ND**	0.20	EPA 8270E	9-2-21	9-2-21	
Acenaphthylene	**ND**	0.020	EPA 8270E/SIM	9-2-21	9-3-21	
Acenaphthene	**ND**	0.020	EPA 8270E/SIM	9-2-21	9-3-21	
Diethylphthalate	**ND**	0.20	EPA 8270E	9-2-21	9-2-21	
Fluorene	**ND**	0.020	EPA 8270E/SIM	9-2-21	9-3-21	
Phenanthrene	**ND**	0.020	EPA 8270E/SIM	9-2-21	9-3-21	
Anthracene	**ND**	0.020	EPA 8270E/SIM	9-2-21	9-3-21	
Di-n-butylphthalate	**ND**	0.20	EPA 8270E	9-2-21	9-2-21	
Fluoranthene	**0.035**	0.020	EPA 8270E/SIM	9-2-21	9-3-21	
Pyrene	**0.033**	0.020	EPA 8270E/SIM	9-2-21	9-3-21	
Butylbenzylphthalate	**ND**	0.20	EPA 8270E	9-2-21	9-2-21	
Benzo[a]anthracene	**ND**	0.020	EPA 8270E/SIM	9-2-21	9-3-21	
Chrysene	**0.027**	0.020	EPA 8270E/SIM	9-2-21	9-3-21	
bis(2-Ethylhexyl)phthalate	**1.3**	0.20	EPA 8270E	9-2-21	9-2-21	
Di-n-octylphthalate	**ND**	0.20	EPA 8270E	9-2-21	9-2-21	
Benzo[b]fluoranthene	**0.034**	0.020	EPA 8270E/SIM	9-2-21	9-3-21	
Benzo(j,k)fluoranthene	**ND**	0.020	EPA 8270E/SIM	9-2-21	9-3-21	
Benzo[a]pyrene	**0.022**	0.020	EPA 8270E/SIM	9-2-21	9-3-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.020	EPA 8270E/SIM	9-2-21	9-3-21	
Dibenz[a,h]anthracene	**ND**	0.020	EPA 8270E/SIM	9-2-21	9-3-21	
Benzo[g,h,i]perylene	**0.025**	0.020	EPA 8270E/SIM	9-2-21	9-3-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*54*	*26 - 109*				
Phenol-d6	*66*	*33 - 113*				
Nitrobenzene-d5	*63*	*31 - 110*				
2-Fluorobiphenyl	*35*	*42 - 107*				Q
2,4,6-Tribromophenol	*51*	*42 - 123*				
Terphenyl-d14	*28*	*41 - 115*				Q

Date of Report: September 23, 2021
Samples Submitted: August 26, 2021
Laboratory Reference: 2108-280
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0902S1					
Naphthalene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
2-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
1-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Dimethylphthalate	**ND**	0.020	EPA 8270E	9-2-21	9-2-21	
Acenaphthylene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Acenaphthene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Diethylphthalate	**ND**	0.020	EPA 8270E	9-2-21	9-2-21	
Fluorene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Phenanthrene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Anthracene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Di-n-butylphthalate	**ND**	0.020	EPA 8270E	9-2-21	9-2-21	
Fluoranthene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Pyrene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Butylbenzylphthalate	**ND**	0.020	EPA 8270E	9-2-21	9-2-21	
Benzo[a]anthracene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Chrysene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
bis(2-Ethylhexyl)phthalate	**ND**	0.020	EPA 8270E	9-2-21	9-2-21	
Di-n-octylphthalate	**ND**	0.020	EPA 8270E	9-2-21	9-2-21	
Benzo[b]fluoranthene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Benzo(j,k)fluoranthene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Benzo[a]pyrene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Dibenz[a,h]anthracene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Benzo[g,h,i]perylene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*59*	*26 - 109*				
Phenol-d6	*65*	*33 - 113*				
Nitrobenzene-d5	*63*	*31 - 110*				
2-Fluorobiphenyl	*67*	*42 - 107*				
2,4,6-Tribromophenol	*63*	*42 - 123*				
Terphenyl-d14	*72*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: August 26, 2021
Laboratory Reference: 2108-280
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0902S1									
	SB	SBD	SB	SBD	SB	SBD				
Phenol	**0.892**	**0.805**	1.33	1.33	67	61	47 - 106	10	30	
2-Chlorophenol	**0.875**	**0.785**	1.33	1.33	66	59	51 - 105	11	31	
1,4-Dichlorobenzene	**0.438**	**0.364**	0.667	0.667	66	55	49 - 101	18	33	
n-Nitroso-di-n-propylamine	**0.451**	**0.412**	0.667	0.667	68	62	50 - 105	9	26	
1,2,4-Trichlorobenzene	**0.493**	**0.427**	0.667	0.667	74	64	50 - 107	14	31	
4-Chloro-3-methylphenol	**1.06**	**0.981**	1.33	1.33	80	74	58 - 114	8	22	
Acenaphthene	**0.396**	**0.349**	0.667	0.667	59	52	52 - 102	13	22	
4-Nitrophenol	**0.957**	**0.919**	1.33	1.33	72	69	51 - 126	4	20	
2,4-Dinitrotoluene	**0.464**	**0.424**	0.667	0.667	70	64	54 - 108	9	19	
Pentachlorophenol	**0.940**	**0.944**	1.33	1.33	71	71	20 - 148	0	30	
Pyrene	**0.525**	**0.481**	0.667	0.667	79	72	55 - 112	9	19	
Surrogate:										
2-Fluorophenol					*69*	*59*	*26 - 109*			
Phenol-d6					*74*	*66*	*33 - 113*			
Nitrobenzene-d5					*73*	*66*	*31 - 110*			
2-Fluorobiphenyl					*77*	*67*	*42 - 107*			
2,4,6-Tribromophenol					*72*	*70*	*42 - 123*			
Terphenyl-d14					*78*	*73*	*41 - 115*			

Date of Report: September 23, 2021
Samples Submitted: August 26, 2021
Laboratory Reference: 2108-280
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G

Matrix: Sediment
Units: % Solids

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONT-3R-2021**					
Laboratory ID:	08-280-01					
Total Solids	**20**	0.50	SM 2540G	8-31-21	9-1-21	
Client ID:	**MONT-3M-2021**					
Laboratory ID:	08-280-02					
Total Solids	**16**	0.50	SM 2540G	9-20-21	9-21-21	

Date of Report: September 23, 2021
Samples Submitted: August 26, 2021
Laboratory Reference: 2108-280
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G
QUALITY CONTROL

Matrix: Sediment
Units: % Solids

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	08-295-01								
	ORIG	DUP							
Total Solids	**66.3**	**66.0**	NA	NA	NA	NA	0	20	
Laboratory ID:	09-039-01								
	ORIG	DUP							
Total Solids	**22.2**	**24.7**	NA	NA	NA	NA	11	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

CHAIN OF CUSTODY

Laboratory No. 08-280

Turnaround Requested:

_____ 1 Day
_____ 2 Day
_____ 3 Day
__X__ Standard

Company: Herrera Environmental Consultants
Project No.: 14-05806-000
Project Name: Redmond Paired Watershed Study
Project Manager: John Lenth

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Organic Carbon	Copper	Zinc	Polycyclic aromatic hydrocarbons	Phthalates							Total Solids 352106
1	MONT-3R-2021	8/26/21	1000	Sediment	1	X			X	X							XX
2	MONT-3M-2021	↓	1000	Sediment	1		X	X									
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												

Relinquished by Rebecca Stebbins Date 8/26/21 Received by [signature] Date 8.26.21
Firm Herrera Time 12:30 Firm OSE Time 12:45
Relinquished by _____ Date _____ Received by _____ Date _____
Firm _____ Time _____ Firm _____ Time _____

Comments:

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OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 23, 2021

John Lenth
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2108-295

Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on August 27, 2021.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

Blair Goodrow
Project Manager

Enclosures

Date of Report: September 23, 2021
Samples Submitted: August 27, 2021
Laboratory Reference: 2108-295
Project: 14-05806-000

Case Narrative

Samples were collected on August 27, 2021 and received by the laboratory on August 27, 2021. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Total Metals EPA 6010D Analysis

The liquid portion of the sample was decanted and only the solid portion was analyzed.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 23, 2021
Samples Submitted: August 27, 2021
Laboratory Reference: 2108-295
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A

Matrix: Sediment
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONT-2R-2021**					
Laboratory ID:	08-295-01					
Total Organic Carbon	**1.4**	0.15	EPA 9060A	9-7-21	9-7-21	

Date of Report: September 23, 2021
Samples Submitted: August 27, 2021
Laboratory Reference: 2108-295
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A
QUALITY CONTROL

Matrix: Solid
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0907S1					
Total Organic Carbon	**ND**	0.042	EPA 9060A	9-7-21	9-7-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	08-167-01								
	ORIG	DUP							
Total Organic Carbon	**3.77**	**4.26**	NA	NA	NA	NA	12	23	
SPIKE BLANK									
Laboratory ID:	SB0907S1								
	SB		SB		SB				
Total Organic Carbon	**42.4**		42.1	NA	101	89-111	NA	NA	

Date of Report: September 23, 2021
Samples Submitted: August 27, 2021
Laboratory Reference: 2108-295
Project: 14-05806-000

TOTAL METALS
EPA 6010D

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONT-2M-2021**					
Laboratory ID:	08-295-02					
Copper	**45**	6.0	EPA 6010D	9-20-21	9-20-21	
Zinc	**1000**	15	EPA 6010D	9-20-21	9-20-21	

Date of Report: September 23, 2021
Samples Submitted: August 27, 2021
Laboratory Reference: 2108-295
Project: 14-05806-000

TOTAL METALS
EPA 6010D
QUALITY CONTROL

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0920SM1					
Copper	**ND**	1.0	EPA 6010D	9-20-21	9-20-21	
Zinc	**ND**	2.5	EPA 6010D	9-20-21	9-20-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-124-01										
	ORIG	DUP									
Copper	**3.97**	**4.13**	NA	NA		NA		NA	4	20	
Zinc	**10.7**	**11.2**	NA	NA		NA		NA	5	20	
MATRIX SPIKES											
Laboratory ID:	08-124-01										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**58.1**	**57.2**	50.0	50.0	3.97	**108**	**106**	75-125	2	20	
Zinc	**110**	**109**	100	100	10.7	**100**	**99**	75-125	1	20	

Date of Report: September 23, 2021
Samples Submitted: August 27, 2021
Laboratory Reference: 2108-295
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM

Matrix: Sediment
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONT-2R-2021**					
Laboratory ID:	08-295-01					
Naphthalene	**ND**	0.0060	EPA 8270E/SIM	9-2-21	9-3-21	
2-Methylnaphthalene	**ND**	0.0060	EPA 8270E/SIM	9-2-21	9-3-21	
1-Methylnaphthalene	**ND**	0.0060	EPA 8270E/SIM	9-2-21	9-3-21	
Dimethylphthalate	**ND**	0.030	EPA 8270E	9-2-21	9-2-21	
Acenaphthylene	**ND**	0.0060	EPA 8270E/SIM	9-2-21	9-3-21	
Acenaphthene	**ND**	0.0060	EPA 8270E/SIM	9-2-21	9-3-21	
Diethylphthalate	**ND**	0.030	EPA 8270E	9-2-21	9-2-21	
Fluorene	**ND**	0.0060	EPA 8270E/SIM	9-2-21	9-3-21	
Phenanthrene	**ND**	0.0060	EPA 8270E/SIM	9-2-21	9-3-21	
Anthracene	**ND**	0.0060	EPA 8270E/SIM	9-2-21	9-3-21	
Di-n-butylphthalate	**ND**	0.030	EPA 8270E	9-2-21	9-2-21	
Fluoranthene	**ND**	0.0060	EPA 8270E/SIM	9-2-21	9-3-21	
Pyrene	**ND**	0.0060	EPA 8270E/SIM	9-2-21	9-3-21	
Butylbenzylphthalate	**ND**	0.030	EPA 8270E	9-2-21	9-2-21	
Benzo[a]anthracene	**ND**	0.0060	EPA 8270E/SIM	9-2-21	9-3-21	
Chrysene	**ND**	0.0060	EPA 8270E/SIM	9-2-21	9-3-21	
bis(2-Ethylhexyl)phthalate	**0.14**	0.030	EPA 8270E	9-2-21	9-2-21	
Di-n-octylphthalate	**ND**	0.030	EPA 8270E	9-2-21	9-2-21	
Benzo[b]fluoranthene	**ND**	0.0060	EPA 8270E/SIM	9-2-21	9-3-21	
Benzo(j,k)fluoranthene	**ND**	0.0060	EPA 8270E/SIM	9-2-21	9-3-21	
Benzo[a]pyrene	**ND**	0.0060	EPA 8270E/SIM	9-2-21	9-3-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.0060	EPA 8270E/SIM	9-2-21	9-3-21	
Dibenz[a,h]anthracene	**ND**	0.0060	EPA 8270E/SIM	9-2-21	9-3-21	
Benzo[g,h,i]perylene	**ND**	0.0060	EPA 8270E/SIM	9-2-21	9-3-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*59*	*26 - 109*				
Phenol-d6	*70*	*33 - 113*				
Nitrobenzene-d5	*68*	*31 - 110*				
2-Fluorobiphenyl	*76*	*42 - 107*				
2,4,6-Tribromophenol	*76*	*42 - 123*				
Terphenyl-d14	*76*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: August 27, 2021
Laboratory Reference: 2108-295
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0902S1					
Naphthalene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
2-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
1-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Dimethylphthalate	**ND**	0.020	EPA 8270E	9-2-21	9-2-21	
Acenaphthylene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Acenaphthene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Diethylphthalate	**ND**	0.020	EPA 8270E	9-2-21	9-2-21	
Fluorene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Phenanthrene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Anthracene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Di-n-butylphthalate	**ND**	0.020	EPA 8270E	9-2-21	9-2-21	
Fluoranthene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Pyrene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Butylbenzylphthalate	**ND**	0.020	EPA 8270E	9-2-21	9-2-21	
Benzo[a]anthracene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Chrysene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
bis(2-Ethylhexyl)phthalate	**ND**	0.020	EPA 8270E	9-2-21	9-2-21	
Di-n-octylphthalate	**ND**	0.020	EPA 8270E	9-2-21	9-2-21	
Benzo[b]fluoranthene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Benzo(j,k)fluoranthene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Benzo[a]pyrene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Dibenz[a,h]anthracene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Benzo[g,h,i]perylene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*59*	*26 - 109*				
Phenol-d6	*65*	*33 - 113*				
Nitrobenzene-d5	*63*	*31 - 110*				
2-Fluorobiphenyl	*67*	*42 - 107*				
2,4,6-Tribromophenol	*63*	*42 - 123*				
Terphenyl-d14	*72*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: August 27, 2021
Laboratory Reference: 2108-295
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0902S1									
	SB	SBD	SB	SBD	SB	SBD				
Phenol	**0.892**	**0.805**	1.33	1.33	67	61	47 - 106	10	30	
2-Chlorophenol	**0.875**	**0.785**	1.33	1.33	66	59	51 - 105	11	31	
1,4-Dichlorobenzene	**0.438**	**0.364**	0.667	0.667	66	55	49 - 101	18	33	
n-Nitroso-di-n-propylamine	**0.451**	**0.412**	0.667	0.667	68	62	50 - 105	9	26	
1,2,4-Trichlorobenzene	**0.493**	**0.427**	0.667	0.667	74	64	50 - 107	14	31	
4-Chloro-3-methylphenol	**1.06**	**0.981**	1.33	1.33	80	74	58 - 114	8	22	
Acenaphthene	**0.396**	**0.349**	0.667	0.667	59	52	52 - 102	13	22	
4-Nitrophenol	**0.957**	**0.919**	1.33	1.33	72	69	51 - 126	4	20	
2,4-Dinitrotoluene	**0.464**	**0.424**	0.667	0.667	70	64	54 - 108	9	19	
Pentachlorophenol	**0.940**	**0.944**	1.33	1.33	71	71	20 - 148	0	30	
Pyrene	**0.525**	**0.481**	0.667	0.667	79	72	55 - 112	9	19	
Surrogate:										
2-Fluorophenol					*69*	*59*	*26 - 109*			
Phenol-d6					*74*	*66*	*33 - 113*			
Nitrobenzene-d5					*73*	*66*	*31 - 110*			
2-Fluorobiphenyl					*77*	*67*	*42 - 107*			
2,4,6-Tribromophenol					*72*	*70*	*42 - 123*			
Terphenyl-d14					*78*	*73*	*41 - 115*			

Date of Report: September 23, 2021
Samples Submitted: August 27, 2021
Laboratory Reference: 2108-295
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G

Matrix: Sediment
Units: % Solids

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MONT-2R-2021**					
Laboratory ID:	08-295-01					
Total Solids	**66**	0.50	SM 2540G	8-31-21	9-1-21	
Client ID:	**MONT-2M-2021**					
Laboratory ID:	08-295-02					
Total Solids	**17**	0.50	SM 2540G	9-20-21	9-21-21	

Date of Report: September 23, 2021
Samples Submitted: August 27, 2021
Laboratory Reference: 2108-295
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G
QUALITY CONTROL

Matrix: Sediment
Units: % Solids

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	08-295-01								
	ORIG	DUP							
Total Solids	**66.3**	**66.0**	NA	NA	NA	NA	0	20	
Laboratory ID:	09-039-01								
	ORIG	DUP							
Total Solids	**22.2**	**24.7**	NA	NA	NA	NA	11	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

CHAIN OF CUSTODY

Laboratory No. 08-295

Company: Herrera Environmental Consultants

Project No.: 14-05806-000

Project Name: Redmond Paired Watershed Study

Project Manager: John Lenth

Turnaround Requested:

_____ 1 Day
_____ 2 Day
_____ 3 Day
__X__ Standard

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Organic Carbon	Copper	Zinc	Polycyclic aromatic hydrocarbons	Phthalates							Total Solids 2540G
1	MONT-2R-2021	8/27/21	1000	Sediment	1	X			X	X							X
2	MONT-2M-2021	↓	1000	Sediment	1		X	X									↓
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												

Relinquished by Nina Maas Date 8/27/21 Received by _____ Date 8/27/21

Firm Herrera Time 1245 Firm CSE Time 1245

Relinquished by _____ Date _____ Received by _____ Date _____

Firm _____ Time _____ Firm _____ Time _____

Comments:

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OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 23, 2021

John Lenth
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2108-305

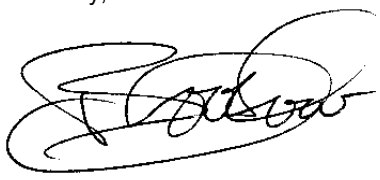
Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on August 30, 2021.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



Blair Goodrow
Project Manager

Enclosures

Date of Report: September 23, 2021
Samples Submitted: August 30, 2021
Laboratory Reference: 2108-305
Project: 14-05806-000

Case Narrative

Samples were collected on August 30, 2021 and received by the laboratory on August 30, 2021. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Total Metals EPA 6010D Analysis

The liquid portion of the sample was decanted and only the solid portion was analyzed.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 23, 2021
Samples Submitted: August 30, 2021
Laboratory Reference: 2108-305
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A

Matrix: Sediment
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**CTRY-2-1R-2021**					
Laboratory ID:	08-305-01					
Total Organic Carbon	**6.5**	0.44	EPA 9060A	9-7-21	9-7-21	

Date of Report: September 23, 2021
Samples Submitted: August 30, 2021
Laboratory Reference: 2108-305
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A
QUALITY CONTROL

Matrix: Solid
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0907S1					
Total Organic Carbon	**ND**	0.042	EPA 9060A	9-7-21	9-7-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	08-167-01								
	ORIG	DUP							
Total Organic Carbon	**3.77**	**4.26**	NA	NA	NA	NA	12	23	
SPIKE BLANK									
Laboratory ID:	SB0907S1								
	SB		SB		SB				
Total Organic Carbon	**42.4**		42.1	NA	101	89-111	NA	NA	

Date of Report: September 23, 2021
Samples Submitted: August 30, 2021
Laboratory Reference: 2108-305
Project: 14-05806-000

TOTAL METALS
EPA 6010D

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**CTRY-2-1M-2021**					
Laboratory ID:	08-305-02					
Copper	**32**	4.0	EPA 6010D	9-20-21	9-20-21	
Zinc	**790**	10	EPA 6010D	9-20-21	9-20-21	

Date of Report: September 23, 2021
Samples Submitted: August 30, 2021
Laboratory Reference: 2108-305
Project: 14-05806-000

TOTAL METALS
EPA 6010D
QUALITY CONTROL

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0920SM1					
Copper	**ND**	1.0	EPA 6010D	9-20-21	9-20-21	
Zinc	**ND**	2.5	EPA 6010D	9-20-21	9-20-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-124-01										
	ORIG	DUP									
Copper	**3.97**	**4.13**	NA	NA		NA		NA	4	20	
Zinc	**10.7**	**11.2**	NA	NA		NA		NA	5	20	
MATRIX SPIKES											
Laboratory ID:	08-124-01										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**58.1**	**57.2**	50.0	50.0	3.97	**108**	**106**	75-125	2	20	
Zinc	**110**	**109**	100	100	10.7	**100**	**99**	75-125	1	20	

Date of Report: September 23, 2021
Samples Submitted: August 30, 2021
Laboratory Reference: 2108-305
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM

Matrix: Sediment
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**CTRY-2-1R-2021**					
Laboratory ID:	08-305-01					
Naphthalene	**ND**	0.0092	EPA 8270E/SIM	9-2-21	9-3-21	
2-Methylnaphthalene	**ND**	0.0092	EPA 8270E/SIM	9-2-21	9-3-21	
1-Methylnaphthalene	**ND**	0.0092	EPA 8270E/SIM	9-2-21	9-3-21	
Dimethylphthalate	**ND**	0.046	EPA 8270E	9-2-21	9-2-21	
Acenaphthylene	**ND**	0.0092	EPA 8270E/SIM	9-2-21	9-3-21	
Acenaphthene	**ND**	0.0092	EPA 8270E/SIM	9-2-21	9-3-21	
Diethylphthalate	**ND**	0.046	EPA 8270E	9-2-21	9-2-21	
Fluorene	**ND**	0.0092	EPA 8270E/SIM	9-2-21	9-3-21	
Phenanthrene	**ND**	0.0092	EPA 8270E/SIM	9-2-21	9-3-21	
Anthracene	**ND**	0.0092	EPA 8270E/SIM	9-2-21	9-3-21	
Di-n-butylphthalate	**ND**	0.046	EPA 8270E	9-2-21	9-2-21	
Fluoranthene	**ND**	0.0092	EPA 8270E/SIM	9-2-21	9-3-21	
Pyrene	**ND**	0.0092	EPA 8270E/SIM	9-2-21	9-3-21	
Butylbenzylphthalate	**ND**	0.046	EPA 8270E	9-2-21	9-2-21	
Benzo[a]anthracene	**ND**	0.0092	EPA 8270E/SIM	9-2-21	9-3-21	
Chrysene	**ND**	0.0092	EPA 8270E/SIM	9-2-21	9-3-21	
bis(2-Ethylhexyl)phthalate	**0.12**	0.046	EPA 8270E	9-2-21	9-2-21	
Di-n-octylphthalate	**ND**	0.046	EPA 8270E	9-2-21	9-2-21	
Benzo[b]fluoranthene	**ND**	0.0092	EPA 8270E/SIM	9-2-21	9-3-21	
Benzo(j,k)fluoranthene	**ND**	0.0092	EPA 8270E/SIM	9-2-21	9-3-21	
Benzo[a]pyrene	**ND**	0.0092	EPA 8270E/SIM	9-2-21	9-3-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.0092	EPA 8270E/SIM	9-2-21	9-3-21	
Dibenz[a,h]anthracene	**ND**	0.0092	EPA 8270E/SIM	9-2-21	9-3-21	
Benzo[g,h,i]perylene	**ND**	0.0092	EPA 8270E/SIM	9-2-21	9-3-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*66*	*26 - 109*				
Phenol-d6	*71*	*33 - 113*				
Nitrobenzene-d5	*70*	*31 - 110*				
2-Fluorobiphenyl	*46*	*42 - 107*				
2,4,6-Tribromophenol	*69*	*42 - 123*				
Terphenyl-d14	*49*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: August 30, 2021
Laboratory Reference: 2108-305
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0902S1					
Naphthalene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
2-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
1-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Dimethylphthalate	**ND**	0.020	EPA 8270E	9-2-21	9-2-21	
Acenaphthylene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Acenaphthene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Diethylphthalate	**ND**	0.020	EPA 8270E	9-2-21	9-2-21	
Fluorene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Phenanthrene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Anthracene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Di-n-butylphthalate	**ND**	0.020	EPA 8270E	9-2-21	9-2-21	
Fluoranthene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Pyrene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Butylbenzylphthalate	**ND**	0.020	EPA 8270E	9-2-21	9-2-21	
Benzo[a]anthracene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Chrysene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
bis(2-Ethylhexyl)phthalate	**ND**	0.020	EPA 8270E	9-2-21	9-2-21	
Di-n-octylphthalate	**ND**	0.020	EPA 8270E	9-2-21	9-2-21	
Benzo[b]fluoranthene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Benzo(j,k)fluoranthene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Benzo[a]pyrene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Dibenz[a,h]anthracene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Benzo[g,h,i]perylene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*59*	*26 - 109*				
Phenol-d6	*65*	*33 - 113*				
Nitrobenzene-d5	*63*	*31 - 110*				
2-Fluorobiphenyl	*67*	*42 - 107*				
2,4,6-Tribromophenol	*63*	*42 - 123*				
Terphenyl-d14	*72*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: August 30, 2021
Laboratory Reference: 2108-305
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0902S1									
	SB	SBD	SB	SBD	SB	SBD				
Phenol	**0.892**	**0.805**	1.33	1.33	67	61	47 - 106	10	30	
2-Chlorophenol	**0.875**	**0.785**	1.33	1.33	66	59	51 - 105	11	31	
1,4-Dichlorobenzene	**0.438**	**0.364**	0.667	0.667	66	55	49 - 101	18	33	
n-Nitroso-di-n-propylamine	**0.451**	**0.412**	0.667	0.667	68	62	50 - 105	9	26	
1,2,4-Trichlorobenzene	**0.493**	**0.427**	0.667	0.667	74	64	50 - 107	14	31	
4-Chloro-3-methylphenol	**1.06**	**0.981**	1.33	1.33	80	74	58 - 114	8	22	
Acenaphthene	**0.396**	**0.349**	0.667	0.667	59	52	52 - 102	13	22	
4-Nitrophenol	**0.957**	**0.919**	1.33	1.33	72	69	51 - 126	4	20	
2,4-Dinitrotoluene	**0.464**	**0.424**	0.667	0.667	70	64	54 - 108	9	19	
Pentachlorophenol	**0.940**	**0.944**	1.33	1.33	71	71	20 - 148	0	30	
Pyrene	**0.525**	**0.481**	0.667	0.667	79	72	55 - 112	9	19	
Surrogate:										
2-Fluorophenol					*69*	*59*	*26 - 109*			
Phenol-d6					*74*	*66*	*33 - 113*			
Nitrobenzene-d5					*73*	*66*	*31 - 110*			
2-Fluorobiphenyl					*77*	*67*	*42 - 107*			
2,4,6-Tribromophenol					*72*	*70*	*42 - 123*			
Terphenyl-d14					*78*	*73*	*41 - 115*			

Date of Report: September 23, 2021
Samples Submitted: August 30, 2021
Laboratory Reference: 2108-305
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G

Matrix: Sediment
Units: % Solids

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**CTRY-2-1R-2021**					
Laboratory ID:	08-305-01					
Total Solids	**44**	0.50	SM 2540G	8-31-21	9-1-21	
Client ID:	**CTRY-2-1M-2021**					
Laboratory ID:	08-305-02					
Total Solids	**25**	0.50	SM 2540G	9-20-21	9-21-21	

Date of Report: September 23, 2021
Samples Submitted: August 30, 2021
Laboratory Reference: 2108-305
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G
QUALITY CONTROL

Matrix: Sediment
Units: % Solids

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	08-295-01								
	ORIG	DUP							
Total Solids	**66.3**	**66.0**	NA	NA	NA	NA	0	20	
Laboratory ID:	09-039-01								
	ORIG	DUP							
Total Solids	**22.2**	**24.7**	NA	NA	NA	NA	11	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: Herrera
Project Number: 14-05806-000
Project Name: RPWS
Project Manager: John Lenth
Sampled by: Nick Bartish

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ can hold for other samples (other)

Laboratory Number: 08-305

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260D	Halogenated Volatiles 8260D	EDB EPA 8011 (Waters Only)	Semivolatiles 8270E/SIM (with low-level PAHs)	PAHs 8270E/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270E/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	metals (Cu, Zn) EPA 6020	TOC-EPA 9060A	PAHs-EPA 8270D SIM	Phthalates-EPA-8270D	% Moisture 2540G Total Solids
1	CTRY-2-1R-2021	8/30/21	10:00	~~Soil~~ sed	1																			X	X	X	X
2	CTRY-2-1M-2021	8/30/21	10:00	~~Soil~~ ↓	1																		X					X

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished	Rebecca Stehling	HEC	8/30/21	12:05	
Received		ORE	8/30/21	1205	
Relinquished					
Received					
Relinquished					
Received					Data Package: Standard ☐ Level III ☐ Level IV ☐
Reviewed/Date		Reviewed/Date			Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

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OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 23, 2021

John Lenth
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 14-05806-000
Laboratory Reference No. 2108-306

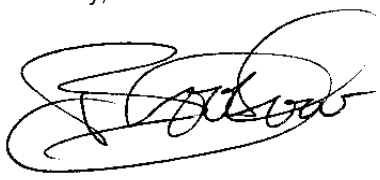
Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on August 30, 2021.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,



Blair Goodrow
Project Manager

Enclosures

Date of Report: September 23, 2021
Samples Submitted: August 30, 2021
Laboratory Reference: 2108-306
Project: 14-05806-000

Case Narrative

Samples were collected on August 30, 2021 and received by the laboratory on August 30, 2021. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Total Metals EPA 6010D Analysis

The liquid portion of the sample was decanted and only the solid portion was analyzed.

Semivolatiles EPA 8270E/SIM Analysis

Sample TOSH-1R-2021 had one surrogate recovery outside of control limits. This is within allowance of our standard operating procedure as long as the recovery is above 10%.

Please note that any other QA/QC issues associated with these extractions and analyses will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: September 23, 2021
Samples Submitted: August 30, 2021
Laboratory Reference: 2108-306
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A

Matrix: Sediment
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TOSH-1R-2021**					
Laboratory ID:	08-306-01					
Total Organic Carbon	**4.1**	0.15	EPA 9060A	9-9-21	9-9-21	
Client ID:	**DUP-R**					
Laboratory ID:	08-306-04					
Total Organic Carbon	**2.0**	0.16	EPA 9060A	9-9-21	9-9-21	

Date of Report: September 23, 2021
Samples Submitted: August 30, 2021
Laboratory Reference: 2108-306
Project: 14-05806-000

TOTAL ORGANIC CARBON
EPA 9060A
QUALITY CONTROL

Matrix: Solid
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0909S1					
Total Organic Carbon	**ND**	0.042	EPA 9060A	9-9-21	9-9-21	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	09-043-05								
	ORIG	DUP							
Total Organic Carbon	**0.0596**	**0.0561**	NA	NA	NA	NA	6	23	
SPIKE BLANK									
Laboratory ID:	SB0909S1								
	SB		SB		SB				
Total Organic Carbon	**43.8**		42.1	NA	104	89-111	NA	NA	

Date of Report: September 23, 2021
Samples Submitted: August 30, 2021
Laboratory Reference: 2108-306
Project: 14-05806-000

TOTAL METALS
EPA 6010D

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TOSH-1M-2021**					
Laboratory ID:	08-306-02					
Copper	**38**	2.8	EPA 6010D	9-20-21	9-20-21	
Zinc	**780**	7.0	EPA 6010D	9-20-21	9-20-21	
Client ID:	**DUP-M**					
Laboratory ID:	08-306-03					
Copper	**31**	2.4	EPA 6010D	9-20-21	9-20-21	
Zinc	**630**	6.1	EPA 6010D	9-20-21	9-20-21	

Date of Report: September 23, 2021
Samples Submitted: August 30, 2021
Laboratory Reference: 2108-306
Project: 14-05806-000

TOTAL METALS
EPA 6010D
QUALITY CONTROL

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0920SM1					
Copper	**ND**	1.0	EPA 6010D	9-20-21	9-20-21	
Zinc	**ND**	2.5	EPA 6010D	9-20-21	9-20-21	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	08-124-01										
	ORIG	DUP									
Copper	**3.97**	**4.13**	NA	NA		NA		NA	4	20	
Zinc	**10.7**	**11.2**	NA	NA		NA		NA	5	20	
MATRIX SPIKES											
Laboratory ID:	08-124-01										
	MS	MSD	MS	MSD		MS	MSD				
Copper	**58.1**	**57.2**	50.0	50.0	3.97	**108**	**106**	75-125	2	20	
Zinc	**110**	**109**	100	100	10.7	**100**	**99**	75-125	1	20	

Date of Report: September 23, 2021
Samples Submitted: August 30, 2021
Laboratory Reference: 2108-306
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM

Matrix: Sediment
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TOSH-1R-2021**					
Laboratory ID:	08-306-01					
Naphthalene	**ND**	0.0091	EPA 8270E/SIM	9-2-21	9-3-21	
2-Methylnaphthalene	**ND**	0.0091	EPA 8270E/SIM	9-2-21	9-3-21	
1-Methylnaphthalene	**ND**	0.0091	EPA 8270E/SIM	9-2-21	9-3-21	
Dimethylphthalate	**ND**	0.045	EPA 8270E	9-2-21	9-2-21	
Acenaphthylene	**ND**	0.0091	EPA 8270E/SIM	9-2-21	9-3-21	
Acenaphthene	**ND**	0.0091	EPA 8270E/SIM	9-2-21	9-3-21	
Diethylphthalate	**ND**	0.045	EPA 8270E	9-2-21	9-2-21	
Fluorene	**ND**	0.0091	EPA 8270E/SIM	9-2-21	9-3-21	
Phenanthrene	**0.027**	0.0091	EPA 8270E/SIM	9-2-21	9-3-21	
Anthracene	**ND**	0.0091	EPA 8270E/SIM	9-2-21	9-3-21	
Di-n-butylphthalate	**ND**	0.045	EPA 8270E	9-2-21	9-2-21	
Fluoranthene	**0.053**	0.045	EPA 8270E	9-2-21	9-2-21	
Pyrene	**0.052**	0.0091	EPA 8270E/SIM	9-2-21	9-3-21	
Butylbenzylphthalate	**ND**	0.045	EPA 8270E	9-2-21	9-2-21	
Benzo[a]anthracene	**0.021**	0.0091	EPA 8270E/SIM	9-2-21	9-3-21	
Chrysene	**0.028**	0.0091	EPA 8270E/SIM	9-2-21	9-3-21	
bis(2-Ethylhexyl)phthalate	**0.063**	0.045	EPA 8270E	9-2-21	9-2-21	
Di-n-octylphthalate	**ND**	0.045	EPA 8270E	9-2-21	9-2-21	
Benzo[b]fluoranthene	**0.038**	0.0091	EPA 8270E/SIM	9-2-21	9-3-21	
Benzo(j,k)fluoranthene	**0.014**	0.0091	EPA 8270E/SIM	9-2-21	9-3-21	
Benzo[a]pyrene	**0.028**	0.0091	EPA 8270E/SIM	9-2-21	9-3-21	
Indeno[1,2,3-cd]pyrene	**0.017**	0.0091	EPA 8270E/SIM	9-2-21	9-3-21	
Dibenz[a,h]anthracene	**ND**	0.0091	EPA 8270E/SIM	9-2-21	9-3-21	
Benzo[g,h,i]perylene	**0.020**	0.0091	EPA 8270E/SIM	9-2-21	9-3-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*52*	*26 - 109*				
Phenol-d6	*61*	*33 - 113*				
Nitrobenzene-d5	*57*	*31 - 110*				
2-Fluorobiphenyl	*44*	*42 - 107*				
2,4,6-Tribromophenol	*59*	*42 - 123*				
Terphenyl-d14	*37*	*41 - 115*				Q

Date of Report: September 23, 2021
Samples Submitted: August 30, 2021
Laboratory Reference: 2108-306
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM

Matrix: Sediment
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**DUP-R**					
Laboratory ID:	08-306-04					
Naphthalene	**ND**	0.0075	EPA 8270E/SIM	9-2-21	9-3-21	
2-Methylnaphthalene	**ND**	0.0075	EPA 8270E/SIM	9-2-21	9-3-21	
1-Methylnaphthalene	**ND**	0.0075	EPA 8270E/SIM	9-2-21	9-3-21	
Dimethylphthalate	**ND**	0.037	EPA 8270E	9-2-21	9-2-21	
Acenaphthylene	**ND**	0.0075	EPA 8270E/SIM	9-2-21	9-3-21	
Acenaphthene	**ND**	0.0075	EPA 8270E/SIM	9-2-21	9-3-21	
Diethylphthalate	**ND**	0.037	EPA 8270E	9-2-21	9-2-21	
Fluorene	**ND**	0.0075	EPA 8270E/SIM	9-2-21	9-3-21	
Phenanthrene	**0.046**	0.037	EPA 8270E	9-2-21	9-2-21	
Anthracene	**ND**	0.0075	EPA 8270E/SIM	9-2-21	9-3-21	
Di-n-butylphthalate	**ND**	0.037	EPA 8270E	9-2-21	9-2-21	
Fluoranthene	**0.082**	0.037	EPA 8270E	9-2-21	9-2-21	
Pyrene	**0.048**	0.037	EPA 8270E	9-2-21	9-2-21	
Butylbenzylphthalate	**ND**	0.037	EPA 8270E	9-2-21	9-2-21	
Benzo[a]anthracene	**0.031**	0.0075	EPA 8270E/SIM	9-2-21	9-3-21	
Chrysene	**0.037**	0.037	EPA 8270E	9-2-21	9-2-21	
bis(2-Ethylhexyl)phthalate	**0.070**	0.037	EPA 8270E	9-2-21	9-2-21	
Di-n-octylphthalate	**ND**	0.037	EPA 8270E	9-2-21	9-2-21	
Benzo[b]fluoranthene	**0.049**	0.037	EPA 8270E	9-2-21	9-2-21	
Benzo(j,k)fluoranthene	**0.017**	0.0075	EPA 8270E/SIM	9-2-21	9-3-21	
Benzo[a]pyrene	**0.039**	0.0075	EPA 8270E/SIM	9-2-21	9-3-21	
Indeno[1,2,3-cd]pyrene	**0.023**	0.0075	EPA 8270E/SIM	9-2-21	9-3-21	
Dibenz[a,h]anthracene	**ND**	0.0075	EPA 8270E/SIM	9-2-21	9-3-21	
Benzo[g,h,i]perylene	**0.025**	0.0075	EPA 8270E/SIM	9-2-21	9-3-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*49*	*26 - 109*				
Phenol-d6	*62*	*33 - 113*				
Nitrobenzene-d5	*56*	*31 - 110*				
2-Fluorobiphenyl	*64*	*42 - 107*				
2,4,6-Tribromophenol	*69*	*42 - 123*				
Terphenyl-d14	*52*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: August 30, 2021
Laboratory Reference: 2108-306
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0902S1					
Naphthalene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
2-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
1-Methylnaphthalene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Dimethylphthalate	**ND**	0.020	EPA 8270E	9-2-21	9-2-21	
Acenaphthylene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Acenaphthene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Diethylphthalate	**ND**	0.020	EPA 8270E	9-2-21	9-2-21	
Fluorene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Phenanthrene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Anthracene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Di-n-butylphthalate	**ND**	0.020	EPA 8270E	9-2-21	9-2-21	
Fluoranthene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Pyrene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Butylbenzylphthalate	**ND**	0.020	EPA 8270E	9-2-21	9-2-21	
Benzo[a]anthracene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Chrysene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
bis(2-Ethylhexyl)phthalate	**ND**	0.020	EPA 8270E	9-2-21	9-2-21	
Di-n-octylphthalate	**ND**	0.020	EPA 8270E	9-2-21	9-2-21	
Benzo[b]fluoranthene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Benzo(j,k)fluoranthene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Benzo[a]pyrene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Indeno[1,2,3-cd]pyrene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Dibenz[a,h]anthracene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Benzo[g,h,i]perylene	**ND**	0.0040	EPA 8270E/SIM	9-2-21	9-2-21	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorophenol	*59*	*26 - 109*				
Phenol-d6	*65*	*33 - 113*				
Nitrobenzene-d5	*63*	*31 - 110*				
2-Fluorobiphenyl	*67*	*42 - 107*				
2,4,6-Tribromophenol	*63*	*42 - 123*				
Terphenyl-d14	*72*	*41 - 115*				

Date of Report: September 23, 2021
Samples Submitted: August 30, 2021
Laboratory Reference: 2108-306
Project: 14-05806-000

SEMIVOLATILES EPA 8270E/SIM
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0902S1									
	SB	SBD	SB	SBD	SB	SBD				
Phenol	**0.892**	**0.805**	1.33	1.33	67	61	47 - 106	10	30	
2-Chlorophenol	**0.875**	**0.785**	1.33	1.33	66	59	51 - 105	11	31	
1,4-Dichlorobenzene	**0.438**	**0.364**	0.667	0.667	66	55	49 - 101	18	33	
n-Nitroso-di-n-propylamine	**0.451**	**0.412**	0.667	0.667	68	62	50 - 105	9	26	
1,2,4-Trichlorobenzene	**0.493**	**0.427**	0.667	0.667	74	64	50 - 107	14	31	
4-Chloro-3-methylphenol	**1.06**	**0.981**	1.33	1.33	80	74	58 - 114	8	22	
Acenaphthene	**0.396**	**0.349**	0.667	0.667	59	52	52 - 102	13	22	
4-Nitrophenol	**0.957**	**0.919**	1.33	1.33	72	69	51 - 126	4	20	
2,4-Dinitrotoluene	**0.464**	**0.424**	0.667	0.667	70	64	54 - 108	9	19	
Pentachlorophenol	**0.940**	**0.944**	1.33	1.33	71	71	20 - 148	0	30	
Pyrene	**0.525**	**0.481**	0.667	0.667	79	72	55 - 112	9	19	
Surrogate:										
2-Fluorophenol					*69*	*59*	*26 - 109*			
Phenol-d6					*74*	*66*	*33 - 113*			
Nitrobenzene-d5					*73*	*66*	*31 - 110*			
2-Fluorobiphenyl					*77*	*67*	*42 - 107*			
2,4,6-Tribromophenol					*72*	*70*	*42 - 123*			
Terphenyl-d14					*78*	*73*	*41 - 115*			

Date of Report: September 23, 2021
Samples Submitted: August 30, 2021
Laboratory Reference: 2108-306
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G

Matrix: Sediment
Units: % Solids

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TOSH-1R-2021**					
Laboratory ID:	08-306-01					
Total Solids	**44**	0.50	SM 2540G	8-31-21	9-1-21	
Client ID:	**TOSH-1M-2021**					
Laboratory ID:	08-306-02					
Total Solids	**36**	0.50	SM 2540G	9-20-21	9-21-21	
Client ID:	**DUP-M**					
Laboratory ID:	08-306-03					
Total Solids	**41**	0.50	SM 2540G	9-20-21	9-21-21	
Client ID:	**DUP-R**					
Laboratory ID:	08-306-04					
Total Solids	**54**	0.50	SM 2540G	8-31-21	9-1-21	

Date of Report: September 23, 2021
Samples Submitted: August 30, 2021
Laboratory Reference: 2108-306
Project: 14-05806-000

TOTAL SOLIDS
SM 2540G
QUALITY CONTROL

Matrix: Sediment
Units: % Solids

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	08-295-01								
	ORIG	DUP							
Total Solids	**66.3**	**66.0**	NA	NA	NA	NA	0	20	
Laboratory ID:	09-039-01								
	ORIG	DUP							
Total Solids	**22.2**	**24.7**	NA	NA	NA	NA	11	20	

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

CHAIN OF CUSTODY

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052
Telephone: 425.883.3881

Company: Herrera Environmental Consultants
Project No.: 14-05806-000
Project Name: Redmond Paired Watershed Study
Project Manager: John Lenth

Turnaround Requested:
_____ 1 Day
_____ 2 Day
_____ 3 Day
__X__ Standard

Page ___ of ___

Laboratory No. 08-306

Requested Analyses

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Total Organic Carbon	Copper	Zinc	Polycyclic aromatic hydrocarbons	Phthalates							TOTAL SOLIDS 2540G
1	TOSH-1R-2021	8.30.21	1000	Sediment	1	X			X	X							X
2	TOSH-1M-2021	↓	↓	Sediment	1		X	X									↓
3	DUP-M			Sediment	1		X	X									
4	DUP-R			Sediment	1	X			X	X							
				Sediment	1												
				Sediment	1												
				Sediment	1												
				Sediment	1												
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				Sediment	1												
				Sediment	1												

Relinquished by Miranda Date 8.30.21 Received by _____ Date 8/30/21
Firm Herrera Time 1238 Firm OSE Time 1238

Relinquished by _____ Date _____ Received by _____ Date _____
Firm _____ Time _____ Firm _____ Time _____

Comments:

APPENDIX Q

Data Validation Memorandum for Sediment Quality Monitoring

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Herrera Environmental Consultants, Inc.

Internal Memorandum

Date: March 30, 2022

To: Project File 14-05806-019

Copy To:

From: Gina Catarra

Subject: Data Quality Assurance Review of the Redmond Paired Watershed Stormwater Retrofit Effectiveness Sediment Quality Monitoring Data

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This memorandum presents a review of data quality for 18 sediment samples (including one field duplicate) collected for the Redmond Paired Watershed Stormwater Retrofit Effectiveness Study between July 7 and August 30, 2021. OnSite Environmental, Inc., of Redmond, Washington analyzed the samples for:

- Total organic carbon (TOC) by EPA Method 9060A
- Metals (copper and zinc) by EPA Method 6020
- Polycyclic aromatic hydrocarbons (PAHs) by EPA Method 8270D/SIM
- Phthalates by EPA Method 8270D.

Results for the following samples were validated.

Date Collected	Lab SDG	Samples Collected	QC Samples Collected
7/07/21	2107-057	MONT-4	None
7/13/21	2107-107	EVAMS-1	None
7/13/21	2107-108	MONT-1	None
7/13/21	2107-202	TYLR-1	None
7/22/21	2107-212	EVALSS	None
7/27/21	2107-262	SIDL-2	None
7/29/21	2107-298	TOSH-3	None
8/02/21	2108-007	SIDL-3	None
8/04/21	2108-039	CTRY-1	None
8/05/21	2108-057	TOSH-2	None
8/11/21	2108-124	SIDL-1	None
8/11/21	2107-127	TOSH-4	None

Date Collected	Lab SDG	Samples Collected	QC Samples Collected
8/17/21	2108-167	TYLR-2	None
8/26/21	2108-280	MONT-3	None
8/27/21	2108-295	MONT-2	None
8/30/21	2108-305	CTRY-2	None
8/30/21	2108-306	TOSH-1, DUP	1 field duplicate (DUP)

The laboratory's performance was reviewed in accordance with quality control (QC) criteria established in the *Redmond Paired Watershed Study Quality Assurance Project Plan* (QAPP) (Herrera 2015), by the laboratory, and in the specified methods.

Quality control data summaries submitted by the laboratory were reviewed; raw data were not submitted by the laboratory. Data Quality Assurance Worksheets were completed for each laboratory report and are included as an Attachment to this memorandum. Data qualifiers (flags) were added to the sample results in the laboratory reports. Data validation results are summarized below, followed by definitions of data qualifiers.

Custody, Preservation, Holding Times, and Completeness—Acceptable

The samples were properly preserved and sample custody was maintained from sample collection to receipt at the laboratory. Samples were analyzed within the required method holding times. The laboratory reports were complete and contained results for all samples and tests requested on the chain-of-custody (COC) forms.

Laboratory Reporting Limits—Acceptable

The laboratory reporting limits met those established in the QAPP. No data were qualified based on laboratory reporting limits.

Method Blank Analysis—Acceptable

Method blanks were analyzed at the required frequency. Method blanks did not contain levels of target analytes above the laboratory reporting limits.

Laboratory Control Sample Analysis—Acceptable

Blank spike/blank spike duplicate (BS/BSD) samples were analyzed with project samples for TOC, PAHs, and phthalates at the required frequency. The percent recovery values for all parameters met the criteria established in the QAPP.

Surrogate Compound Analysis—Acceptable

Surrogates were analyzed with project samples, method blanks, and laboratory duplicates for PAHs and phthalates, as required by the analytical methods. The percent recovery values for all surrogate compounds met the criteria established by the laboratory.

Matrix Spike Analysis—Acceptable

Matrix spike/matrix spike duplicate (MS/MSD) samples were analyzed for copper and zinc at the required frequency. The percent recovery values for copper and zinc met the control limits (75 to 125 percent) established in the QAPP.

Laboratory Duplicate Analysis—Acceptable

Laboratory duplicate samples were analyzed for TOC, copper, and zinc; BS/BSD samples were analyzed for PAHs and phthalates. The relative percent difference (RPD) was calculated for each analyte where both duplicate values were greater than five times the reporting limit (RL). The difference between duplicate values was calculated if the detected compound concentration was less than five times the RL in either the sample or the duplicate. The RPD values or difference values met the control limits established by the QAPP.

Field Duplicate Analysis—Acceptable with Qualification

A field duplicate (QA) of sample TOSH-1 was collected and analyzed for all parameters. However, the QAPP specifies that two field duplicate samples will be collected and analyzed for each annual sampling event. The RPD was calculated for each analyte where both the values were greater than five times the RL. The difference between the duplicate values was calculated if the detected compound concentration was less than five times the RL in either the sample or the field duplicate. The RPD values or difference values met the control limits established in the QAPP, with the exceptions noted below.

The RPD value for TOC (69 percent) exceeded the less than 35 percent criterion established in the QAPP. As shown in the table below, sample TOSH-1 was qualified as estimated (flagged J) due to the field duplicate RPD exceedance.

Date Collected	Parameter	Sample ID	Reason for Qualification	Qualifier
8/30/2021	TOC	TOSH-1 and DUP	Field duplicate RPD exceedance	J

Definition of Data Qualifiers

The following are data qualifier definitions applied for this project.

Data Qualifier	Definition
J	Value is an estimate based on analytical results
R	Value is rejected based on analytical results
U	Value is below the reporting limit
UJ	Value is below the reporting limit and is an estimate based on analytical results

References

Herrera. 2015. Redmond Paired Watershed Study Quality Assurance Project Plan. Prepared by Herrera Environmental Consultants, Inc., Seattle, Washington. December 31.

APPENDIX R

Laboratory Report for Biological Monitoring

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The contents of this appendix are provided in a separate electronic file.

APPENDIX S

Quality Assurance Review Documentation for Biological Monitoring

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Sample_ID	Sample_ Station_Name	Sample_Client_ID	Sample_ Date_Collected	Sorting Efficiency	Percent Taxonomic Disagreement (PTD)	Percent Difference in Enumeration (PDE)
HEC21JL001	Country Creek	CTRY-1	8/4/2021	98.74%		
HEC21JL003	Evans Tributary	EVAMS	7/15/2021		2.44%	0.49%
HEC21JL005	Monticello Creek	MONT-4	7/7/2021	96.63%		
HEC21JL008	Seidel Creek	SIDL-3	8/2/2021	96.05%	1.33%	0.67%

Sample_ID	Sample_ Station_Name	Sample_Client_ID	Sample_Date_ Collected	Sorting Efficiency	Percent Taxonomic Disagreement (PTD)	Percent Difference in Enumeration (PDE)
HEC21JL02003	Monticello Creek	MONT-2	8/27/2021	98.62%		
HEC21JL02004	Monticello Creek	MONT-3	8/26/2021		1.33%	0.19%