

April 14, 2021

Bill Tietzel  
Lewis County Environmental Services  
2025 N.E. Kresky Avenue  
Chehalis, WA

Re: Centralia Landfill 2020 Compliance Monitoring Report

Dear Bill:

This letter report summarizes the 2020 water quality monitoring events at the Centralia Landfill in Lewis County, Washington (Figure 1). Biannual groundwater and surface water quality monitoring are performed during the wet and dry seasons; in 2020 the monitoring events were performed in April (2020 Q2) and October (2020 Q4). In addition to groundwater, landfill gas is monitored quarterly at the landfill. Groundwater data and landfill gas monitoring data are submitted to EIM. Draft copies of 2020 Q2 and 2020 Q4 groundwater level, water quality, and landfill gas data tables and time-series plots were provided to the Washington State Department of Ecology (Ecology) on March 5, 2021 at their request. The water quality data tables in this report replace the draft versions.

The Centralia Landfill (Site) is a closed municipal solid waste landfill that operated between 1958 and 1994. Cleanup activities at the landfill were completed under Cleanup Action Plan Consent Decree C91-5100 as executed in 2001 between the Washington State Department of Ecology (Ecology), Lewis County, the City of Chehalis, the City of Centralia, the City of Morton, the City of Mossyrock, the Town of Pe Ell, and the City of Vader. The final remedial action for the landfill included post-closure monitoring of groundwater and surface water, operation and maintenance of the landfill gas control system, and maintenance of the final landfill cover and surface water control systems. The selected remedy also provided for institutional controls and compliance monitoring.

As of 2019, Ecology allowed Lewis County to combine the two semi-annual monitoring event reports into a single report. Therefore, this report presents all water quality data collected in 2020.

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## 1.0 MONITORING PROGRAM

The groundwater and surface water monitoring networks, points of compliance, and regulatory limits are described below.

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## 1.1 GROUNDWATER MONITORING NETWORK

Compliance groundwater monitoring at the Centralia Landfill is performed in a network of wells established in the 1999 Compliance Monitoring Plan (CH2M Hill 1999) and presented in Figures 2 to 7. The monitoring wells are completed in two water-bearing units identified at the landfill, the Shallow Upper/Upper Unit and the Lower Unit, as follows:

- Shallow Upper/Upper Unit wells: B-1SU, B-1S, B-2SU, B-2S, MW-1S, MW-2SU, MW-2S, MW-3S, MW-4S, MW-5S, and MW-CNE-1S. The suffix “SU” indicates wells that are completed in the Shallow Upper Unit and the suffix “S” indicates wells that are completed in the Upper Unit.
- Lower Unit wells: B-6DR, B-8DR, MW-1D, MW-2D, MW-3D<sup>1</sup>, and MW-CNE-1D.

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## 1.2 SURFACE WATER MONITORING NETWORK

Runoff from the landfill surface collects in the Weyerhaeuser Ditch that discharges to Salzer Creek. In compliance with the 1999 Compliance Monitoring Plan (CH2M Hill 1999), the surface water monitoring network consists of a single station, SW-14. This surface water station is located in the Weyerhaeuser Ditch at the southwest corner of the landfill just before water in the ditch flows off the landfill property boundary and discharges into Salzer Creek (Figure 1). As summarized in Ecology’s Second Periodic Review (Ecology 2016), surface water sampling is performed during the wet and dry seasons as required by the Cleanup Action Plan and Consent Decree.

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## 1.3 CLEANUP LEVELS AND POINTS OF COMPLIANCE

Cleanup levels for groundwater and surface water were established in the Cleanup Action Plan using the Model Toxics Control Act (MTCA) Method B (WAC 173-340-705), which references Applicable, Relevant, and Appropriate Requirements (ARARs) based on applicable state and federal laws, in addition to providing methods for calculating cleanup levels based on toxic or carcinogenic risk. The following discussion of cleanup levels and points of compliance summarizes information detailed in the Second Periodic Review (Ecology 2016).

### 1.3.1 Groundwater

Groundwater in the Upper Unit discharges to the Weyerhaeuser Ditch and Salzer Creek. Therefore, cleanup levels for groundwater in the Upper Unit were established considering both MTCA Method B groundwater *and* surface water standards. Site cleanup levels for groundwater in the Shallow Upper/Upper Unit have been established for:

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<sup>1</sup> MW-3D was not identified as a monitoring well in the 1999 Compliance Monitoring Plan.

- Dissolved mercury and nitrate based on primary drinking water standards for (Groundwater Standards in Tables 1 and 4)
- Chloride, pH, sulfate, TDS, and dissolved manganese, iron, and zinc based on secondary drinking water standards for (Groundwater Standards in Tables 1 and 4)
- Dissolved arsenic based on surface water ARAR (Section 1.3.2), which is applicable to groundwater in the Shallow Upper/Upper Unit because it discharges to surface water (CAP Compliance Level in Tables 1 and 4).

Groundwater in the Lower Unit does not discharge to surface water near the Centralia Landfill; therefore, cleanup levels in the Lower Unit are based only on groundwater ARARs and the CAP Cleanup Levels are the same as the Groundwater Standards in Tables 2 and 5. Site cleanup levels for groundwater in the Lower Unit have been established for:

- Dissolved iron and manganese based on secondary drinking water standards (Groundwater Standards in Tables 2 and 5)
- Dissolved arsenic with an unclear basis. The Second Periodic Review (Ecology 2016) refers to a cleanup level for arsenic of 5 µg/L (0.005 mg/L) for groundwater in the Lower Unit and also states that arsenic has two standards, the primary drinking water standard (0.01 mg/L) and a state groundwater quality standard (0.05 µg/L or 0.00005 mg/L). The Cleanup Action Plan (unknown 1999) states that the arsenic site cleanup level (5 µg/L or 0.005 mg/L) is the MTCA Method A cleanup level based on background concentrations for the State of Washington. The current MTCA Method A cleanup level for arsenic is 5 µg/L (0.005 mg/L).

The Second Periodic Review (Ecology 2016) acknowledges that if Site background concentrations of iron, manganese, and/or arsenic are higher than cleanup levels, then background-based alternative cleanup levels will be established. Ecology further states that since there is only one background monitoring well completed in the Lower Unit<sup>2</sup>, continued and expanded background monitoring is required to make this evaluation.

The point of compliance for groundwater cleanup at the Centralia Landfill is the existing property boundary.

### **1.3.2 Surface Water**

Contaminants of concern for surface water at the Centralia Landfill are arsenic, iron, and manganese (Ecology 2016). A surface water cleanup level for arsenic of 0.27 µg/L (0.00027 mg/L) was previously calculated based on background concentrations. However, this value is less than the practical quantitation limit (PQL) of 0.5 µg/L (0.0005 mg/L), which is the lowest limit that can reliably be achieved during routine laboratory operating conditions and using Ecology-approved methods. Therefore, the compliance

<sup>2</sup> The Second Periodic Review (Ecology, 2016) states there is only one background monitoring well completed in the Lower Unit; however, groundwater contours presented for September 2016 (Centralia Public Works, 2016) and for this report suggest that MW-1D and MW-3D are both located upgradient of the landfill.

level for arsenic in surface water established for this Site is 0.5 µg/L (0.0005 mg/L)<sup>3</sup>. Surface water ARARs for iron and manganese are not established.

The surface water point of compliance is monitoring station SW-14, located in the Weyerhaeuser Ditch just before flows pass the Centralia Landfill property boundary and discharge into Salzer Creek.

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## 2.0 2020 Q2 WATER QUALITY MONITORING EVENT

Representatives of the City of Centralia performed the 2020 wet season water quality sampling event in April (2020 Q2). Analytical services were provided by Dragon Analytical Laboratory, Inc. (DAL), in Olympia, Washington. DAL subcontracted analysis of total organic carbon (TOC) to Anatek Labs, Inc. in Spokane, Washington and subcontracted analysis of dissolved mercury to ALS Group USA Corp. in Kelso, Washington. DAL, Anatek Labs, and ALS Group USA Corp are Ecology-accredited laboratories.

The 2020 Q2 groundwater quality samples were collected from the Shallow Upper/Upper Unit wells and Lower Unit wells identified in Section 1.1 by representatives of the City of Centralia on April 21, 2020. Dedicated submersible pumps were used to purge the wells and collect the samples. The 2020 Q2 groundwater samples were analyzed for alkalinity, ammonia, total organic carbon (TOC), chemical oxygen demand (COD), chloride, hardness, nitrate+nitrite, total dissolved solids (TDS), sulfate, and nine dissolved metals (arsenic, calcium, iron, magnesium, manganese, mercury, potassium, sodium, and zinc). Handheld meters were used to measure pH, specific conductivity, and temperature in the field during sampling at each well. Groundwater samples were delivered to DAL on April 22, 2020 for analysis. Samples collected for dissolved metals analysis were lab-filtered at DAL. ALS performed the mercury analyses on samples that had been lab-filtered at DAL; therefore, the results reflect dissolved mercury concentrations. The ALS results are identified “Mercury, Total” in the attached lab report because the chain-of-custody received by ALS did not document that the samples had been filtered.

The 2020 Q2 surface water sample SW-14 was collected on April 22, 2020 by representatives of the City of Centralia. The surface water sample was analyzed for alkalinity, ammonia, total organic carbon (TOC), chemical oxygen demand (COD), chloride, hardness, nitrate+nitrite, total dissolved solids (TDS), sulfate, and nine total and dissolved metals (arsenic, calcium, iron, magnesium, manganese, mercury, potassium, sodium, and zinc). Handheld meters were used to measure pH, specific conductivity, and temperature in the field during sample collection. The surface water sample was delivered to DAL on April 22, 2020 and the sample for dissolved metals analysis was lab-filtered. Again, the mercury analysis was performed by ALS on a sample that had been filtered at DAL and therefore represents a dissolved mercury concentration. However, the ALS result is labeled “Mercury, Total” in the attached lab report because the chain-of-custody form that accompanied the sample between the labs was incomplete.

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<sup>3</sup> The CAP compliance level for arsenic in Shallow Upper/Upper Unit groundwater is also 0.5 µg/L (0.0005 mg/L) because it discharges to surface water.

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## 2.1 2020 Q2 GROUNDWATER LEVEL DATA

Water levels in all Centralia Landfill monitoring wells were measured on April 21, 2020. Groundwater level elevations for the 2020 Q2 sampling event were calculated relative to elevations provided by the City and are presented in Figures 2 to 4. Wells completed in the Upper Shallow Unit are configured in a straight line and therefore a groundwater flow direction cannot be calculated (Figure 2). Water level elevations in the Upper Shallow Unit indicate some component of groundwater flow toward the south; however, whether that flow is toward the southwest, south, or southeast cannot be evaluated from the current well network. Groundwater contour maps of the data for the Upper and Lower Units (Figures 3 and 4) indicate that at the time of measurement, groundwater in these units was flowing toward the southwest.

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## 2.2 2020 Q2 RESULTS RELATIVE TO CLEANUP LEVELS

The 2020 Q2 analytical results and applicable site cleanup levels for the Upper Shallow/Shallow Unit groundwater samples, the Lower Unit groundwater samples, and SW-14 surface water sample are presented in Tables 1, 2, and 3 respectively. Time series plots of groundwater quality data are presented in Appendix A for the period-of-record available from Ecology's online Environmental Information Management System (EIM). Lab reports are presented in Appendix B.

### 2.2.1 Upper Shallow/Shallow Unit Groundwater Quality

The following observations were made regarding 2020 Q2 groundwater concentrations in the Upper Shallow/Shallow Unit wells relative to Site cleanup levels (Table 1):

- TDS concentrations in samples collected at B-1SU, MW-2S, MW-2SU, and MW-CNE-1S exceeded the secondary groundwater standard (500 mg/L). Based on groundwater contours for the 2020 Q2 sampling event (Figure 3), MW-2S is located downgradient of the landfill and MW-CNE-1S is located cross gradient. B-1SU and MW-2SU are located adjacent to the landfill (Figure 2), although as stated above, water level data in the Upper Shallow Unit could not be contoured. Based on the time-series plots (Appendix A), TDS frequently exceeds the groundwater standard in these wells.
- Dissolved arsenic concentrations exceeded the Site compliance level of 0.0005 mg/L in all samples except for MW-1S, MW-3S, and MW-4S. Based on Figure 3, MW-1S and MW-3S are located upgradient of the landfill, whereas MW-4S is located downgradient of the landfill.
- Dissolved iron concentrations exceeded the secondary groundwater standard (0.3 mg/L) in samples collected at Upper Shallow/Shallow Unit wells B-1SU, MW-2S, MW-2SU, and MW-CNE-1S (see Section 2.3 for definition of "j" flags). MW-CNE-1S is located cross gradient of the landfill and had the maximum concentration of dissolved iron relative to the other 2020 Q2 Upper Shallow/Shallow Unit wells. MW-2S is located downgradient of the landfill (Figure 3). B-1SU and

MW-2SU are located adjacent to the landfill but as described about groundwater levels in the Upper Shallow Unit could not be contoured (Figure 2).

- Dissolved manganese concentrations exceeded the secondary groundwater standard (0.05 mg/L) in Upper Shallow/Shallow Unit samples collected at B-1S, B-1SU, MW-2S, MW-2SU, MW-5S, and MW-CNE-1S. Based on Figure 3, wells B-1S, MW-2S, and MW-5S are located downgradient of the landfill and MW-CNE-1S is located cross-gradient. Upper Shallow Unit wells MW-1SU and MW-2SU are located adjacent to the landfill (Figure 2).
- Chloride, nitrate+nitrite, sulfate, dissolved mercury, and dissolved zinc concentrations were less than corresponding cleanup levels or were not detected in all samples collected from Upper Shallow/Shallow Unit wells in 2020 Q2.
- The 2020 Q2 pH measurements made during sampling the Upper Shallow/Shallow Unit wells were all above the groundwater standard range (6.5 to 8.5) with the exceptions of MW-2S, MW-3S, and MW-CNE-1S. The elevated pH measurements and long-term increasing trends in all wells (Appendix A) may suggest the probe should be serviced or replaced.

### **2.2.2 Lower Unit Groundwater Quality**

The Second Periodic Review (Ecology 2016) compared dissolved arsenic, soluble iron, and manganese (unspecified) to corresponding cleanup levels. The following observations were made regarding the 2020 Q2 groundwater concentrations in the Lower Unit wells relative to cleanup levels for arsenic, iron, and manganese (Table 2):

- Dissolved arsenic concentrations in samples MW-1D and MW-2D were above the cleanup level of 0.005 mg/L referenced in the Second Periodic Review (Ecology 2016). MW-1D is located upgradient of the Centralia Landfill while MW-2D is located downgradient of the landfill (Figure 4). During 2020 Q2, the dissolved arsenic concentration in MW-1D (upgradient) was slightly greater than the dissolved arsenic concentration in MW-2D.
- Dissolved iron concentrations in samples collected from B-6DR and MW-3D exceeded the secondary groundwater cleanup level for iron (0.3 mg/L). Based on groundwater contours for the 2020 Q2 event (Figure 4), during 2020 Q2 the dissolved iron concentration in upgradient well MW-3D was greater than the dissolved iron concentration in downgradient well B-6DR. The time-series plots indicate dissolved iron is frequently elevated in upgradient well MW-3D relative to the other Lower Unit wells (Appendix A).
- Dissolved manganese concentrations in all 2020 Q2 samples collected in the Lower Unit wells exceeded the secondary groundwater cleanup levels for manganese (0.05 mg/L). The maximum dissolved manganese concentration in Lower Unit groundwater samples in 2020 Q2 was in upgradient well MW-3D (Figure 4), which is generally consistent with past sampling events (Appendix A).



- The 2020 Q2 pH measurements made during sampling the Lower Unit wells were all above the groundwater standard range (6.5 to 8.5). The elevated pH measurements and long-term increasing trends in all wells (Appendix A) may suggest the probe should be serviced or replaced.

### **2.2.3 Surface Water Quality**

The 2020 Q2 analytical results and applicable site cleanup levels for surface water sample SW-14 are presented in Table 3. The 2020 Q2 concentrations of total and dissolved arsenic in sample SW-14 were above the 0.5 µg/L (0.0005 mg/L) compliance level established for this Site. Although iron and manganese are also contaminants of concern for surface water at the Centralia Landfill, surface water ARARs are not established for these metals.

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## **2.3 QUALITY ASSURANCE/QUALITY CONTROL**

Quality control/quality assurance (QA/QC) reviews were conducted on the reported analyses. All requested analyses were performed and QA/QC assessments indicate that the data are considered usable for the intended purpose of the project. Notable results identified during the QA/QC review are discussed below.

Field duplicates are a type of QA/QC that may be included in a monitoring program to document the precision of the sampling process, the heterogeneity of the matrix, and reproducibility of sample preparation and analysis. A field duplicate is a second, separate sample taken from the same source, collected in separate containers, and analyzed independently by the same method and laboratory. During the 2020 Q2 sampling event, a field duplicate was collected at MW-CNE-1D and assigned the sample name “Dup 1”. The EPA National Functional Guidelines for Inorganic Superfund Methods Data Review (EPA, 2017), or National Functional Guidelines, provides guidance for evaluating results of duplicate samples. For metals analyses in water samples, the National Functional Guidelines recommend a relative percent difference (RPD) control limit of 20 percent if the original and duplicate concentrations are greater than or equal to 5 times the lab reporting limit, or a control limit of plus/minus the lab reporting limit if either the original or sample result is less than 5 times the lab reporting limit (including non-detects).

The 2020 Q2 duplicate analysis of dissolved metals were within National Functional Guidelines with the following exceptions. The concentrations of dissolved iron and dissolved zinc in at least one of the MW-CNE-1D and the field duplicate samples were less than five times the reporting limits and the difference in concentrations between the two samples were greater than the reporting limits. Therefore, consistent with the National Functional Guidelines sample detections of dissolved iron and zinc were flagged by PGG as estimated, “j,” and non-detect results were flagged “Uj.”

The National Functional Guidelines for duplicate evaluations do not extend to conventional parameters, instead PGG used professional judgement for duplicate evaluations of these parameters. Chemical oxygen demand (COD), a conventional parameter, was not

detected in MW-CNE-1D but was detected in the field duplicate at a concentration greater than five times the reporting limit. The concentration of ammonia in at least one of the MW-CNE-1D and the field duplicate samples was less than five times the reporting limits and the difference in concentrations between the two samples was greater than the reporting limits. Using professional judgement, PGG qualified the 2020 Q2 COD and ammonia detections as estimated, “j,” and non-detect COD and ammonia results as “Uj.”

Specific conductivity is measured in the field during sample collection using handheld meters and recorded on field sheets. The 2020 Q2 specific conductivity values presented in Table 1 and Appendix A are consistent with the values recorded on the field sheet; however, the 2020 Q2 specific conductivity values are two to three orders of magnitude lower than measurements made at individual wells between 2009 Q3 and 2018 Q3. An instrument or transcription error is suspected and therefore the 2020 Q2 specific conductivity values have been qualified by PGG as estimated, “j.”

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### **3.0 2020 Q4 WATER QUALITY MONITORING EVENT**

Representatives of the City of Centralia performed the 2020 dry season water quality sampling event in October (2020 Q4). Analytical services were provided by DAL who subcontracted analysis of TOC to Anatek Labs, Inc. and subcontracted analysis of dissolved mercury to ALS Group USA Corp. DAL, Anatek Labs, and ALS Group USA Corp are Ecology-accredited laboratories.

The 2020 Q4 groundwater quality samples were collected from the Shallow Upper/Upper Unit wells and Lower Unit wells identified in Section 1.1 by representatives of the City of Centralia on October 8 and 9, 2020. Dedicated submersible pumps were used to purge and collect the samples. Groundwater samples collected from the Centralia Landfill monitoring wells in 2020 Q4 were analyzed for alkalinity, ammonia, TOC, COD, chloride, hardness, nitrate+nitrite, TDS, sulfate, and nine dissolved metals (arsenic, calcium, iron, magnesium, manganese, mercury, potassium, sodium, and zinc). Handheld meters were used to measure pH, specific conductivity, and temperature in the field during sampling at each well. Groundwater samples were delivered to DAL on October 9, 2020 for analysis. Samples collected for dissolved metals analysis were lab-filtered at DAL, including those samples subcontracted to ALS Group for dissolved mercury analysis.

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#### **3.1 2020 Q4 GROUNDWATER LEVEL DATA**

Water levels in all Centralia Landfill monitoring wells were measured on October 8, 2020. Groundwater level elevations for the 2020 Q4 sampling event were calculated relative to elevations provided by the City and are presented in Figures 5 to 7. Wells completed in the Upper Shallow Unit are configured in a straight line and therefore a groundwater flow direction cannot be calculated (Figure 5). Water level elevations in the Upper Shallow Unit indicate some component of groundwater flow toward the south; however, whether that flow is toward the southwest, south, or southeast cannot be evaluated from the current well network. Groundwater contour maps of the data for the Upper



and Lower Units (Figures 6 and 7) indicate that at the time of measurement, groundwater in these units was flowing toward the west and southwest.

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## **3.2 2020 Q4 RESULTS RELATIVE TO CLEANUP LEVELS**

The 2020 Q4 analytical results and applicable site cleanup levels for the Upper Shallow/Shallow Unit groundwater samples and Lower Unit groundwater samples are presented in Tables 4 and 5 respectively. Time series plots of groundwater quality data are presented in Appendix A for the period-of-record available from Ecology's online Environmental Information Management System (EIM). Lab reports are presented in Appendix C.

### **3.2.1 Upper Shallow/Shallow Unit Groundwater Quality**

The following observations were made regarding 2020 Q4 groundwater concentrations in the Upper Shallow/Shallow Unit wells relative to Site cleanup levels (Table 4):

- The nitrate+nitrite concentration in sample B-2S exceeded the primary groundwater standard (10 mg/L). Well B-S2 is located downgradient of the landfill (Figure 6). The time-series plot indicates that nitrate+nitrite concentrations were elevated in both the 2019 and 2020 dry season sampling events (Appendix A).
- TDS concentrations in samples MW-2S, MW-2SU, and MW-CNE-1S exceeded the secondary groundwater standard (500 mg/L). MW-2SU is located adjacent to the landfill (Figure 5), although as stated above, water level data in the Upper Shallow Unit could not be contoured. Based on the time-series plots (Appendix A), TDS frequently exceeds the groundwater standard in these wells.
- Dissolved arsenic concentrations exceeded the Site compliance level of 0.0005 mg/L in all samples except for MW-1S and MW-3S. These wells are both located upgradient of the landfill based on the 2020 Q4 groundwater contours (Figure 6).
- Dissolved iron concentrations exceeded the secondary groundwater standard (0.3 mg/L) in samples collected at Upper Shallow/Shallow Unit wells B-1SU, B-2S, MW-2S, MW-2SU, and MW-CNE-1S. Based on the time-series plots (Appendix A), dissolved iron frequently exceeds the groundwater standard in these wells. Based on the 2020 Q4 groundwater contour levels (Figure 6), MW-2S is located downgradient of the landfill and MW-CNE-1S is located cross gradient. Wells B-1SU and MW-2SU are located adjacent to the landfill (Figure 5). As stated above, water level data in the Upper Shallow Unit could not be contoured.
- Dissolved manganese concentrations exceeded the secondary groundwater standard (0.05 mg/L) in all samples collected in the Upper Shallow/Shallow Unit wells with the exceptions of samples B-2S, B-2SU, MW-1S, and MW-3S. Wells MW-1S and MW-3S are located upgradient of the landfill and well B2-S is located downgradient of the landfill (Figure 6). As stated above, water level data in the Upper Shallow Unit could not be contoured.

- Chloride, sulfate, dissolved mercury, and dissolved zinc concentrations were less than corresponding cleanup levels or were not detected in all samples collected from Upper Shallow/Shallow Unit wells in 2020 Q4.
- The 2020 Q4 pH measurements made during sampling the Upper Shallow/Shallow Unit wells were all above the groundwater standard range (6.5 to 8.5). The elevated pH measurements and long-term increasing trends in all wells (Appendix A) may suggest the probe should be serviced or replaced.

### **3.2.2 Lower Unit Groundwater Quality**

The Second Periodic Review (Ecology 2016) compared dissolved arsenic, soluble iron, and manganese (unspecified) to corresponding cleanup levels. The following observations were made regarding the 2020 Q4 groundwater concentrations in the Lower Unit wells relative to cleanup levels for arsenic, iron, and manganese (Table 4):

- Dissolved arsenic concentrations in samples B-6DR and MW-2D were above the cleanup level of 0.005 mg/L referenced in the Second Periodic Review (Ecology 2016). These wells are both located downgradient of the landfill based on groundwater contours for 2020 Q4 (Figure 7).
- The dissolved iron concentration in upgradient sample MW-3D (Figure 7) exceeded the secondary groundwater cleanup level (0.3 mg/L) and was the maximum concentration in Lower Unit groundwater samples in 2020 Q4. The time-series plots indicate this is frequently the case (Appendix A).
- Dissolved manganese concentrations in all 2020 Q4 samples collected in the Lower Unit wells exceeded the secondary groundwater cleanup levels for manganese (0.05 mg/L). The maximum dissolved manganese concentration in Lower Unit groundwater samples in 2020 Q4 was in upgradient well MW-3D (Figure 7), which is generally consistent with past sampling events (Appendix A).
- The 2020 Q4 pH measurements made during sampling the Lower Unit wells were all above the groundwater standard range (6.5 to 8.5). The elevated pH measurements and long-term increasing trends in all wells (Appendix A) may suggest the probe should be serviced or replaced.

### **3.2.3 Surface Water Quality**

Surface water station SW-14 was not sampled during 2020 Q4.

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## **3.3 QUALITY ASSURANCE/QUALITY CONTROL**

Quality control/quality assurance (QA/QC) reviews were conducted on the reported analyses. All requested analyses were performed and QA/QC assessments indicate that the data are considered usable for the intended purpose of the project. Notable results were not identified during the QA/QC review with the following exceptions.

The TDS analysis on samples MW-1S, MW-1D, MW-2S, MW-3S, and MW-3D were performed one day outside the method holding time. PGG flagged these results “h” to indicate the holding time exceedance.

During the 2020 Q4 sampling event, a field duplicate was collected at MW-CNE-1D and assigned the sample name “Dup 1”. The 2020 Q4 duplicate analysis of dissolved metals were within National Functional Guidelines with the following exception. The concentrations of dissolved mercury in at least one of the MW-CNE-1D and the field duplicate samples were less than five times the reporting limits and the difference in concentrations between the two samples were greater than the reporting limits. Therefore, consistent with the National Functional Guidelines sample detections of dissolved mercury were flagged by PGG as estimated, “j,” and non-detect results were flagged “Uj.”

Matrix spikes (MS) and matrix spike duplicates (MSD) are QA/QC methods to assess potential analytical interferences caused by the sample matrix based on the ability of the lab to successfully recover target analytes from a field sample. MS are prepared by the lab by adding known concentrations of analytes to aliquots of samples collected in the field. The recovery of the target analytes from the MS sample demonstrates whether the sample matrix has interfered with the analyses. MS are frequently performed in duplicate as an MSD. Comparison of the MS to the MSD indicate the analytical precision in the given matrix. The MS recoveries of dissolved potassium and dissolved zinc from sample MW-1S were outside control limits; therefore, DAL flagged these results “MX.”

Specific conductivity is measured in the field during sample collection using handheld meters and recorded on field sheets. The 2020 Q4 specific conductivity values presented in Table 5 and Appendix A are consistent with the value recorded on the field sheets; however, the 2020 Q4 specific conductivity values are two to three orders of magnitude lower than measurements made at individual wells between 2009 Q3 and 2018 Q3. An instrument or transcription error is suspected and therefore the 2020 Q4 specific conductivity values have been qualified by PGG as estimated, “j.”

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## REFERENCES

- Centralia Public Works. 2016. Compliance Monitoring report for the Centralia Landfill. Letter report provided to Bill Teitzel, Lewis County Environmental Services, by Randy Prevost, City of Centralia.
- CH2M Hill. 1999. Centralia Landfill Compliance Monitoring Plan. Consultant’s report prepared for the Centralia Landfill Closure Group.
- Environmental Protection Agency (EPA). 2016. National Functional Guidelines for Inorganic Superfund Methods Data Review. Office of Superfund Remediation and Technology Innovation (OSRTI). OLEM 9355.0-133. EPA-540-R-2016-001. September 2016.
- Unknown Author. 1999. Exhibit B Cleanup Action Plan Centralia Landfill Lewis County, Washington. September 1999.

Washington State Department of Ecology (Ecology). 2016. Second Periodic Review Report Final Centralia Landfill Facility Site ID #: 1154. Southwest Region Office Toxics Cleanup Program. January 2016.

We are pleased to provide you with these monitoring services. Please call us if you have any questions

Sincerely,

**Pacific Groundwater Group**



Stephen P. Swope  
Principal Hydrogeologist

Cc: Panjini Balaraju, Department of Ecology  
Kallan Kersavage, Lewis County  
Greg Gachowsky, Lewis County

Attachments: Table 1. Shallow Upper/Upper Groundwater Quality Summary, 2020 Q2  
Table 2. Lower Unit Groundwater Quality Summary, 2020 Q2  
Table 3. Surface Water Quality Summary, 2020 Q2  
Table 4. Shallow Upper/Upper Groundwater Quality Summary, 2020 Q4  
Table 5. Lower Unit Groundwater Quality Summary, 2020 Q4  
Figure 1. Centralia Landfill Vicinity  
Figure 2. Shallow Upper Aquifer Groundwater Elevations 2020 Q2  
Figure 3. Upper Aquifer Groundwater Elevations 2020 Q2  
Figure 4. Lower Aquifer Groundwater Elevations 2020 Q2  
Figure 5. Shallow Upper Aquifer Groundwater Elevations 2020 Q4  
Figure 6. Upper Aquifer Groundwater Elevations 2020 Q4  
Figure 7. Lower Aquifer Groundwater Elevations 2020 Q4  
Appendix A. Water Quality Time Series Plots  
Appendix B. 2020 Q2 Lab Reports  
Appendix C. 2020 Q4 Lab Reports

*Centralia2020SummaryRpt-Final*

Table 1. Shallow Upper/Upper Groundwater Quality Summary, 2020 Q2

Parameter Group	Constituent	Units	CAP Cleanup Level	CAP Compliance Level	Groundwater Standards *	B-1S	B-1SU	B-2S	B-2SU	MW-1S	MW-2S	MW-2SU	MW-3S	MW-4S	MW-5S	MW-CNE-1S
Field Parameters																
	Depth to Water	feet				7.98	8.37	7.17	7.78	6.16	4.4	5.47	9.55	7.46	5.83	4.46
	pH, Field	std. units			8.5	8.93	8.54	8.81	8.73	8.54	8.37	8.36	7.84	9.11	8.99	8.25
	Specific Conductivity (at 25 deg C)	uS/cm	700			0.376 j	1.08 j	0.272 j	0.459 j	0.198 j	2.13 j	2.27 j	0.223 j	0.253 j	0.155 j	1.46 j
	Temperature, 0 C	0 C	0	0	0	12.26	11.58	12.56	12.03	14.77	13.75	12.7	14.66	12.56	11.93	12.5
Conventional Parameters																
	Alkalinity, Carb as CaCO3	mg/L				162	431	40	203	51	533	493	47	62	42	525
	Ammonia as N, Total	mg/L				0.63 j	0.3 Uj	0.3 Uj	0.3 Uj	0.3 Uj	0.34 j	0.3 Uj	0.3 Uj	0.3 Uj	0.3 Uj	0.3 Uj
	Carbon, Total Organic	mg/L				0.868	5	1.43	1.16	0.418	11	11.3	0.47	1.02	2.21	10.6
	Chemical Oxygen Demand (COD)	mg/L				19.8 j	33 j	19.8 j	21.7 j	10 Uj	32.3 j	45.7 j	10 Uj	10 Uj	10 Uj	26.5 j
	Chloride	mg/L	250		250	5.1	65.5	2.2	2.1	1.7	220	213	5	1.9	3.8	57.2
	Hardness	mg/L				136	324	58.2	150	47.2	661	597	46	48.5	37.9	484
	Nitrate+Nitrite as N	mg/L			10	0.1 U	0.1 U	2.5	0.62	1.3	0.13	0.12	0.95	0.55	0.39	0.1 U
	Solids, Total Dissolved	mg/L			500	213	514	95.2	206	107	982	984	112	96.8	73.6	610
	Sulfate	mg/L			250	0.2 U	0.25	8.7	9.3	10.6	1	0.53	16.7	5.1	3.9	0.2 U
Dissolved Metals																
	Arsenic, Dissolved	mg/L	0.00027	0.0005	0.00005	0.015	0.0021	0.00095	0.0012	0.0005 U	0.0202	0.0015	0.0005 U	0.0005 U	0.00055	0.0063
	Calcium, Dissolved	mg/L				32.9	61.5	12.5	26.5	11.7	136	141	12.3	11.2	8.98	90
	Iron, Dissolved	mg/L	0.3		0.3	0.05 Uj	0.956 j	0.05 Uj	0.05 Uj	0.05 Uj	6.5 j	5.8 j	0.05 Uj	0.05 Uj	0.143 j	16.9 j
	Magnesium, Dissolved	mg/L				12.3	48.3	4.29	21.7	3.95	74.2	76	3.14	5.59	4.11	60
	Manganese, Dissolved	mg/L	0.05		0.05	0.874	4.06	0.0164	0.00095	0.0008	8.94	7.84	0.0126	0.0068	0.32	2.47
	Mercury, Dissolved	mg/L			0.002	0.0000007	0.0000012	0.000001	0.0000008	0.0000008	0.0000007	0.000001	0.0000005	0.0000008	0.000001	0.0000006
	Potassium, Dissolved	mg/L				4.81	2.32	0.487	1.64	0.516	6.17	6.92	0.489	0.899	2.07	4.54
	Sodium, Dissolved	mg/L				13	56.4	5.32	20.6	8.4	23.3	27.5	11	10.9	7.57	22
	Zinc, Dissolved	mg/L			5	0.004 j	0.0171 j	0.0082 j	0.0089 j	0.0021 j	0.0055 j	0.0122 j	0.0071 j	0.01 j	0.0128 j	0.0047 j

CAP = Cleanup Action Plan (September, 1999)  
\*Groundwater Primary Standards for Nitrate, Arsenic, and Mercury; Groundwater Secondary Standards for remaining parameters. Arsenic has a primary drinking water standard of 0.01 mg/L and a state ground water quality standard of 0.00005 mg/L. Groundwater Standards presented in this table are consistent with Centralia Landfill Second Periodic Review, Appendix 6.3 (Washington Department of Ecology, January 2016)  
U = not detected at associated reporting limit  
j = estimated  
MX = matrix spike recovery outside control limits

2020 Q2

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Table 2. Lower Unit Groundwater Quality Summary, 2020 Q2

Parameter Group	Constituent	Units	CAP Cleanup Level	Groundwater Standards *	B-6DR	B-8DR	MW-1D	MW-2D	MW-3D	MW-CNE-1D
Field Parameters										
	Depth to Water	feet			7.45	8.48	8.6	5.57	10.38	5.32
	pH, Field	std. units		8.5	9.07	9.05	9.07	8.91	8.59	8.56
	Specific Conductivity (at 25 deg C)	uS/cm			0.234 j	0.679 j	0.462 j	0.519 j	0.344 j	0.426 j
	Temperature, 0 C	0 C	0	0	12.99	12.47	14.26	13.61	14.19	12.37
Conventional Parameters										
	Alkalinity, Carb as CaCO3	mg/L			86	208	162	161	104	151
	Ammonia as N, Total	mg/L			0.49 j	0.67 j	1.6 j	1.7 j	0.73 j	0.92 j
	Carbon, Total Organic	mg/L			3.02	1.96	3.77	1.84	1.11	1.45
	Chemical Oxygen Demand (COD)	mg/L			18 j	22.9 j	10 Uj	10 U	10 Uj	10 Uj
	Chloride	mg/L			6	5.1	5.6	10.9	5.4	6.4
	Hardness	mg/L			142	54.1	107	130	80.4	103
	Nitrate+Nitrite as N	mg/L			0.23	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
	Solids, Total Dissolved	mg/L			115	273	201	204	174	162
	Sulfate	mg/L			1.6	21	0.2 U	0.2 U	0.2 U	0.2 U
Dissolved Metals										
	Arsenic, Dissolved	mg/L	0.005	0.005	0.0017	0.0005 U	0.009	0.0061	0.0015	0.0005 U
	Calcium, Dissolved	mg/L			15.5	35.5	24.3	31	19.1	28.3
	Iron, Dissolved	mg/L	0.3	0.3	0.125 j	0.05 Uj	0.0891 j	0.05 Uj	0.967 j	0.107 j
	Magnesium, Dissolved	mg/L			5.16	13.7	8.75	12.2	7.99	7.71
	Manganese, Dissolved	mg/L	0.05	0.05	0.37	0.256	0.538	0.838	1.03	0.216
	Mercury, Dissolved	mg/L			0.0000011	0.0000005 U	0.0000007	0.0000006	0.0000009	0.0000007
	Potassium, Dissolved	mg/L			2.16	1.84	1.68	2.39	2.27	1.95
	Sodium, Dissolved	mg/L			8.88	42.2	24.9	17.3	13.2	21.6
	Zinc, Dissolved	mg/L			0.0059 j	0.0055 j	0.0056 j	0.0018 j	0.0038 j	0.001 Uj

CAP = Cleanup Action Plan (September, 1999)  
\*Groundwater Standards presented in this table are consistent with Centralia Landfill Second Periodic Review, Appendix 6.3 (Washington Department of Ecology, January 2016)  
U = not detected at associated reporting limit  
j = estimated



Table 3. Surface Water Quality Summary, 2020 Q2

Parameter Group	Constituent	Units	CAP Cleanup Level	CAP Compliance Level	SW-14
<b>Field Parameters</b>					
	pH, Field	std. units			8.88
	Specific Conductivity (at 25 deg C)	uS/cm			0.54 j
	Temperature, 0 C	0 C	0	0	11.25
<b>Conventional Parameters</b>					
	Alkalinity, Carb as CaCO3	mg/L			161
	Ammonia as N, Total	mg/L			0.3 U
	Carbon, Total Organic	mg/L			9.71
	Chemical Oxygen Demand (COD)	mg/L			38.6
	Chloride	mg/L			34
	Hardness	mg/L			166
	Nitrate+Nitrite as N	mg/L			0.1 U
	Solids, Total Dissolved	mg/L			254
	Sulfate	mg/L			1.9
<b>Dissolved Metals</b>					
	Arsenic, Dissolved	mg/L	0.00027	0.0005	0.00062
	Calcium, Dissolved	mg/L			33.2
	Iron, Dissolved	mg/L			0.217
	Magnesium, Dissolved	mg/L			18.5
	Manganese, Dissolved	mg/L			1.8
	Mercury, Dissolved	mg/L			0.0000013
	Potassium, Dissolved	mg/L			0.765
	Sodium, Dissolved	mg/L			12.5
	Zinc, Dissolved	mg/L			0.0237
<b>Total Metals</b>					
	Arsenic, Total	mg/L	0.00027	0.0005	0.00087
	Calcium, Total	mg/L			34.4
	Iron, Total	mg/L			1.51
	Magnesium, Total	mg/L			19.4
	Manganese, Total	mg/L			1.85
	Mercury, Total	mg/L			0.0000029
	Potassium, Total	mg/L			0.804
	Sodium, Total	mg/L			12.8
	Zinc, Total	mg/L			0.0164

CAP = Cleanup Action Plan (September, 1999)

U = not detected at associated reporting limit

J = estimated

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Table 4. Shallow Upper/Upper Groundwater Quality Summary, 2020 Q4

Parameter Group	Constituent	Units	CAP Cleanup Level	CAP Compliance Level	Groundwater Standards *	B-1S	B-1SU	B-2S	B-2SU	MW-1S	MW-2S	MW-2SU	MW-3S	MW-4S	MW-5S	MW-CNE-1S
Field Parameters																
	Depth to Water	feet				10.81	11.33	10.85	11.5	9.3	8.35	9.3	13.1	9.5	9.63	9.11
	pH, Field	std. units			8.5	9.08	9.05	9.13	9	9.28	9.31	9.23	9.51	9.03	8.99	9.43
	Specific Conductivity (at 25 deg C)	uS/cm	700			0.432 j	0.69 j	0.442 j	0.527 j	0.159 j	2.11 j	1.24 j	0.23 j	0.237 j	0.309 j	1.39 j
	Temperature, 0 C	0 C	0	0	0	14.59	13.75	15.07	15.62	15.66	14.86	15.34	15.66	15.31	15.37	14.28
Conventional Parameters																
	Alkalinity, Carb as CaCO3	mg/L				115	183	32	117	25	330	292	26	45	54	431
	Ammonia as N, Total	mg/L				0.68	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.61	0.3 U	0.3 U	0.3 U	0.3 U
	Carbon, Total Organic	mg/L				0.914	3.48	1.32	0.639	0.207	12	6.78	0.561	1.06	1.24	8.35
	Chemical Oxygen Demand (COD)	mg/L				10 U	11.1	10 U	10 U	3.4	41.9	22.6	40.9	10 U	10 U	30.3
	Chloride	mg/L	250		250	7.9	12.3	4.2	2.3	1.7	223	129	4.9	2.6	3.7	54.6
	Hardness	mg/L				136	198	139	187	42.4	890	678	48.9	63.7	87.6	442
	Nitrate+Nitrite as N	mg/L			10	0.21	0.1 U	23.6	0.2	0.67	0.48	0.28	2.1	0.1 U	0.79	0.3
	Solids, Total Dissolved	mg/L			500	196	236	256	316	272 h	780 h	1020	166 h	138	366	606
	Sulfate	mg/L			250	0.32	0.24	5.1	5.8	8.1	0.87	8.15	15.2	6.8	6	0.15
Dissolved Metals																
	Arsenic, Dissolved	mg/L	0.00027	0.0005	0.00005	0.0167	0.0071	0.00084	0.002	0.0005 U	0.025	0.0034	0.0005 U	0.0007	0.00065	0.0092
	Calcium, Dissolved	mg/L				32.4	39.8	36.9	36.3	10.1	142	115	12.7	13.7	17.6	102
	Iron, Dissolved	mg/L	0.3		0.3	0.0676	4.18	6.36	0.05 U	0.05 U	8.81	15.6	0.05 U	0.05 U	0.05 U	24.3
	Magnesium, Dissolved	mg/L				12.1	28.6	12.5	24.5	3.21	73.8	55.1	3.28	6.21	8.87	67.7
	Manganese, Dissolved	mg/L	0.05		0.05	0.926	2.72	0.0253	0.00732	0.0005 U	9.19	5.55	0.002986	0.2437	0.253	2.42
	Mercury, Dissolved	mg/L			0.002	0.0000009 j	0.0000032 j	0.0000013 j	0.0000082 j	0.0000006 j	0.0000036 j	0.0000006 j	0.0000005 Uj	0.0000007 j	0.0000007 j	0.0000023 j
	Potassium, Dissolved	mg/L				5.58	2.55	0.916	2.06	0.489 MX	6.21	5.95	0.573	0.985	2.19	4.36
	Sodium, Dissolved	mg/L				13.7	26.4	11	20.2	7.42	23.2	32.3	11.6	9.42	12.2	21.9
	Zinc, Dissolved	mg/L			5	0.001	0.001 U	0.0069	0.0018	0.001 U,MX	0.002	0.0055	0.0084	0.0036	0.0049	0.0011

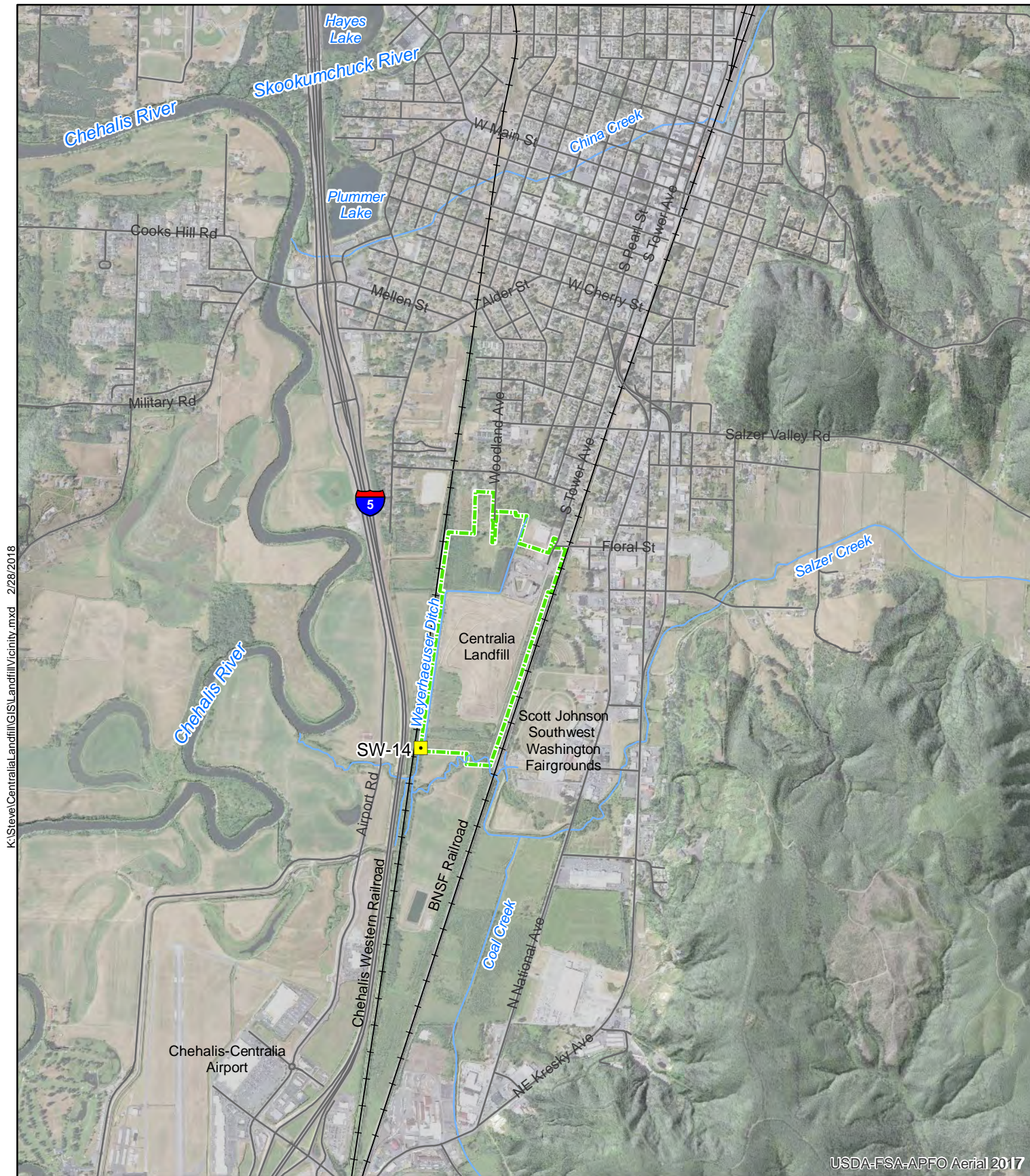
CAP = Cleanup Action Plan (September, 1999)  
\*Groundwater Primary Standards for Nitrate, Arsenic, and Mercury; Groundwater Secondary Standards for remaining parameters. Arsenic has a primary drinking water standard of 0.01 mg/L and a state ground water quality standard of 0.00005 mg/L. Groundwater Standards presented in this table are consistent with Centralia Landfill Second Periodic Review, Appendix 6.3 (Washington Department of Ecology, January 2016)  
U = not detected at associated reporting limit  
j = estimated  
MX = matrix spike recovery outside control limits

Table 5. Lower Unit Groundwater Quality Summary, 2020 Q4

Parameter Group	Constituent	Units	CAP Cleanup Level	Groundwater Standards *	B-6DR	B-8DR	MW-1D	MW-2D	MW-3D	MW-CNE-1D
Field Parameters										
	Depth to Water	feet			10.14	10.98	11.6	8.75	15	8.87
	pH, Field	std. units		8.5	8.95	9.05	9.42	9.17	9.51	9.31
	Specific Conductivity (at 25 deg C)	uS/cm			0.334 j	0.569 j	0.283 j	0.7 j	0.326 j	0.505 j
	Temperature, 0 C	0 C	0	0	13.52	14.55	14.61	14.66	14.72	13.11
Conventional Parameters										
	Alkalinity, Carb as CaCO3	mg/L			79	144	52	102	93	98
	Ammonia as N, Total	mg/L			1.22	0.63	0.36	1.6	0.62	0.37
	Carbon, Total Organic	mg/L			2.92	1.78	1.92	2.1	1.25	1.62
	Chemical Oxygen Demand (COD)	mg/L			10 U	10 U	10 U	10 U	10 U	10 U
	Chloride	mg/L			13.3	5.4	2.6	11.7	5.5	6.7
	Hardness	mg/L			125	166	71.6	153	91.2	112
	Nitrate+Nitrite as N	mg/L			0.1 U	0.1 U	0.12	0.1 U	0.1 U	0.1 U
	Solids, Total Dissolved	mg/L			240	302	126 h	250	206 h	470
	Sulfate	mg/L			0.43	27.3	3.1	0.2 U	0.2 U	0.2 U
Dissolved Metals										
	Arsenic, Dissolved	mg/L	0.005	0.005	0.0062	0.0005 U	0.0013	0.0062	0.0018	0.0005 U
	Calcium, Dissolved	mg/L			29	41.4	21	34	18.8	33.3
	Iron, Dissolved	mg/L	0.3	0.3	0.276	0.05 U	0.05 U	0.05 U	0.956	0.077
	Magnesium, Dissolved	mg/L			10.4	16	2.93	11.3	7.55	8.21
	Manganese, Dissolved	mg/L	0.05	0.05	0.72	0.293	0.115	0.798	1.01	0.24
	Mercury, Dissolved	mg/L			0.0000045 j	0.0000011 j	0.0000006 j	0.0000005 Uj	0.0000024 j	0.0000006 j
	Potassium, Dissolved	mg/L			3.2	2.3	1.35	2.36	2.21	2.18
	Sodium, Dissolved	mg/L			14.2	48	11.9	16.3	12.6	24.1
	Zinc, Dissolved	mg/L			0.001 U	0.001 U	0.0044	0.001 U	0.001 U	0.001 U

CAP = Cleanup Action Plan (September, 1999)  
\*Groundwater Standards presented in this table are consistent with Centralia Landfill Second Periodic Review, Appendix 6.3 (Washington Department of Ecology, January 2016)  
U = not detected at associated reporting limit  
j = estimated

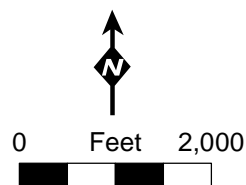




K:\Steve\Centralia Landfill\GIS\Landfill Vicinity.mxd 2/28/2018

USDA-FSA-APFO Aerial 2017

- Surface Water Monitoring Station
- City Property

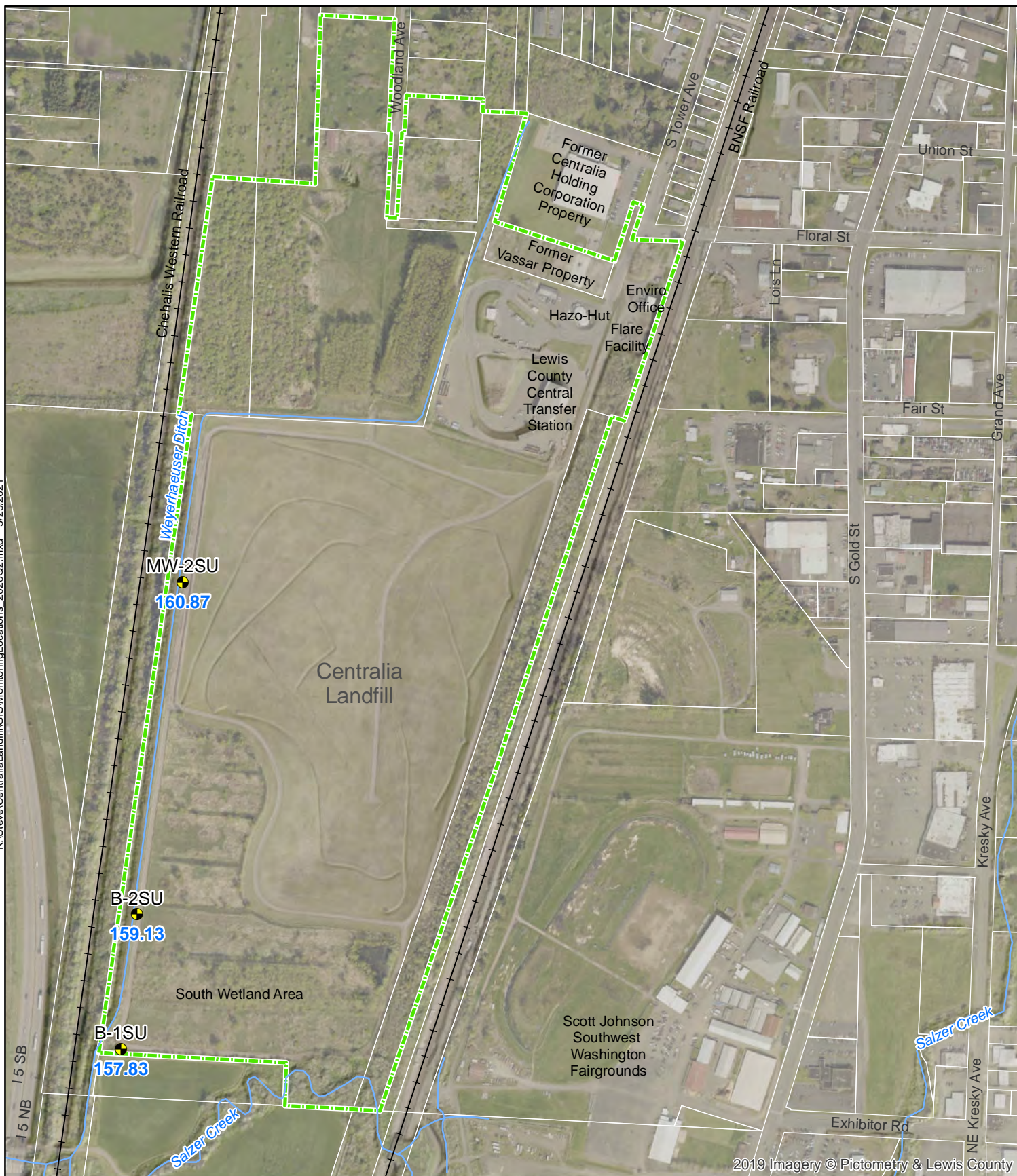


**Figure 1**  
Centralia Landfill  
Vicinity

Centralia Landfill  
Compliance Monitoring

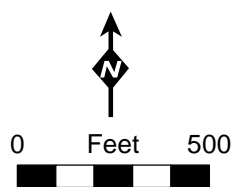
**PgG**





2019 Imagery © Pictometry & Lewis County

- Monitoring Wells (with Measured Groundwater Elevation)
- City Property



**Figure 2**  
**Shallow Upper Aquifer**  
**Groundwater Elevations**  
**2020 Q2**

Centralia Landfill  
 Compliance Monitoring

**PgG**



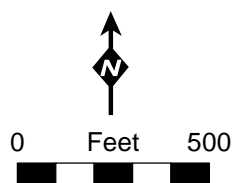


Figure 3

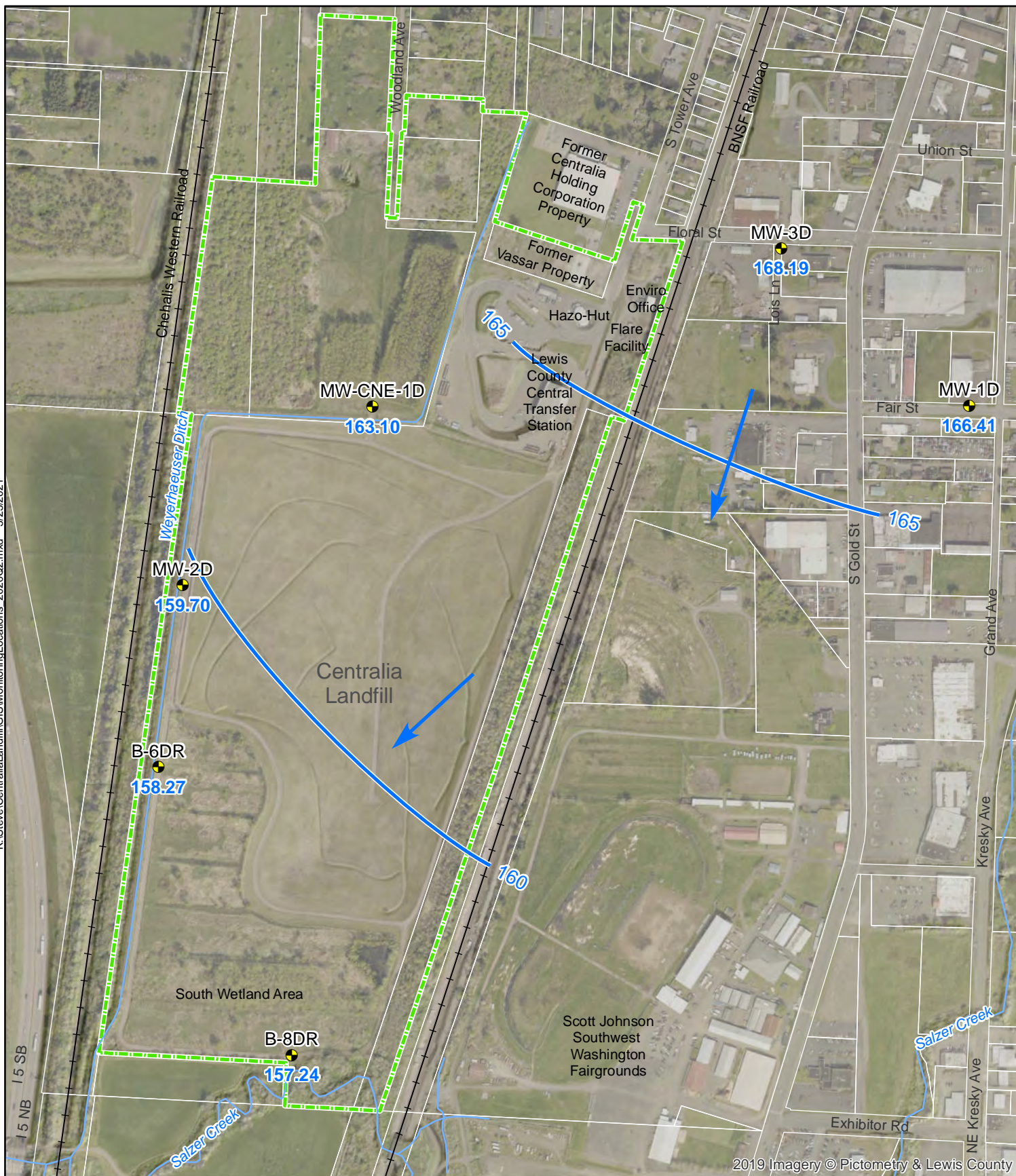
Upper Aquifer  
Groundwater Elevations  
2019 Q2

Centralia Landfill  
Compliance Monitoring

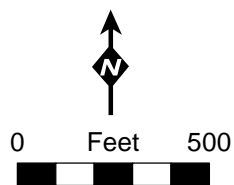
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- Monitoring Wells (with Measured Groundwater Elevation)
- Groundwater Elevation Contours
- ➔ Estimated Flow Path
- City Property



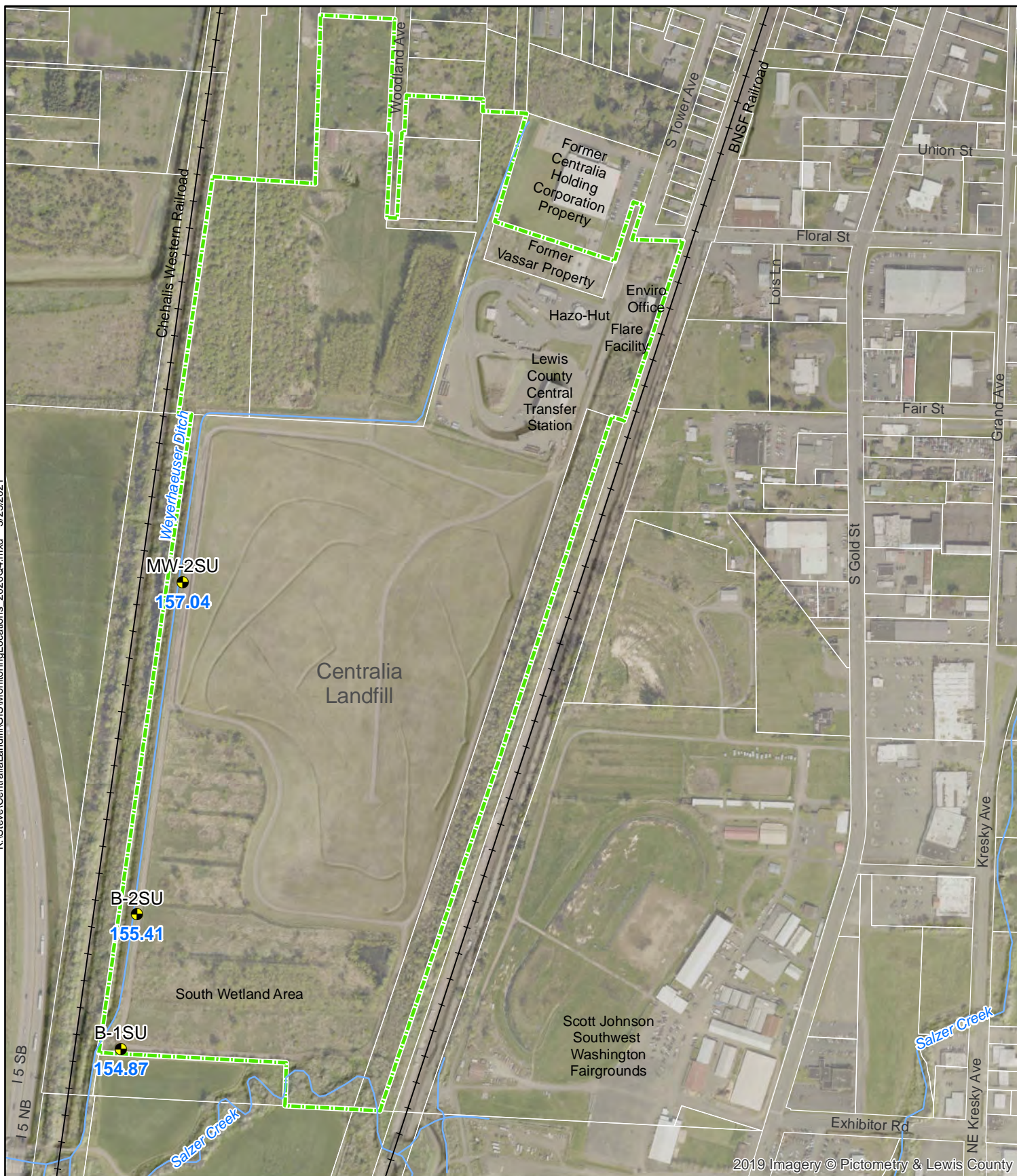
**Figure 4**

**Lower Aquifer  
Groundwater Elevations  
2020 Q2**

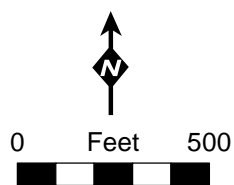
Centralia Landfill  
Compliance Monitoring

**PgG**





- Monitoring Wells (with Measured Groundwater Elevation)
- City Property



**Figure 5**  
**Shallow Upper Aquifer**  
**Groundwater Elevations**  
**2020 Q4**

Centralia Landfill  
 Compliance Monitoring





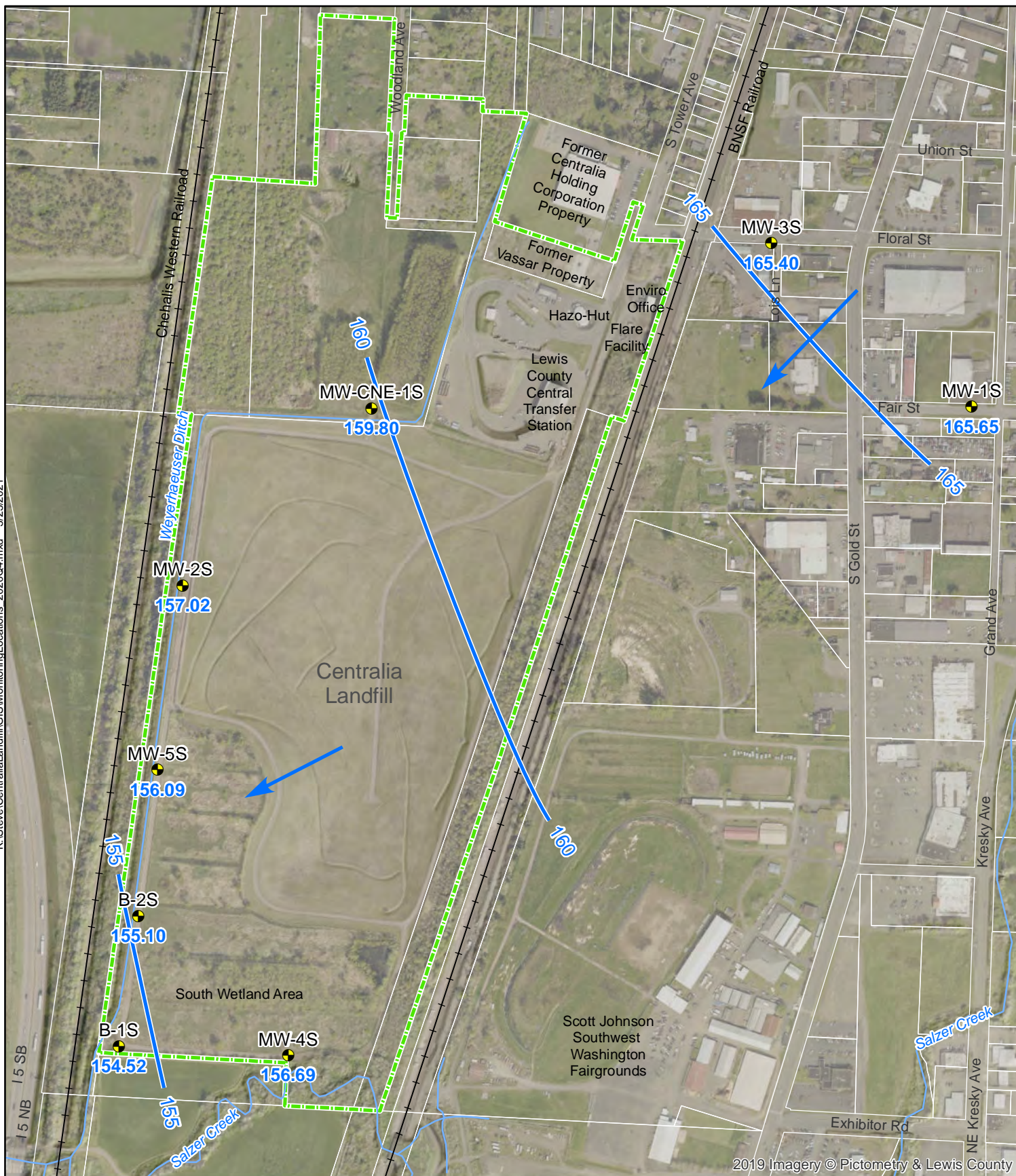


Figure 6

Upper Aquifer  
Groundwater Elevations  
2019 Q4

Centralia Landfill  
Compliance Monitoring

PgG

- Monitoring Wells (with Measured Groundwater Elevation)
- Groundwater Elevation Contours
- Estimated Flow Path
- City Property

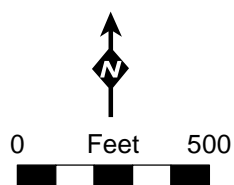




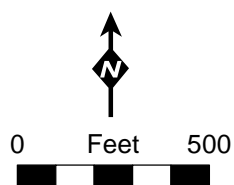


Figure 7

Lower Aquifer  
Groundwater Elevations  
2020 Q4

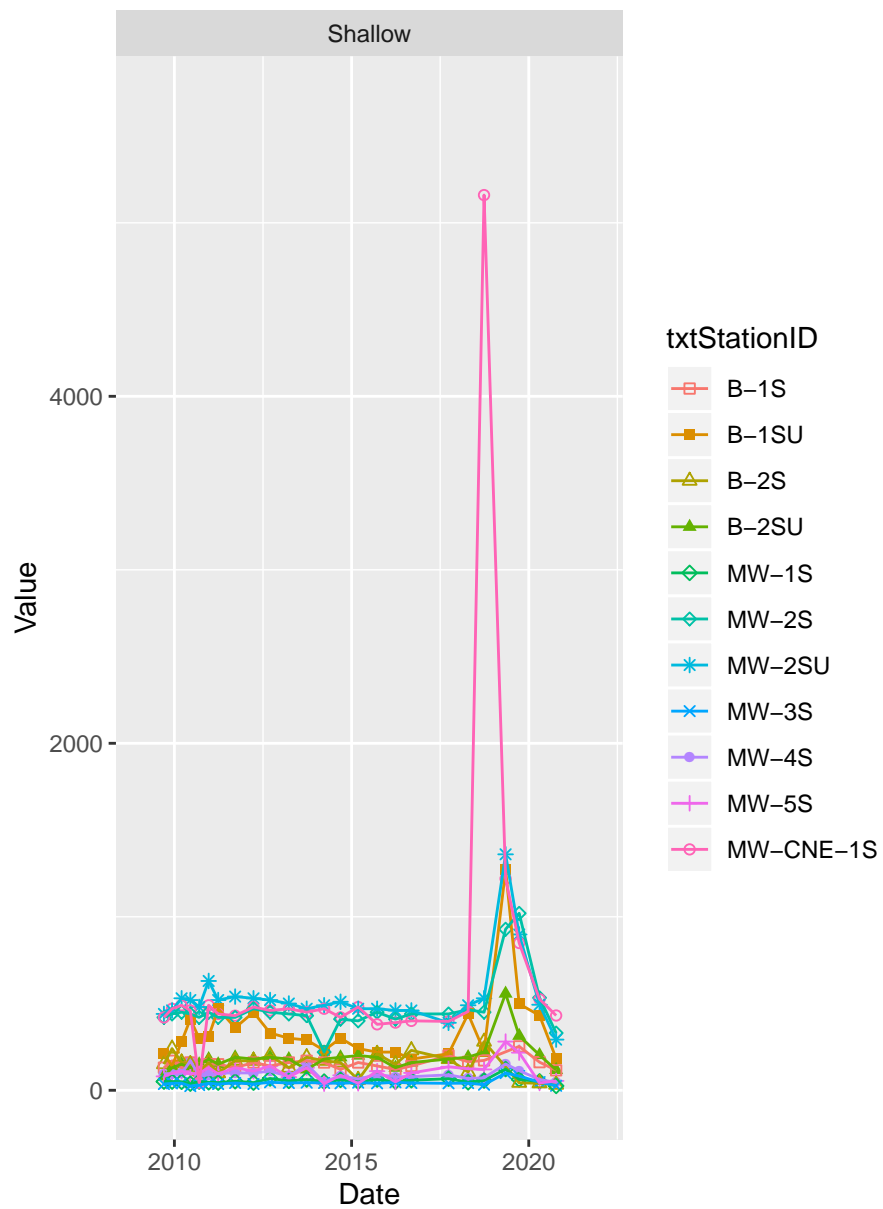
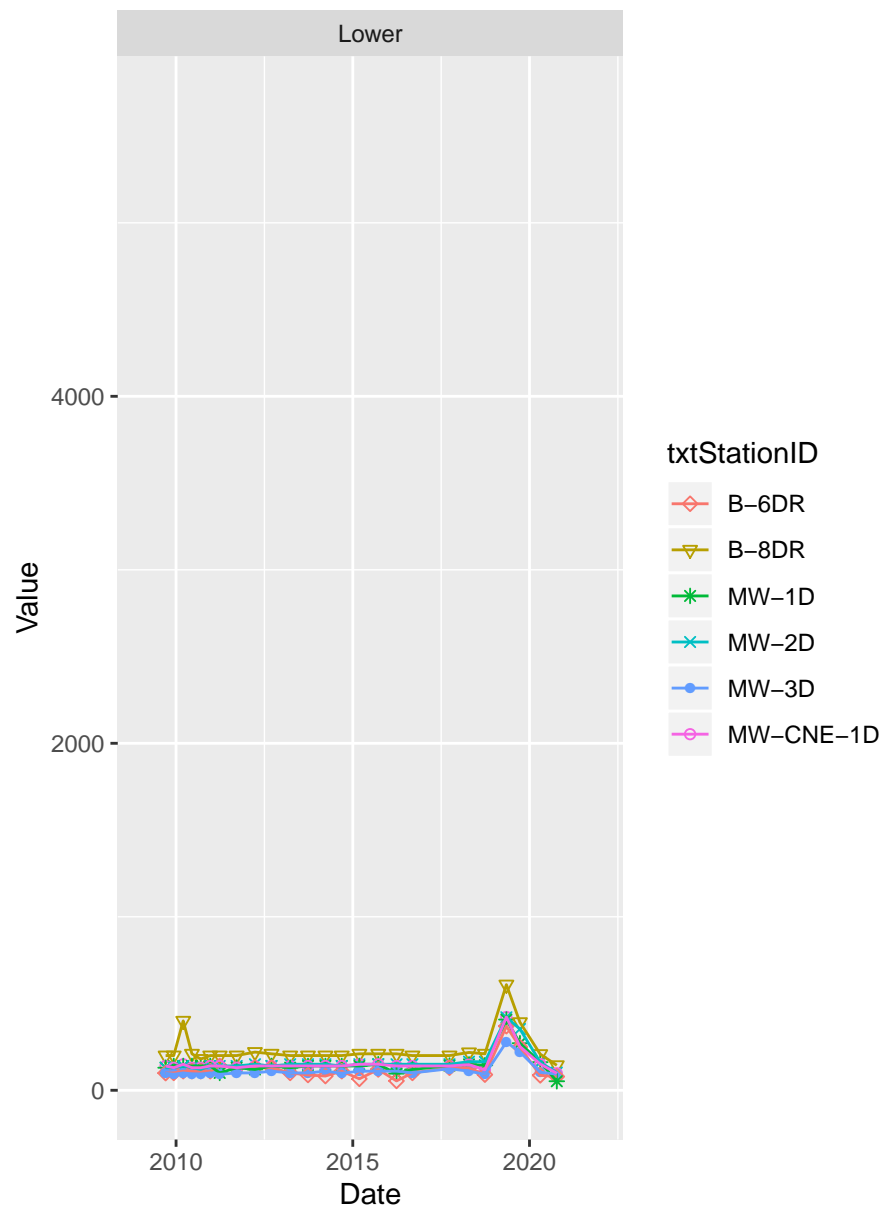
Centralia Landfill  
Compliance Monitoring

PgG



## **APPENDIX A**

### **GROUNDWATER QUALITY TIME SERIES PLOTS**

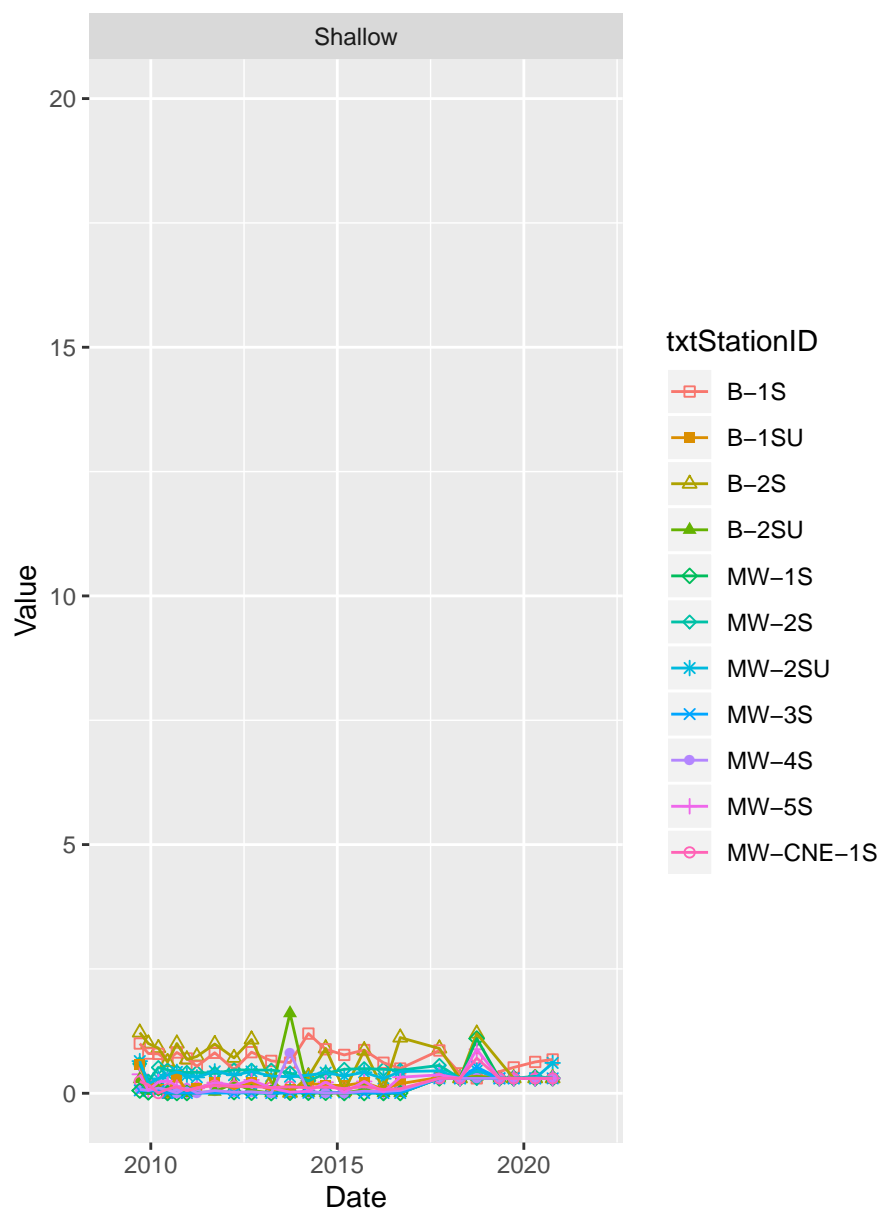
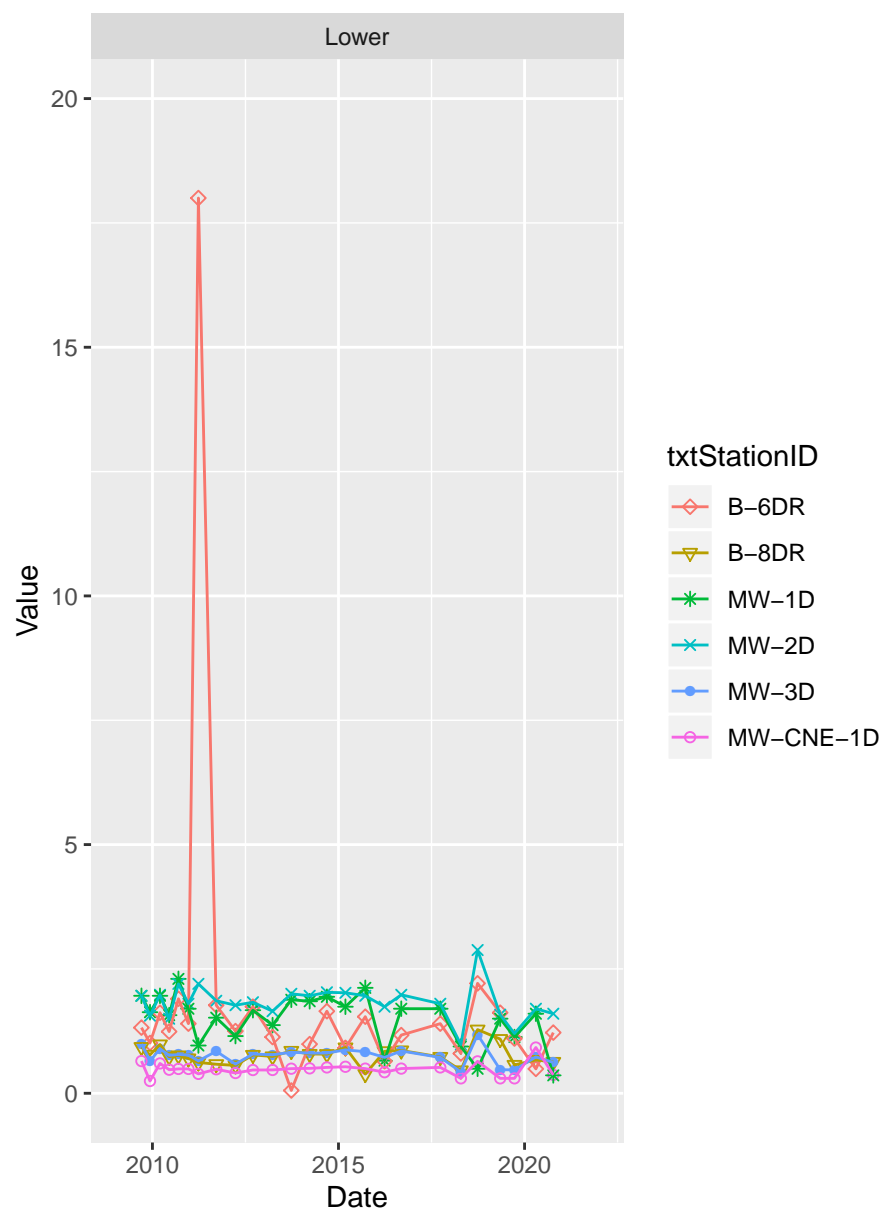


Non-detect values plotted at Method Reporting Limit value

**Figure A1. Time Series**

**Alkalinity, Carb as CaCO<sub>3</sub>, mg/L**

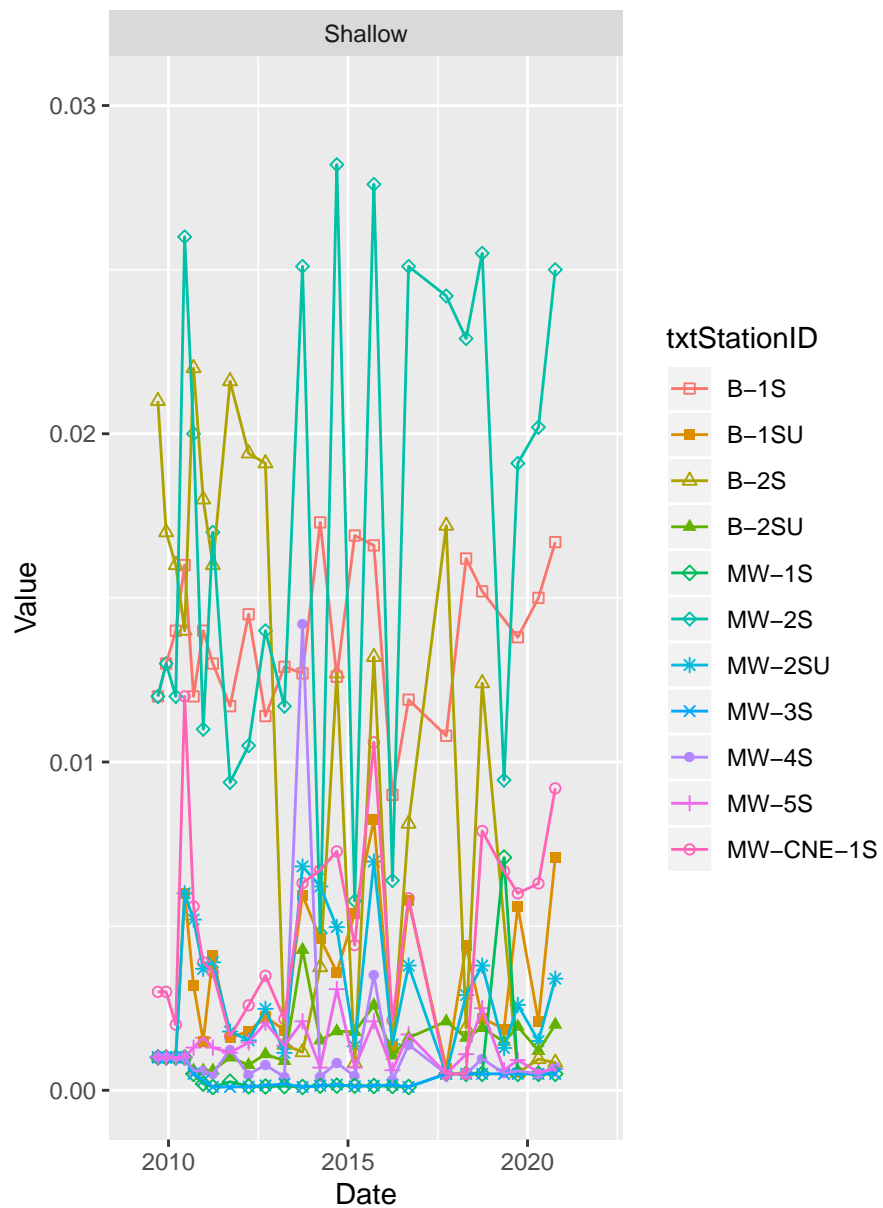
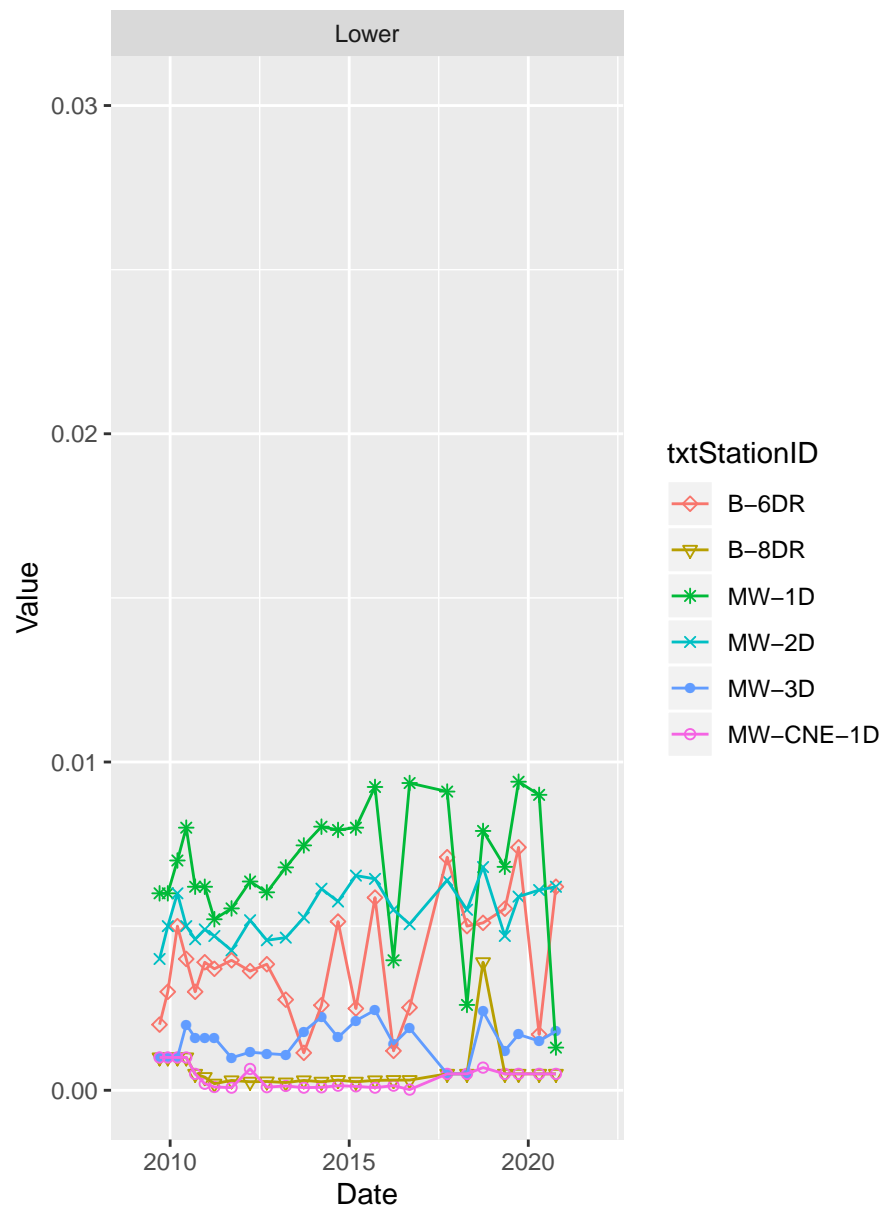




Non-detect values plotted at Method Reporting Limit value

**Figure A2. Time Series**

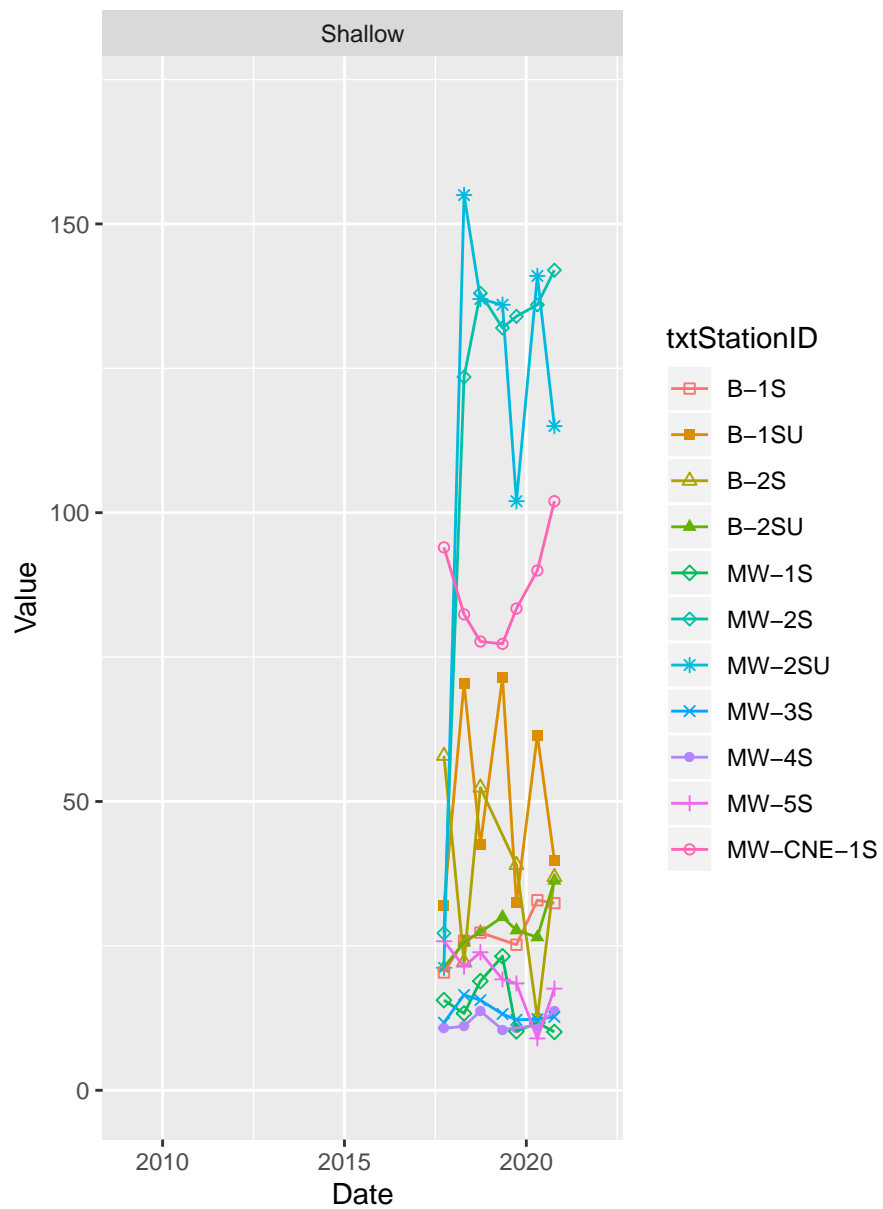
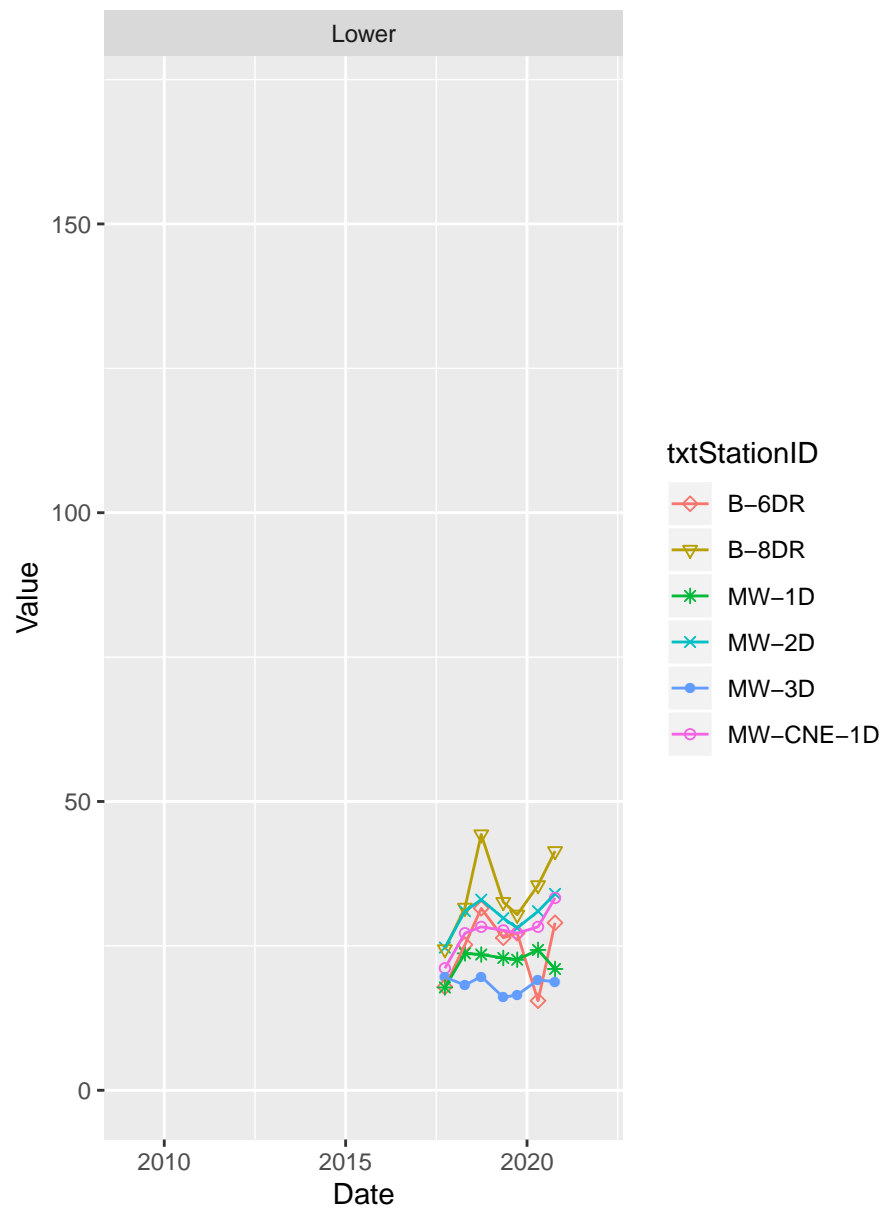
**Ammonia as N, Total, mg/L**



Non-detect values plotted at Method Reporting Limit value

**Figure A3. Time Series**

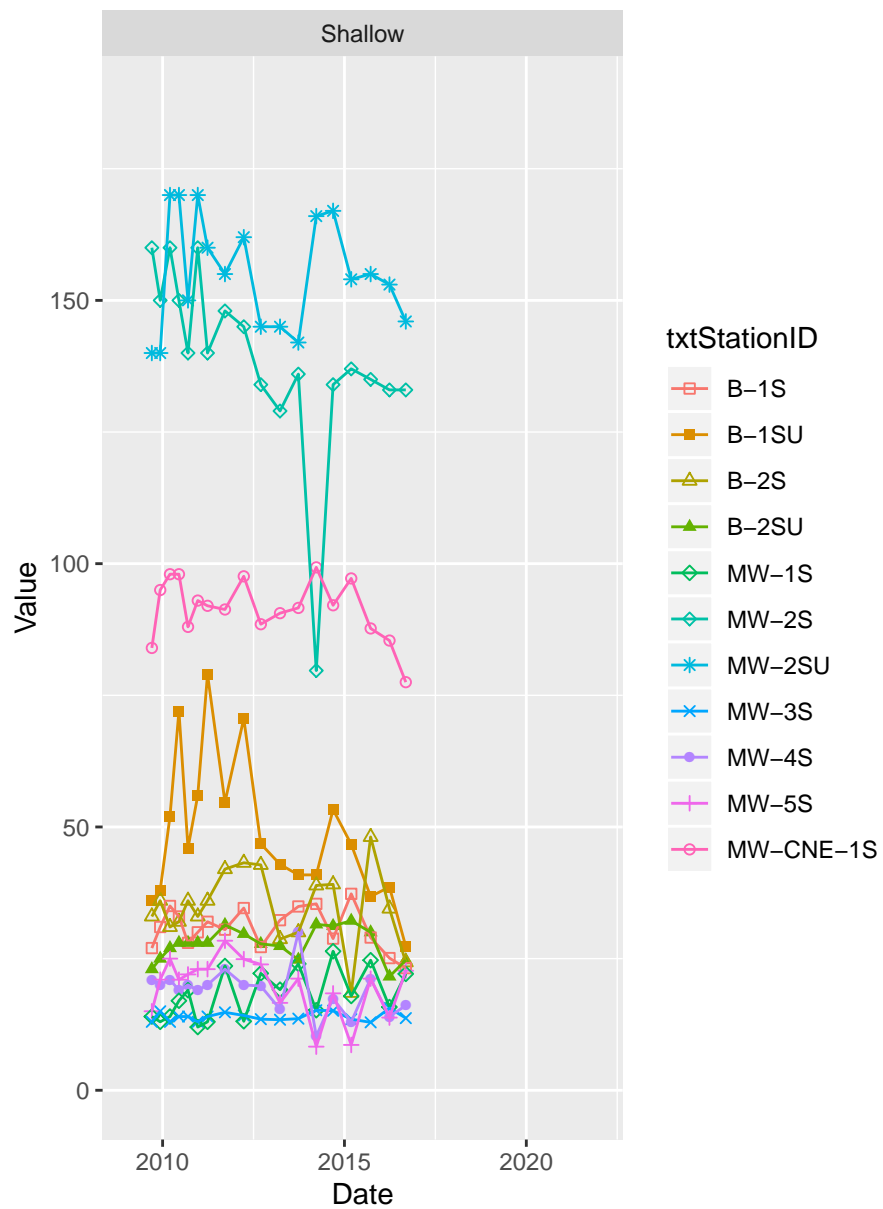
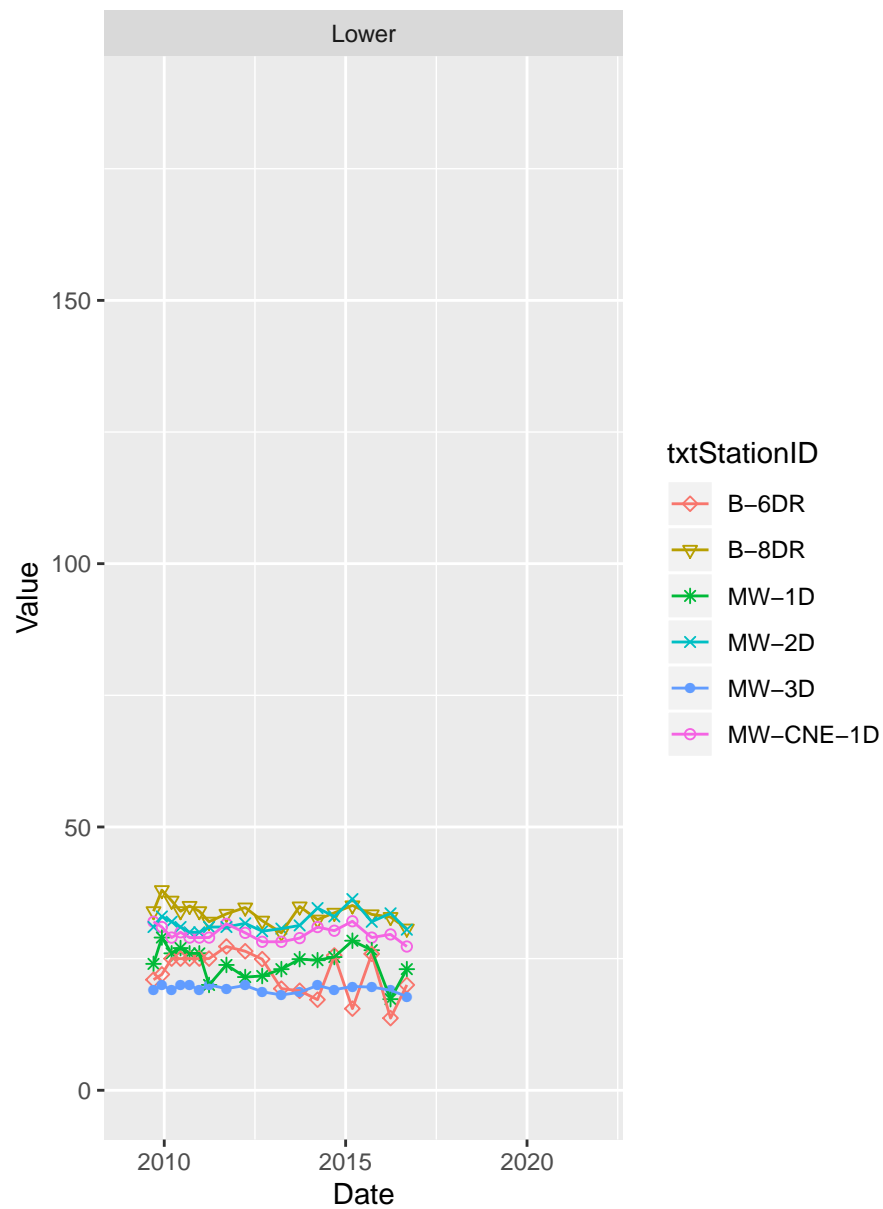
**Arsenic, Dissolved, mg/L**



Non-detect values plotted at Method Reporting Limit value

**Figure A4. Time Series**

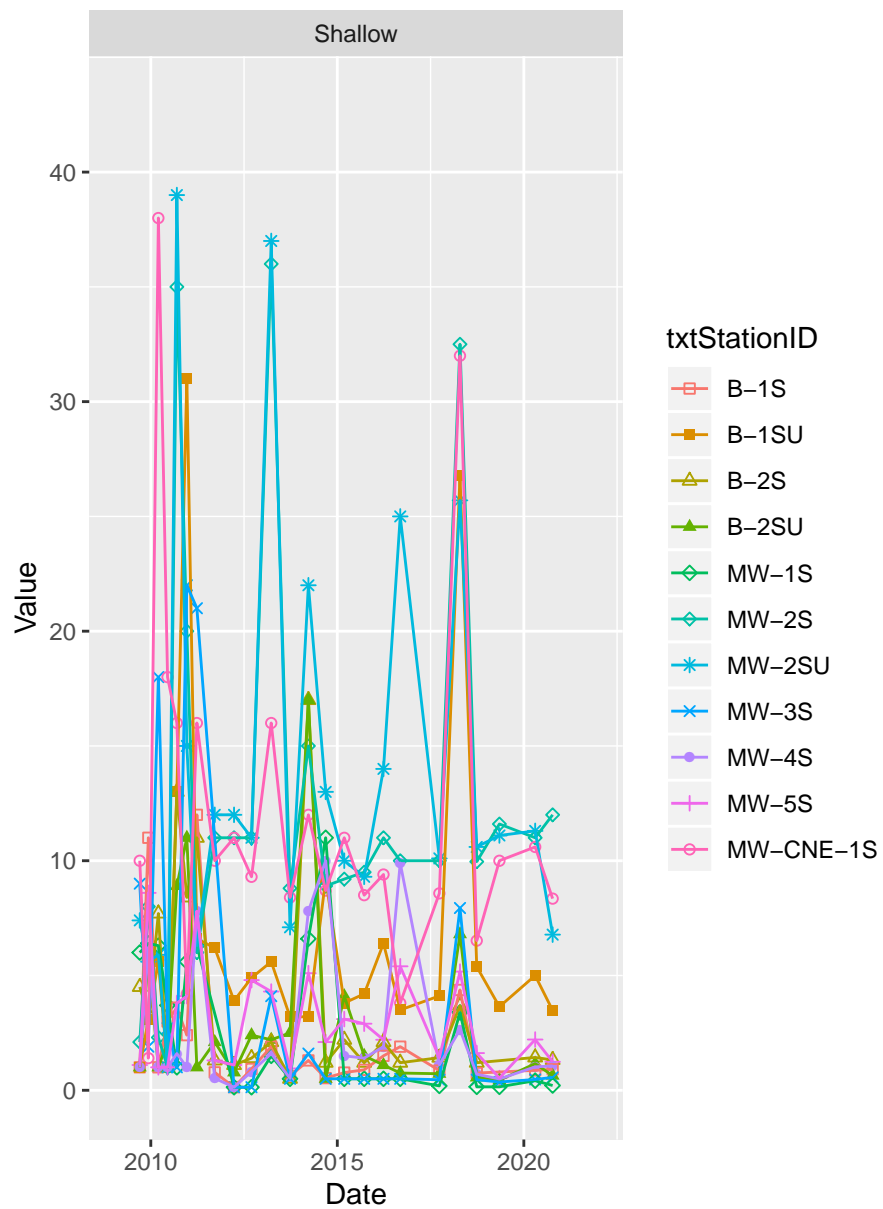
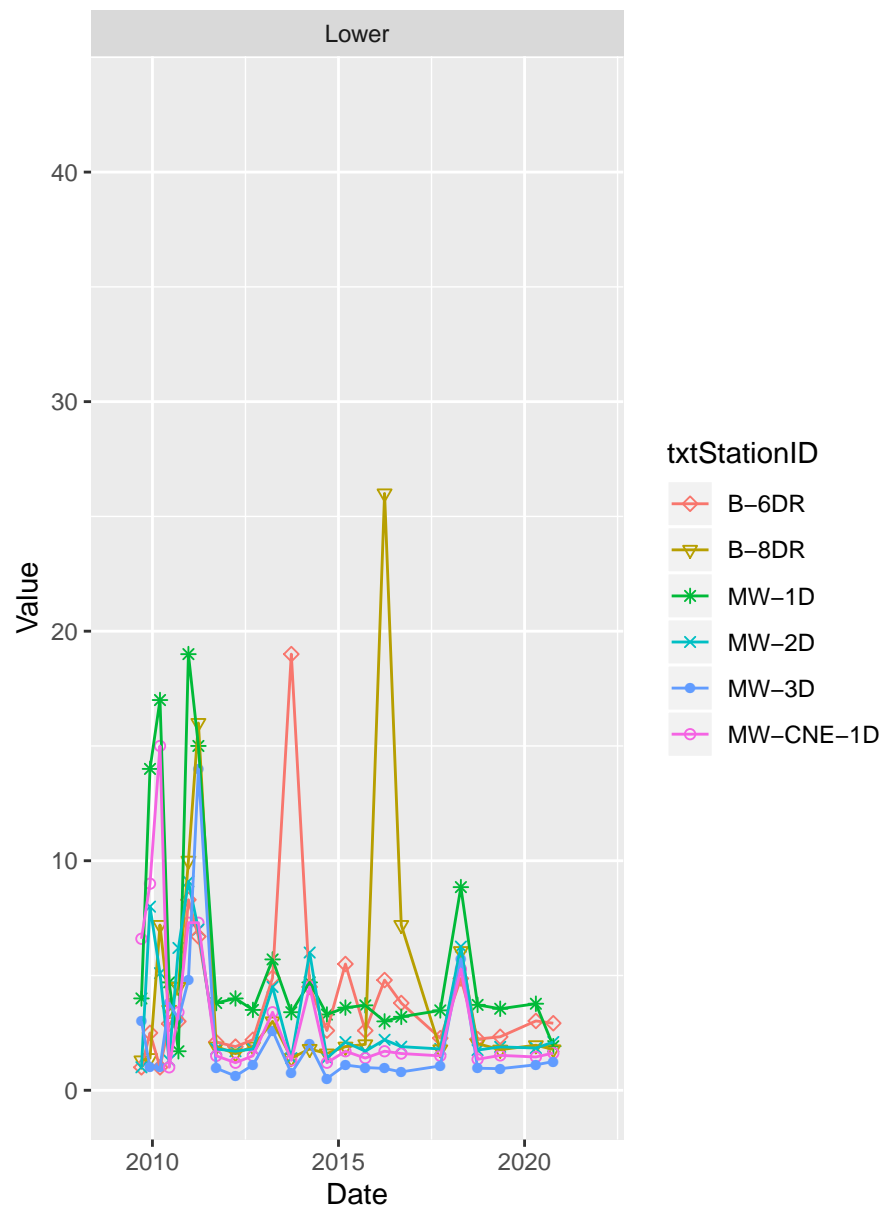
**Calcium, Dissolved, mg/L**



Non-detect values plotted at Method Reporting Limit value

**Figure A5. Time Series**

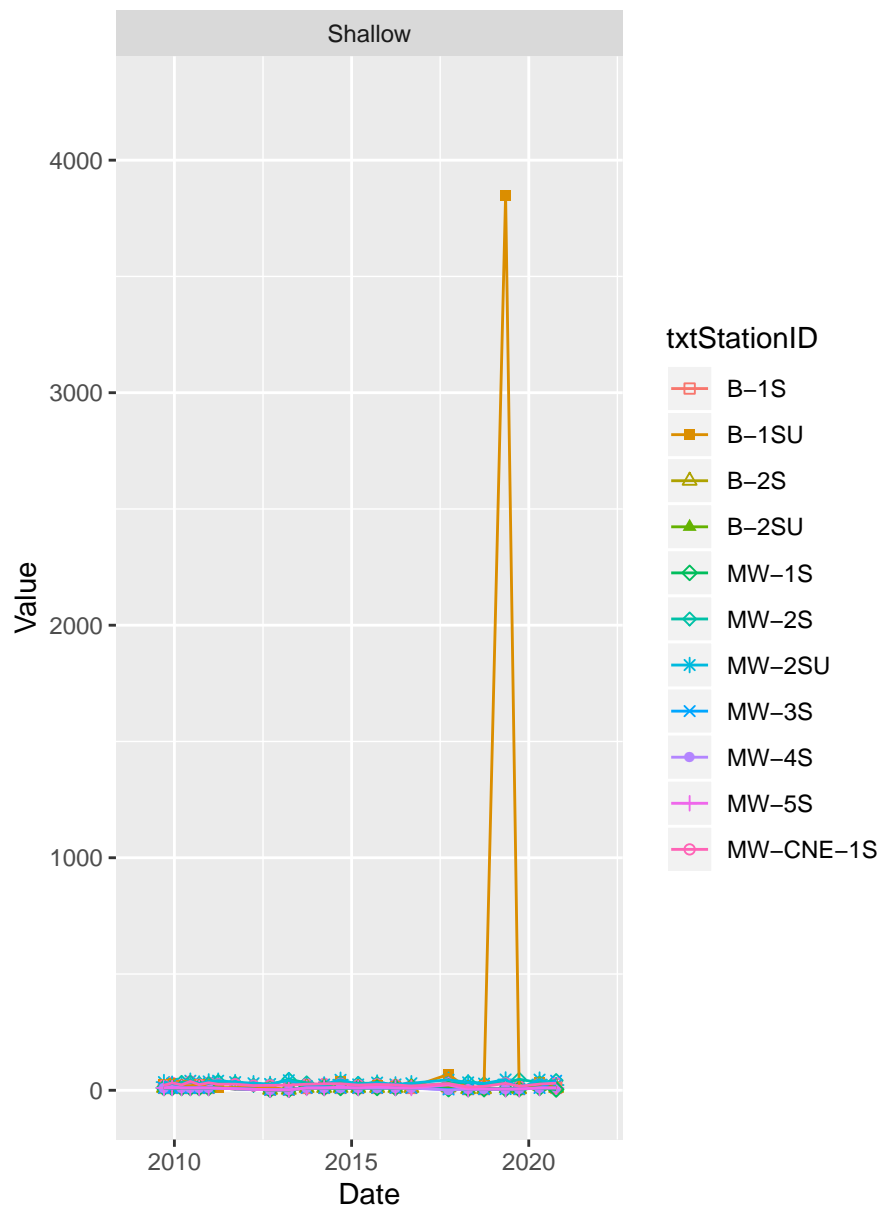
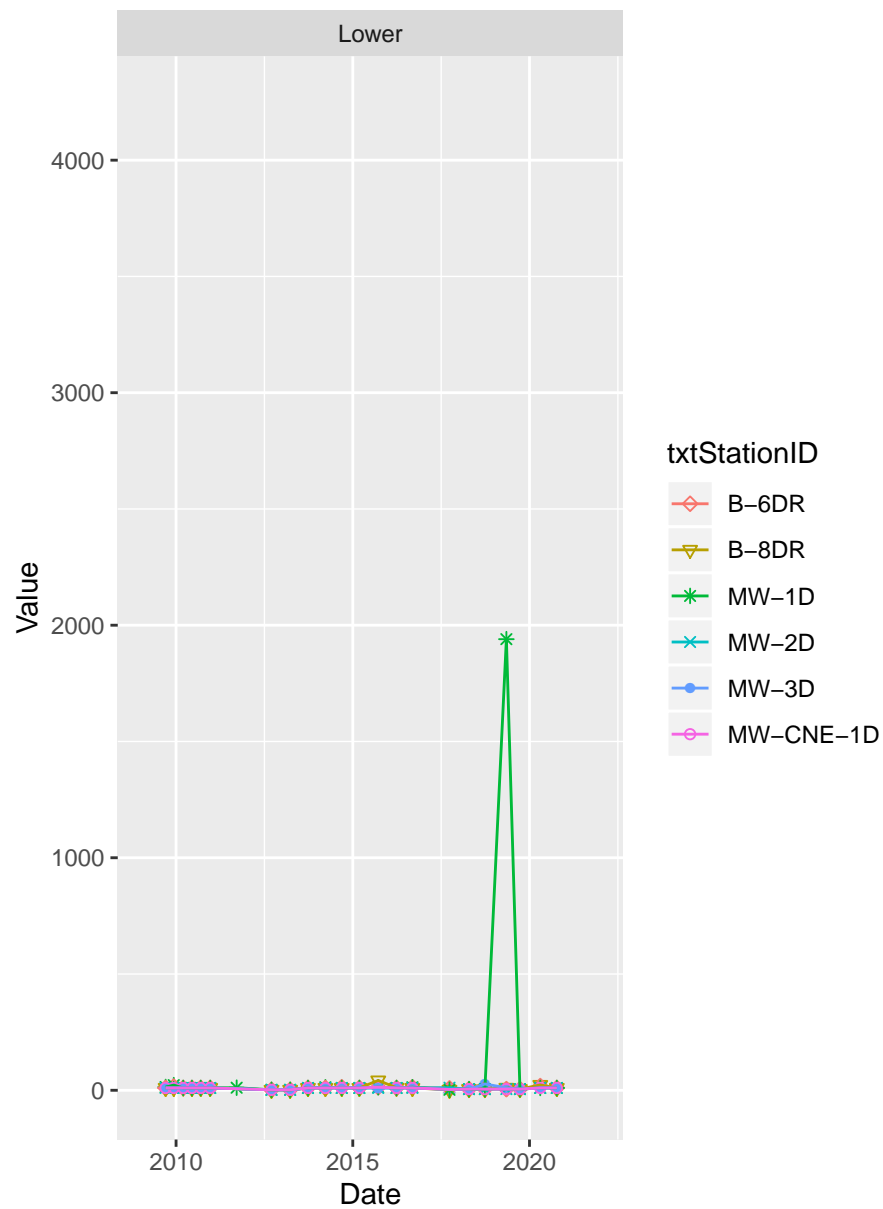
**Calcium, mg/L**



Non-detect values plotted at Method Reporting Limit value

**Figure A6. Time Series**

**Carbon, Total Organic, mg/L**

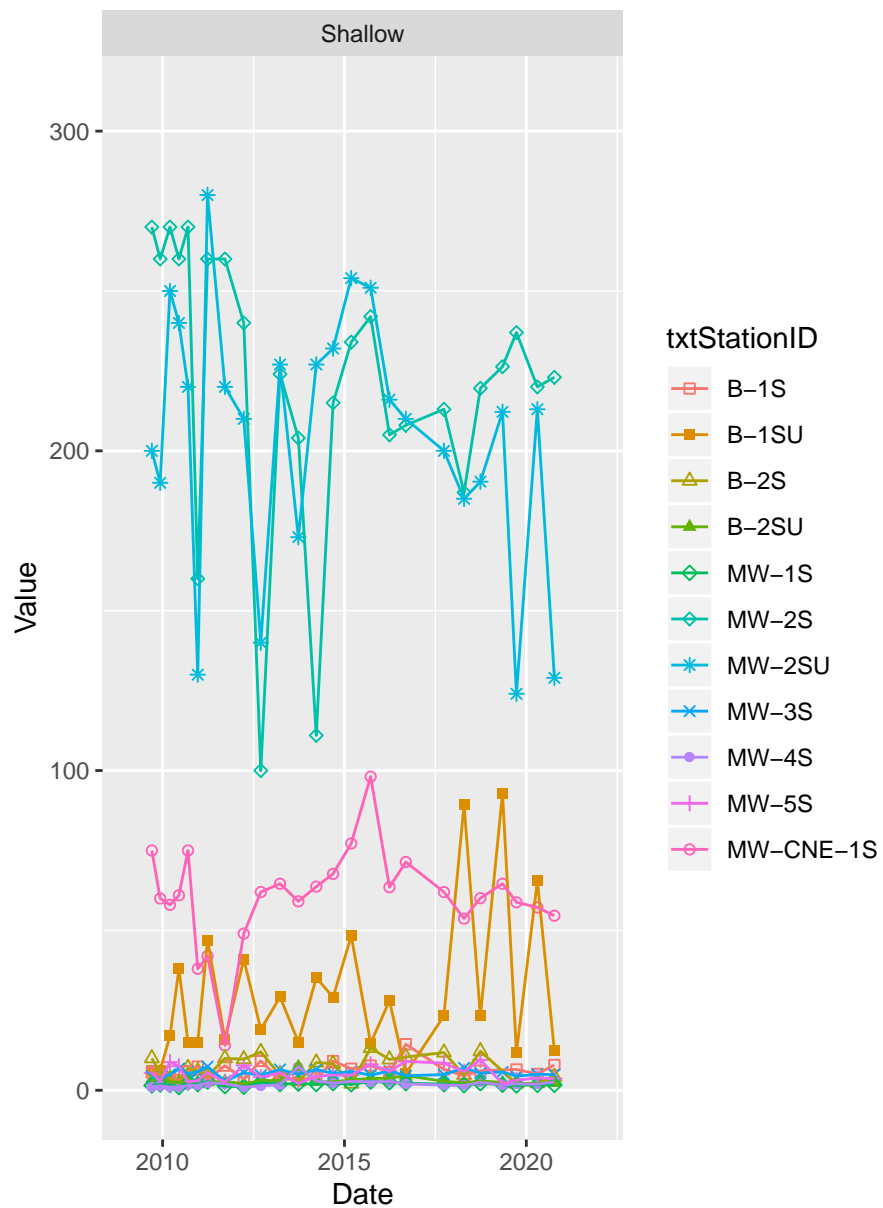
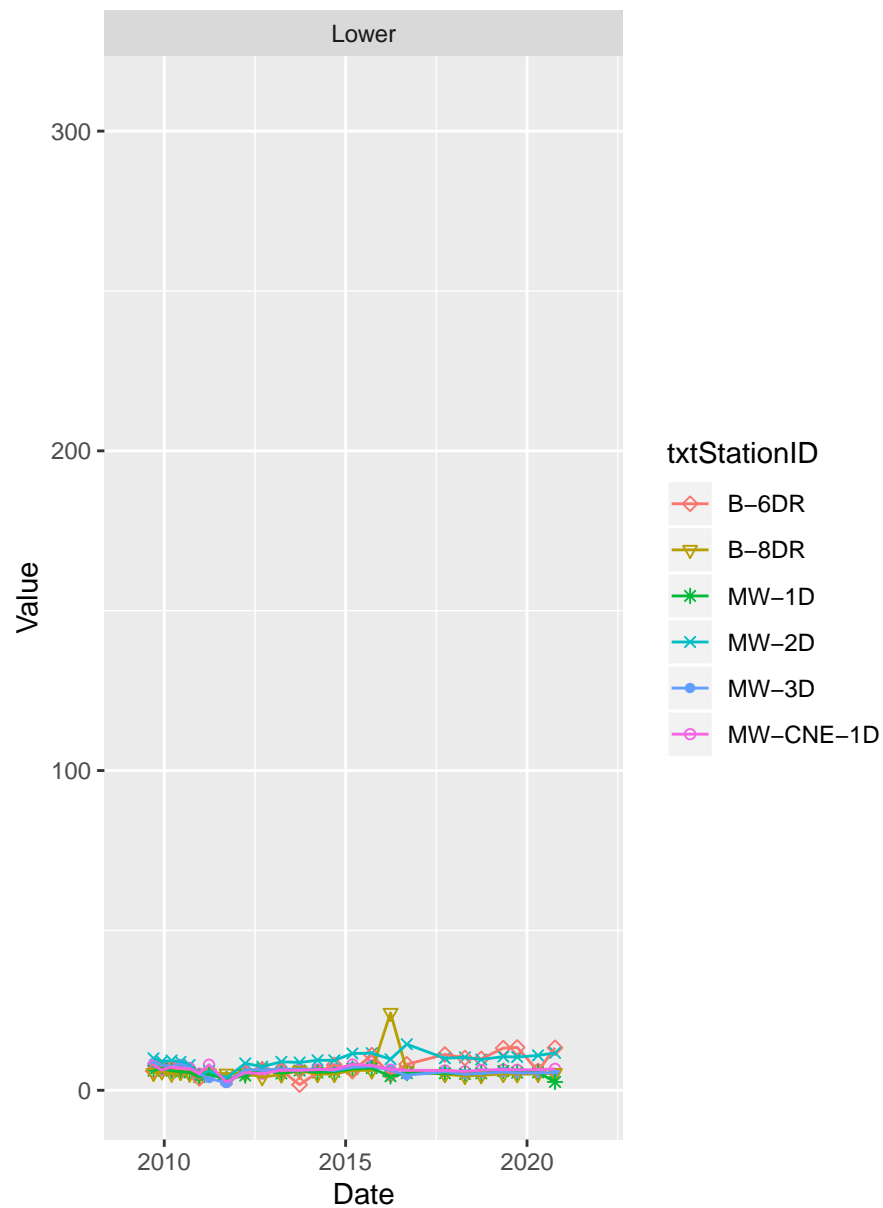


Non-detect values plotted at Method Reporting Limit value

**Figure A7. Time Series**

**Chemical Oxygen Demand (COD), mg/L**

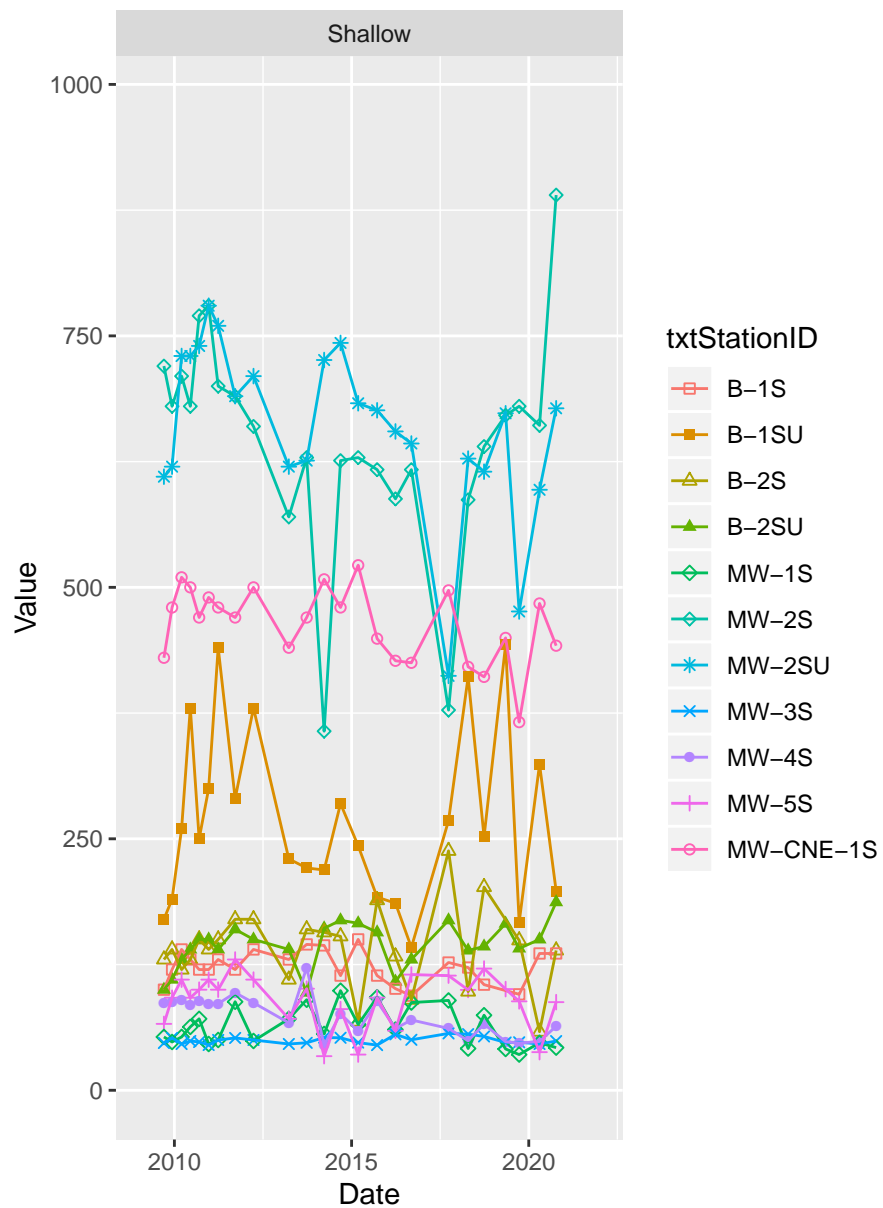
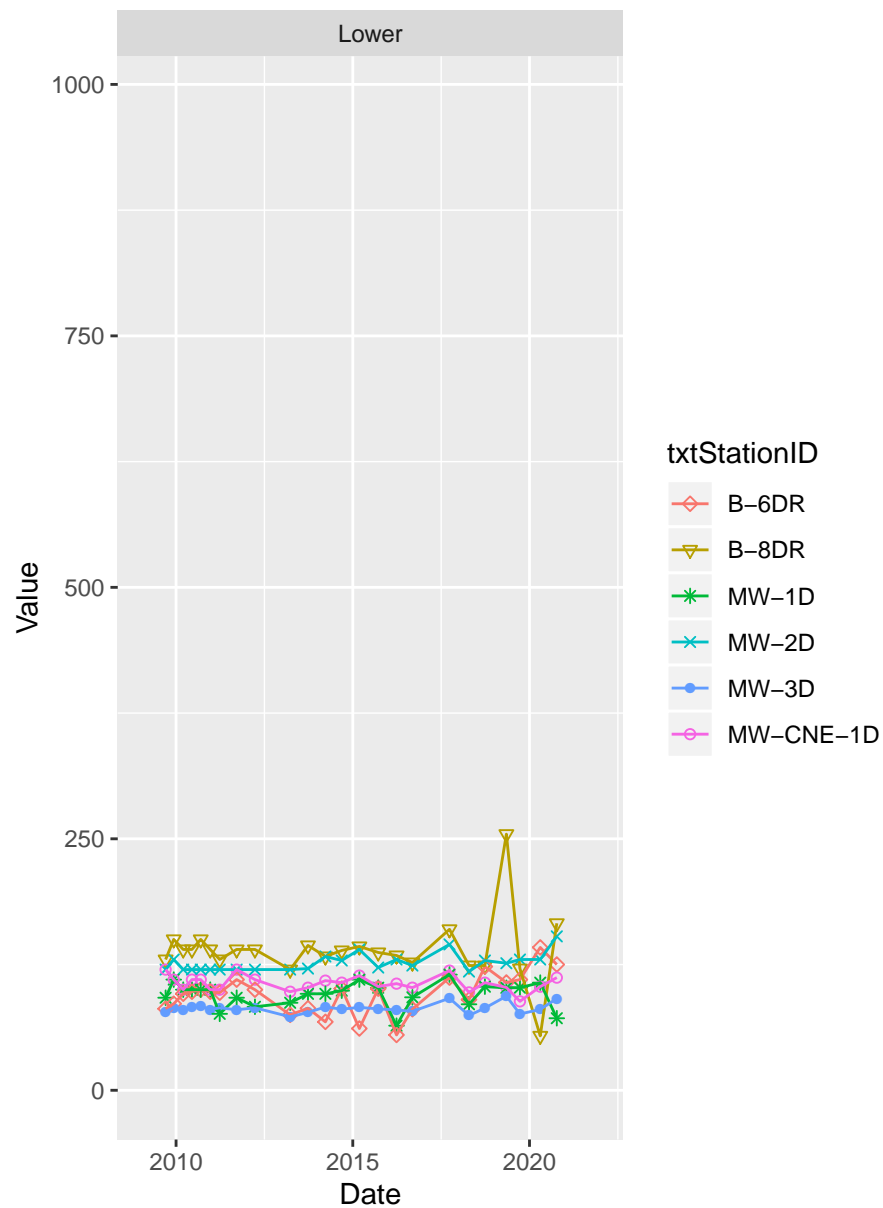




Non-detect values plotted at Method Reporting Limit value

**Figure A8. Time Series**

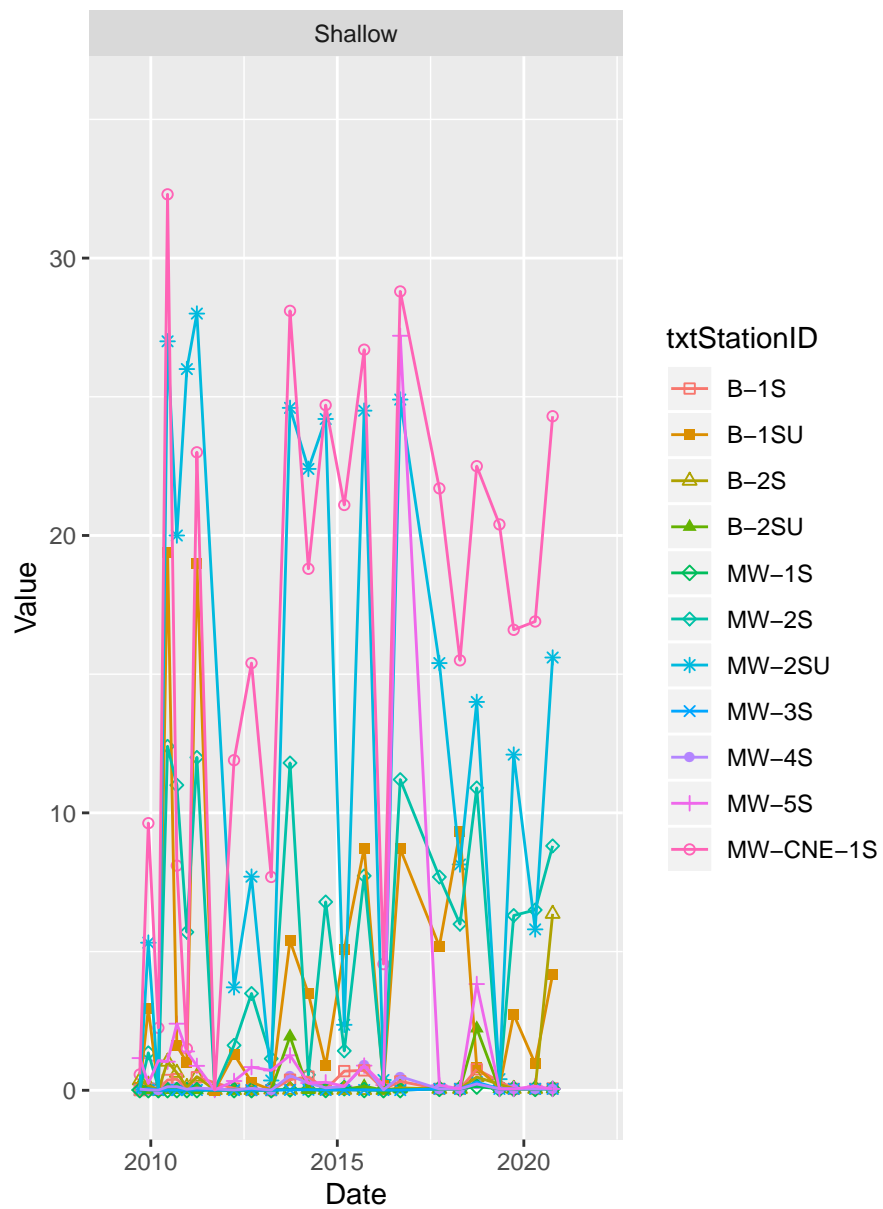
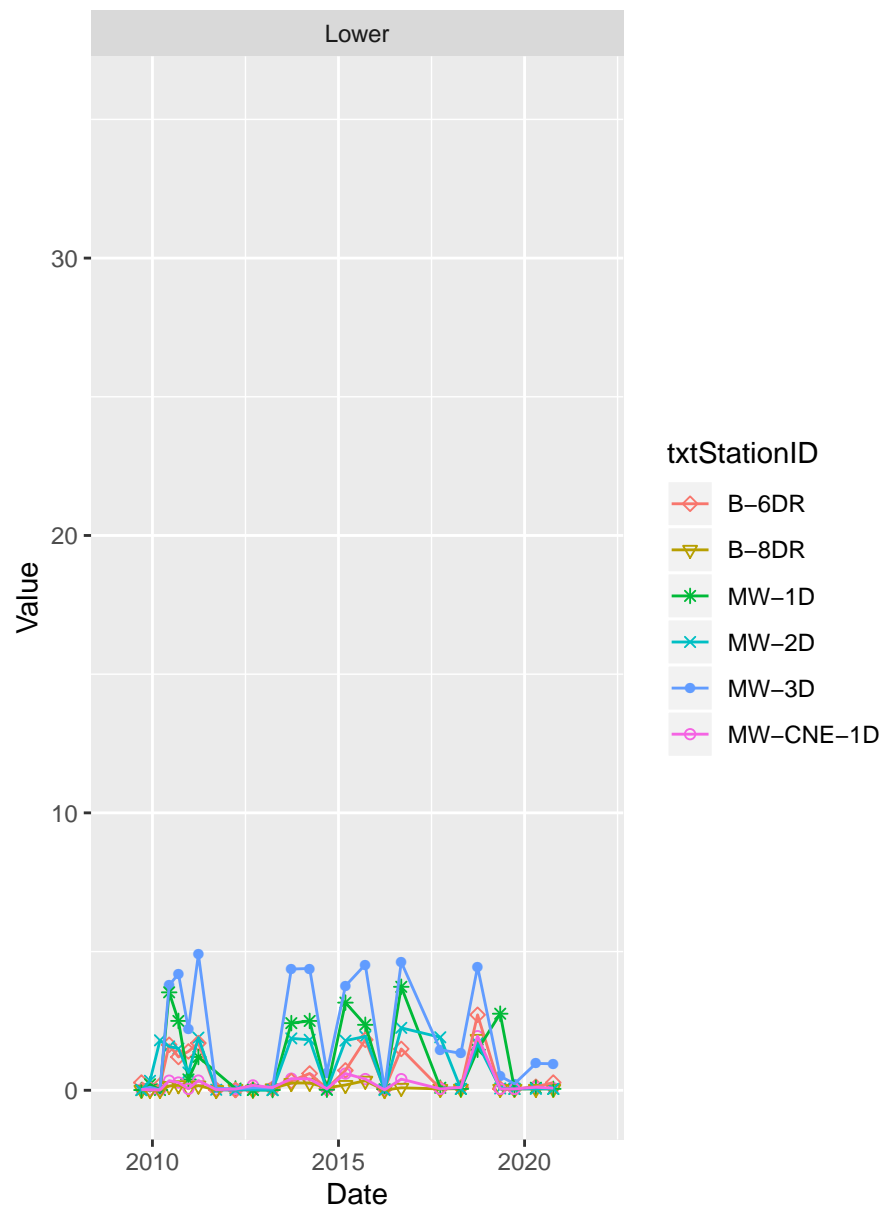
**Chloride, mg/L**



Non-detect values plotted at Method Reporting Limit value

**Figure A9. Time Series**

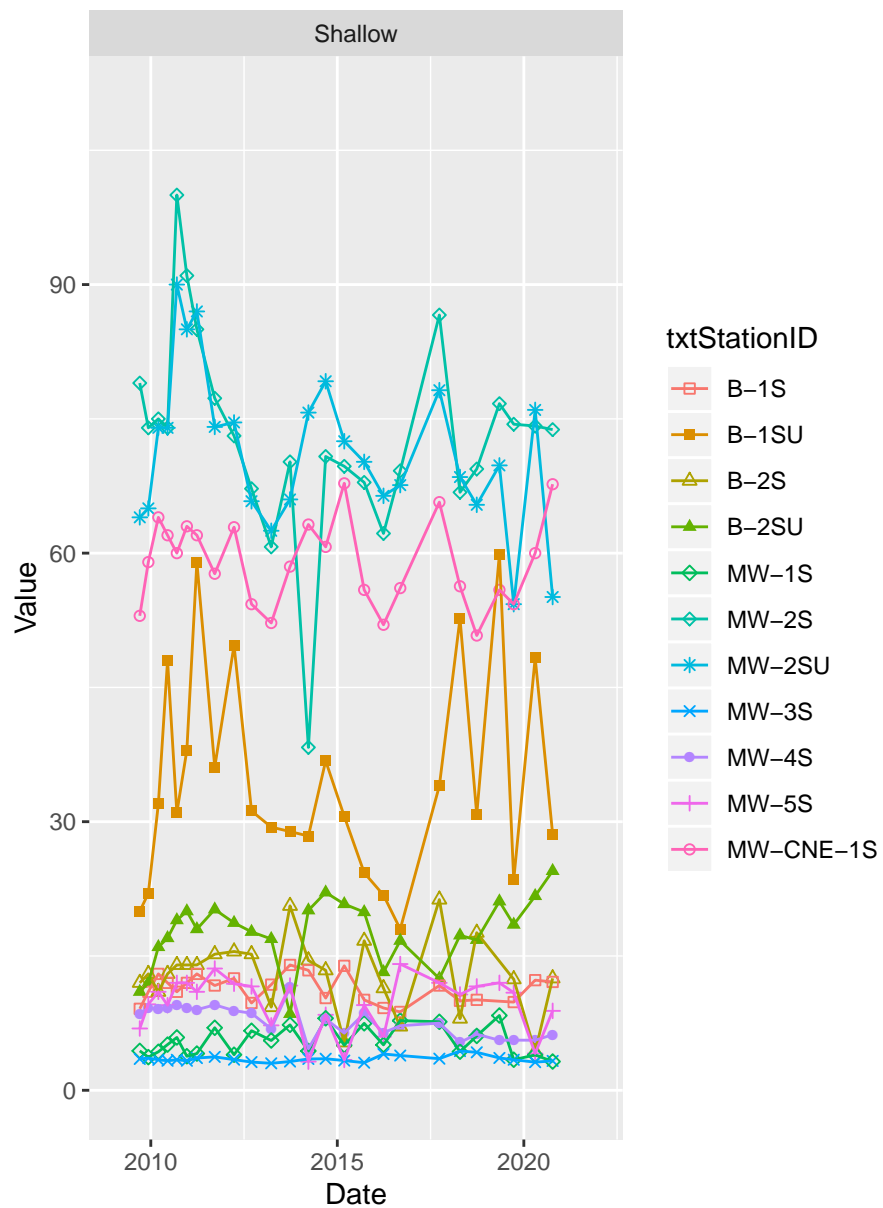
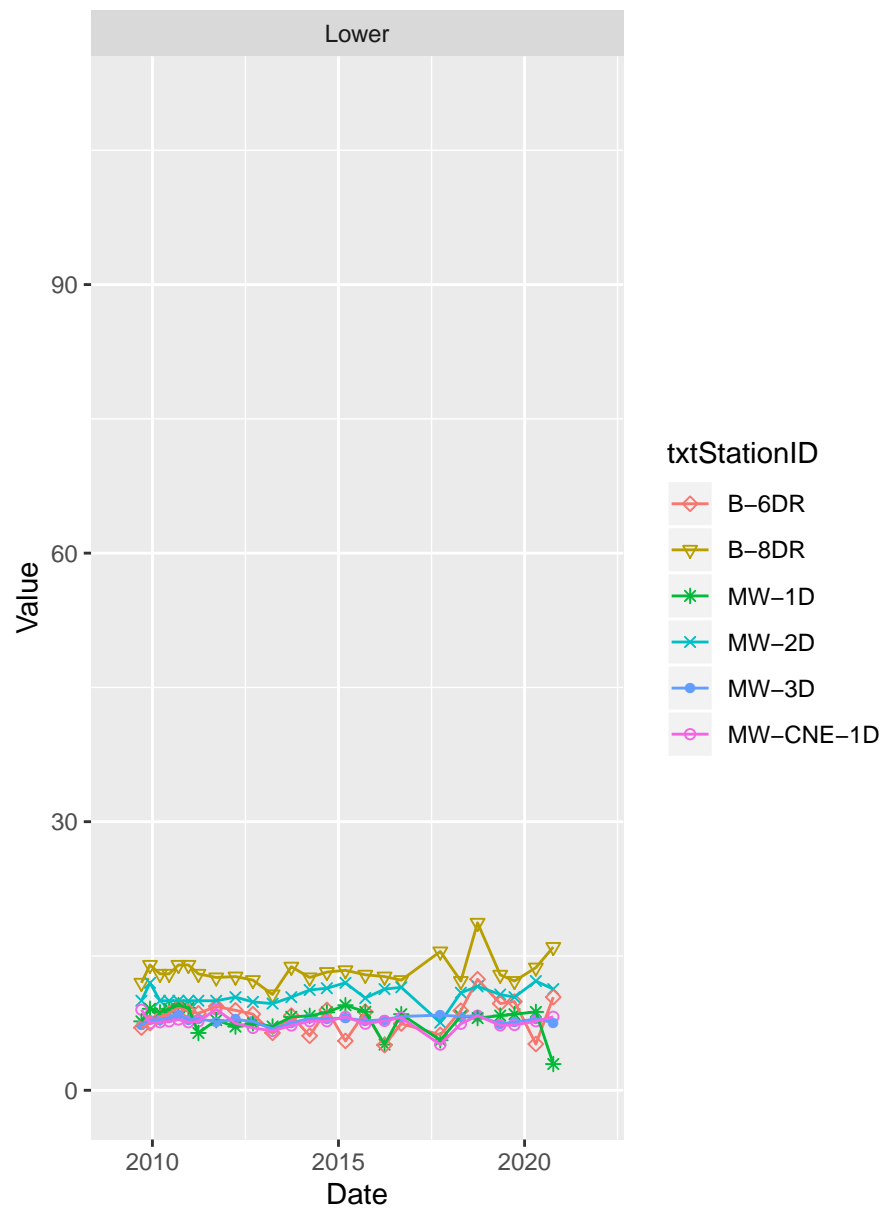
**Hardness, mg/L**



Non-detect values plotted at Method Reporting Limit value

**Figure A10. Time Series**

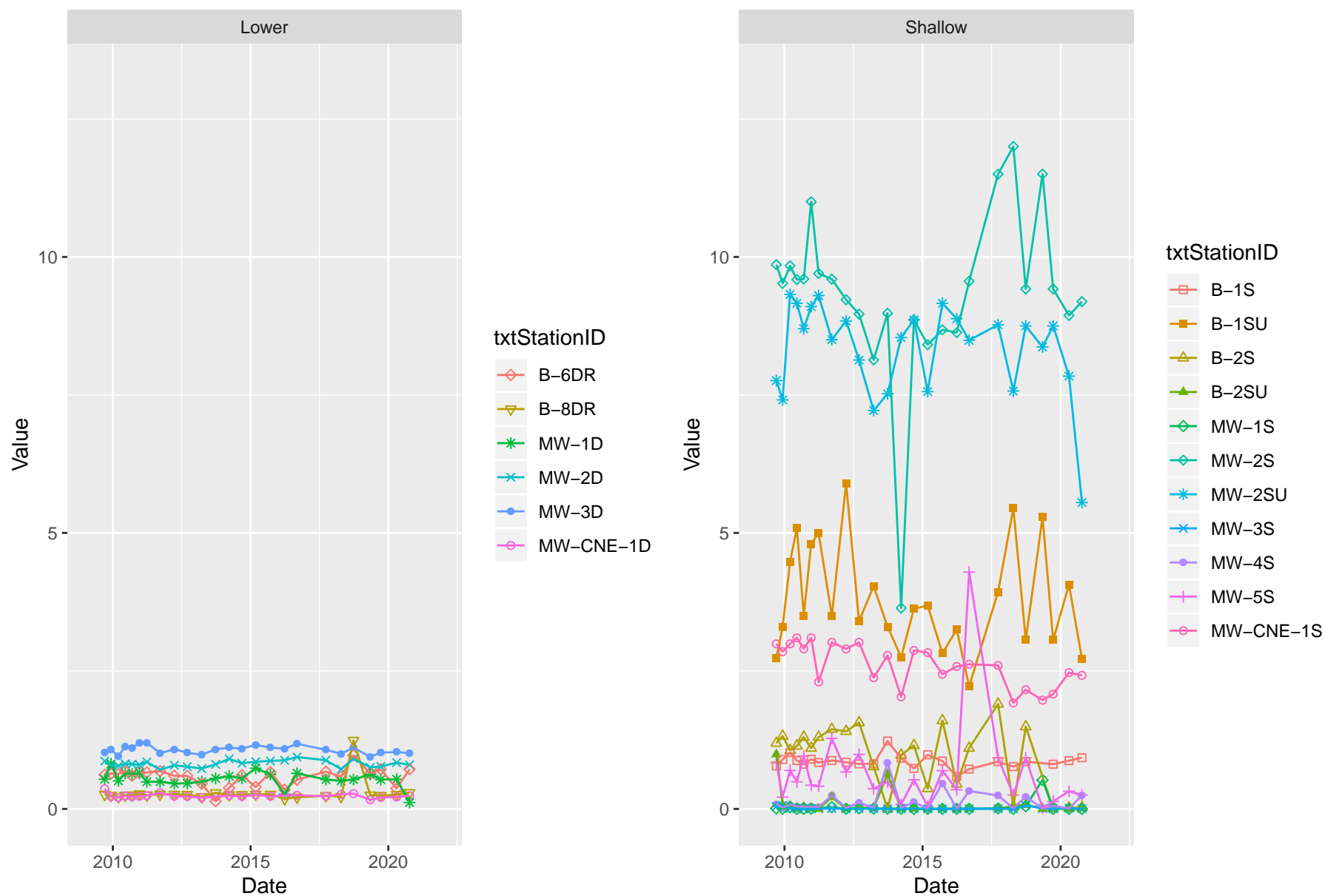
**Iron, Dissolved, mg/L**



Non-detect values plotted at Method Reporting Limit value

**Figure A11. Time Series**

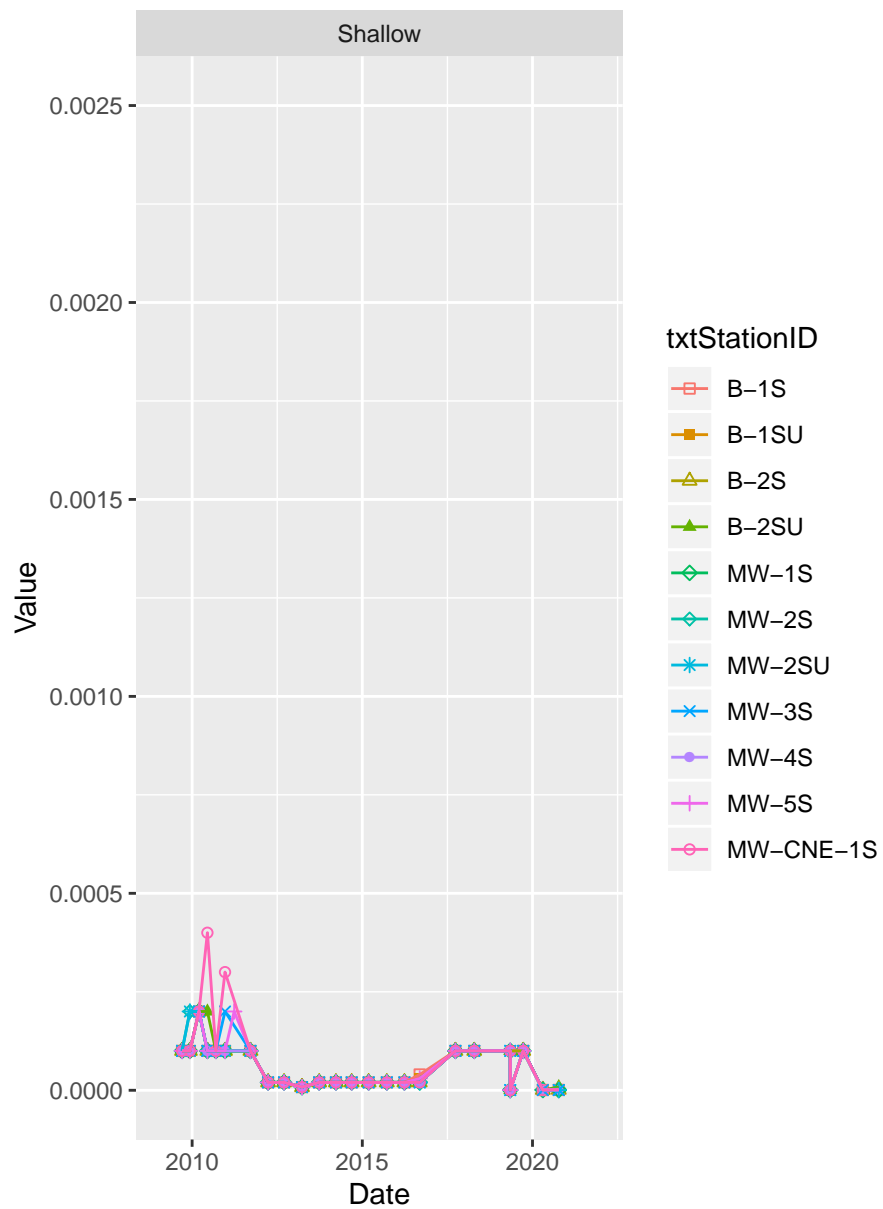
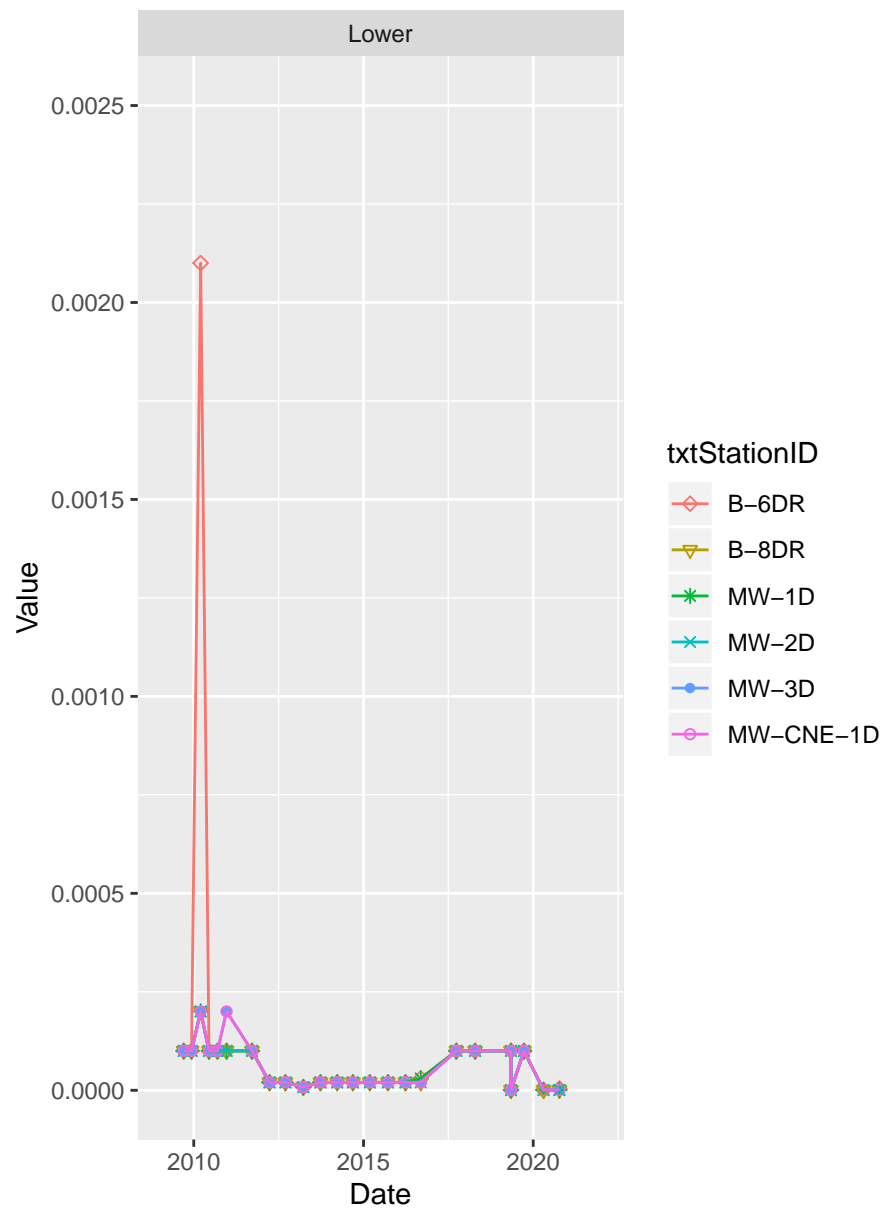
**Magnesium, Dissolved, mg/L**



Non-detect values plotted at Method Reporting Limit value

**Figure A12. Time Series**

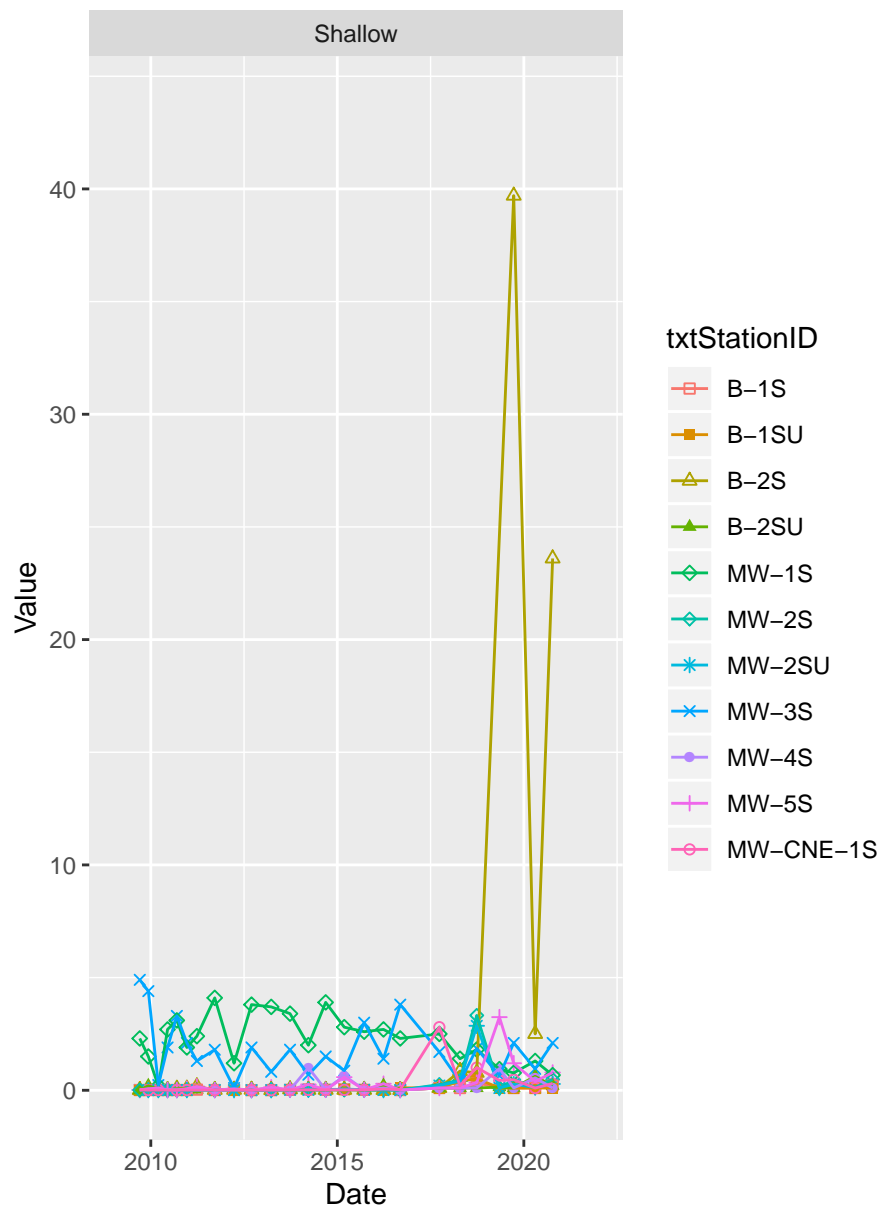
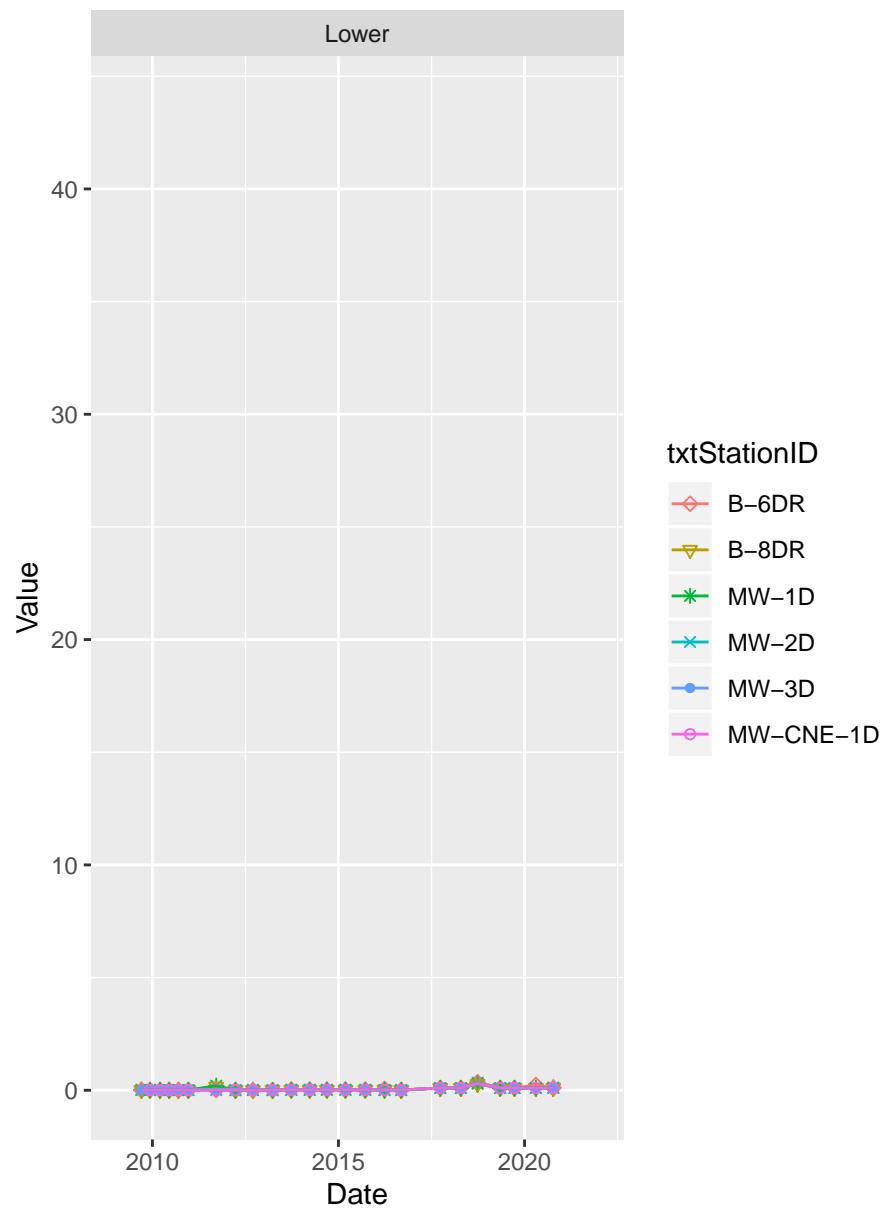
**Manganese, Dissolved, mg/L**



Non-detect values plotted at Method Reporting Limit value

**Figure A13. Time Series**

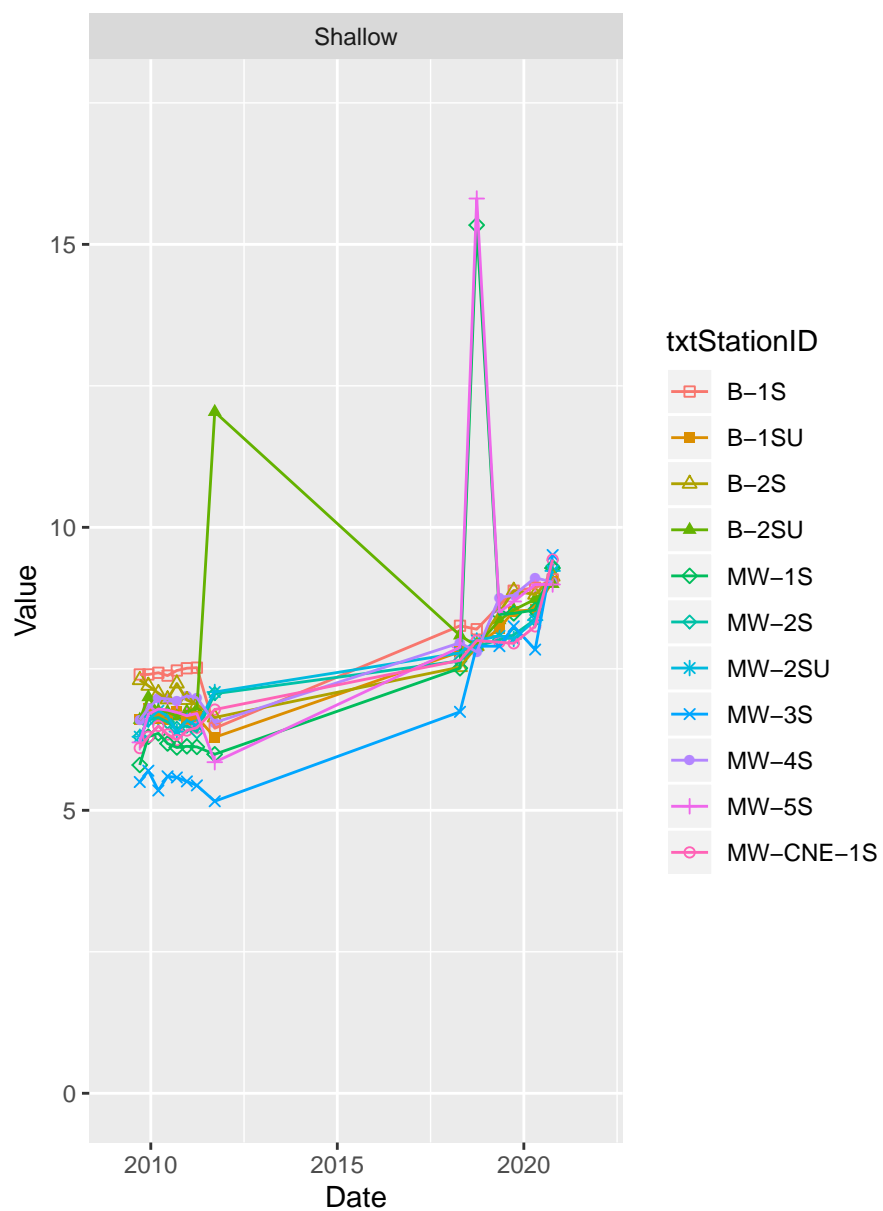
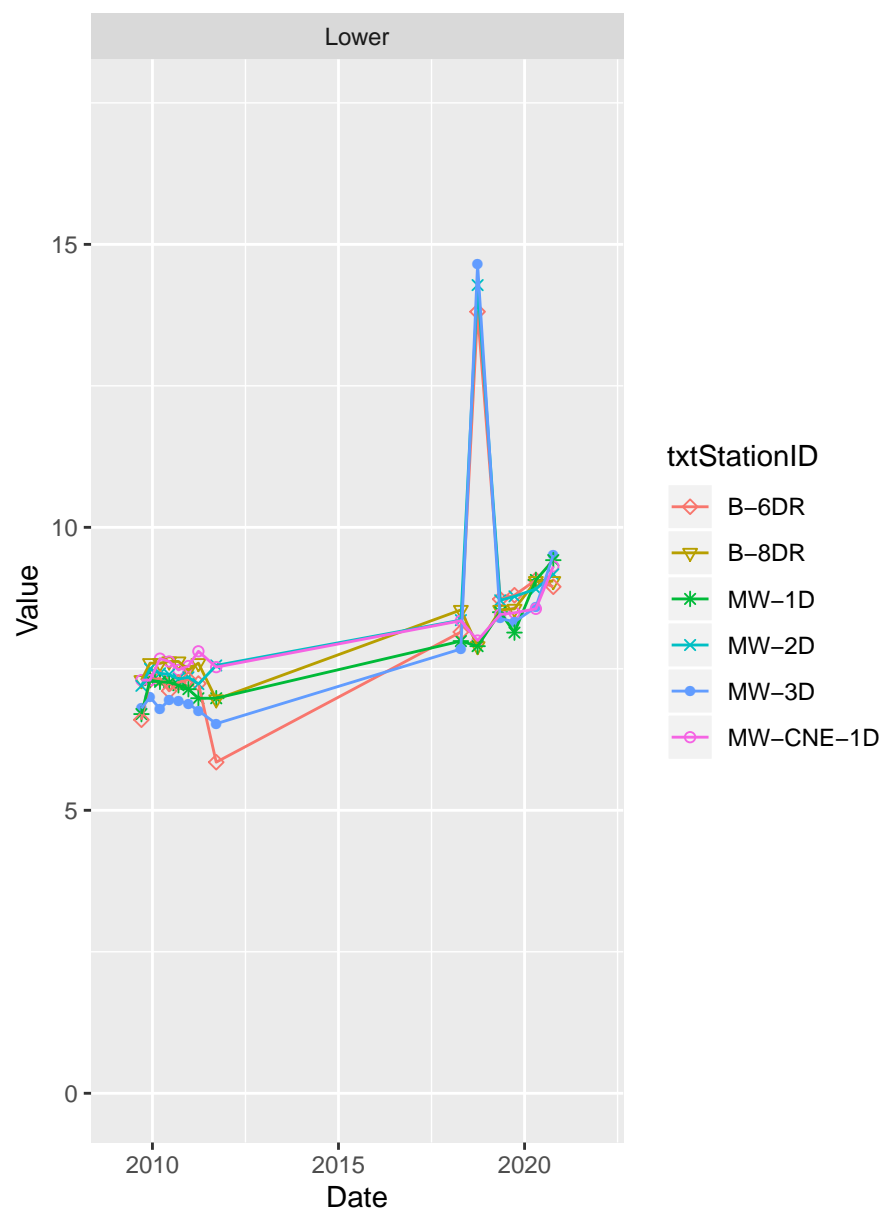
**Mercury, Dissolved, mg/L**



Non-detect values plotted at Method Reporting Limit value

**Figure A14. Time Series**

**Nitrate+Nitrite as N, mg/L**

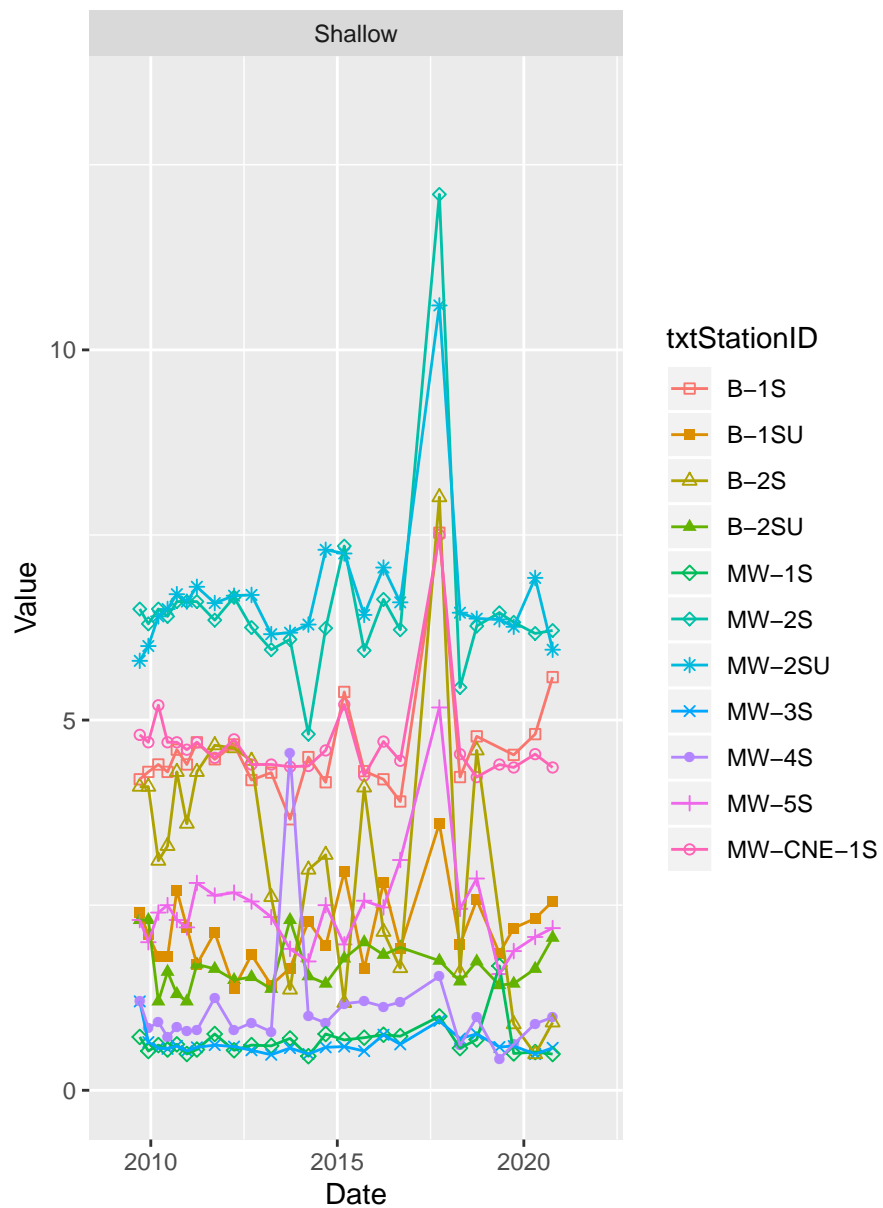
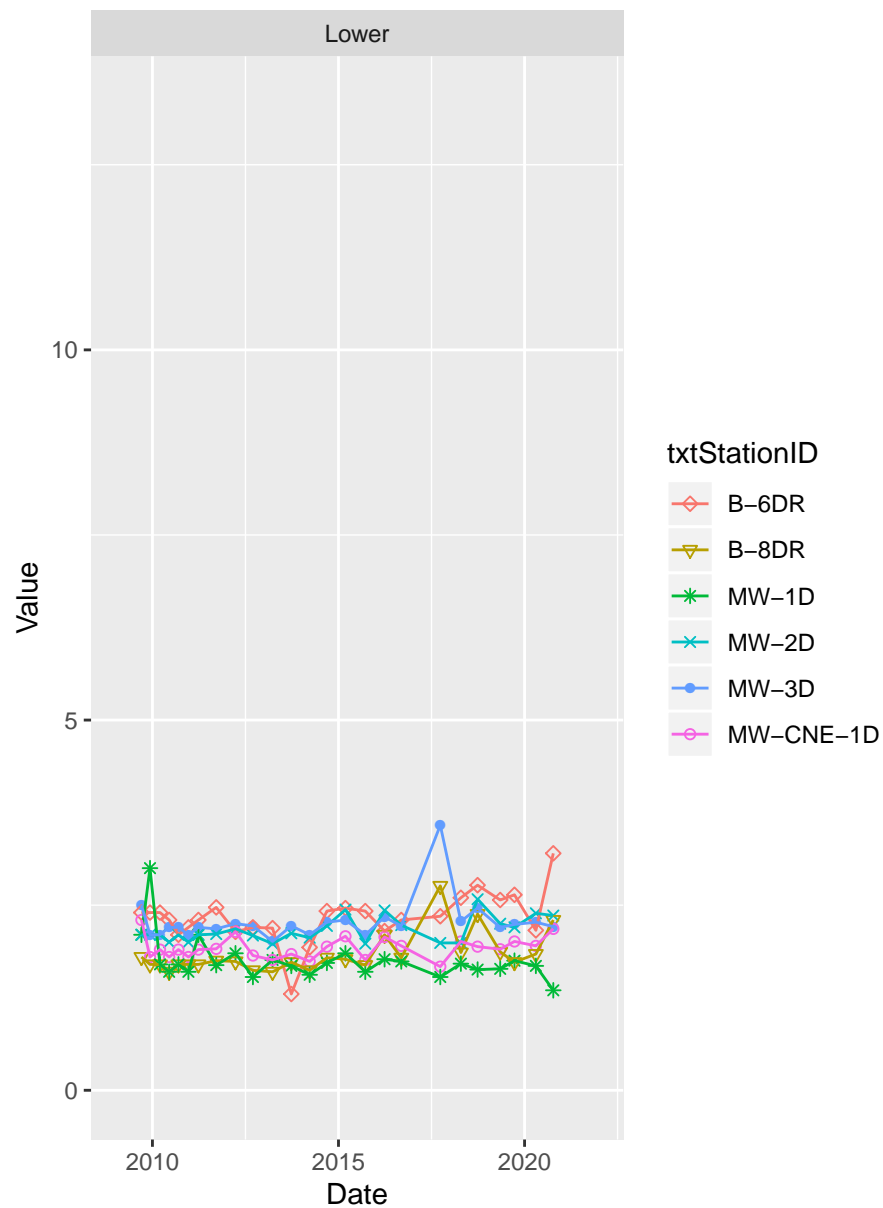


Non-detect values plotted at Method Reporting Limit value

**Figure A15. Time Series**

**pH, Field, std. units**

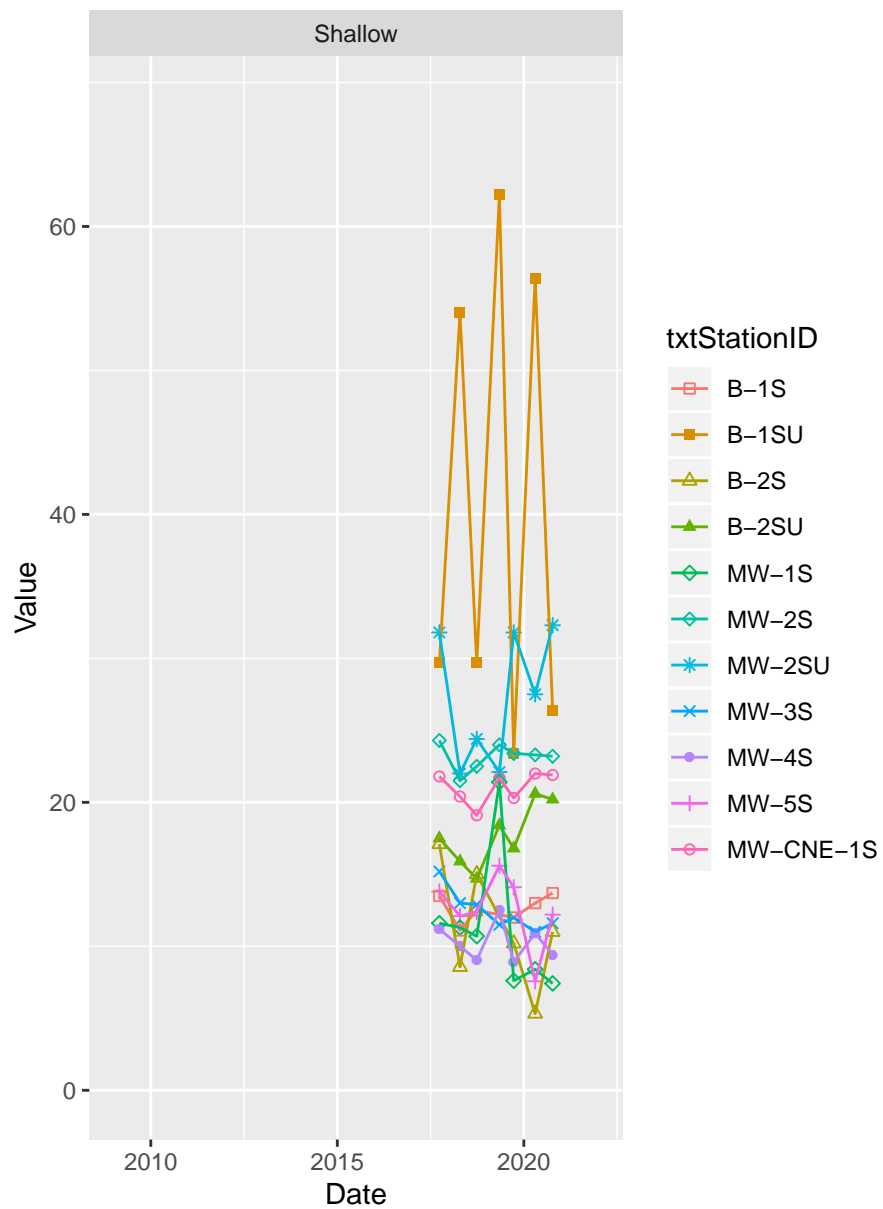




Non-detect values plotted at Method Reporting Limit value

**Figure A16. Time Series**

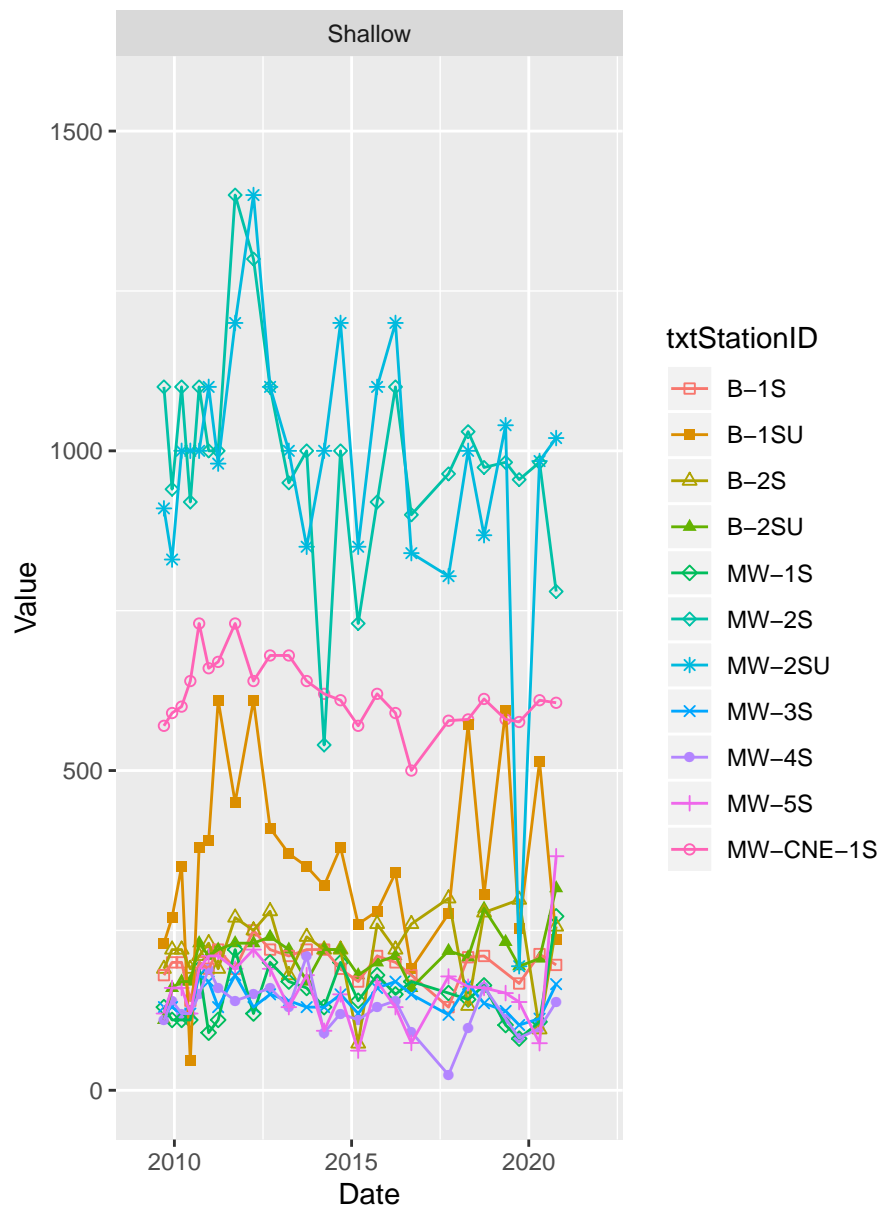
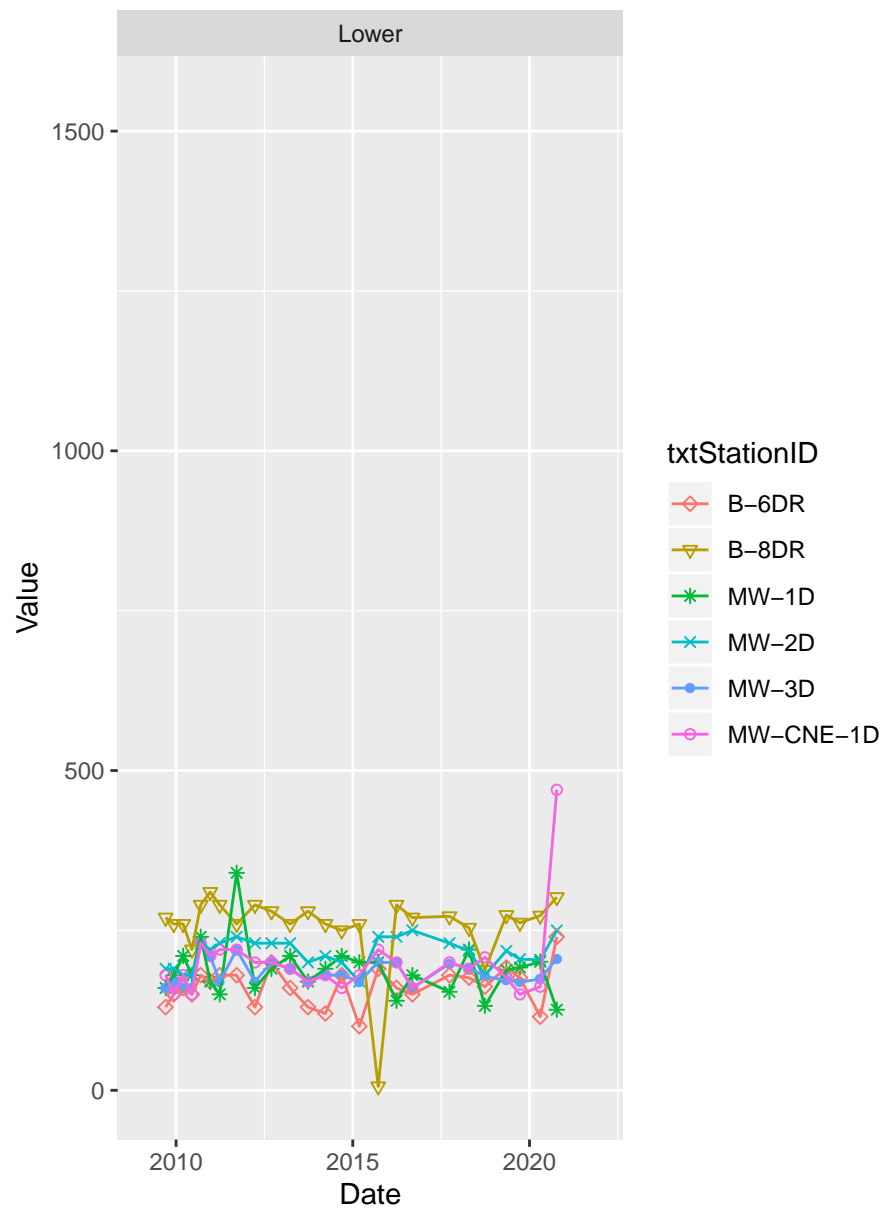
**Potassium, Dissolved, mg/L**



Non-detect values plotted at Method Reporting Limit value

**Figure A17. Time Series**

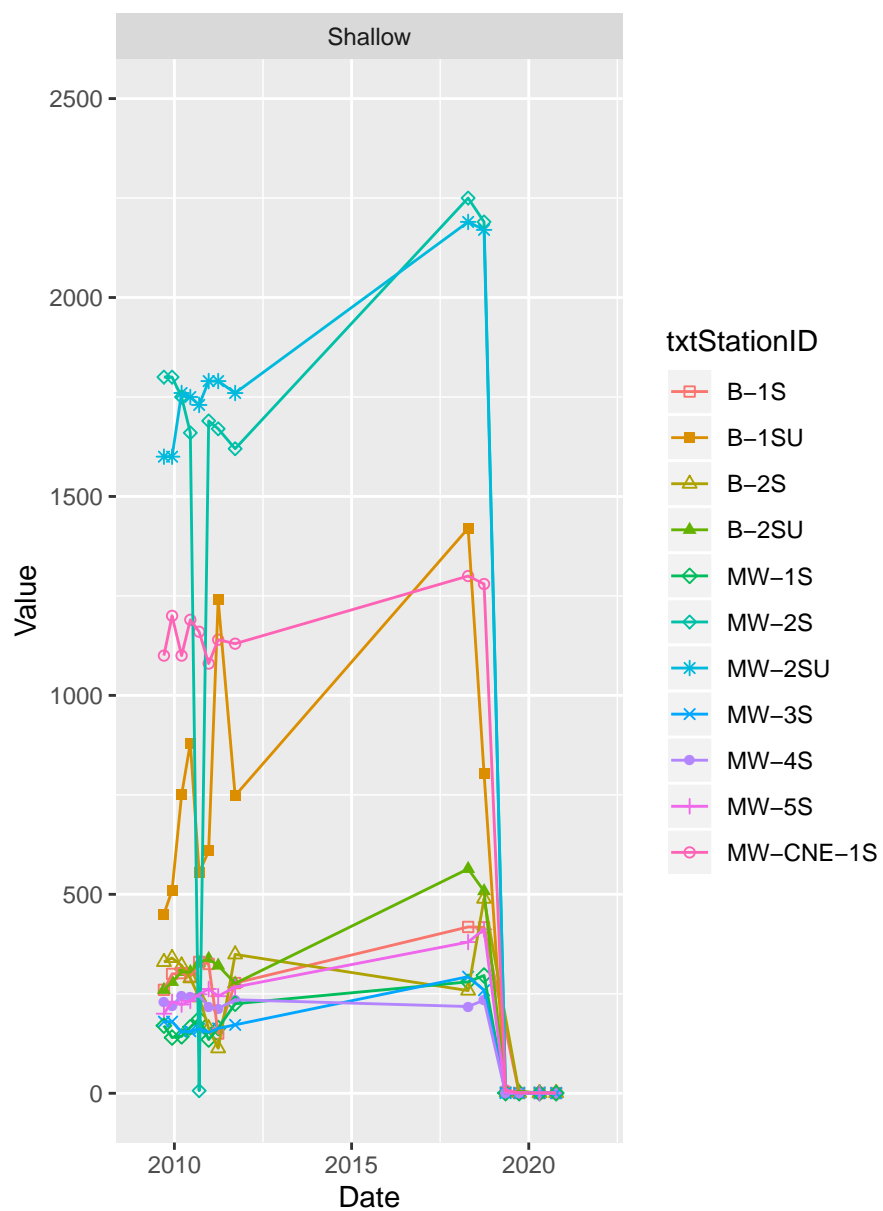
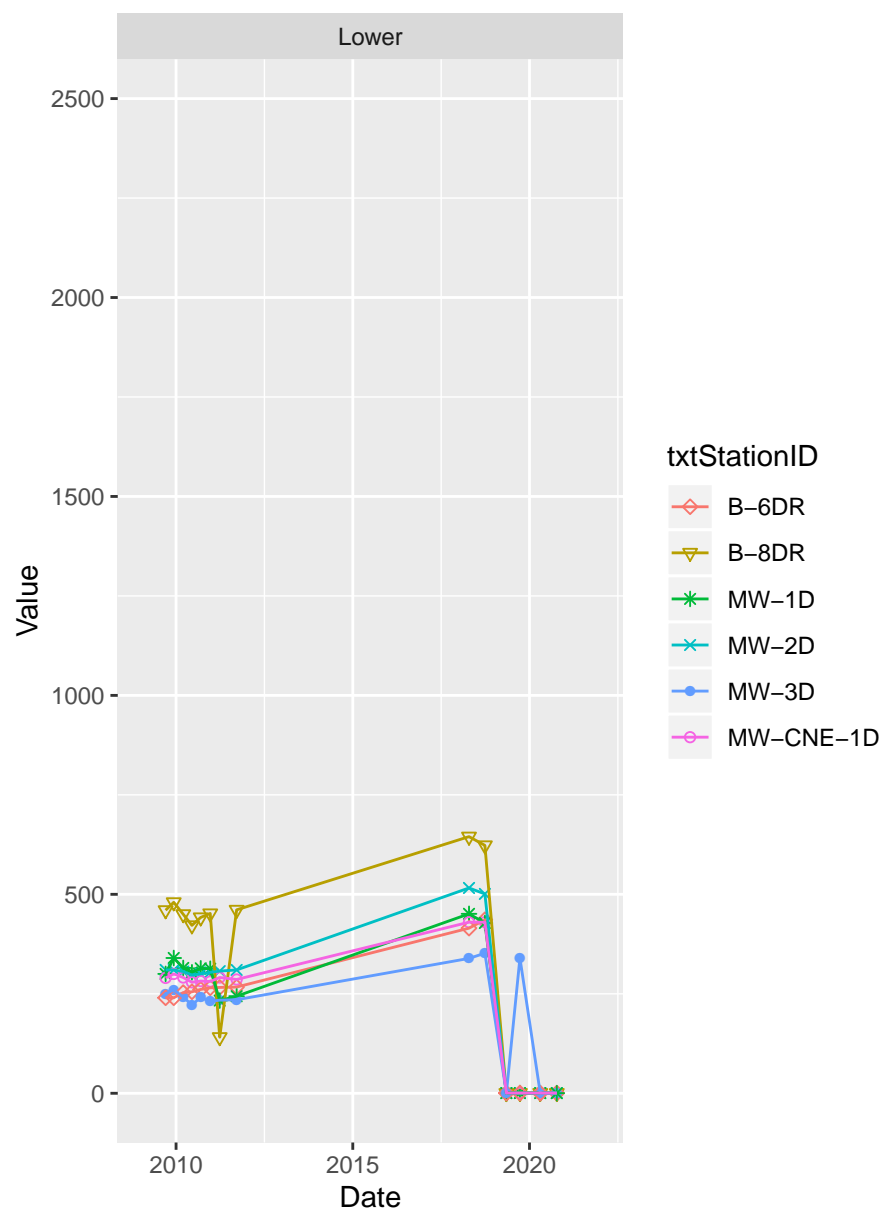
**Sodium, Dissolved, mg/L**



Non-detect values plotted at Method Reporting Limit value

**Figure A18. Time Series**

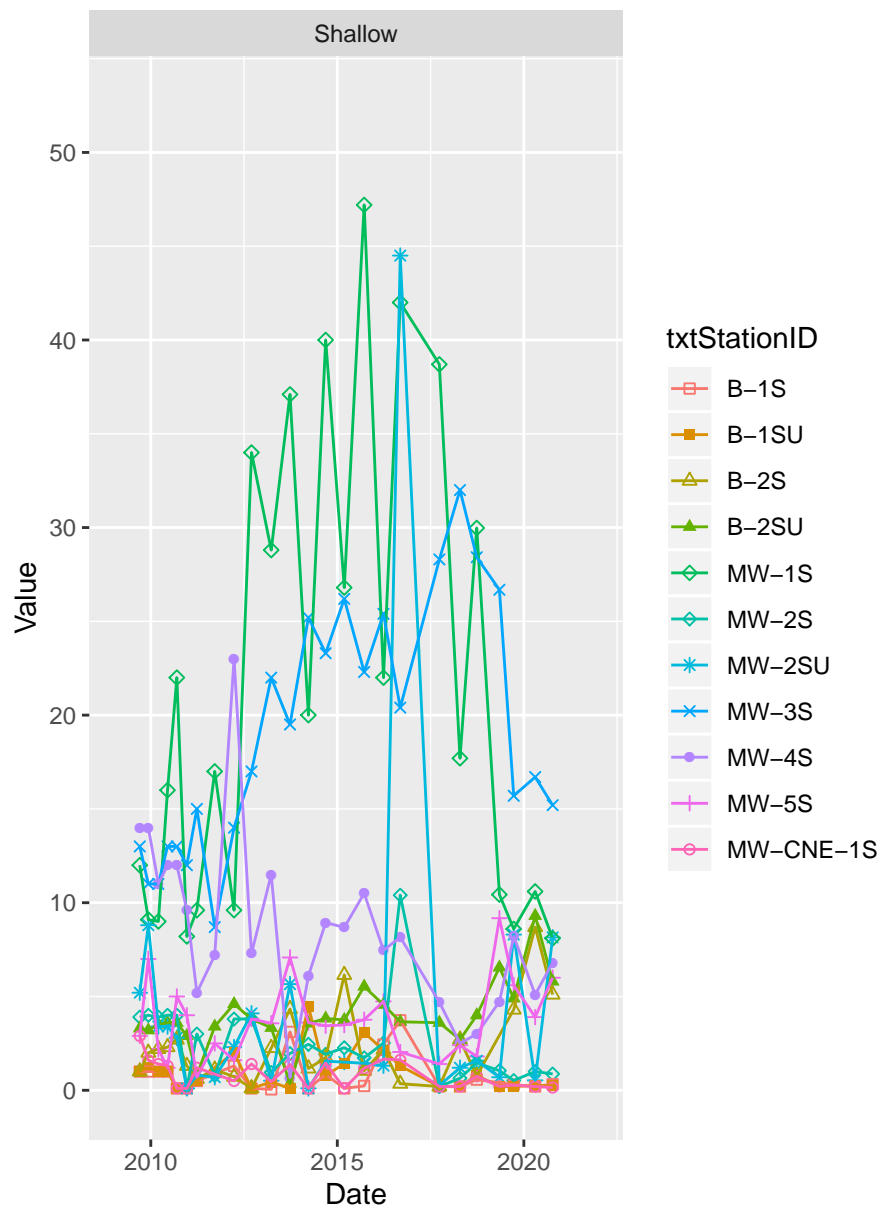
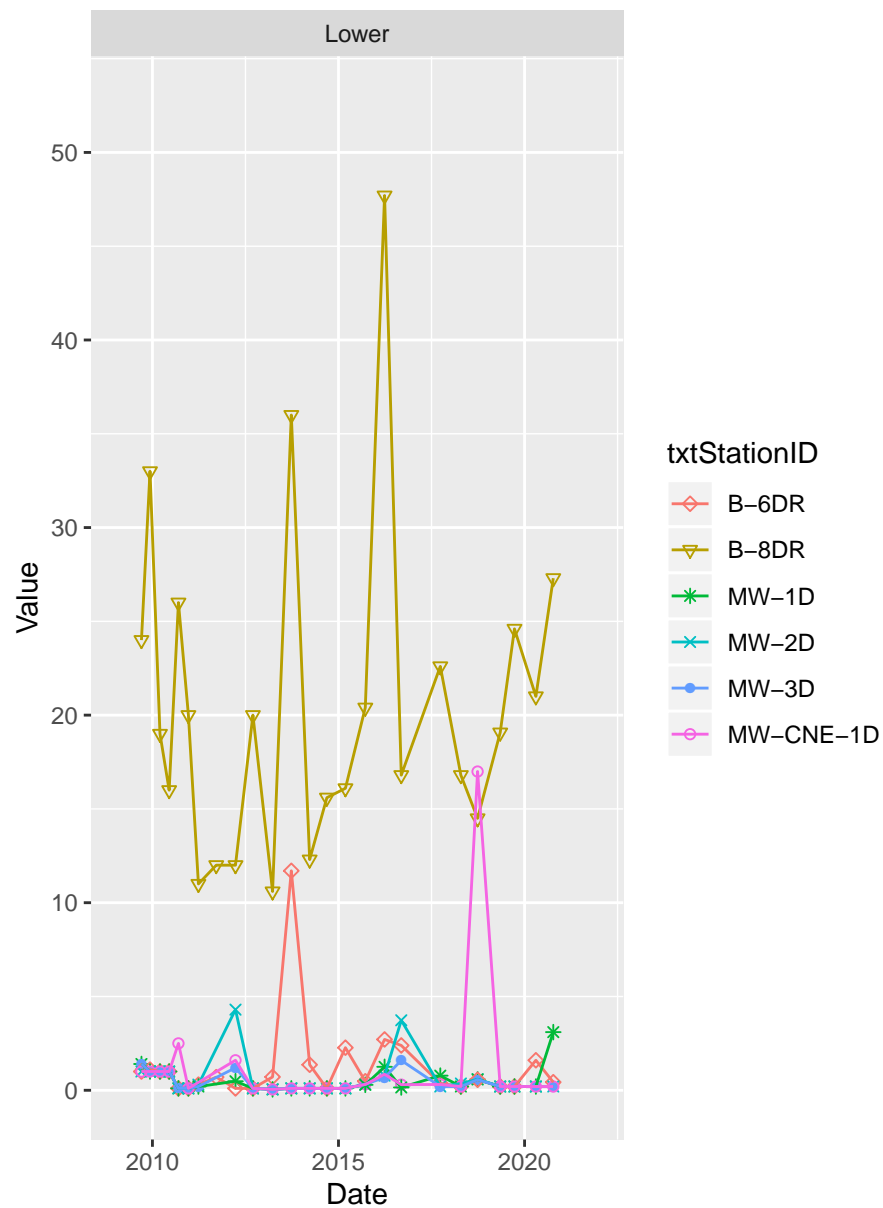
**Solids, Total Dissolved, mg/L**



Non-detect values plotted at Method Reporting Limit value

**Figure A19. Time Series**

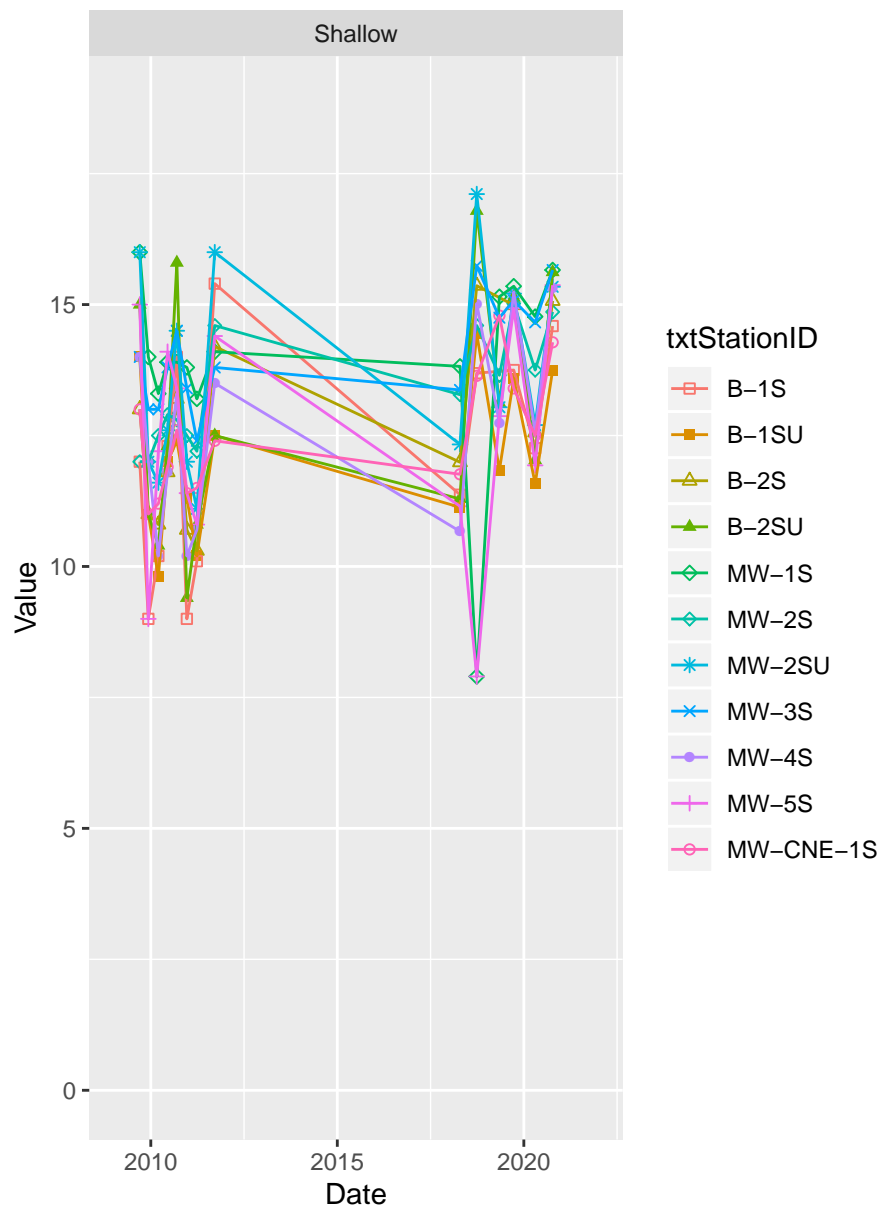
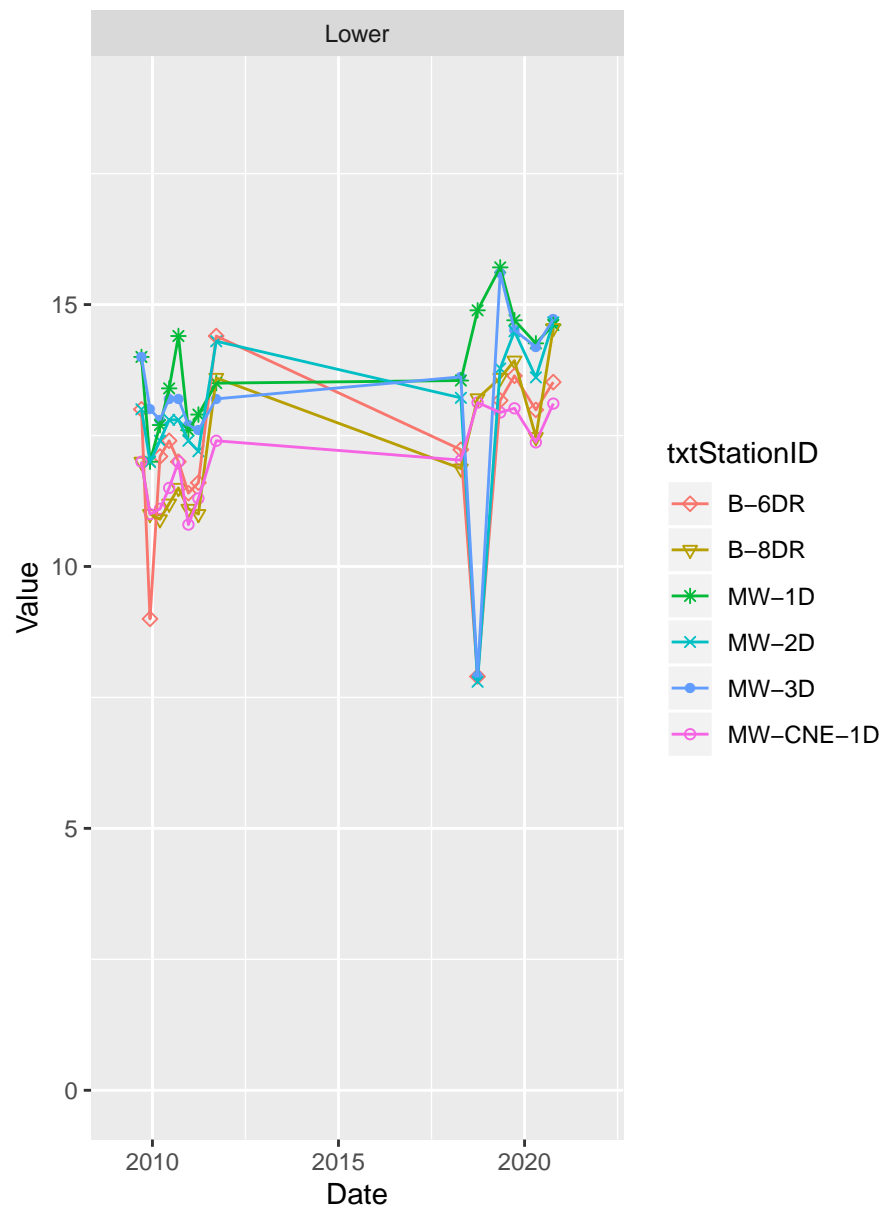
**Specific Conductivity (at 25 deg C), uS/cm**



Non-detect values plotted at Method Reporting Limit value

**Figure A20. Time Series**

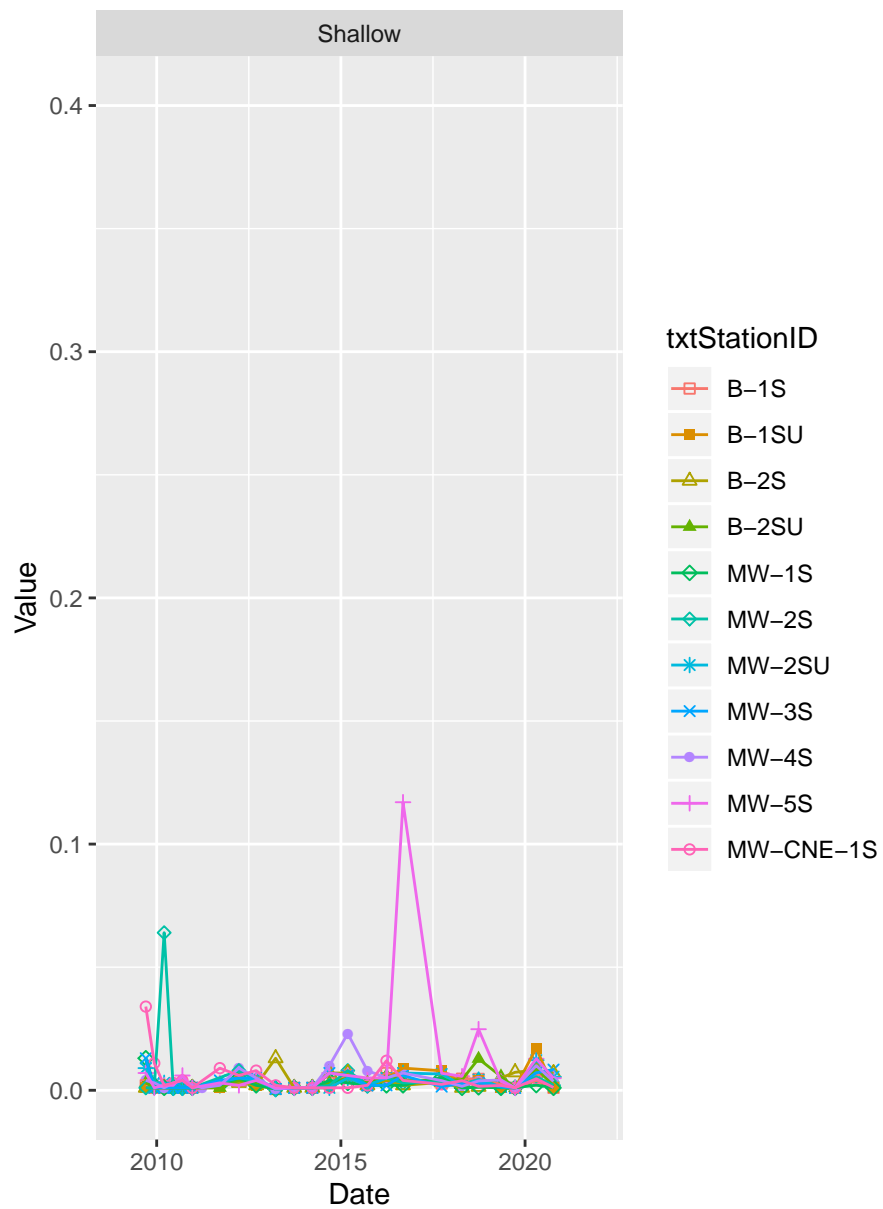
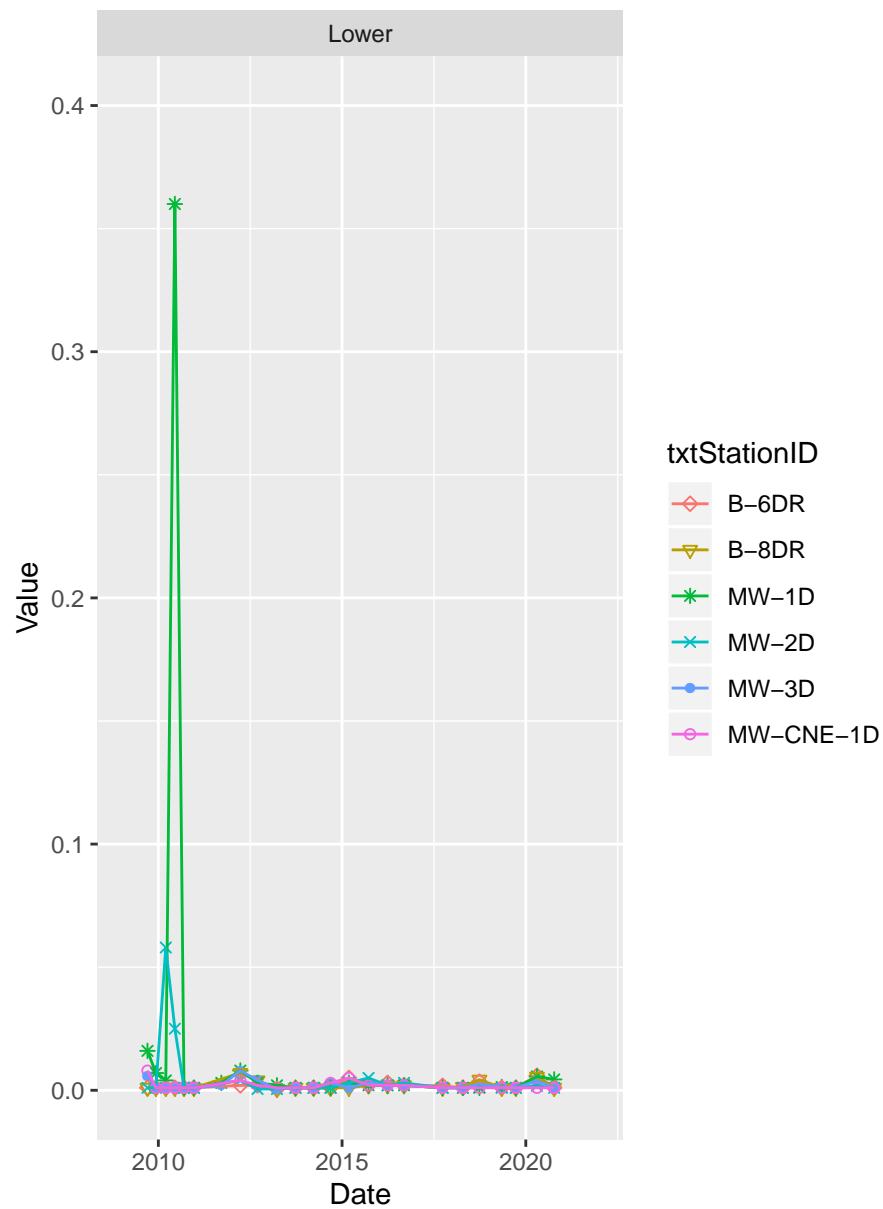
**Sulfate, mg/L**



Non-detect values plotted at Method Reporting Limit value

**Figure A21. Time Series**

**Temperature, 0 C, 0 C**



Non-detect values plotted at Method Reporting Limit value

**Figure A22. Time Series**

**Zinc, Dissolved, mg/L**

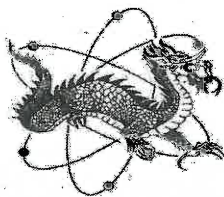
**APPENDIX B**  
**2020 Q2 LAB REPORTS**







Analytical Laboratory, Inc.



### CWA CHAIN OF CUSTODY RECORD

627 Durell Road SE, Suite B105, Tumwater, WA 98501

Phone: (360) 866-0543

Email: [customerservice@dragonlaboratory.com](mailto:customerservice@dragonlaboratory.com)

Website: [www.dragonlaboratory.com](http://www.dragonlaboratory.com)

Page 3 of 3

Samples Collected By:

**Contact Number:**

Client: Lewis County Landfill

Phone: 360-740-1221

Project Name: Landfill wet season

Project PO:

Address: 1411 S. Tower Ave

Fax:

**Project Location: Centralia Landfill**

**Contact :**

Centrailia, WA 98531

E-mail:

Project Number:

DAL Project #: 200422-C9

**Matrix Code:** SW=storm/surface water  
WW = wastewater GW=ground water O =other  
SL = sludge V = vapor S = soil or solid

[illegible]

Relinquished By (Signature)

Date/Time

Received By (Signature)

Date/Time

### Turn Around Time

Relinquished By (Signature)

Date/Time

Received By (Signature) \_\_\_\_\_

Date/Time

**Note:** Records will only be retained for 7 years

Sample Disposal instructions :

☐ DAL Disposal @\$2.50 per container

☐ Return☐ Pick Up

- ☐ 1 Day  
☐ 2 Day  
☐ 5 Business Days  
☒ 10 Business Days (approx)  
☐ Other

**Metals:** Please circle the desired analytes.

Total:

Ag Al As Ba Be Ca Cd Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sn Ti Zn

**Dissolved:**

Ag Al As Ba Be Ca Cd Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sn Ti Zn

Sample Temp:

Cooler Temp:





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Customerservice@DragonLaboratory.com

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water  
Mobile Environmental Laboratory



Lewis County  
1411 S. Tower Ave  
Centralia, WA 98531

Sampled By: BN/KK

**DAL Project No.: 200422-09**

Project Name: Landfill Wet Season

Project No.: n/a

PO No.: n/a

Date Collected: 4/21/2020;12:50 - 4/22/2020;10:00

Date Received: 4/22/2020; 12:24

Temperature Received (°C): 4

Report Date: 6/30/2020

Preparation Method: US EPA 200.8 Digested

Analytical Method: US EPA 200.8

Date Prepared: 4/27/2020

Date Analyzed: 4/28/2020

Analyst: TM

Units: ug/L

Matrix: Non-Potable Water

Reporting Limits: Standard

Instrument ID: Agilent 7500

Lab Data File: 20D28100

## TOTAL HEAVY METALS ANALYTICAL RESULTS

Analyte	CAS No.	MRL	Method Blank	SW14
Arsenic (As)	7440-38-2	0.63	nd	<b>0.87</b>
Calcium (Ca)	7440-70-2	62.5	nd	<b>34,400</b>
Iron (Fe)	7439-89-6	62.5	nd	<b>1,510</b>
Magnesium (Mg)	7439-95-4	31.3	nd	<b>19,400</b>
Manganese (Mn)	7439-96-5	0.63	nd	<b>1,850</b>
Potassium (K)	7440-09-7	125	nd	<b>804</b>
Sodium (Na)	7440-23-5	125	nd	<b>12,800</b>
Zinc (Zn)	7440-66-6	1.3	nd	<b>16.4</b>
Dilution Factor			1.25	1.25



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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water  
Mobile Environmental Laboratory



Lewis County  
DAL Project No.: 200422-09

Project Name: Landfill Wet Season  
Project No.: n/a

## TOTAL HEAVY METALS QUALITY CONTROL RESULTS

### LABORATORY CONTROL SAMPLE AND MATRIX SPIKE

QC Batch ID: 200428-Metals			MS/MSD Sample ID: 200428-Metals MS/MSD							LCS Sample ID: 200428-Metals LCS			
Analyte	MS/MSD Level (ug/L)	Sample Conc. (ug/L)	MS Recovery (ug/L)	MS Percent Recovery	MSD Recovery (ug/L)	MSD Percent Recovery	MS/MSD Limits (%)	RPD	MS/MSD RPD Limits	LCS Level (ug/L)	LCS Recovery (ug/L)	LCS Percent Recovery	LCS Limits (%)
Arsenic (As)	50	8.2	55.3	94.2%	57.3	98.2%	70-130	4.2	≤ 25%	50	47.5	95.1%	85-115
Calcium (Ca)	DO	DO	DO	DO	DO	DO	DO	DO	DO	5000	5043	101%	85-115
Iron (Fe)	5000	2325	6926	92.0%	7092	95.3%	70-130	3.5	≤ 25%	5000	4959	99.2%	85-115
Magnesium (Mg)	5000	7458	11890	88.6%	12140	93.6%	70-130	5.5	≤ 25%	5000	4848	97.0%	85-115
Manganese (Mn)	DO	DO	DO	DO	DO	DO	DO	DO	DO	50	47.4	94.9%	85-115
Potassium (K)	MI	MI	MI	MI	MI	MI	MI	MI	MI	5000	4846	96.9%	85-115
Sodium (Na)	DO	DO	DO	DO	DO	DO	DO	DO	DO	5000	4793	95.9%	85-115
Zinc (Zn)	50	2.2	51.6	98.9%	52.4	101%	70-130	1.6	≤ 25%	50	47.1	94.2%	85-115

WA-DOE-Laboratory Certification No.: C890

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

n/a indicates not applicable

MI indicates Matrix Interference, sample matrix interfered with recovery of spiked analyte.

DO indicates Diluted Out, matrix spike level was less than 30% of the background concentration therefore recovery calculations are not required per the method.

Comments and Explanations: None.



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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water  
Mobile Environmental Laboratory



Lewis County  
1411 S. Tower Ave  
Centralia, WA 98531

Sampled By: BN/KK

**DAL Project No.: 200422-09**

Project Name: Landfill Wet Season

Project No.: n/a

PO No.: n/a

Date Collected: 4/21/2020;12:50 - 4/22/2020;10:00

Date Received: 4/22/2020; 12:24

Temperature Received (°C): 4

Report Date: 6/30/2020

Preparation Method: US EPA 200.8 Dissolved

Analytical Method: US EPA 200.8

Date Prepared: 4/23/2020

Date Analyzed: 4/23/2020

Analyst: TM

Units: ug/L

Matrix: Non-Potable Water

Reporting Limits: Standard

Instrument ID: Agilent 7500

Lab Data File: 20D23o00

## DISSOLVED HEAVY METALS ANALYTICAL RESULTS

Analyte	CAS No.	MRL	Method Blank	MW1D	MW1S	MW3D	MW3S	CNE1D	DUP1	CNE1S	MW2SU	MW2S	MW2D
Arsenic (As)	7440-38-2	0.50	nd	9.0	nd	1.5	nd	nd	----	6.3	1.5	20.2	----
Calcium (Ca)	7440-70-2	50.0	nd	24,300	11,700	19,100	12,300	28,300	----	90,000	141,000 (1)	136,000 (1)	----
Iron (Fe)	7439-89-6	50.0	nd	89.1	nd	967	nd	107	----	16,900 (1)	5,800 (1)	6,500 (1)	----
Magnesium (Mg)	7439-95-4	25.0	nd	8,750	3,950	7,990	3,140 (1)	7,710	----	60,000 (1)	76,000	74,200 (1)	----
Manganese (Mn)	7439-96-5	0.50	nd	538	0.80	1,030	12.6 (1)	216	----	2,470 (1)	7,840	8,940 (1)	----
Potassium (K)	7440-09-7	100	nd	1,680	516	2,270	489 (1)	1,950	----	4,540 (1)	6,920	6,170 (1)	----
Sodium (Na)	7440-23-5	100	nd	24,900	8,400	13,200	11,000 (1)	21,600	----	22,000 (1)	27,500	23,300 (1)	----
Zinc (Zn)	7440-66-6	1.0	nd	5.6	2.1	3.8	7.1	nd	----	4.7	12.2	5.5	----
Dilution Factor			1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Comments and Explanations: A (1) indicates sample was analyzed on 5/12/2020 20E12k00 at a DF of 10.



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Mobile Environmental Laboratory



Lewis County  
1411 S. Tower Ave  
Centralia, WA 98531

Sampled By: BN/KK

**DAL Project No.: 200422-09**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Date Collected: 4/21/2020;12:50 - 4/22/2020;10:00

Date Received: 4/22/2020; 12:24

Temperature Received (°C): 4

Report Date: 6/30/2020

Preparation Method: US EPA 200.8 Dissolved

Analytical Method: US EPA 200.8

Date Prepared: 4/23/2020

Date Analyzed: 4/23/2020

Analyst: TM

Units: ug/L

Matrix: Non-Potable Water

Reporting Limits: Standard

Instrument ID: Agilent 7500

Lab Data File: 20D23o00

## DISSOLVED HEAVY METALS ANALYTICAL RESULTS

Sample Identification	CAS No.	MRL	B6DR	MW5S	B2SU	B1SU	B8DR	MW4S	B1S	B2S	SW14
Arsenic (As)	7440-38-2	0.50	1.7	0.55	1.2	2.1	nd	nd	15.0	0.95	0.62
Calcium (Ca)	7440-70-2	50	15,500	8,980	26,500	61,500	35,500	11,200	32,900	12,500	33,200
Iron (Fe)	7439-89-6	50	125	143	nd	956	nd	nd	nd	nd	217
Magnesium (Mg)	7439-95-4	25	5,160 (1)	4,110	21,700	48,300 (1)	13,700	5,590	12,300	4,290 (1)	18,500 (1)
Manganese (Mn)	7439-96-5	0.50	370 (1)	320	0.95	4,060 (1)	256	6.8	874	16.4 (1)	1,800 (1)
Potassium (K)	7440-09-7	100	2,160 (1)	2,070	1,640	2,320 (1)	1,840	899	4,810	487 (1)	765 (1)
Sodium (Na)	7440-23-5	100	8,880 (1)	7,570	20,600	56,400 (1)	42,200	10,900	13,000	5,320 (1)	12,500 (1)
Zinc (Zn)	7440-66-6	1.0	5.9	12.8	8.9	17.1	5.5	10.0	4.0	8.2	23.7
Dilution Factor			1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Comments and Explanations: A (1) indicates sample was analyzed on 5/12/2020 20E12k00 at a DF of 10.





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Mobile Environmental Laboratory



Lewis County  
DAL Project No.: 200422-09

Project Name: Landfill Wet Season  
Project No.: n/a

## DISSOLVED HEAVY METALS QUALITY CONTROL RESULTS

### LABORATORY CONTROL SAMPLE AND MATRIX SPIKE

QC Batch ID: 200423-Metals			MS/MSD Sample ID: 200423-Metals MS/MSD							LCS Sample ID: 200423-Metals LCS			
Analyte	MS/MSD Level (ug/L)	Sample Conc. (ug/L)	MS Recovery (ug/L)	MS Percent Recovery	MSD Recovery (ug/L)	MSD Percent Recovery	MS/MSD Limits (%)	RPD	MS/MSD RPD Limits	LCS Level (ug/L)	LCS Recovery (ug/L)	LCS Percent Recovery	LCS Limits (%)
Arsenic (As)	50	1.1	51.3	100%	49.3	96.4%	70-130	4.0	≤ 25%	50	47.6	95.2%	85-115
Calcium (Ca)	5000	29.0	5179	103%	5156	103%	70-130	0.45	≤ 25%	5000	4982	99.6%	85-115
Iron (Fe)	5000	116	5090	99.5%	5024	98.2%	70-130	1.3	≤ 25%	5000	4887	97.7%	85-115
Magnesium (Mg)	5000	9.8	5070	101%	4939	98.6%	70-130	2.6	≤ 25%	5000	4993	99.9%	85-115
Manganese (Mn)	50	0.99	50.7	99.3%	49.9	97.8%	70-130	1.6	≤ 25%	50	48.7	97.5%	85-115
Potassium (K)	MI	MI	MI	MI	MI	MI	MI	MI	MI	5000	4952	99.0%	85-115
Sodium (Na)	5000	29670	34610	98.8%	33760	81.8%	70-130	18.8	≤ 25%	5000	5065	101%	85-115
Zinc (Zn)	50	140	190	100%	186	92.4%	70-130	7.9	≤ 25%	50	48.5	97.1%	85-115

WA-DOE-Laboratory Certification No.: C890

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

n/a indicates not applicable

MI indicates Matrix Interference, sample matrix interfered with recovery of spiked analyte.



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Lewis County  
1411 S. Tower Ave  
Centralia, WA 98531

Sampled By: BN/KK

**DAL Project No.: 200422-09**

Project Name: Landfill Wet Season

Project No.: n/a

PO No.: n/a

Date Collected: 4/21/2020;12:50 - 4/22/2020;10:00

Date Received: 4/22/2020; 12:24

Temperature Received (°C): 4

Report Date: 6/30/2020

Preparation Method: US EPA 200.8 Dissolved

Analytical Method: US EPA 200.8

Date Prepared: 4/29/2020

Date Analyzed: 4/30/2020

Analyst: TM

Units: ug/L

Matrix: Non-Potable Water

Reporting Limits: Standard

Instrument ID: Agilent 7500

Lab Data File: 20D30k00

## DISSOLVED HEAVY METALS ANALYTICAL RESULTS

Analyte	CAS No.	MRL	Method	DUP1	MW2D
			Blank		
Arsenic (As)	7440-38-2	0.50	nd	nd	6.1
Calcium (Ca)	7440-70-2	50.0	nd	29,200	31,000
Iron (Fe)	7439-89-6	50.0	nd	58.1	nd
Magnesium (Mg)	7439-95-4	25.0	nd	7,220	12,200
Manganese (Mn)	7439-96-5	0.50	nd	206	838
Potassium (K)	7440-09-7	100	nd	1,810	2,390
Sodium (Na)	7440-23-5	100	nd	20,300	17,300
Zinc (Zn)	7440-66-6	1.0	nd	2.3	1.8
Dilution Factor			1.0	1.0	1.0



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Mobile Environmental Laboratory



Lewis County  
DAL Project No.: 200422-09

Project Name: Landfill Wet Season  
Project No.: n/a

## DISSOLVED HEAVY METALS QUALITY CONTROL RESULTS

### LABORATORY CONTROL SAMPLE AND MATRIX SPIKE

QC Batch ID: 200430-Metals			MS/MSD Sample ID: 200430-Metals MS/MSD							LCS Sample ID: 200430-Metals LCS			
Analyte	MS/MSD Level (ug/L)	Sample Conc. (ug/L)	MS Recovery (ug/L)	MS Percent Recovery	MSD Recovery (ug/L)	MSD Percent Recovery	MS/MSD Limits (%)	RPD	MS/MSD RPD Limits	LCS Level (ug/L)	LCS Recovery (ug/L)	LCS Percent Recovery	LCS Limits (%)
Arsenic (As)	50	0.95	47.9	93.8%	50.0	98.1%	70-130	4.5	≤ 25%	50	45.1	90.2%	85-115
Calcium (Ca)	5000	9829	13410	71.6%	15390	111%	70-130	43.3	≤ 25%	5000	4835	96.7%	85-115
Iron (Fe)	5000	1334	5958	92.5%	6821	110%	70-130	17.1	≤ 25%	5000	4864	97.3%	85-115
Magnesium (Mg)	5000	3518	8141	92.5%	8766	105%	70-130	12.7	≤ 25%	5000	4821	96.4%	85-115
Manganese (Mn)	50	8.0	53.9	91.9%	58.3	101%	70-130	9.1	≤ 25%	50	47.5	95.1%	85-115
Potassium (K)	MI	MI	MI	MI	MI	MI	MI	MI	MI	5000	4849	97.0%	85-115
Sodium (Na)	5000	4620	9264	92.9%	9889	105%	70-130	12.6	≤ 25%	5000	4829	96.6%	85-115
Zinc (Zn)	50	37.5	95.2	115%	95.7	116%	70-130	0.88	≤ 25%	50	45.3	90.6%	85-115

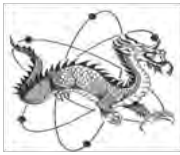
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n/a indicates not applicable

MI indicates Matrix Interference, sample matrix interfered with recovery of spiked analyte.

Comments and Explanations: None.



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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water  
Mobile Environmental Laboratory



Lewis County  
1411 S. Tower Ave  
Centralia, WA 98531

Sampled by: BN/KK

**DAL Project No.: 200422-09**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: MW1D

Matrix: Non-Potable Water

Temperature Received (°C): 4

Collected: 4/21/2020; 12:50

Received: 4/22/2020; 12:24

Report Date: 6/30/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	162	n/a	5.0	mg/L	SM 2320 B	1	4/23/2020	4/23/2020	n/a	SH/EW	
Chloride	5.6	0.0024	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
COD	nd	2.5	10.0	mg/L	SM 5220 D	1	4/23/2020	4/23/2020	n/a	BS	
Hardness	107	n/a	1.0	mg/L	SM 2340 B	1.25	5/5/2020	5/5/2020	n/a	TM	
Nitrogen, Ammonia	1.6	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	4/23/2020	4/23/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	nd	0.0015	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
Solids, Total Dissolved	201	n/a	20.0	mg/L	SM 2540 C	1	4/30/2020	5/1/2020	n/a	SH	(1)
Sulfate	nd	0.046	0.20	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	

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Comments and Explanations: A (1) flag Indicates an estimated value because the sample was analyzed outside of method hold time.





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Sampled by: BN/KK

**DAL Project No.: 200422-09**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: MW1S

Matrix: Non-Potable Water

Temperature Received (°C): 4

Collected: 4/21/2020; 13:10

Received: 4/22/2020; 12:24

Report Date: 6/30/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	51.0	n/a	5.0	mg/L	SM 2320 B	1	4/23/2020	4/23/2020	n/a	SH/EW	
Chloride	1.7	0.0024	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
COD	nd	2.5	10.0	mg/L	SM 5220 D	1	4/23/2020	4/23/2020	n/a	BS	
Hardness	47.2	n/a	1.0	mg/L	SM 2340 B	1.25	5/5/2020	5/5/2020	n/a	TM	
Nitrogen, Ammonia	nd	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	4/23/2020	4/23/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	1.3	0.0015	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
Solids, Total Dissolved	107	n/a	20.0	mg/L	SM 2540 C	1	4/30/2020	5/1/2020	n/a	SH	(1)
Sulfate	10.6	0.046	0.20	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	

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Sampled by: BN/KK

**DAL Project No.: 200422-09**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: MW3D

Matrix: Non-Potable Water

Temperature Received (°C): 4

Collected: 4/21/2020; 13:30

Received: 4/22/2020; 12:24

Report Date: 6/30/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	104	n/a	5.0	mg/L	SM 2320 B	1	4/23/2020	4/23/2020	n/a	SH/EW	
Chloride	5.4	0.0024	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
COD	nd	2.5	10.0	mg/L	SM 5220 D	1	4/23/2020	4/23/2020	n/a	BS	
Hardness	80.4	n/a	1.0	mg/L	SM 2340 B	1.25	5/5/2020	5/5/2020	n/a	TM	
Nitrogen, Ammonia	0.73	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	4/23/2020	4/23/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	nd	0.0015	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
Solids, Total Dissolved	174	n/a	20.0	mg/L	SM 2540 C	1	4/30/2020	5/1/2020	n/a	SH	(1)
Sulfate	nd	0.046	0.20	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	

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**DAL Project No.: 200422-09**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: MW3S

Matrix: Non-Potable Water

Temperature Received (°C): 4

Collected: 4/21/2020; 13:45

Received: 4/22/2020; 12:24

Report Date: 6/30/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	47.0	n/a	5.0	mg/L	SM 2320 B	1	4/23/2020	4/23/2020	n/a	SH/EW	
Chloride	5.0	0.0024	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
COD	nd	2.5	10.0	mg/L	SM 5220 D	1	4/23/2020	4/23/2020	n/a	BS	
Hardness	46.0	n/a	1.0	mg/L	SM 2340 B	1.25	5/5/2020	5/5/2020	n/a	TM	
Nitrogen, Ammonia	nd	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	4/23/2020	4/23/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	0.95	0.0015	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
Solids, Total Dissolved	112	n/a	20.0	mg/L	SM 2540 C	1	4/30/2020	5/1/2020	n/a	SH	(1)
Sulfate	16.7	0.046	0.20	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	

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Sampled by: BN/KK

**DAL Project No.: 200422-09**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: CNE1D

Matrix: Non-Potable Water

Temperature Received (°C): 4

Collected: 4/21/2020; 14:05

Received: 4/22/2020; 12:24

Report Date: 6/30/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	151	n/a	5.0	mg/L	SM 2320 B	1	4/23/2020	4/23/2020	n/a	SH/EW	
Chloride	6.4	0.0024	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
COD	nd	2.5	10.0	mg/L	SM 5220 D	1	4/23/2020	4/23/2020	n/a	BS	
Hardness	103	n/a	1.0	mg/L	SM 2340 B	1.25	5/5/2020	5/5/2020	n/a	TM	
Nitrogen, Ammonia	0.92	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	4/23/2020	4/23/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	nd	0.0015	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
Solids, Total Dissolved	162	n/a	20.0	mg/L	SM 2540 C	1	4/30/2020	5/1/2020	n/a	SH	(1)
Sulfate	nd	0.046	0.20	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	

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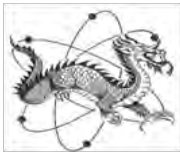
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Sampled by: BN/KK

**DAL Project No.: 200422-09**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: DUP1

Matrix: Non-Potable Water

Temperature Received (°C): 4

Collected: 4/21/2020; 14:05

Received: 4/22/2020; 12:24

Report Date: 6/30/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	141	n/a	5.0	mg/L	SM 2320 B	1	4/23/2020	4/23/2020	n/a	SH/EW	
Chloride	6.4	0.0024	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
COD	19.8	2.5	10.0	mg/L	SM 5220 D	1	4/23/2020	4/23/2020	n/a	BS	
Hardness	99.2	n/a	1.0	mg/L	SM 2340 B	1.25	5/5/2020	5/5/2020	n/a	TM	
Nitrogen, Ammonia	0.37	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	4/23/2020	4/23/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	nd	0.0015	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
Solids, Total Dissolved	183	n/a	20.0	mg/L	SM 2540 C	1	4/30/2020	5/1/2020	n/a	SH	(1)
Sulfate	nd	0.046	0.20	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	

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**DAL Project No.: 200422-09**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: CNE1S

Matrix: Non-Potable Water

Temperature Received (°C): 4

Collected: 4/21/2020; 14:25

Received: 4/22/2020; 12:24

Report Date: 6/30/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	525	n/a	5.0	mg/L	SM 2320 B	1	4/23/2020	4/23/2020	n/a	SH/EW	
Chloride	57.2	0.0024	0.10	mg/L	EPA 300.0	10	4/22/2020	4/23/2020	n/a	AK	
COD	26.5	2.5	10.0	mg/L	SM 5220 D	1	4/23/2020	4/23/2020	n/a	BS	
Hardness	484	n/a	1.0	mg/L	SM 2340 B	1.25	5/5/2020	5/5/2020	n/a	TM	
Nitrogen, Ammonia	nd	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	4/23/2020	4/23/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	nd	0.0015	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
Solids, Total Dissolved	610	n/a	20.0	mg/L	SM 2540 C	1	4/30/2020	5/1/2020	n/a	SH	(1)
Sulfate	nd	0.046	0.20	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	

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Sampled by: BN/KK

**DAL Project No.: 200422-09**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: MW2SU

Matrix: Non-Potable Water

Temperature Received (°C): 4

Collected: 4/21/2020; 14:40

Received: 4/22/2020; 12:24

Report Date: 6/30/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	493	n/a	5.0	mg/L	SM 2320 B	1	4/23/2020	4/23/2020	n/a	SH/EW	
Chloride	213	0.0024	0.10	mg/L	EPA 300.0	10	4/22/2020	4/23/2020	n/a	AK	
COD	45.7	2.5	10.0	mg/L	SM 5220 D	1	4/23/2020	4/23/2020	n/a	BS	
Hardness	597	n/a	1.0	mg/L	SM 2340 B	1.25	5/5/2020	5/5/2020	n/a	TM	
Nitrogen, Ammonia	nd	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	4/23/2020	4/23/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	0.12	0.0015	0.10	mg/L	EPA 300.0	10	4/22/2020	4/23/2020	n/a	AK	
Solids, Total Dissolved	984	n/a	20.0	mg/L	SM 2540 C	1	4/30/2020	5/1/2020	n/a	SH	(1)
Sulfate	0.53	0.046	0.20	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	

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**DAL Project No.: 200422-09**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: MW2S

Matrix: Non-Potable Water

Temperature Received (°C): 4

Collected: 4/21/2020; 14:50

Received: 4/22/2020; 12:24

Report Date: 6/30/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	533	n/a	5.0	mg/L	SM 2320 B	1	4/23/2020	4/23/2020	n/a	SH/EW	
Chloride	220	0.0024	0.10	mg/L	EPA 300.0	10	4/22/2020	4/23/2020	n/a	AK	
COD	32.3	2.5	10.0	mg/L	SM 5220 D	1	4/23/2020	4/23/2020	n/a	BS	
Hardness	661	n/a	1.0	mg/L	SM 2340 B	1.25	5/5/2020	5/5/2020	n/a	TM	
Nitrogen, Ammonia	0.34	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	4/23/2020	4/23/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	0.13	0.0015	0.10	mg/L	EPA 300.0	10	4/22/2020	4/23/2020	n/a	AK	
Solids, Total Dissolved	982	n/a	20.0	mg/L	SM 2540 C	1	4/30/2020	5/1/2020	n/a	SH	
Sulfate	1.0	0.046	0.20	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	

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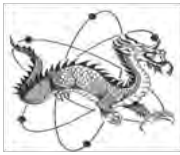
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Sampled by: BN/KK

**DAL Project No.: 200422-09**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: MW2D

Matrix: Non-Potable Water

Temperature Received (°C): 4

Collected: 4/21/2020; 15:00

Received: 4/22/2020; 12:24

Report Date: 6/30/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	161	n/a	5.0	mg/L	SM 2320 B	1	4/23/2020	4/23/2020	n/a	SH/EW	
Chloride	10.9	0.0024	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
COD	nd	2.5	10.0	mg/L	SM 5220 D	1	4/23/2020	4/23/2020	n/a	BS	
Hardness	130	n/a	1.0	mg/L	SM 2340 B	1.25	5/5/2020	5/5/2020	n/a	TM	
Nitrogen, Ammonia	1.7	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	4/23/2020	4/23/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	nd	0.0015	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
Solids, Total Dissolved	204	n/a	20.0	mg/L	SM 2540 C	1	4/30/2020	5/1/2020	n/a	SH	(1)
Sulfate	nd	0.046	0.20	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	

WA-DOE-Laboratory Certification No.: C890

"MDL" indicates Method Detection Limit

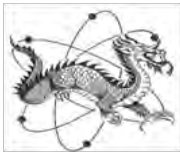
"MRL" indicates Method Reporting Limit

"DF" indicates Dilution Factor

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Comments and Explanations: A (1) flag Indicates an estimated value because the sample was analyzed outside of method hold time.



# DRAGON ANALYTICAL LABORATORY

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water  
Mobile Environmental Laboratory



Lewis County  
1411 S. Tower Ave  
Centralia, WA 98531

Sampled by: BN/KK

**DAL Project No.: 200422-09**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: B6DR

Matrix: Non-Potable Water

Temperature Received (°C): 4

Collected: 4/21/2020; 15:15

Received: 4/22/2020; 12:24

Report Date: 6/30/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	86.0	n/a	5.0	mg/L	SM 2320 B	1	4/23/2020	4/23/2020	n/a	SH/EW	
Chloride	6.0	0.0024	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
COD	18.0	2.5	10.0	mg/L	SM 5220 D	1	4/23/2020	4/23/2020	n/a	BS	
Hardness	142	n/a	1.0	mg/L	SM 2340 B	1.25	5/5/2020	5/5/2020	n/a	TM	
Nitrogen, Ammonia	0.49	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	4/23/2020	4/23/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	0.23	0.0015	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
Solids, Total Dissolved	115	n/a	20.0	mg/L	SM 2540 C	1	4/30/2020	5/1/2020	n/a	SH	(1)
Sulfate	1.6	0.046	0.20	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	

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Lewis County  
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Centralia, WA 98531

Sampled by: BN/KK

**DAL Project No.: 200422-09**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: MW5S

Matrix: Non-Potable Water

Temperature Received (°C): 4

Collected: 4/21/2020; 15:25

Received: 4/22/2020; 12:24

Report Date: 6/30/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	42.0	n/a	5.0	mg/L	SM 2320 B	1	4/23/2020	4/23/2020	n/a	SH/EW	
Chloride	3.8	0.0024	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
COD	nd	2.5	10.0	mg/L	SM 5220 D	1	4/23/2020	4/23/2020	n/a	BS	
Hardness	37.9	n/a	1.0	mg/L	SM 2340 B	1.25	5/5/2020	5/5/2020	n/a	TM	
Nitrogen, Ammonia	nd	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	4/23/2020	4/23/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	0.39	0.0015	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
Solids, Total Dissolved	73.6	n/a	20.0	mg/L	SM 2540 C	1	4/30/2020	5/1/2020	n/a	SH	(1)
Sulfate	3.9	0.046	0.20	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	

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Sampled by: BN/KK

**DAL Project No.: 200422-09**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: B2SU

Matrix: Non-Potable Water

Temperature Received (°C): 4

Collected: 4/21/2020; 15:40

Received: 4/22/2020; 12:24

Report Date: 6/30/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	203	n/a	5.0	mg/L	SM 2320 B	1	4/23/2020	4/23/2020	n/a	SH/EW	
Chloride	2.1	0.0024	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
COD	21.7	2.5	10.0	mg/L	SM 5220 D	1	4/23/2020	4/23/2020	n/a	BS	
Hardness	150	n/a	1.0	mg/L	SM 2340 B	1.25	5/5/2020	5/5/2020	n/a	TM	
Nitrogen, Ammonia	nd	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	4/23/2020	4/23/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	0.62	0.0015	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
Solids, Total Dissolved	206	n/a	20.0	mg/L	SM 2540 C	1	4/30/2020	5/1/2020	n/a	SH	(1)
Sulfate	9.3	0.046	0.20	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	

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Sampled by: BN/KK

**DAL Project No.: 200422-09**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: B1SU

Matrix: Non-Potable Water

Temperature Received (°C): 4

Collected: 4/21/2020; 16:00

Received: 4/22/2020; 12:24

Report Date: 6/30/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	431	n/a	5.0	mg/L	SM 2320 B	1	4/23/2020	4/23/2020	n/a	SH/EW	
Chloride	65.5	0.0024	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
COD	33.0	2.5	10.0	mg/L	SM 5220 D	1	4/23/2020	4/23/2020	n/a	BS	
Hardness	324	n/a	1.0	mg/L	SM 2340 B	1.25	5/5/2020	5/5/2020	n/a	TM	
Nitrogen, Ammonia	nd	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	4/23/2020	4/23/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	nd	0.0015	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
Solids, Total Dissolved	514	n/a	20.0	mg/L	SM 2540 C	1	4/30/2020	5/1/2020	n/a	SH	(1)
Sulfate	0.25	0.046	0.20	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	

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Sampled by: BN/KK

**DAL Project No.: 200422-09**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: B8DR

Matrix: Non-Potable Water

Temperature Received (°C): 4

Collected: 4/21/2020; 16:15

Received: 4/22/2020; 12:24

Report Date: 6/30/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	208	n/a	5.0	mg/L	SM 2320 B	1	4/23/2020	4/23/2020	n/a	SH/EW	
Chloride	5.1	0.0024	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
COD	22.9	2.5	10.0	mg/L	SM 5220 D	1	4/23/2020	4/23/2020	n/a	BS	
Hardness	54.1	n/a	1.0	mg/L	SM 2340 B	1.25	5/5/2020	5/5/2020	n/a	TM	
Nitrogen, Ammonia	0.67	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	4/23/2020	4/23/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	nd	0.0015	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
Solids, Total Dissolved	273	n/a	20.0	mg/L	SM 2540 C	1	4/30/2020	5/1/2020	n/a	SH	(1)
Sulfate	21.0	0.046	0.20	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	

WA-DOE-Laboratory Certification No.: C890

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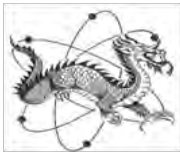
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Sampled by: BN/KK

**DAL Project No.: 200422-09**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: MW4S

Matrix: Non-Potable Water

Temperature Received (°C): 4

Collected: 4/21/2020; 16:30

Received: 4/22/2020; 12:24

Report Date: 6/30/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	62.0	n/a	5.0	mg/L	SM 2320 B	1	4/23/2020	4/23/2020	n/a	SH/EW	
Chloride	1.9	0.0024	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
COD	nd	2.5	10.0	mg/L	SM 5220 D	1	4/23/2020	4/23/2020	n/a	BS	
Hardness	48.5	n/a	1.0	mg/L	SM 2340 B	1.25	5/5/2020	5/5/2020	n/a	TM	
Nitrogen, Ammonia	nd	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	4/23/2020	4/23/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	0.55	0.0015	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
Solids, Total Dissolved	96.8	n/a	20.0	mg/L	SM 2540 C	1	4/30/2020	5/1/2020	n/a	SH	(1)
Sulfate	5.1	0.046	0.20	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	

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Sampled by: BN/KK

**DAL Project No.: 200422-09**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: B1S

Matrix: Non-Potable Water

Temperature Received (°C): 4

Collected: 4/21/2020; 16:52

Received: 4/22/2020; 12:24

Report Date: 6/30/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	162	n/a	5.0	mg/L	SM 2320 B	1	4/23/2020	4/23/2020	n/a	SH/EW	
Chloride	5.1	0.0024	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
COD	19.8	2.5	10.0	mg/L	SM 5220 D	1	4/23/2020	4/23/2020	n/a	BS	
Hardness	136	n/a	1.0	mg/L	SM 2340 B	1.25	5/5/2020	5/5/2020	n/a	TM	
Nitrogen, Ammonia	0.63	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	4/23/2020	4/23/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	nd	0.0015	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
Solids, Total Dissolved	213	n/a	20.0	mg/L	SM 2540 C	1	4/30/2020	5/1/2020	n/a	SH	(1)
Sulfate	nd	0.046	0.20	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	

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Sampled by: BN/KK

**DAL Project No.: 200422-09**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: B2S

Matrix: Non-Potable Water

Temperature Received (°C): 4

Collected: 4/21/2020; 17:15

Received: 4/22/2020; 12:24

Report Date: 6/30/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	40.0	n/a	5.0	mg/L	SM 2320 B	1	4/23/2020	4/23/2020	n/a	SH/EW	
Chloride	2.2	0.0024	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
COD	19.8	2.5	10.0	mg/L	SM 5220 D	1	4/23/2020	4/23/2020	n/a	BS	
Hardness	58.2	n/a	1.0	mg/L	SM 2340 B	1.25	5/5/2020	5/5/2020	n/a	TM	
Nitrogen, Ammonia	nd	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	4/23/2020	4/23/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	2.5	0.0015	0.10	mg/L	EPA 300.0	10	4/22/2020	4/23/2020	n/a	AK	
Solids, Total Dissolved	95.2	n/a	20.0	mg/L	SM 2540 C	1	4/30/2020	5/1/2020	n/a	SH	(1)
Sulfate	8.7	0.046	0.20	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	

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Sampled by: BN/KK

**DAL Project No.: 200422-09**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: SW14

Matrix: Non-Potable Water

Temperature Received (°C): 4

Collected: 4/22/2020; 10:00

Received: 4/22/2020; 12:24

Report Date: 6/30/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	161	n/a	5.0	mg/L	SM 2320 B	1	4/23/2020	4/23/2020	n/a	SH/EW	
Chloride	34.0	0.0024	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
COD	38.6	2.5	10.0	mg/L	SM 5220 D	1	4/23/2020	4/23/2020	n/a	BS	
Hardness	166	n/a	1.0	mg/L	SM 2340 B	1.25	5/5/2020	5/5/2020	n/a	TM	
Nitrogen, Ammonia	nd	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	4/23/2020	4/23/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	nd	0.0015	0.10	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	
Solids, Total Dissolved	254	n/a	20.0	mg/L	SM 2540 C	1	4/30/2020	5/1/2020	n/a	SH	(1)
Sulfate	1.9	0.046	0.20	mg/L	EPA 300.0	1	4/22/2020	4/23/2020	n/a	AK	

WA-DOE-Laboratory Certification No.: C890

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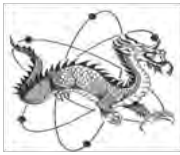
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Lewis County

DAL Project No.: 200422-09

Project Name: Landfill Wet Season

Project No.: n/a

## QUALITY CONTROL RESULTS Method Blank

PARAMETER	SAMPLE BATCH	RESULT	MRL	UNITS	ANALYTICAL METHOD	ANALYSIS DATE	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	200423-Alkalinity (CaCO <sub>3</sub> )	n/a	5.0	mg/L	SM 2320 B	4/23/2020	SH/EW	
Chloride	200423-Chloride	nd	0.10	mg/L	EPA 300.0	4/23/2020	AK	
COD	200423-COD	nd	10.0	mg/L	SM 5220 D	4/23/2020	BS	
Hardness	200505-Hardness	nd	1.0	mg/L	SM 2340 B	5/5/2020	TM	
Nitrogen, Ammonia	200423-NH <sub>3</sub>	nd	0.30	mg/L	SM 4500-NH <sub>3</sub> D	4/23/2020	BS	
Nitrogen, Nitrate + Nitrite	200423-N+N	nd	0.10	mg/L	EPA 300.0	4/23/2020	AK	
Solids, Total Dissolved	200501-TDS	nd	20.0	mg/L	SM 2540 C	5/1/2020	SH	
Sulfate	200423-Sulfate	nd	0.20	mg/L	EPA 300.0	4/23/2020	AK	

## QUALITY CONTROL RESULTS Duplicate Sample

PARAMETER	SAMPLE BATCH	RESULT	DUP. RESULT	UNITS	ANALYTICAL METHOD	RPD(%)	LIMITS(%)	ANALYSIS DATE	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	200423-Alkalinity (CaCO <sub>3</sub> )	161	166	mg/L	SM 2320 B	3.1	±35	4/23/2020	SH/EW	
Chloride	200423-Chloride	3.5	3.5	mg/L	EPA 300.0	0.75	±35	4/23/2020	AK	
COD	200423-COD	nd	nd	mg/L	SM 5220 D	0.00	±35	4/23/2020	BS	
Hardness	200505-Hardness	107	101	mg/L	SM 2340 B	6.1	±35	5/5/2020	TM	
Nitrogen, Ammonia	200423-NH <sub>3</sub>	0.92	0.94	mg/L	SM 4500-NH <sub>3</sub> D	3.1	±35	4/23/2020	BS	
Nitrogen, Nitrate + Nitrite	200423-N+N	nd	nd	mg/L	EPA 300.0	0.00	±35	4/23/2020	AK	
Solids, Total Dissolved	200501-TDS	254	247	mg/L	SM 2540 C	2.9	±35	5/1/2020	SH	
Sulfate	200423-Sulfate	4.2	4.2	mg/L	EPA 300.0	0.072	±35	4/23/2020	AK	

WA-DOE-Laboratory Certification No.: C890

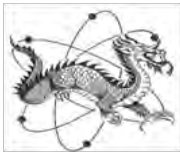
"MRL" indicates Method Reporting Limit

"RPD" indicates Relative Percent Difference

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Comments and Explanations: None



# DRAGON ANALYTICAL LABORATORY

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water  
Mobile Environmental Laboratory



Lewis County

DAL Project No.: 200422-09

Project Name: Landfill Wet Season

Project No.: n/a

## QUALITY CONTROL RESULTS Laboratory Fortified Blank

PARAMETER	SAMPLE BATCH	LFB RESULT	TRUE VALUE	UNITS	ANALYTICAL METHOD	RECOVERY (%)	LIMITS (%)	ANALYSIS DATE	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	200423-Alkalinity (CaCO <sub>3</sub> )	192	200	mg/L	SM 2320 B	96.0	65.0-135	4/23/2020	SH/EW	
Chloride	200423-Chloride	5.2	5.0	mg/L	EPA 300.0	105	65.0-135	4/23/2020	AK	
COD	200423-COD	103	100	mg/L	SM 5220 D	103	65.0-135	4/23/2020	BS	
Hardness	200505-Hardness	32.6	33.1	mg/L	SM 2340 B	98.5	65.0-135	5/5/2020	TM	
Nitrogen, Ammonia	200423-NH <sub>3</sub>	1.0	1.0	mg/L	SM 4500-NH <sub>3</sub> D	101	65.0-135	4/23/2020	BS	
Nitrogen, Nitrate + Nitrite	200423-N+N	2.8	2.65	mg/L	EPA 300.0	105	65.0-135	4/23/2020	AK	
Solids, Total Dissolved	200501-TDS	512	500	mg/L	SM 2540 C	102	65.0-135	5/1/2020	SH	
Sulfate	200423-Sulfate	5.0	5.0	mg/L	EPA 300.0	100	65.0-135	4/23/2020	AK	

## QUALITY CONTROL RESULTS Matrix Spike/Matrix Spike Duplicate

PARAMETER	SAMPLE BATCH	MS RESULT	MSD RESULT	TRUE VALUE	UNITS	ANALYTICAL METHOD	RPD (%)	LIMITS(%)	ANALYSIS DATE	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	200423-Alkalinity (CaCO <sub>3</sub> )	n/a	n/a	n/a	mg/L	SM 2320 B	n/a	n/a	n/a	n/a	
Chloride	200423-Chloride	4.7	4.9	5.0	mg/L	EPA 300.0	3.9	±35	4/23/2020	AK	
COD	200423-COD	99.6	90.0	100	mg/L	SM 5220 D	10.1	±35	4/23/2020	BS	
Hardness	200505-Hardness	n/a	n/a	n/a	mg/L	SM 2340 B	n/a	n/a	n/a	n/a	
Nitrogen, Ammonia	200423-NH <sub>3</sub>	1.1	1.1	1.0	mg/L	SM 4500-NH <sub>3</sub> D	0.92	±35	4/23/2020	BS	
Nitrogen, Nitrate + Nitrite	200423-N+N	2.7	2.9	2.65	mg/L	EPA 300.0	4.6	±35	4/23/2020	AK	
Solids, Total Dissolved	200501-TDS	n/a	n/a	n/a	mg/L	SM 2540 C	n/a	n/a	n/a	n/a	
Sulfate	200423-Sulfate	4.8	4.6	5.0	mg/L	EPA 300.0	5.1	±35	4/23/2020	AK	

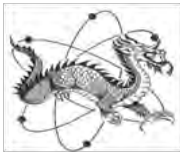
WA-DOE-Laboratory Certification No.: C890

"RPD" indicates Relative Percent Difference

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Comments and Explanations: None



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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water  
Mobile Environmental Laboratory



Lewis County

DAL Project No.: 200422-09

Project Name: Landfill Wet Season

Project No.: n/a

## QUALITY CONTROL RESULTS Matrix Spike/Matrix Spike Duplicate

PARAMETER	SAMPLE RESULT	MS RESULT	MSD RESULT	TRUE VALUE	UNITS	ANALYTICAL METHOD	MS RECOVERY %	MSD RECOVERY %	MS/MSD RECOVERY LIMITS %	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	n/a	n/a	n/a	n/a	mg/L	SM 2320 B	n/a	n/a	n/a	n/a	
Chloride	3.5	8.2	8.4	5.0	mg/L	EPA 300.0	94.3	98.1	80-120	AK	
COD	nd	99.6	90.0	100	mg/L	SM 5220 D	99.6	90.0	65-135	BS	
Hardness	n/a	n/a	n/a	n/a	mg/L	SM 2340 B	n/a	n/a	n/a	n/a	
Nitrogen, Ammonia	0.92	2.0	2.0	1.0	mg/L	SM 4500-NH <sub>3</sub> D	110	109	65-135	BS	
Nitrogen, Nitrate + Nitrite	0.023	2.8	2.9	2.65	mg/L	EPA 300.0	103	108	80-120	AK	
Solids, Total Dissolved	n/a	n/a	n/a	n/a	mg/L	SM 2540 C	n/a	n/a	n/a	n/a	
Sulfate	4.2	9.0	8.8	5.0	mg/L	EPA 300.0	96.5	91.8	80-120	AK	

WA-DOE-Laboratory Certification No.: C890

"RPD" indicates Relative Percent Difference

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Comments and Explanations: None



**ALS Group USA, Corp.**  
dba ALS Environmental  
Analytical Report

**Client:** Dragon Analytical Laboratory  
**Project:** Lewis County/200422-09  
**Sample Matrix:** Wastewater

**Service Request:** K2003427  
**Date Collected:** 04/21-22/20  
**Date Received:** 04/28/20

Mercury, Total

**Prep Method:** METHOD  
**Analysis Method:** 1631E  
**Test Notes:**

**Units:** ng/L  
**Basis:** NA

Sample Name	Lab Code	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
MW 1D	K2003427-001	0.5	1	04/28/20	04/29/20	0.7	
MW 1S	K2003427-002	0.5	1	04/28/20	04/29/20	0.8	
MW 3D	K2003427-003	0.5	1	04/28/20	04/29/20	0.9	
MW 3S	K2003427-004	0.5	1	04/28/20	04/29/20	0.5	
CNE3 1D	K2003427-005	0.5	1	04/28/20	04/29/20	0.7	
DUP 1	K2003427-006	0.5	1	04/28/20	04/29/20	0.6	
CNE 1S	K2003427-007	0.5	1	04/28/20	04/29/20	0.6	
MW 2SU	K2003427-008	0.5	1	04/28/20	04/29/20	1.0	
MW 2S	K2003427-009	0.5	1	04/28/20	04/29/20	0.7	
MW 2D	K2003427-010	0.5	1	04/28/20	04/29/20	0.6	
B6 DR	K2003427-011	0.5	1	04/28/20	04/29/20	1.1	
MW 5S	K2003427-012	0.5	1	04/28/20	04/29/20	1.0	
B2 SU	K2003427-013	0.5	1	04/28/20	04/29/20	0.8	
B1 SU	K2003427-014	0.5	1	04/28/20	04/29/20	1.2	
B8 DR	K2003427-015	0.5	1	04/28/20	04/29/20	ND	
MW 4S	K2003427-016	0.5	1	04/28/20	04/29/20	0.8	
B1 S	K2003427-017	0.5	1	04/28/20	04/29/20	0.7	
B 2S	K2003427-018	0.5	1	04/28/20	04/29/20	1.0	
SW 14	K2003427-019	0.5	1	04/28/20	04/29/20	1.3	
SW 14 Total	K2003427-020	0.5	1	4/28/2020	4/29/2020	2.9	
Method Blank 1	K2003427-MB1	0.5	1	4/28/2020	4/29/2020	ND	
Method Blank 2	K2003427-MB2	0.5	1	4/28/2020	4/29/2020	ND	
Method Blank 3	K2003427-MB3	0.5	1	4/28/2020	4/29/2020	ND	

**ALS Group USA, Corp.**

dba ALS Environmental

QA/QC Report

**Client:** Dragon Analytical Laboratory  
**Project:** Lewis County/200422-09  
**Sample Matrix:** Wastewater

**Service Request:** K2003427  
**Date Collected:** 04/21/20  
**Date Received:** 04/28/20  
**Date Extracted:** 04/28/20  
**Date Analyzed:** 04/29/20

Matrix Spike/Duplicate Matrix Spike Summary  
Total Metals

Sample Name: MW 2D Units: ng/L  
Lab Code: K2003427-010MS, K2003427-010DMS Basis: NA  
Test Notes:

Analyte	Prep Method	Analysis Method	MRL	Spike Level		Sample Result	Spike Result		Percent Recovery		ALS Acceptance Limits	Relative Percent Difference	Result Notes
				MS	DMS		MS	DMS	MS	DMS			
Mercury	METHOD	1631E	0.5	50	50	0.6	50.7	51.1	100	101	71-125	<1	

**ALS Group USA, Corp.**

dba ALS Environmental

## QA/QC Report

**Client:** Dragon Analytical Laboratory  
**Project:** Lewis County/200422-09  
**Sample Matrix:** Wastewater

**Service Request:** K2003427  
**Date Collected:** 04/21/20  
**Date Received:** 04/28/20  
**Date Extracted:** 04/28/20  
**Date Analyzed:** 04/29/20

Matrix Spike/Duplicate Matrix Spike Summary  
Total Metals

Sample Name: B6 DR Units: ng/L  
Lab Code: K2003427-011MS, K2003427-011DMS Basis: NA  
Test Notes:

Analyte	Prep Method	Analysis Method	MRL	Spike Level		Sample Result	Spike Result		Percent Recovery		ALS Acceptance Limits	Relative Percent Difference	Result Notes
				MS	DMS		MS	DMS	MS	DMS			
Mercury	METHOD	1631E	0.5	50	50	1.1	51.8	51.2	101	100	71-125	1	

**ALS Group USA, Corp.**  
**dba ALS Environmental**  
**QA/QC Report**

**Client:** Dragon Analytical Laboratory  
**Project:** Lewis County/200422-09  
**LCS Matrix:** Water

**Service Request:** K2003427  
**Date Collected:** NA  
**Date Received:** NA  
**Date Extracted:** NA  
**Date Analyzed:** 04/29/20

Ongoing Precision and Recovery (OPR) Sample Summary  
Total Metals

**Sample Name:** Ongoing Precision and Recovery (Initial) **Units:** ng/L  
**Basis:** NA

**Test Notes:**

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	ALS Percent Recovery	Result Notes
						Acceptance Limits	
Mercury	METHOD	1631E	5.00	5.11	102	77-123	

ALS Group USA, Corp.  
dba ALS Environmental  
QA/QC Report

**Client:** Dragon Analytical Laboratory  
**Project:** Lewis County/200422-09  
**LCS Matrix:** Water

**Service Request:** K2003427  
**Date Collected:** NA  
**Date Received:** NA  
**Date Extracted:** NA  
**Date Analyzed:** 04/29/20

Ongoing Precision and Recovery (OPR) Sample Summary  
Total Metals

**Sample Name:** Ongoing Precision and Recovery (Final) **Units:** ng/L  
**Basis:** NA

**Test Notes:**

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	ALS	Result Notes
						Percent Recovery Acceptance Limits	
Mercury	METHOD	1631E	5.00	5.04	101	77-123	

ALS Group USA, Corp.  
dba ALS Environmental  
QA/QC Report

**Client:** Dragon Analytical Laboratory  
**Project:** Lewis County/200422-09  
**LCS Matrix:** Water

**Service Request:** K2003427  
**Date Collected:** NA  
**Date Received:** NA  
**Date Extracted:** 4/28/2020  
**Date Analyzed:** 04/29/20

Quality Control Sample (QCS) Summary  
Total Metals

**Sample Name:** Quality Control Sample

**Units:** ng/L  
**Basis:** NA

**Test Notes:**

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	ALS	Result Notes
						Percent Recovery Acceptance Limits	
Mercury	METHOD	1631E	5.00	4.44	89	77-123	



# Anatek Labs, Inc.

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504 E Sprague Ste. D - Spokane, WA 99202 - (509) 838-3999 - fax (509) 838-4433 - email [spokane@anateklabs.com](mailto:spokane@anateklabs.com)

**Client:** Dragon Analytical Laboratory, Inc.  
**Address:** 627 Durell Rd. SE, Ste. B105  
Tumwater, WA 98501  
**Attn:** Beth Kuttitg

**Work Order:** WAD0725  
**Project:** Lewis County  
**Reported:** 5/11/2020 18:17

## Analytical Results Report

**Sample Location:** MW 1D  
**Lab/Sample Number:** WAD0725-01 **Collect Date:** 04/21/20 00:00  
**Date Received:** 04/28/20 13:40 **Collected By:**  
**Matrix:** Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	3.77	mg/L	0.100	5/6/20 16:43	RPR	SM 5310 B	

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Sample Location: MW 1S  
Lab/Sample Number: WAD0725-02 Collect Date: 04/21/20 00:00  
Date Received: 04/28/20 13:40 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	0.418	mg/L	0.100	5/6/20 16:58	RPR	SM 5310 B	

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Sample Location: MW 3D  
Lab/Sample Number: WAD0725-03 Collect Date: 04/21/20 00:00  
Date Received: 04/28/20 13:40 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	1.11	mg/L	0.100	5/6/20 17:11	RPR	SM 5310 B	

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Sample Location: MW 3S  
Lab/Sample Number: WAD0725-04 Collect Date: 04/21/20 00:00  
Date Received: 04/28/20 13:40 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	0.470	mg/L	0.100	5/6/20 17:26	RPR	SM 5310 B	

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Sample Location: CNE3 1D  
Lab/Sample Number: WAD0725-05 Collect Date: 04/21/20 00:00  
Date Received: 04/28/20 13:40 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	1.45	mg/L	0.100	5/6/20 17:39	RPR	SM 5310 B	

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Sample Location: DUP 1  
Lab/Sample Number: WAD0725-06 Collect Date: 04/21/20 00:00  
Date Received: 04/28/20 13:40 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	1.63	mg/L	0.100	5/6/20 17:52	RPR	SM 5310 B	



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Sample Location: CNE 1S  
Lab/Sample Number: WAD0725-07 Collect Date: 04/21/20 00:00  
Date Received: 04/28/20 13:40 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	10.6	mg/L	0.100	5/6/20 18:06	RPR	SM 5310 B	

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Sample Location: MW 2SU  
Lab/Sample Number: WAD0725-08 Collect Date: 04/21/20 00:00  
Date Received: 04/28/20 13:40 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	11.3	mg/L	0.100	5/6/20 19:02	RPR	SM 5310 B	

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Sample Location: MW 2S  
Lab/Sample Number: WAD0725-09 Collect Date: 04/21/20 00:00  
Date Received: 04/28/20 13:40 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	11.0	mg/L	0.100	5/6/20 19:16	RPR	SM 5310 B	

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Sample Location: MW 2D  
Lab/Sample Number: WAD0725-10 Collect Date: 04/21/20 00:00  
Date Received: 04/28/20 13:40 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	1.84	mg/L	0.100	5/6/20 19:32	RPR	SM 5310 B	

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Sample Location: B6 DR  
Lab/Sample Number: WAD0725-11 Collect Date: 04/21/20 00:00  
Date Received: 04/28/20 13:40 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	3.02	mg/L	0.100	5/6/20 19:45	RPR	SM 5310 B	

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1282 Alturas Drive - Moscow, ID 83843 - (208) 883-2839 - Fax (208) 8829246 - email [moscow@anateklabs.com](mailto:moscow@anateklabs.com)  
504 E Sprague Ste. D - Spokane, WA 99202 - (509) 838-3999 - fax (509) 838-4433 - email [spokane@anateklabs.com](mailto:spokane@anateklabs.com)

Sample Location: MW 5S  
Lab/Sample Number: WAD0725-12 Collect Date: 04/21/20 00:00  
Date Received: 04/28/20 13:40 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	2.21	mg/L	0.100	5/6/20 19:59	RPR	SM 5310 B	

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Sample Location: B2 SU  
Lab/Sample Number: WAD0725-13 Collect Date: 04/21/20 00:00  
Date Received: 04/28/20 13:40 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	1.16	mg/L	0.100	5/6/20 20:12	RPR	SM 5310 B	



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Sample Location: B1 SU  
Lab/Sample Number: WAD0725-14 Collect Date: 04/21/20 00:00  
Date Received: 04/28/20 13:40 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	5.00	mg/L	0.100	5/6/20 20:26	RPR	SM 5310 B	

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Sample Location: B8 DR  
Lab/Sample Number: WAD0725-15 Collect Date: 04/21/20 00:00  
Date Received: 04/28/20 13:40 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	1.96	mg/L	0.100	5/6/20 20:42	RPR	SM 5310 B	

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Sample Location: MW 4S  
Lab/Sample Number: WAD0725-16      Collect Date: 04/21/20 00:00  
Date Received: 04/28/20 13:40      Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	1.02	mg/L	0.100	5/6/20 20:57	RPR	SM 5310 B	

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Sample Location: B1 S  
Lab/Sample Number: WAD0725-17 Collect Date: 04/21/20 00:00  
Date Received: 04/28/20 13:40 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	0,868	mg/L	0.100	5/6/20 21:10	RPR	SM 5310 B	

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Sample Location: B 2S  
Lab/Sample Number: WAD0725-18 Collect Date: 04/21/20 00:00  
Date Received: 04/28/20 13:40 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	1.43	mg/L	0.100	5/7/20 14:03	RPR	SM 5310 B	

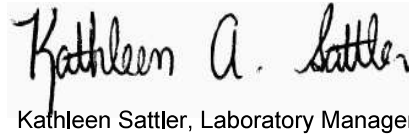
# Anatek Labs, Inc.

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Sample Location: SW 14  
Lab/Sample Number: WAD0725-19 Collect Date: 04/21/20 00:00  
Date Received: 04/28/20 13:40 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	9.71	mg/L	0.100	5/7/20 14:17	RPR	SM 5310 B	

Authorized Signature,



Kathleen Sattler, Laboratory Manager

PQL Practical Quantitation Limit  
ND Not Detected  
MCL EPA's Maximum Contaminant Level  
Dry Sample results reported on a dry weight basis  
\* Not a certified analyte

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The results reported related only to the samples indicated.

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## Quality Control Data

### Inorganics

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
---------	--------	------	--------------------	-------	----------------	------------------	------	----------------	-----	--------------

#### Batch: BAE0134 - TOC

##### Blank (BAE0134-BLK1)

TOC	ND		0.100	mg/L	Prepared & Analyzed: 5/6/2020					
-----	----	--	-------	------	-------------------------------	--	--	--	--	--

##### LCS (BAE0134-BS1)

TOC	10.6		0.100	mg/L	10.0		106	80-120		
-----	------	--	-------	------	------	--	-----	--------	--	--

##### LCS (BAE0134-BS2)

TOC	10.2		0.100	mg/L	10.0		102	80-120		
-----	------	--	-------	------	------	--	-----	--------	--	--

#### Batch: BAE0174 - TOC

##### Blank (BAE0174-BLK1)

TOC	ND		0.100	mg/L	Prepared & Analyzed: 5/7/2020					
-----	----	--	-------	------	-------------------------------	--	--	--	--	--

##### Blank (BAE0174-BLK2)

TOC	ND		0.100	mg/L	Prepared & Analyzed: 5/7/2020					
-----	----	--	-------	------	-------------------------------	--	--	--	--	--

##### LCS (BAE0174-BS1)

TOC	11.0		0.100	mg/L	10.0		110	80-120		
-----	------	--	-------	------	------	--	-----	--------	--	--

##### LCS (BAE0174-BS2)

TOC	10.8		0.100	mg/L	10.0		108	80-120		
-----	------	--	-------	------	------	--	-----	--------	--	--

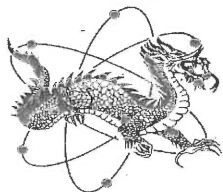
## **APPENDIX C**

### **2020 Q4 LAB REPORTS**



# DRAGON

Analytical Laboratory, Inc.



## CWA CHAIN OF CUSTODY RECORD

627 Durell Road SE, Suite B105, Tumwater, WA 98501

Phone: (360) 866-0543

Email: customerservice@dragonlaboratory.com

Website: www.dragonlaboratory.com

Page 1 of 2

Samples Collected By:

KK-BN

Contact Number:

360-740-1130

Client: Lewis County Landfill

Phone: 360-740-1221

Project Name: Landfill wet season

Project PO: \_\_\_\_\_

Address: 1411 S. Tower Ave

Fax: \_\_\_\_\_

Project Location: Centralia Landfill

Contact: \_\_\_\_\_

Centralia, WA 98531

E-mail: \_\_\_\_\_

Project Number: \_\_\_\_\_

DAL Project #: 20009-08

**Matrix Code:** SW=storm/surface water  
WW = wastewater GW =ground water O =other  
SL = sludge V = vapor S = soil or solid

Sample  
Identification

Sample Matrix

Sample

Sample

Container Type

Hardness

Dissolved: As, Ca, Fe, Mg, Mn, K, Na, Zn

Total: As, Ca, Fe, Mg, Mn, K, Na, Zn

COD, NH3

Alkalinity, Total Dissolved Solids

Chloride, N+N, Sulfate

Dissolved Low Level Hg

Total Low Level Hg

TOC

Well

Time sampled

MW1s ✓

1:16

MW1d ✓

1:32

MW3d ✓

1:52

MW3s ✓

2:00

Relinquished By (Signature)

Date/Time

with J. J. J. J. J. 10-9-20  
1:00

Received By (Signature)

Date/Time

B 10/09/20  
1:00

Relinquished By (Signature)

Date/Time

Received By (Signature)

Date/Time

Note: Records will only be retained for 7 years

Sample Disposal Instructions:

☐ DAL Disposal @\$2.50 per container

☐ Return

☐ Pick Up

Turn Around Time

- ☐ 1 Day  
☐ 2 Day  
☐ 5 Business Days  
☒ 10 Business Days (approx)  
☐ Other \_\_\_\_\_

**Metals:** Please circle the desired analytes.

**Total:**

Ag Al As Ba Be Ca Cd Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sn Ti Zn

**Dissolved:**

Ag Al As Ba Be Ca Cd Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sn Ti Zn

Sample Temp: 15

Cooler Temp: \_\_\_\_\_





# DRAGON ANALYTICAL LABORATORY

627 Durell Road SE, STE B105, Tumwater, WA 98501 (360)866-0543  
Customerservice@DragonLaboratory.com

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water  
Mobile Environmental Laboratory



Lewis County  
1411 S. Tower Ave  
Centralia, WA 98531

Sampled By: KK-BN

**DAL Project No.: 201009-08**

Project Name: Landfill Wet Season

Project No.: n/a

PO No.: n/a

Date Collected: 10/8/2020;13:16 - 10/9/2020;12:40

Date Received: 10/9/2020; 13:00

Temperature Received (°C): 15

Report Date: 12/8/2020

Preparation Method: US EPA 200.8 Dissolved

Analytical Method: US EPA 200.8

Date Prepared: 10/13/2020

Date Analyzed: 10/20/2020

Analyst: TM

Units: ug/L

Matrix: Non-Potable Water

Reporting Limits: Standard

Instrument ID: Agilent 7500

Lab Data File: 20J20n00

## DISSOLVED HEAVY METALS ANALYTICAL RESULTS

Analyte	CAS No.	MRL	Method Blank	MW1S	MW1D	MW3D	MW3S	CNE1S	CNE1D	DUP	MW2SU	MW2S	MW2D
Arsenic (As)	7440-38-2	0.50	nd	nd	1.3	1.8	nd	9.2	nd	nd	3.4	25.0	6.2
Calcium (Ca)	7440-70-2	50.0	nd	10,100	21,000	18,800	12,700	102,000	33,300	33,400	115,000	142,000	34,000
Iron (Fe)	7439-89-6	50.0	nd	nd	nd	956	nd	24,300	77.2	nd	15,600	8,810	nd
Magnesium (Mg)	7439-95-4	25.0	nd	3,210	2,930	7,550	3,280	67,700	8,210	8,880	55,100	73,800	11,300
Manganese (Mn)	7439-96-5	0.50	nd	nd	115	1,010	3.0	2,420	240	241	-----	9,190	798
Potassium (K)	7440-09-7	100	nd	489 (M-)	1,350	2,210	573	4,360	2,180	2,430	5,950	6,210	2,360
Sodium (Na)	7440-23-5	100	nd	7,420	11,900	12,600	11,600	21,900	24,100	24,200	32,300	23,200	16,300
Zinc (Zn)	7440-66-6	1.0	nd	nd (M+)	4.4	nd	8.4	1.1	nd	nd	5.5	2.0	nd
Dilution Factor			1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	10	1.0	1.0

Comments and Explanations: A "M-" denotes that a matrix spike failed low. A "M+" denotes that a matrix spike failed high.



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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water  
Mobile Environmental Laboratory



Lewis County  
1411 S. Tower Ave  
Centralia, WA 98531

Sampled By: KK-BN

**DAL Project No.: 201009-08**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Date Collected: 10/8/2020;13:16 - 10/9/2020;12:40

Date Received: 10/9/2020; 13:00

Temperature Received (°C): 15

Report Date: 12/8/2020

Preparation Method: US EPA 200.8 Dissolved

Analytical Method: US EPA 200.8

Date Prepared: 10/13/2020

Date Analyzed: 10/20/2020

Analyst: TM

Units: ug/L

Matrix: Non-Potable Water

Reporting Limits: Standard

Instrument ID: Agilent 7500

Lab Data File: 20J20n00

## DISSOLVED HEAVY METALS ANALYTICAL RESULTS

Sample Identification	CAS No.	MRL	MW5S	B6DR	B2SU	B1SU	MW4S	B8DR	B2S	B1S
Arsenic (As)	7440-38-2	0.50	0.65	6.2	2.0	7.1	0.69	nd	0.84	16.7
Calcium (Ca)	7440-70-2	50.0	17,600	29,000	36,300	39,800	13,700	41,400	36,900	32,400
Iron (Fe)	7439-89-6	50.0	nd	276	nd	4,180	nd	nd	6,360	67.6
Magnesium (Mg)	7439-95-4	25.0	8,870	10,400	24,500	28,600	6,210	16,000	12,500	12,100
Manganese (Mn)	7439-96-5	0.50	253	720	7.3	2,720	244	293	25.3	926
Potassium (K)	7440-09-7	100	2,190	3,200	2,060	2,550	985	2,300	916	5,580
Sodium (Na)	7440-23-5	100	12,200	14,200	20,200	26,400	9,420	48,000	11,000	13,700
Zinc (Zn)	7440-66-6	1.0	4.9	nd	1.8	nd	3.6	nd	6.9	1.0
Dilution Factor			1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Comments and Explanations: None.



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Mobile Environmental Laboratory



Lewis County  
DAL Project No.: 201009-08

Project Name: Landfill Wet Season  
Project No.: n/a

## DISSOLVED HEAVY METALS QUALITY CONTROL RESULTS

### LABORATORY CONTROL SAMPLE AND MATRIX SPIKE

QC Batch ID: 201020-Metals			MS/MSD Sample ID: 201020-Metals MS/MSD							LCS Sample ID: 201020-Metals LCS			
Analyte	MS/MSD	Sample	MS	MS	MSD	MSD	MS/MSD	RPD	MS/MSD	LCS	LCS	LCS	LCS
	Level (ug/L)	Conc. (ug/L)	Recovery (ug/L)	Percent Recovery	Recovery (ug/L)	Percent Recovery	Limits (%)		RPD Limits	Level (ug/L)	Recovery (ug/L)	Percent Recovery	Limits (%)
Arsenic (As)	50	0.040	66.5	133%	66.9	134%	50-150	0.59	≤ 25%	50	51.3	103%	85-115
Calcium (Ca)	5000	10130	16100	119%	16370	125%	50-150	4.4	≤ 25%	5000	5100	102%	85-115
Iron (Fe)	5000	0.00	5951	119%	6130	123%	50-150	3.0	≤ 25%	5000	5030	101%	85-115
Magnesium (Mg)	5000	3205	9014	116%	9165	119%	50-150	2.6	≤ 25%	5000	5060	101%	85-115
Manganese (Mn)	50	0.27	63.4	126%	64.0	127%	50-150	0.88	≤ 25%	50	50.8	102%	85-115
Potassium (K)	5000	489	2669	43.6%	2665	43.5%	50-150	0.18	≤ 25%	5000	5257	105%	85-115
Sodium (Na)	5000	7418	13260	117%	13510	122%	50-150	4.2	≤ 25%	5000	4879	97.6%	85-115
Zinc (Zn)	50	0.00	78.1	156%	72.6	145%	50-150	7.4	≤ 25%	50	51.5	103%	85-115
WA-DOE-Laboratory Certification No.: C890			"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.							n/a indicates not applicable			
Comments and Explanations: None.													



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Mobile Environmental Laboratory



Lewis County  
1411 S. Tower Ave  
Centralia, WA 98531

Sampled By: KK-BN

**DAL Project No.: 201009-08**

Project Name: Landfill Wet Season

Project No.: n/a

PO No.: n/a

Date Collected: 10/8/2020;13:16 - 10/9/2020;12:40

Date Received: 10/9/2020; 13:00

Temperature Received (°C): 15

Report Date: 12/8/2020

Preparation Method: US EPA 200.8 Dissolved

Analytical Method: US EPA 200.8

Date Prepared: 10/13/2020

Date Analyzed: 11/4/2020

Analyst: TM

Units: ug/L

Matrix: Non-Potable Water

Reporting Limits: Standard

Instrument ID: Agilent 7500

Lab Data File: 20K04100

## DISSOLVED HEAVY METALS ANALYTICAL RESULTS

Analyte	CAS No.	MRL	Method Blank	MW2SU
Manganese (Mn)	7439-96-5	2.50	nd	<b>5,550</b>
Dilution Factor			1.0	10

## DISSOLVED HEAVY METALS QUALITY CONTROL RESULTS

### LABORATORY CONTROL SAMPLE AND MATRIX SPIKE

QC Batch ID: 201104-Metals			MS/MSD Sample ID: 201104-Metals MS/MSD							LCS Sample ID: 201104-Metals LCS			
Analyte	MS/MSD Level (ug/L)	Sample Conc. (ug/L)	MS Recovery (ug/L)	MS Percent Recovery	MSD Recovery (ug/L)	MSD Percent Recovery	MS/MSD Limits (%)	RPD	MS/MSD RPD Limits	LCS Level (ug/L)	LCS Recovery (ug/L)	LCS Percent Recovery	LCS Limits (%)
Manganese (Mn)	50	0.76	50.0	98.5%	50.6	100%	50-150	1.1	≤ 25%	50	55.8	112%	85-115
WA-DOE-Laboratory Certification No.: C890			"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.							n/a indicates not applicable			
Comments and Explanations: None.													



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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water  
Mobile Environmental Laboratory



Lewis County  
1411 S. Tower Ave  
Centralia, WA 98531

Sampled by: KK-BN

**DAL Project No.: 201009-08**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: MW1S

Matrix: Non-Potable Water

Temperature Received (°C): 15

Collected: 10/8/2020; 13:16

Received: 10/9/2020; 13:00

Report Date: 12/8/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	25.0	n/a	5.0	mg/L	SM 2320 B	1	10/14/2020	10/14/2020	n/a	SR	
Chloride	1.7	0.0024	0.10	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	
COD	3.4	2.5	10.0	mg/L	SM 5220 D	1	10/12/2020	10/12/2020	n/a	BS	
Hardness	42.4	n/a	1.0	mg/L	SM 2340 B	1	10/20/2020	10/20/2020	n/a	TM	
Nitrogen, Ammonia	nd	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	10/15/2020	10/15/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	0.67	0.0015	0.10	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	
Solids, Total Dissolved	272	n/a	20.0	mg/L	SM 2540 C	1	10/16/2020	10/16/2020	n/a	SR	
Sulfate	8.1	0.046	0.20	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	

WA-DOE-Laboratory Certification No.: C890

"MDL" indicates Method Detection Limit

"MRL" indicates Method Reporting Limit

"DF" indicates Dilution Factor

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Comments and Explanations: None



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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water  
Mobile Environmental Laboratory



Lewis County  
1411 S. Tower Ave  
Centralia, WA 98531

Sampled by: KK-BN

**DAL Project No.: 201009-08**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: MW1D

Matrix: Non-Potable Water

Temperature Received (°C): 15

Collected: 10/8/2020; 13:32

Received: 10/9/2020; 13:00

Report Date: 12/8/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	52.0	n/a	5.0	mg/L	SM 2320 B	1	10/14/2020	10/14/2020	n/a	SR	
Chloride	2.6	0.0024	0.10	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	
COD	nd	2.5	10.0	mg/L	SM 5220 D	1	10/12/2020	10/12/2020	n/a	BS	
Hardness	71.6	n/a	1.0	mg/L	SM 2340 B	1	10/20/2020	10/20/2020	n/a	TM	
Nitrogen, Ammonia	0.36	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	10/15/2020	10/15/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	0.12	0.0015	0.10	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	
Solids, Total Dissolved	126	n/a	20.0	mg/L	SM 2540 C	1	10/16/2020	10/16/2020	n/a	SR	
Sulfate	3.1	0.046	0.20	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	

WA-DOE-Laboratory Certification No.: C890

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Comments and Explanations: None





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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water  
Mobile Environmental Laboratory



Lewis County  
1411 S. Tower Ave  
Centralia, WA 98531

Sampled by: KK-BN

**DAL Project No.: 201009-08**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: MW3D

Matrix: Non-Potable Water

Temperature Received (°C): 15

Collected: 10/8/2020; 13:52

Received: 10/9/2020; 13:00

Report Date: 12/8/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	93.0	n/a	5.0	mg/L	SM 2320 B	1	10/14/2020	10/14/2020	n/a	SR	
Chloride	5.5	0.0024	0.10	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	
COD	nd	2.5	10.0	mg/L	SM 5220 D	1	10/12/2020	10/12/2020	n/a	BS	
Hardness	91.2	n/a	1.0	mg/L	SM 2340 B	1	10/20/2020	10/20/2020	n/a	TM	
Nitrogen, Ammonia	0.62	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	10/15/2020	10/15/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	nd	0.0015	0.10	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	
Solids, Total Dissolved	206	n/a	20.0	mg/L	SM 2540 C	1	10/16/2020	10/16/2020	n/a	SR	
Sulfate	nd	0.046	0.20	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	

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Comments and Explanations: None



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Sampled by: KK-BN

**DAL Project No.: 201009-08**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: MW3S

Matrix: Non-Potable Water

Temperature Received (°C): 15

Collected: 10/8/2020; 14:00

Received: 10/9/2020; 13:00

Report Date: 12/8/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	26.0	n/a	5.0	mg/L	SM 2320 B	1	10/14/2020	10/14/2020	n/a	SR	
Chloride	4.9	0.0024	0.10	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	
COD	40.9	2.5	10.0	mg/L	SM 5220 D	1	10/12/2020	10/12/2020	n/a	BS	
Hardness	48.9	n/a	1.0	mg/L	SM 2340 B	1	10/20/2020	10/20/2020	n/a	TM	
Nitrogen, Ammonia	nd	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	10/15/2020	10/15/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	2.1	0.0015	0.10	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	
Solids, Total Dissolved	166	n/a	20.0	mg/L	SM 2540 C	1	10/16/2020	10/16/2020	n/a	SR	
Sulfate	15.2	0.046	0.20	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	

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Comments and Explanations: None



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Centralia, WA 98531

Sampled by: KK-BN

**DAL Project No.: 201009-08**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: CNE1S

Matrix: Non-Potable Water

Temperature Received (°C): 15

Collected: 10/9/2020; 10:00

Received: 10/9/2020; 13:00

Report Date: 12/8/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	431	n/a	5.0	mg/L	SM 2320 B	1	10/14/2020	10/14/2020	n/a	SR	
Chloride	54.6	0.0024	0.10	mg/L	EPA 300.0	10	10/9/2020	10/9/2020	n/a	FW/AK	
COD	30.3	2.5	10.0	mg/L	SM 5220 D	1	10/12/2020	10/12/2020	n/a	BS	
Hardness	442	n/a	1.0	mg/L	SM 2340 B	1	10/20/2020	10/20/2020	n/a	TM	
Nitrogen, Ammonia	nd	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	10/15/2020	10/15/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	0.30	0.0015	0.10	mg/L	EPA 300.0	1	10/9/2020	10/9/2020	n/a	FW/AK	
Solids, Total Dissolved	606	n/a	20.0	mg/L	SM 2540 C	1	10/16/2020	10/16/2020	n/a	SR	
Sulfate	0.15	0.046	0.20	mg/L	EPA 300.0	1	10/9/2020	10/9/2020	n/a	FW/AK	

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Comments and Explanations: None



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Sampled by: KK-BN

**DAL Project No.: 201009-08**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: CNE1D

Matrix: Non-Potable Water

Temperature Received (°C): 15

Collected: 10/9/2020; 10:15

Received: 10/9/2020; 13:00

Report Date: 12/8/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	98.0	n/a	5.0	mg/L	SM 2320 B	1	10/14/2020	10/14/2020	n/a	SR	
Chloride	6.7	0.0024	0.10	mg/L	EPA 300.0	1	10/9/2020	10/9/2020	n/a	FW/AK	
COD	nd	2.5	10.0	mg/L	SM 5220 D	1	10/12/2020	10/12/2020	n/a	BS	
Hardness	112	n/a	1.0	mg/L	SM 2340 B	1	10/20/2020	10/20/2020	n/a	TM	
Nitrogen, Ammonia	0.37	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	10/15/2020	10/15/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	nd	0.0015	0.10	mg/L	EPA 300.0	1	10/9/2020	10/9/2020	n/a	FW/AK	
Solids, Total Dissolved	470	n/a	20.0	mg/L	SM 2540 C	1	10/16/2020	10/16/2020	n/a	SR	
Sulfate	nd	0.046	0.20	mg/L	EPA 300.0	1	10/9/2020	10/9/2020	n/a	FW/AK	

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Comments and Explanations: None



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Sampled by: KK-BN

**DAL Project No.: 201009-08**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: DUP

Matrix: Non-Potable Water

Temperature Received (°C): 15

Collected: 10/9/2020; 10:15

Received: 10/9/2020; 13:00

Report Date: 12/8/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	85.0	n/a	5.0	mg/L	SM 2320 B	1	10/14/2020	10/14/2020	n/a	SR	
Chloride	6.7	0.0024	0.10	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	
COD	nd	2.5	10.0	mg/L	SM 5220 D	1	10/12/2020	10/12/2020	n/a	BS	
Hardness	121	n/a	1.0	mg/L	SM 2340 B	1	10/20/2020	10/20/2020	n/a	TM	
Nitrogen, Ammonia	0.39	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	10/15/2020	10/15/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	nd	0.0015	0.10	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	
Solids, Total Dissolved	442	n/a	20.0	mg/L	SM 2540 C	1	10/16/2020	10/16/2020	n/a	SR	
Sulfate	nd	0.046	0.20	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	

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Comments and Explanations: None



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Sampled by: KK-BN

**DAL Project No.: 201009-08**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: MW2SU

Matrix: Non-Potable Water

Temperature Received (°C): 15

Collected: 10/9/2020; 10:25

Received: 10/9/2020; 13:00

Report Date: 12/8/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	292	n/a	5.0	mg/L	SM 2320 B	1	10/14/2020	10/14/2020	n/a	SR	
Chloride	129	0.0024	0.10	mg/L	EPA 300.0	10	10/9/2020	10/9/2020	n/a	FW/AK	
COD	22.6	2.5	10.0	mg/L	SM 5220 D	1	10/12/2020	10/12/2020	n/a	BS	
Hardness	678	n/a	1.0	mg/L	SM 2340 B	1	10/20/2020	10/20/2020	n/a	TM	
Nitrogen, Ammonia	0.61	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	10/15/2020	10/15/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	0.28	0.0015	0.10	mg/L	EPA 300.0	1	10/9/2020	10/9/2020	n/a	FW/AK	
Solids, Total Dissolved	1,020	n/a	20.0	mg/L	SM 2540 C	1	10/16/2020	10/16/2020	n/a	SR	
Sulfate	8.1	0.046	0.20	mg/L	EPA 300.0	1	10/9/2020	10/9/2020	n/a	FW/AK	

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Comments and Explanations: None



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Sampled by: KK-BN

**DAL Project No.: 201009-08**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: MW2S

Matrix: Non-Potable Water

Temperature Received (°C): 15

Collected: 10/9/2020; 10:35

Received: 10/9/2020; 13:00

Report Date: 12/8/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	<b>330</b>	n/a	5.0	mg/L	SM 2320 B	1	10/14/2020	10/14/2020	n/a	SR	
Chloride	<b>223</b>	0.0024	0.10	mg/L	EPA 300.0	10	10/9/2020	10/9/2020	n/a	FW/AK	
COD	<b>41.9</b>	2.5	10.0	mg/L	SM 5220 D	1	10/12/2020	10/12/2020	n/a	BS	
Hardness	<b>890</b>	n/a	1.0	mg/L	SM 2340 B	1	10/20/2020	10/20/2020	n/a	TM	
Nitrogen, Ammonia	<b>nd</b>	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	10/15/2020	10/15/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	<b>0.48</b>	0.0015	0.10	mg/L	EPA 300.0	1	10/9/2020	10/9/2020	n/a	FW/AK	
Solids, Total Dissolved	<b>780</b>	n/a	20.0	mg/L	SM 2540 C	1	10/16/2020	10/16/2020	n/a	SR	
Sulfate	<b>0.87</b>	0.046	0.20	mg/L	EPA 300.0	1	10/9/2020	10/9/2020	n/a	FW/AK	

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Comments and Explanations: None



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**DAL Project No.: 201009-08**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: MW2D

Matrix: Non-Potable Water

Temperature Received (°C): 15

Collected: 10/9/2020; 10:45

Received: 10/9/2020; 13:00

Report Date: 12/8/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	<b>102</b>	n/a	5.0	mg/L	SM 2320 B	1	10/14/2020	10/14/2020	n/a	SR	
Chloride	<b>11.7</b>	0.0024	0.10	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	
COD	<b>nd</b>	2.5	10.0	mg/L	SM 5220 D	1	10/12/2020	10/12/2020	n/a	BS	
Hardness	<b>153</b>	n/a	1.0	mg/L	SM 2340 B	1	10/20/2020	10/20/2020	n/a	TM	
Nitrogen, Ammonia	<b>1.6</b>	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	10/15/2020	10/15/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	<b>nd</b>	0.0015	0.10	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	
Solids, Total Dissolved	<b>250</b>	n/a	20.0	mg/L	SM 2540 C	1	10/16/2020	10/16/2020	n/a	SR	
Sulfate	<b>nd</b>	0.046	0.20	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	

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Comments and Explanations: None





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Sampled by: KK-BN

**DAL Project No.: 201009-08**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: MW5S

Matrix: Non-Potable Water

Temperature Received (°C): 15

Collected: 10/9/2020; 11:00

Received: 10/9/2020; 13:00

Report Date: 12/8/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	54.0	n/a	5.0	mg/L	SM 2320 B	1	10/14/2020	10/14/2020	n/a	SR	
Chloride	3.7	0.0024	0.10	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	
COD	nd	2.5	10.0	mg/L	SM 5220 D	1	10/12/2020	10/12/2020	n/a	BS	
Hardness	87.6	n/a	1.0	mg/L	SM 2340 B	1	10/20/2020	10/20/2020	n/a	TM	
Nitrogen, Ammonia	nd	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	10/15/2020	10/15/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	0.79	0.0015	0.10	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	
Solids, Total Dissolved	366	n/a	20.0	mg/L	SM 2540 C	1	10/16/2020	10/16/2020	n/a	SR	
Sulfate	6.0	0.046	0.20	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	

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Comments and Explanations: None



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Sampled by: KK-BN

**DAL Project No.: 201009-08**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: B6DR

Matrix: Non-Potable Water

Temperature Received (°C): 15

Collected: 10/9/2020; 11:15

Received: 10/9/2020; 13:00

Report Date: 12/8/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	79.0	n/a	5.0	mg/L	SM 2320 B	1	10/14/2020	10/14/2020	n/a	SR	
Chloride	13.3	0.0024	0.10	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	
COD	nd	2.5	10.0	mg/L	SM 5220 D	1	10/12/2020	10/12/2020	n/a	BS	
Hardness	125	n/a	1.0	mg/L	SM 2340 B	1	10/20/2020	10/20/2020	n/a	TM	
Nitrogen, Ammonia	1.2	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	10/15/2020	10/15/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	nd	0.0015	0.10	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	
Solids, Total Dissolved	240	n/a	20.0	mg/L	SM 2540 C	1	10/16/2020	10/16/2020	n/a	SR	
Sulfate	0.43	0.046	0.20	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	

WA-DOE-Laboratory Certification No.: C890

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"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Comments and Explanations: None



# DRAGON ANALYTICAL LABORATORY

627 Durell Road SE, STE B105, Tumwater, WA 98501 (360)866-0543  
Customerservice@DragonLaboratory.com

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water  
Mobile Environmental Laboratory



Lewis County  
1411 S. Tower Ave  
Centralia, WA 98531

Sampled by: KK-BN

**DAL Project No.: 201009-08**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: B2SU

Matrix: Non-Potable Water

Temperature Received (°C): 15

Collected: 10/9/2020; 11:20

Received: 10/9/2020; 13:00

Report Date: 12/8/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	117	n/a	5.0	mg/L	SM 2320 B	1	10/14/2020	10/14/2020	n/a	SR	
Chloride	2.3	0.0024	0.10	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	
COD	nd	2.5	10.0	mg/L	SM 5220 D	1	10/12/2020	10/12/2020	n/a	BS	
Hardness	187	n/a	1.0	mg/L	SM 2340 B	1	10/20/2020	10/20/2020	n/a	TM	
Nitrogen, Ammonia	nd	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	10/15/2020	10/15/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	0.20	0.0015	0.10	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	
Solids, Total Dissolved	316	n/a	20.0	mg/L	SM 2540 C	1	10/16/2020	10/16/2020	n/a	SR	
Sulfate	5.8	0.046	0.20	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	

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Comments and Explanations: None



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Centralia, WA 98531

Sampled by: KK-BN

**DAL Project No.: 201009-08**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: B1SU

Matrix: Non-Potable Water

Temperature Received (°C): 15

Collected: 10/9/2020; 11:40

Received: 10/9/2020; 13:00

Report Date: 12/8/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	<b>183</b>	n/a	5.0	mg/L	SM 2320 B	1	10/14/2020	10/14/2020	n/a	SR	
Chloride	<b>12.3</b>	0.0024	0.10	mg/L	EPA 300.0	1	10/9/2020	10/9/2020	n/a	FW/AK	
COD	<b>11.1</b>	2.5	10.0	mg/L	SM 5220 D	1	10/12/2020	10/12/2020	n/a	BS	
Hardness	<b>198</b>	n/a	1.0	mg/L	SM 2340 B	1	10/20/2020	10/20/2020	n/a	TM	
Nitrogen, Ammonia	<b>nd</b>	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	10/15/2020	10/15/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	<b>nd</b>	0.0015	0.10	mg/L	EPA 300.0	1	10/9/2020	10/9/2020	n/a	FW/AK	
Solids, Total Dissolved	<b>236</b>	n/a	20.0	mg/L	SM 2540 C	1	10/16/2020	10/16/2020	n/a	SR	
Sulfate	<b>0.24</b>	0.046	0.20	mg/L	EPA 300.0	1	10/9/2020	10/9/2020	n/a	FW/AK	

WA-DOE-Laboratory Certification No.: C890

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"n/a" indicates not applicable

Comments and Explanations: None



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Centralia, WA 98531

Sampled by: KK-BN

**DAL Project No.: 201009-08**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: MW4S

Matrix: Non-Potable Water

Temperature Received (°C): 15

Collected: 10/9/2020; 11:55

Received: 10/9/2020; 13:00

Report Date: 12/8/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	45.0	n/a	5.0	mg/L	SM 2320 B	1	10/14/2020	10/14/2020	n/a	SR	
Chloride	2.6	0.0024	0.10	mg/L	EPA 300.0	1	10/9/2020	10/9/2020	n/a	FW/AK	
COD	nd	2.5	10.0	mg/L	SM 5220 D	1	10/12/2020	10/12/2020	n/a	BS	
Hardness	63.7	n/a	1.0	mg/L	SM 2340 B	1	10/20/2020	10/20/2020	n/a	TM	
Nitrogen, Ammonia	nd	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	10/15/2020	10/15/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	nd	0.0015	0.10	mg/L	EPA 300.0	1	10/9/2020	10/9/2020	n/a	FW/AK	
Solids, Total Dissolved	138	n/a	20.0	mg/L	SM 2540 C	1	10/16/2020	10/16/2020	n/a	SR	
Sulfate	6.8	0.046	0.20	mg/L	EPA 300.0	1	10/9/2020	10/9/2020	n/a	FW/AK	

WA-DOE-Laboratory Certification No.: C890

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Comments and Explanations: None



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Sampled by: KK-BN

**DAL Project No.: 201009-08**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: B8DR

Matrix: Non-Potable Water

Temperature Received (°C): 15

Collected: 10/9/2020; 12:05

Received: 10/9/2020; 13:00

Report Date: 12/8/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	144	n/a	5.0	mg/L	SM 2320 B	1	10/14/2020	10/14/2020	n/a	SR	
Chloride	5.4	0.0024	0.10	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	
COD	nd	2.5	10.0	mg/L	SM 5220 D	1	10/12/2020	10/12/2020	n/a	BS	
Hardness	166	n/a	1.0	mg/L	SM 2340 B	1	10/20/2020	10/20/2020	n/a	TM	
Nitrogen, Ammonia	0.63	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	10/15/2020	10/15/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	nd	0.0015	0.10	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	
Solids, Total Dissolved	302	n/a	20.0	mg/L	SM 2540 C	1	10/16/2020	10/16/2020	n/a	SR	
Sulfate	27.3	0.046	0.20	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	

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Comments and Explanations: None



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Centralia, WA 98531

Sampled by: KK-BN

**DAL Project No.: 201009-08**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: B2S

Matrix: Non-Potable Water

Temperature Received (°C): 15

Collected: 10/9/2020; 12:25

Received: 10/9/2020; 13:00

Report Date: 12/8/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	32.0	n/a	5.0	mg/L	SM 2320 B	1	10/14/2020	10/14/2020	n/a	SR	
Chloride	4.2	0.0024	0.10	mg/L	EPA 300.0	1	10/9/2020	10/9/2020	n/a	FW/AK	
COD	nd	2.5	10.0	mg/L	SM 5220 D	1	10/12/2020	10/12/2020	n/a	BS	
Hardness	139	n/a	1.0	mg/L	SM 2340 B	1	10/20/2020	10/20/2020	n/a	TM	
Nitrogen, Ammonia	nd	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	10/15/2020	10/15/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	23.6	0.0015	0.10	mg/L	EPA 300.0	10	10/9/2020	10/9/2020	n/a	FW/AK	
Solids, Total Dissolved	256	n/a	20.0	mg/L	SM 2540 C	1	10/16/2020	10/16/2020	n/a	SR	
Sulfate	5.1	0.046	0.20	mg/L	EPA 300.0	1	10/9/2020	10/9/2020	n/a	FW/AK	

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Comments and Explanations: None



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Sampled by: KK-BN

**DAL Project No.: 201009-08**

Project Name: Landfill Wet Season

Project No.: n/a

P.O. No.: n/a

Sample Name: B1S

Matrix: Non-Potable Water

Temperature Received (°C): 15

Collected: 10/9/2020; 12:40

Received: 10/9/2020; 13:00

Report Date: 12/8/2020

## ANALYTICAL RESULTS

PARAMETER	RESULTS	MDL	MRL	UNITS	METHOD	DF	PREPARATION DATE	ANALYSIS DATE	ANALYSIS TIME	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	115	n/a	5.0	mg/L	SM 2320 B	1	10/14/2020	10/14/2020	n/a	SR	
Chloride	7.9	0.0024	0.10	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	
COD	nd	2.5	10.0	mg/L	SM 5220 D	1	10/12/2020	10/12/2020	n/a	BS	
Hardness	136	n/a	1.0	mg/L	SM 2340 B	1	10/20/2020	10/20/2020	n/a	TM	
Nitrogen, Ammonia	0.68	0.029	0.30	mg/L	SM 4500-NH <sub>3</sub> D	1	10/15/2020	10/15/2020	n/a	BS	
Nitrogen, Nitrate + Nitrite	0.21	0.0015	0.10	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	
Solids, Total Dissolved	196	n/a	20.0	mg/L	SM 2540 C	1	10/16/2020	10/16/2020	n/a	SR	
Sulfate	0.32	0.046	0.20	mg/L	EPA 300.0	1	10/9/2020	10/10/2020	n/a	FW/AK	

WA-DOE-Laboratory Certification No.: C890

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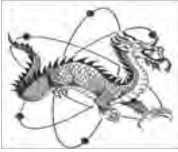
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Comments and Explanations: None





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Lewis County

DAL Project No.: 201009-08

Project Name: Landfill Wet Season

Project No.: n/a

## QUALITY CONTROL RESULTS Method Blank

PARAMETER	SAMPLE BATCH	RESULT	MRL	UNITS	ANALYTICAL METHOD	ANALYSIS DATE	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	201014-Alkalinity (CaCO <sub>3</sub> )	nd	5.0	mg/L	SM 2320 B	10/14/2020	SR	
Chloride	201010-Chloride	nd	0.10	mg/L	EPA 300.0	10/10/2020	FW/AK	
COD	201012-COD	nd	10.0	mg/L	SM 5220 D	10/12/2020	BS	
Hardness	201020-Hardness	nd	1.0	mg/L	SM 2340 B	10/20/2020	TM	
Nitrogen, Ammonia	201015-NH <sub>3</sub>	nd	0.30	mg/L	SM 4500-NH <sub>3</sub> D	10/15/2020	BS	
Nitrogen, Nitrate + Nitrite	201010-N+N	nd	0.10	mg/L	EPA 300.0	10/10/2020	FW/AK	
Solids, Total Dissolved	201016-TDS	nd	20.0	mg/L	SM 2540 C	10/16/2020	SR	
Sulfate	201010-Sulfate	nd	0.20	mg/L	EPA 300.0	10/10/2020	FW/AK	

## QUALITY CONTROL RESULTS Duplicate Sample

PARAMETER	SAMPLE BATCH	RESULT	DUP. RESULT	UNITS	ANALYTICAL METHOD	RPD(%)	LIMITS(%)	ANALYSIS DATE	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	201014-Alkalinity (CaCO <sub>3</sub> )	431	431	mg/L	SM 2320 B	0.00	±35	10/14/2020	SR	
Chloride	201010-Chloride	6.9	6.9	mg/L	EPA 300.0	0.043	±35	10/10/2020	FW/AK	
COD	201012-COD	nd	nd	mg/L	SM 5220 D	0.00	±35	10/12/2020	BS	
Hardness	201020-Hardness	64.8	52.0	mg/L	SM 2340 B	22.0	±35	10/20/2020	TM	
Nitrogen, Ammonia	201015-NH <sub>3</sub>	0.61	0.61	mg/L	SM 4500-NH <sub>3</sub> D	0.66	±35	10/15/2020	BS	
Nitrogen, Nitrate + Nitrite	201010-N+N	2.7	2.7	mg/L	EPA 300.0	0.00	±35	10/10/2020	FW/AK	
Solids, Total Dissolved	201016-TDS	606	600	mg/L	SM 2540 C	1.0	±35	10/16/2020	SR	
Sulfate	201010-Sulfate	6.6	6.6	mg/L	EPA 300.0	0.061	±35	10/10/2020	FW/AK	

WA-DOE-Laboratory Certification No.: C890

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"RPD" indicates Relative Percent Difference

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Comments and Explanations: None



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Mobile Environmental Laboratory



Lewis County

DAL Project No.: 201009-08

Project Name: Landfill Wet Season

Project No.: n/a

## QUALITY CONTROL RESULTS Laboratory Fortified Blank

PARAMETER	SAMPLE BATCH	LFB RESULT	TRUE VALUE	UNITS	ANALYTICAL METHOD	RECOVERY (%)	LIMITS (%)	ANALYSIS DATE	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	201014-Alkalinity (CaCO <sub>3</sub> )	199	200	mg/L	SM 2320 B	100	65.0-135	10/10/2020	SR	
Chloride	201010-Chloride	5.5	5.0	mg/L	EPA 300.0	110	65.0-135	10/10/2020	FW/AK	
COD	201012-COD	103	100	mg/L	SM 5220 D	103	65.0-135	10/12/2020	BS	
Hardness	201020-Hardness	37.2	33.1	mg/L	SM 2340 B	112	65.0-135	10/20/2020	TM	
Nitrogen, Ammonia	201015-NH <sub>3</sub>	1.1	1.0	mg/L	SM 4500-NH <sub>3</sub> D	105	65.0-135	10/15/2020	BS	
Nitrogen, Nitrate + Nitrite	201010-N+N	2.6	2.65	mg/L	EPA 300.0	99.3	65.0-135	10/10/2020	FW/AK	
Solids, Total Dissolved	201016-TDS	466	500	mg/L	SM 2540 C	93.2	65.0-135	10/16/2020	SR	
Sulfate	201010-Sulfate	5.4	5.0	mg/L	EPA 300.0	108	65.0-135	10/10/2020	FW/AK	

## QUALITY CONTROL RESULTS Matrix Spike/Matrix Spike Duplicate

PARAMETER	SAMPLE BATCH	MS RESULT	MSD RESULT	TRUE VALUE	UNITS	ANALYTICAL METHOD	RPD (%)	LIMITS(%)	ANALYSIS DATE	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	201014-Alkalinity (CaCO <sub>3</sub> )	n/a	n/a	n/a	mg/L	SM 2320 B	n/a	n/a	n/a	n/a	
Chloride	201010-Chloride	5.4	5.5	5.0	mg/L	EPA 300.0	1.0	±35	10/10/2020	FW/AK	
COD	201012-COD	107	119	100	mg/L	SM 5220 D	10.2	±35	10/12/2020	BS	
Hardness	201020-Hardness	n/a	n/a	n/a	mg/L	SM 2340 B	n/a	n/a	n/a	n/a	
Nitrogen, Ammonia	201015-NH <sub>3</sub>	1.1	1.1	1.0	mg/L	SM 4500-NH <sub>3</sub> D	1.9	±35	10/15/2020	BS	
Nitrogen, Nitrate + Nitrite	201010-N+N	2.6	2.6	2.65	mg/L	EPA 300.0	0.039	±35	10/10/2020	FW/AK	
Solids, Total Dissolved	201016-TDS	n/a	n/a	n/a	mg/L	SM 2540 C	n/a	n/a	n/a	n/a	
Sulfate	201010-Sulfate	5.1	5.0	5.0	mg/L	EPA 300.0	2.7	±35	10/10/2020	FW/AK	

WA-DOE-Laboratory Certification No.: C890

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"n/a" indicates not applicable

Comments and Explanations: None



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Mobile Environmental Laboratory

Lewis County

DAL Project No.: 201009-08

Project Name: Landfill Wet Season

Project No.: n/a

## QUALITY CONTROL RESULTS Matrix Spike/Matrix Spike Duplicate

PARAMETER	SAMPLE RESULT	MS RESULT	MSD RESULT	TRUE VALUE	UNITS	ANALYTICAL METHOD	MS RECOVERY %	MSD RECOVERY %	MS/MSD RECOVERY LIMITS %	ANALYST	DATA FLAGS
Alkalinity (CaCO <sub>3</sub> )	n/a	n/a	n/a	n/a	mg/L	SM 2320 B	n/a	n/a	n/a	n/a	
Chloride	6.9	12.3	12.4	5.0	mg/L	EPA 300.0	109	110	80-120	FW/AK	
COD	0.00	107	119	100	mg/L	SM 5220 D	107	119	65-135	BS	
Hardness	n/a	n/a	n/a	n/a	mg/L	SM 2340 B	n/a	n/a	n/a	n/a	
Nitrogen, Ammonia	0.61	1.7	1.7	1.0	mg/L	SM 4500-NH <sub>3</sub> D	109	107	65-135	BS	
Nitrogen, Nitrate + Nitrite	2.7	5.3	5.3	2.65	mg/L	EPA 300.0	97.1	97.1	80-120	FW/AK	
Solids, Total Dissolved	n/a	n/a	n/a	n/a	mg/L	SM 2540 C	n/a	n/a	n/a	n/a	
Sulfate	6.6	11.8	11.6	5.0	mg/L	EPA 300.0	103	100	80-120	FW/AK	

WA-DOE-Laboratory Certification No.: C890

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"n/a" indicates not applicable

Comments and Explanations: None

**ALS Group USA, Corp.**  
**dba ALS Environmental**  
Analytical Report

**Client:** Dragon Analytical Laboratory  
**Project:** Wet Season/201009-08  
**Sample Matrix:** Wastewater

**Service Request:** K2009167  
**Date Collected:** 10/09/20  
**Date Received:** 10/13/20

Mercury, Dissolved

Prep Method: METHOD  
Analysis Method: 1631E  
Test Notes:

Units: ng/L  
Basis: NA

Sample Name	Lab Code	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
CE1s	K2009167-001	0.5	1	10/13/20	10/16/20	2.3	
CNE1d	K2009167-002	0.5	1	10/13/20	10/16/20	0.6	
DUP	K2009167-003	0.5	1	10/13/20	10/16/20	17.1	
MW2su	K2009167-004	0.5	1	10/13/20	10/16/20	0.6	
MW2s	K2009167-005	0.5	1	10/13/20	10/16/20	3.6	
MW2d	K2009167-006	0.5	1	10/13/20	10/16/20	ND	
MW5s	K2009167-007	0.5	1	10/13/20	10/16/20	0.7	
B6dr	K2009167-008	0.5	1	10/13/20	10/16/20	4.5	
B2su	K2009167-009	0.5	1	10/13/20	10/16/20	8.2	
B1su	K2009167-010	0.5	1	10/13/20	10/16/20	3.2	
MW4s	K2009167-011	0.5	1	10/13/20	10/16/20	0.7	
B8dr	K2009167-012	0.5	1	10/13/20	10/16/20	1.1	
B2s	K2009167-013	0.5	1	10/13/20	10/16/20	1.3	
B1s	K2009167-014	0.5	1	10/13/20	10/16/20	0.9	
MW1s	K2009167-015	0.5	1	10/13/20	10/16/20	0.6	
MW1d	K2009167-016	0.5	1	10/13/20	10/16/20	0.6	
MW3d	K2009167-017	0.5	1	10/13/20	10/16/20	2.4	
MW3s	K2009167-018	0.5	1	10/13/20	10/16/20	ND	
Method Blank 1	K2009167-MB1	0.5	1	10/13/20	10/16/20	ND	
Method Blank 2	K2009167-MB2	0.5	1	10/13/20	10/16/20	ND	
Method Blank 3	K2009167-MB3	0.5	1	10/13/20	10/16/20	ND	

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**Client:** Dragon Analytical Laboratory, Inc.  
**Address:** 627 Durell Rd. SE, Ste. B105  
Tumwater, WA 98501  
**Attn:** Beth Kuttig

**Work Order:** WAJ0511  
**Project:** Wet Season  
**Reported:** 10/26/2020 09:36

## Analytical Results Report

**Sample Location:** CNE1s  
**Lab/Sample Number:** WAJ0511-01      **Collect Date:** 10/09/20 10:00  
**Date Received:** 10/13/20 13:38      **Collected By:**  
**Matrix:** Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	8.35	mg/L	0.100	10/20/20 13:54	RPR	SM 5310 B	

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## Analytical Results Report

(Continued)

Sample Location: CNE1d  
Lab/Sample Number: WAJ0511-02 Collect Date: 10/09/20 10:15  
Date Received: 10/13/20 13:38 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	1.62	mg/L	0.100	10/20/20 14:13	RPR	SM 5310 B	

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## Analytical Results Report

(Continued)

Sample Location: DUP  
Lab/Sample Number: WAJ0511-03 Collect Date: 10/09/20 10:15  
Date Received: 10/13/20 13:38 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	1.61	mg/L	0.100	10/20/20 14:31	RPR	SM 5310 B	

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## Analytical Results Report

(Continued)

Sample Location: MW2su  
Lab/Sample Number: WAJ0511-04 Collect Date: 10/09/20 10:25  
Date Received: 10/13/20 13:38 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	6.78	mg/L	0.100	10/20/20 14:46	RPR	SM 5310 B	



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## Analytical Results Report

(Continued)

Sample Location: MW2s  
Lab/Sample Number: WAJ0511-05 Collect Date: 10/09/20 10:35  
Date Received: 10/13/20 13:38 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	12.0	mg/L	0.100	10/20/20 17:33	RPR	SM 5310 B	

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## Analytical Results Report

(Continued)

Sample Location: MW2d  
Lab/Sample Number: WAJ0511-06 Collect Date: 10/09/20 10:45  
Date Received: 10/13/20 13:38 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	2.10	mg/L	0.100	10/20/20 17:52	RPR	SM 5310 B	

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## Analytical Results Report

(Continued)

Sample Location: MW5s  
Lab/Sample Number: WAJ0511-07 Collect Date: 10/09/20 11:00  
Date Received: 10/13/20 13:38 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	1.24	mg/L	0.100	10/20/20 18:09	RPR	SM 5310 B	

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## Analytical Results Report

(Continued)

Sample Location: B6dr  
Lab/Sample Number: WAJ0511-08 Collect Date: 10/09/20 11:15  
Date Received: 10/13/20 13:38 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	2.92	mg/L	0.100	10/20/20 18:22	RPR	SM 5310 B	

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## Analytical Results Report

(Continued)

Sample Location: B2su  
Lab/Sample Number: WAJ0511-09 Collect Date: 10/09/20 11:20  
Date Received: 10/13/20 13:38 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	0.639	mg/L	0.100	10/20/20 18:40	RPR	SM 5310 B	

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## Analytical Results Report

(Continued)

Sample Location: B1su  
Lab/Sample Number: WAJ0511-10 Collect Date: 10/09/20 11:40  
Date Received: 10/13/20 13:38 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	3.48	mg/L	0.100	10/20/20 18:53	RPR	SM 5310 B	

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## Analytical Results Report

(Continued)

Sample Location: MW4s  
Lab/Sample Number: WAJ0511-11 Collect Date: 10/09/20 11:55  
Date Received: 10/13/20 13:38 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	1.06	mg/L	0.100	10/20/20 19:06	RPR	SM 5310 B	

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## Analytical Results Report

(Continued)

Sample Location: B8dr  
Lab/Sample Number: WAJ0511-12 Collect Date: 10/09/20 12:05  
Date Received: 10/13/20 13:38 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	1.78	mg/L	0.100	10/20/20 19:19	RPR	SM 5310 B	



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## Analytical Results Report

(Continued)

Sample Location: B2s  
Lab/Sample Number: WAJ0511-13 Collect Date: 10/09/20 12:25  
Date Received: 10/13/20 13:38 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	1.32	mg/L	0.100	10/20/20 19:32	RPR	SM 5310 B	

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## Analytical Results Report

(Continued)

Sample Location: B1s  
Lab/Sample Number: WAJ0511-14 Collect Date: 10/09/20 12:40  
Date Received: 10/13/20 13:38 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	0.914	mg/L	0.100	10/20/20 19:45	RPR	SM 5310 B	

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## Analytical Results Report

(Continued)

Sample Location: MW1s  
Lab/Sample Number: WAJ0511-15 Collect Date: 10/09/20 13:16  
Date Received: 10/13/20 13:38 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	0.207	mg/L	0.100	10/22/20 11:02	RPR	SM 5310 B	

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## Analytical Results Report

(Continued)

Sample Location: MW1d  
Lab/Sample Number: WAJ0511-16 Collect Date: 10/09/20 13:32  
Date Received: 10/13/20 13:38 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	1.92	mg/L	0.100	10/22/20 11:20	RPR	SM 5310 B	

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## Analytical Results Report

(Continued)

Sample Location: MW3d  
Lab/Sample Number: WAJ0511-17 Collect Date: 10/09/20 13:52  
Date Received: 10/13/20 13:38 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	1.25	mg/L	0.100	10/22/20 11:38	RPR	SM 5310 B	

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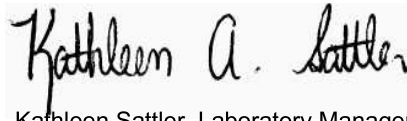
## Analytical Results Report

(Continued)

Sample Location: MW3s  
Lab/Sample Number: WAJ0511-18 Collect Date: 10/09/20 14:00  
Date Received: 10/13/20 13:38 Collected By:  
Matrix: Wastewater

Analyte	Result	Units	PQL	Analyzed	Analyst	Method	Qualifier
<b>Inorganics</b>							
Total Organic Carbon (TOC)	0.561	mg/L	0.100	10/22/20 11:55	RPR	SM 5310 B	

Authorized Signature,



Kathleen Sattler, Laboratory Manager

PQL Practical Quantitation Limit  
ND Not Detected  
MCL EPA's Maximum Contaminant Level  
Dry Sample results reported on a dry weight basis  
\* Not a certified analyte

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