

# 2023 ANNUAL MONITORING REPORT

OLALLA LANDFILL

KITSAP COUNTY, WASHINGTON

APRIL 2024



Prepared by

TRC Environmental Corporation on behalf of  
Kitsap County Department of Public Works  
Port Orchard, Washington



WESLEY R. WEISBERG

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**CHECKLIST FOR GROUNDWATER REPORTING**  
**Municipal Solid Waste Landfills**  
**WAC 173-351-415**

Include a signed, completed copy of this checklist with each quarterly and annual report.

Quarterly groundwater reports shall be submitted to the jurisdictional health department and Ecology within 60 days of receipt of analytical data. Annual groundwater reports shall be submitted to the jurisdictional health department and Ecology by April 1 of each year.

1 <sup>st</sup> _____ 2 <sup>nd</sup> _____ 3 <sup>rd</sup> _____ 4 <sup>th</sup> <u>X</u> YEAR <u>2023</u>	Reference (section, subsection)	Included in this report	Location – page # or appendix #
<b><i>Quarterly Groundwater Reports: 173-351-415 (2) plus the referenced section</i></b>			
Statistical calculations and summaries			
Descriptive statistics	420, (1)	<input checked="" type="checkbox"/>	Pages 19-20
Statistical tests	420, (2)	<input checked="" type="checkbox"/>	Pages 19-20
Notification of statistical increase (if applicable)	420, (4)	<input checked="" type="checkbox"/>	Page 14
Notification of concentrations above Chapter 173-200 WAC criteria (if any)	430, (4)	<input checked="" type="checkbox"/>	Pages 9-10
Static water level readings	415, (2)	<input checked="" type="checkbox"/>	Appendix A
Potentiometric surface elevation maps depicting flow direction	415, (2)	<input checked="" type="checkbox"/>	Page 7
Flow rate – calculated	415, (2)	<input checked="" type="checkbox"/>	Pages 5-8
Cation-anion balances	430, (5a)	<input type="checkbox"/>	
Explanation of greater than 5% (or 10%) difference if needed	430, (5a)	<input type="checkbox"/>	
Trilinear diagrams	430, (5b)	<input type="checkbox"/>	
Leachate analyses (if sampled and tested)	415, (2)	<input type="checkbox"/>	
Data entered into EIM database (date entered: <u>February 5, 2024</u> )	415, (3)	<input checked="" type="checkbox"/>	Yes
Complete copy of the lab report with chain of custody record.		<input checked="" type="checkbox"/>	Attachment 2
<b><i>Annual Groundwater Reports: 173-351-415 (1) YEAR <u>2023</u></i></b>			
Summary of statistical results and trends	415, (1)	<input checked="" type="checkbox"/>	Appendix B
Summary of groundwater flow rate and direction for the year	415, (1)	<input checked="" type="checkbox"/>	Page 8
Copy of all potentiometric maps for the year	415, (1)	<input checked="" type="checkbox"/>	Appendix A
Summary geochemical evaluation	415, (1)	<input type="checkbox"/>	
<b><i>For Quarterly and Annual Reports</i></b>			
Stamped by a licensed professional	RCW 18.220	<input checked="" type="checkbox"/>	Cover

Wesley Weisberg  
 Signature of Report Author

April 10, 2024  
 Date

Olalla  
 Landfill

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Attachment 2 2023 Quarterly Monitoring Analytical Data Sheets (provided on attached CD-ROM)

## INTRODUCTION

The Olalla Landfill (Landfill) is located approximately 0.75 mile east of Highway 16 on Burley-Olalla Road in Kitsap County, Washington. The Landfill was closed in 1989 in accordance with the Olalla Final Closure Plan (Parametrix 1988). Post-closure activities have consisted primarily of quarterly monitoring and maintenance per Washington Administrative Code (WAC) 173-304-407 (Minimum Functional Standards for Solid Waste Handling [MFS]), “General Closure and Post Closure Requirements” Kitsap County Board of Health Ordinance 2010-01 “Solid Waste Regulations” and Solid Waste Handling Permits (the Permit) issued by the Kitsap Public Health District (KPHD).

A Remedial Investigation/Feasibility Study (RI/FS; Parametrix 2014a) was performed at the Landfill starting in May 2010 and ending May 2014 when the RI/FS was submitted to the Washington State Department of Ecology (Ecology) and KPHD. Upon approval of the RI/FS, the Kitsap County Solid Waste Division (SWD) prepared a Cleanup Action Plan (CAP; Parametrix 2014b) to summarize the RI/FS activities and present the preferred cleanup action, which was selected based on the results of the RI/FS. Ecology and KPHD approved the CAP in December 2014.

The approved cleanup action, monitored natural attenuation (MNA) and land use controls, is based on a continuation of ongoing groundwater, surface water, and landfill gas monitoring in accordance with the SWHP. Quarterly monitoring results will be used to evaluate the effectiveness of the cleanup action and to verify that natural attenuation continues to occur at the Landfill. The overall effectiveness of the cleanup action will be evaluated at 5-year intervals as part of the periodic review process.

Specific groundwater, surface water, and landfill gas monitoring methods and procedures that are performed under the requirements of MFS, the SWHP, and the CAP are documented in a Compliance Monitoring Plan (CMP; EPI 2015). The CMP integrates all the previously noted monitoring program requirements into one document that contains a site-specific Sampling and Analysis Plan (SAP), Quality Assurance Plan (QAP), and Health and Safety Plan (HASP).

Results of the December 2023 quarterly groundwater and landfill gas monitoring event performed under the SWHP, CAP, and CMP are documented in this report. December 2023 analytical and field data were uploaded to Ecology’s Electronic Information Management (EIM) system on Monday, February 5, 2024.

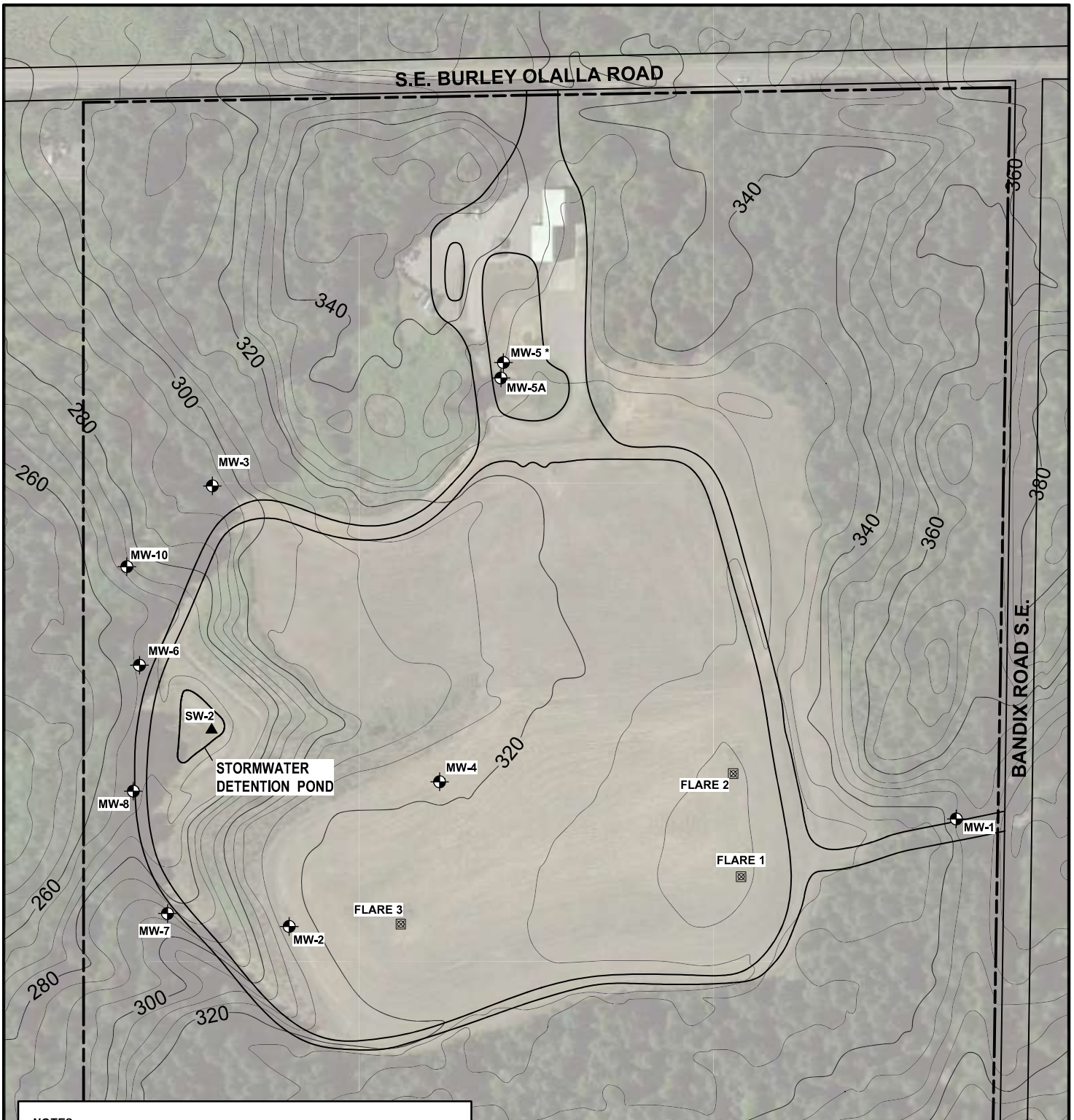
This Annual Report documents the results of the fourth quarter 2023 groundwater, surface water, and landfill gas monitoring event and summarizes the results of the previous quarterly monitoring and reporting events completed at the Landfill in 2023, in accordance with WAC 173-304-405(4), CAP, CMP, and the 2021–2025 SWHP issued by KPHD on February 10, 2021.

In addition to this Introduction, the 2023 Annual Monitoring Report consists of four main sections: Monitoring Program Description, Monitoring Results, Statistical Analysis, and Conclusions. The Monitoring Program Description summarizes the monitoring well network and laboratory analyses. Landfill gas field measurement data, groundwater elevations, and groundwater analytical results are presented in the Monitoring Results section. The statistical data evaluation methods used in this report are consistent with recommended methods found in the 2009 *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities* (Unified Guidance; USEPA 2009). Results of statistical and non-statistical evaluations of the 2023 monitoring data are summarized in the Conclusions section.

## MONITORING PROGRAM DESCRIPTION

The sampling locations, analytical parameters, and frequency of sample collection for groundwater, surface water, and landfill gas monitoring at the Landfill are specified in the 2021–2025 Permit issued by KPHD and dated February 10, 2021, the 2014 CAP, and the 2015 CMP. Monitoring well, landfill gas flare locations, and the surface water sampling location (SW-2, which is sampled annually) are shown on Figure 1. Specific information pertaining to this monitoring event is summarized in the following bullets:

- TRC performed groundwater sampling activities and measured landfill gas parameters at each of the three on-site passive landfill gas flares on December 20, 2023.
- Depth-to-water measurements were performed at all on-site monitoring wells on December 20, 2023. TRC field staff also measured the depth to water in well MW-5, which is screened in a discontinuous shallow perched groundwater zone that is not hydraulically connected to the uppermost aquifer beneath the Landfill.
- Groundwater samples were collected from the upgradient monitoring well MW-1, crossgradient monitoring wells MW-5A and MW-7, and downgradient monitoring wells MW-3, MW-6, MW-8, and MW-10. One field duplicate sample was collected from downgradient monitoring well MW-10 and was assigned the identifier MW-13.
- Groundwater samples were hand-delivered to Analytical Resources, Inc. in Tukwila, Washington, for analysis on December 20, 2023.
- The surface water sample location, SW-2, was dry during the December 20, 2023, monitoring event. A surface water sample was collected on January 29, 2024, following several days of consistent rainfall.
- Samples were analyzed within their respective holding times, except total coliform and laboratory-measured pH samples. The holding time for total coliform is 6 hours and the pH holding time is 15 minutes. These short holding times cannot be achieved at the laboratory, but the pH holding times are achieved by the field-measured pH data. Both field- and laboratory-measured pH data are included in data tables and statistical evaluations presented in this report for comparison; however, field-measured pH data represent the dataset and statistical evaluations that should be considered for demonstrations of regulatory compliance.
- Data evaluations, statistical tests, and data reporting were performed by TRC in accordance with methods described in the Unified Guidance (USEPA 2004 [draft] and 2009 [final]) and developed with input and direction from KPHD and Ecology and in accordance with procedures documented in the CAP and CMP.





**NOTES:**


**BASE MAP SOURCE:**  
GOOGLE EARTH


**TOPOGRAPHIC CONTOUR SOURCE:**  
KITSAP COUNTY PARCEL VIEWER


\*MW-5 IS COMPLETED IN A SHALLOW PERCHED GROUNDWATER ZONE


MW-2  MONITORING WELL LOCATION


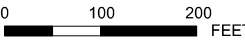
SW-2  SURFACE WATER SAMPLING LOCATION


 LANDFILL GAS FLARE

 300 TOPOGRAPHIC ELEVATION CONTOUR

 APPROXIMATE PROPERTY BOUNDARY

 PERIMETER ACCESS ROAD

  
 1:2400  
 1" = 200'  
 0 100 200 FEET

<b>PROJECT:</b>	
<b>KITSAP COUNTY OLALLA LANDFILL KITSAP COUNTY, WASHINGTON</b>	
<b>TITLE:</b>	
<b>OLALLA LANDFILL MONITORING WELL LOCATIONS 2023 ANNUAL MONITORING REPORT</b>	
DRAWN BY: A. MULLER	PROJ NO.: 533022
CHECKED BY: W. WEISBERG	<b>FIGURE 1</b>
APPROVED BY: W. WEISBERG	
DATE: JANUARY 12, 2024	
	
1180 NW MAPLE ST, SUITE 310 ISSAQUAH, WA 98027 WWW.TRCCOMPANIES.COM 425.395.0010	
FILE NO.:	2023 - Q4 GW MONITORING_FIGS 1-3.VWX

## MONITORING RESULTS

Results for 2023 quarterly monitoring events consist of landfill gas composition, groundwater elevations, calculated groundwater gradients and velocities, and groundwater quality data. A surface water sample was obtained during a separate mobilization following the December 2023 sampling event. The surface water sampling was performed on January 29, 2024, following several days of heavy precipitation. These data are summarized in this section and in Appendix A. Monitoring field notes associated with the four quarterly monitoring events and laboratory analytical data reports for 2023 is provided electronically in Attachments 1 and 2, respectively, and on the CD-ROM submitted with this report.

### Landfill Gas Data

Field measurements of landfill gas were taken from the three passive flares at the Landfill on March 22, June 13, September 21, and December 20, 2023. Landfill gas field measurement data summary tables are included in Appendix A. Data from the four quarterly landfill gas monitoring events performed in 2023 are summarized in the following sections.

#### March 22, 2023 – First Quarter

- Methane, by percent of volume was not detected in any of the flares. Instrument-measured Lower Explosive Limit (LEL) values were 0% for all three flares.
- Oxygen concentrations were 20.4%, 19.6%, and 20.6% by volume in Flares 1, 2, and 3, respectively.
- Carbon dioxide concentrations were 0.1%, 0.7%, and 0.1% by volume in Flares 1, 2, and 3, respectively.
- Gas pressure measurements were 0.10 inches of water in Flares 1, 2, and 3.

#### June 13, 2023 – Second Quarter

- Methane, by percent of volume was not detected in any of the flares. Instrument-measured Lower Explosive Limit (LEL) values were 0% for all three flares.
- Oxygen concentrations were 21.0%, 20.9%, and 19.0% by volume in Flares 1, 2, and 3, respectively.
- Carbon dioxide concentrations were 0.1%, 0.1%, and 1.4% by volume in Flares 1, 2, and 3, respectively.
- Gas pressure measurements were 0.12 inches of water in Flare 1 and 0.10 inches of water in Flares 2 and 3.

#### September 21, 2023 – Third Quarter

- Methane, by percent of volume, was not detected in any of the flares. Instrument-measured LEL values were 0% for all three flares.
- Oxygen concentrations were 20.7%, 20.5%, and 21.0% by volume in Flares 1, 2, and 3, respectively.
- Carbon dioxide concentrations were 0.0 in all three flares.
- Gas pressure measurements were 0.10 inches of water in Flare 1, 0.09 inches of water in Flare 2, and 0.06 inches of water in Flare 3.

## **December 20, 2023 – Fourth Quarter**

- Methane, by percent of volume was not detected in any of the flares. Instrument-measured LEL values were 0% for all three flares.
- Oxygen concentrations were 20.7%, 20.9%, and 20.8% by volume in Flares 1, 2, and 3, respectively.
- Carbon dioxide concentrations were 0.1%, 0.0%, and 0.0% by volume in Flares 1, 2, and 3, respectively.
- Pressure measurements were 0.11 inches of water in Flare 1, 0.07 inches of water in Flare 2, and 0.05 inches of water in Flare 3.

## **Groundwater Elevation, Flow Direction, Gradient, and Velocity**

All monitoring wells installed at the Landfill, except for MW-5, are screened in a laterally continuous sand and gravel unit that has been interpreted as belonging to the same aquifer unit (Parametrix 1988). Monitoring well MW-5 is screened in a shallow perched groundwater zone. Replacement monitoring well MW-5A was drilled at a location near MW-5 and is screened in the same aquifer as the other monitoring wells at the Landfill.

The Permit and CAP do not require water level or water quality data to be collected from MW-5 as part of the monitoring program for the Landfill because the shallow perched groundwater zone in which MW-5 is completed is not hydraulically connected to the uppermost continuous aquifer in which the other Landfill monitoring wells are completed. SWD has elected to measure the depth to water in MW-5 as additional information and depth-to-water measurements for MW-5 are included in the field notes presented in Attachment 1. The Permit and CAP specify annual monitoring of crossgradient monitoring wells MW-5A and MW-7. Quarterly groundwater level measurements are made at MW-5A and MW-7 to provide a more comprehensive dataset for the groundwater elevation contour map and hydrograph.

The groundwater flow direction beneath the Landfill during the December 2023 monitoring event was generally toward the northwest as depicted on Figure 2. Based on the groundwater elevation contours the groundwater flow direction at the Landfill is consistently toward the northwest, with potentially a western component near MW-3 and MW-10, as demonstrated by the quarterly groundwater elevation contour maps for all four quarters of 2023, which are presented in Appendix A.

Groundwater elevation contour patterns and flow directions have been consistent throughout all four seasons and over many years of quarterly water level measurements. The groundwater flow direction maps demonstrate that well MW-1 is consistently upgradient of the Landfill, wells MW-3, MW-6, MW-8, and MW-10 are consistently downgradient of the Landfill, and wells MW-5A and MW-7 are consistently crossgradient to the Landfill.

Groundwater elevation data from 1991 through the fourth quarter of 2023 for each of the on-site MFS monitoring wells (except MW-5) are plotted and shown on the water level elevation time-series graph in Appendix A. December 2023 groundwater elevations were lower than December 2022 elevations in all wells (except MW-5), with differences ranging from 3.21 feet lower in upgradient well MW-1 to 0.03 foot lower in downgradient well MW-3.

Precipitation data from the Bremerton National Airport Weather Station (KPWT) indicate that during the 2023 water year (November 2022 to October 2023) the area near the Landfill received 35.58 inches of

precipitation, which is less than the 42.84 inches of precipitation for the 2022 water year (Weather Underground, Station KPWT, 2023). Decreases in rainfall are reflected in groundwater monitoring elevations as much as three feet lower in upgradient well MW-1. If decreases in annual precipitation continues to persist, we can expect groundwater elevations to continue to decline.

Groundwater flow rates based on the quarterly groundwater elevation contour maps were calculated based on a modified form of Darcy's Law:

$$V = KI/n$$

Where:            V = average linear velocity (L/T)  
                      K = hydraulic conductivity (L/T)  
                      I = hydraulic gradient (L/L [dimensionless])  
                      n = effective porosity (percent expressed as a decimal)

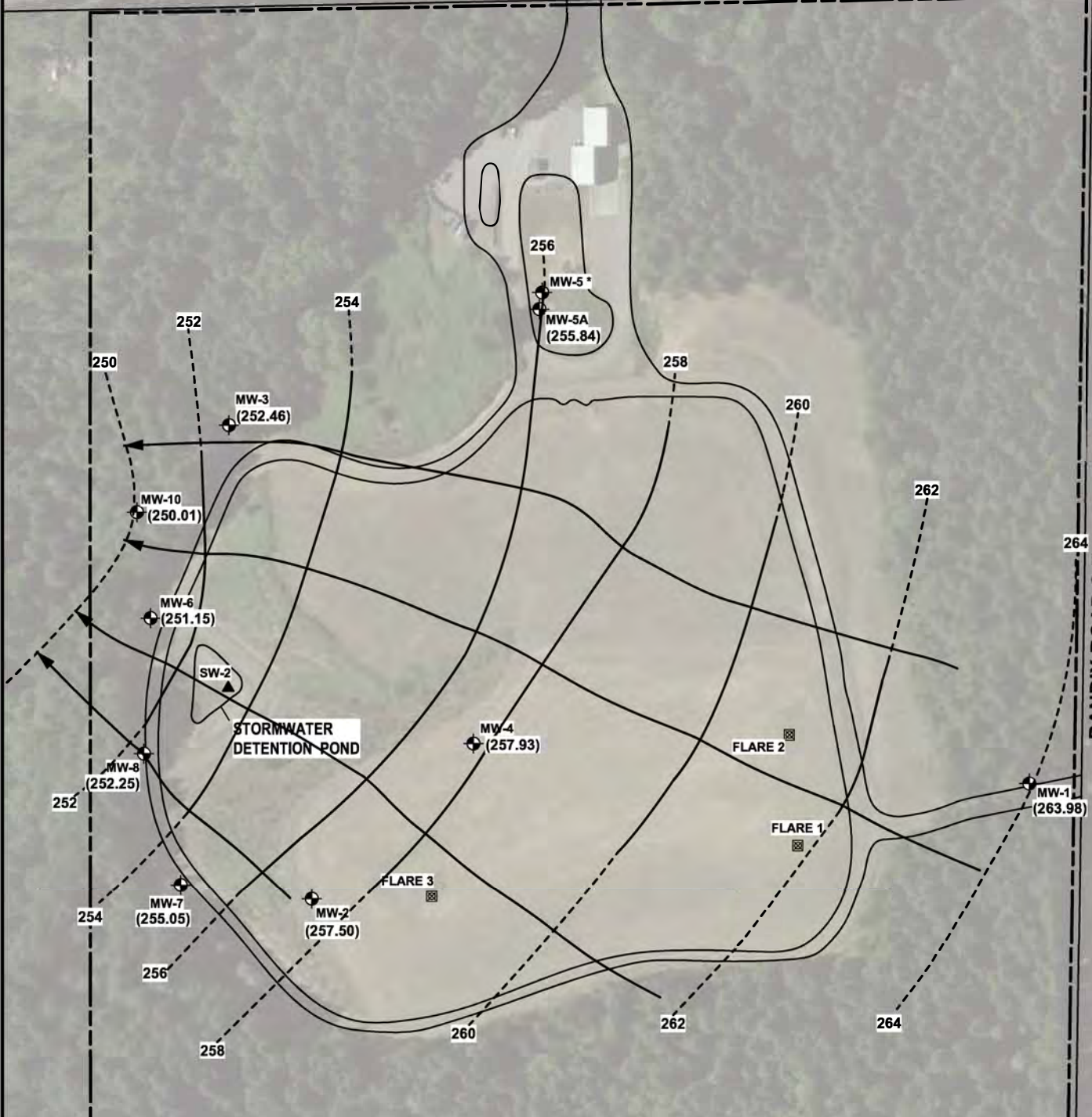
The hydraulic conductivity "K" of the aquifer was calculated from single well aquifer tests performed in monitoring wells MW-1, MW-2, MW-3, and MW-4. The range of values obtained from these tests indicated that the hydraulic conductivity of the uppermost aquifer at the Landfill is approximately  $7 \times 10^{-3}$  to  $3 \times 10^{-2}$  centimeters per second (cm/sec), with a mean value of  $2.2 \times 10^{-2}$  cm/sec (62.4 feet/day) (Parametrix 1988). This mean value correlates with the hydraulic conductivity values calculated using the Hazen equation for soil samples collected from the screened intervals from the boreholes for MW-8 and MW-10. Hazen equation calculated hydraulic conductivity values for soil at MW-8 and MW-10 are  $1.2 \times 10^{-2}$  cm/sec (34 feet/day) and  $1.4 \times 10^{-2}$  cm/sec (40 feet/day), respectively. The mean hydraulic conductivity value from the single well aquifer tests of  $2.2 \times 10^{-2}$  cm/sec (62.4 feet/day) is used for groundwater velocity calculations presented below.

The hydraulic gradients "I" of the aquifer for each monitoring event are calculated from quarterly groundwater elevation contour maps presented in Appendix A. Average hydraulic gradients calculated for the four 2023 quarterly events at the Landfill range from 0.0116 in December to 0.0141 in September. The effective porosity "n" of the aquifer is estimated to be 0.40, which is a typical value for fine to medium sand (Freeze and Cherry 1979).




S.E. BURLEY OLALLA ROAD

BANDIX ROAD S.E.



**NOTES:**

\* MW-5 IS COMPLETED IN A SHALLOW PERCHED GROUNDWATER ZONE.

- MW-2  MONITORING WELL LOCATION
- SW-2  SURFACE WATER SAMPLING LOCATION
-  LANDFILL GAS FLARE
-  GROUNDWATER ELEVATION CONTOUR
-  INFERRED GROUNDWATER FLOW PATH
-  APPROXIMATE PROPERTY BOUNDARY
-  PERIMETER ACCESS ROAD



1:2400  
1" = 200'  
0 100 200 FEET

PROJECT: **KITSAP COUNTY  
OLALLA LANDFILL  
KITSAP COUNTY, WASHINGTON**

TITLE: **OLALLA LANDFILL GROUNDWATER ELEVATION  
CONTOUR MAP - DECEMBER 20, 2023  
2023 ANNUAL MONITORING REPORT**

DRAWN BY:	A. MULLER	PROJ NO.:	533022
CHECKED BY:	W. WEISBERG	<b>FIGURE 2</b>	
APPROVED BY:	W. WEISBERG		
DATE:	JANUARY 12, 2024		



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425.395.0010

FILE NO.: 2023 - Q4 GW MONITORING\_FIGS 1-3.VWX

The resulting groundwater flow velocities “V” calculated from 2023 quarterly data range from 1.81 feet/day in December to 2.20 feet/day in September. The calculated groundwater gradients and flow velocities are summarized in Table 1.

**Table 1**  
**2023 Olalla Landfill Calculated Groundwater Flow Velocities**

Measurement Date	Calculated Hydraulic Gradient (L/L)	Calculated Groundwater Flow Velocity (feet/day)
March 22, 2023	0.0134	2.09
June 13, 2023	0.0135	2.11
September 21, 2023	0.0141	2.20
December 20, 2023	0.0116	1.81

### Surface Water Quality Data

Section IV.D.3.a of the KPHD-issued 2021–2025 SWHP for the Landfill states that surface water samples shall be collected at location SW-2 (see Figure 1) between January and March or between November and December if there is enough water for a sample. Surface water station SW-2 was dry during the December 20, 2023, sampling event. Samplers returned to the landfill on January 29, 2024, after several days of heavy rain, and collected a surface water sample. The following results were noted in surface water data:

- The laboratory-measured pH value for SW-2 surface water sample was 6.93 standard pH units, which is within the acceptable range of the Washington State Surface Water Standard (WAC 173-201A-200) of 6.5 to 8.5 standard pH units.
- Nitrate-nitrogen was detected at a concentration of 0.0534 milligrams per liter (mg/L), which is less than the Washington State Drinking Water and Groundwater Primary Standard of 10 mg/L.
- Nitrite + nitrate as nitrogen was detected at a concentration of 0.053 mg/L, which is less than the Washington State Drinking Water Primary Standard of 1.0 mg/L.
- Fecal coliform was not detected in the surface water sample obtained from SW-2.

Surface water quality data are presented in Appendix A. Analytical results (laboratory data sheets) are provided electronically in Attachment 2 on the CD-ROM for this report to reduce the amount of paper required to produce this report.

### Groundwater Quality Data

A summary of the groundwater quality data for the four quarterly events of 2023 is presented in Appendix A. Laboratory data sheets for all field samples, duplicates, and laboratory quality control samples reported by ARI are provided electronically in Attachment 2 of the CD-ROM for this report.

## Exceedances of Primary Regulatory Standards

Constituent concentrations in groundwater that exceeded Washington State Drinking Water Primary Standards (WAC 246-290-310) or Washington State Groundwater Primary Standards (WAC 173-300-040) are summarized in Table 2.

**Table 2**  
**2023 Water Quality Constituent Concentrations**  
**Exceeding Washington State Primary Standards**

Constituent	Drinking Water Standards <sup>a</sup>	Groundwater Quality Standards <sup>b</sup>	Site-Specific CUL <sup>c</sup>	March	June	Sept.	Dec.
<b>MW-1 (upgradient)</b>							
Arsenic	10 µg/L	0.05 µg/L	1.29 µg/L	0.10	0.11	0.12	0.09
<b>MW-3 (downgradient)</b>							
Arsenic	10 µg/L	0.05 µg/L	1.29 µg/L	0.12	0.15	0.110	0.14
Arsenic FD	10 µg/L	0.05 µg/L	1.29 µg/L	0.11	NA	NA	NA
<b>MW-5A (crossgradient)</b>							
Arsenic	10 µg/L	0.05 µg/L	1.29 µg/L	NA	NA	NA	0.20
<b>MW-6 (downgradient)</b>							
Arsenic	10 µg/L	0.05 µg/L	1.29 µg/L	0.22	0.46	0.42	0.30
Arsenic FD	10 µg/L	0.05 µg/L	1.29 µg/L	NA	0.47	NA	NA
Vinyl Chloride	2.0 µg/L	0.02 µg/L	0.29 µg/L	--	0.03	--	--
<b>MW-7 (crossgradient)</b>							
Arsenic	10 µg/L	0.05 µg/L	1.29 µg/L	NA	NA	NA	0.40
<b>MW-8 (downgradient)</b>							
Arsenic	10 µg/L	0.05 µg/L	1.29 µg/L	0.73	0.78	1.15	1.36
Arsenic FD	10 µg/L	0.05 µg/L	1.29 µg/L	NA	NA	1.09	NA
<b>MW-10 (downgradient)</b>							
Arsenic	10 µg/L	0.05 µg/L	1.29 µg/L	1.92	1.87	1.85	1.43
Arsenic FD	10 µg/L	0.05 µg/L	1.29 µg/L	NA	NA	NA	1.70

Notes:

Values are reported in the same units as the regulatory standards.

µg/L = Micrograms per liter.

FD = Field Duplicate.

NA = Not Applicable or Not Analyzed per the SWHP.

-- = Analyzed with no regulatory exceedance

<sup>a</sup> WAC 246-290-310.

<sup>b</sup> WAC 173-200-040.

<sup>c</sup>Site-Specific Cleanup Level.

## Exceedances of Secondary Regulatory Standards

Constituent concentrations in groundwater that exceeded Washington State Drinking Water Secondary Standards (WAC 246-290-310) and Washington State Groundwater Secondary Standards (WAC 173-300-040) are summarized in Table 3.

**Table 3**  
**2023 Water Quality Constituent Concentrations**  
**Exceeding Washington State Secondary Standards**

Constituent	Drinking Water Standards <sup>a</sup>	Groundwater Quality Standards <sup>b</sup>	March	June	Sept.	Dec.
<b>MW-1 (upgradient)</b>						
pH (lab)	NA	6.5 – 8.5	6.4 H	6.5 H	6.4 H	6.4 H
pH (field)	NA	6.5 – 8.5	6.5	6.2	6.5	6.3
<b>MW-3 (downgradient)</b>						
Manganese	50 µg/L	50 µg/L	8,660	8,320	5,020	4,960
Manganese FD	50 µg/L	50 µg/L	8,540	NA	NA	NA
pH (field)	NA	6.5 – 8.5	6.3	6.3	6.3	6.2
pH (lab)	NA	6.5 – 8.5	6.2 H	6.3 H	6.4 H	6.4 H
pH (lab) FD	NA	6.5 – 8.5	6.2 H	NA	NA	NA
<b>MW-5A (crossgradient)</b>						
none	NA	NA	NA	NA	NA	--
<b>MW-6 (downgradient)</b>						
Manganese	50 µg/L	50 µg/L	501	542	462	374
Manganese FD	50 µg/L	50 µg/L	NA	637	NA	NA
Iron	300 µg/L	300 µg/L	--	--	391	--
<b>MW-7 (crossgradient)</b>						
none	NA	NA	NA	NA	NA	--
<b>MW-8 (downgradient)</b>						
Iron	300 µg/L	300 µg/L	--	440	317	344
Iron FD	300 µg/L	300 µg/L	NA	NA	313	NA
Manganese	50 µg/L	50 µg/L	2,120	1,990	1,520	1,190
Manganese FD	50 µg/L	50 µg/L	NA	NA	1,520	NA
<b>MW-10 (downgradient)</b>						
Manganese	50 µg/L	50 µg/L	4,310	4,300	3,740	3,780
Manganese FD	50 µg/L	50 µg/L	NA	NA	NA	3,690

Notes:

Values are reported in the same units as the regulatory standards.

FD = Field Duplicate.

J = Estimated value, holding time exceeded.

H = Holding time exceeded.

NA = Not Applicable or Not Analyzed per the SWHP.

-- = Analyzed with no regulatory exceedance.

<sup>a</sup> WAC 246-290-310 and Site-Specific Cleanup Level.

<sup>b</sup> WAC 173-200-040.

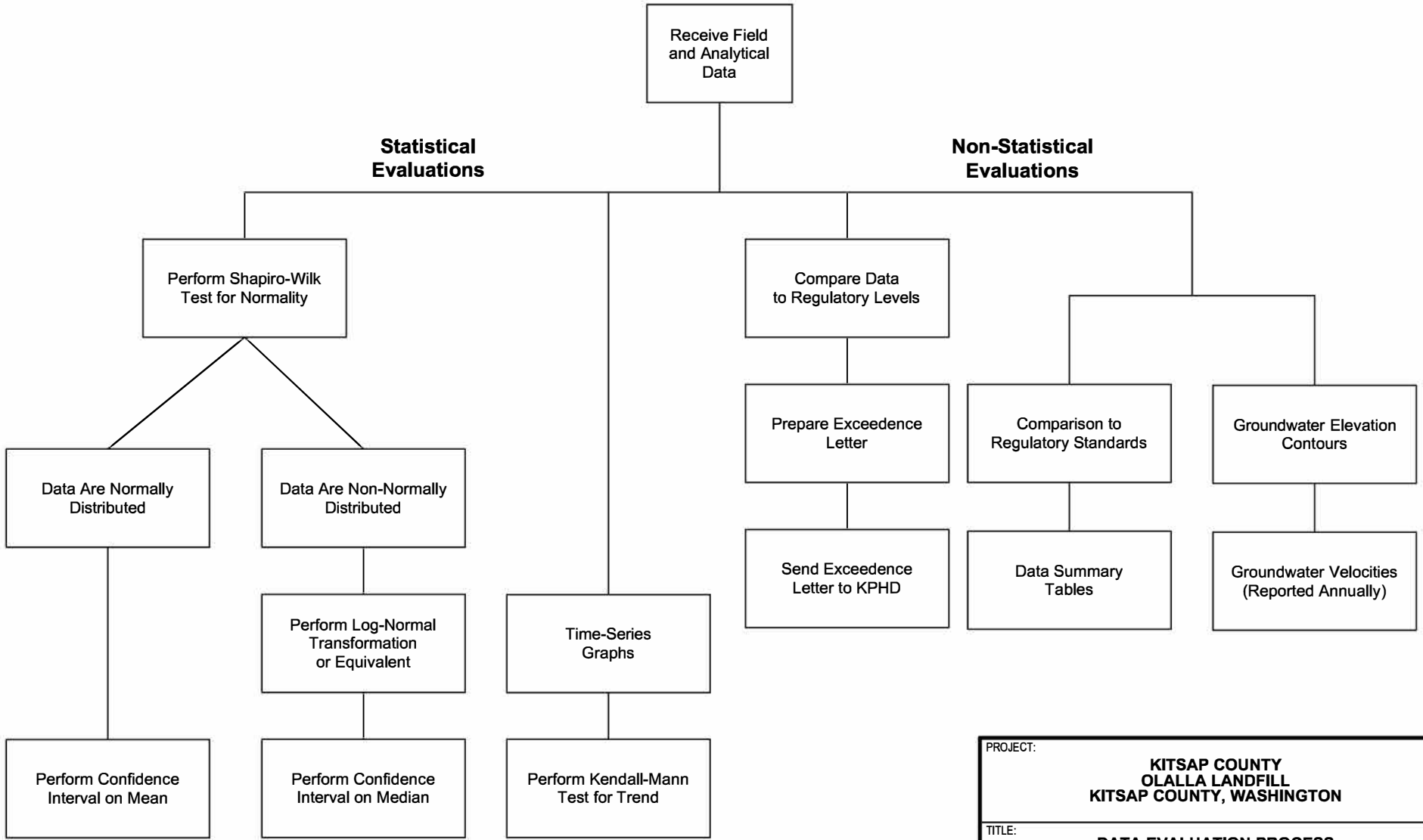
## STATISTICAL ANALYSIS


SWD and TRC developed the current statistical evaluation process used in this report with input and direction from KPHD and Ecology. KPHD and Ecology referenced the EPA 2004 Unified Guidance as the basis for evaluating appropriate statistical methods for Landfill groundwater data. The statistical methods used in this report are consistent with recommended methods found in the Unified Guidance, which was updated in 2009 (USEPA 2009).

Statistical analysis of groundwater data for the Landfill uses four tools: time-series plots, Mann-Kendall test for trend, Shapiro-Wilk test for normality, and confidence intervals (parametric and non-parametric). Application of these tools is based on statistical methods identified in the Unified Guidance and is documented in the CAP. These four statistical tools, along with non-statistical data evaluation tools, are applied to the data following the process shown on Figure 3.

Statistical analyses are performed on a dataset consisting of a moving window of the 20 most recent sampling events (as one new data point is added the oldest data point is dropped). For most wells, this is a 5-year moving window of data. Wells MW-5A and MW-7 are on an annual sampling schedule and SWD has defined the window of data used for the Mann-Kendall, Shapiro-Wilk and 95% Confidence Interval statistical analyses as 20 sampling events rather than 5 years of data. The moving window of 20 sampling events provides enough data points for adequate statistical power while focusing the statistical evaluations on the most recent and most relevant data. Statistical analyses for the Landfill groundwater monitoring data are performed using the following criteria:

- Dissolved metals, volatile organic compounds (VOCs), conventional water quality parameters, and field parameters required for groundwater analysis under the current Section IV.D.2 Solid Waste Handling Permit for Olalla Landfill are presented in time-series plots (Appendix B), and tables showing summary results of the Mann-Kendall trend test, Shapiro-Wilk test for normality, and 95% confidence intervals.
- Statistical tests are not automatically performed for every constituent or parameter measured. Some constituents have not been detected in samples collected during the past 5 years (20 events) or do not have enough detections to support one or more of the statistical analyses. Datasets that are all non-detects, or do not have enough detections for statistical analysis, are temporarily dropped from the specific statistical evaluations that are not amenable to those datasets.
- VOC and metals detections include values at concentrations less than laboratory specified reporting limits (i.e., J-qualified), but do not include values where the constituent was also detected in the method blank (i.e., values qualified with a "B").
- Beginning in 2012, wells MW-5A and MW-7 are sampled at a reduced (annual) frequency and for a reduced list of constituents relative to the other Olalla Landfill monitoring wells. Thus, the statistical evaluations at MW-5A and MW-7 ended in 2012 for some constituents that were no longer analyzed but will continue at a reduced frequency for other constituents that are analyzed annually in samples from these two crossgradient wells.



PROJECT:		<b>KITSAP COUNTY OLALLA LANDFILL KITSAP COUNTY, WASHINGTON</b>	
TITLE:		<b>DATA EVALUATION PROCESS FOR OLALLA LANDFILL GROUNDWATER DATA 2023 ANNUAL MONITORING REPORT</b>	
DRAWN BY:	A. MULLER	PROJ NO.:	533022
CHECKED BY:	W. WEISBERG	<b>FIGURE 3</b>	
APPROVED BY:	W. WEISBERG		
DATE:	JANUARY 12, 2024		
		1180 NW MAPLE ST, SUITE 310 ISSAQUAH, WA 98027 WWW.TRCCOMPANIES.COM 425.395.0010	
		FILE NO.:	2023 - Q4 GW MONITORING_FIGS 1-3.VWX

- Non-detections are managed by assigning them a uniform value that is less than the reporting limit for that constituent as prescribed in Section 14.4.2.2 of the Unified Guidance. Guidance from the United States Geological Survey (USGS 2008) suggests that censoring values that are less than the detection limit (non-detects) provides more accurate statistical results compared to substituting a value, commonly one half of the reporting limit. The SWD assigns a value of zero to non-detected results as recommended by the USGS and KPHD. J-qualified analytical results are reported as individual detected values as recommended by the USGS guidance.

The following subsections briefly describe the tools used in the statistical evaluation and summarize analytical results for the current year.

### **Time-Series Plots**

Time-series plots are used to compare field measurements or analytical results from a well or a set of wells over time. The plots provide a convenient graphical means of delineating seasonal trends and large differences in concentration between upgradient and downgradient wells and can be used to readily identify data that exceed regulatory levels. Time-series plots are presented by individual constituents for upgradient well MW-1, crossgradient wells MW-5A and MW-7, and downgradient wells MW-3, MW-6, MW-8, and MW-10.

Historical data are presented as two time-series plots. The first time-series plot presents all quarterly data from 1992, when groundwater monitoring was initiated at the Landfill, to the present quarter. This time-series plot is useful to graphically demonstrate that groundwater quality has improved over time. Because MW-8 and MW-10 were installed in 2010, their datasets are smaller than other wells in the full time-series plots. The second time-series plot presents the most recent 5 years of data and provides a greater level of detail than is more readily seen at the scale required for full time-series plots that graph all historical results. Washington State drinking water and groundwater regulatory levels and site-specific cleanup levels (CULs) are shown graphically on time-series plots when applicable.

### **Mann-Kendall Trend Test**

The Mann-Kendall trend test is a non-parametric statistical method recommended in the Unified Guidance for sites in the compliance assessment and corrective action monitoring phases and is appropriately paired with time-series plots. For this report, the Mann-Kendall trend test is used to determine if upward or downward data trends graphically presented in time-series plots are statistically significant. The Mann-Kendall test is applied to the same five-year moving window of data described in the Time-Series Plots section. December 2023 Mann-Kendall Trend Test results are presented in Table 4 and are summarized in the following bullets. Tabulated Mann-Kendall trend test results for all four quarters of 2023 are presented in Appendix B.

As described in the 2021–2025 SWHP, crossgradient wells MW-5A and MW-7 are sampled annually, during the fourth quarter, for a reduced list of constituents relative to the other Olalla Landfill monitoring wells.

**Table 4**  
**December 2023 Mann-Kendall Statistically Significant Trend Test Results**

Constituent or Parameter	MW-1	MW-3	MW-5A	MW-6	MW-7	MW-8	MW-10
Ammonia (N)	NO TREND	NO TREND	NA	UP	NA	NO TREND	DOWN
Arsenic - Dissolved	NO TREND	UP	NO TREND	DOWN	UP	NO TREND	NO TREND
Barium - Dissolved	NO TREND	NO TREND	NO TREND	UP	NO TREND	NO TREND	NO TREND
Bicarbonate	UP	NO TREND	NA	NO TREND	NA	NO TREND	UP
Calcium	UP	UP	NA	NO TREND	NA	NO TREND	UP
Carbonate	NO TREND	NO TREND	NA	NO TREND	NA	NO TREND	NO TREND
COD	NO TREND	NO TREND	NA	NO TREND	NA	NO TREND	NO TREND
Chloride	UP	UP	NA	NO TREND	NA	DOWN	DOWN
Dissolved Oxygen	DOWN	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
Iron - Dissolved	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND	UP
Manganese - Dissolved	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
Nitrate	NO TREND	NO TREND	NA	NO TREND	NA	NO TREND	NO TREND
Nitrite	NO TREND	NO TREND	NA	NO TREND	NA	NO TREND	NO TREND
Oxidation Reduction Potential	NO TREND	NO TREND	NO TREND	UP	NO TREND	NO TREND	UP
pH - Field	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
pH - Laboratory	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
Potassium	NO TREND	NO TREND	NA	UP	NA	NO TREND	NO TREND
Sodium	UP	NO TREND	NA	NO TREND	NA	NO TREND	NO TREND
Specific Conductance	UP	UP	NO TREND	NO TREND	NO TREND	NO TREND	UP
Sulfate	NO TREND	NO TREND	NA	NO TREND	NA	NO TREND	NO TREND
Temperature	NO TREND	NO TREND	NO TREND	UP	NO TREND	UP	UP
Total Coliform	NO TREND	NO TREND	NA	NO TREND	NA	NO TREND	NO TREND
TOC	UP	UP	NA	NO TREND	NA	UP	NO TREND
Vinyl Chloride	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
Zinc - Dissolved	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND

Notes:

NO TREND = No statistically significant trend or dataset has four or fewer detections and cannot be evaluated.  
UP = Statistically significant upward trend.  
DOWN = Statistically significant downward trend.



- Five well-constituent combinations have statistically significant downward concentration trends. The downward well-constituent combination trends are presented below:
  - Ammonia: MW-10
  - Arsenic: MW-6
  - Chloride: MW-8 and MW-10
  - Dissolved Oxygen: MW-1
  
- One of the well-constituent combinations with statistically significant downward concentration trends also has a regulatory standard exceedance in December 2023 data. The well-constituent combination with downward trend and current regulatory exceedance is presented below:
  - Arsenic: MW-6
  
- Twenty-five well-constituent combinations have statistically significant upward concentration trends. The upward well-constituent combination trends are presented below:
  - Ammonia: MW-6
  - Arsenic: MW-3 and MW-7
  - Barium: MW-6
  - Bicarbonate: MW-1 and MW-10
  - Calcium: MW-1, MW-3, and MW-10
  - Chloride: MW-1 and MW-3
  - Iron: MW-10
  - Oxidation Reduction Potential: MW-6 and MW-10
  - Potassium: MW-6
  - Sodium: MW-1
  - Specific Conductance: MW-1, MW-3, and MW-10
  - Temperature: MW-6, MW-8, and MW-10
  - Total Organic Carbon: MW-1, MW-3, and MW-8
  
- There are 145 well-constituent combinations that have no statistically significant concentration trend, or the constituents are no longer analyzed in wells MW-5A and MW-7 per the SWHP. Of the well-constituent combinations with no statistically significant trends, the following nine well-constituent combinations exceed regulatory levels.
  - Iron: MW-8
  - Manganese: MW-3, MW-6, MW-8, MW-10
  - pH (field): MW-1, MW-3
  - pH (laboratory): MW-1, MW-3

### **Shapiro-Wilk Test for Normality**

The Shapiro-Wilk Test for Normality is a method recommended in the Unified Guidance for evaluating if datasets are normally distributed. The Shapiro-Wilk Test for Normality is applied annually to the 5-year moving window of analytical data for each well-constituent pair that has enough data points to apply this statistical method. Shapiro-Wilk results for the current monitoring event are summarized in Table 5 and

in the following bullets. Shapiro-Wilk result summary tables for all four quarters of 2023 are presented in Appendix B.

As described in the Mann-Kendall Trend Test section, MW-5A and MW-7 are sampled annually and for a reduced list of constituents relative to the other Olalla Landfill monitoring wells and the Shapiro-Wilk statistical evaluations of the reduced list of constituents are included in Table 5.

- There are 175 well-constituent combinations presented in Table 5 and 68 well-constituent combinations had fewer than four detections and could not be tested for normality or the constituents are no longer analyzed in wells MW-5A and MW-7 per the SWHP. The remaining 107 well-constituent combinations were tested for normality.
- Normal data distributions were noted in 40 of the well-constituent combinations that were tested for normality.
- Non-normal data distributions were noted in 67 of the well-constituent combinations tested for normality.

Data that are normally distributed are evaluated using the 95% confidence interval around the mean (a parametric statistical test). Data that are not normally distributed are adjusted by log-normal transformation prior to being evaluated using the 95% confidence interval around the median (a non-parametric statistical test).

**Table 5  
December 2023 Shapiro-Wilk Test for Normality Results**

<b>Constituent or Parameter</b>	<b>MW-1</b>	<b>MW-3</b>	<b>MW-5A</b>	<b>MW-6</b>	<b>MW-7</b>	<b>MW-8</b>	<b>MW-10</b>
Ammonia (N)	ND	ND	NA	Non-Normal	NA	ND	Non-Normal
Arsenic - Dissolved	Non-Normal	Non-Normal	Non-Normal	Non-Normal	Normal	Normal	Normal
Barium - Dissolved	Non-Normal	Non-Normal	ND	Non-Normal	ND	Non-Normal	Non-Normal
Bicarbonate	Non-Normal	Non-Normal	NA	Non-Normal	NA	Non-Normal	Non-Normal
Calcium	Normal	Normal	NA	Non-Normal	NA	Normal	Normal
Carbonate	ND	ND	NA	ND	NA	ND	ND
COD	ND	ND	NA	ND	NA	ND	ND
Chloride	Normal	Non-Normal	NA	Normal	NA	Non-Normal	Normal
Dissolved Oxygen	Non-Normal	Non-Normal	Normal	Non-Normal	Normal	Non-Normal	Non-Normal
Iron - Dissolved	ND	ND	ND	Non-Normal	ND	Non-Normal	Non-Normal
Manganese - Dissolved	ND	Normal	ND	Normal	ND	Normal	Normal
Nitrate	Non-Normal	Non-Normal	NA	Non-Normal	NA	Non-Normal	Non-Normal
Nitrite	ND	ND	NA	Non-Normal	NA	ND	ND
Oxidation-Reduction Potential	Non-Normal	Non-Normal	Normal	Non-Normal	Non-Normal	Non-Normal	Non-Normal
pH - Field	Non-Normal	Non-Normal	Non-Normal	Normal	Normal	Normal	Normal
pH - Laboratory	Non-Normal	Non-Normal	Normal	Non-Normal	Non-Normal	Non-Normal	Non-Normal
Potassium	Non-Normal	Non-Normal	NA	Normal	NA	Non-Normal	Normal
Sodium	Non-Normal	Non-Normal	NA	Normal	NA	Normal	Normal
Specific Conductance	Non-Normal	Normal	Non-Normal	Normal	Non-Normal	Normal	Non-Normal
Sulfate	Normal	Normal	NA	Normal	NA	Normal	Non-Normal
Temperature	Non-Normal	Non-Normal	Normal	Normal	Normal	Normal	Normal
Total Coliform	ND	ND	NA	ND	NA	ND	ND
TOC	Non-Normal	Normal	NA	Non-Normal	NA	Non-Normal	Non-Normal
Vinyl Chloride	ND	ND	ND	Non-Normal	ND	Non-Normal	Non-Normal
Zinc - Dissolved	ND	ND	ND	ND	ND	ND	ND

Notes:

ND = Dataset has four or fewer quarters with detects and statistical tests cannot be performed.

## Confidence Interval

The statistical test for confidence interval is recommended in the Unified Guidance and is appropriate for compliance assessment and corrective action monitoring phases. In addition, evaluation of the confidence interval is appropriate when analytical data are compared to a fixed limit such as a regulatory standard. Confidence intervals are a common and statistically defensible way to assess compliance with a fixed numerical limit.

The moving window of 20 data points was evaluated for the 95% confidence interval for each well-constituent pair that had enough data points to apply this statistical method. The moving window of 20 data points adds new data with each successive sampling event and drops data from the oldest sampling event to maintain a consistent sample population of the most current 20 data points.

Confidence intervals for December 2023 is compared to Washington State Drinking Water Standards, Groundwater Quality Standards, and, in the cases of arsenic and vinyl chloride, to Site-Specific CULs. The results of these comparisons are summarized in Table 6. Confidence interval summary tables for all four quarters of 2023 are presented in Appendix B.

Exceedance of a regulatory standard is triggered when the lower 95% confidence interval is greater than the regulatory standard; these cases are highlighted in red on Table 6. Successful remediation is attained if the upper 95% confidence limit does not exceed the regulatory standard, which is highlighted in green. In some cases, the upper 95% confidence interval exceeds the regulatory standard, but the lower 95% confidence interval does not. This condition is not an exceedance but should be monitored for changes and these cases are highlighted in yellow.

Observations regarding the 95% confidence interval results are summarized in the following bullets:

- There are 27 constituents and parameters in samples from seven wells that are tracked in Table 6 for a total of 189 well-constituent combinations. Arsenic and vinyl chloride are each presented twice on Table 6 to allow comparisons of their confidence intervals to Washington State Primary Groundwater Standards and to their Site-Specific Cleanup Levels.
- Seventy-six of the well-constituent combinations evaluated had an insufficient number of detections in the moving 5-year window of data to perform the statistical analysis or the constituents were not analyzed. These well-constituent combinations were not evaluated statistically and are represented as ND (not detected) or NA (not analyzed) in Table 6. Confidence intervals were evaluated for remaining well-constituent combinations.
- Eighty-nine of the well-constituent combinations that were statistically evaluated had 95% confidence intervals that did not exceed applicable regulatory standards or have no applicable regulatory standards.

**Table 6**  
**December 2023 Results of 95% Confidence Interval Evaluations**

Constituent or Parameter	MW-1	MW-3	MW-5A	MW-6	MW-7	MW-8	MW-10	Regulatory Level	Basis for Comparison
Ammonia (N)	ND	ND	NA	ND to 70	NA	ND to ND	60 to 83	None	
Arsenic - Dissolved	0.10 to 0.11	0.11 to 0.12	0.15 to 0.21	0.31 to 0.46	0.29 to 0.39	0.93 to 1.19	1.81 to 1.98	0.05 µg/L	Primary GW Standard
Arsenic - Dissolved	0.10 to 0.11	0.11 to 0.12	0.15 to 0.21	0.31 to 0.46	0.29 to 0.39	0.93 to 1.19	1.81 to 1.98	1.29 µg/L	Site-Specific Cleanup Level
Barium - Dissolved	ND to ND	14.5 to 15.5	ND	15.1 to 20.1	ND	ND to 5.80	14.5 to 15.9	1000 µg/L	Primary GW Standard
Bicarbonate	49.3 to 59.3	186 to 225	NA	164 to 188	NA	96 to 131	197 to 227	None	
Calcium	10,707 to 11,798	42,257 to 49,255	NA	32,220 to 37,000	NA	17,946 to 22,759	38,439 to 41,822	None	
Carbonate	ND	ND	NA	ND	NA	ND	ND	None	
COD (mg/L)	ND	ND	NA	ND	NA	ND	ND	None	
Chloride	4,144 to 5,053	2,510 to 4,430	NA	2,341 to 3,298	NA	2,229 to 2,440	5,249 to 7,881	250,000 µg/L	Secondary GW and DW Standard
Dissolved Oxygen (mg/L)	9.43 to 9.90	0.370 to 1.150	9.6 to 10.3	0.200 to 0.470	6.9 to 7.4	0.300 to 1.540	0.210 to 0.530	None	
Iron - Dissolved	ND	ND	ND	195 to 724	ND	230 to 440	ND to 22.50	300 µg/L	Secondary GW and DW Standard
Manganese - Dissolved	ND	5,591 to 6,687	ND	474 to 670	ND	2,008 to 2,431	4,001 to 4,404	50 µg/L	Secondary GW and DW Standard
Nitrate	225 to 715	ND to 20	NA	ND to 59	NA	28 to 37	ND to ND	10,000 µg/L	Primary GW and DW Standard
Nitrite	ND	ND	NA	ND to ND	NA	ND	ND	1,000 µg/L	Primary DW Standard
Oxidation-Reduction Potential	224 to 268	227 to 271	175 to 280	36 to 98	135 to 351	52 to 95	122 to 147	None	
pH - Field	6.3 to 6.5	6.2 to 6.3	6.2 to 7.0	6.6 to 6.7	6.6 to 6.9	6.6 to 6.7	6.6 to 6.7	6.5 - 8.5	Secondary GW Standard
pH - Laboratory	6.2 to 6.4	6.1 to 6.3	6.2 to 6.9	6.5 to 6.6	ND to ND	6.5 to 6.6	6.5 to 6.6	6.5 - 8.5	Secondary GW Standard
Potassium	620 to 651	787 to 856	NA	1,473 to 1,905	NA	939 to 992	1,183 to 1,281	None	
Sodium	4,230 to 4,860	8,570 to 9,530	NA	7,659 to 9,264	NA	7,074 to 8,008	14,410 to 16,630	20,000 µg/L	Secondary DW Standard
Specific Conductance (µmhos/cm)	111 to 133	356 to 458	92 to 239	312 to 372	89 to 249	196 to 276	401 to 462	700 µmhos/cm	Secondary DW Standard
Sulfate	3,979 to 4,352	15,436 to 18,564	NA	6,472 to 8,091	NA	4,072 to 4,666	8,050 to 11,100	250,000 µg/L	Secondary GW and DW Standard
Temperature (°C)	10.7 to 10.9	11.8 to 12.1	11.7 to 12.8	11.4 to 11.9	10.7 to 11.2	10.8 to 11.2	11.4 to 11.6	None	
Total Coliform (Colony Forming Units/100 mL)	ND	ND	NA	ND	NA	ND	ND	1/100mL	Primary GW and DW Standard
TOC	ND to 650	2,504 to 3,029	NA	1,860 to 2,140	NA	690 to 910	2,820 to 3,400	None	
Vinyl Chloride	ND	ND	ND	ND to 0.046	ND	ND to 0.048	ND to ND	0.02 µg/L	Primary GW Standard
Vinyl Chloride	ND	ND	ND	ND to 0.046	ND	ND to 0.048	ND	0.29 µg/L	Site-Specific Cleanup Level
Zinc - Dissolved	ND	ND	ND	ND	ND	ND	ND	5,000 µg/L	Secondary GW and DW Standard

Notes:

All concentrations reported as µg/L unless otherwise noted.

ND = Data all non-detects or 4 or fewer detections

     = 95% Lower CI Exceeds Regulatory Level (Exceedence)

     = 95% Upper CI Exceeds Regulatory Level but Lower CI Does Not (No Exceedence, No Compliance)

     = 95% Upper CI Does not Exceed Regulatory Level (No Exceedence)

     = No Regulatory Level

Normally Distributed Data - Parametric Confidence Interval - Data not Transformed

Non-Normally Distributed Data - Non-Parametric Confidence Interval - Log Base-10 Transformed Data

Non-Detects treated as 0

- Fifteen of the well-constituent combinations that were statistically evaluated had lower 95% confidence intervals that were greater than applicable regulatory levels (are exceedances). The exceedances are highlighted red in Table 6 and are summarized in the following bullets:
  - Arsenic: MW-1, MW-3, MW-5A, MW-6, MW-7, MW-8, and MW-10 (WA State Primary Groundwater Standard)
  - Arsenic: MW-10 (Site-Specific Cleanup Level)
  - Manganese: MW-3, MW-6, MW-8, and MW-10
  - pH (field): MW-3 (Secondary Groundwater Standard)
  - pH (laboratory): MW-1 and MW-3 (Secondary Groundwater Standard)
  
- Nine well-constituent combinations have upper 95% confidence intervals that were greater than (less than in the case of pH) applicable regulatory levels but have lower 95% confidence intervals that are less than applicable regulatory levels. These are not statistical exceedances, but they should be monitored for changes. The well-constituent combinations are highlighted yellow in Table 6 and are summarized in the following bullets:
  - Iron: MW-6 and MW-8
  - pH (field): MW-1 and MW-5A
  - pH (laboratory): MW-5A
  - Vinyl Chloride: MW-6 and MW-8 (Primary GW Standard)
  - Vinyl Chloride: MW-6 and MW-8 (Site-Specific Cleanup Level)

## CONCLUSIONS

Quarterly monitoring data collected during 2023 at the Olalla Landfill are summarized in the following sections.

### Landfill Gas Data

Landfill gas field measurements were performed at the three on-site passive flares during the four quarterly monitoring events in 2023. Landfill gas data for all four quarterly monitoring events are included in Appendix A and are summarized in the following sections.

#### March 22, 2023 – First Quarter

Flares 1, 2, and 3 had indicators of landfill gas including the measurable presence of carbon dioxide (0.1%, 0.7%, and 0.1% by volume, respectively). None of the flares had measurable concentrations of methane. Oxygen concentrations were 20.4%, 19.6.9%, and 20.6% by volume, respectively, and are consistent with atmospheric conditions. The low carbon dioxide, natural atmospheric oxygen conditions and lack of methane measurements are consistent with the byproducts of aerobic degradation of organics.

Gas pressure measurements were 0.10 inches of water in Flare 1, 2, and 3. The consistently low gas pressure readings indicate a low potential for landfill gas flow from the flares.

Weather station data from the Bremerton National Airport indicate that barometric pressure decreased from a mean of 29.85 inches of mercury on March 21, 2023, the day before the monitoring event, to a mean of 29.81 inches of mercury on March 22, 2023, the day the flares were measured (Weather Underground, Station KPWT, 2023). This slight decreasing trend in barometric pressure likely contributed to subduing any measurable landfill gas in the three flares. All three flares had low to zero gas pressure measurements, which indicates a low potential for the flow of landfill gas from the flares.

#### June 13, 2023 – Second Quarter

Flares 1, 2, and 3 had no indicators of landfill with the measurable presence of methane in all flares at 0.0% by volume. Carbon dioxide was detected at 0.1%, 0.1%, and 1.4% by volume, respectively. Depressed oxygen was observed at concentrations of 21.0%, 20.9%, and 19.0% by volume, respectively. These measurements are consistent with the byproducts of aerobic degradation of organics.

Gas pressure measurements were 0.12 inches of water in Flare 1 and 0.1 inches of water in Flares 2 and 3, respectively. The consistently and unmeasurably low gas pressure readings indicate a low potential for landfill gas flow from any of the flares.

Weather station data from the Bremerton National Airport indicate that barometric pressure slightly increased from a mean of 29.50 inches of mercury on June 12, 2023, the day before the monitoring event,

to a mean of 29.51 inches of mercury on June 13, 2023, the day the flares were measured (Weather Underground, Station KPWT, 2023). This negligible increasing trend in barometric pressure is likely contributed to subduing any measurable landfill gas in the three flares. All three flares had low to zero gas pressure measurements, which indicates a low potential for the flow of landfill gas from the flares.

### **September 21, 2023 – Third Quarter**

Flares 1, 2, and 3 had no indicators of landfill gas with the measurable presence of methane in all flares at 0.0% by volume. Carbon dioxide was detected at 0.0%, by volume for all flares. Depressed oxygen was observed at concentrations of 20.7%, 20.5%, and 21.0% by volume, respectively. These measurements are consistent with the byproducts of aerobic degradation of organics.

Gas pressure measurements were 0.10 inches of water in Flare 1, 0.09 inches of water in Flare 2 and 0.06 inches of water in Flare 3. The consistently and unmeasurably low gas pressure readings indicate a low potential for landfill gas flow from any of the flares.

Weather station data from the Bremerton National Airport indicate that barometric pressure increased slightly from a mean of 29.60 inches of mercury on September 20, 2023, the day before the monitoring event, to a mean of 29.62 inches of mercury on September 21, 2023, the day the flares were measured (Weather Underground, Station KPWT, 2023). This unchanging trend in barometric pressure potentially limited the presence of measurable landfill gas indicators in the three flares.

### **December 20, 2023 – Fourth Quarter**

Flare 1 had low indicators of landfill gas including the measurable presence of carbon dioxide at 0.1% by volume. Flares 2 and 3 did not have any indicators of landfill gas. None of the flares had measurable concentrations of methane. Oxygen concentrations were 20.7%, 20.9%, and 20.8% by volume, respectively and are consistent with atmospheric conditions. The low concentrations of carbon dioxide in Flare 1, natural atmospheric oxygen conditions, and lack of methane measurements are consistent with the byproducts of aerobic degradation of organics.

Gas pressure measurements were 0.11 inches of water in Flare 1, 0.07 inches of water in Flare 2 and 0.05 inches of water in Flare 3. The low gas pressure measurements indicate a low potential for landfill gas flow from the flares.

Weather station data from the Bremerton National Airport indicate that barometric pressure increased from 29.28 inches of mercury on December 19, 2023, the day before the monitoring event, to 29.49 inches of mercury on December 20, 2023, the day the flares were measured (Weather Underground, Station KPWT 2023). This increasing trend in barometric pressure likely contributed to the absence of measurable landfill gas indicators in Flare 3, the low concentration of carbon dioxide in Flare1, and no measurable gas pressure in any of the flares.



## Groundwater Elevation and Flow Direction Data

The groundwater flow direction beneath the Landfill is generally toward the northwest, with groundwater from beneath the Landfill flowing toward downgradient wells MW-3, MW-6, MW-8, and MW-10 as depicted in the quarterly groundwater elevation contour and flow direction figures for 2023 sampling events presented in Appendix A. The groundwater flow directions and elevation contour patterns are consistent with historical groundwater elevation data from the Landfill.

The lowest calculated groundwater gradients during 2023 occurred in December with mean horizontal gradients of 0.0116. The resulting calculated groundwater flow velocities are 1.81 feet/day. Groundwater gradients and calculated groundwater velocities were greatest during the September event, which had mean horizontal gradients of 0.01410 and calculated flow velocities of 2.20 feet/day.

## Exceedances of Primary Regulatory Standards

### Upgradient Well (MW-1)

#### *Arsenic*

- Groundwater samples collected from MW-1 had arsenic concentrations of 0.10 µg/L, 0.11 µg/L, 0.12 µg/L, and 0.09 µg/L in March, June, September, and December, respectively. The four quarterly arsenic concentrations exceed the Washington State Groundwater Primary Standard of 0.05 µg/L but are significantly less than both the Washington State Drinking Water Primary Standard of 10 µg/L and the site-specific CUL of 1.29 µg/L.
- The upper and lower 95% confidence intervals for arsenic in samples from MW-1 exceed the Washington State Groundwater Primary Standard of 0.05 µg/L, which represents a statistically significant exceedance of that standard.
- The upper and lower 95% confidence intervals for arsenic in samples from MW-1 are less than the Site-Specific CUL of 1.29 µg/L, which represents statistically significant compliance with the Site-Specific CUL.
- The presence of arsenic at concentrations greater than the Washington State Groundwater Primary Standard in samples from upgradient well MW-1 is an indication that dissolution of naturally occurring arsenic in soil contributes to the arsenic concentrations noted in groundwater data from other wells at the Landfill.

### Crossgradient Wells (MW-5A and MW-7)

#### *Arsenic*

#### MW-5A and MW-7

- Per the SWHP and CMP, crossgradient wells MW-5A and MW-7 are sampled only during the fourth quarter monitoring event. Groundwater samples collected from MW-5A and MW-7 had arsenic concentrations of 0.20 µg/L and 0.40 µg/L, respectively. Both concentrations exceed the Washington State Groundwater Primary Standard of 0.05 µg/L but are less than both the Washington State Drinking Water Primary Standard of 10 µg/L and the Site-Specific CUL of 1.29 µg/L.

- The upper and lower 95% confidence intervals for arsenic in samples from MW-5A and MW-7 exceed the Washington State Groundwater Primary Standard of 0.05 µg/L, which represents a statistically significant exceedance of that standard.
- The upper and lower 95% confidence intervals for arsenic in samples from MW-5A and MW-7 are less than the Site-Specific CUL of 1.29 µg/L, which represents statistically significant compliance with the Site-Specific CUL.
- The presence of arsenic at concentrations greater than the Washington State Groundwater Primary Standard in samples from crossgradient wells MW-5A and MW-7 is an indication that dissolution of naturally occurring arsenic in soil contributes to the arsenic concentrations noted in groundwater data from other wells at the Landfill.

#### Downgradient Wells (MW-3, MW-6, MW-8, and MW-10)

##### *Arsenic*

##### MW-3, MW-6, MW-8, and MW-10

- Groundwater samples from downgradient monitoring wells had arsenic concentrations exceeding the Washington State Groundwater Primary Standard of 0.05 µg/L during the four quarterly events in 2023. None of the arsenic concentrations exceed the Washington State Drinking Water Primary Standard of 10 µg/L. Samples from MW-10 exceeded the site-specific CUL during the four quarters of 2023 and one sample from MW-8 December 2023. Arsenic concentrations for downgradient wells are summarized in the following bullets:
  - MW-3 had arsenic concentrations of 0.12 µg/L, 0.15 µg/L, 0.11 µg/L, and 0.14 µg/L in March, June, September, and December, respectively.
  - MW-6 had arsenic concentrations of 0.22 µg/L, 0.46 µg/L, 0.42 µg/L, and 0.30 µg/L in March, June, September, and December, respectively.
  - MW-8 had arsenic concentrations of 0.73 µg/L, 0.78 µg/L, 1.15 µg/L, and 1.36 µg/L in March, June, September, and December, respectively.
  - MW-10 had arsenic concentrations of 1.92 µg/L, 1.87 µg/L, 1.85 µg/L, and 1.43 µg/L in March, June, September, and December, respectively.
- Upper and lower 95% confidence intervals for arsenic in samples from the four downgradient wells exceed the Washington State Groundwater Primary Standard of 0.05 µg/L. This represents statistically significant exceedances of that standard in the downgradient wells. The upper and lower 95% confidence intervals for MW-10 also exceed the Site-Specific CUL of 1.29 µg/L, indicating statistically significant exceedance of the CUL for MW-10.
- Upper and lower 95% confidence intervals for arsenic in samples from MW-8 are less than the Site-Specific CUL of 1.29 µg/L, which represents statistically significant compliance with the Site-Specific CUL.

- Upper and lower 95% confidence intervals for arsenic in samples from MW-10 exceed the Site-Specific CUL of 1.29 µg/L, which represent statistically significant exceedances of the Site-Specific CUL.
- The upper 95% confidence limit for arsenic data from MW-8 does not exceed the Site-Specific CUL of 1.29 µg/L. This does not represent statistical exceedance or compliance but indicates that continued monitoring and evaluation is warranted.

#### *Vinyl Chloride*

##### MW-6

- The June 2023 groundwater sample from downgradient monitoring well MW-6 had a vinyl chloride concentration of 0.03 µg/L, which exceeds the Washington State Groundwater Primary Standard of 0.02 µg/L. This detected concentration does not exceed the Washington State Drinking Water Standard of 2.0 µg/L or the Site-Specific CUL of 0.29 µg/L.
- The upper and lower 95% confidence intervals for vinyl chloride in samples from MW-6 is greater than the Washington State Groundwater Primary Standard of 0.02 µg/L, which represents a statistically significant exceedance of that standard.
- The upper and lower 95% confidence intervals for vinyl chloride in samples from MW-6 are less than the Site-Specific CUL of 0.29 µg/L, which represents statistically significant compliance with the Site-Specific CUL.

## **Exceedances of Secondary Regulatory Standards**

### Upgradient Well (MW-1)

#### *pH (lab-measured)*

- Groundwater purged from well MW-1 had lab-measured pH values of 6.4, 6.5, 6.4, and 6.4 during the March, June, September, and December monitoring events, respectively. These values are lower or within the limit range of 6.5 to 8.5 pH for the Washington State Groundwater Secondary Standard.
- The upper and lower 95% confidence limits for lab-measured pH in purge water from MW-1 are less than or meet the Washington State Secondary Groundwater Standard range of 6.5 to 8.5, which represents a statistically significant exceedance of the Washington State Groundwater Secondary Standard.

#### *pH (field-measured)*

- Groundwater purged from well MW-1 had field-measured pH values of 6.5, 6.2, 6.5, and 6.3 during the March, June, September, and December monitoring events. These values are lower or within the limit range of 6.5 to 8.5 pH for the Washington State Groundwater Secondary Standard.
- The upper and lower 95% confidence limits for field-measured pH in purge water from MW-1 are less than or within the Washington State Secondary Groundwater Standard range of 6.5 to 8.5, which represents a statistically significant exceedance of the Washington State Groundwater Secondary Standard.

### Crossgradient Wells (MW-5A and MW-7)

None.

### Downgradient Wells (MW-3, MW-6, MW-8, and MW-10)

#### *Iron*

#### MW-6 & MW-8

- Iron is a common constituent in landfill leachate and the September 2023 groundwater sample from downgradient well MW-6 had an iron concentration of 391 µg/L, which is greater than the Washington State Drinking Water Secondary Standard and Groundwater Secondary Standard of 300 µg/L. During the June 2023 groundwater sample from MW-8, the concentration of iron was 440 µg/L, which exceeds the Washington State Drinking Water Secondary Standard and Groundwater Secondary Standard of 300 µg/L. During the September 2023 groundwater sampling event, the concentration of iron was 317 µg/L, which exceeds the Washington State Drinking Water Secondary Standard and Groundwater Secondary Standard of 300 µg/L. During the December 2023 groundwater sampling event, the concentration of iron was 344 µg/L, which exceeds the Washington State Drinking Water Secondary Standard and Groundwater Secondary Standard of 300 µg/L.
- The upper 95% confidence limit for iron in samples from MW-6 & MW-8 is less than the Washington State Secondary Groundwater Standard of 300 µg/L. Therefore, there is no statistical exceedance for MW-8 and the well meets compliance standards for iron. However, due to prior years exceedances, it is recommended that continued monitoring and evaluation is warranted.

#### *Manganese*

#### MW-3, MW-6, MW-8, and MW-10

- Manganese is a common constituent of landfill leachate and manganese concentrations in groundwater samples from downgradient wells MW-3, MW-6, MW-8, and MW-10 exceed the Washington State Drinking Water Secondary Standard and Groundwater Secondary Standard of 50 µg/L during the four quarterly monitoring events of 2023 as summarized below:
  - MW-3 had manganese concentrations of 8,660 µg/L, 8,320 µg/L, 5,020 µg/L, and 4,960 µg/L for the March, June, September, and December sampling events, respectively.
  - MW-6 had manganese concentrations of 501 µg/L, 542 µg/L, 462 µg/L, and 373 µg/L for the March, June, September, and December sampling events, respectively.
  - MW-8 had manganese concentrations of 2,120 µg/L, 1,990 µg/L, 1,520 µg/L, and 1,190 µg/L for the March, June, September, and December sampling events, respectively.
  - MW-10 had manganese concentrations of 4,310 µg/L, 4,300 µg/L, 3,740 µg/L, and 3,780 µg/L for the March, June, September, and December sampling events, respectively.
- Upper and lower 95% confidence limits for manganese in samples from all four downgradient wells exceed the Washington State Secondary Groundwater Standard of 50 µg/L indicating statistically significant exceedances for manganese in downgradient wells.

*pH (field-measured)*

MW-3

- Purge water from downgradient monitoring well MW-3 had field-measured pH values of 6.3, 6.3, and 6.2 standard pH units in March, June, September, and December, respectively. These values are less than the lower limit of the 6.5 to 8.5 range of the Washington State Groundwater Secondary Standard.
- Both the upper and lower 95% confidence limits for field-measured pH in purge water from MW-3 are outside of (less than) the Washington State Secondary Groundwater Standard range of 6.5 to 8.5, indicating a statistically significant exceedance of that standard.

*pH (laboratory-measured)*

MW-3

- Purge water from downgradient monitoring well MW-3 had laboratory-measured pH values of 6.2, 6.3, 6.4, and 6.4 standard pH units in March, June, September, and December, respectively. These values are less than the lower limit of the 6.5 to 8.5 range of the Washington State Groundwater Secondary Standard.
- Both the upper and lower 95% confidence limits for laboratory-measured pH in samples from MW-3 are lower than the Washington State Secondary Groundwater Standard range of 6.5 to 8.5, indicating a statistically significant exceedance of that standard.

## **Analytical Tests for Volatile Organic Compounds**

This section lists and describes detections of additional VOC constituents in groundwater samples from the Landfill monitoring well network. The VOC detections listed in this section are at concentrations less than applicable Washington State Drinking Water Standards or Washington State Groundwater Quality Standards or are for VOCs that do not have applicable groundwater standards.

- Chlorobenzene was detected in the samples from MW-6 at concentrations of 2.30 µg/L, 1.88 µg/L, 2.05 µg/L, and 2.41 µg/L in March, June, September, and December, respectively. These concentrations are less than the Washington State Primary Drinking Water Standard of 100 µg/L.

## **Inspection and Maintenance Summary for 2023 and Activities Planned for 2024**

A summary of the inspection, maintenance, and engineering work performed at the Olalla Landfill in 2023 is presented in Appendix C. Activities planned for 2024 are summarized in Appendix D.

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**Appendix A:**  
**2023 Quarterly Monitoring Data**

Landfill Gas Data  
Groundwater Elevations and Contour Maps  
Groundwater Quality Data

**Olalla Landfill  
2023 Landfill Gas Data**

<b>March 22, 2023</b>	<b>Flare #1</b>	<b>Flare #2</b>	<b>Flare #3</b>
METHANE, (% Volume)	0.0	0.0	0.0
METHANE, (% LEL) <sup>a</sup>	0	0	0
OXYGEN, (% Volume)	20.4	19.6	20.6
CARBON DIOXIDE, (% Volume)	0.1	0.7	0.1
TEMPERATURE (°F)	50	50	50
PRESSURE (inches of water column)	-0.10	-0.10	-0.10
AMBIENT TEMPERATURE, (°F)	49		

<b>June 13, 2023</b>	<b>Flare #1</b>	<b>Flare #2</b>	<b>Flare #3</b>
METHANE, (% Volume)	0.0	0.0	0.0
METHANE, (% LEL) <sup>a</sup>	0	0	0
OXYGEN, (% Volume)	21.0	20.9	19.0
CARBON DIOXIDE, (% Volume)	0.1	0.1	1.4
TEMPERATURE (°F)	62	62	62
PRESSURE (inches of water column)	0.12	0.10	0.10
AMBIENT TEMPERATURE, (°F)	62		

<b>September 21, 2023</b>	<b>Flare #1</b>	<b>Flare #2</b>	<b>Flare #3</b>
METHANE, (% LEL) <sup>a</sup>	0	0	0
METHANE, (% Volume)	0.0	0.0	0.0
OXYGEN, (% Volume)	20.7	20.5	21.0
CARBON DIOXIDE, (% Volume)	0.0	0.0	0.0
TEMPERATURE (°F)	62	62	62
PRESSURE (inches of water column)	0.10	0.09	0.06
AMBIENT TEMPERATURE, (°F)	62		

<b>December 20, 2023</b>	<b>Flare #1</b>	<b>Flare #2</b>	<b>Flare #3</b>
METHANE, (% Volume)	0	0	0
METHANE, (% LEL) <sup>a</sup>	0.0	0.0	0.0
OXYGEN, (% Volume)	20.7	20.9	20.8
CARBON DIOXIDE, (% Volume)	0.1	0.0	0.0
TEMPERATURE (°F)	46	46	46
PRESSURE (inches of water column)	0.11	0.07	0.05
AMBIENT TEMPERATURE, (°F)	46		

Note:

<sup>a</sup> LEL values are directly taken from the GEM 2000 at the time of measurement.



**Olalla Landfill  
2023 Groundwater Elevations**

Station	Reference Elevation*	Depth to Water (feet)	Groundwater Elevation*
<b>March 22, 2023</b>			
MW-1	343.79	77.42	266.37
MW-2	323.25	64.18	259.07
MW-3	296.95	43.95	253.00
MW-4	320.93	61.16	259.77
MW-5A	332.53	74.85	257.68
MW-6	271.17	19.83	251.34
MW-7	280.43	24.39	256.04
MW-8	272.85	20.30	252.55
MW-10	279.21	28.90	250.31

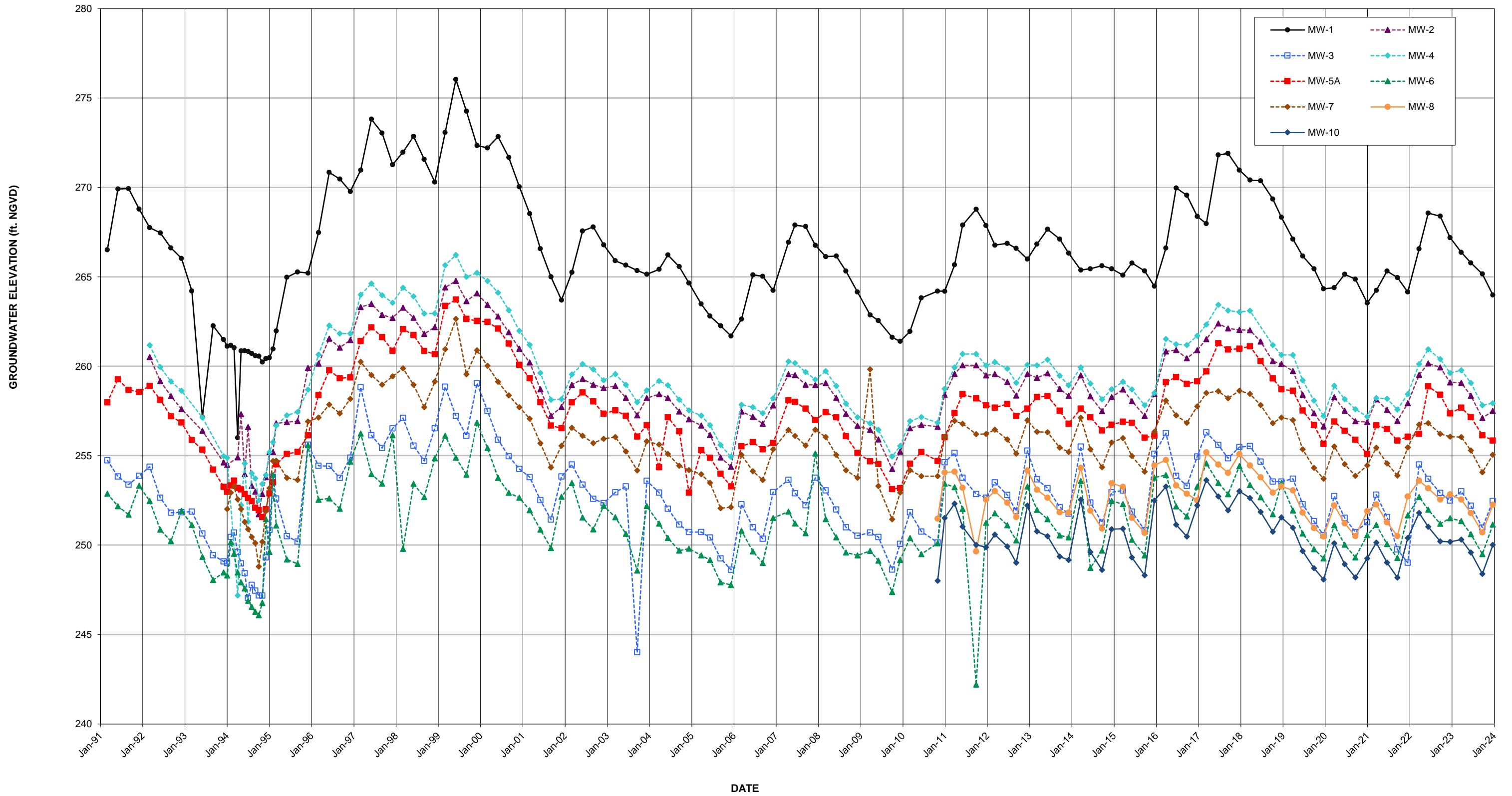
Station	Reference Elevation*	Depth to Water (feet)	Groundwater Elevation*
<b>June 13, 2023</b>			
MW-1	343.79	78.01	265.78
MW-2	323.25	64.90	258.35
MW-3	296.95	44.75	252.20
MW-4	320.93	61.86	259.07
MW-5A	332.53	75.37	257.16
MW-6	271.17	20.56	250.61
MW-7	280.43	25.14	255.29
MW-8	272.85	21.06	251.79
MW-10	279.21	29.63	249.58

Station	Reference Elevation*	Depth to Water (feet)	Groundwater Elevation*
<b>September 21, 2023</b>			
MW-1	343.79	78.63	265.16
MW-2	323.25	66.15	257.10
MW-3	296.95	45.97	250.98
MW-4	320.93	63.11	257.82
MW-5A	332.53	76.39	256.14
MW-6	271.17	21.68	249.49
MW-7	280.43	26.36	254.07
MW-8	272.85	22.14	250.71
MW-10	279.21	30.82	248.39

Station	Reference Elevation*	Depth to Water (feet)	Groundwater Elevation*
<b>December 20, 2023</b>			
MW-1	343.79	79.81	263.98
MW-2	323.25	65.75	257.50
MW-3	296.95	44.49	252.46
MW-4	320.93	63.00	257.93
MW-5A	332.53	76.69	255.84
MW-6	271.17	20.02	251.15
MW-7	280.43	25.38	255.05
MW-8	272.85	20.60	252.25
MW-10	279.21	29.20	250.01

\*Elevations in Feet NGVD 29

# OLALLA LANDFILL Groundwater Elevations



S.E. BURLEY OLALLA ROAD

BANDIX ROAD S.E.



**NOTES:**

\* MW-5 IS COMPLETED IN A SHALLOW PERCHED GROUNDWATER ZONE.

- MW-2  MONITORING WELL LOCATION
- SW-2  SURFACE WATER SAMPLING LOCATION
-  LANDFILL GAS FLARE
-  GROUNDWATER ELEVATION CONTOUR
-  INFERRED GROUNDWATER FLOW PATH
-  APPROXIMATE PROPERTY BOUNDARY
-  PERIMETER ACCESS ROAD



PROJECT: **KITSAP COUNTY  
OLALLA LANDFILL  
KITSAP COUNTY, WASHINGTON**

TITLE: **OLALLA LANDFILL GROUNDWATER ELEVATION  
CONTOUR MAP - MARCH 22, 2023**

DRAWN BY:	A. MULLER	PROJ NO.:	533022
CHECKED BY:	W. WEISBERG		
APPROVED BY:	W. WEISBERG		
DATE:	JANUARY 12, 2024		



1180 NW MAPLE ST, SUITE 310  
ISSAQUAH, WA 98027  
WWW.TRCCOMPANIES.COM  
425.395.0010

FILE NO.: 2023 - Q4 GW MONITORING\_FIGS 1-3.VVX



S.E. BURLEY OLALLA ROAD

BANDIX ROAD S.E.



**NOTES:**

\* MW-5 IS COMPLETED IN A SHALLOW PERCHED GROUNDWATER ZONE.

- MW-2  MONITORING WELL LOCATION
- SW-2  SURFACE WATER SAMPLING LOCATION
-  LANDFILL GAS FLARE
-  GROUNDWATER ELEVATION CONTOUR
-  INFERRED GROUNDWATER FLOW PATH
-  APPROXIMATE PROPERTY BOUNDARY
-  PERIMETER ACCESS ROAD



PROJECT: **KITSAP COUNTY  
OLALLA LANDFILL  
KITSAP COUNTY, WASHINGTON**

TITLE: **OLALLA LANDFILL GROUNDWATER ELEVATION  
CONTOUR MAP - JUNE 13, 2023**

DRAWN BY:	A. MULLER	PROJ NO.:	533022
CHECKED BY:	W. WEISBERG		
APPROVED BY:	W. WEISBERG		
DATE:	JANUARY 12, 2024		

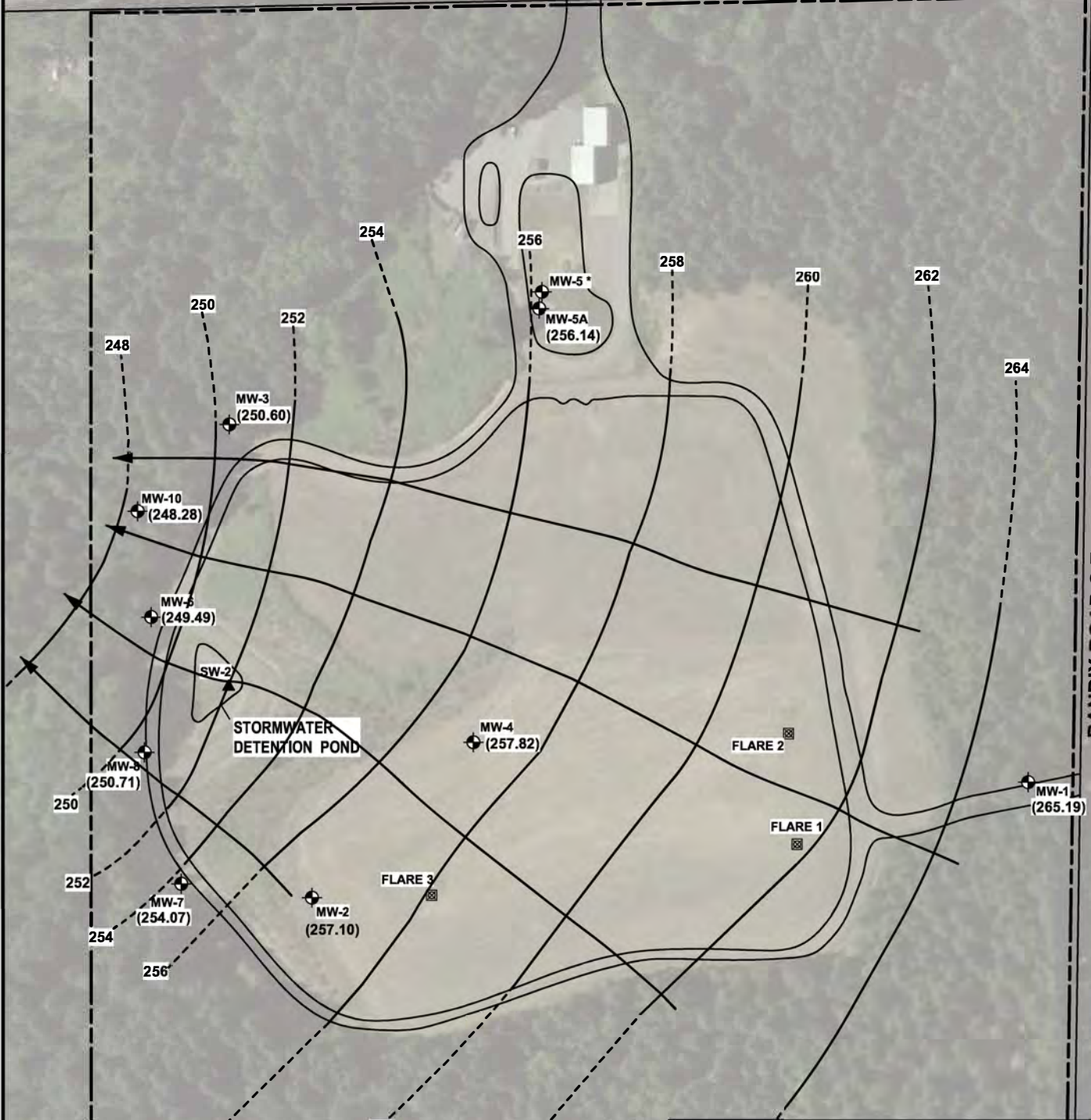


1180 NW MAPLE ST, SUITE 310  
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WWW.TRCCOMPANIES.COM  
425.395.0010

FILE NO.: 2023 - Q4 GW MONITORING\_FIGS 1-3.VWX


S.E. BURLEY OLALLA ROAD

BANDIX ROAD S.E.



**NOTES:**

\* MW-5 IS COMPLETED IN A SHALLOW PERCHED GROUNDWATER ZONE.

- MW-2  MONITORING WELL LOCATION
- SW-2  SURFACE WATER SAMPLING LOCATION
-  LANDFILL GAS FLARE
-  GROUNDWATER ELEVATION CONTOUR
-  INFERRED GROUNDWATER FLOW PATH
-  APPROXIMATE PROPERTY BOUNDARY
-  PERIMETER ACCESS ROAD



PROJECT: **KITSAP COUNTY  
OLALLA LANDFILL  
KITSAP COUNTY, WASHINGTON**

TITLE: **OLALLA LANDFILL GROUNDWATER ELEVATION  
CONTOUR MAP - SEPTEMBER 21, 2023**

DRAWN BY:	A. MULLER	PROJ NO.:	533022
CHECKED BY:	W. WEISBERG		
APPROVED BY:	W. WEISBERG		
DATE:	JANUARY 12, 2024		



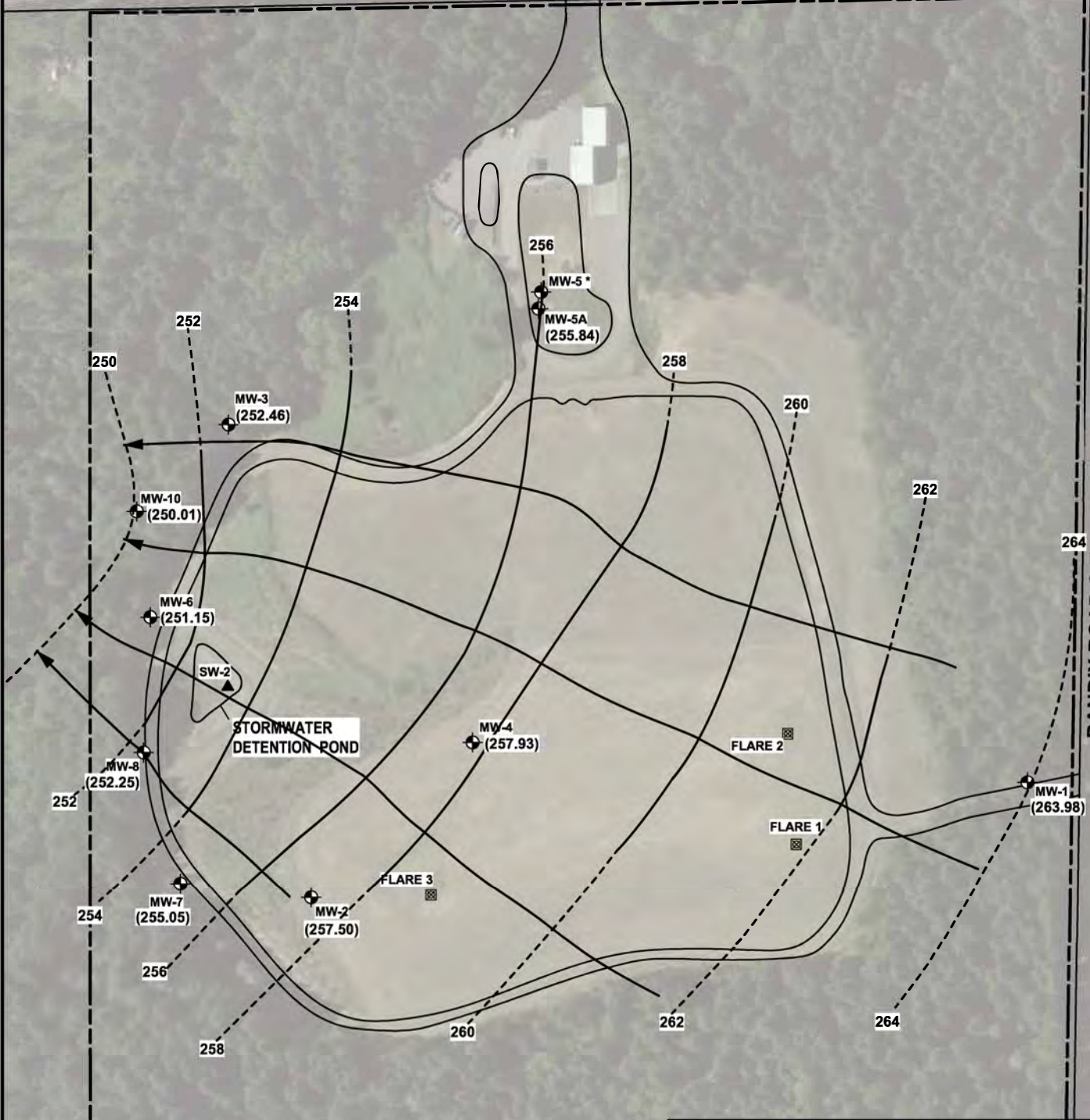
1180 NW MAPLE ST, SUITE 310  
ISSAQUAH, WA 98027  
WWW.TRCCOMPANIES.COM  
425.395.0010

FILE NO.: 2023 - Q4 GW MONITORING\_FIGS 1-3.VWX

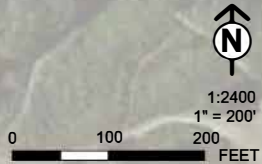


S.E. BURLEY OLALLA ROAD

BANDIX ROAD S.E.



- NOTES:**  
 \* MW-5 IS COMPLETED IN A SHALLOW PERCHED GROUNDWATER ZONE.
- MW-2 MONITORING WELL LOCATION
  - SW-2 SURFACE WATER SAMPLING LOCATION
  - LANDFILL GAS FLARE
  - GROUNDWATER ELEVATION CONTOUR
  - INFERRED GROUNDWATER FLOW PATH
  - APPROXIMATE PROPERTY BOUNDARY
  - PERIMETER ACCESS ROAD



PROJECT:	<b>KITSAP COUNTY OLALLA LANDFILL KITSAP COUNTY, WASHINGTON</b>		
TITLE:	<b>OLALLA LANDFILL GROUNDWATER ELEVATION CONTOUR MAP - DECEMBER 20, 2023</b>		
DRAWN BY:	A. MULLER	PROJ NO.:	533022
CHECKED BY:	W. WEISBERG		
APPROVED BY:	W. WEISBERG		
DATE:	JANUARY 12, 2024		
		1180 NW MAPLE ST, SUITE 310 ISSAQUAH, WA 98027 WWW.TRCCOMPANIES.COM 425.395.0010	
FILE NO.:	2023 - Q4 GW MONITORING_FIGS 1-3.VWX		

**Groundwater Quality Data**  
**March 2023 Quarterly Monitoring Event**  
**Page 1 of 3**

	State Drinking Water Standard (a)	State Ground- water Standard (b)	Site- Specific Cleanup Level (c)	Units	MW-1	MW-3	MW-5A	MW-6	MW-7	MW-8	MW-10	MW-9(FD)
<b>CONVENTIONALS</b>												
ALKALINITY	----	----	----	mg/L	55.2	299	NA	133	NA	86.4	248	297
AMMONIA NITROGEN	----	----	----	mg/L	0.040 U	0.040 U	NA	0.67	NA	0.040 U	0.057	0.040 U
BICARBONATE	----	----	----	mg/L	55.2	299	NA	133	NA	86.4	248	297
CARBONATE	----	----	----	mg/L	1.0 U	1.0 U	NA	1.0 U	NA	1.0 U	1.0 U	1.0 U
CHEMICAL OXYGEN DEMAND (COD)	----	----	----	mg/L	10.0 U	10.0 U	NA	10.0 U	NA	10.0 U	10.0 U	10.0 U
CHLORIDE	250**	250**	----	mg/L	5.22	3.03	NA	2.44	NA	2.11	12.6	3.06
DISSOLVED OXYGEN	----	----	----	mg/L	9.53	2.23	NA	2.26	NA	2.32	2.31	NA
NITRATE NITROGEN	10*	10*	----	mg/L	0.715	0.020 U	NA	0.377	NA	0.035	0.020 U	0.020 U
NITRITE NITROGEN	1*	----	----	mg/L	0.010 U	0.010 U	NA	0.010 U	NA	0.010 U	0.010 U	0.010 U
OXIDATION REDUCTION POTENTIAL (ORP)	----	----	----	mV	235.5	312.3	NA	285.4	NA	293.0	354.8	NA
pH (field)	----	6.5-8.5**	----	-log H+	6.5	6.3	NA	6.9	NA	6.8	6.7	NA
pH (laboratory)	----	6.5-8.5**	----	-log H+	6.4 J	6.2 J	NA	6.6 J	NA	6.6 J	6.5 J	6.2 J
SPECIFIC CONDUCTANCE	700**	----	----	umhos/cm	123	523	NA	244	NA	164	472	NA
SULFATE	250**	250**	----	mg/L	4.1	22.1	NA	8.0	NA	3.7	8.41	21.6
TEMPERATURE	----	----	----	°C	9.4	12.0	NA	11.8	NA	10.9	11.6	NA
FECAL COLIFORM	----	----	----	cfu/100 mL	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL DISSOLVED SOLIDS	500**	500**	----	mg/L								
TOTAL COLIFORM	1/100 mL*	1/100 mL*	----	cfu/100 mL	1 HU	1 U	NA	1 U	NA	1 U	1 U	1 HU
TOTAL ORGANIC CARBON (TOC)	----	----	----	mg/L	1.34	3.56	NA	2.07	NA	0.8	3.65	3.36
TURBIDITY	----	----	----	NTU	3.9	0.77	NA	4.42	NA	6.39	0.84	NA
<b>DISSOLVED METALS</b>												
ARSENIC	10*	0.05*	1.29	µg/L	0.10	0.12	NA	0.22	NA	0.73	1.92	0.11
BARIUM	2,000*	1,000*	----	µg/L	6.0 U	19.5	NA	15.1	NA	6.0 U	16.8	19.1
CALCIUM	----	----	----	mg/L	11.2	63.8	NA	21.9	NA	14.2	42.5	61.6
IRON	300**	300**	300	µg/L	20.0 U	20.0 U	NA	95	NA	47	40.0 U	20 U
MANGANESE	50**	50**	50	µg/L	4.0 U	8,660	NA	501	NA	2,120	4,310	8,540
POTASSIUM	----	----	----	mg/L	0.632	0.887	NA	1.96	NA	0.939	1.22	0.86
SODIUM	20***	----	----	mg/L	4.59	9.79	NA	4.95	NA	6.16	14.5	9.4
ZINC	5,000**	5,000**	----	µg/L	6.0 U	6.0 U	NA	6.0 U	NA	6.0 U	6.0 U	6.0 U
<b>SURFACE WATER</b>												
TOTAL COLIFORM	1/100 mL*	1/100 mL*		#/100 mL								
NITRATE NITROGEN	10*	10*		mg/L								
NITRITE NITROGEN	1*	----		mg/L								
<b>VOLATILE ORGANIC COMPOUNDS</b>												
VINYL CHLORIDE	2*	0.02*	0.29	µg/L	0.02 U	0.02 U	NA	0.02 U	NA	0.02 U	0.02 U	0.02 U

**Notes:**

Concentration exceeds Washington State Drinking Water or Groundwater Standards

FD = Field Duplicate of MW-3 was labeled MW-9.

**Regulatory Standards:**

(a) WAC 246-290-310

(b) WAC 173-200-040

(c) WAC 173-201A-200 - Nitrate and Nitrite Standards noted are for Class AA water. Fecal coliform standard is 100/100mL for Primary Contact Recreation.

The appropriate class of water for the detention pond has not been established.

(c) Site-specific Cleanup Levels per Olalla Landfill Cleanup Action Plan, December 2014

\* Primary Standard

\*\* Secondary Standard

\*\*\* Recommended level of concern for consumers with restricted daily sodium intake.

**Data Qualifiers:**

H = Analyzed outside of holding time.

J = Estimated Value. Laboratory-measured pH exceeded its 15-minute holding time.

NA = Not Analyzed

U = Indicates compound was analyzed for, but not detected at the specified detection limit.

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<b>VOLATILE ORGANIC COMPOUNDS</b>	<b>State Drinking Water Standards (a)</b>	<b>State Ground- water Standards (b)</b>	<b>Units</b>	<b>MW-1</b>	<b>MW-3</b>	<b>MW-6</b>	<b>MW-8</b>	<b>MW-10</b>	<b>MW-9(FD)</b>
1,1,1,2-TETRACHLOROETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,1-TRICHLOROETHANE	200	200	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2,2-TETRACHLOROETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2-TRICHLOROETHANE	5	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-DICHLOROETHANE	----	1	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-DICHLOROETHENE	7	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-DICHLOROPROPENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,3-TRICHLOROBENZENE	----	----	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,3-TRICHLOROPROPANE	----	----	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,4-TRICHLOROBENZENE	70	----	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,4-TRIMETHYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-DIBROMO-3-CHLOROPROPANE	----	----	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROBENZENE	600	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-DICHLOROETHANE	5	0.5	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-DICHLOROPROPANE	5	0.6	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3,5-TRIMETHYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-DICHLOROBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-DICHLOROPROPANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,4-DICHLOROBENZENE	75	4	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2,2-DICHLOROPROPANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-BUTANONE	----	----	µg/L	5 U	5 U	5 U	5 U	5 U	5 U
2-CHLOROETHYLVINYLETHER	----	----	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
2-CHLOROTOLUENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-HEXANONE	----	----	µg/L	5 U	5 U	5 U	5 U	5 U	5 U
4-CHLOROTOLUENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
4-ISOPROPYLTOLUENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
4-METHYL-2-PANTANONE	----	----	µg/L	5 U	5 U	5 U	5 U	5 U	5 U
ACETONE	----	----	µg/L	5 U	5 U	5 U	5 U	5 U	5 U
ACROLEIN	----	----	µg/L	5 U	5 U	5 U	5 U	5 U	5 U
ACRYLONITRILE	----	----	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
BENZENE	5	1	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
BROMOBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
BROMOCHLOROMETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
BROMOFORM	----	5	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
BROMOMETHANE	----	----	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
CARBON DISULFIDE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CARBON TETRACHLORIDE	5	0.3	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CFC-113	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CHLOROBENZENE	100	----	µg/L	0.2 U	0.2 U	2.3	0.2 U	0.2 U	0.2 U
CHLORODIBROMOMETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CHLOROETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CHLOROFORM	----	7	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CHLOROMETHANE	----	----	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CIS-1,2-DICHLOROETHENE	70	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U



**Groundwater Quality Data**  
**March 2023 Quarterly Monitoring Event**  
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<b>VOLATILE ORGANIC COMPOUNDS</b>	<b>State Drinking Water Standards (a)</b>	<b>State Ground- water Standards (b)</b>	<b>Units</b>	<b>MW-1</b>	<b>MW-3</b>	<b>MW-6</b>	<b>MW-8</b>	<b>MW-10</b>	<b>MW-9 (FD)</b>
CIS-1,3-DICHLOROPROPENE	----	0.2	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
DIBROMOETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
DICHLOROBROMOMETHANE	----	0.5	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
ETHYLBENZENE	700	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
ETHYLENE DIBROMIDE	----	0.001	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
HEXACHLOROBUTADIENE	----	----	µg/L	2 U	2 U	2 U	2 U	2 U	2 U
IODOMETHANE	----	----	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
ISOPROPYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
METHYLENE CHLORIDE	5	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
M & P-XYLENE	10	----	µg/L	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
NAPHTHALENE	----	----	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
N-BUTYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
N-PROPYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
O-XYLENE	10	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
SEC-BUTYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
STYRENE	100	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TERT-BUTYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TETRACHLOROETHENE	5	0.8	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TOLUENE	1000	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TRANS-1,2-DICHLOROETHENE	100	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TRANS-1,3-DICHLOROPROPENE	----	0.2	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TRANS-1,4-DICHLORO-2-BUTENE			µg/L	1 U	1 U	1 U	1 U	1 U	1 U
TRICHLOROETHENE	5	3	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TRICHLOROFLUOROMETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
VINYL ACETATE			µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
VINYL CHLORIDE	2	0.02	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U

**Notes:**

FD = Field Duplicate of MW-3 was labeled MW-9.

**Regulatory Standards:**

All regulatory standards listed for VOCs are Primary Regulatory Standards

(a) WAC 246-290-310

(b) WAC 173-200-040

**Data Qualifiers:**

U = Indicates compound was analyzed for but was not detected at the specified detection limit.

**Groundwater Quality Data**  
**June 2023 Quarterly Monitoring Event**  
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	State Drinking Water Standard (a)	State Ground- water Standard (b)	Site- Specific Cleanup Level (c)	Units	MW-1	MW-3	MW-5A	MW-6	MW-7	MW-8	MW-10	MW-17(FD)
<b>CONVENTIONALS</b>												
ALKALINITY	----	----	----	mg/L	54.0	259	NA	172	NA	105	239	165
AMMONIA NITROGEN	----	----	----	mg/L	0.040 U	0.040 U	NA	0.789	NA	0.040 U	0.046	0.798
BICARBONATE	----	----	----	mg/L	54.0	259	NA	172	NA	105	239	165
CARBONATE	----	----	----	mg/L	1.0 U	1.0 U	NA	1.0 U	NA	1.0 U	1.0 U	1.0 U
CHEMICAL OXYGEN DEMAND (COD)	----	----	----	mg/L	10.0 U	10.0 U	NA	10.0 U	NA	10.0 U	10.0 U	10.0 U
CHLORIDE	250**	250**	----	mg/L	5.20	4.43	NA	3.02	NA	2.29	11.4	2.98
DISSOLVED OXYGEN	----	----	----	mg/L	8.79	0.27	NA	0.03	NA	0.22	0.03	NA
NITRATE NITROGEN	10*	10*	----	mg/L	0.778	0.020 U	NA	0.020 U	NA	0.020 U	0.020 U	0.054
NITRITE NITROGEN	1*	----	----	mg/L	0.010 U	0.010 U	NA	0.010 U	NA	0.010 U	0.010 U	0.010 U
OXIDATION REDUCTION POTENTIAL (ORP)	----	----	----	mV	32.0	-9.5	NA	-45.7	NA	-74.3	-50.3	NA
pH (field)	----	6.5-8.5**	----	-log H+	6.2	6.3	NA	6.6	NA	6.7	6.6	NA
pH (laboratory)	----	6.5-8.5**	----	-log H+	6.5 H	6.3 H	NA	6.7 H	NA	6.7 H	6.7 H	6.7 H
SPECIFIC CONDUCTANCE	700**	----	----	umhos/cm	124	518	NA	304	NA	158	462	NA
SULFATE	250**	250**	----	mg/L	4.0	25.7	NA	6.5	NA	4.30	11.6	6.2
TEMPERATURE	----	----	----	°C	10.8	11.7	NA	11.3	NA	10.5	11.7	NA
FECAL COLIFORM	----	----	----	cfu/100 mL								
TOTAL DISSOLVED SOLIDS	500**	500**	----	mg/L								
TOTAL COLIFORM	1/100 mL*	1/100 mL*	----	cfu/100 mL	1.0 U	1.0 U	NA	1.0 U	NA	1.0 U	1.0 U	1.0 H
TOTAL ORGANIC CARBON (TOC)	----	----	----	mg/L	0.5 U	3.35	NA	1.86	NA	0.91	3.13	1.77
TURBIDITY	----	----	----	NTU	1.2	3.19	NA	2.70	NA	4.42	0.50	NA
<b>DISSOLVED METALS</b>												
ARSENIC	10*	0.05*	1.29	µg/L	0.11	0.15	NA	0.46	NA	0.78	1.87	0.47
BARIUM	2,000*	1,000*	----	µg/L	6.0 U	19.4	NA	20.4	NA	6.0 U	15.9	20.6
CALCIUM	----	----	----	mg/L	11.3	57.7	NA	30.7	NA	15.0	42.8	30.1
IRON	300**	300**	300	µg/L	40.0 U	20.0 U	NA	265	NA	440	100.0 U	258
MANGANESE	50**	50**	50	µg/L	4.0 U	8,320	NA	542	NA	1,990	4,300	637
POTASSIUM	----	----	----	mg/L	0.585	0.829	NA	2.33	NA	0.943	1.17	2.40
SODIUM	20***	----	----	mg/L	4.67	9.00	NA	5.91	NA	6.39	13.9	5.86
ZINC	5,000**	5,000**	----	µg/L	6.0 U	6.0 U	NA	6.0 U	NA	6.0 U	6.0 U	6.0 U
<b>SURFACE WATER</b>												
TOTAL COLIFORM	1/100 mL*	1/100 mL*		#/100 mL	1.0 U	1.0 U	NA	1.0 U	NA	1.0 U	1.0 U	1.0 HU
NITRATE NITROGEN	10*	10*		mg/L	0.778	0.02 U	NA	0.02 U	NA	0.02 U	0.02 U	0.0539
NITRITE NITROGEN	1*	----		mg/L	0.01 U	0.01 U	NA	0.01 U	NA	0.01 U	0.01 U	0.01 U
<b>VOLATILE ORGANIC COMPOUNDS</b>												
VINYL CHLORIDE	2*	0.02*	0.29	µg/L	0.02 U	0.02 U	NA	0.025	NA	0.02 U	0.02 U	0.026

**Notes:**

Concentration exceeds Washington State Drinking Water or Groundwater Standards

FD = Field Duplicate of MW-3 was labeled MW-9.

**Regulatory Standards:**

(a) WAC 246-290-310

(b) WAC 173-200-040

(c) WAC 173-201A-200 - Nitrate and Nitrite Standards noted are for Class AA water. Fecal coliform standard is 100/100mL for Primary Contact Recreation.

The appropriate class of water for the detention pond has not been established.

(c) Site-specific Cleanup Levels per Olalla Landfill Cleanup Action Plan, December 2014

\* Primary Standard

\*\* Secondary Standard

\*\*\* Recommended level of concern for consumers with restricted daily sodium intake.

**Data Qualifiers:**

H = Analyzed outside of holding time.

J = Estimated Value. Laboratory-measured pH exceeded its 15-minute holding time.

NA = Not Analyzed

U = Indicates compound was analyzed for, but not detected at the specified detection limit.

**Groundwater Quality Data**  
**June 2023 Quarterly Monitoring Event**  
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VOLATILE ORGANIC COMPOUNDS	State	State	Units	MW-1	MW-3	MW-6	MW-8	MW-10	MW-17(FD)
	Drinking Water Standards	Ground-water Standards							
	(a)	(b)							
1,1,1,2-TETRACHLOROETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,1-TRICHLOROETHANE	200	200	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2,2-TETRACHLOROETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2-TRICHLOROETHANE	5	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-DICHLOROETHANE	----	1	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-DICHLOROETHENE	7	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-DICHLOROPROPENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,3-TRICHLOROBENZENE	----	----	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,3-TRICHLOROPROPANE	----	----	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,4-TRICHLOROBENZENE	70	----	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,4-TRIMETHYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-DIBROMO-3-CHLOROPROPANE	----	----	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROBENZENE	600	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-DICHLOROETHANE	5	0.5	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-DICHLOROPROPANE	5	0.6	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3,5-TRIMETHYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-DICHLOROBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-DICHLOROPROPANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,4-DICHLOROBENZENE	75	4	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2,2-DICHLOROPROPANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-BUTANONE	----	----	µg/L	5 U	5 U	5 U	5 U	5 U	5 U
2-CHLOROETHYLVINYLETHER	----	----	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
2-CHLOROTOLUENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-HEXANONE	----	----	µg/L	5 U	5 U	5 U	5 U	5 U	5 U
4-CHLOROTOLUENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
4-ISOPROPYLTOLUENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
4-METHYL-2-PANTANONE	----	----	µg/L	5 U	5 U	5 U	5 U	5 U	5 U
ACETONE	----	----	µg/L	5 U	5 U	5 U	5 U	5 U	5 U
ACROLEIN	----	----	µg/L	5 U	5 U	5 U	5 U	5 U	5 U
ACRYLONITRILE	----	----	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
BENZENE	5	1	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
BROMOBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
BROMOCHLOROMETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
BROMOFORM	----	5	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
BROMOMETHANE	----	----	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
CARBON DISULFIDE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CARBON TETRACHLORIDE	5	0.3	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CFC-113	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CHLOROBENZENE	100	----	µg/L	0.2 U	0.2 U	1.88	0.2 U	0.2 U	2.01
CHLORODIBROMOMETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CHLOROETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CHLOROFORM	----	7	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CHLOROMETHANE	----	----	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CIS-1,2-DICHLOROETHENE	70	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U

**Groundwater Quality Data**  
**June 2023 Quarterly Monitoring Event**  
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VOLATILE ORGANIC COMPOUNDS	State	State	Units	MW-1	MW-3	MW-6	MW-8	MW-10	MW-17 (FD)
	Drinking Water Standards (a)	Ground-water Standards (b)							
CIS-1,3-DICHLOROPROPENE	----	0.2	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
DIBROMOETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
DICHLOROBROMOMETHANE	----	0.5	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
ETHYLBENZENE	700	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
ETHYLENE DIBROMIDE	----	0.001	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
HEXACHLOROBUTADIENE	----	----	µg/L	2 U	2 U	2 U	2 U	2 U	2 U
IODOMETHANE	----	----	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
ISOPROPYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
METHYLENE CHLORIDE	5	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
M & P-XYLENE	10	----	µg/L	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
NAPHTHALENE	----	----	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
N-BUTYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
N-PROPYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
O-XYLENE	10	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
SEC-BUTYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
STYRENE	100	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TERT-BUTYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TETRACHLOROETHENE	5	0.8	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TOLUENE	1000	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TRANS-1,2-DICHLOROETHENE	100	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TRANS-1,3-DICHLOROPROPENE	----	0.2	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TRANS-1,4-DICHLORO-2-BUTENE	----	----	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
TRICHLOROETHENE	5	3	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TRICHLOROFLUOROMETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
VINYL ACETATE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
VINYL CHLORIDE	2	0.02	µg/L	0.20 U	0.20 U	<b>0.03</b>	0.20 U	0.20 U	<b>0.03</b>

**Notes:**

FD = Field Duplicate of MW-3 was labeled MW-9.

**Regulatory Standards:**

All regulatory standards listed for VOCs are Primary Regulatory Standards

(a) WAC 246-290-310

(b) WAC 173-200-040

**Data Qualifiers:**

U = Indicates compound was analyzed for but was not detected at the specified detection limit.

**Groundwater Quality Data**  
**September 2023 Quarterly Monitoring Event**  
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	State Drinking Water Standard (a)	State Ground- water Standard (b)	Site- Specific Cleanup Level (c)	Units	MW-1	MW-3	MW-5A	MW-6	MW-7	MW-8	MW-10	MW-12(FD)
<b>CONVENTIONALS</b>												
ALKALINITY	----	----	----	mg/L	213.0	54.8	NA	198	NA	71.3	211	70.1
AMMONIA NITROGEN	----	----	----	mg/L	0.040 U	0.040 U	NA	1.13 D	NA	0.040 U	0.047	0.040 U
BICARBONATE	----	----	----	mg/L	213.0	54.8	NA	198	NA	71.3	211	70.1
CARBONATE	----	----	----	mg/L	1.0 U	1.0 U	NA	1.0 U	NA	1.0 U	1.0 U	1.0 U
CHEMICAL OXYGEN DEMAND (COD)	----	----	----	mg/L	10.0 U	10.0 U	NA	10.0 U	NA	10.0 U	10.0 U	10.0 U
CHLORIDE	250**	250**	----	mg/L	6.86	4.26	NA	2.61	NA	2.27	8.64	2.25
DISSOLVED OXYGEN	----	----	----	mg/L	9.43	0.49	NA	0.17	NA	0.36	0.15	NA
NITRATE NITROGEN	10*	10*	----	mg/L	0.225	0.020 U	NA	0.020 U	NA	0.03	0.020 U	0.032
NITRITE NITROGEN	1*	----	----	mg/L	0.010 U	0.010 U	NA	0.010 U	NA	0.010 U	0.010 U	0.010 U
OXIDATION REDUCTION POTENTIAL (ORP)	----	----	----	mV	296.7	330.1	NA	50.1	NA	44.5	238.1	NA
pH (field)	----	6.5-8.5**	----	-log H+	6.5	6.3	NA	6.6	NA	6.7	6.7	NA
pH (laboratory)	----	6.5-8.5**	----	-log H+	6.4 H	6.4 H	NA	6.5 H	NA	6.6 H	6.6 H	6.5 H
SPECIFIC CONDUCTANCE	700**	----	----	umhos/cm	138	447	NA	392	NA	137	440	NA
SULFATE	250**	250**	----	mg/L	4.4	18.7	NA	7.5	NA	3.86	11.1	3.8
TEMPERATURE	----	----	----	°C	10.7	11.8	NA	11.6	NA	11.0	11.7	NA
FECAL COLIFORM	----	----	----	cfu/100 mL	1.0 U	1.0 U	NA	1.0 U	NA	1.0 U	1.0 U	1.0 HU
TOTAL COLIFORM	1/100 mL*	1/100 mL*	----	cfu/100 mL	1.0 U	1.0 U	NA	1.0 U	NA	1.0 U	1.0 U	1.0 HU
TOTAL ORGANIC CARBON (TOC)	----	----	----	mg/L	0.69	2.61	NA	2.06	NA	0.75	3.15	0.70
TURBIDITY	----	----	----	NTU	4.2	3.10	NA	2.79	NA	4.28	2.17	NA
<b>DISSOLVED METALS</b>												
ARSENIC	10*	0.05*	1.29	µg/L	0.12	0.11	NA	0.42	NA	1.15	1.85	1.09
BARIUM	2,000*	1,000*	----	µg/L	6.0 U	15.0	NA	25.7	NA	6.0 U	14.1	6.0 U
CALCIUM	----	----	----	mg/L	12.9	51.9	NA	39.3	NA	10.8	42.2	11.6
IRON	300**	300**	300	µg/L	20.0 U	20.0 U	NA	391 D	NA	317	120 D	313
MANGANESE	50**	50**	50	µg/L	4.0 U	5,020	NA	462	NA	1,520	3,740	1,520
POTASSIUM	----	----	----	mg/L	0.595	0.79	NA	2.89	NA	0.850	1.10	0.91
SODIUM	20***	----	----	mg/L	5.15	9.50	NA	7.43	NA	6.09	12.9	6.3
ZINC	5,000**	5,000**	----	µg/L	6.0 U	6.0 U	NA	6.0 U	NA	6.0 U	6.0 U	6.0 U
<b>VOLATILE ORGANIC COMPOUNDS</b>												
VINYL CHLORIDE	2*	0.02*	0.29	µg/L	0.02 U	0.02 U	NA	0.02 U	NA	0.02 U	0.02 U	0.02 U

**Notes:**

Concentration exceeds Washington State Drinking Water or Groundwater Standards

FD = Field Duplicate of MW-3 was labeled MW-9.

**Regulatory Standards:**

(a) WAC 246-290-310

(b) WAC 173-200-040

(c) WAC 173-201A-200 - Nitrate and Nitrite Standards noted are for Class AA water. Fecal coliform standard is 100/100mL for Primary Contact Recreation.

The appropriate class of water for the detention pond has not been established.

(c) Site-specific Cleanup Levels per Olalla Landfill Cleanup Action Plan, December 2014

\* Primary Standard

\*\* Secondary Standard

\*\*\* Recommended level of concern for consumers with restricted daily sodium intake.

**Data Qualifiers:**

H = Analyzed outside of holding time.

J = Estimated Value. Laboratory-measured pH exceeded its 15-minute holding time.

NA = Not Analyzed

U = Indicates compound was analyzed for, but not detected at the specified detection limit.

**Groundwater Quality Data**  
**September 2023 Quarterly Monitoring Event**  
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<b>VOLATILE ORGANIC COMPOUNDS</b>	<b>State Drinking Water Standards (a)</b>	<b>State Ground- water Standards (b)</b>	<b>Units</b>	<b>MW-1</b>	<b>MW-3</b>	<b>MW-6</b>	<b>MW-8</b>	<b>MW-10</b>	<b>MW-12(FD)</b>
1,1,1,2-TETRACHLOROETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,1-TRICHLOROETHANE	200	200	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2,2-TETRACHLOROETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2-TRICHLOROETHANE	5	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-DICHLOROETHANE	----	1	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-DICHLOROETHENE	7	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-DICHLOROPROPENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,3-TRICHLOROBENZENE	----	----	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,3-TRICHLOROPROPANE	----	----	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,4-TRICHLOROBENZENE	70	----	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,4-TRIMETHYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-DIBROMO-3-CHLOROPROPANE	----	----	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROBENZENE	600	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-DICHLOROETHANE	5	0.5	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-DICHLOROPROPANE	5	0.6	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3,5-TRIMETHYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-DICHLOROBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-DICHLOROPROPANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,4-DICHLOROBENZENE	75	4	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2,2-DICHLOROPROPANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-BUTANONE	----	----	µg/L	5 U	5 U	5 U	5 U	5 U	5 U
2-CHLOROETHYLVINYLETHER	----	----	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
2-CHLOROTOLUENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-HEXANONE	----	----	µg/L	5 U	5 U	5 U	5 U	5 U	5 U
4-CHLOROTOLUENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
4-ISOPROPYLTOLUENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
4-METHYL-2-PANTANONE	----	----	µg/L	5 U	5 U	5 U	5 U	5 U	5 U
ACETONE	----	----	µg/L	5 U	5 U	5 U	5 U	5 U	5 U
ACROLEIN	----	----	µg/L	5 U	5 U	5 U	5 U	5 U	5 U
ACRYLONITRILE	----	----	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
BENZENE	5	1	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
BROMOBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
BROMOCHLOROMETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
BROMOFORM	----	5	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
BROMOMETHANE	----	----	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
CARBON DISULFIDE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CARBON TETRACHLORIDE	5	0.3	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CFC-113	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CHLOROBENZENE	100	----	µg/L	0.2 U	0.2 U	2.05	0.2 U	0.2 U	0.2 U
CHLORODIBROMOMETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CHLOROETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CHLOROFORM	----	7	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CHLOROMETHANE	----	----	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CIS-1,2-DICHLOROETHENE	70	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U

**Groundwater Quality Data**  
**September 2023 Quarterly Monitoring Event**  
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VOLATILE ORGANIC COMPOUNDS	State	State	Units	MW-1	MW-3	MW-6	MW-8	MW-10	MW-12 (FD)
	Drinking Water Standards (a)	Ground-water Standards (b)							
CIS-1,3-DICHLOROPROPENE	----	0.2	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
DIBROMOETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
DICHLOROBROMOMETHANE	----	0.5	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
ETHYLBENZENE	700	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
ETHYLENE DIBROMIDE	----	0.001	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
HEXACHLOROBUTADIENE	----	----	µg/L	2 U	2 U	2 U	2 U	2 U	2 U
IODOMETHANE	----	----	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
ISOPROPYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
METHYLENE CHLORIDE	5	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
M & P-XYLENE	10	----	µg/L	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
NAPHTHALENE	----	----	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
N-BUTYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
N-PROPYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
O-XYLENE	10	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
SEC-BUTYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
STYRENE	100	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TERT-BUTYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TETRACHLOROETHENE	5	0.8	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TOLUENE	1000	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TRANS-1,2-DICHLOROETHENE	100	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TRANS-1,3-DICHLOROPROPENE	----	0.2	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TRANS-1,4-DICHLORO-2-BUTENE			µg/L	1 U	1 U	1 U	1 U	1 U	1 U
TRICHLOROETHENE	5	3	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TRICHLOROFLUOROMETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
VINYL ACETATE			µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
VINYL CHLORIDE	2	0.02	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U

**Notes:**

FD = Field Duplicate of MW-3 was labeled MW-9.

**Regulatory Standards:**

All regulatory standards listed for VOCs are Primary Regulatory Standards

(a) WAC 246-290-310

(b) WAC 173-200-040

**Data Qualifiers:**

U = Indicates compound was analyzed for but was not detected at the specified detection limit.

**Groundwater Quality Data**  
**December 2023 Quarterly Monitoring Event**  
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	State Drinking Water Standard (a)	State Ground- water Standard (b)	Site- Specific Cleanup Level (c)	Units	MW-1	MW-3	MW-5A	MW-6	MW-7	MW-8	MW-10	MW-13(FD)
<b>CONVENTIONALS</b>												
ALKALINITY	----	----	----	mg/L	54.8	206	NA	175	NA	105	206	209
AMMONIA NITROGEN	----	----	----	mg/L	0.040 U	0.040 U	NA	0.040 U	NA	0.040 U	0.040 U	0.040 U
BICARBONATE	----	----	----	mg/L	54.8	206	NA	175	NA	105	206	209
CARBONATE	----	----	----	mg/L	1.0 U	1.0 U	NA	1.0 U	NA	1.0 U	1.0 U	1.0 U
CHEMICAL OXYGEN DEMAND (COD)	----	----	----	mg/L	10.0 U	10.0 U	NA	10.0 U	NA	10.0 U	10.0 U	10.0 U
CHLORIDE	250**	250**	----	mg/L	6.78	6.37	NA	3.06	NA	2.25	6.11	6.09
DISSOLVED OXYGEN	----	----	----	mg/L	9.27	0.48	9.77	0.30	7.05	0.25	0.25	NA
NITRATE NITROGEN	10*	10*	----	mg/L	0.202 H	0.020 UH	NA	0.020 UH	NA	0.020 U	0.020 UH	0.020 UH
NITRITE NITROGEN	1*	----	----	mg/L	0.010 UH	0.010 UH	NA	0.010 UH	NA	0.010 U	0.010 UH	0.010 UH
OXIDATION REDUCTION POTENTIAL (ORP)	----	----	----	mV	290.7	347.3	314.8	300.9	223.60	229.8	326.3	NA
pH (field)	----	6.5-8.5**	----	-log H+	6.3	6.2	6.8	6.5	6.7	6.6	6.6	NA
pH (laboratory)	----	6.5-8.5**	----	-log H+	6.4 H	6.4 H	NA	6.6 H	NA	6.7 H	6.6 H	6.6 H
SPECIFIC CONDUCTANCE	700**	----	----	umhos/cm	133	426	107	331	108.00	212	416	NA
SULFATE	250**	250**	----	mg/L	4.2	21.6	NA	5.7	NA	4.40	6.26	6.2
TEMPERATURE	----	----	----	°C	10.6	11.9	11.8	11.8	10.80	11.4	11.6	NA
TOTAL COLIFORM	1/100 mL*	1/100 mL*	----	cfu/100 mL	1.0 U	1.0 U	NA	1.0 U	NA	1.0 U	1.0 U	1.0 U
TOTAL ORGANIC CARBON (TOC)	----	----	----	mg/L	0.65	2.72	NA	1.84	NA	0.68	2.94	2.93
TURBIDITY	----	----	----	NTU	3.4	3.44	4.55	4.71	3.01	10.20	4.65	NA
<b>DISSOLVED METALS</b>												
ARSENIC	10*	0.05*	1.29	µg/L	0.09	0.14	0.2 B	0.30	0.40	1.36 B	1.43 B	1.70 B
BARIUM	2,000*	1,000*	----	µg/L	6.0 U	15.3	6.0 U	21.7	6.0 U	6.0 U	13.4	13.3
CALCIUM	----	----	----	mg/L	12.9	51.9	NA	33.3	NA	22.4	43.1	42.1
IRON	300**	300**	300	µg/L	40.0 U	20.0 U	20.0 U	130	40.0 U	344	100 U	100 U
MANGANESE	50**	50**	50	µg/L	4.0 U	4,960	4.0 U	374	4.0 U	1,190	3,780	3,690
POTASSIUM	----	----	----	mg/L	0.640	0.787	NA	2.21	NA	0.855	1.07	1.10
SODIUM	20***	----	----	mg/L	4.90	9.47	NA	6.31	NA	7.63	9.95	9.77
ZINC	5,000**	5,000**	----	µg/L	6.0 U	6.0 U	6.0 U	30.0 U	12.0 U	30.0 U	30.0 U	30.0 U
<b>VOLATILE ORGANIC COMPOUNDS</b>												
VINYL CHLORIDE	2*	0.02*	0.29	µg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U

**Notes:**

Concentration exceeds Washington State Drinking Water or Groundwater Standards

FD = Field Duplicate of MW-3 was labeled MW-9.

**Regulatory Standards:**

(a) WAC 246-290-310

(b) WAC 173-200-040

(c) WAC 173-201A-200 - Nitrate and Nitrite Standards noted are for Class AA water. Fecal coliform standard is 100/100mL for Primary Contact Recreation.

The appropriate class of water for the detention pond has not been established.

(c) Site-specific Cleanup Levels per Olalla Landfill Cleanup Action Plan, December 2014

\* Primary Standard

\*\* Secondary Standard

\*\*\* Recommended level of concern for consumers with restricted daily sodium intake.

**Data Qualifiers:**

B = Analyte detected in sample and in method blank; reported result is without blank correction.

H = Analyzed outside of holding time.

NA = Not Analyzed

U = Indicates compound was analyzed for, but not detected at the specified detection limit.



**Groundwater Quality Data**  
**December 2023 Quarterly Monitoring Event**  
**Page 2 of 3**

<b>VOLATILE ORGANIC COMPOUNDS</b>	<b>State Drinking Water Standards (a)</b>	<b>State Ground- water Standards (b)</b>	<b>Units</b>	<b>MW-1</b>	<b>MW-3</b>	<b>MW-6</b>	<b>MW-8</b>	<b>MW-10</b>	<b>MW-13(FD)</b>
1,1,1,2-TETRACHLOROETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,1-TRICHLOROETHANE	200	200	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2,2-TETRACHLOROETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2-TRICHLOROETHANE	5	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-DICHLOROETHANE	----	1	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-DICHLOROETHENE	7	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-DICHLOROPROPENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,3-TRICHLOROBENZENE	----	----	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,3-TRICHLOROPROPANE	----	----	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,4-TRICHLOROBENZENE	70	----	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,4-TRIMETHYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-DIBROMO-3-CHLOROPROPANE	----	----	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROBENZENE	600	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-DICHLOROETHANE	5	0.5	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-DICHLOROPROPANE	5	0.6	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3,5-TRIMETHYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-DICHLOROBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-DICHLOROPROPANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,4-DICHLOROBENZENE	75	4	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2,2-DICHLOROPROPANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-BUTANONE	----	----	µg/L	5 U	5 U	5 U	5 U	5 U	5 U
2-CHLOROETHYLVINYLETHER	----	----	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
2-CHLOROTOLUENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-HEXANONE	----	----	µg/L	5 U	5 U	5 U	5 U	5 U	5 U
4-CHLOROTOLUENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
4-ISOPROPYLTOLUENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
4-METHYL-2-PANTANONE	----	----	µg/L	5 U	5 U	5 U	5 U	5 U	5 U
ACETONE	----	----	µg/L	5 U	5 U	5 U	5 U	5 U	5 U
ACROLEIN	----	----	µg/L	5 U	5 U	5 U	5 U	5 U	5 U
ACRYLONITRILE	----	----	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
BENZENE	5	1	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
BROMOBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
BROMOCHLOROMETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
BROMOFORM	----	5	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
BROMOMETHANE	----	----	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
CARBON DISULFIDE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CARBON TETRACHLORIDE	5	0.3	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CFC-113	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CHLOROBENZENE	100	----	µg/L	0.2 U	0.2 U	2.42	0.2 U	0.2 U	0.2 U
CHLORODIBROMOMETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CHLOROETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CHLOROFORM	----	7	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CHLOROMETHANE	----	----	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CIS-1,2-DICHLOROETHENE	70	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U

**Groundwater Quality Data**  
**December 2023 Quarterly Monitoring Event**  
**Page 3 of 3**

VOLATILE ORGANIC COMPOUNDS	State	State	Units	MW-1	MW-3	MW-6	MW-8	MW-10	MW-13 (FD)
	Drinking Water Standards (a)	Ground-water Standards (b)							
CIS-1,3-DICHLOROPROPENE	----	0.2	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
DIBROMOETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
DICHLOROBROMOMETHANE	----	0.5	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
ETHYLBENZENE	700	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
ETHYLENE DIBROMIDE	----	0.001	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
HEXACHLOROBUTADIENE	----	----	µg/L	2 U	2 U	2 U	2 U	2 U	2 U
IODOMETHANE	----	----	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
ISOPROPYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
METHYLENE CHLORIDE	5	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U
M & P-XYLENE	10	----	µg/L	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
NAPHTHALENE	----	----	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
N-BUTYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
N-PROPYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
O-XYLENE	10	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
SEC-BUTYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
STYRENE	100	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TERT-BUTYLBENZENE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TETRACHLOROETHENE	5	0.8	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TOLUENE	1000	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TRANS-1,2-DICHLOROETHENE	100	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TRANS-1,3-DICHLOROPROPENE	----	0.2	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TRANS-1,4-DICHLORO-2-BUTENE			µg/L	1 U	1 U	1 U	1 U	1 U	1 U
TRICHLOROETHENE	5	3	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TRICHLOROFLUOROMETHANE	----	----	µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
VINYL ACETATE			µg/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
VINYL CHLORIDE	2	0.02	µg/L	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U

**Notes:**

FD = Field Duplicate of MW-3 was labeled MW-9.

**Regulatory Standards:**

All regulatory standards listed for VOCs are Primary Regulatory Standards

(a) WAC 246-290-310

(b) WAC 173-200-040

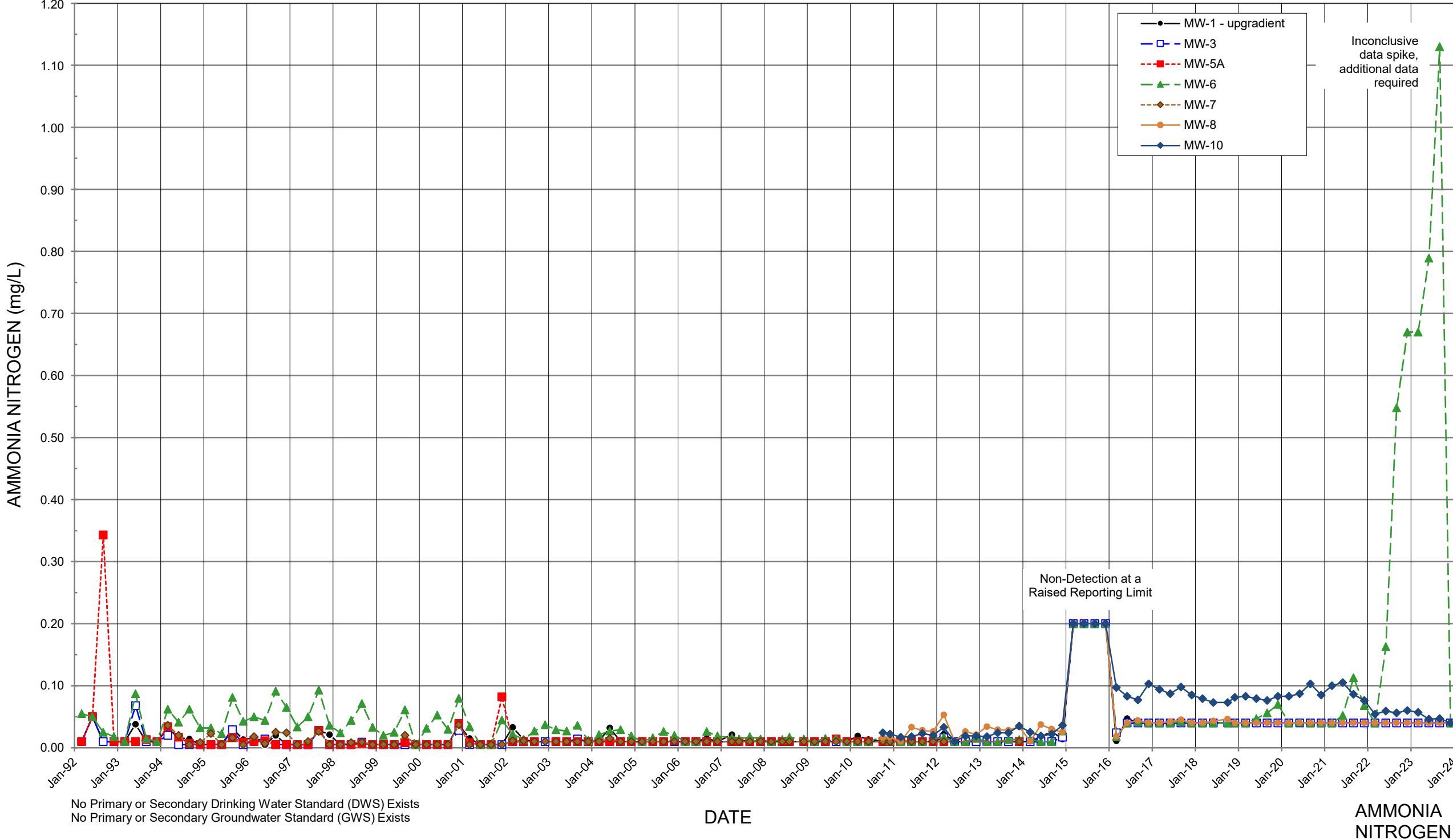
**Data Qualifiers:**

U = Indicates compound was analyzed for but was not detected at the specified detection limit.

**Appendix B:**  
**2023 Statistical Summaries**

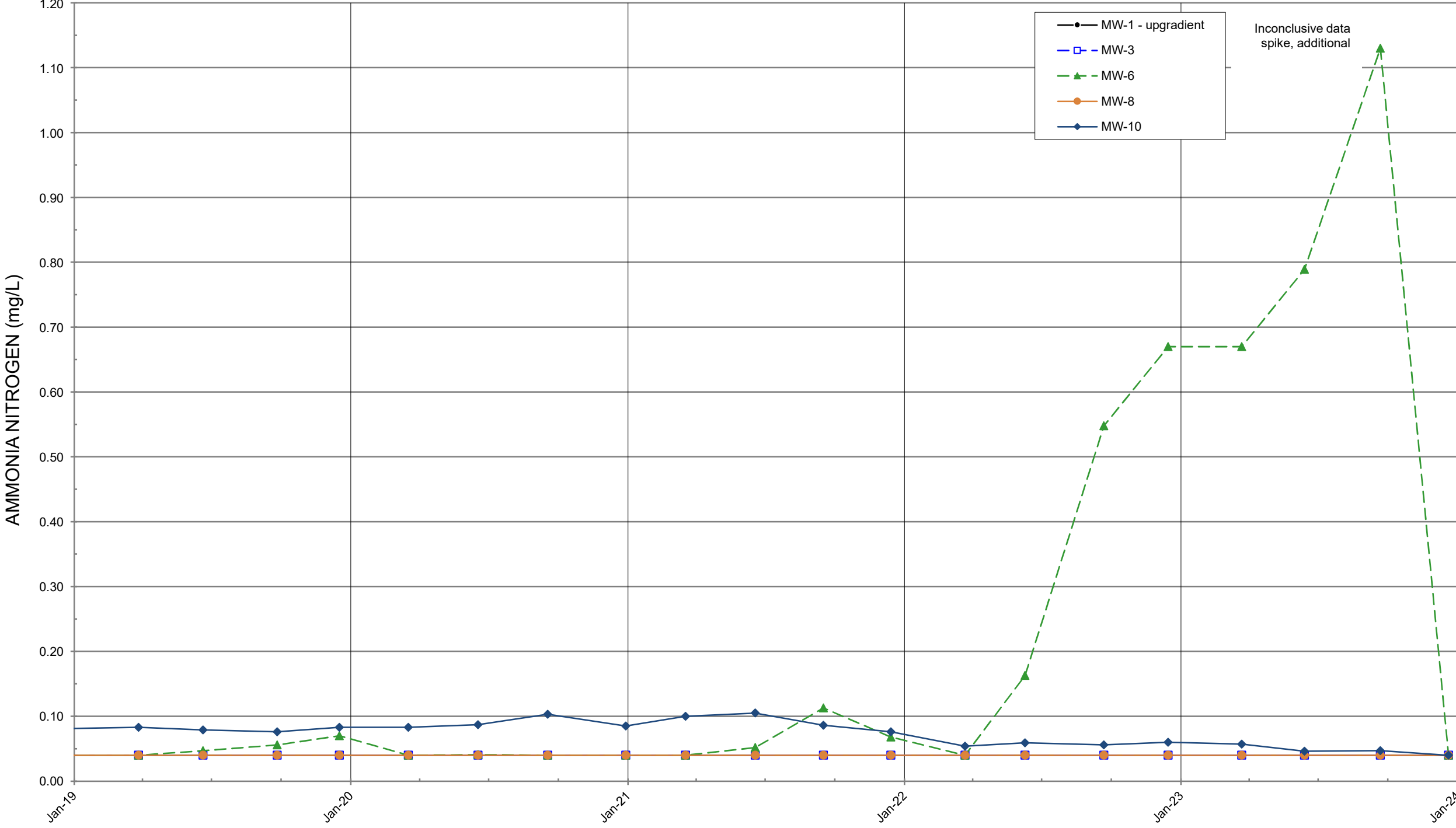
Time-Series Plots through December 2023  
Mann-Kendall Statistically Significant Trend Test Summary Tables  
Shapiro-Wilk Test for Normality Summary Tables  
Confidence Interval Summary Tables

# OLALLA LANDFILL Quarterly Monitoring Data



# OLALLA LANDFILL

## Quarterly Monitoring Data (most recent five years)

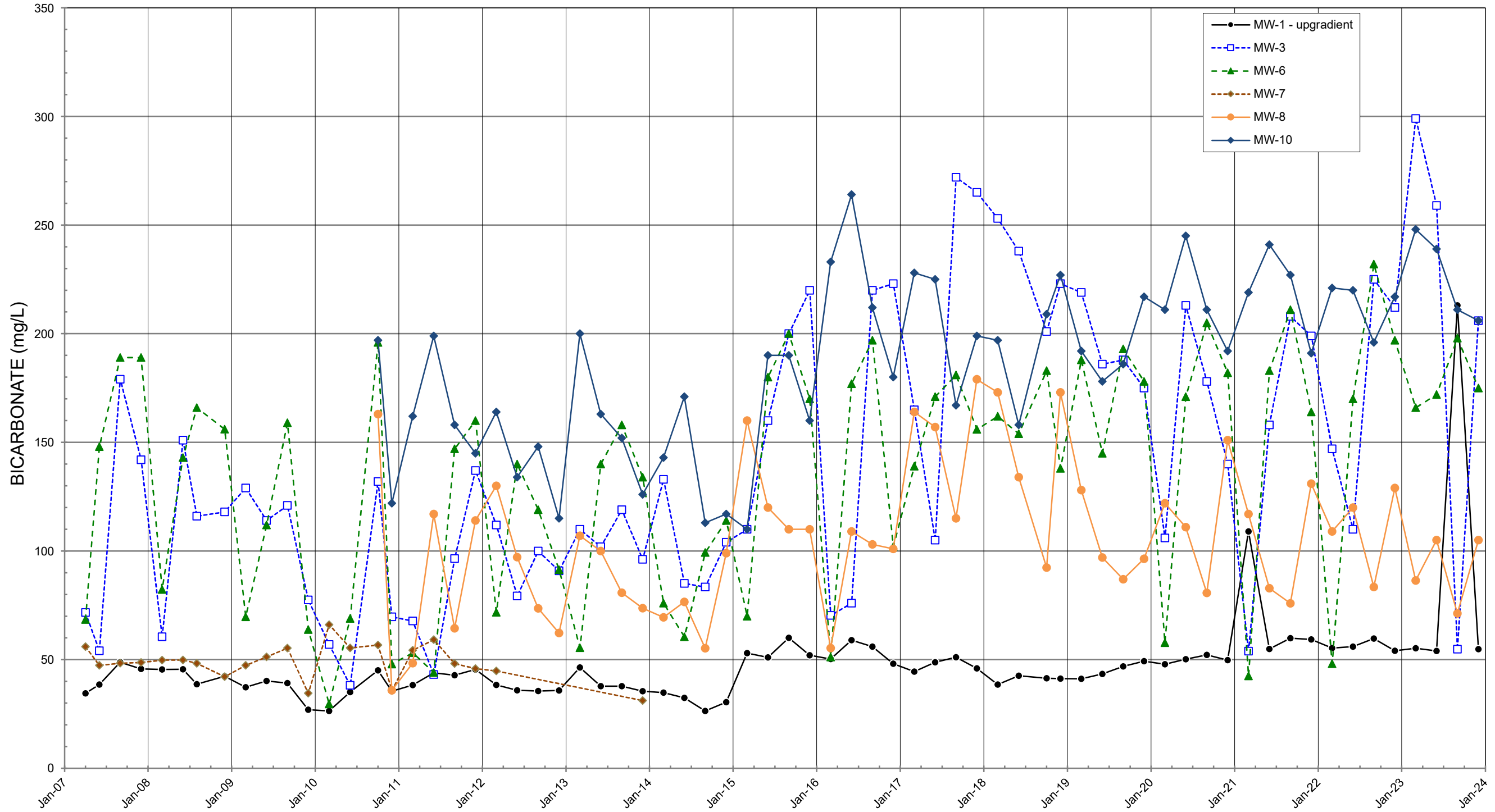


No Primary or Secondary Drinking Water Standard (DWS) Exists  
No Primary or Secondary Groundwater Standard (GWS) Exists

DATE

AMMONIA NITROGEN  
(RECENT)

# OLALLA LANDFILL Quarterly Monitoring Data



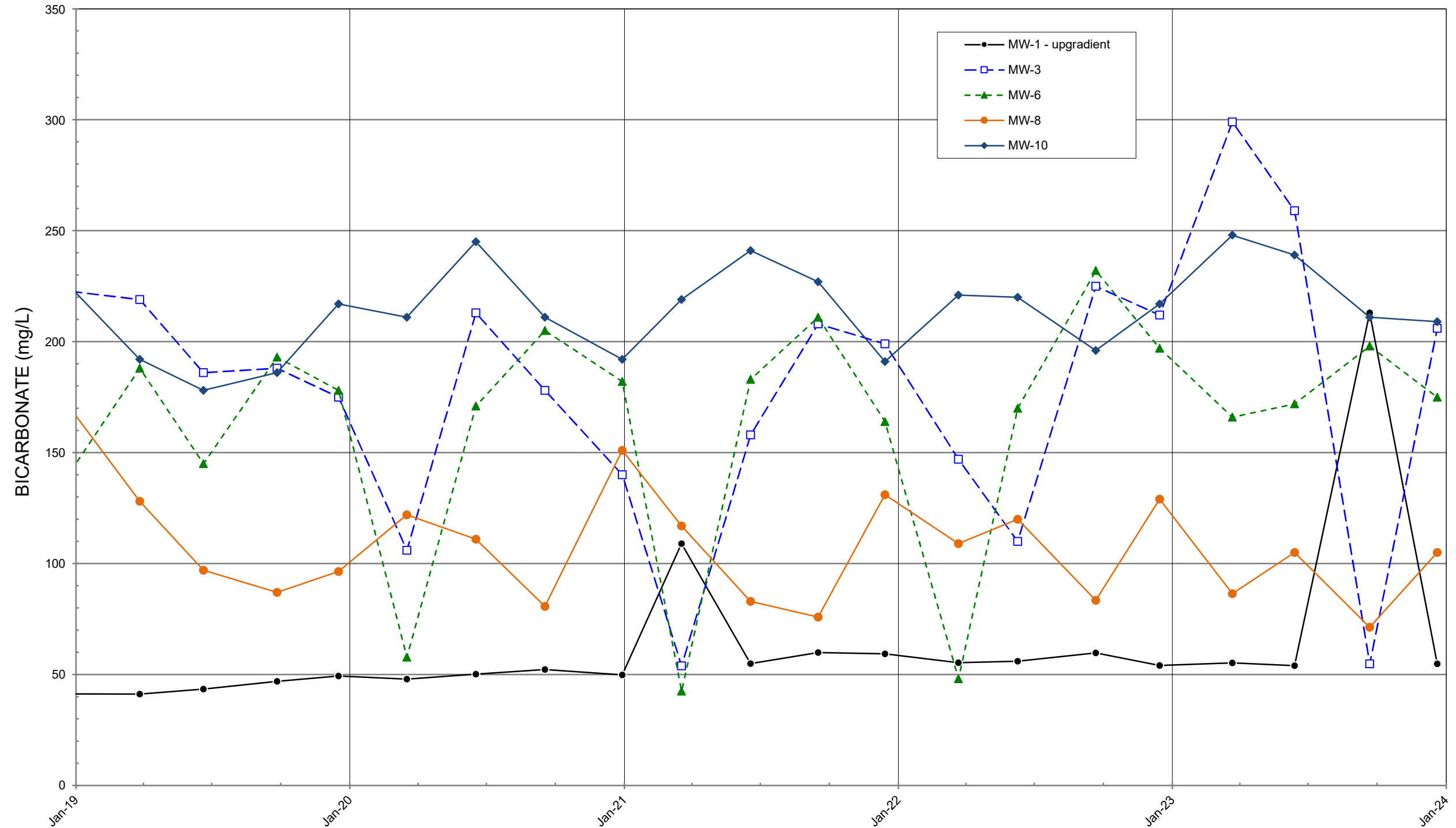
No Primary or Secondary Drinking Water Standard (DWS) Exists  
No Primary or Secondary Groundwater Standard (GWS) Exists

DATE

BICARBONATE  
(Analysis started in 2007)

# OLALLA LANDFILL

## Quarterly Monitoring Data (most recent five years)

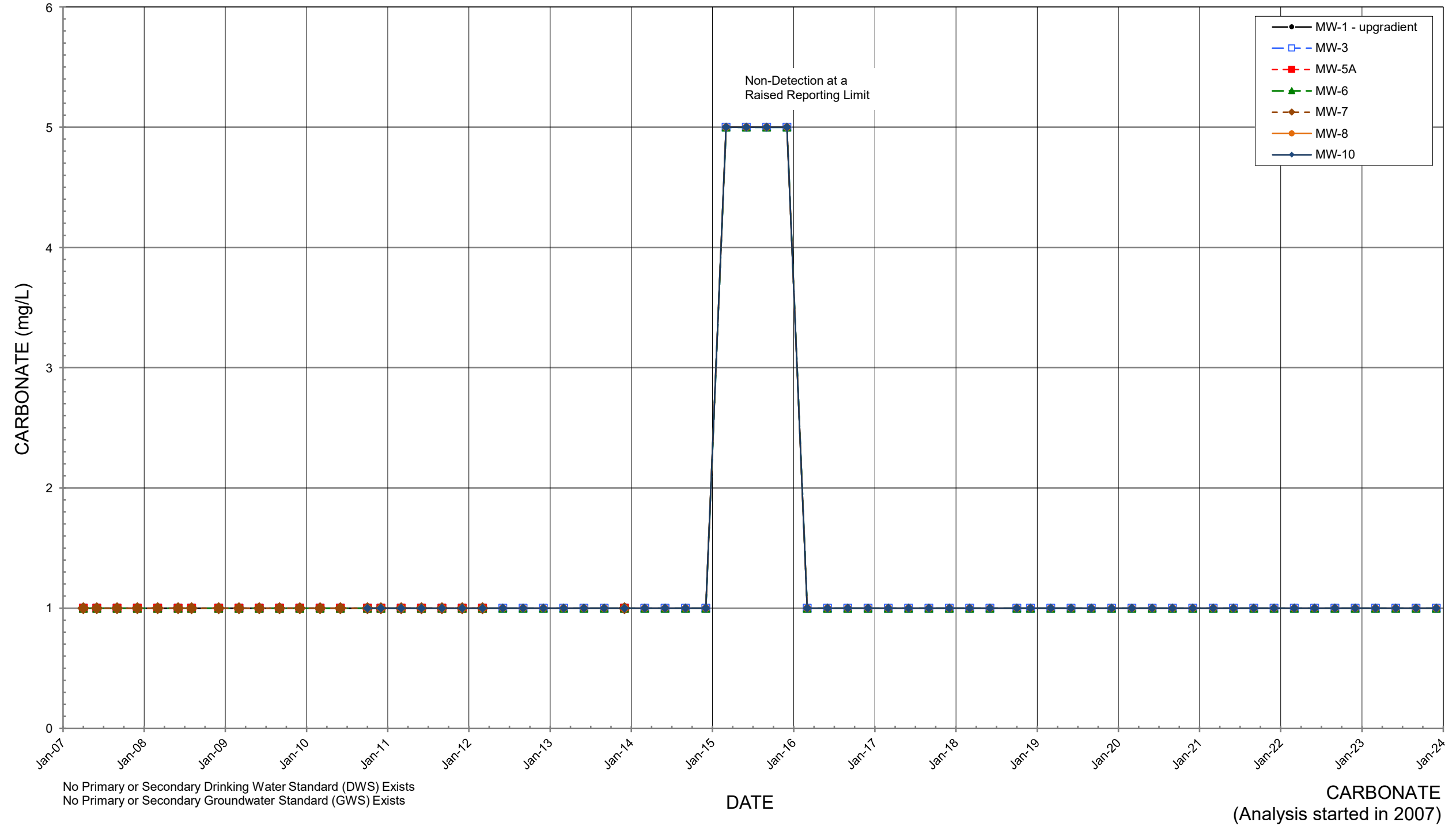


No Primary or Secondary Drinking Water Standard (DWS) Exists  
 No Primary or Secondary Groundwater Standard (GWS) Exists

DATE

BICARBONATE  
(RECENT)

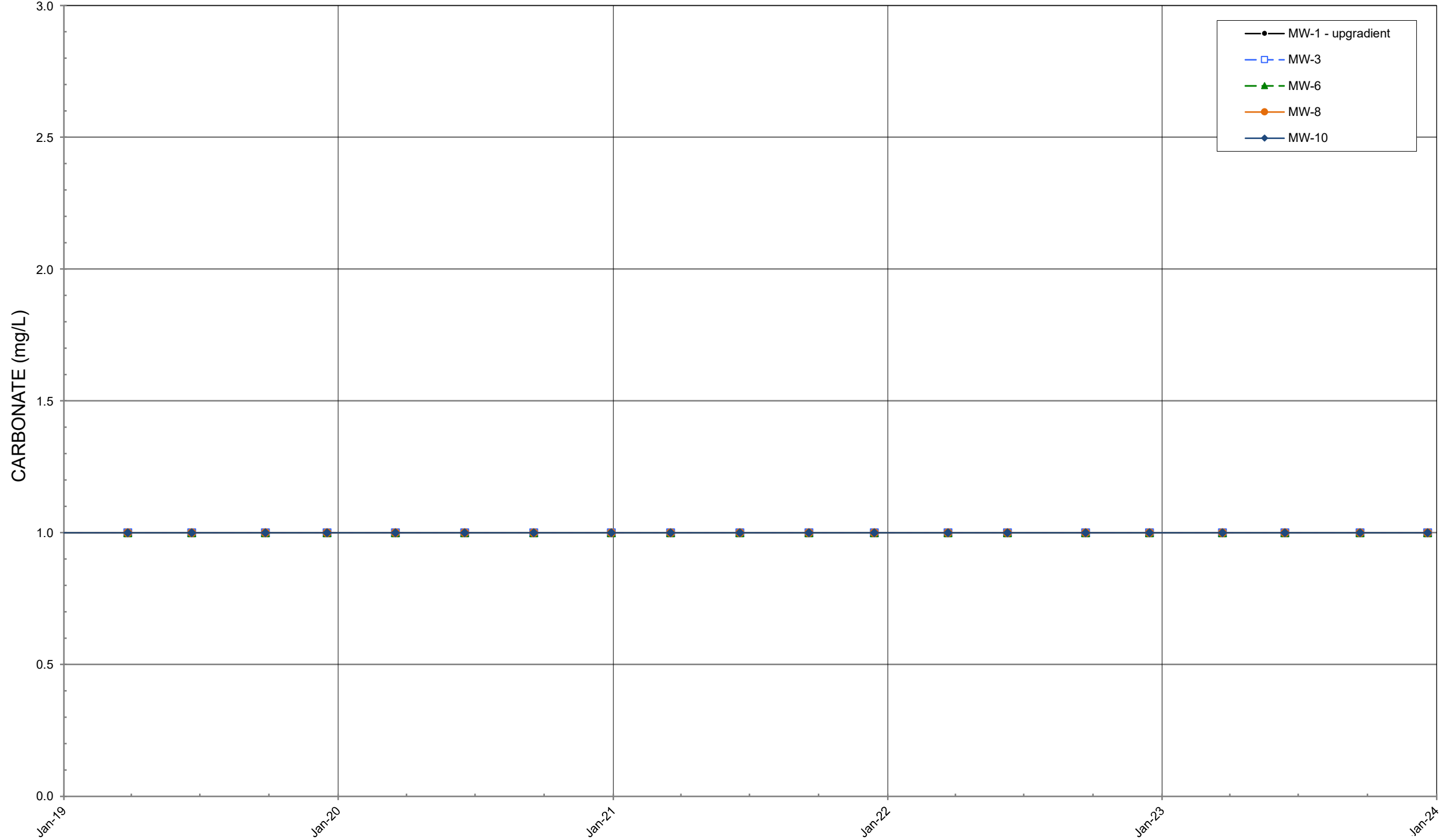
# OLALLA LANDFILL Quarterly Monitoring Data





# OLALLA LANDFILL

## Quarterly Monitoring Data (most recent five years)

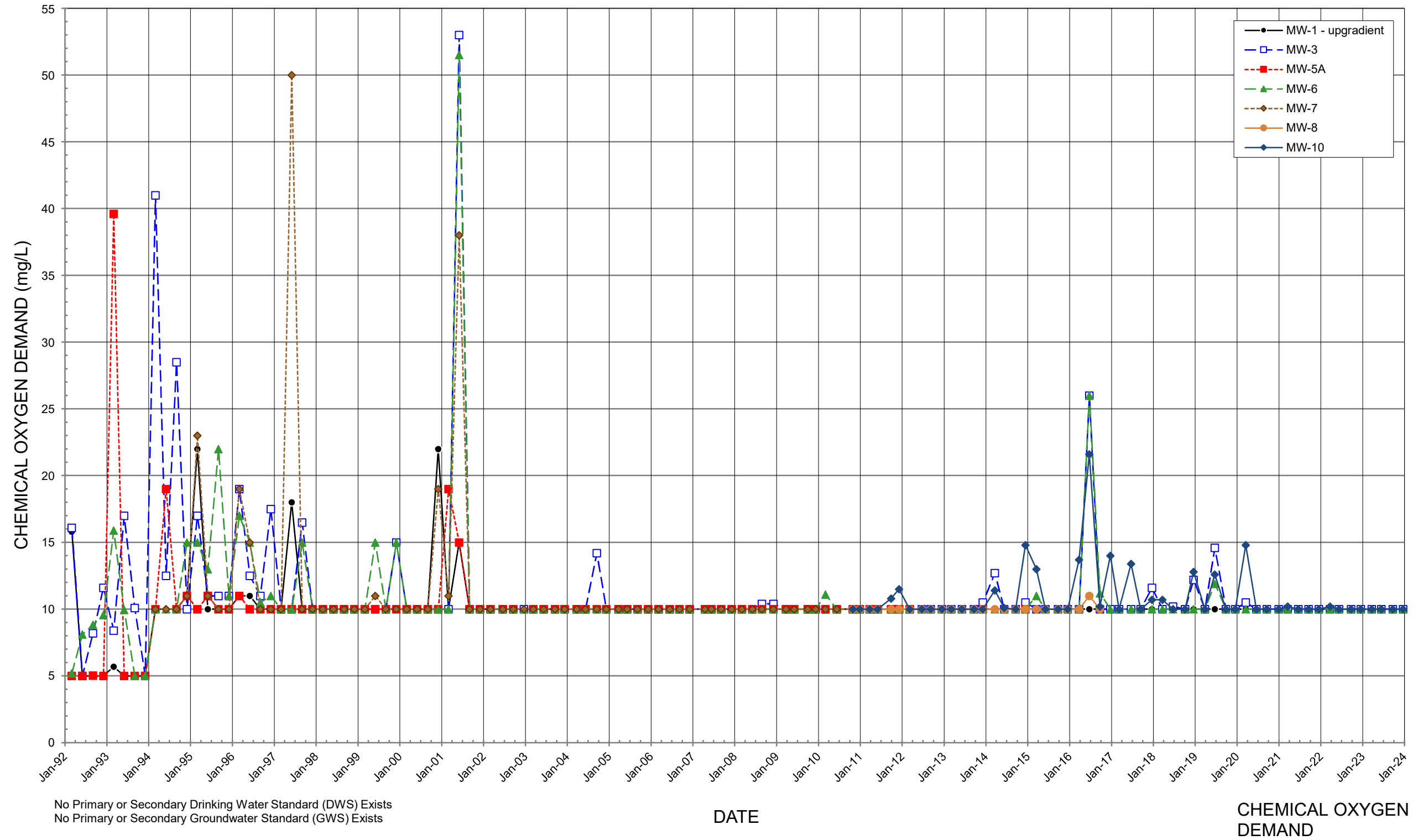


No Primary or Secondary Drinking Water Standard (DWS) Exists  
No Primary or Secondary Groundwater Standard (GWS) Exists

DATE

CARBONATE  
(RECENT)

# OLALLA LANDFILL Quarterly Monitoring Data

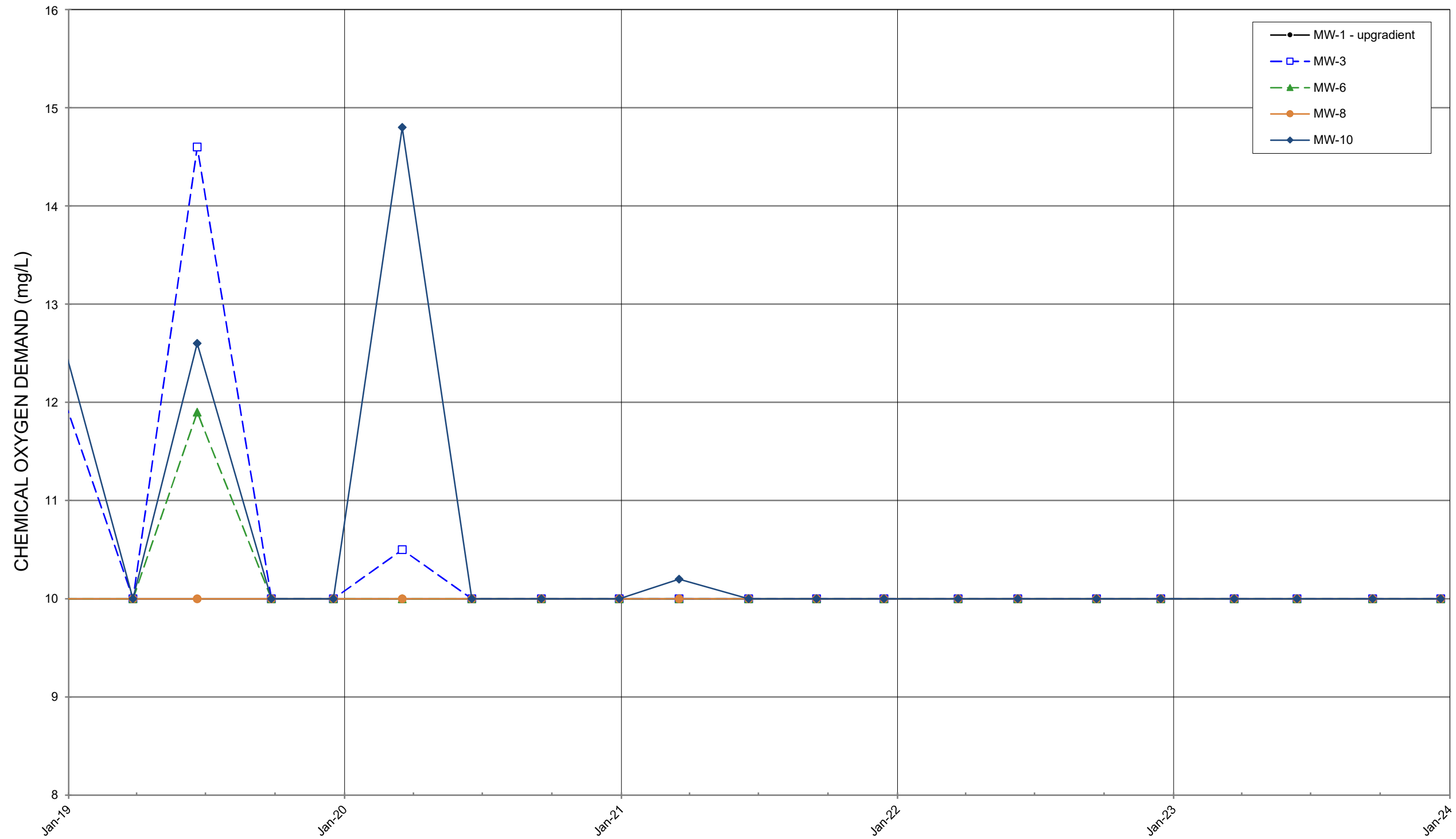


DATE

CHEMICAL OXYGEN DEMAND

# OLALLA LANDFILL

## Quarterly Monitoring Data (most recent five years)

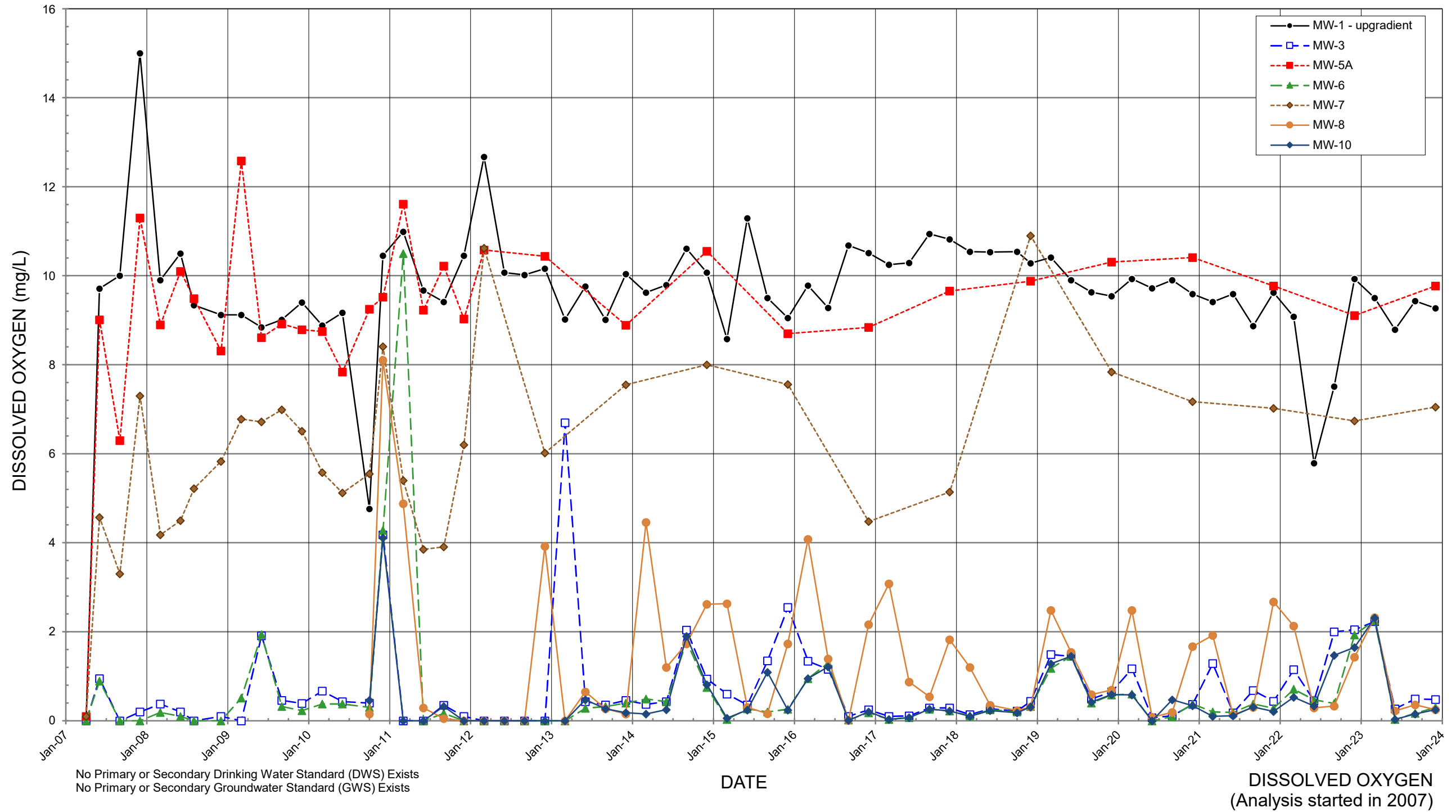


No Primary or Secondary Drinking Water Standard (DWS) Exists  
No Primary or Secondary Groundwater Standard (GWS) Exists

DATE

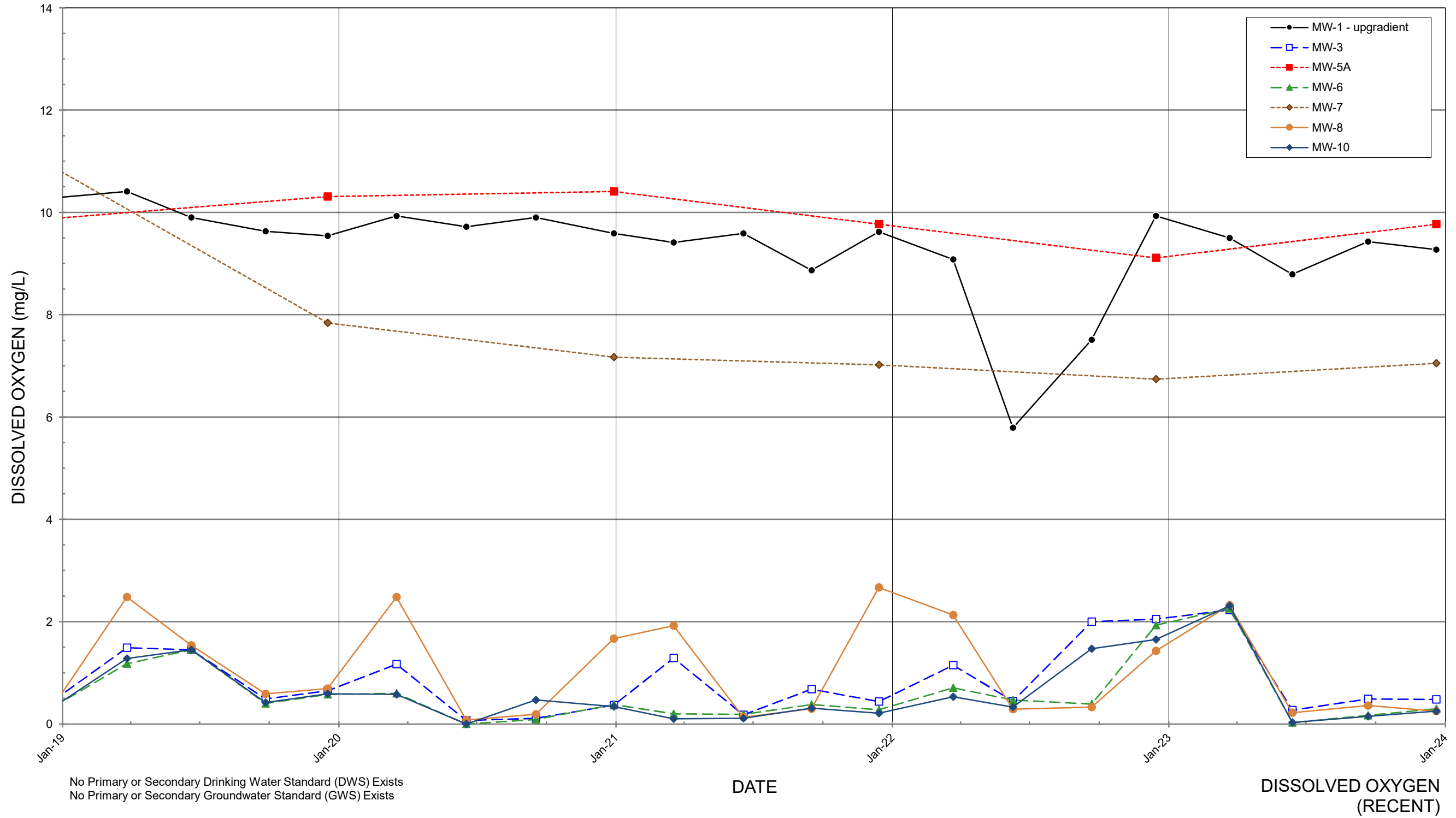
CHEMICAL OXYGEN DEMAND (RECENT)

# OLALLA LANDFILL Quarterly Monitoring Data

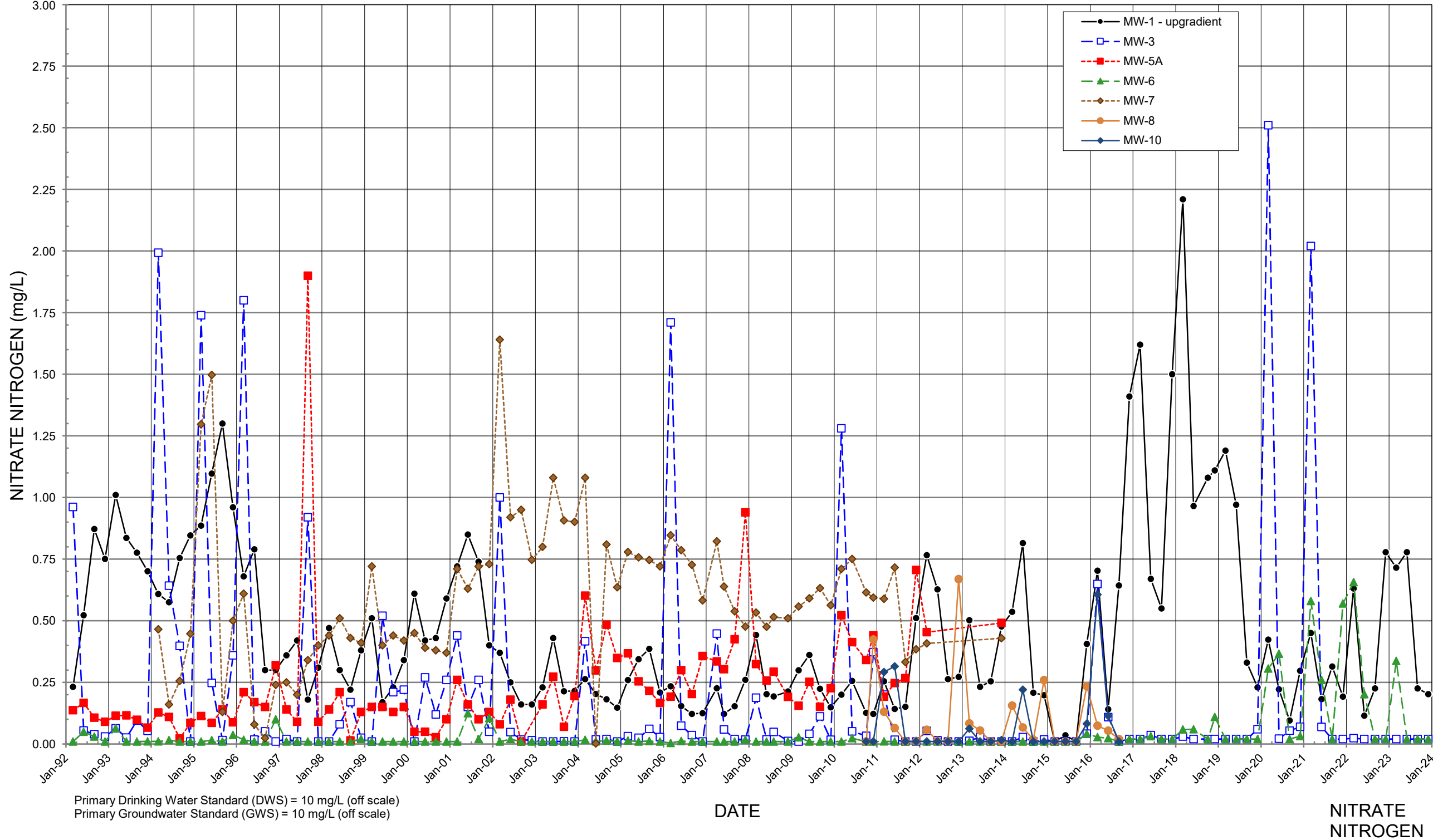


# OLALLA LANDFILL

## Quarterly Monitoring Data (most recent five years)

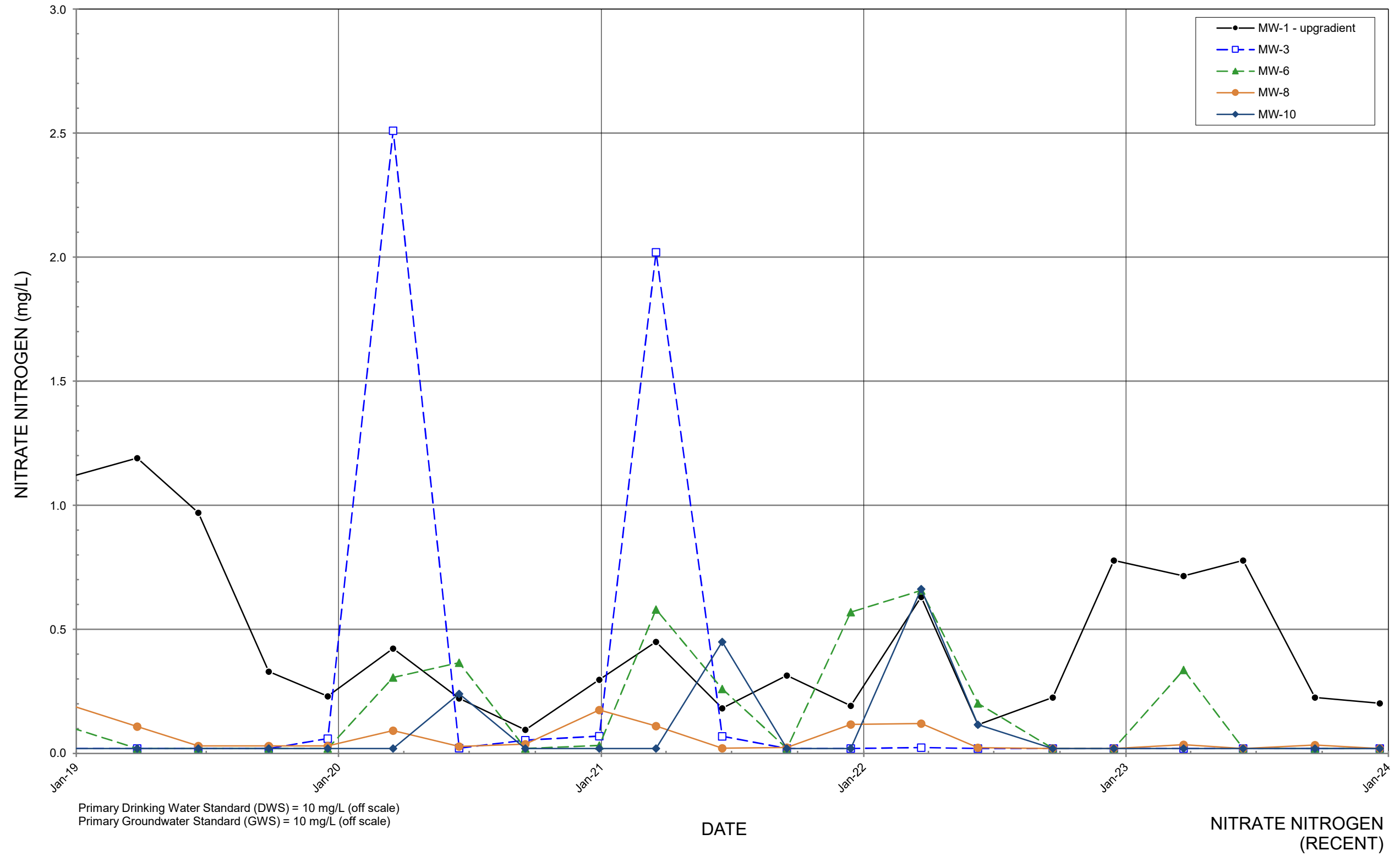


# OLALLA LANDFILL Quarterly Monitoring Data

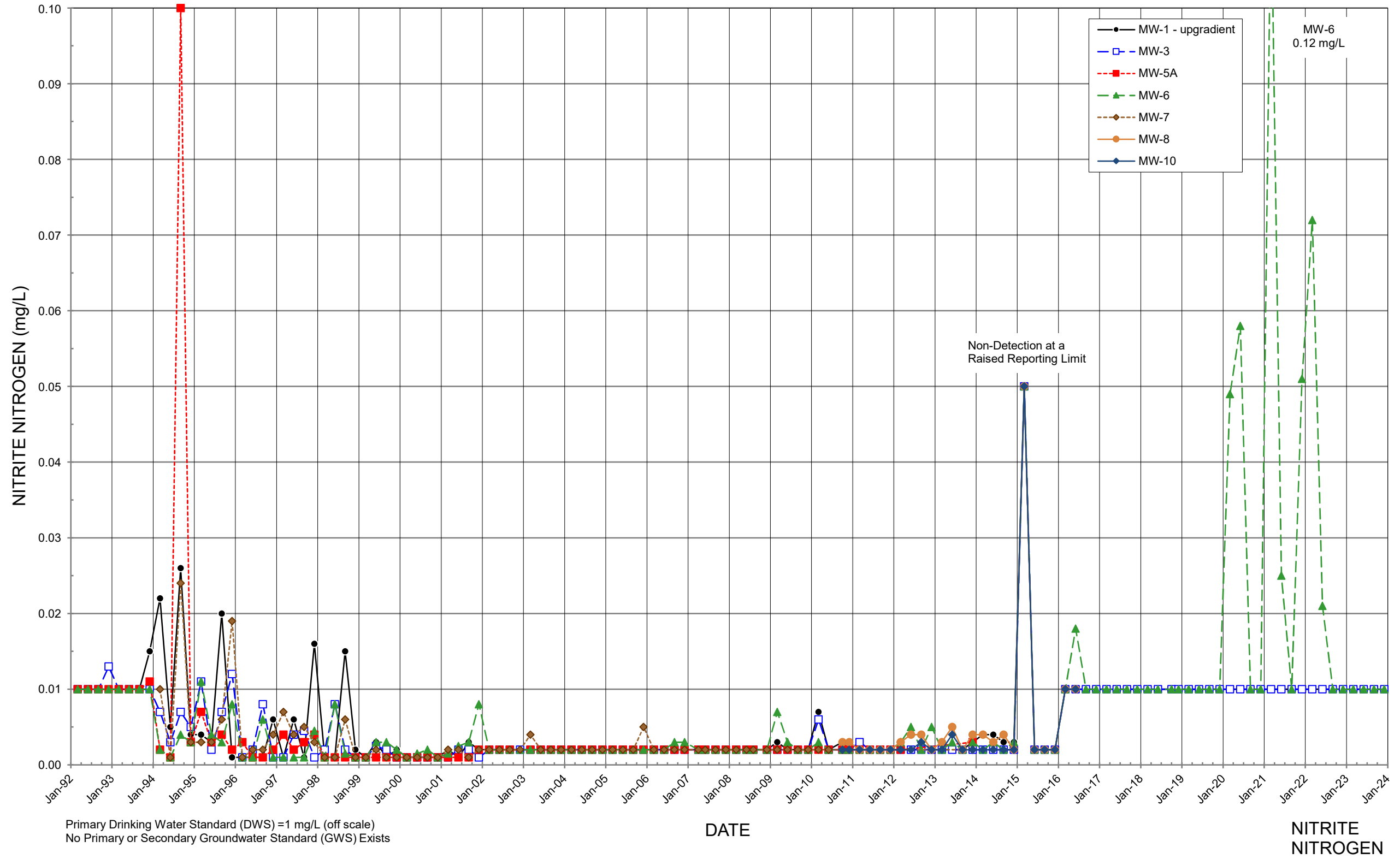


# OLALLA LANDFILL

## Quarterly Monitoring Data (most recent five years)



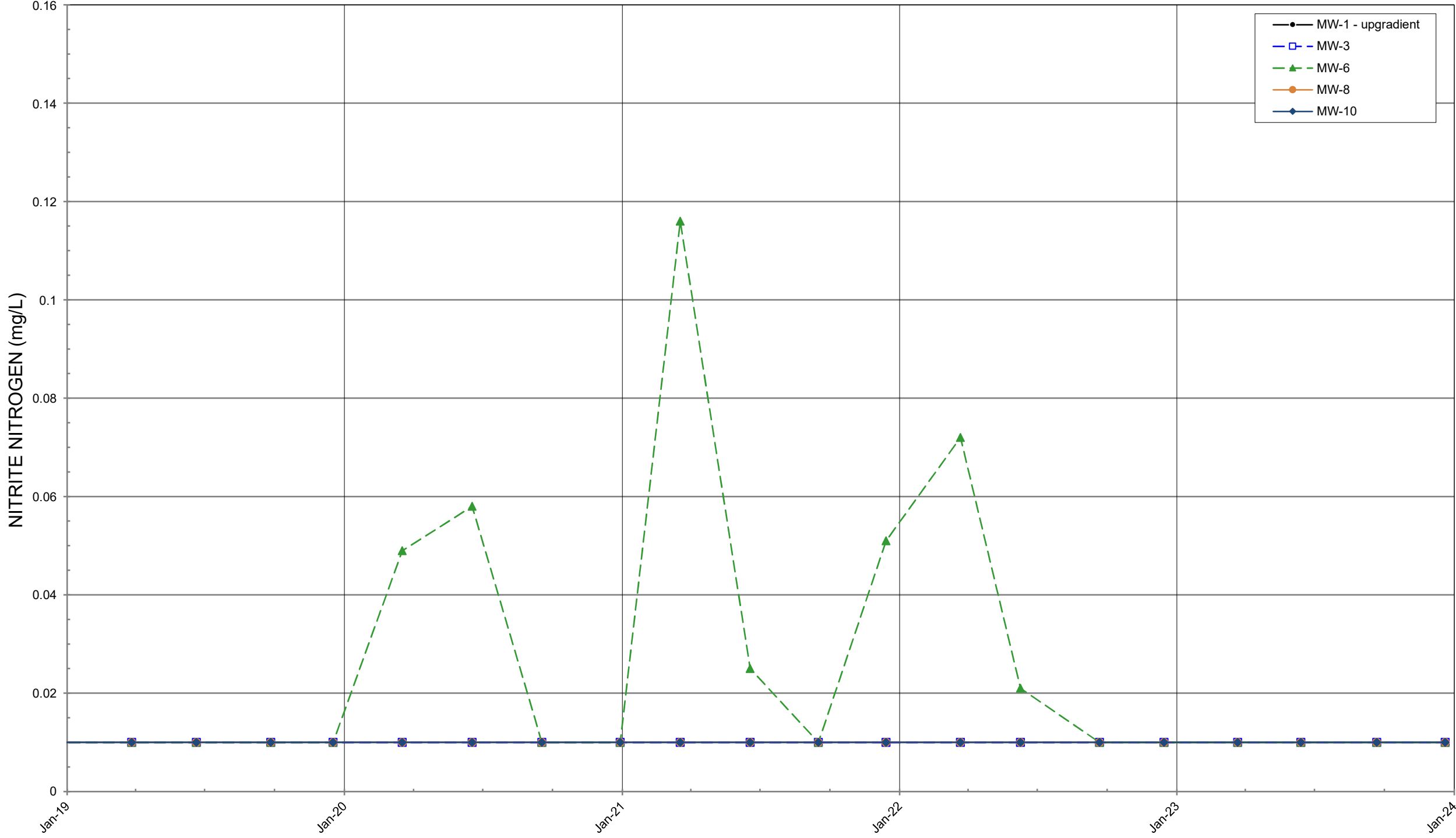
# OLALLA LANDFILL Quarterly Monitoring Data





# OLALLA LANDFILL

## Quarterly Monitoring Data (most recent five years)

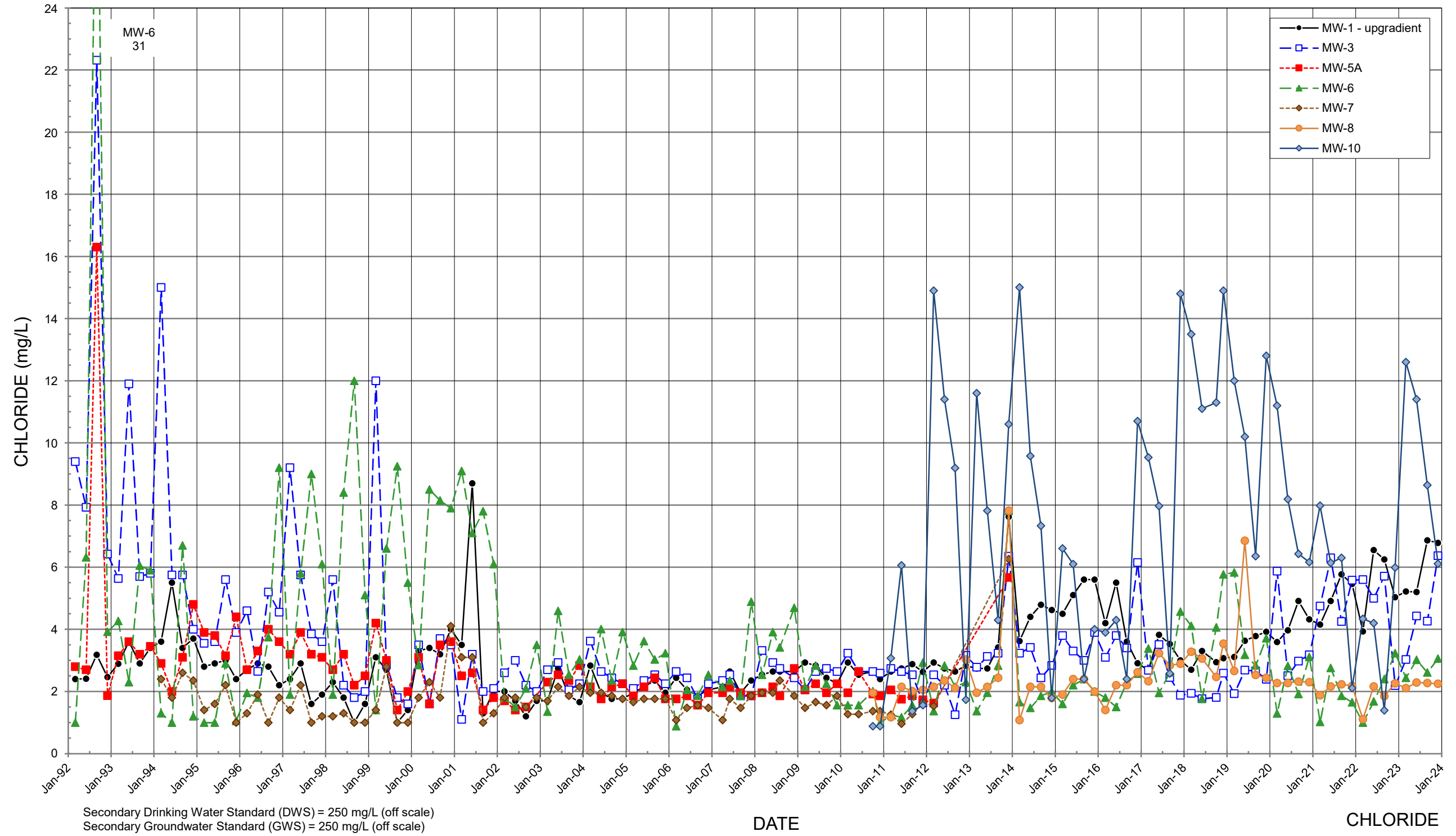


Primary Drinking Water Standard (DWS) = 1 mg/L (off scale)  
No Primary or Secondary Groundwater Standard (GWS) Exists

DATE

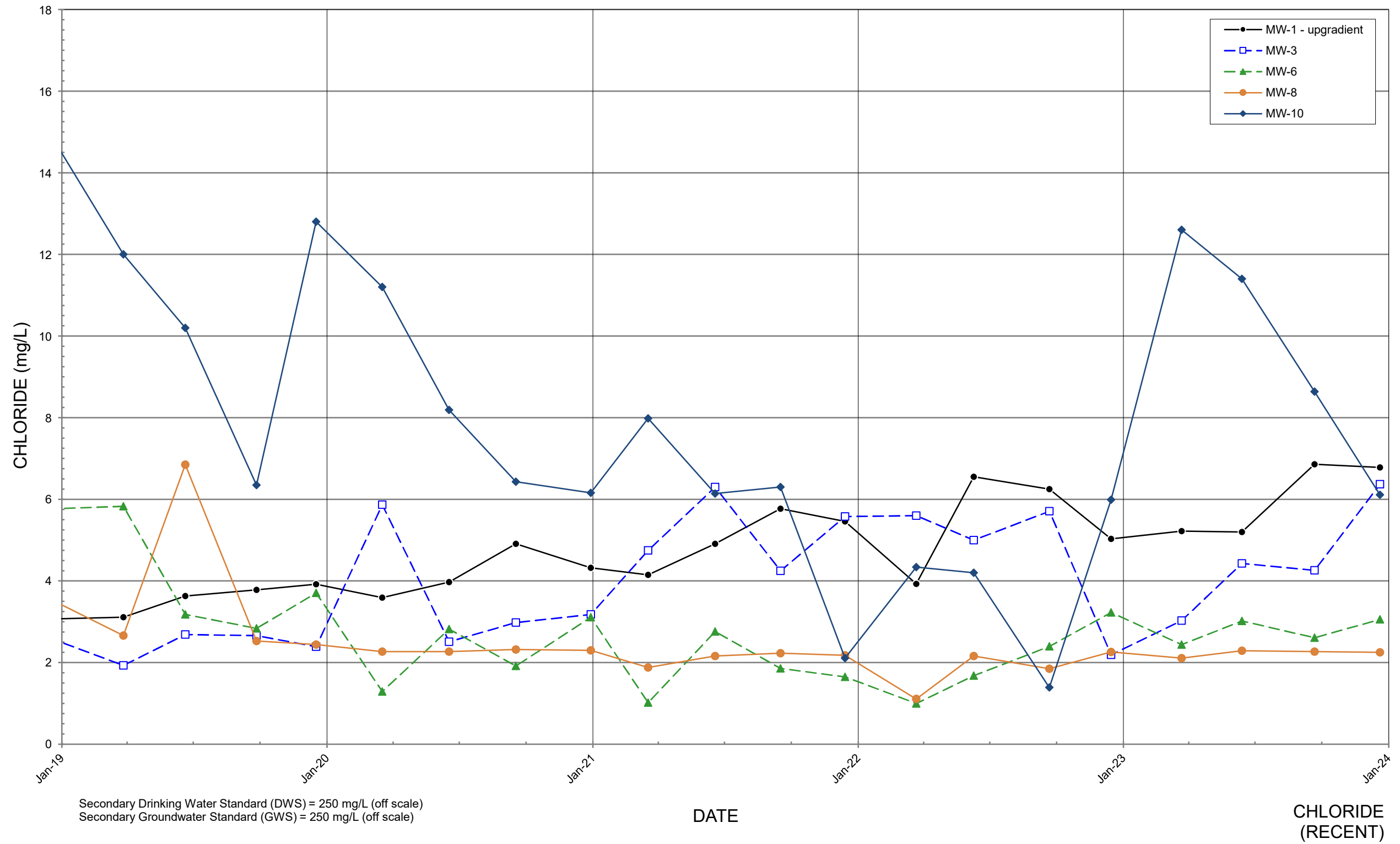
NITRITE NITROGEN  
(RECENT)

# OLALLA LANDFILL Quarterly Monitoring Data



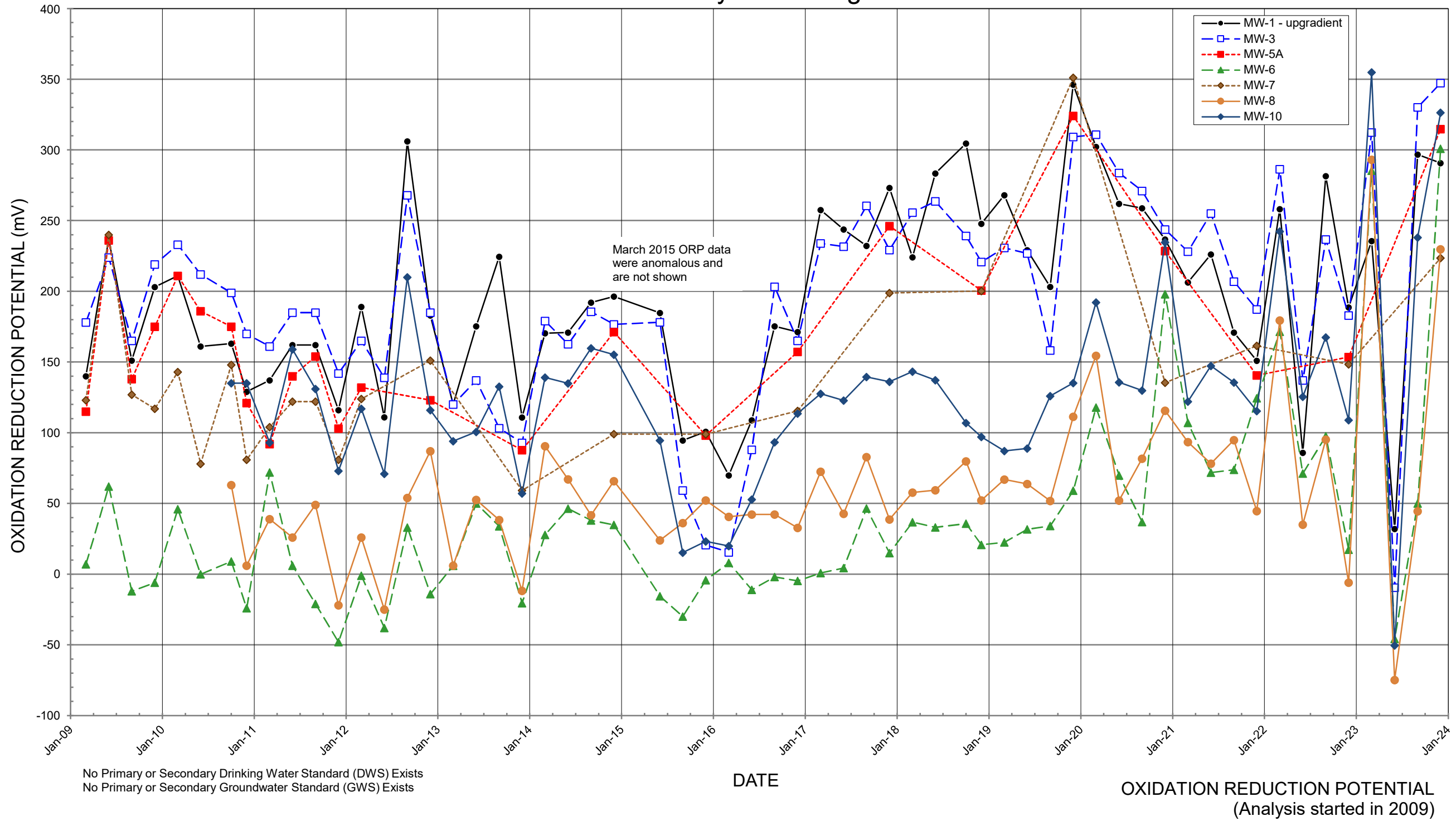
# OLALLA LANDFILL

## Quarterly Monitoring Data (most recent five years)



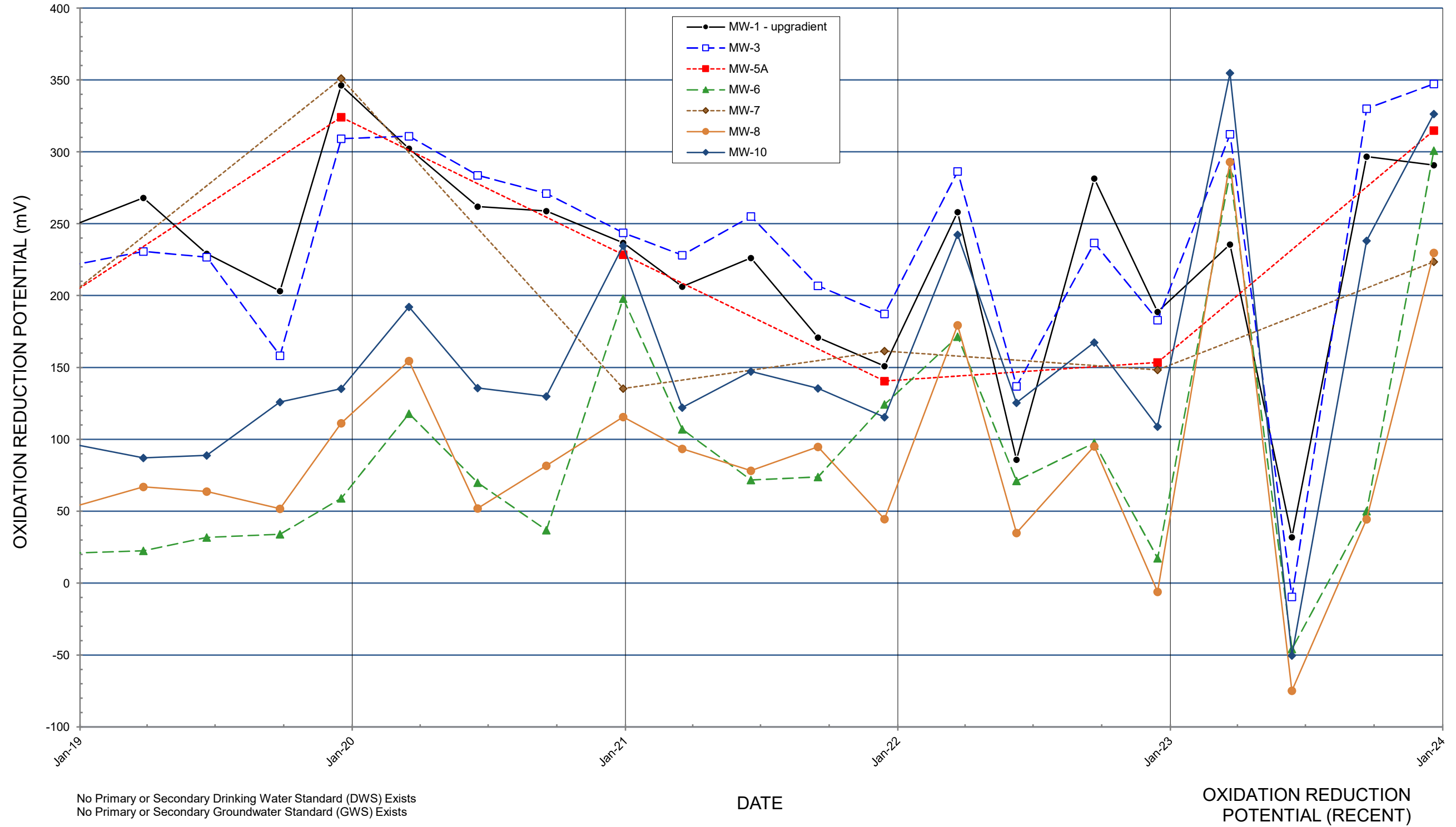
# OLALLA LANDFILL

## Quarterly Monitoring Data

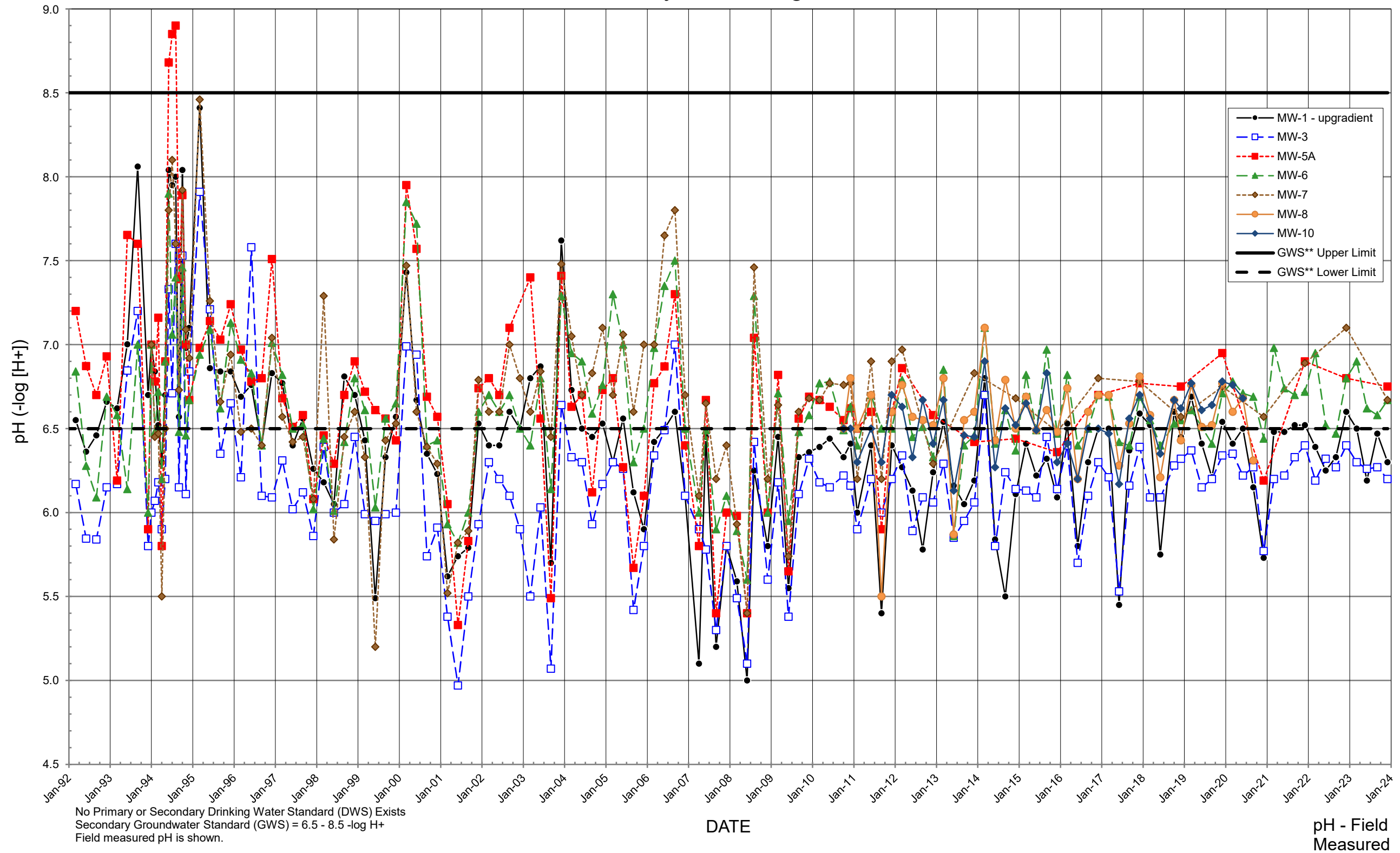


# OLALLA LANDFILL

## Quarterly Monitoring Data (most recent five years)

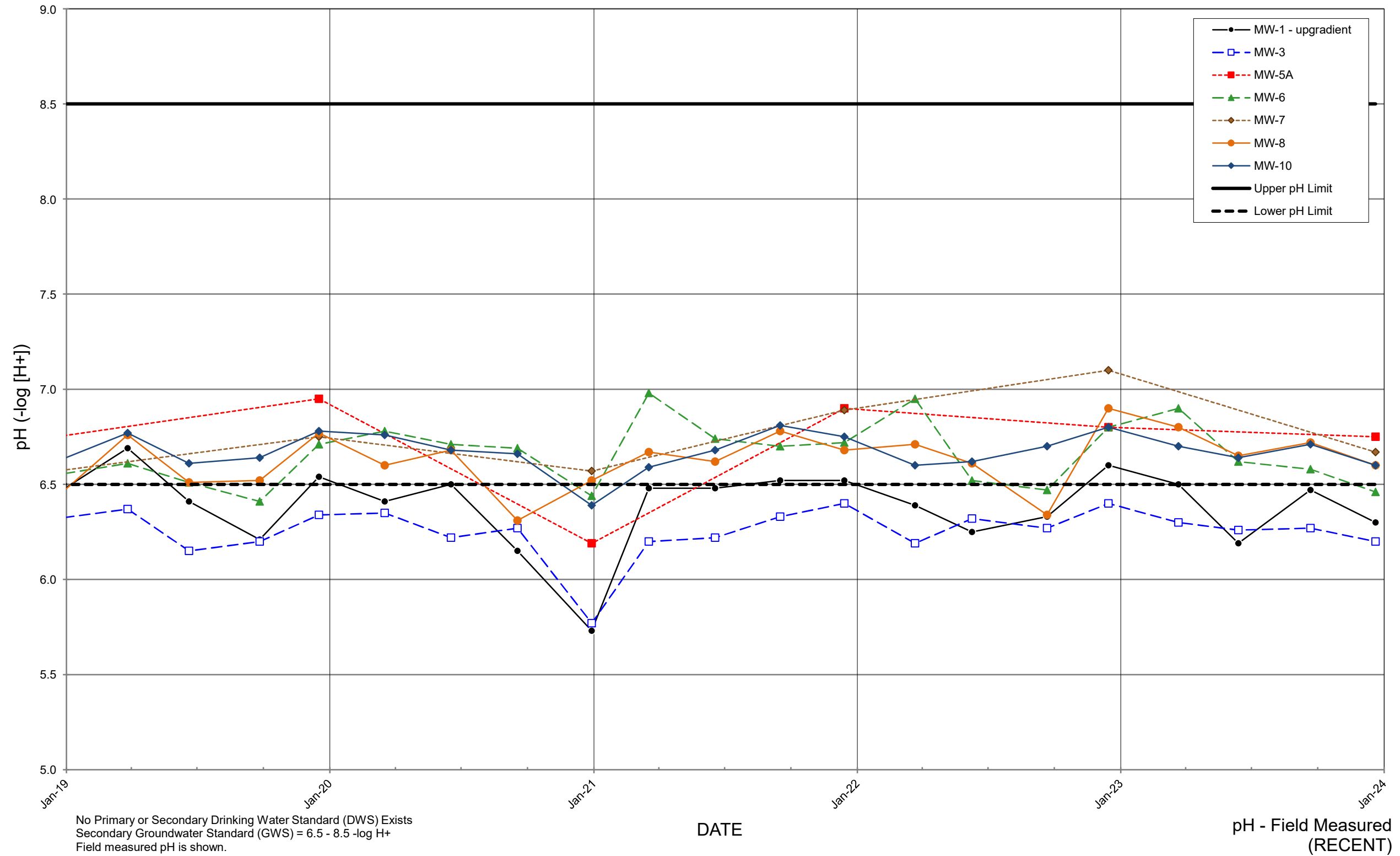


# OLALLA LANDFILL Quarterly Monitoring Data



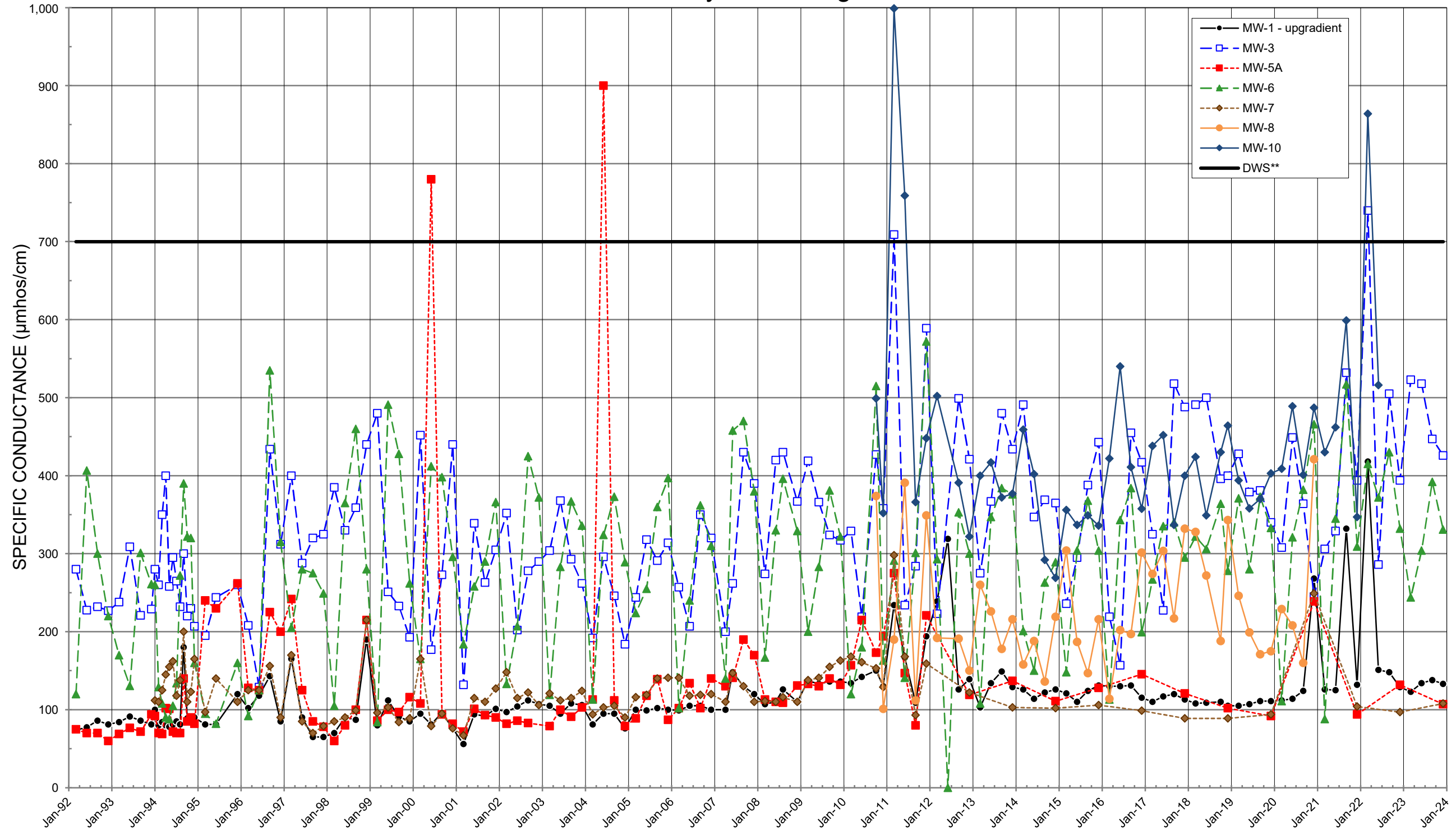
# OLALLA LANDFILL

## Quarterly Monitoring Data (most recent five years)





# OLALLA LANDFILL Quarterly Monitoring Data



Secondary Drinking Water Standard (DWS) = 700 µmhos/cm  
No Primary or Secondary Groundwater Standard (GWS) Exists

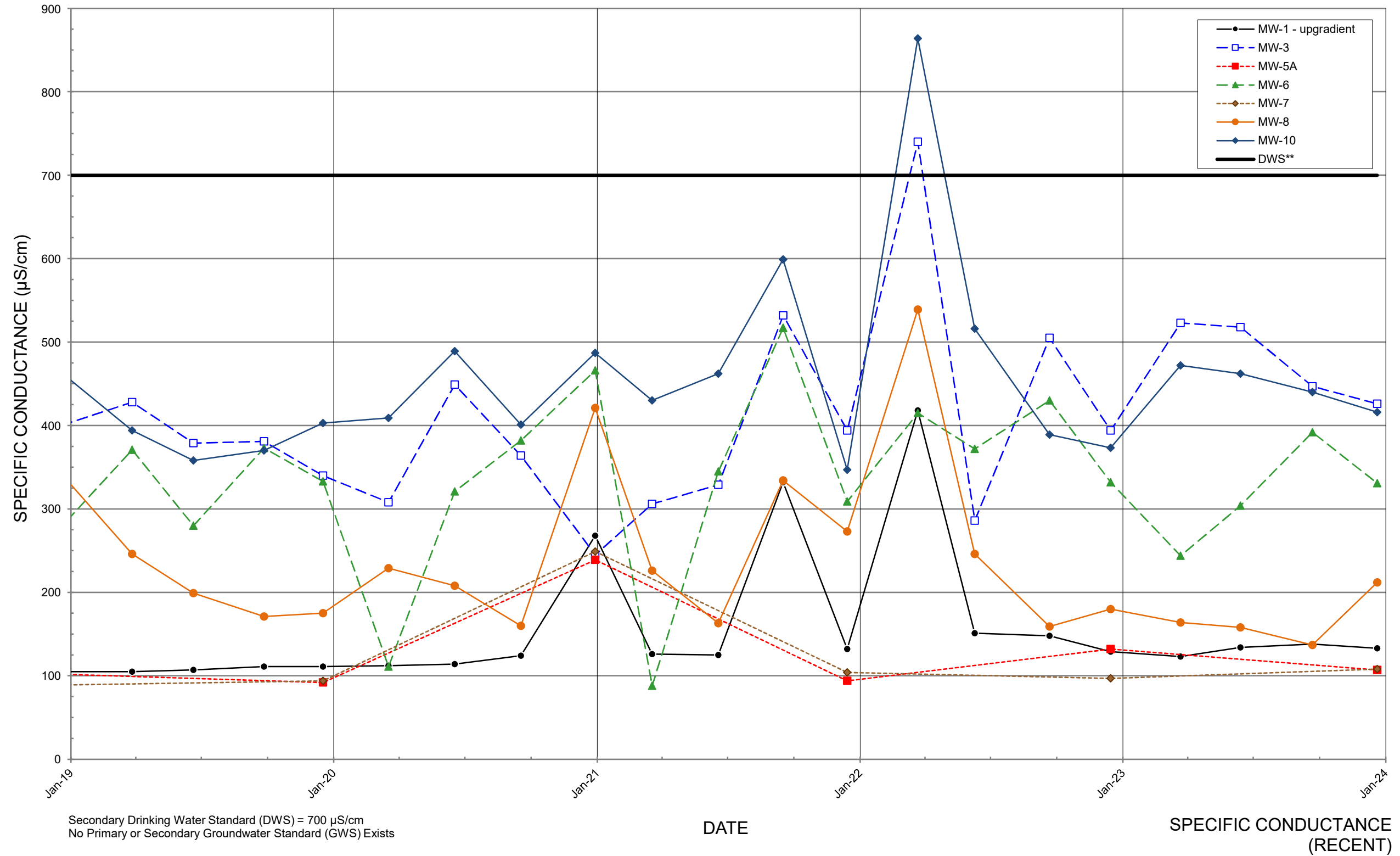
DATE

SPECIFIC CONDUCTANCE

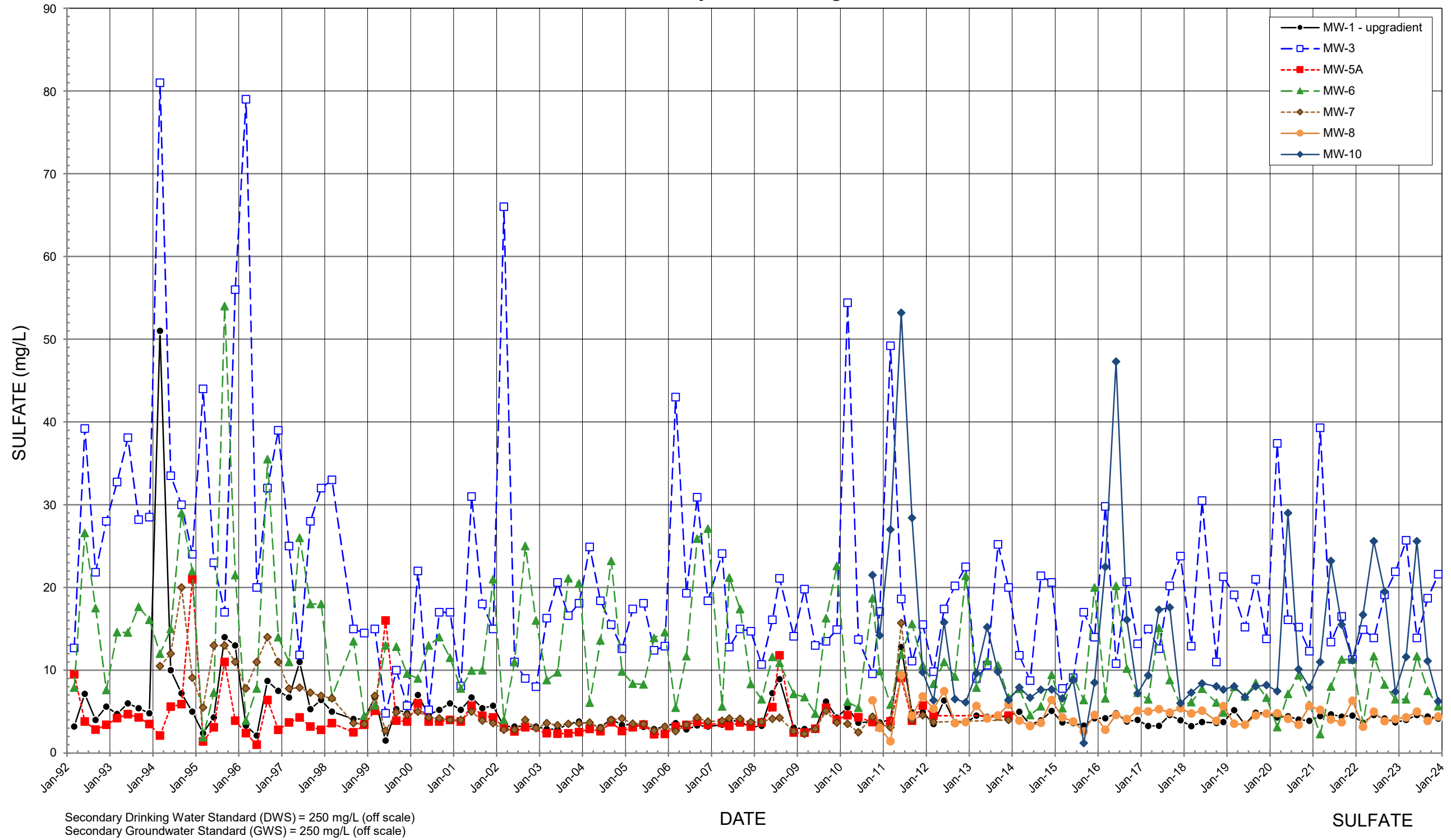


# OLALLA LANDFILL

## Quarterly Monitoring Data (most recent five years)

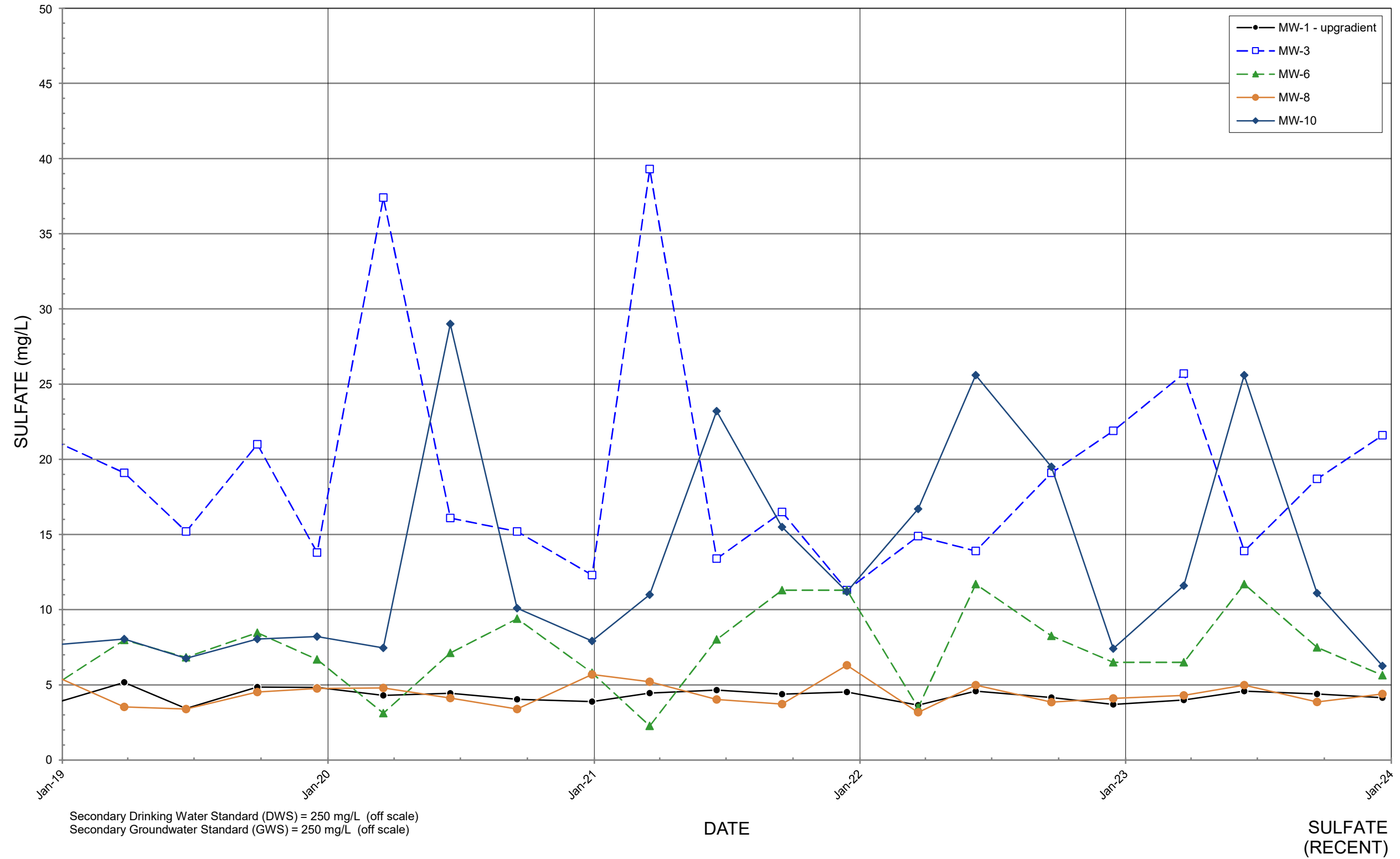


# OLALLA LANDFILL Quarterly Monitoring Data

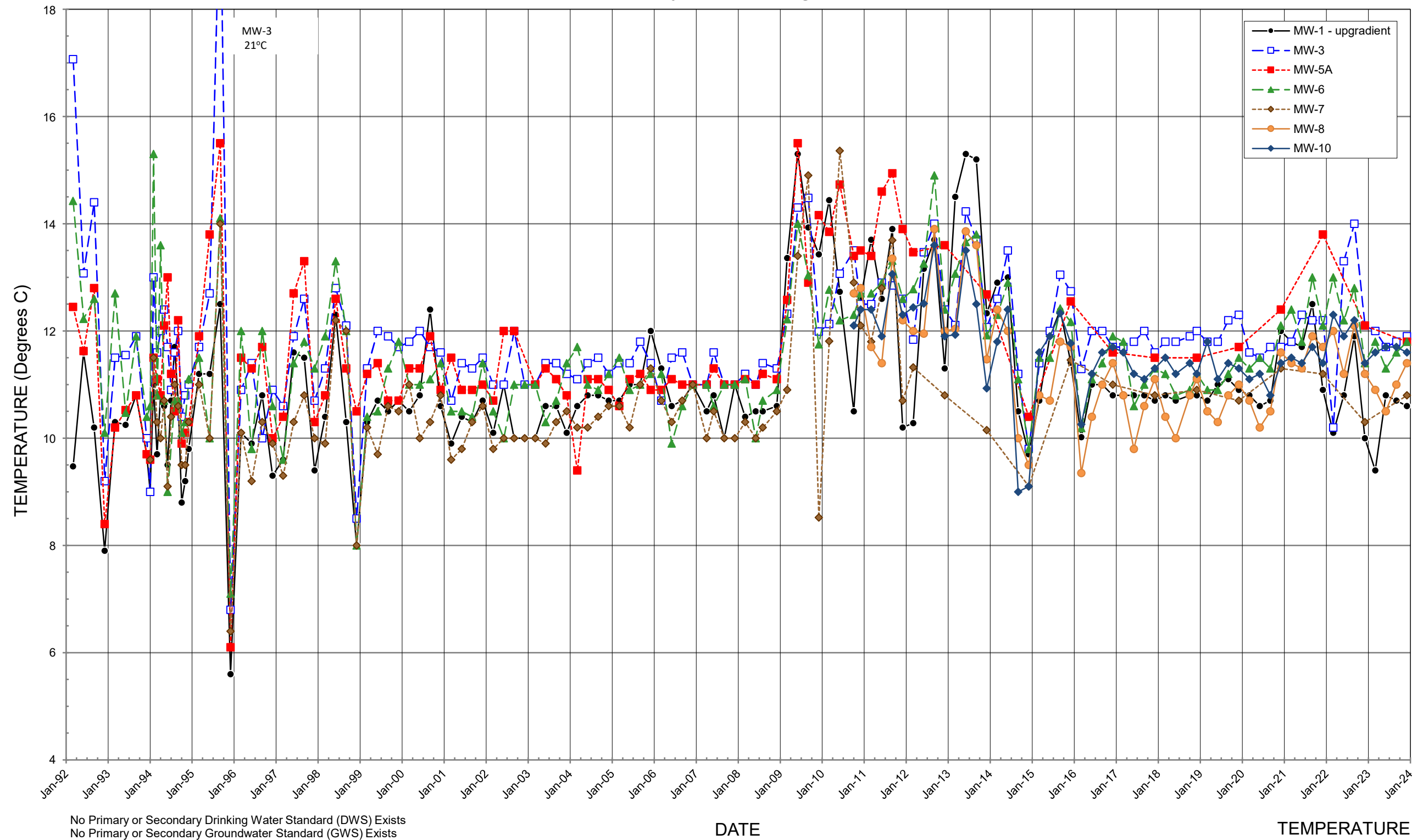


# OLALLA LANDFILL

## Quarterly Monitoring Data (most recent five years)

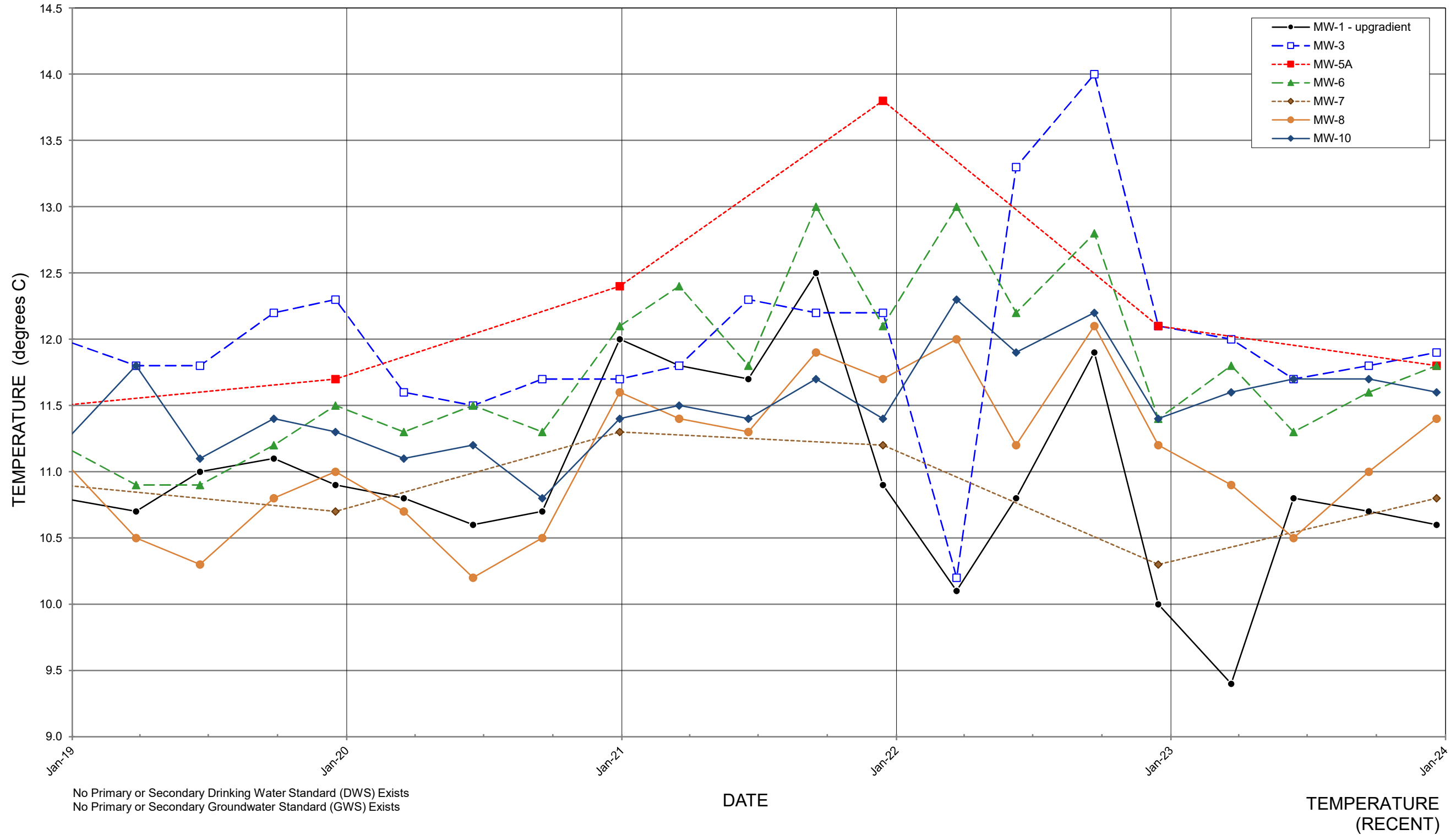


# OLALLA LANDFILL Quarterly Monitoring Data

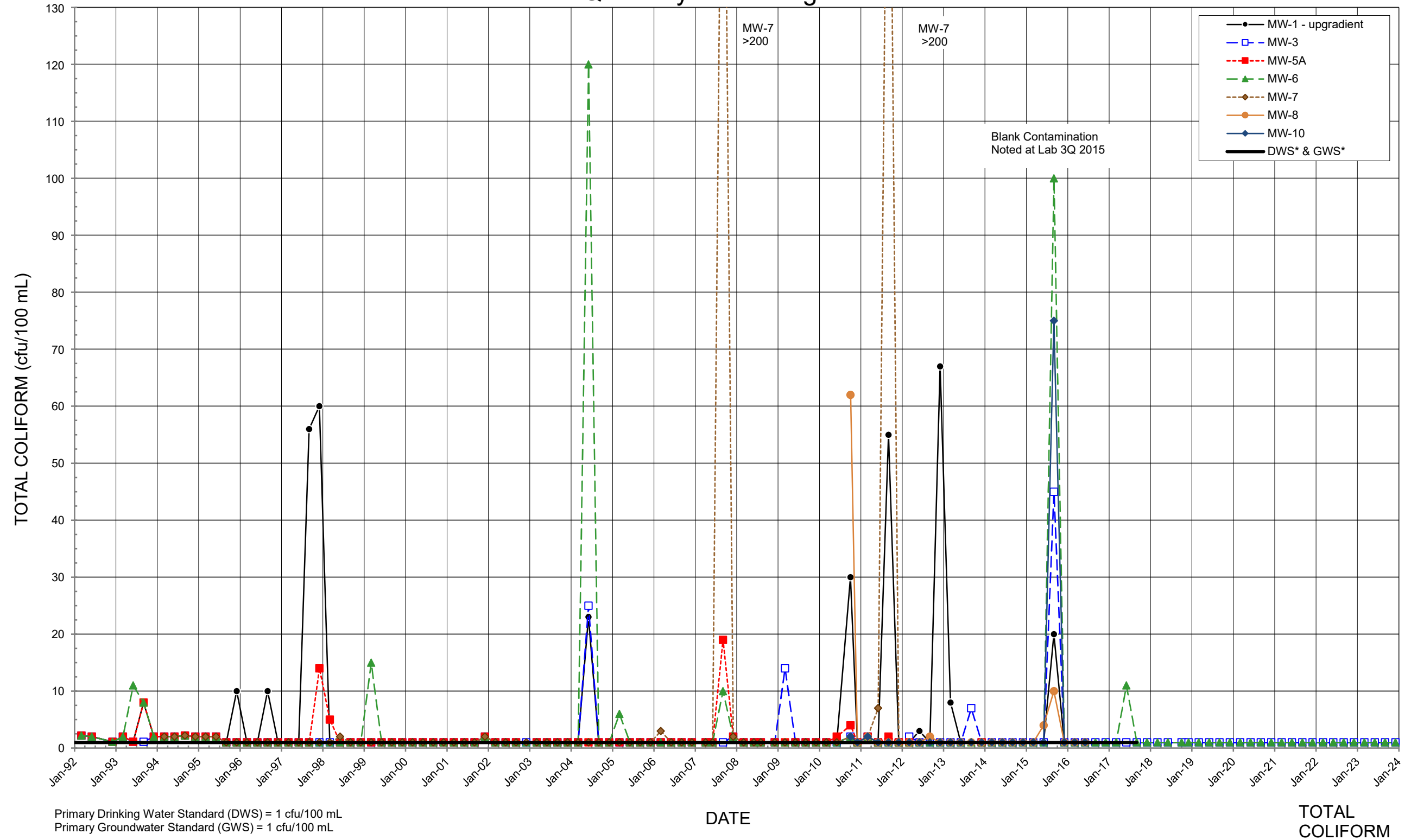


# OLALLA LANDFILL

## Quarterly Monitoring Data (most recent five years)

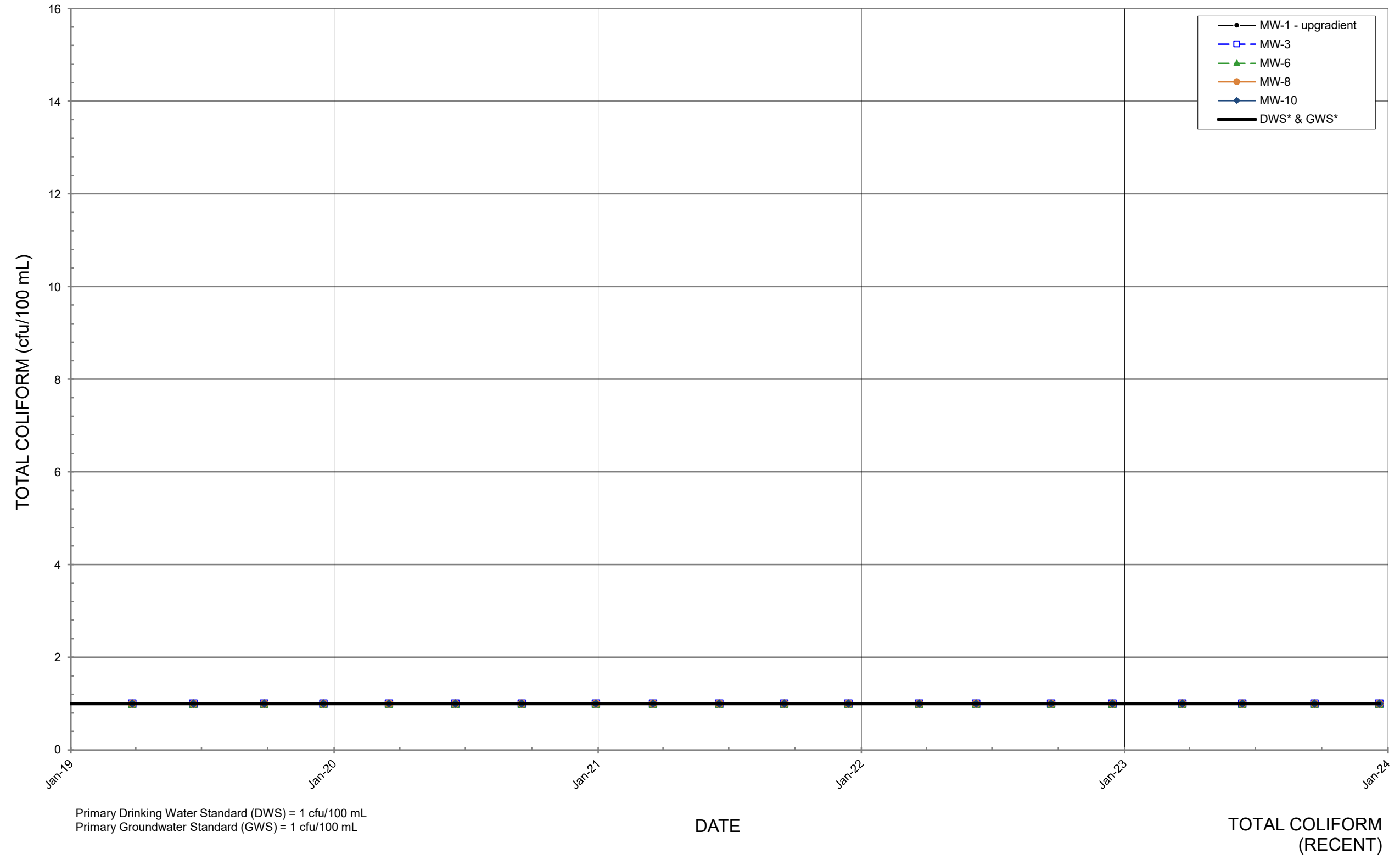


# OLALLA LANDFILL Quarterly Monitoring Data



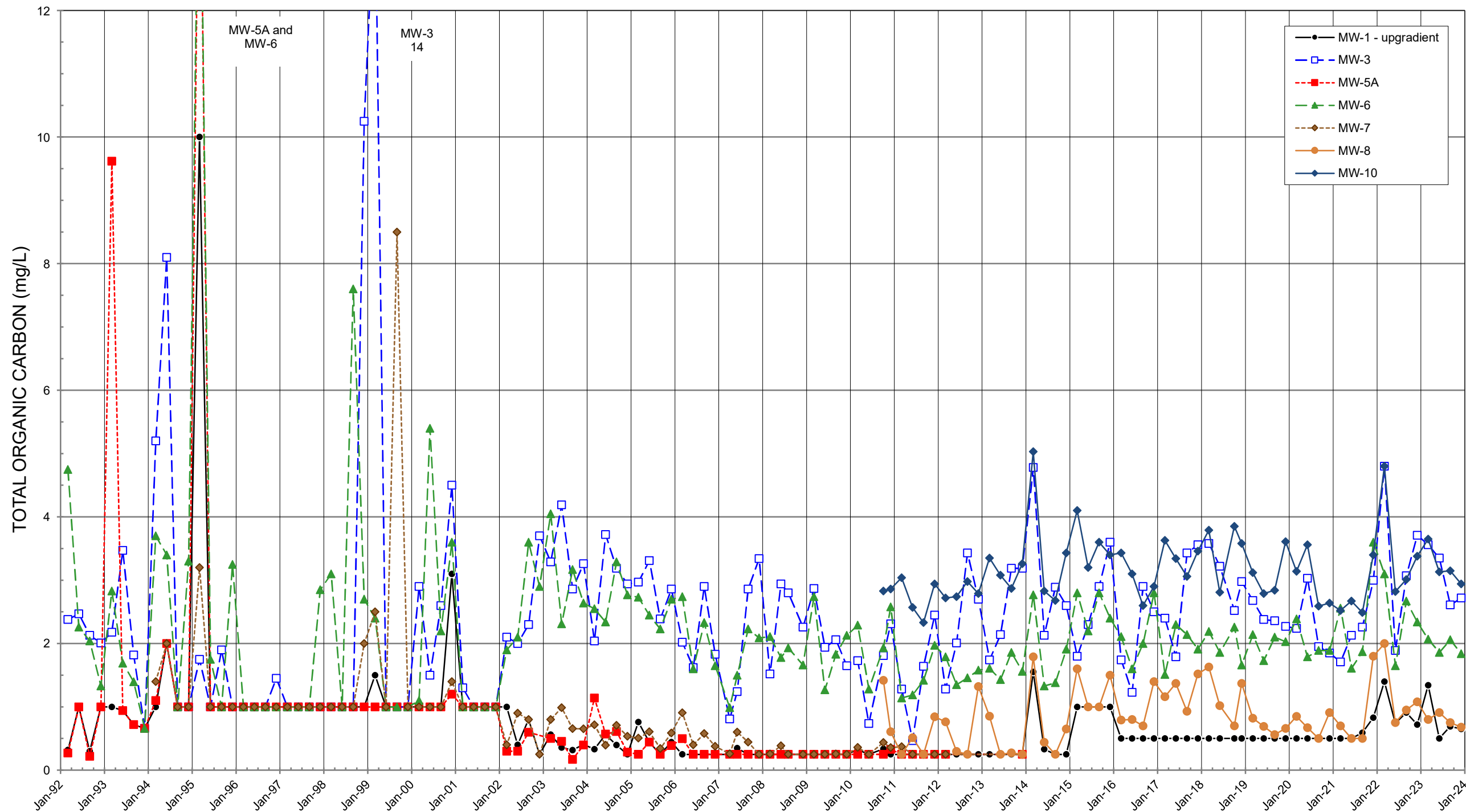
# OLALLA LANDFILL

## Quarterly Monitoring Data (most recent five years)



# OLALLA LANDFILL

## Quarterly Monitoring Data



Data split (beginning 12/01) is due to a change in the Method Detection Limit  
 No Primary or Secondary Drinking Water Standard (DWS) Exists  
 No Primary or Secondary Groundwater Standard (GWS) Exists

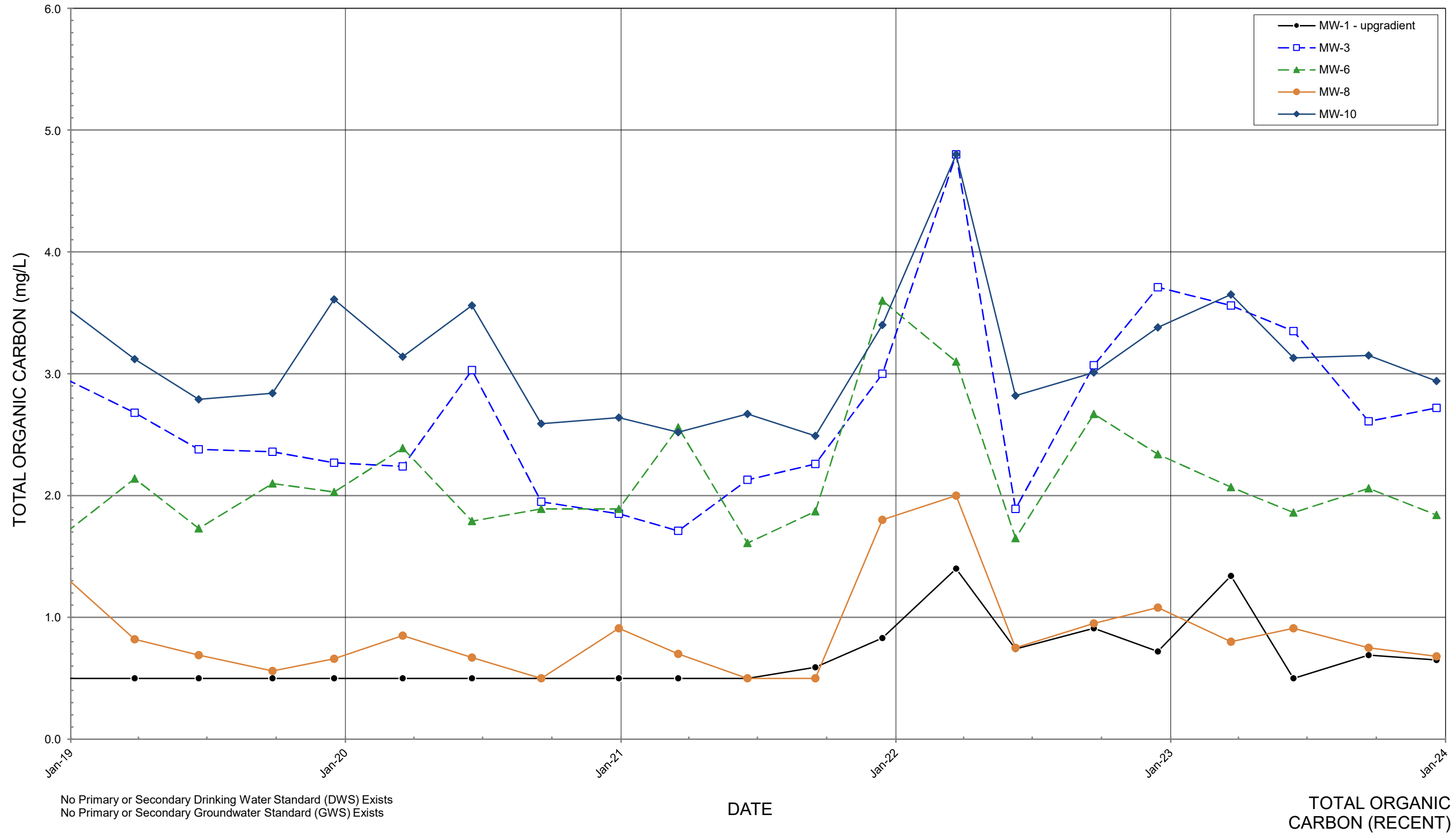
DATE

TOTAL ORGANIC CARBON



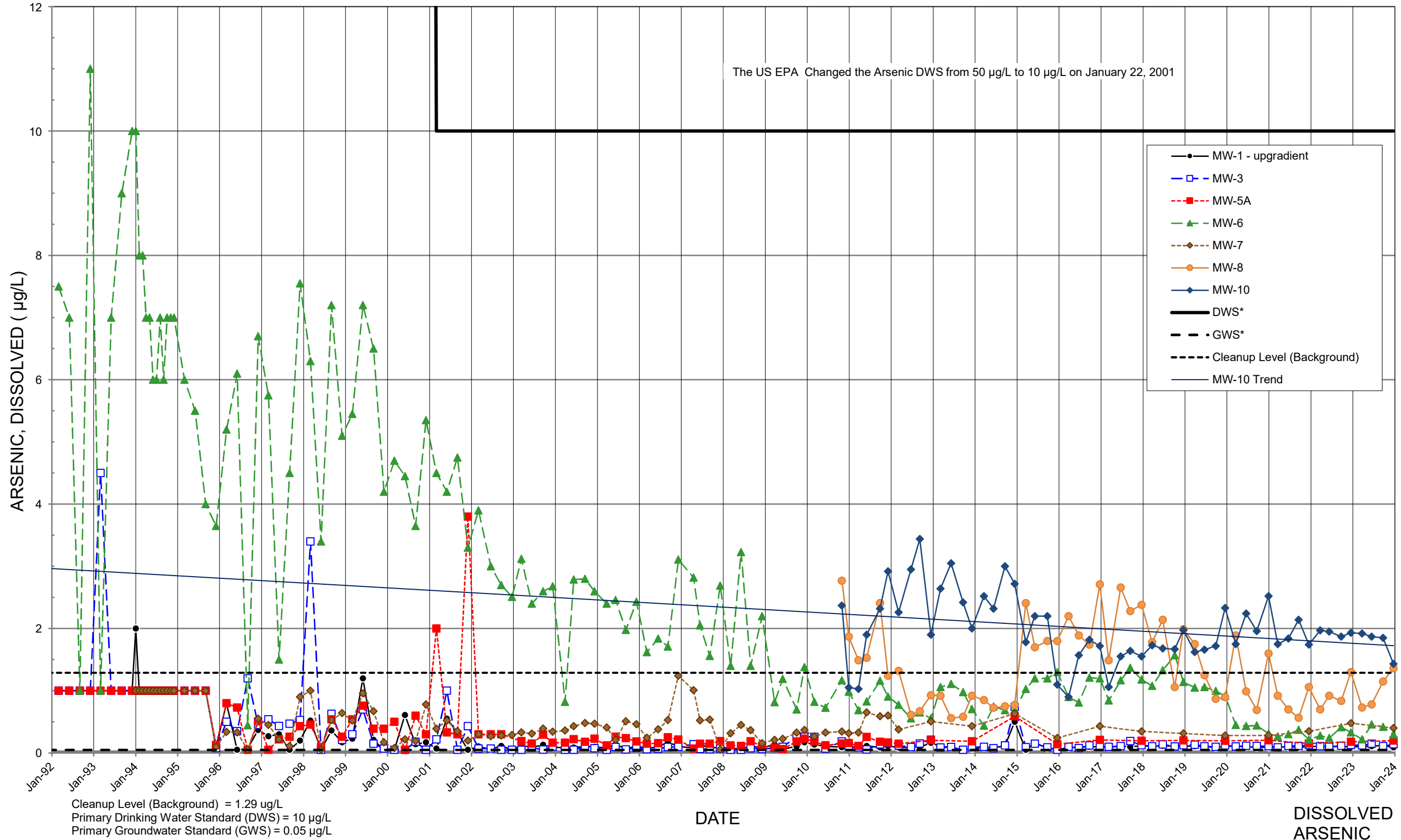
# OLALLA LANDFILL

## Quarterly Monitoring Data (most recent five years)



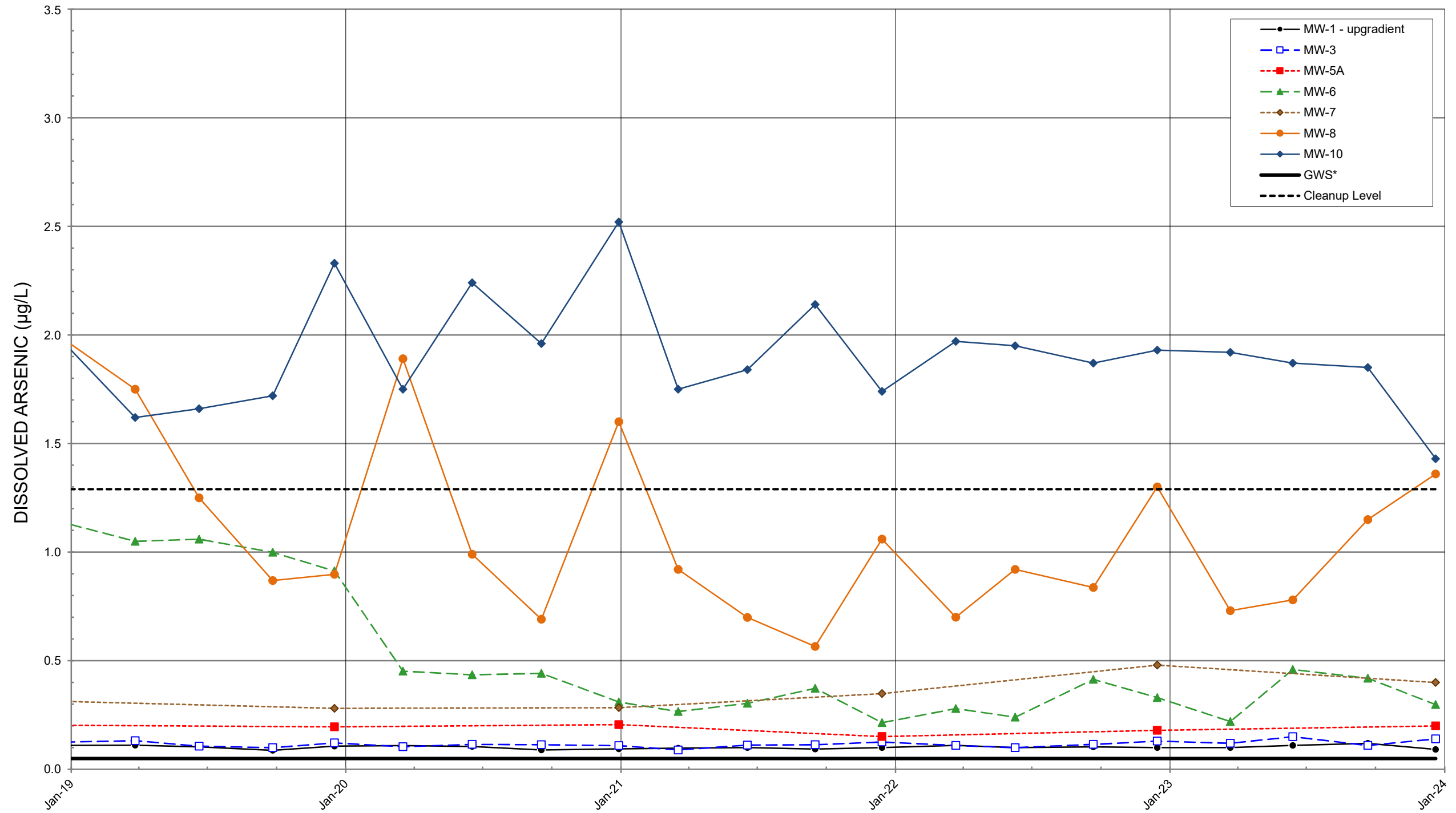
# OLALLA LANDFILL

## Quarterly Monitoring Data



# OLALLA LANDFILL

## Quarterly Monitoring Data (most recent five years)

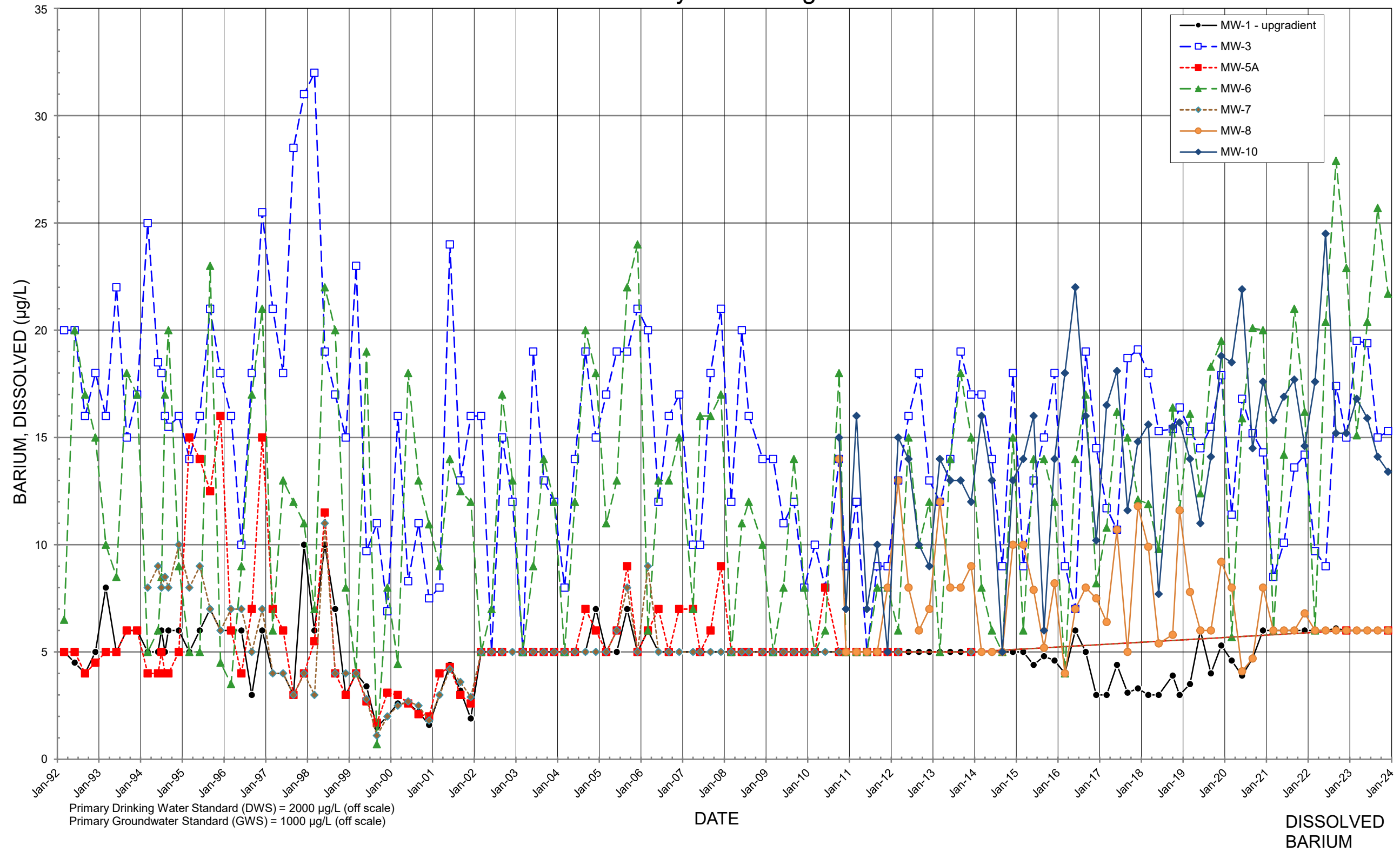


Site Specific Cleanup Level (background) = 1.29 µg/L  
 Primary Drinking Water Standard (DWS) = 10 µg/L (off scale)  
 Primary Groundwater Standard (GWS) = 0.05 µg/L

DATE

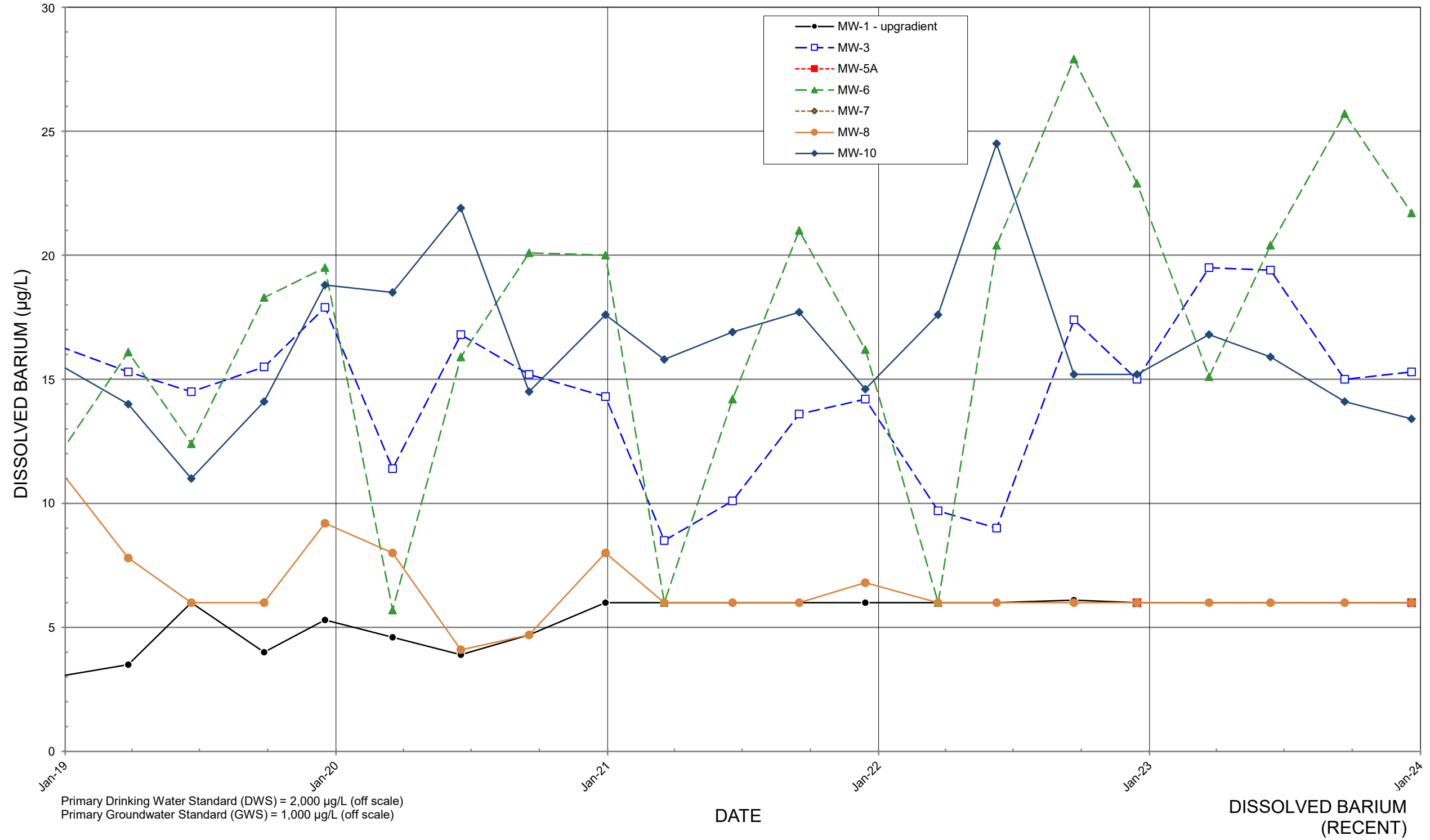
DISSOLVED ARSENIC (RECENT)

# OLALLA LANDFILL Quarterly Monitoring Data

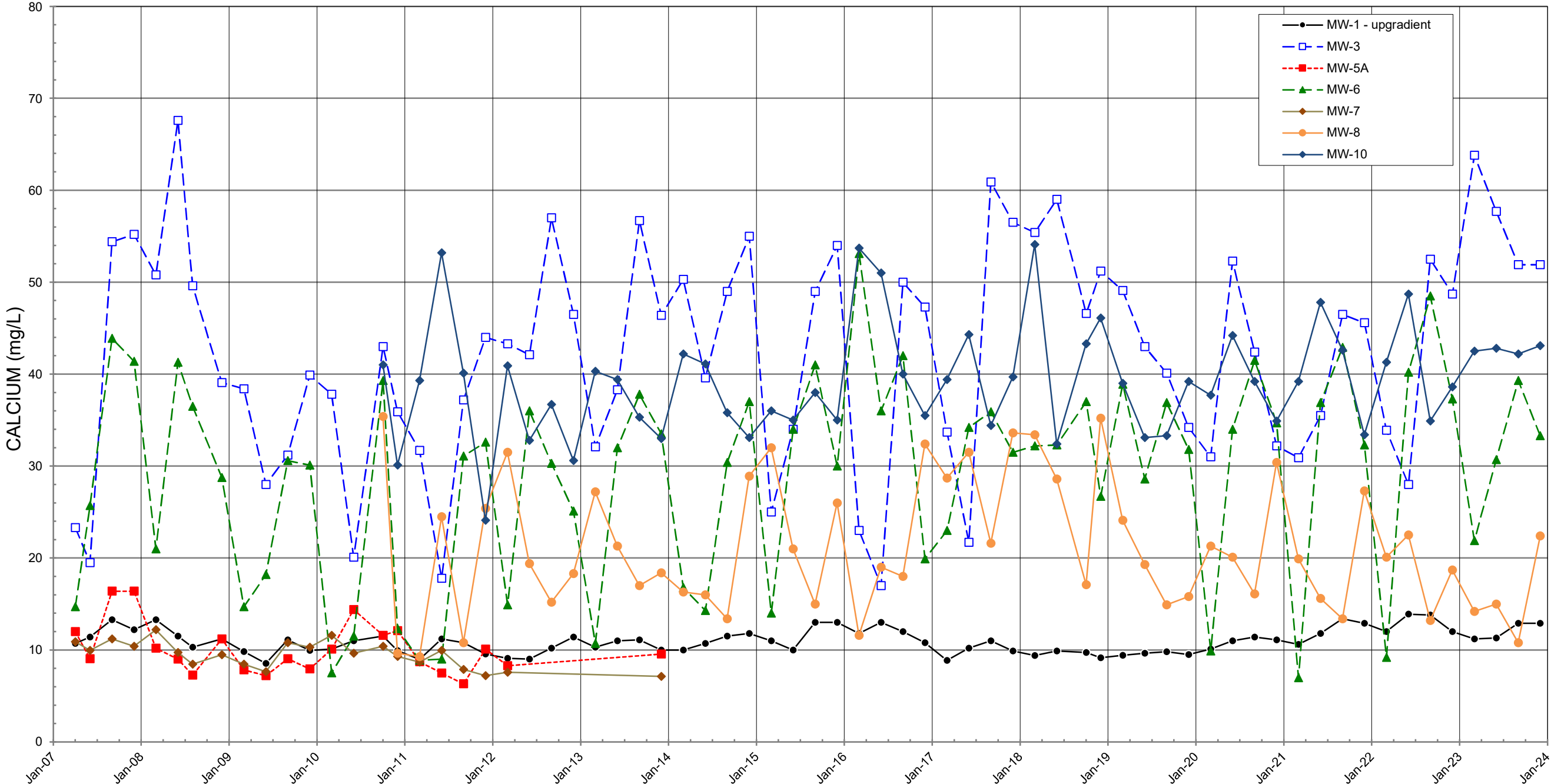


# OLALLA LANDFILL

## Quarterly Monitoring Data (most recent five years)



# OLALLA LANDFILL Quarterly Monitoring Data



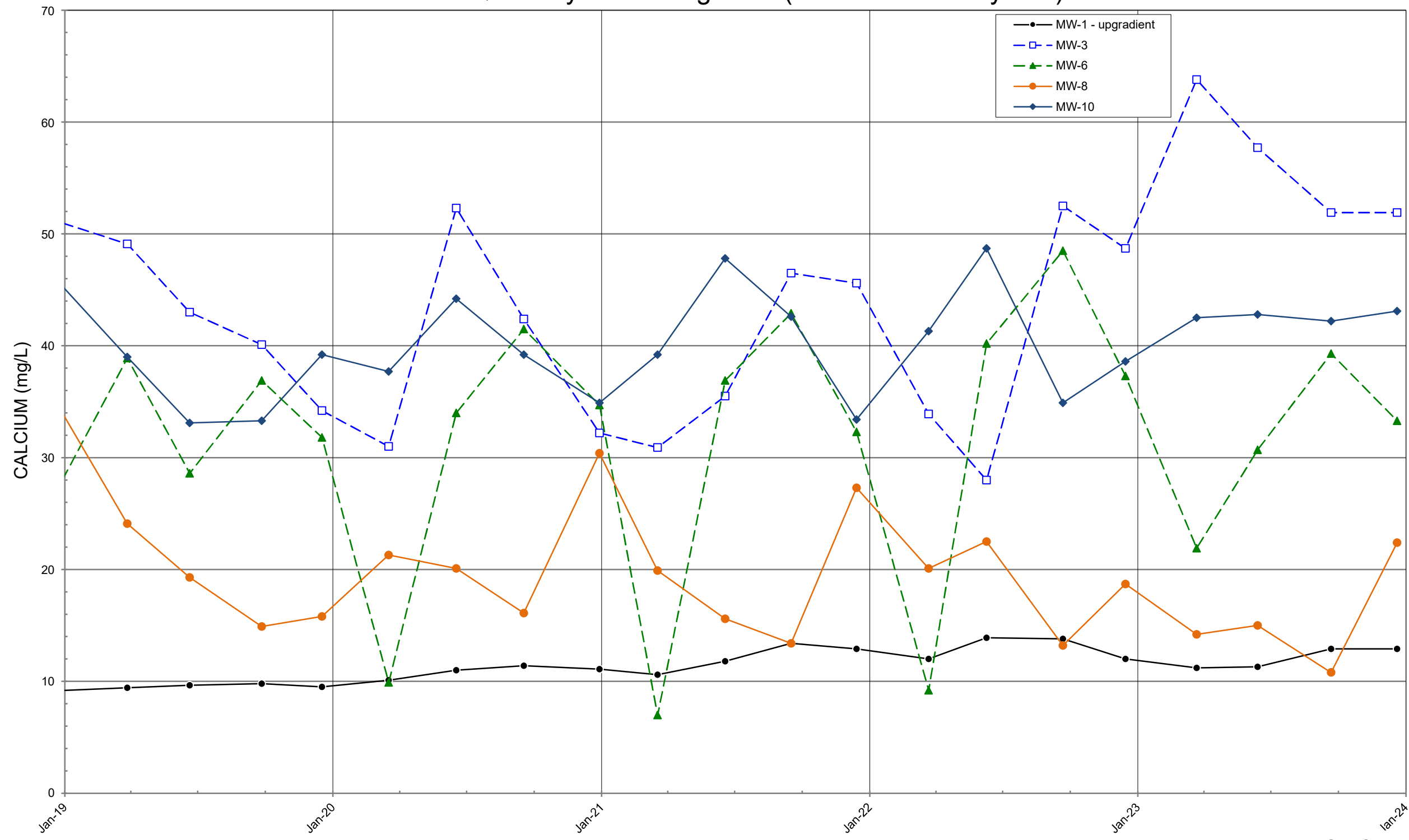
No Primary or Secondary Drinking Water Standard (DWS) Exists  
 No Primary or Secondary Groundwater Standard (GWS) Exists

DATE

CALCIUM  
 (Analysis started in 2007)

# OLALLA LANDFILL

## Quarterly Monitoring Data (most recent five years)

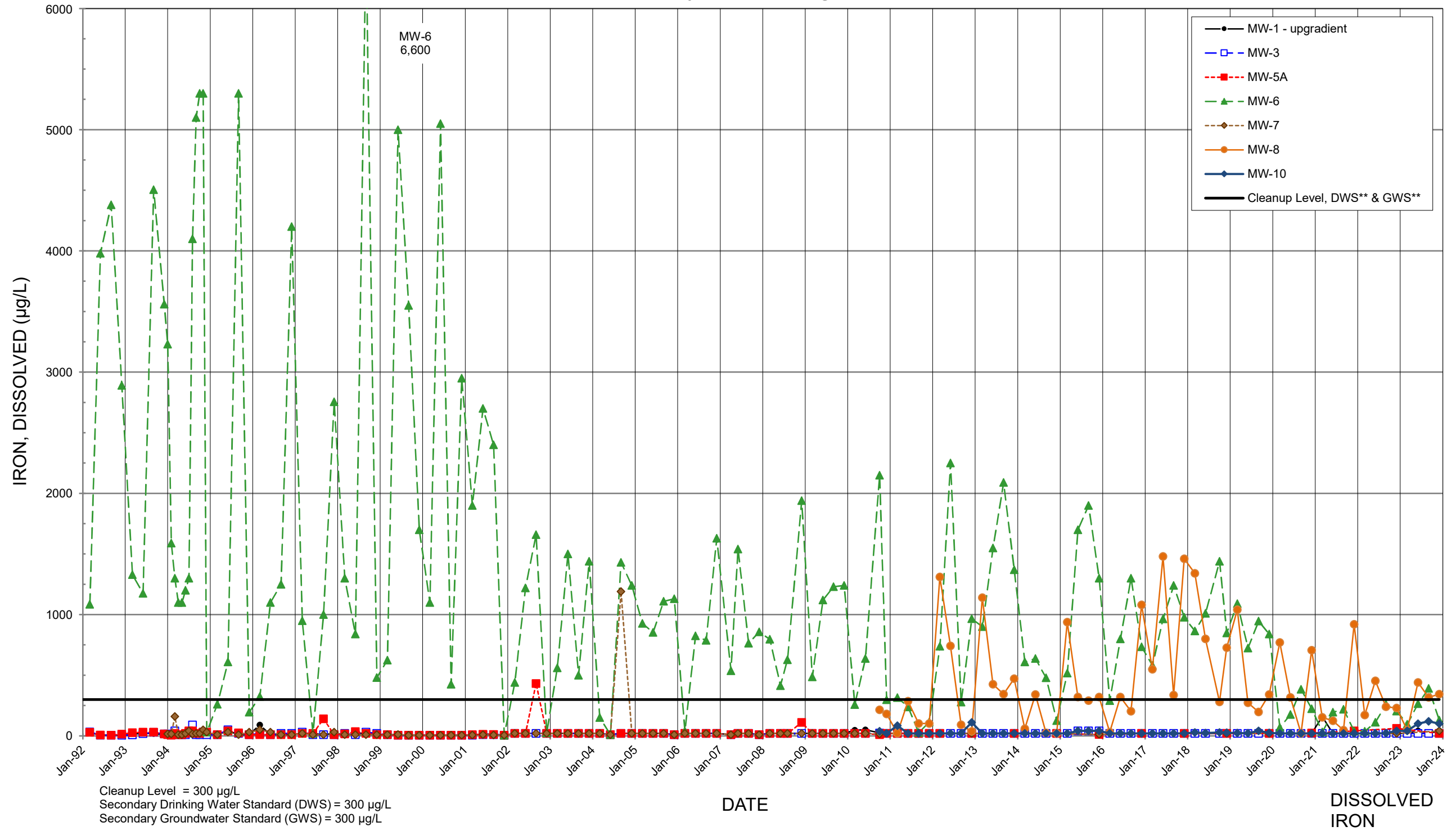


No Primary or Secondary Drinking Water Standard (DWS) Exists  
 No Primary or Secondary Groundwater Standard (GWS) Exists

DATE

CALCIUM (RECENT)

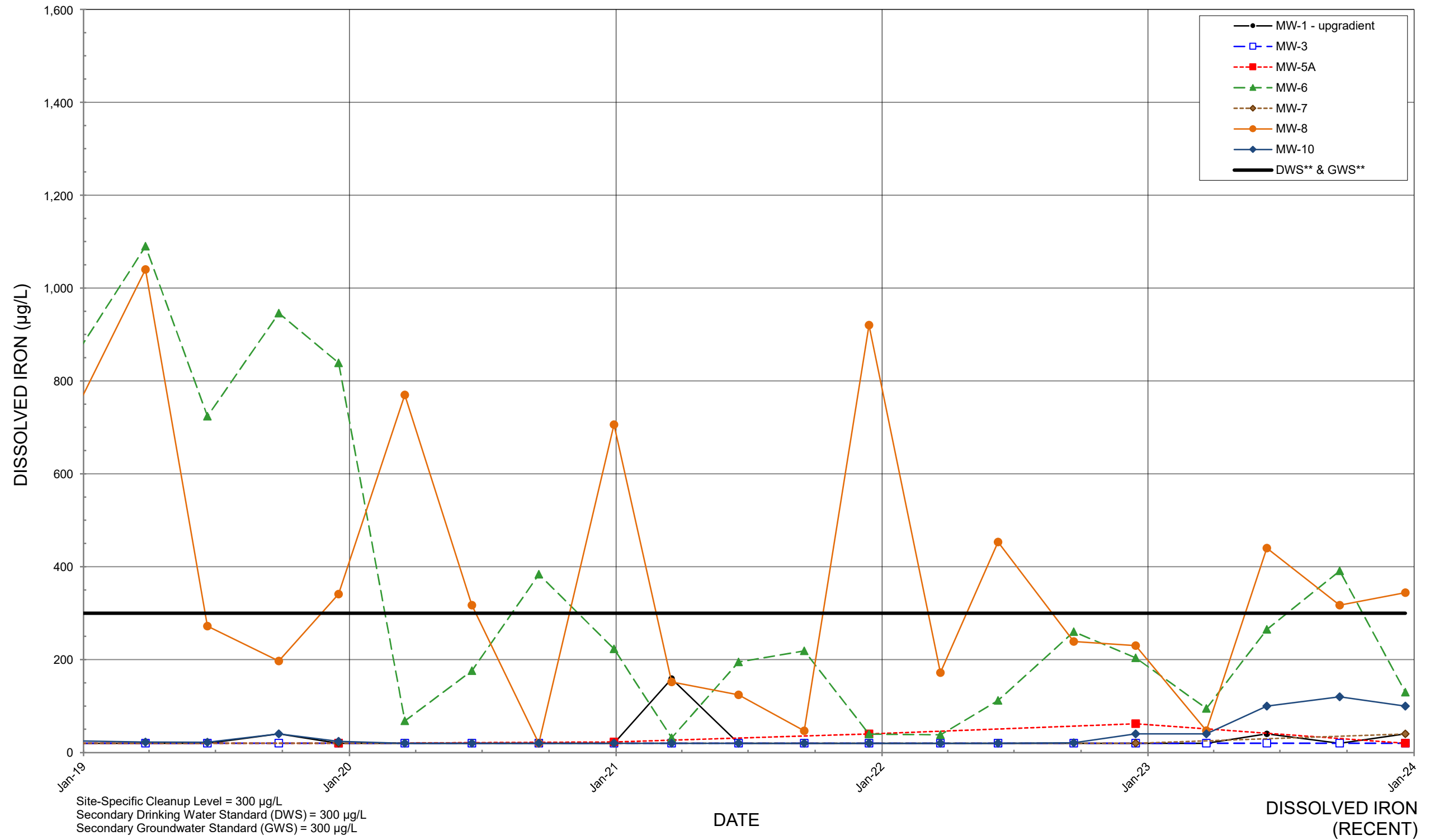
# OLALLA LANDFILL Quarterly Monitoring Data





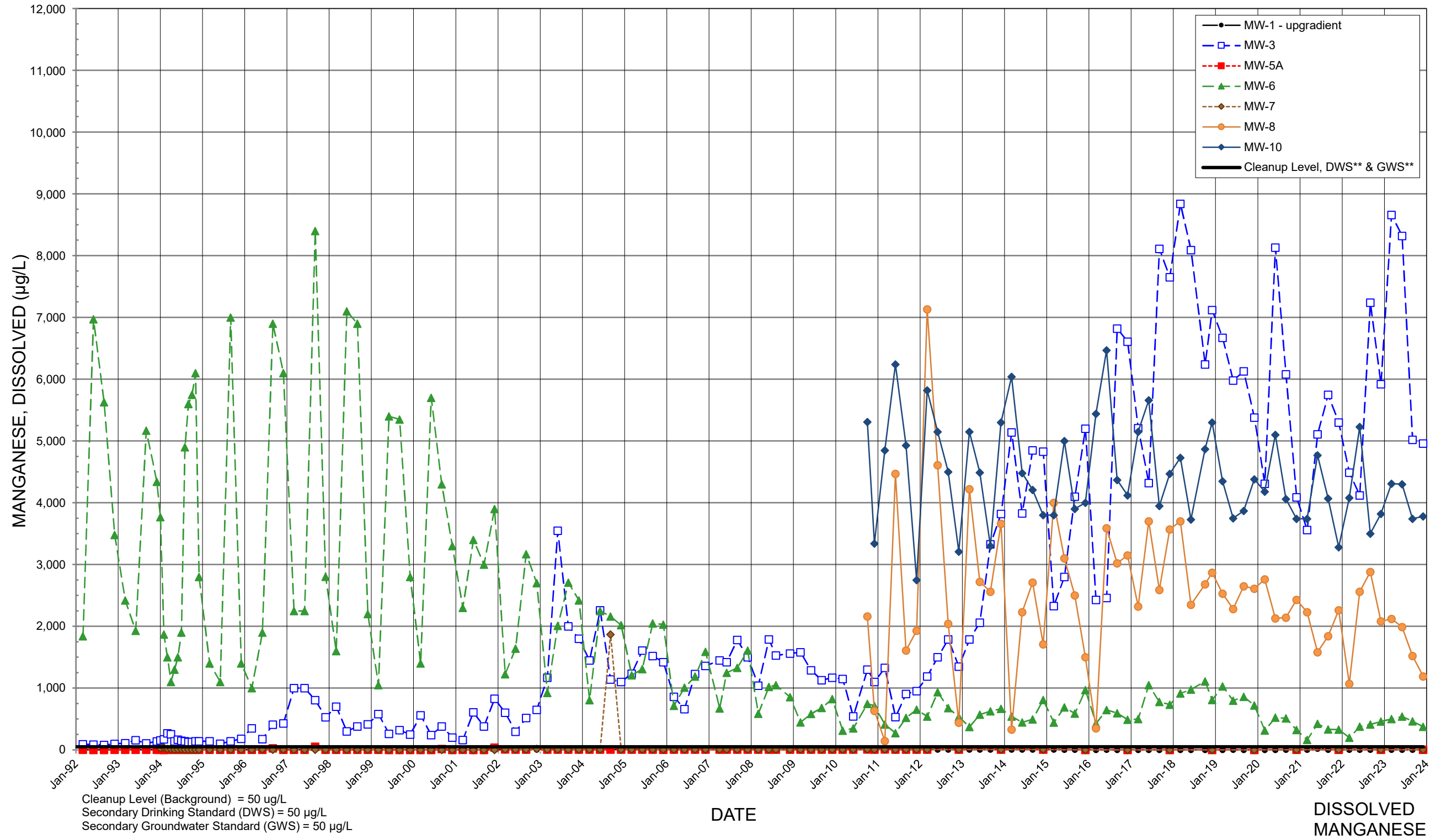
# OLALLA LANDFILL

## Quarterly Monitoring Data (most recent five years)



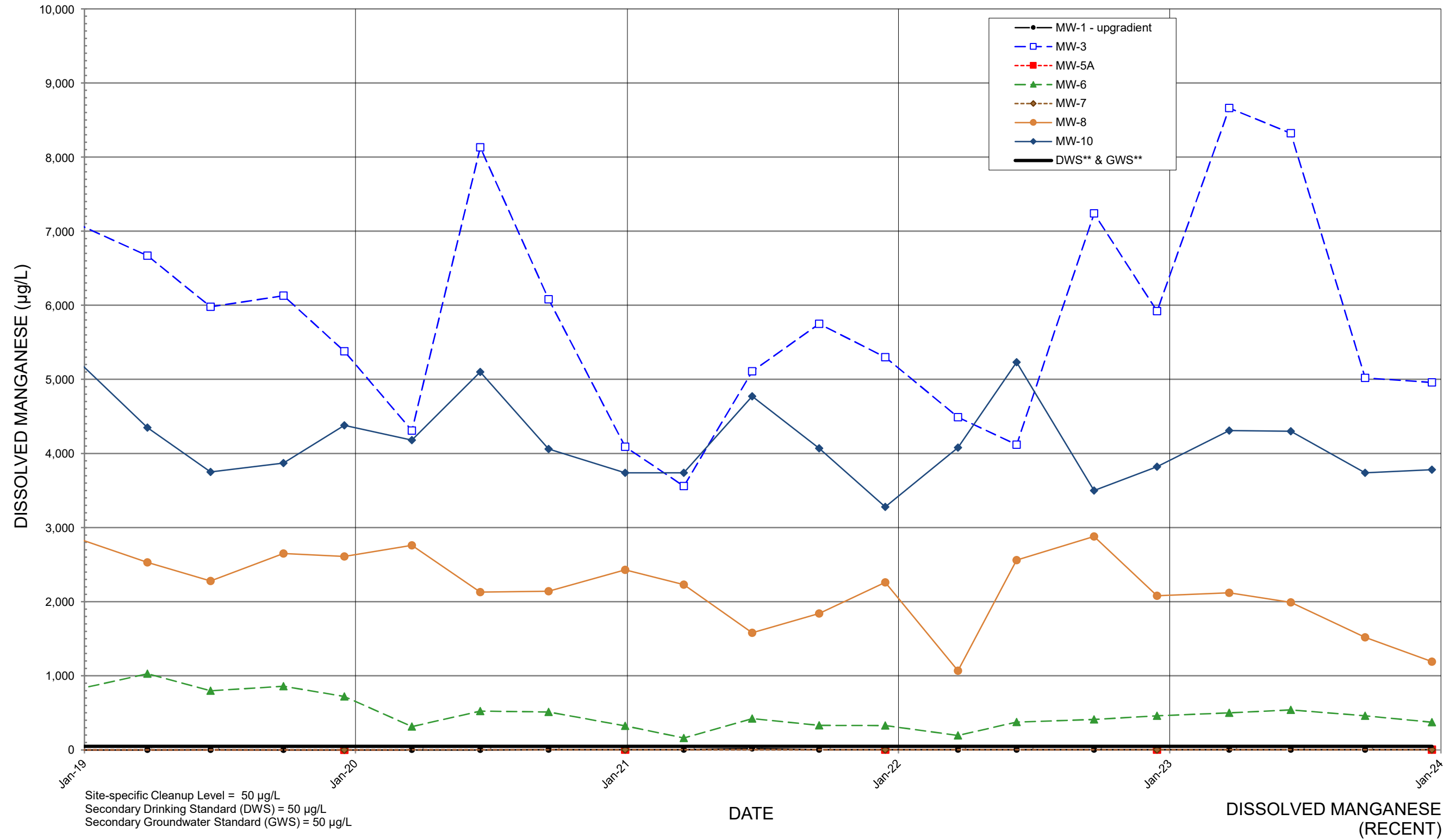
# OLALLA LANDFILL

## Quarterly Monitoring Data

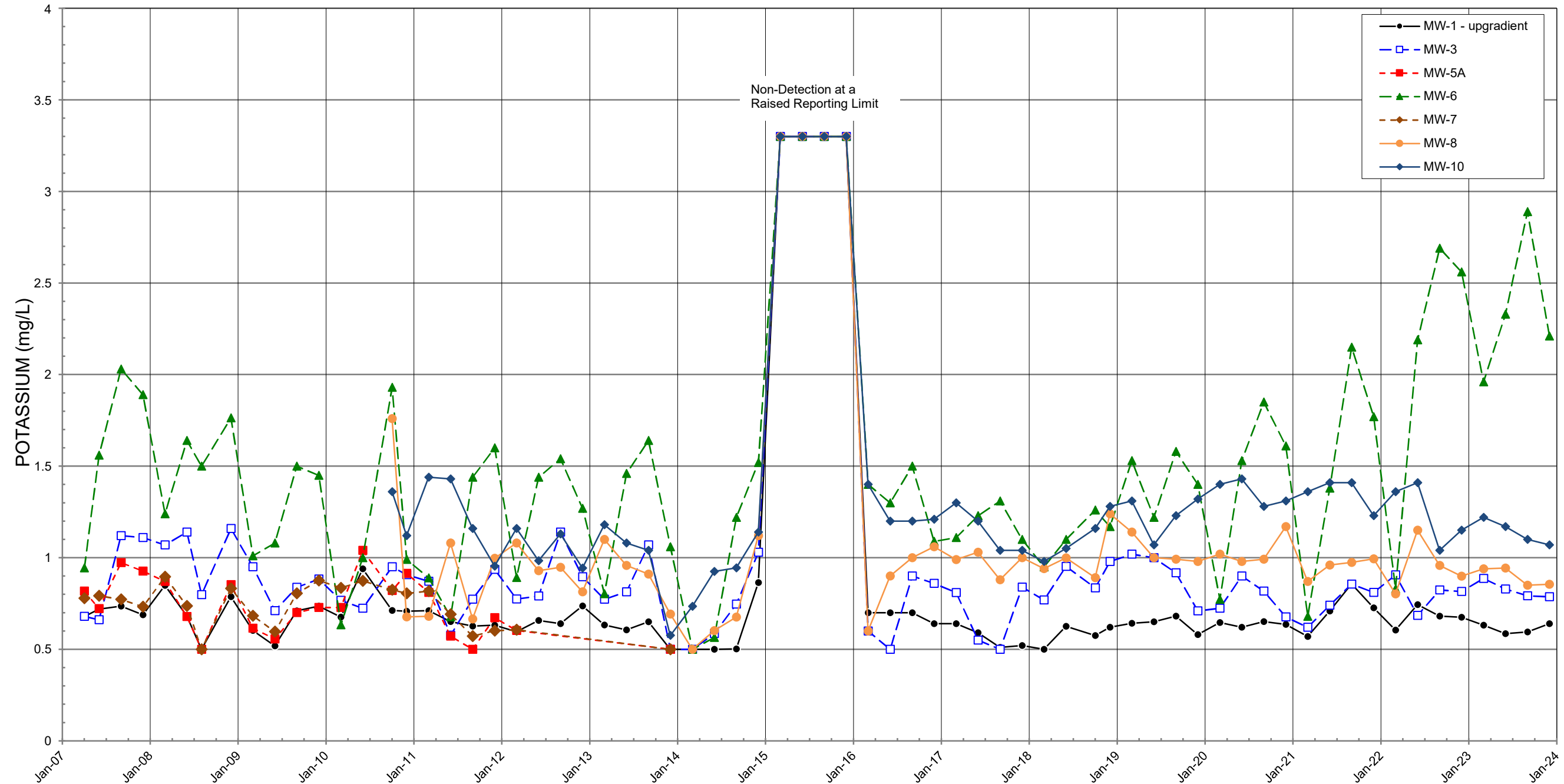


# OLALLA LANDFILL

## Quarterly Monitoring Data (most recent five years)



# OLALLA LANDFILL Quarterly Monitoring Data



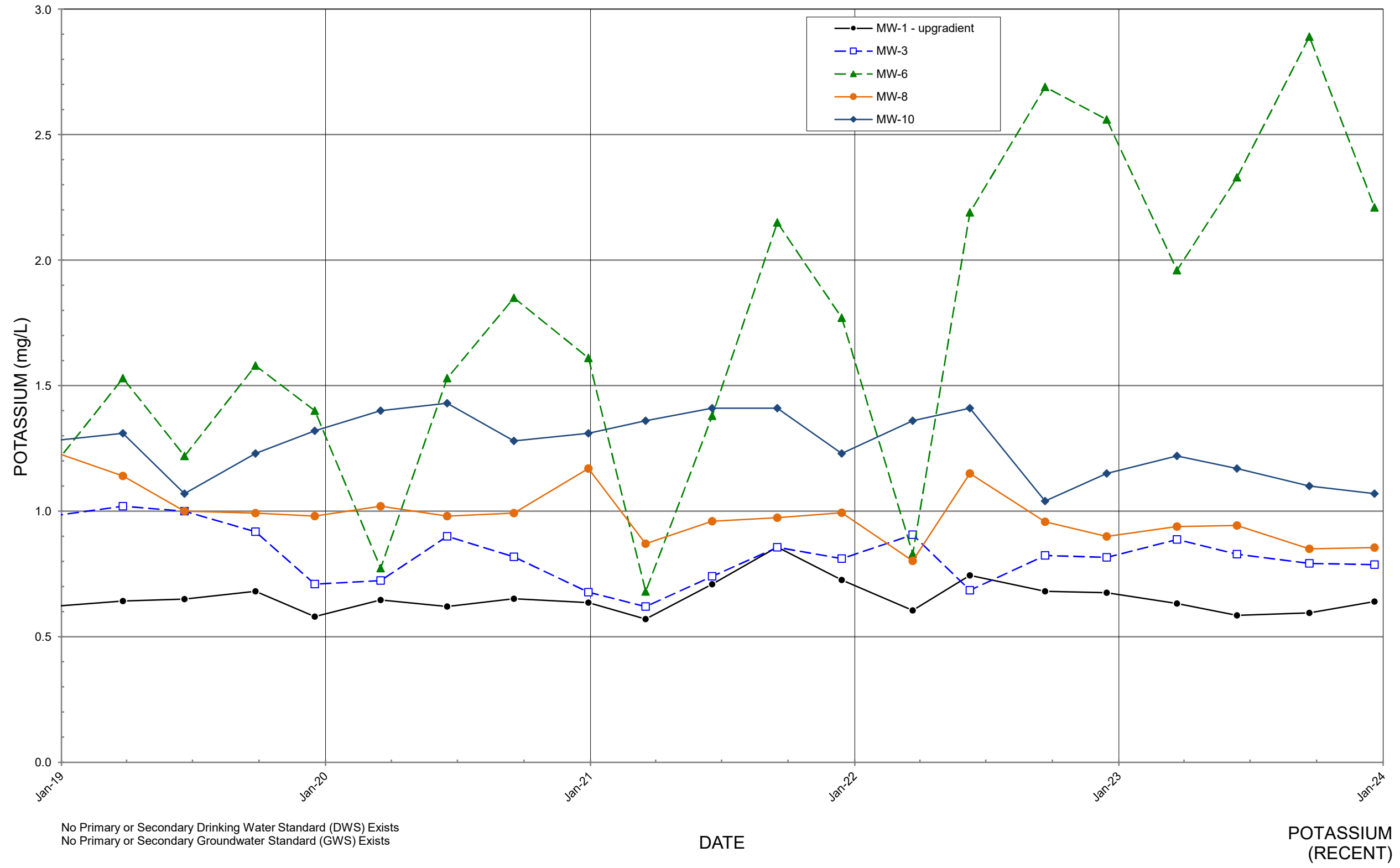
No Primary or Secondary Drinking Water Standard (DWS) Exists  
No Primary or Secondary Groundwater Standard (GWS) Exists

DATE

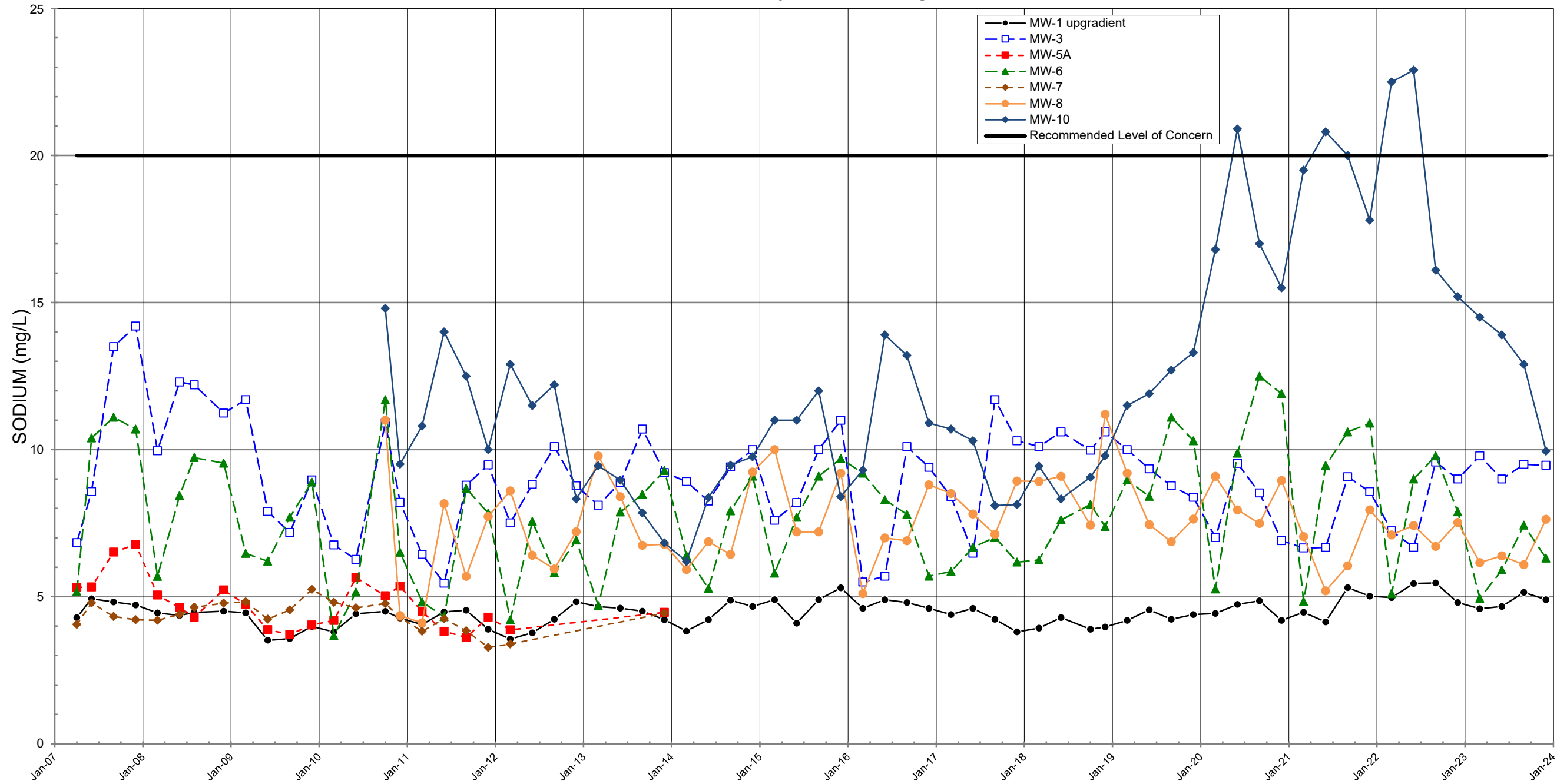
POTASSIUM  
(Analysis started in 2007)

# OLALLA LANDFILL

## Quarterly Monitoring Data (most recent five years)



# OLALLA LANDFILL Quarterly Monitoring Data



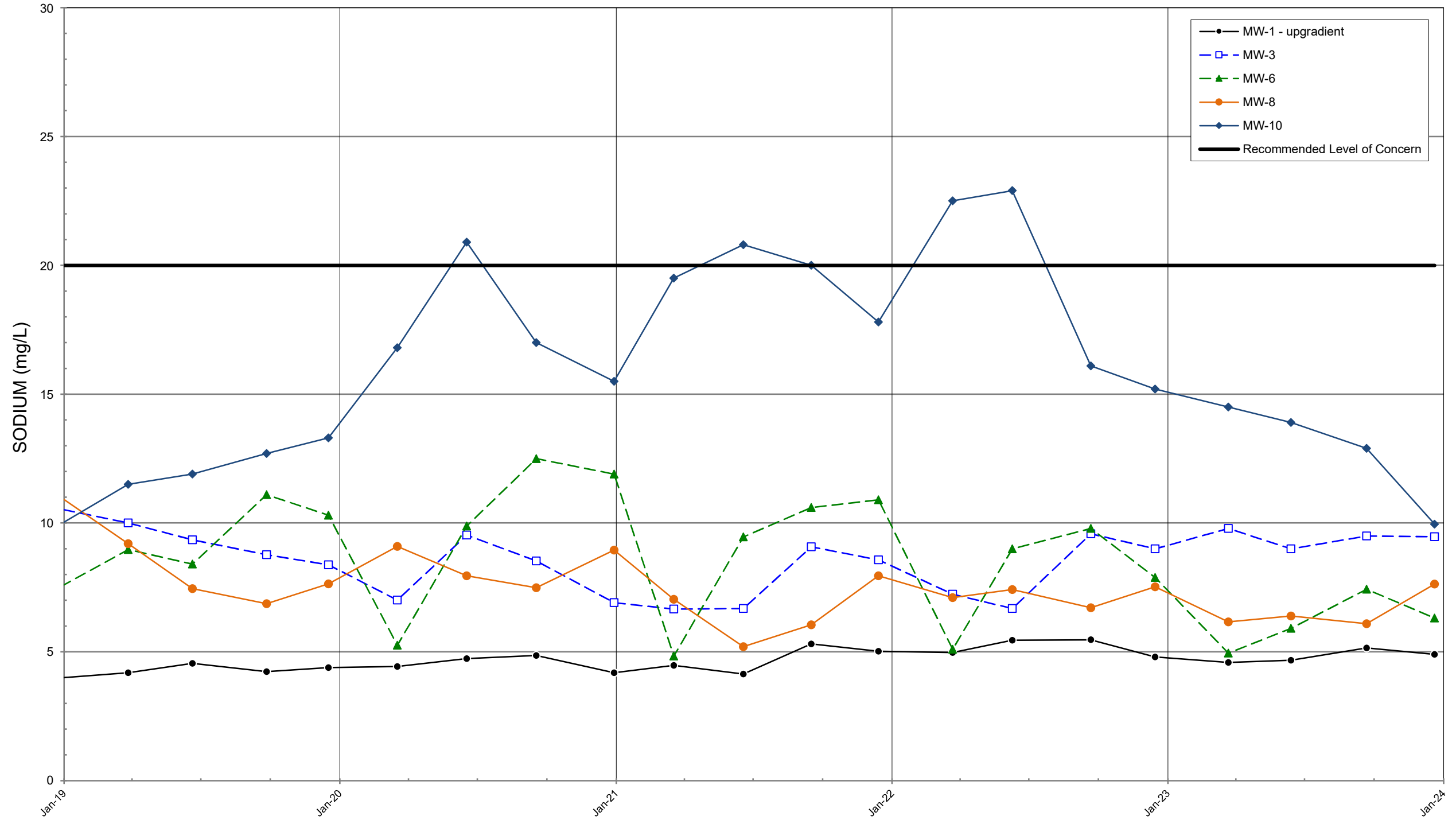
No Primary or Secondary Drinking Water Standard (DWS) Exists  
 No Primary or Secondary Groundwater Standard (GWS) Exists.  
 Recommended level of concern for consumers with restricted daily sodium intake is 20 mg/L.

DATE

SODIUM  
 (Analysis started in 2007)

# OLALLA LANDFILL

## Quarterly Monitoring Data (most recent five years)

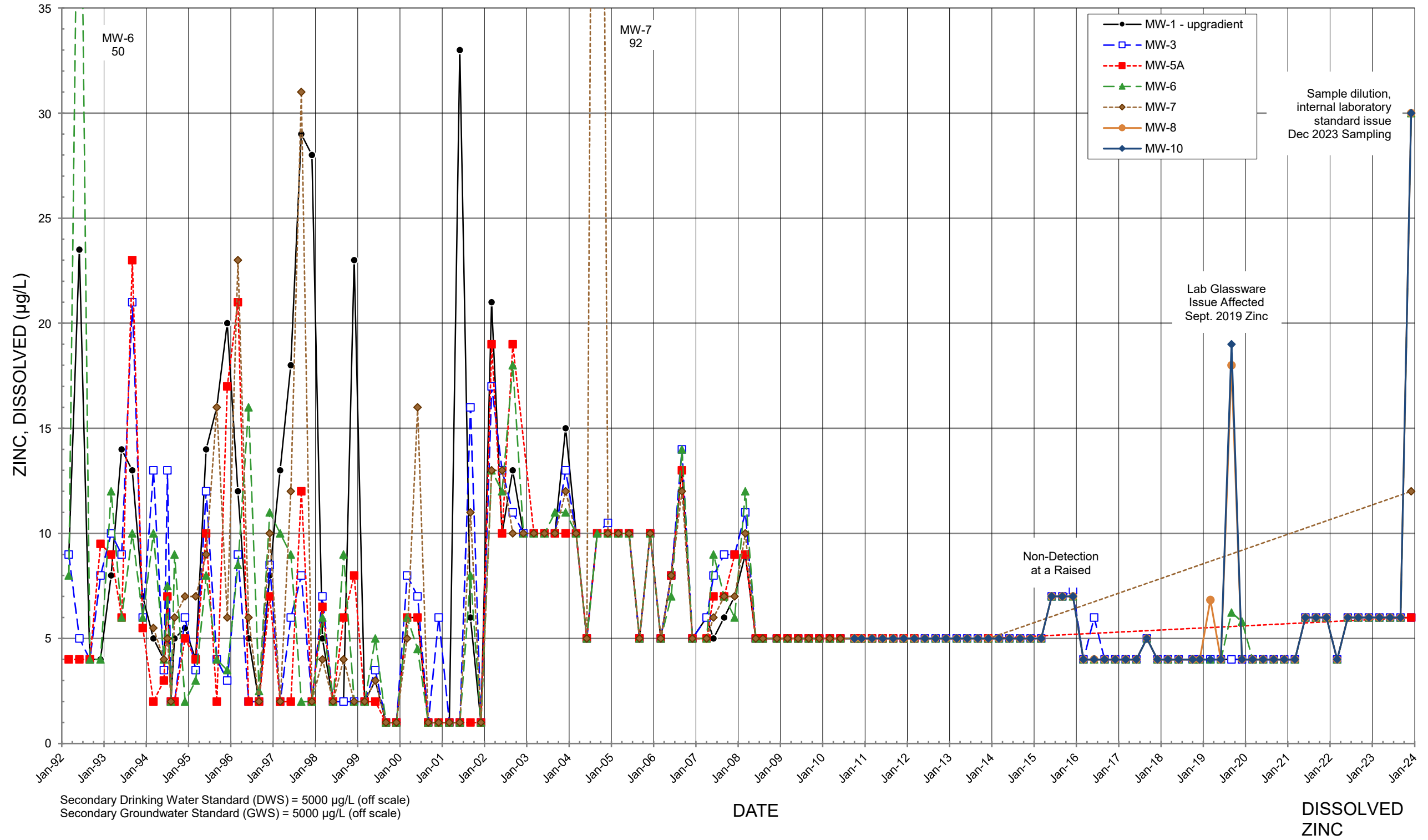


No Primary or Secondary Drinking Water Standard (DWS) Exists. Recommended level of concern for consumers with restricted daily sodium intake is 20 mg/L  
 No Primary or Secondary Groundwater Standard (GWS) Exists

DATE

SODIUM (RECENT)

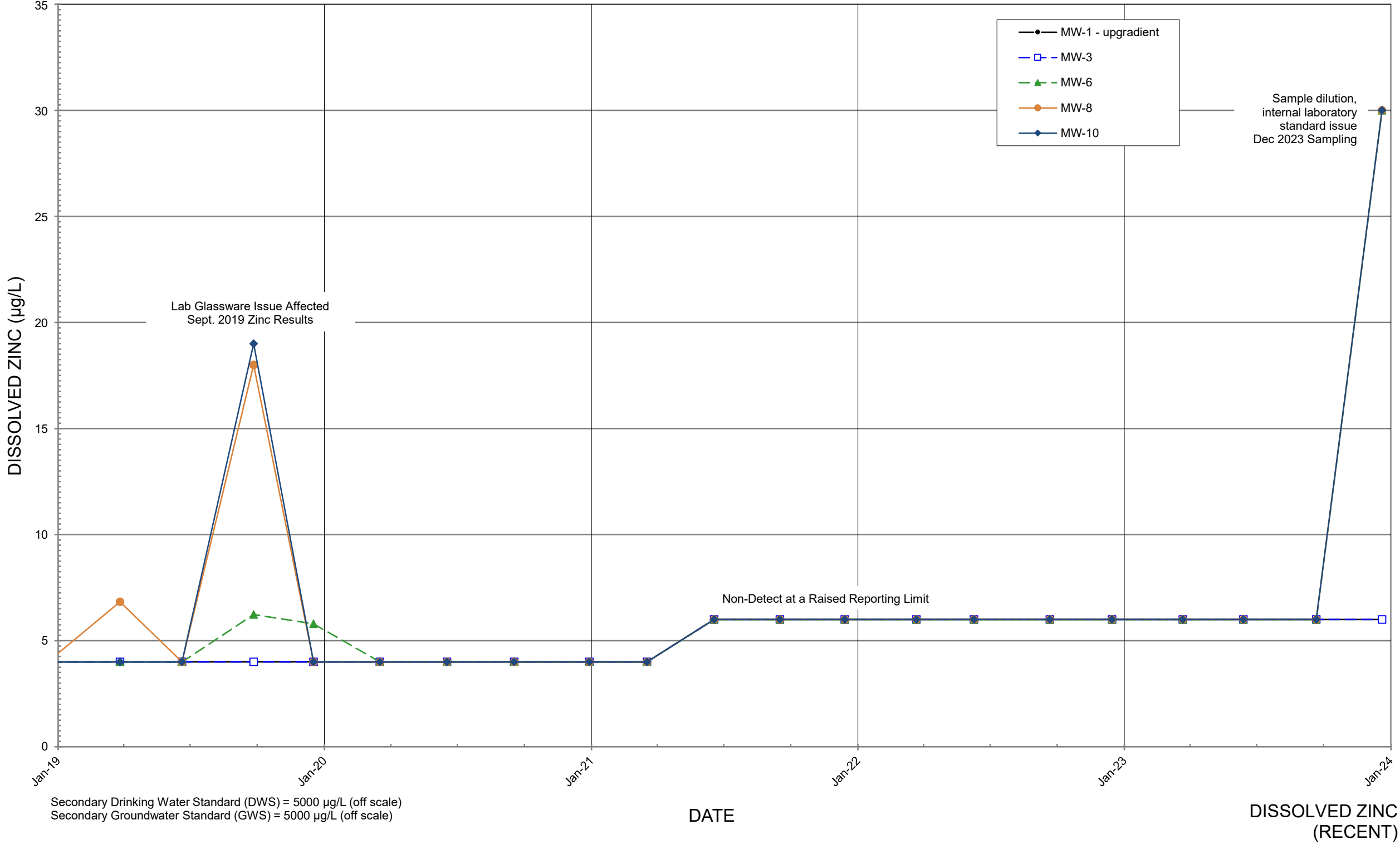
# OLALLA LANDFILL Quarterly Monitoring Data



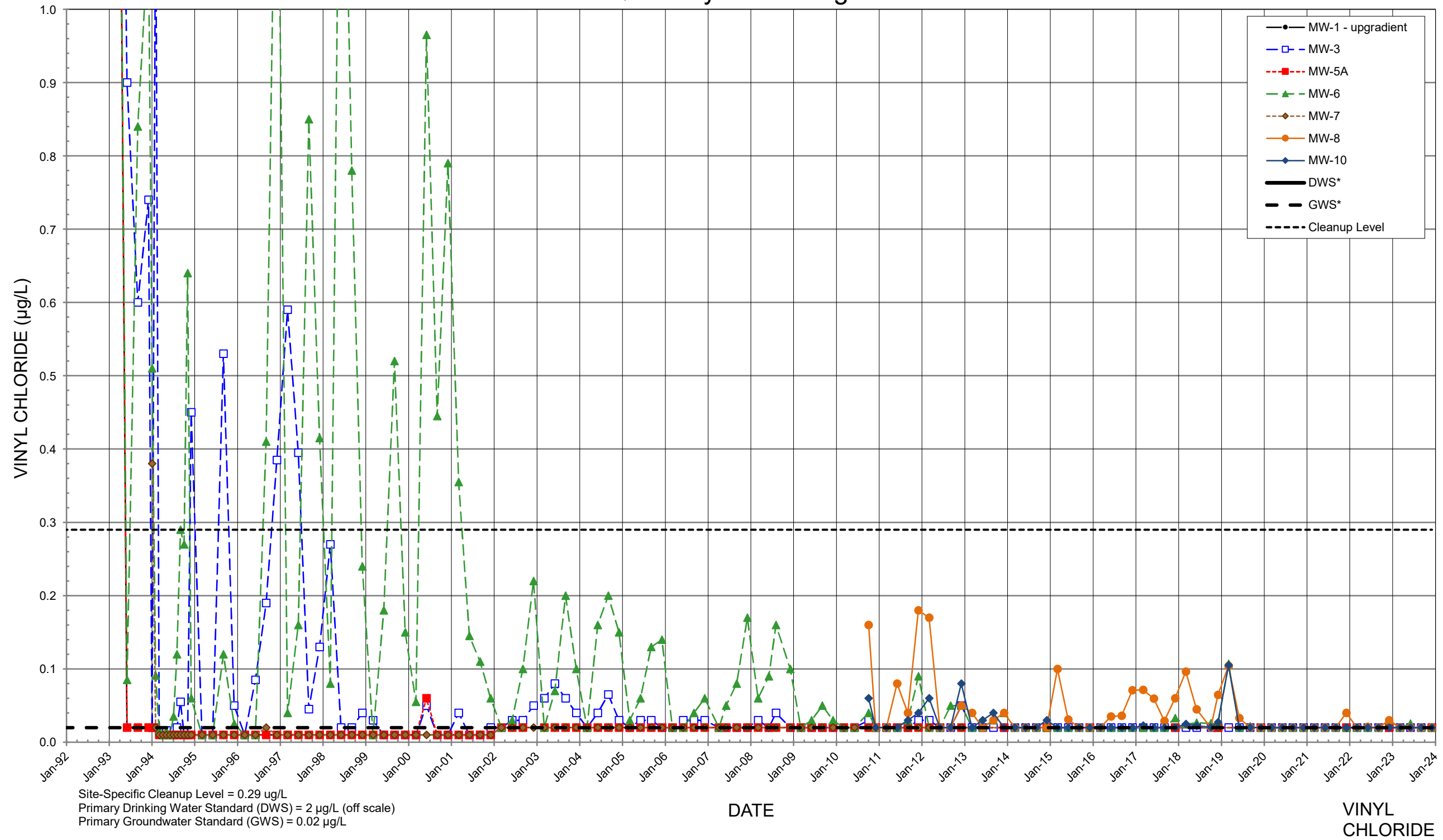


# OLALLA LANDFILL

## Quarterly Monitoring Data (most recent five years)

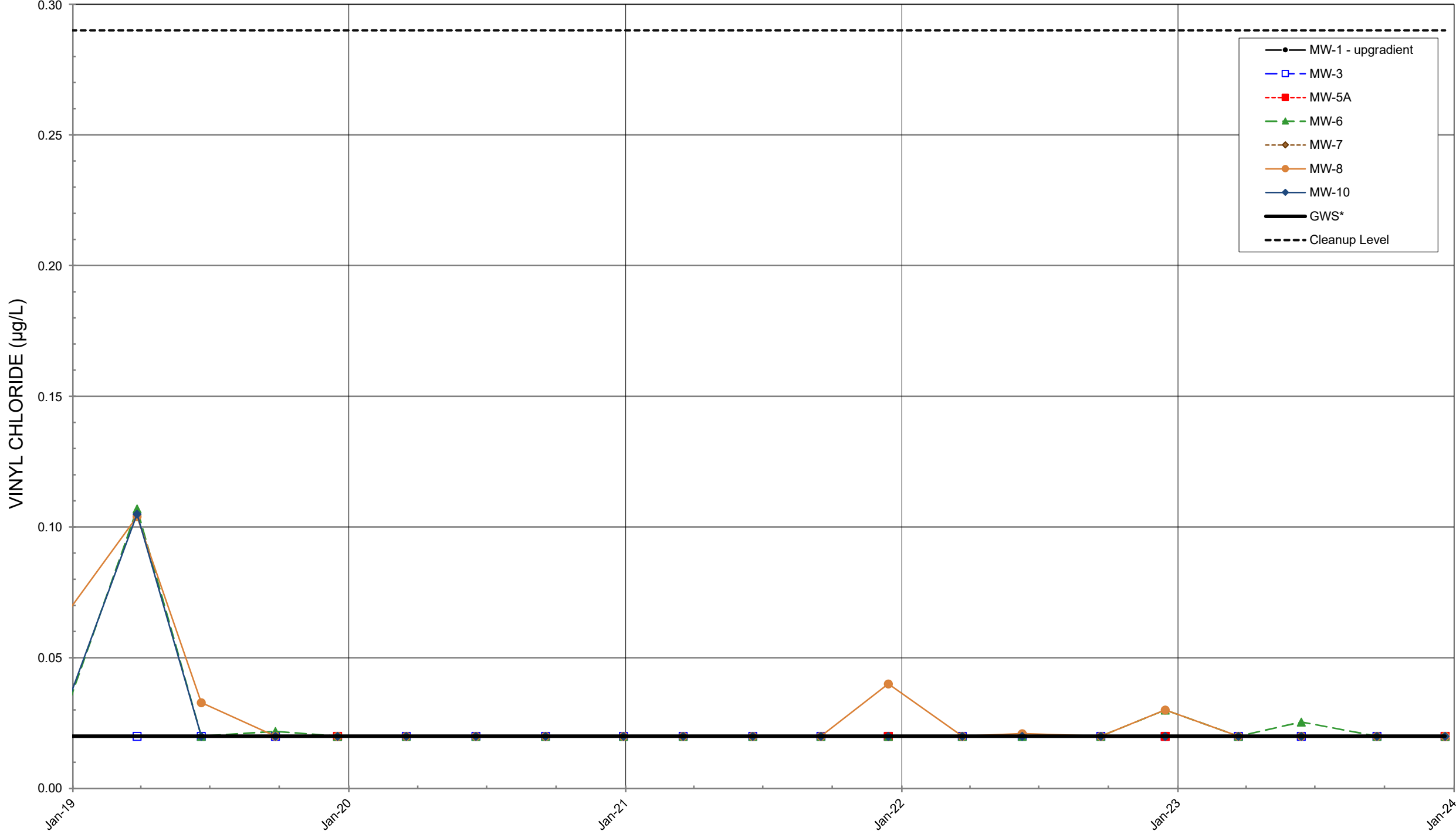


# OLALLA LANDFILL Quarterly Monitoring Data



# OLALLA LANDFILL

## Quarterly Monitoring Data (most recent five years)



Site-Specific Cleanup Level = 0.29 µg/L  
Primary Drinking Water Standard (DWS) = 2 µg/L (off scale)  
Primary Groundwater Standard (GWS) = 0.02 µg/L

DATE

VINYL CHLORIDE (RECENT)

### March 2023 Mann-Kendall Statistically Significant Trend Test Results

Constituent or Parameter	MW-1	MW-3	MW-6	MW-8	MW-10
Ammonia (N)	NO TREND	NO TREND	UP	NO TREND	NO TREND
Arsenic - Dissolved	NO TREND	NO TREND	DOWN	DOWN	NO TREND
Barium - Dissolved	NO TREND	NO TREND	UP	DOWN	NO TREND
Bicarbonate	UP	NO TREND	NO TREND	NO TREND	UP
Calcium	UP	NO TREND	NO TREND	NO TREND	NO TREND
Carbonate	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
COD	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
Chloride	UP	UP	DOWN	DOWN	DOWN
Dissolved Oxygen	DOWN	UP	NO TREND	NO TREND	NO TREND
Iron - Dissolved	NO TREND	NO TREND	DOWN	DOWN	NO TREND
Manganese - Dissolved	NO TREND	NO TREND	DOWN	DOWN	NO TREND
Nitrate	DOWN	NO TREND	UP	NO TREND	NO TREND
Nitrite	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
Oxidation Reduction Potential	DOWN	NO TREND	UP	NO TREND	UP
pH - Field	NO TREND	NO TREND	UP	UP	NO TREND
pH - Laboratory	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
Potassium	UP	NO TREND	UP	NO TREND	NO TREND
Sodium	UP	DOWN	NO TREND	DOWN	UP
Specific Conductance	UP	NO TREND	NO TREND	NO TREND	NO TREND
Sulfate	NO TREND	NO TREND	NO TREND	NO TREND	UP
Temperature	NO TREND	NO TREND	UP	UP	UP
Total Coliform	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
TOC	UP	NO TREND	NO TREND	NO TREND	NO TREND
Vinyl Chloride	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
Zinc - Dissolved	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND

**Notes:**

NO TREND = No statistically significant trend or dataset has four or fewer detections and cannot be evaluated.

UP = Statistically significant upward trend.

DOWN = Statistically significant downward trend.

## June 2023 Mann-Kendall Statistically Significant Trend Test Results

Constituent or Parameter	MW-1	MW-3	MW-6	MW-8	MW-10
Ammonia (N)	NO TREND	NO TREND	UP	NO TREND	NO TREND
Arsenic - Dissolved	NO TREND	NO TREND	DOWN	NO TREND	NO TREND
Barium - Dissolved	NO TREND	NO TREND	UP	DOWN	NO TREND
Bicarbonate	UP	NO TREND	NO TREND	NO TREND	NO TREND
Calcium	UP	NO TREND	NO TREND	NO TREND	NO TREND
Carbonate	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
COD	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
Chloride	UP	UP	DOWN	DOWN	DOWN
Dissolved Oxygen	DOWN	NO TREND	NO TREND	NO TREND	NO TREND
Iron - Dissolved	NO TREND	NO TREND	DOWN	NO TREND	NO TREND
Manganese - Dissolved	NO TREND	NO TREND	DOWN	DOWN	NO TREND
Nitrate	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
Nitrite	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
Oxidation Reduction Potential	DOWN	NO TREND	UP	NO TREND	NO TREND
pH - Field	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
pH - Laboratory	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
Potassium	NO TREND	NO TREND	UP	NO TREND	NO TREND
Sodium	UP	NO TREND	NO TREND	DOWN	UP
Specific Conductance	UP	NO TREND	NO TREND	NO TREND	NO TREND
Sulfate	NO TREND	NO TREND	NO TREND	NO TREND	UP
Temperature	NO TREND	NO TREND	UP	UP	UP
Total Coliform	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
TOC	UP	NO TREND	NO TREND	NO TREND	NO TREND
Vinyl Chloride	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
Zinc - Dissolved	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND

**Notes:**

NO TREND = No statistically significant trend or dataset has four or fewer detections and cannot be evaluated.

UP = Statistically significant upward trend.

DOWN = Statistically significant downward trend.

## September 2023 Mann-Kendall Statistically Significant Trend Test Results

Constituent or Parameter	MW-1	MW-3	MW-6	MW-8	MW-10
Ammonia (N)	NO TREND	NO TREND	UP	NO TREND	DOWN
Arsenic - Dissolved	NO TREND	NO TREND	DOWN	NO TREND	NO TREND
Barium - Dissolved	NO TREND	NO TREND	UP	DOWN	NO TREND
Bicarbonate	UP	NO TREND	NO TREND	NO TREND	UP
Calcium	UP	NO TREND	NO TREND	NO TREND	UP
Carbonate	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
COD	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
Chloride	UP	UP	NO TREND	DOWN	DOWN
Dissolved Oxygen	DOWN	NO TREND	NO TREND	NO TREND	NO TREND
Iron - Dissolved	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
Manganese - Dissolved	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
Nitrate	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
Nitrite	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
Oxidation Reduction Potential	NO TREND	NO TREND	UP	NO TREND	UP
pH - Field	NO TREND	NO TREND	NO TREND	UP	NO TREND
pH - Laboratory	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
Potassium	NO TREND	NO TREND	UP	NO TREND	NO TREND
Sodium	UP	NO TREND	NO TREND	DOWN	UP
Specific Conductance	UP	NO TREND	NO TREND	NO TREND	UP
Sulfate	NO TREND	NO TREND	NO TREND	NO TREND	UP
Temperature	NO TREND	NO TREND	UP	UP	UP
Total Coliform	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
TOC	UP	NO TREND	NO TREND	UP	NO TREND
Vinyl Chloride	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
Zinc - Dissolved	NO TREND	NO TREND	NO TREND	DOWN	NO TREND

**Notes:**

NO TREND = No statistically significant trend or dataset has four or fewer detections and cannot be evaluated.

UP = Statistically significant upward trend.

DOWN = Statistically significant downward trend.

## December 2023 Mann-Kendall Statistically Significant Trend Test Results

Constituent or Parameter	MW-1	MW-3	MW-5A	MW-6	MW-7	MW-8	MW-10
Ammonia (N)	NO TREND	NO TREND	NA	UP	NA	NO TREND	DOWN
Arsenic - Dissolved	NO TREND	UP	NO TREND	DOWN	UP	NO TREND	NO TREND
Barium - Dissolved	NO TREND	NO TREND	NO TREND	UP	NO TREND	NO TREND	NO TREND
Bicarbonate	UP	NO TREND	NA	NO TREND	NA	NO TREND	UP
Calcium	UP	UP	NA	NO TREND	NA	NO TREND	UP
Carbonate	NO TREND	NO TREND	NA	NO TREND	NA	NO TREND	NO TREND
COD	NO TREND	NO TREND	NA	NO TREND	NA	NO TREND	NO TREND
Chloride	UP	UP	NA	NO TREND	NA	DOWN	DOWN
Dissolved Oxygen	DOWN	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
Iron - Dissolved	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND	UP
Manganese - Dissolved	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
Nitrate	NO TREND	NO TREND	NA	NO TREND	NA	NO TREND	NO TREND
Nitrite	NO TREND	NO TREND	NA	NO TREND	NA	NO TREND	NO TREND
Oxidation Reduction Potential	NO TREND	NO TREND	NO TREND	UP	NO TREND	NO TREND	UP
pH - Field	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
pH - Laboratory	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
Potassium	NO TREND	NO TREND	NA	UP	NA	NO TREND	NO TREND
Sodium	UP	NO TREND	NA	NO TREND	NA	NO TREND	NO TREND
Specific Conductance	UP	UP	NO TREND	NO TREND	NO TREND	NO TREND	UP
Sulfate	NO TREND	NO TREND	NA	NO TREND	NA	NO TREND	NO TREND
Temperature	NO TREND	NO TREND	NO TREND	UP	NO TREND	UP	UP
Total Coliform	NO TREND	NO TREND	NA	NO TREND	NA	NO TREND	NO TREND
TOC	UP	UP	NA	NO TREND	NA	UP	NO TREND
Vinyl Chloride	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND
Zinc - Dissolved	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND	NO TREND

**Notes:**

NO TREND = No statistically significant trend or dataset has four or fewer detections and cannot be evaluated.

UP = Statistically significant upward trend.

DOWN = Statistically significant downward trend.

## March 2023 Shapiro-Wilk Test for Normality Results

Constituent or Parameter	MW-1	MW-3	MW-6	MW-8	MW-10
Ammonia (N)	ND	ND	Non-normal	ND	Normal
Arsenic - Dissolved	Non-normal	Non-normal	Non-normal	Normal	Normal
Barium - Dissolved	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal
Bicarbonate	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal
Calcium	Normal	Normal	Non-normal	Non-normal	Normal
Carbonate	ND	ND	ND	ND	ND
COD	ND	ND	ND	ND	ND
Chloride	Normal	Non-normal	Normal	Non-normal	Normal
Dissolved Oxygen	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal
Iron - Dissolved	ND	ND	Non-normal	Non-normal	Non-normal
Manganese - Dissolved	ND	Normal	Normal	Normal	Normal
Nitrate	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal
Nitrite	ND	ND	Non-normal	ND	ND
Oxidation-Reduction Potential	Normal	Normal	Non-normal	Non-normal	Non-normal
pH - Field	Non-normal	Non-normal	Normal	Normal	Normal
pH - Laboratory	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal
Potassium	Non-normal	Non-normal	Normal	Non-normal	Normal
Sodium	Normal	Non-normal	Normal	Normal	Normal
Specific Conductance	Non-normal	Normal	Normal	Normal	Non-normal
Sulfate	Normal	Normal	Normal	Normal	Non-normal
Temperature	Normal	Non-normal	Normal	Normal	Non-normal
Total Coliform	ND	ND	ND	ND	ND
TOC	Non-normal	Normal	Non-normal	Normal	Non-normal
Vinyl Chloride	ND	ND	Non-normal	Non-normal	Non-normal
Zinc - Dissolved	ND	ND	ND	ND	ND

Notes:

ND = Dataset has four or fewer quarters with detects and statistical tests cannot be performed.



## June 2023 Shapiro-Wilk Test for Normality Results

Constituent or Parameter	MW-1	MW-3	MW-6	MW-8	MW-10
Ammonia (N)	ND	ND	Non-Normal	ND	Normal
Arsenic - Dissolved	Non-Normal	Non-Normal	Non-Normal	Normal	Normal
Barium - Dissolved	Non-Normal	Non-Normal	Non-Normal	Non-Normal	Non-Normal
Bicarbonate	Non-Normal	Non-Normal	Non-Normal	Non-Normal	Non-Normal
Calcium	Normal	Normal	Non-Normal	Non-Normal	Normal
Carbonate	ND	ND	ND	ND	ND
COD	ND	ND	ND	ND	ND
Chloride	Normal	Non-Normal	Normal	Non-Normal	Normal
Dissolved Oxygen	Non-Normal	Non-Normal	Non-Normal	Non-Normal	Non-Normal
Iron - Dissolved	ND	ND	Non-Normal	Non-Normal	Non-Normal
Manganese - Dissolved	ND	Normal	Normal	Normal	Normal
Nitrate	Non-Normal	Non-Normal	Non-Normal	Non-Normal	Non-Normal
Nitrite	ND	ND	Non-Normal	ND	ND
Oxidation-Reduction Potential	Normal	Non-Normal	Non-Normal	Non-Normal	Non-Normal
pH - Field	Non-Normal	Non-Normal	Normal	Normal	Normal
pH - Laboratory	Non-Normal	Non-Normal	Non-Normal	Non-Normal	Non-Normal
Potassium	Non-Normal	Non-Normal	Normal	Non-Normal	Normal
Sodium	Normal	Normal	Normal	Normal	Normal
Specific Conductance	Non-Normal	Normal	Normal	Normal	Non-Normal
Sulfate	Normal	Normal	Normal	Normal	Non-Normal
Temperature	Normal	Non-Normal	Normal	Normal	Normal
Total Coliform	ND	ND	ND	ND	ND
TOC	Non-Normal	Normal	Non-Normal	Normal	Non-Normal
Vinyl Chloride	ND	ND	Non-Normal	Non-Normal	ND
Zinc - Dissolved	ND	ND	ND	ND	ND

Notes:

ND = Dataset has four or fewer quarters with detects and statistical tests cannot be performed.

## September 2023 Shapiro-Wilk Test for Normality Results

Constituent or Parameter	MW-1	MW-3	MW-6	MW-8	MW-10
Ammonia (N)	ND	ND	Non-Normal	ND	Normal
Arsenic - Dissolved	Non-Normal	Non-Normal	Non-Normal	Normal	Non-Normal
Barium - Dissolved	Non-Normal	Non-Normal	Non-Normal	Non-Normal	Non-Normal
Bicarbonate	Non-Normal	Non-Normal	Non-Normal	Non-Normal	Non-Normal
Calcium	Normal	Normal	Non-Normal	Non-Normal	Normal
Carbonate	ND	ND	ND	ND	ND
COD	ND	ND	ND	ND	ND
Chloride	Normal	Normal	Normal	Non-Normal	Normal
Dissolved Oxygen	Non-Normal	Non-Normal	Non-Normal	Non-Normal	Non-Normal
Iron - Dissolved	ND	ND	Non-Normal	Non-Normal	Non-Normal
Manganese - Dissolved	ND	Normal	Normal	Normal	Normal
Nitrate	Non-Normal	Non-Normal	Non-Normal	Non-Normal	Non-Normal
Nitrite	ND	ND	Non-Normal	ND	ND
Oxidation-Reduction Potential	Normal	Non-Normal	Non-Normal	Non-Normal	Non-Normal
pH - Field	Non-Normal	Non-Normal	Normal	Normal	Normal
pH - Laboratory	Non-Normal	Non-Normal	Non-Normal	Non-Normal	Non-Normal
Potassium	Non-Normal	Non-Normal	Normal	Non-Normal	Normal
Sodium	Non-Normal	Non-Normal	Normal	Normal	Normal
Specific Conductance	Non-Normal	Normal	Normal	Normal	Non-Normal
Sulfate	Normal	Normal	Normal	Normal	Non-Normal
Temperature	Normal	Non-Normal	Normal	Normal	Normal
Total Coliform	ND	ND	ND	ND	ND
TOC	Non-Normal	Normal	Non-Normal	Non-Normal	Normal
Vinyl Chloride	ND	ND	Non-Normal	Non-Normal	ND
Zinc - Dissolved	ND	ND	ND	ND	ND

Notes:

ND = Dataset has four or fewer quarters with detects and statistical tests cannot be performed.

## December 2023 Shapiro-Wilk Test for Normality Results

Constituent or Parameter	MW-1	MW-3	MW-5A	MW-6	MW-7	MW-8	MW-10
Ammonia (N)	ND	ND	NA	Non-Normal	NA	ND	Non-Normal
Arsenic - Dissolved	Non-Normal	Non-Normal	Non-Normal	Non-Normal	Normal	Normal	Normal
Barium - Dissolved	Non-Normal	Non-Normal	ND	Non-Normal	ND	Non-Normal	Non-Normal
Bicarbonate	Non-Normal	Non-Normal	NA	Non-Normal	NA	Non-Normal	Non-Normal
Calcium	Normal	Normal	NA	Non-Normal	NA	Normal	Normal
Carbonate	ND	ND	NA	ND	NA	ND	ND
COD	ND	ND	NA	ND	NA	ND	ND
Chloride	Normal	Non-Normal	NA	Normal	NA	Non-Normal	Normal
Dissolved Oxygen	Non-Normal	Non-Normal	Normal	Non-Normal	Normal	Non-Normal	Non-Normal
Iron - Dissolved	ND	ND	ND	Non-Normal	ND	Non-Normal	Non-Normal
Manganese - Dissolved	ND	Normal	ND	Normal	ND	Normal	Normal
Nitrate	Non-Normal	Non-Normal	NA	Non-Normal	NA	Non-Normal	Non-Normal
Nitrite	ND	ND	NA	Non-Normal	NA	ND	ND
Oxidation-Reduction Potential	Non-Normal	Non-Normal	Normal	Non-Normal	Non-Normal	Non-Normal	Non-Normal
pH - Field	Non-Normal	Non-Normal	Non-Normal	Normal	Normal	Normal	Normal
pH - Laboratory	Non-Normal	Non-Normal	Normal	Non-Normal	Non-Normal	Non-Normal	Non-Normal
Potassium	Non-Normal	Non-Normal	NA	Normal	NA	Non-Normal	Normal
Sodium	Non-Normal	Non-Normal	NA	Normal	NA	Normal	Normal
Specific Conductance	Non-Normal	Normal	Non-Normal	Normal	Non-Normal	Normal	Non-Normal
Sulfate	Normal	Normal	NA	Normal	NA	Normal	Non-Normal
Temperature	Non-Normal	Non-Normal	Normal	Normal	Normal	Normal	Normal
Total Coliform	ND	ND	NA	ND	NA	ND	ND
TOC	Non-Normal	Normal	NA	Non-Normal	NA	Non-Normal	Non-Normal
Vinyl Chloride	ND	ND	ND	Non-Normal	ND	Non-Normal	Non-Normal
Zinc - Dissolved	ND	ND	ND	ND	ND	ND	ND

**Notes:**

ND = Dataset has four or fewer quarters with detects and statistical tests cannot be performed.

NA = Not applicable.

### March 2023 Results of 95% Confidence Interval Evaluations

Constituent or Parameter	MW-1	MW-3	MW-6	MW-8	MW-10	Regulatory Level	Basis for Comparison
Ammonia (N)	ND	ND	ND to 70	ND to ND	72 to 84	None	
Arsenic - Dissolved	0.10 to 0.10	0.11 to 0.12	0.30 to 1.00	0.91 to 2.20	1.83 to 2.01	0.05 µg/L	Primary GW Standard
Arsenic - Dissolved	0.10 to 0.10	0.11 to 0.12	0.30 to 1.00	0.91 to 2.20	1.83 to 2.01	1.29 µg/L	Site-Specific Cleanup Level
Barium - Dissolved	ND to 3.90	14.2 to 16.4	11.9 to 20.0	ND to 6.00	14.5 to 17.6	1000 µg/L	Primary GW Standard
Bicarbonate	43.4 to 56.0	186 to 225	162 to 188	96 to 134	196 to 227	None	
Calcium	10,490 to 11,681	40,726 to 48,364	31,800 to 37,300	15,800 to 24,100	37,826 to 41,664	None	
Carbonate	ND	ND	ND	ND	ND	None	
COD (mg/L)	ND	ND	ND	ND	ND	None	
Chloride	3,912 to 4,780	2,260 to 4,750	2,253 to 3,363	2,160 to 2,530	4,949 to 7,949	250,000 µg/L	Secondary GW and DW Standard
Dissolved Oxygen (mg/L)	9.54 to 9.93	0.369 to 1.170	0.250 to 0.580	0.310 to 1.670	0.230 to 0.580	None	
Iron - Dissolved	ND	ND	195 to 839	172 to 706	ND to 22	300 µg/L	Secondary GW and DW Standard
Manganese - Dissolved	ND	5,556 to 6,734	477 to 700	2,109 to 2,535	4,015 to 4,468	50 µg/L	Secondary GW and DW Standard
Nitrate	231 to 715	ND to 22	ND to 223	28 to 40	ND to ND	10,000 µg/L	Primary GW and DW Standard
Nitrite	ND	ND	ND to 21	ND	ND	1,000 µg/L	Primary DW Standard
Oxidation-Reduction Potential	215 to 258	222 to 258	36 to 98	58 to 95	122 to 143	None	
pH - Field	6.4 to 6.5	6.2 to 6.3	6.6 to 6.7	6.5 to 6.7	6.6 to 6.7	6.5 - 8.5	Secondary GW Standard
pH - Laboratory	6.2 to 6.3	6.1 to 6.2	6.5 to 6.6	6.5 to 6.6	6.5 to 6.6	6.5 - 8.5	Secondary GW Standard
Potassium	620 to 681	741 to 898	1,361 to 1,781	939 to 994	1,197 to 1,303	None	
Sodium	4,382 to 4,763	8,380 to 9,790	7,876 to 9,620	7,152 to 8,182	13,639 to 17,232	20,000 µg/L	Secondary DW Standard
Specific Conductance (µmhos/cm)	340 to 460	340 to 457	307 to 377	201 to 292	394 to 472	700 µmhos/cm	Secondary DW Standard
Sulfate	3,945 to 4,380	14,649 to 17,685	6,465 to 8,317	4,054 to 4,738	8,050 to 11,000	250,000 µg/L	Secondary GW and DW Standard
Temperature (°C)	10.7 to 11.2	11.8 to 12.2	11.4 to 11.9	10.8 to 11.3	11.3 to 11.5	None	
Total Coliform (Colony Forming Units/100 mL)	ND	ND	ND	ND	ND	1/100mL	Primary GW and DW Standard
TOC	ND to 720	2,447 to 3,048	1,860 to 2,260	645 to 1,065	2,790 to 3,580	None	
Vinyl Chloride	ND	ND	ND to 0.04	ND to 0.03	ND	0.02 µg/L	Primary GW Standard
Vinyl Chloride	ND	ND	ND to 0.04	ND to 0.03	ND	0.29 µg/L	Site-Specific Cleanup Level
Zinc - Dissolved	ND	ND	ND	ND	ND	5,000 µg/L	Secondary GW and DW Standard

**Notes:**

All concentrations reported as µg/L unless otherwise noted.

- ND = Data all non-detects or 4 or fewer detections
- = 95% Lower CI Exceeds Regulatory Level (Exceedence)
- = 95% Upper CI Exceeds Regulatory Level but Lower CI Does Not (No Exceedence, No Compliance)
- = 95% Upper CI Does not Exceed Regulatory Level (No Exceedence)
- = No Regulatory Level

Normally Distributed Data - Parametric Confidence Interval - Data not Transformed

Non-Normally Distributed Data - Non-Parametric Confidence Interval - Log Base-10 Transformed Data

Non-Detects treated as 0

### June 2023 Results of 95% Confidence Interval Evaluations

Constituent or Parameter	MW-1	MW-3	MW-6	MW-8	MW-10	Regulatory Level	Basis for Comparison
Ammonia (N)	ND	ND	ND to 113	ND to ND	70 to 83	None	
Arsenic - Dissolved	0.10 to 0.11	0.11 to 0.12	0.30 to 0.91	0.87 to 1.13	1.84 to 2.02	0.05 µg/L	Primary GW Standard
Arsenic - Dissolved	0.10 to 0.11	0.11 to 0.12	0.30 to 0.91	0.87 to 1.13	1.84 to 2.02	1.29 µg/L	Site-Specific Cleanup Level
Barium - Dissolved	ND to 3.90	14.2 to 16.4	12.4 to 20.1	ND to 5.80	14.5 to 17.6	1000 µg/L	Primary GW Standard
Bicarbonate	49.3 to 59.3	186 to 225	164 to 188	96 to 131	196 to 239	None	
Calcium	10,602 to 11,756	40,785 to 48,535	30,700 to 37,300	15,600 to 22,500	37,892 to 41,758	None	
Carbonate	ND	ND	ND	ND	ND	None	
COD (mg/L)	ND	ND	ND	ND	ND	None	
Chloride	4,058 to 4,884	2,390 to 4,750	2,211 to 3,296	2,160 to 2,470	4,949 to 7,949	250,000 µg/L	Secondary GW and DW Standard
Dissolved Oxygen (mg/L)	9.53 to 9.90	0.370 to 1.170	0.250 to 0.580	0.300 to 1.670	0.230 to 0.580	None	
Iron - Dissolved	ND	ND	195 to 724	172 to 453	ND to 22	300 µg/L	Secondary GW and DW Standard
Manganese - Dissolved	ND	5,547 to 6,691	463 to 678	2,064 to 2,401	3,997 to 4,443	50 µg/L	Secondary GW and DW Standard
Nitrate	231 to 715	ND to 22	ND to 223	24 to 38	ND to ND	10,000 µg/L	Primary GW and DW Standard
Nitrite	ND	ND	ND to 21	ND	ND	1,000 µg/L	Primary DW Standard
Oxidation-Reduction Potential	200 to 255	221 to 264	34 to 98	52 to 95	115 to 137	None	
pH - Field	6.3 to 6.5	6.2 to 6.3	6.6 to 6.7	6.5 to 6.7	6.6 to 6.7	6.5 - 8.5	Secondary GW Standard
pH - Laboratory	6.2 to 6.4	6.2 to 6.3	6.5 to 6.7	6.5 to 6.6	6.5 to 6.6	6.5 - 8.5	Secondary GW Standard
Potassium	620 to 681	741 to 898	1,428 to 1,852	939 to 994	1,212 to 1,308	None	
Sodium	4,428 to 4,791	8,380 to 9,580	7,851 to 9,611	7,028 to 8,053	13,940 to 17,378	20,000 µg/L	Secondary DW Standard
Specific Conductance (µmhos/cm)	111 to 132	341 to 458	306 to 376	192 to 283	394 to 472	700 µmhos/cm	Secondary DW Standard
Sulfate	4,005 to 4,403	15,144 to 18,612	6,486 to 8,331	4,032 to 4,712	8,050 to 11,000	250,000 µg/L	Secondary GW and DW Standard
Temperature (°C)	10.7 to 11.2	11.8 to 12.2	11.4 to 11.9	10.8 to 11.3	11.3 to 11.6	None	
Total Coliform (Colony Forming Units/100 mL)	ND	ND	ND	ND	ND	1/100mL	Primary GW and DW Standard
TOC	ND to 720	2,440 to 3,032	1,860 to 2,260	621 to 1,017	2,790 to 3,560	None	
Vinyl Chloride	ND	ND	ND to 0.04	ND to 0.03	ND	0.02 µg/L	Primary GW Standard
Vinyl Chloride	ND	ND	ND to 0.04	ND to 0.03	ND	0.29 µg/L	Site-Specific Cleanup Level
Zinc - Dissolved	ND	ND	ND	ND	ND	5,000 µg/L	Secondary GW and DW Standard

**Notes:**

All concentrations reported as micrograms per liter (µg/L) unless otherwise noted.

ND	= Data all non-detects or 4 or fewer detections
	= 95% Lower CI Exceeds Regulatory Level (Exceedence)
	= 95% Upper CI Exceeds Regulatory Level but Lower CI Does Not (No Exceedence, No Compliance)
	= 95% Upper CI Does not Exceed Regulatory Level (No Exceedence)
	= No Regulatory Level

Normally Distributed Data - Parametric Confidence Interval - Data not Transformed

Non-Normally Distributed Data - Non-Parametric Confidence Interval - Log Base-10 Transformed Data

Non-Detects treated as 0

## September 2023 Results of 95% Confidence Interval Evaluations

Constituent or Parameter	MW-1	MW-3	MW-6	MW-8	MW-10	Regulatory Level	Basis for Comparison
Ammonia (N)	ND	ND	ND to 113	ND to ND	68 to 85	None	
Arsenic - Dissolved	0.10 to 0.11	0.11 to 0.12	0.31 to 0.93	0.89 to 1.13	1.84 to 1.96	0.05 µg/L	Primary GW Standard
Arsenic - Dissolved	0.10 to 0.11	0.11 to 0.12	0.31 to 0.93	0.89 to 1.13	1.84 to 1.96	1.29 µg/L	Site-Specific Cleanup Level
Barium - Dissolved	ND to 3.90	14.2 to 16.4	15.1 to 20.4	ND to 5.80	14.5 to 17.6	1000 µg/L	Primary GW Standard
Bicarbonate	49.8 to 59.7	175 to 223	170 to 197	92 to 129	209 to 239	None	
Calcium	10,745 to 11,911	40,591 to 48,019	30,700 to 38,900	15,000 to 20,100	38,496 to 42,134	None	
Carbonate	ND	ND	ND	ND	ND	None	
COD (mg/L)	ND	ND	ND	ND	ND	None	
Chloride	4,203 to 5,095	3,114 to 4,230	2,260 to 3,331	2,160 to 2,440	5,183 to 8,008	250,000 µg/L	Secondary GW and DW Standard
Dissolved Oxygen (mg/L)	9.41 to 9.90	0.370 to 1.170	0.200 to 0.580	0.290 to 1.670	0.180 to 0.580	None	
Iron - Dissolved	ND	ND	195 to 391	172 to 440	ND to 22	300 µg/L	Secondary GW and DW Standard
Manganese - Dissolved	ND	5,416 to 6,515	443 to 646	2,008 to 2,369	3,998 to 4,443	50 µg/L	Secondary GW and DW Standard
Nitrate	225 to 778	ND to 24	ND to 285	21 to 38	ND to ND	10,000 µg/L	Primary GW and DW Standard
Nitrite	ND	ND	ND to 21	ND	ND	1,000 µg/L	Primary DW Standard
Oxidation-Reduction Potential	197 to 255	207 to 284	36 to 107	52 to 95	115 to 167	None	
pH - Field	6.3 to 6.5	6.2 to 6.4	6.6 to 6.7	6.6 to 6.7	6.6 to 6.7	6.5 - 8.5	Secondary GW Standard
pH - Laboratory	6.2 to 6.4	6.1 to 6.4	6.5 to 6.6	6.5 to 6.6	6.5 to 6.6	6.5 - 8.5	Secondary GW Standard
Potassium	605 to 681	741 to 887	1,497 to 1,961	899 to 992	1,216 to 1,309	None	
Sodium	4,229 to 4,860	8,380 to 9,530	7,840 to 9,604	6,883 to 7,898	14,280 to 17,495	20,000 µg/L	Secondary DW Standard
Specific Conductance (µmhos/cm)	114 to 138	375 to 470	307 to 381	181 to 278	403 to 472	700 µmhos/cm	Secondary DW Standard
Sulfate	4,044 to 4,432	15,330 to 18,617	6,475 to 8,318	3,974 to 4,645	8,050 to 11,200	250,000 µg/L	Secondary GW and DW Standard
Temperature (°C)	10.7 to 11.2	11.8 to 12.2	11.5 to 12.0	10.9 to 11.3	11.3 to 11.6	None	
Total Coliform (Colony Forming Units/100 mL)	ND	ND	ND	ND	ND	1/100mL	Primary GW and DW Standard
TOC	ND to 720	2,413 to 2,998	1,860 to 2,260	670 to 910	2,961 to 3,399	None	
Vinyl Chloride	ND	ND	ND	ND	ND	0.02 µg/L	Primary GW Standard
Vinyl Chloride	ND	ND	ND	ND	ND	0.29 µg/L	Site-Specific Cleanup Level
Zinc - Dissolved	ND	ND	ND	ND	ND	5,000 µg/L	Secondary GW and DW Standard

**Notes:**

All concentrations reported as µg/L unless otherwise noted.

ND	= Data all non-detects or 4 or fewer detections
	= 95% Lower CI Exceeds Regulatory Level (Exceedence)
	= 95% Upper CI Exceeds Regulatory Level but Lower CI Does Not (No Exceedence, No Compliance)
	= 95% Upper CI Does not Exceed Regulatory Level (No Exceedence)
	= No Regulatory Level

Normally Distributed Data - Parametric Confidence Interval - Data not Transformed

Non-Normally Distributed Data - Non-Parametric Confidence Interval - Log Base-10 Transformed Data

Non-Detects treated as 0

**December 2023 Results of 95% Confidence Interval Evaluations**

Constituent or Parameter	MW-1	MW-3	MW-5A	MW-6	MW-7	MW-8	MW-10	Regulatory Level	Basis for Comparison
Ammonia (N)	ND	ND	NA	ND to 70	NA	ND to ND	60 to 83	None	
Arsenic - Dissolved	0.10 to 0.11	0.11 to 0.12	0.15 to 0.21	0.31 to 0.46	0.29 to 0.39	0.93 to 1.19	1.81 to 1.98	0.05 µg/L	Primary GW Standard
Arsenic - Dissolved	0.10 to 0.11	0.11 to 0.12	0.15 to 0.21	0.31 to 0.46	0.29 to 0.39	0.93 to 1.19	1.81 to 1.98	1.29 µg/L	Site-Specific Cleanup Level
Barium - Dissolved	ND to ND	14.5 to 15.5	ND	15.1 to 20.1	ND	ND to 5.80	14.5 to 15.9	1000 µg/L	Primary GW Standard
Bicarbonate	49.3 to 59.3	186 to 225	NA	164 to 188	NA	96 to 131	197 to 227	None	
Calcium	10,707 to 11,798	42,257 to 49,255	NA	32,220 to 37,000	NA	17,946 to 22,759	38,439 to 41,822	None	
Carbonate	ND	ND	NA	ND	NA	ND	ND	None	
COD (mg/L)	ND	ND	NA	ND	NA	ND	ND	None	
Chloride	4,144 to 5,053	2,510 to 4,430	NA	2,341 to 3,298	NA	2,229 to 2,440	5,249 to 7,881	250,000 µg/L	Secondary GW and DW Standard
Dissolved Oxygen (mg/L)	9.43 to 9.90	0.370 to 1.150	9.6 to 10.3	0.200 to 0.470	6.9 to 7.4	0.300 to 1.540	0.210 to 0.530	None	
Iron - Dissolved	ND	ND	ND	195 to 724	ND	230 to 440	ND to 22.50	300 µg/L	Secondary GW and DW Standard
Manganese - Dissolved	ND	5,591 to 6,687	ND	474 to 670	ND	2,008 to 2,431	4,001 to 4,404	50 µg/L	Secondary GW and DW Standard
Nitrate	225 to 715	ND to 20	NA	ND to 59	NA	28 to 37	ND to ND	10,000 µg/L	Primary GW and DW Standard
Nitrite	ND	ND	NA	ND to ND	NA	ND	ND	1,000 µg/L	Primary DW Standard
Oxidation-Reduction Potential	224 to 268	227 to 271	175 to 280	36 to 98	135 to 351	52 to 95	122 to 147	None	
pH - Field	6.3 to 6.5	6.2 to 6.3	6.2 to 7.0	6.6 to 6.7	6.6 to 6.9	6.6 to 6.7	6.6 to 6.7	6.5 - 8.5	Secondary GW Standard
pH - Laboratory	6.2 to 6.4	6.1 to 6.3	6.2 to 6.9	6.5 to 6.6	ND to ND	6.5 to 6.6	6.5 to 6.6	6.5 - 8.5	Secondary GW Standard
Potassium	620 to 651	787 to 856	NA	1,473 to 1,905	NA	939 to 992	1,183 to 1,281	None	
Sodium	4,230 to 4,860	8,570 to 9,530	NA	7,659 to 9,264	NA	7,074 to 8,008	14,410 to 16,630	20,000 µg/L	Secondary DW Standard
Specific Conductance (µmhos/cm)	111 to 133	356 to 458	92 to 239	312 to 372	89 to 249	196 to 276	401 to 462	700 µmhos/cm	Secondary DW Standard
Sulfate	3,979 to 4,352	15,436 to 18,564	NA	6,472 to 8,091	NA	4,072 to 4,666	8,050 to 11,100	250,000 µg/L	Secondary GW and DW Standard
Temperature (°C)	10.7 to 10.9	11.8 to 12.1	11.7 to 12.8	11.4 to 11.9	10.7 to 11.2	10.8 to 11.2	11.4 to 11.6	None	
Total Coliform (Colony Forming Units/100 mL)	ND	ND	NA	ND	NA	ND	ND	1/100mL	Primary GW and DW Standard
TOC	ND to 650	2,504 to 3,029	NA	1,860 to 2,140	NA	690 to 910	2,820 to 3,400	None	
Vinyl Chloride	ND	ND	ND	ND to 0.046	ND	ND to 0.048	ND to ND	0.02 µg/L	Primary GW Standard
Vinyl Chloride	ND	ND	ND	ND to 0.046	ND	ND to 0.048	ND	0.29 µg/L	Site-Specific Cleanup Level
Zinc - Dissolved	ND	ND	ND	ND	ND	ND	ND	5,000 µg/L	Secondary GW and DW Standard

Notes:

All concentrations reported as µg/L unless otherwise noted.

- ND = Data all non-detects or 4 or fewer detections
- = 95% Lower CI Exceeds Regulatory Level (Exceedence)
- = 95% Upper CI Exceeds Regulatory Level but Lower CI Does Not (No Exceedence, No Compliance)
- = 95% Upper CI Does not Exceed Regulatory Level (No Exceedence)
- = No Regulatory Level

Normally Distributed Data - Parametric Confidence Interval - Data not Transformed

Non-Normally Distributed Data - Non-Parametric Confidence Interval - Log Base-10 Transformed Data

Non-Detects treated as 0

**Appendix C:**  
**Inspection, Maintenance, and Engineering Summary for 2023**



## Inspection, Maintenance, and Engineering Summary for 2023

The bulleted items below present a summary of the inspection, maintenance, and engineering tasks that were performed during 2023 at the Olalla Landfill (Landfill).

- TRC conducted groundwater and landfill gas monitoring activities in all four quarters of 2023. The results are discussed in this report.
- TRC oversaw the removal of submersible pump from MW-1 and installation of temporary submersible pump.
- TRC continued reporting and data analysis in accordance with Section IV of the SWHP and the CAP. The results are discussed in this report.
- SWD supported KPHD in quarterly inspections conducted at the Landfill. After the inspections, KPHD stated that no problems were noted during the inspections.
- SWD conducted regular inspections of the Landfill and its engineered systems including evaluation of the drainage systems and potential erosion areas. During 2023, all systems were operating as designed.
- SWD worked with other divisions in KCPW to maintain the systems at the Landfill including maintenance of the cap, stormwater drainage systems, and the stormwater detention pond. During 2023, routine maintenance was required including mowing of the cap and removal of vegetation.
- The Kitsap County Department of Public Works, Roads Engineering survey group established permanent monitoring points, designated FM1 through FM25, on the surface of the closed Olalla Landfill in 2019. The purpose of the permanent points is to monitor possible movement of the surface of the closed landfill and Kitsap County inspects these permanent monitoring points at least annually. In December 2020, Kitsap County surveyors re-surveyed the permanent monitoring points at the Landfill. Differences between the original 2019 survey coordinates and elevations relative to the 2020 survey coordinates and elevations were within the precision of the survey instrumentation and operators. This finding demonstrates no evidence of measurable movement of the surface of the closed Landfill.

**Appendix D:  
Activities Planned for 2024**

## **Activities Planned for 2024**

The bulleted items below present a summary of the planned inspections, maintenance and engineering activities planned for 2024 at the Olalla Landfill (Landfill).

- Quarterly monitoring, sampling, and reporting will continue in accordance with Section IV of the SWHP and the CAP. SWD will continue to contract with TRC for monitoring and sampling activities for 2024.
- TRC will re-install the repaired submersible pump for MW-1 during Q2-2024 sampling event.
- TRC will continue to conduct the reporting and data analysis in accordance with Section IV of the SWHP and the CAP.
- SWD will continue to support KPHD in their quarterly inspections of the Landfill.
- SWD will continue to work with other divisions in the KCPW to maintain the systems at the Landfill including maintenance of the cap, stormwater drainage systems, and the stormwater detention pond.

**Attachment 1:**  
**2023 Quarterly Monitoring Field Data Sheet**

# **Olalla Landfill Quarterly Monitoring Field Book March 2023**



**Olalla Landfill  
Kitsap County, Washington  
Project Number: 533022.0000. Task 3**

**TRC Environmental Corporation  
1180 NW Maple Street, Suite 310  
Issaquah, Washington 98027  
(425) 395-0010  
(425) 281-3629**

## Project Instructions - Olalla Landfill Quarterly Monitoring

- Access the landfill from the main entrance off SE Burley Olalla Rd. The gate code is 9300. Lock the gate after entry.
- Inspect each well and pump head and note any repairs that are needed.
- Collect depth to water measurements at all wells including interior landfill wells MW-2 and MW-4 and shallow well MW-5 (next to MW-5A).
- Collect groundwater samples from MW-1, MW-3, MW-6, MW-8, and MW-10. There are **no samples** from interior wells MW-2 and MW-4 or from cross-gradient wells MW-5A and MW-7. Use the lowest sustainable flowrate for sample collection. Purge water can be poured on the ground away from the wells.
- The dissolved metals samples for each location get field filtered through single use 0.45 micron in-line filters.
- Take a field duplicate at MW-3 and label it as MW-9. Note it as the field duplicate in the field book.
- Measure landfill gas at all three flares using the GEM 2000. Call me if the measurements look odd or if you're having trouble with the GEM 2000.
- Make sure all wells, flare gates, and main entrance gate are locked before you leave.

### **1.1.1 Field Duplicate Sample Identification**

A field duplicate sample is collected from one of the four downgradient monitoring wells, (MW-3, MW-6, MW-8, or MW-10) during the quarterly monitoring events as described in Section 3.7.1. Duplicate sample locations will be rotated throughout the year such that each of the four downgradient monitoring wells will have one duplicate sample collected every year. Duplicate samples will be assigned fictitious sample identifiers using the following duplicate sample identification system:

- First quarter: MW-9 is the field duplicate of MW-3
- Second quarter: MW-17 is the field duplicate of MW-6
- Third quarter: MW-12 is the field duplicate of MW-8
- Fourth quarter: MW-13 is the field duplicate of MW-10

### March 2023 Quarterly Event Bottle Order Form

<b>Project Name</b>	Olalla Landfill Monitoring
<b>Project Number</b>	466410.0
<b>Client:</b>	TRC 1180 NW Maple St. Suite 310 Issaquah, WA 98027
<b>Client Contact:</b>	Wes Weisberg
<b>Lab PM:</b>	Kelly Bottem
<b># of Coolers:</b>	as needed
<b>Trip Blanks</b>	1 set (3 VOAs)

<b>Date of Bottle Request</b>	March 14, 2023
<b>Date Bottle are Needed</b>	March 21, 2022
<b>Estimated Date Samples will Return:</b>	March 2, 2022

<b>Order completed by:</b>	Laithan Briant
<b>YES</b>	Include LOOSE Labels
<b>YES</b>	Include COC's

Number of Samples	Analysis Requested	Bottles Per Sample	Typical Bottle Size and Type	Preservation	Total Bottles
<b>Groundwater Samples</b>					
7	Volatiles	3	40mL VOA	HCL	21
7	Vinyl chloride by SIM or Low Level	2	40mL VOA	HCL	14
7	Dissolved metals (As, Fe, Zn, Ba, Mn)	1	500 mL HDPE	Field Filtered/HNO <sub>3</sub>	7
7	Total metals (K, Na, Ca)	1	500 mL HDPE	HNO <sub>3</sub>	7
7	Alkalinity, carbonate, bicarbonate	1	Small OJ	-	7
7	Nitrate, nitrite, chloride, sulfate, pH	1	Large OJ	-	7
7	TOC, COD, ammonia	1	250 mL AG	H <sub>2</sub> SO <sub>4</sub>	7
7	Total coliform	1	Corning	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	7
<b>Surface Water Sample (Sampled in March or December)</b>					
0	pH	1	500 mL poly		0
0	Nitrate-Nitrogen	1			0
0	Fecal coliform	1	glass or poly	-	0

**Total Bottles: 77**



## Attachment B: Olalla Landfill MFS Monitoring Recommended Equipment List

Field Instruments Provided by Consultant:	Example
Multi-parameter meter or individual meters as noted:	YSI 556
pH meter	Orion 250A
Specific conductance meter	YSI Pro 30
Dissolved oxygen meter	YSI Model 50B
ORP meter	YSI ORP15
Turbidity meter	LaMott 2020
Flow-through cell for field parameter instruments	
Landfill gas meter (rented)	Landtech GEM 5000, or equivalent
Water Level Indicator	Solinst, Heron, Slope Indicator

### Equipment to Obtain from the County:

Keys to Bandix Road Gate, wells, and gates to flares
Grundfos Rediflow II pump controller and electrical cables

### Equipment Provided by Consultant:

Appropriate gas powered generator (Honda eu2000i or equivalent)
Power cord for generator
Extra fuel for generator in DOT-approved container(s)
Field logbook with appropriate field data forms
Pens
Sample bottles and coolers
Spray bottles
Appropriate PPE (see HASP)
5-gallon purge water buckets
Watch or phone for sample times
Utility knife or equivalent
Cell Phone

### Expendible Supplies:

0.45 micron in-line filters for dissolved metals samples
Nitrile gloves
Garbage bags
Ziploc-type bags
Paper towels
Ice
Distilled or deionized water
Liquinox™ or equivalent non-phosphate detergent
Chain of custody forms
Strapping tape (if shipping sample coolers)
Clear packing tape (if shipping sample coolers)
Calibration fluids for pH, specific conductance, DO, and ORP
Calibration gases (methane, oxygen, CO <sub>2</sub> ) and appropriate regulators and hoses
Extra batteries or charging cords for meters and water level indicator

Notes:

DOT = Department of Transportation

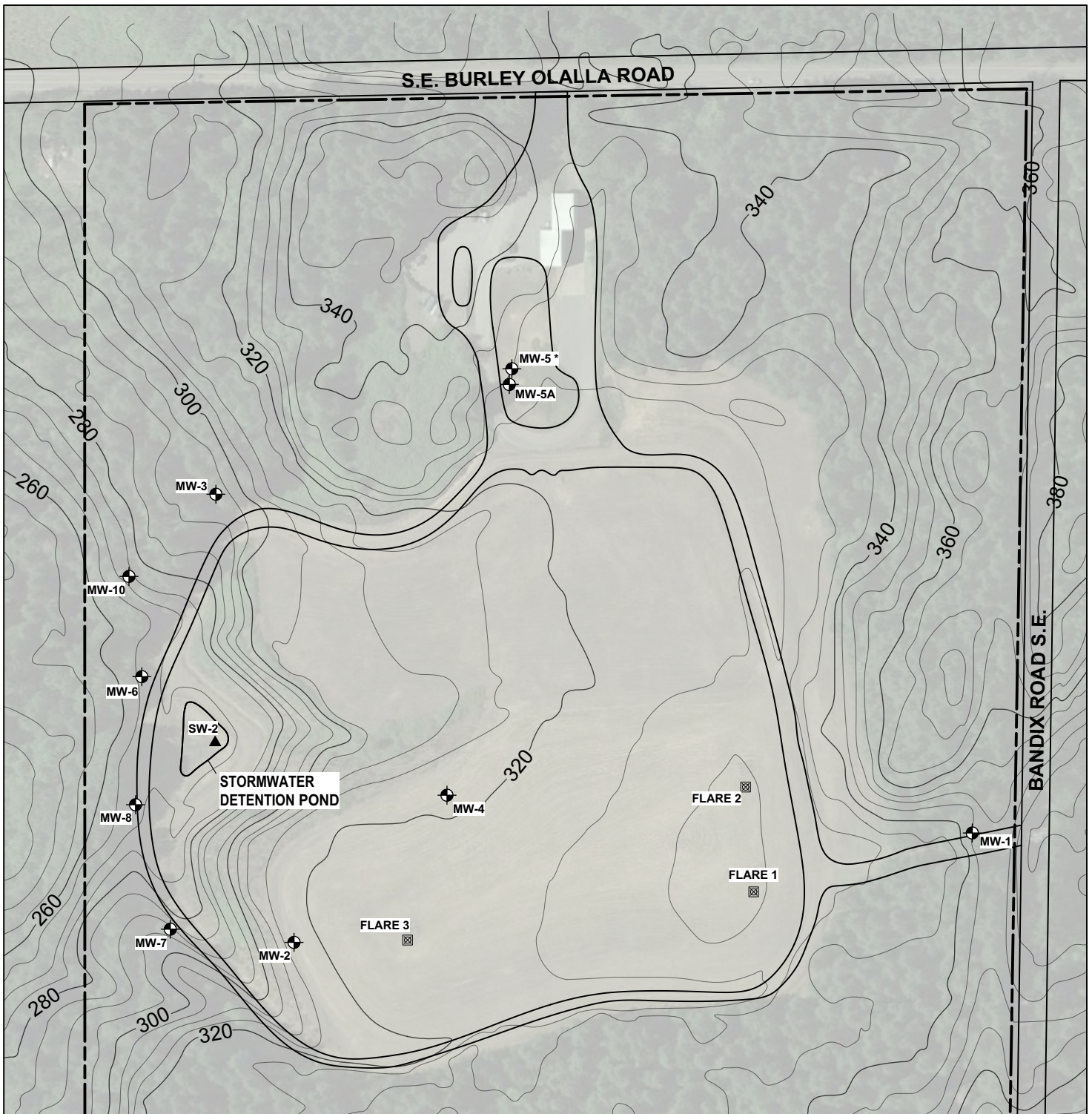
CO<sub>2</sub> = Carbon dioxide

HASP = Health and safety plan

ORP = Oxidation reduction potential

PPE = Personal protective equipment

YSI = Yellow Springs Instruments



**NOTES:**

**BASE MAP SOURCE:**  
GOOGLE EARTH

**TOPOGRAPHIC CONTOUR SOURCE:**  
KITSAP COUNTY PARCEL VIEWER

\*MW-5 IS COMPLETED IN A SHALLOW PERCHED GROUNDWATER ZONE

MW-2 MONITORING WELL LOCATION

SW-2 SURFACE WATER SAMPLING LOCATION

LANDFILL GAS FLARE

TOPOGRAPHIC ELEVATION CONTOUR

APPROXIMATE PROPERTY BOUNDARY

PERIMETER ACCESS ROAD

N

0 50 100 200

SCALE: 1" = 200'



1180 NW MAPLE ST, SUITE 310  
 ISSAQUAH, WA 98027  
 425.395.0010  
 WWW.TRCCOMPANIES.COM

**FIGURE 1**  
 OLALLA LANDFILL MONITORING WELL LOCATIONS

<b>REPORT</b> QUARTERLY MONITORING REPORT 3RD QUARTER (SEPTEMBER, 2020)	<b>PREPARED FOR</b> KITSAP COUNTY
<b>LOCATION</b> OLALLA LANDFILL KITSAP COUNTY, WASHINGTON	<b>PROJECT NUMBER</b> 382595
	<b>DATE</b> ..... 9/28/20
	<b>DRAWN BY</b> ..... JYT
	<b>REVIEWED BY</b> ..... DCK

## Depth to Water Measurement Field Data - Olalla Landfill Monitoring

Well	Time	Measuring Point Elevation (ft. NGVD <sup>1</sup> )	Depth to Water (ft.)	Comments and Well Inspection <sup>2</sup> Notes
MW-1	0821	343.79	77.42	Temp Pump
MW-2	0917	323.25	64.18	NO comment
MW-3	0947	296.95	43.95	NO comment
MW-4	0925	320.93	61.16	NO comment
MW-5	0935	334.17	9.37	NO comment
MW-5A	0939	332.53	74.85	NO comment
MW-6	1228	271.17	19.43	NO comment
MW-7	1342	280.43	24.39	NO comment
MW-8	1300	272.85	20.30	NO comment
MW-10	1025	279.21	28.90	NO comment

**Notes:**

<sup>1</sup>NGVD = National Geodetic Vertical Datum (1929)

<sup>2</sup>Observations regarding the condition of the well and surrounding area (e.g., protective casing, surface seal, cap, lock, bollards, soil conditions near the well such as depressions, ponded surface water, or other subsidence features, and any installed sampling equipment).

**Multiparameter Probe Calibration Log - Olalla Landfill Groundwater Monitoring**

Meter Type	Manufacturer	Model Number	Mfg. Serial#	Rental Co. Serial #	Date	Time

**Calibrated to Autocal Solution**

Calibration Solution Manufacturer \_\_\_\_\_ Lot Number \_\_\_\_\_ Exp. Date \_\_\_\_\_

pH = \_\_\_\_\_ Turbidity = \_\_\_\_\_ Temperature = \_\_\_\_\_

Conductivity = \_\_\_\_\_ Dissolved Oxygen = \_\_\_\_\_ ORP = \_\_\_\_\_

Comments:

*See attached*

Meter Type	Manufacturer	Model Number	Mfg. Serial#	Rental Co. Serial #	Date	Time

**Calibrated to Autocal Solution**

Calibration Solution Manufacturer \_\_\_\_\_ Lot Number \_\_\_\_\_ Exp. Date \_\_\_\_\_

pH = \_\_\_\_\_ Turbidity = \_\_\_\_\_ Temperature = \_\_\_\_\_

Conductivity = \_\_\_\_\_ Dissolved Oxygen = \_\_\_\_\_ ORP = \_\_\_\_\_

Comments:

*See attached*

# Groundwater Sampling Field Data - Olalla Landfill Monitoring

Station	MW-1	Date	3-22-23
Sample: ID	MW-1	Field Team: (Initials)	UDT EM
Field Conditions	Sunny, 45°F		

## Low-Flow Purge Information

Well Diameter (in.)	2"	Purge Method :	Submersible pump → Temp Pump
Well Depth (ft.)	87.00	Other :	
Depth to Water (ft.)	77.42	Start Time	0630
Depth of Water Column		End Time	0900
1 Casing Volume (gal.)		Total Gallons Purged	2.0 gal
Controller setting (Hz)	N/A		

Time	Gallons	pH	Conductivity	NTU	DO	Temp.	ORP	Appearance
0632	.2	6.56	.122	3.64	9.30	9.3	169.4	clear, no color
0635	.4	6.53	.122	3.34	9.36	9.3	179.1	↓
0638	.6	6.52	.122	3.54	9.44	9.4	168.3	
0641	.8	6.52	.122	2.94	9.51	9.3	219.8	
0644	1.0	6.50	.122	3.93	9.56	9.4	229.1	
0647	1.2	6.50	.123	3.46	9.53	9.4	235.5	

## Sample Information

Sample Method(s) : Submersible pump

Analysis	Time	Bottle Type	Preservative/Filtration	Comments
Volatiles and VC	0650	(3) 40-mL VOA	HCl, cool to <4°C	
Total Coliform	↓	300-mL sterile AG or poly	Cool to <4°C	
Geochemical Parameters		500-mL HDPE	Cool to <4°C	
Nitrate/Nitrite		500-mL HDPE	Cool to <4°C	
TOC		250-mL AG	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
COD		250-mL HDPE	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
Total Metals		250-mL HDPE	HNO <sub>3</sub> to pH <2, cool to <4°C	
Dissolved Metals		250-mL HDPE	Field filter, HNO <sub>3</sub> to pH <2, cool to <4°C	

Sample End Time 0900

## Comments / Exceptions:

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Notes: Where multiple visits are required to complete sampling, parameters are to be checked prior to sampling for each visit. Enter data under field comments.

# Groundwater Sampling Field Data - Olalla Landfill Monitoring

Station	<u>MW-3</u>	Date	<u>3-22-23</u>
Sample: ID	<u>MW-3</u>	Field Team: (Initials)	<u>LD+EM</u>
Field Conditions	<u>Sunny, 47°F</u>		

## Low-Flow Purge Information

Well Diameter (in.)	<u>2"</u>	Purge Method :	<u>Submersible pump</u>
Well Depth (ft.)	<u>55.00</u>	Other: :	
Depth to Water (ft.)	<u>43.95</u>	Start Time	<u>0947</u>
Depth of Water Column		End Time	<u>1010</u>
1 Casing Volume (gal.)		Total Gallons Purged	<u>2 gal</u>
Controller setting (Hz)	<u>146.4</u>		

Time	Gallons	pH	Conductivity	NTU	DO	Temp.	ORP	Appearance
<u>0947</u>	<u>.2</u>	<u>6.32</u>	<u>.542</u>	<u>1.20</u>	<u>5.64</u>	<u>10.9</u>	<u>292.3</u>	<u>Clear, no odor</u>
<u>0950</u>	<u>.4</u>	<u>6.24</u>	<u>.543</u>	<u>1.06</u>	<u>4.32</u>	<u>11.4</u>	<u>296.0</u>	↓
<u>0953</u>	<u>.6</u>	<u>6.29</u>	<u>.536</u>	<u>1.12</u>	<u>3.36</u>	<u>11.7</u>	<u>299.4</u>	
<u>0956</u>	<u>.8</u>	<u>6.29</u>	<u>.527</u>	<u>.94</u>	<u>2.29</u>	<u>11.9</u>	<u>303.4</u>	
<u>0959</u>	<u>1.0</u>	<u>6.30</u>	<u>.525</u>	<u>.83</u>	<u>2.26</u>	<u>12.0</u>	<u>310.7</u>	
<u>1002</u>	<u>1.2</u>	<u>6.32</u>	<u>.523</u>	<u>.77</u>	<u>2.23</u>	<u>12.0</u>	<u>312.3</u>	

## Sample Information

Sample Method(s) : Submersible pump

Analysis	Time	Bottle Type	Preservative/Filtration	Comments
Volatiles and VC	<u>1005</u>	(3) 40-mL VOA	HCl, cool to <4°C	
Total Coliform	↓	300-mL sterile AG or poly	Cool to <4°C	
Geochemical Parameters		500-mL HDPE	Cool to <4°C	
Nitrate/Nitrite		500-mL HDPE	Cool to <4°C	
TOC		250-mL AG	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
COD		250-mL HDPE	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
Total Metals		250-mL HDPE	HNO <sub>3</sub> to pH <2, cool to <4°C	
Dissolved Metals		250-mL HDPE	Field filter, HNO <sub>3</sub> to pH <2, cool to <4°C	

Sample End Time 1010

## Comments / Exceptions:

Dup collected → mw-9

Notes: Where multiple visits are required to complete sampling, parameters are to be checked prior to sampling for each visit. Enter data under field comments.

# Groundwater Sampling Field Data - Olalla Landfill Monitoring

Station	MW-10	Date	3-22-23
Sample: ID	MW-10	Field Team: (Initials)	LB + EM
Field Conditions	Sunny, 47°F		

## Low-Flow Purge Information

Well Diameter (in.)	2"	Purge Method	Submersible pump
Well Depth (ft.)	47.00'	Other:	
Depth to Water (ft.)	28.90	Start Time	1025
Depth of Water Column		End Time	1055
1 Casing Volume (gal.)		Total Gallons Purged	3 gal.
Controller setting (Hz)	126.0		

Time	Gallons	pH	Conductivity	NTU	DO	Temp.	ORP	Appearance
1027	.2	6.75	.476	1.09	6.28	10.7	332.6	clear, no odor
1030	.4	6.75	.473	.80	5.18	10.9	340.0	↓
1033	.6	6.74	.474	.86	3.89	11.1	342.1	
1036	.8	6.72	.473	.78	2.84	11.4	346.7	
1039	1.0	6.72	.474	.95	2.41	11.5	348.6	
1042	1.2	6.72	.472	.76	2.36	11.6	352.4	
1045	1.4	6.72	.472	.84	2.31	11.6	354.8	

## Sample Information

Sample Method(s) : Submersible pump

Analysis	Time	Bottle Type	Preservative/Filtration	Comments
Volatiles and VC	1045	(3) 40-mL VOA	HCl, cool to <4°C	
Total Coliform	↓	300-mL sterile AG or poly	Cool to <4°C	
Geochemical Parameters		500-mL HDPE	Cool to <4°C	
Nitrate/Nitrite		500-mL HDPE	Cool to <4°C	
TOC		250-mL AG	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
COD		250-mL HDPE	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
Total Metals		250-mL HDPE	HNO <sub>3</sub> to pH <2, cool to <4°C	
Dissolved Metals		250-mL HDPE	Field filter, HNO <sub>3</sub> to pH <2, cool to <4°C	

Sample End Time 1050

## Comments / Exceptions:

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Notes: Where multiple visits are required to complete sampling, parameters are to be checked prior to sampling for each visit. Enter data under field comments.

# Groundwater Sampling Field Data - Olalla Landfill Monitoring

Station	MW-6	Date	3-22-23
Sample: ID	MW-6	Field Team: (Initials)	UB FEM
Field Conditions	Sunny, 51°F		

## Low-Flow Purge Information

Well Diameter (in.)	2"	Purge Method	Submersible pump
Well Depth (ft.)	35.00'	Other:	
Depth to Water (ft.)	19.83'	Start Time	1227
Depth of Water Column		End Time	1255
1 Casing Volume (gal.)		Total Gallons Purged	3 gal
Controller setting (Hz)	104.0		

Time	Gallons	pH	Conductivity	NTU	DO	Temp.	ORP	Appearance
1230	.2	7.02	260	87.5	7.85	11.3	256.9	clear, no odor
1233	.4	6.96	252	34.7	4.97	11.7	267.3	↓
1236	.6	6.94	249	10.8	3.14	11.8	274.1	
1239	.8	6.91	249	5.26	2.61	11.9	276.4	
1242	1.0	6.89	245	4.56	2.36	11.8	281.4	
1245	1.2	6.89	245	4.87	2.33	11.8	283.1	
1248	1.4	6.86	244	4.42	2.26	11.8	285.4	

## Sample Information

Sample Method(s) : Submersible pump

Analysis	Time	Bottle Type	Preservative/Filtration	Comments
Volatiles and VC	1250	(3) 40-mL VOA	HCl, cool to <4°C	
Total Coliform	↓	300-mL sterile AG or poly	Cool to <4°C	
Geochemical Parameters		500-mL HDPE	Cool to <4°C	
Nitrate/Nitrite		500-mL HDPE	Cool to <4°C	
TOC		250-mL AG	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
COD		250-mL HDPE	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
Total Metals		250-mL HDPE	HNO <sub>3</sub> to pH <2, cool to <4°C	
Dissolved Metals		250-mL HDPE	Field filter, HNO <sub>3</sub> to pH <2, cool to <4°C	

Sample End Time 1255

## Comments / Exceptions:

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Notes: Where multiple visits are required to complete sampling, parameters are to be checked prior to sampling for each visit. Enter data under field comments.



# Groundwater Sampling Field Data - Olalla Landfill Monitoring

Station	MW-8	Date	3-22-23
Sample: ID	MW-8	Field Team: (Initials)	LBT EM
Field Conditions	Sunny, 53°F		

## Low-Flow Purge Information

Well Diameter (in.)	2"	Purge Method :	Submersible pump
Well Depth (ft.)	38.00'	Other :	
Depth to Water (ft.)	20.30'	Start Time	1300
Depth of Water Column		End Time	1335
1 Casing Volume (gal.)		Total Gallons Purged	3.5 gal
Controller setting (Hz)	110.0		

Time	Gallons	pH	Conductivity	NTU	DO	Temp.	ORP	Appearance
1303	.2	7.22	.121	13.1	7.54	10.1	263.5	Clear, no odor
1306	.4	7.16	.123	10.3	4.69	10.5	242.4	↓
1309	.6	7.09	.139	10.8	3.71	10.7	286.4	
1312	.8	6.93	.138	11.7	3.28	10.6	291.7	
1315	1.0	6.93	.145	5.64	2.89	10.9	293.0	
1318	1.2	6.86	.161	6.09	2.45	10.8	294.5	
1321	1.4	6.84	.162	6.23	2.38	10.9	294.0	
1324	1.6	6.82	.164	6.39	2.32	10.9	293.0	

## Sample Information

Sample Method(s) : Submersible pump

Analysis	Time	Bottle Type	Preservative/Filtration	Comments
Volatiles and VC	1325	(3) 40-mL VOA	HCl, cool to <4°C	
Total Coliform	↓	300-mL sterile AG or poly	Cool to <4°C	
Geochemical Parameters		500-mL HDPE	Cool to <4°C	
Nitrate/Nitrite		500-mL HDPE	Cool to <4°C	
TOC		250-mL AG	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
COD		250-mL HDPE	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
Total Metals		250-mL HDPE	HNO <sub>3</sub> to pH <2, cool to <4°C	
Dissolved Metals		250-mL HDPE	Field filter, HNO <sub>3</sub> to pH <2, cool to <4°C	

Sample End Time 1335

## Comments / Exceptions:

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Notes: Where multiple visits are required to complete sampling, parameters are to be checked prior to sampling for each visit. Enter data under field comments.

## Landfill Gas Monitoring Field Data - Olalla Landfill Monitoring

Instrument Used:	GEM 2000	Date and Time:	3-22-23 @ 1100
Ambient Temperature:	49°f	Field Team:	LB + EM
Field Conditions:	Sunny, 49°f		

### Landfill Gas Data

Flare #	Time	Methane (% vol.)	% LEL	Oxygen (% vol.)	Carbon Dioxide (% vol.)	Temperatur e(°f)	Gas Pressure ("H <sub>2</sub> O)
3	1102	00.0	00.0	20.6	00.1	50°f	-0.10
2	1114	00.0	00.0	19.6	00.7	50°f	-0.10
1	1120	00.0	00.0	20.4	00.1	50°f	-0.10

### Comments / Inspection Results<sup>1</sup>

29.81" Hg Barometric Pressure.

Flare 1 valve needs to be replaced

<sup>1</sup>Inspect the following: lock and gate operation, tightness of bolts and clamps, differential settlement, valve operation, debris or breaks in hose barb.

### YSI ProDSS RENTAL CALIBRATION CERTIFICATE

SERVICE TECHNICIAN: GM

DATE: 3/20/23

RENTAL CUSTOMER: TRC

#### INSTRUMENT INFORMATION

RENTAL I.D. NUMBER: YSI-ProDSS. 05

SERIAL NUMBER: 16F102616

#### CALIBRATION INFORMATION

PARAMETER:	STANDARD:	PASS ( )	LOT #
1. CONDUCTIVITY	1,000 $\mu$ Mhos	X	<u>057939</u>
2. pH ZERO	pH 7	X	<u>065579</u>
pH SLOPE	pH 4	X	<u>062494</u>
pH SLOPE	pH 10	X	<u>062496</u>
3. DISSOLVED OXYGEN	Air Calibration Barometric pressure = 760mmHg	X	N/A
<del>4. TURBIDITY ZERO</del>	<del>0.0 NTU's</del>	<del>—</del>	<del>N/A</del>
<del>TURBIDITY SPAN</del>	<del>100 NTU's</del>	<del>—</del>	<del>N/A</del>
5. REDOX (ORP)	231mV (YSI Zobell solution)	X	<u>040621</u>



# EQUIPCO

## CES LANDTECH MODEL: GEM 2000 CALIBRATION CERTIFICATE

SERVICE TECHNICIAN QM

DATE: 3/20/23

### INSTRUMENT INFORMATION

RENTAL ID: GEM2000. 11

SERIAL NUMBER: GM07638/04

### CALIBRATION INFORMATION

1. CALIBRATION GAS: 35 % CO<sub>2</sub>

LOT #: 573162

GAS RESPONSE: 35 % CO<sub>2</sub> ±2%

2. CALIBRATION GAS: 50 % Vol. Methane

LOT #: 573162

GAS RESPONSE: 50 % Vol. Methane ±2%

OXYGEN RESPONSE IN FRESH AIR ENVIRONMENT: 20.9% ✓

OXYGEN DOWNSCALE RESPONSE CHECKED: 0% WITH 99.9% Nitrogen ✓

THIS INSTRUMENT HAS BEEN CALIBRATED TO STANDARDS SET FORTH BY THE  
MANUFACTURER



# Chain of Custody Record & Laboratory Analysis Request



Analytical Resources, LLC  
 Analytical Chemists and Consultants  
 4611 South 134th Place, Suite 100  
 Tukwila, WA 98168  
 206-695-6200 206-695-6201 (fax)

ARI Assigned Number:	Turn-around Requested: <i>standard</i>	Page: <i>1</i> of <i>1</i>
ARI Client Company: <i>TRC</i>	Phone: <i>425-395-0010</i>	Date: <i>3/22/23</i> Ice Present?
Client Contact: <i>Eric Caddy</i>	No. of Coolers:	Cooler Temps:

Client Project Name: <i>Olalla</i>		Po#: <i>196897</i>		Analysis Requested										Notes/Comments
Client Project #: <i>533022</i>		Samplers: <i>EM and LB</i>		Voc and VC	M SIM	Dissolved Metals As, Fe, Zn, Ba, Mn	Total Metals K, Na, Ca	Alkalinity Carbonate bicarbonate	Nitrate Nitrite, chloride sulfate, pH	TOC, COD,	Ammonia	Total Calcium		
Sample ID	Date	Time	Matrix	No. Containers										
<i>MW-1</i>	<i>3/22/23</i>	<i>0850</i>	<i>Water</i>	<i>11</i>	X	X	X	X	X	X	X			<i>Diss. metals need to be lab filtered. unpreserved.</i>
<i>MW-3</i>		<i>1005</i>			X	X	X	X	X	X	X			
<i>MW-10</i>		<i>1045</i>			X	X	X	X	X	X	X			
<i>MW-6</i>		<i>1250</i>			X	X	X	X	X	X	X			
<i>MW-8</i>		<i>1325</i>			X	X	X	X	X	X	X			
<i>MW-9</i>		<i>-</i>			X	X	X	X	X	X	X			
Comments/Special Instructions				Relinquished by: <i>EM</i> (Signature)	Received by:			Relinquished by:			Received by:			
				Printed Name: <i>EVAN MILLER</i>	Printed Name:			Printed Name:			Printed Name:			
				Company: <i>TRC</i>	Company:			Company:			Company:			
				Date & Time:	Date & Time:			Date & Time:			Date & Time:			

**Limits of Liability:** ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

**Sample Retention Policy:** All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Olalla Landfill - 533022

Quarterly GWS  
Kitsap County  
3-22-23  
L. Briant

Scope: Q1 GWS  
Staff: L. Briant  
Conds: Sunny, 46°F

(1)

0800: TRC on-site

0805: Gain entrance to facility, mob to MW-1

0810: Equip PPE, review HHS for site

0820: Gauge, & Prep sampling equipment for MW-1.

0850: Sample MW-1

0900: Mob to MW-2 & MW-4, gauge wells

0925: Mob to MW-5 & MW-5A to gauge.

0935: Gauge MW-5 & MW-5A, mob to MW-3

1005: Sample MW-3

↳ collect Dup, MW-4

1015: Mob to MW-10, gauge & set up equipment.

1045: Sample MW-10.

1100: Mob to interior landfill to perform flare analysis.

1140: Finish Flare analysis.

1150: Mob to MW-6, Prep bottles for sampling

1200: Lunch break.

1225: Gauge & setup equipment on mw-6.

1250: Sample mw-6, mob to mw-6

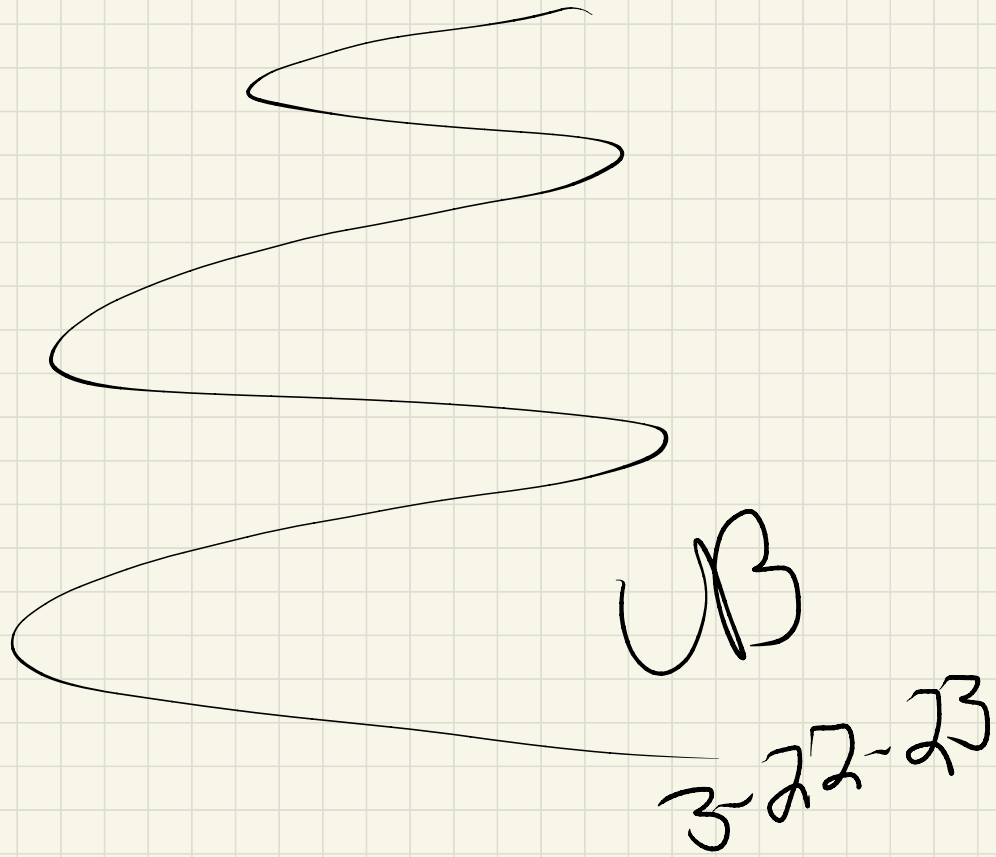
1325: Sample mw-8.

1340: Mob to mw-7, gauge well

1350: Confer w/ PM, check samples & fill out LOC.

1410: All samples present, call lab to inform of sample delivery.

1420: Trc off-site





# Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number:	Turn-around Requested: <i>standard</i>	Page: <i>1</i> of <i>1</i>
ARI Client Company: <i>TRC</i>	Phone: <i>425-395-0010</i>	Date: <i>3/22/23</i> Ice Present?
Client Contact: <i>Eric Caddy</i>	No. of Coolers:	Cooler Temps:



Analytical Resources, LLC  
 Analytical Chemists and Consultants  
 4611 South 134th Place, Suite 100  
 Tukwila, WA 98168  
 206-695-6200 206-695-6201 (fax)

Client Project Name: <i>Olalla</i> <i>PO#: 196897</i>					Analysis Requested								Notes/Comments
Client Project #: <i>533022</i>		Samplers: <i>EM and LB</i>			VOC and VC M SIM	Dissolved Metals As, Fe, Zn, Ba, Mn	Total Metals K, Na, Ca	Alkalinity, Carbonate, b. carbonate	Nitrate, Nitrite, chloride, sulfate, pH	TOC, COD, Ammonia	Total Coliform		
Sample ID	Date	Time	Matrix	No. Containers									
<i>MW-1</i>	<i>3/22/23</i>	<i>0850</i>	<i>water</i>	<i>11</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>Diss. metals need to be lab filtered. unpreserved.</i>	
<i>MW-3</i>		<i>1005</i>			<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>			
<i>MW-10</i>		<i>1045</i>			<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>			
<i>MW-6</i>		<i>1250</i>			<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>			
<i>MW-8</i>		<i>1325</i>			<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>			
<i>MW-9</i>		<i>-</i>			<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>			
Comments/Special Instructions					Relinquished by: <i>EM</i> (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)					
					Printed Name: <i>EVAN MILLER</i>	Printed Name:	Printed Name:	Printed Name:					
					Company: <i>TRC</i>	Company:	Company:	Company:					
					Date & Time:	Date & Time:	Date & Time:	Date & Time:					

**Limits of Liability:** ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

**Sample Retention Policy:** All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

# **Olalla Landfill Quarterly Monitoring Field Book June 2023**



**Olalla Landfill  
Kitsap County, Washington  
Project Number: 533022.0000. Task 3**

**TRC Environmental Corporation  
1180 NW Maple Street, Suite 310  
Issaquah, Washington 98027  
(425) 395-0010  
(425) 281-3629**

## Project Instructions - Olalla Landfill Quarterly Monitoring

- Access the landfill from the main entrance off SE Burley Olalla Rd. The gate code is 9300. Lock the gate after entry.
- Inspect each well and pump head and note any repairs that are needed.
- Collect depth to water measurements at all wells including interior landfill wells MW-2 and MW-4 and shallow well MW-5 (next to MW-5A).
- Collect groundwater samples from MW-1, MW-3, MW-6, MW-8, and MW-10. There are **no samples** from interior wells MW-2 and MW-4 or from cross-gradient wells MW-5A and MW-7. Use the lowest sustainable flowrate for sample collection. Purge water can be poured on the ground away from the wells.
- The dissolved metals samples for each location get field filtered through single use 0.45 micron in-line filters.
- Take a field duplicate at MW-6 and label it as MW-17. Note it as the field duplicate in the field book.
- Measure landfill gas at all three flares using the GEM 2000. Call me if the measurements look odd or if you're having trouble with the GEM 2000.
- Make sure all wells, flare gates, and main entrance gate are locked before you leave.



### 1.1.1 Field Duplicate Sample Identification

A field duplicate sample is collected from one of the four downgradient monitoring wells, (MW-3, MW-6, MW-8, or MW-10) during the quarterly monitoring events as described in Section 3.7.1. Duplicate sample locations will be rotated throughout the year such that each of the four downgradient monitoring wells will have one duplicate sample collected every year. Duplicate samples will be assigned fictitious sample identifiers using the following duplicate sample identification system:

- First quarter: MW-9 is the field duplicate of MW-3
- Second quarter: MW-17 is the field duplicate of MW-6
- Third quarter: MW-12 is the field duplicate of MW-8
- Fourth quarter: MW-13 is the field duplicate of MW-10

## June 2023 Quarterly Event Bottle Order Form

<b>Project Name</b>	Olalla Landfill Monitoring
<b>Project Number</b>	533022.0
<b>Client:</b>	TRC 1180 NW Maple St. Suite 310 Issaquah, WA 98027
<b>Client Contact:</b>	Wes Weisberg
<b>Lab PM:</b>	Kelly Bottem
<b># of Coolers:</b>	as needed
<b>Trip Blanks</b>	1 set (3 VOAs)

<b>Date of Bottle Request</b>	June 5, 2023
<b>Date Bottle are Needed</b>	June 13, 2022
<b>Estimated Date Samples will Return:</b>	June 13, 2022

<b>Order completed by:</b>	Laithan Briant
<b>YES</b>	Include LOOSE Labels
<b>YES</b>	Include COC's

Number of Samples	Analysis Requested	Bottles Per Sample	Typical Bottle Size and Type	Preservation	Total Bottles
<b>Groundwater Samples</b>					
7	Volatiles	3	40mL VOA	HCL	<b>21</b>
7	Vinyl chloride by SIM or Low Level	2	40mL VOA	HCL	<b>14</b>
7	Dissolved metals (As, Fe, Zn, Ba, Mn)	1	500 mL HDPE	Field Filtered/HNO <sub>3</sub>	<b>7</b>
7	Total metals (K, Na, Ca)	1	500 mL HDPE	HNO <sub>3</sub>	<b>7</b>
7	Alkalinity, carbonate, bicarbonate	1	Small OJ	-	<b>7</b>
7	Nitrate, nitrite, chloride, sulfate, pH	1	Large OJ	-	<b>7</b>
7	TOC, COD, ammonia	1	250 mL AG	H <sub>2</sub> SO <sub>4</sub>	<b>7</b>
7	Total coliform	1	Corning	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	<b>7</b>
<b>Surface Water Sample (Sampled in March or December)</b>					
0	pH	1	500 mL poly		<b>0</b>
0	Nitrate-Nitrogen	1			<b>0</b>
0	Fecal coliform	1	glass or poly	-	<b>0</b>

**Total Bottles: 77**

## Attachment B: Olalla Landfill MFS Monitoring Recommended Equipment List

Field Instruments Provided by Consultant:	Example
Multi-parameter meter or individual meters as noted:	YSI 556
pH meter	Orion 250A
Specific conductance meter	YSI Pro 30
Dissolved oxygen meter	YSI Model 50B
ORP meter	YSI ORP15
Turbidity meter	LaMott 2020
Flow-through cell for field parameter instruments	
Landfill gas meter (rented)	Landtech GEM 5000, or equivalent
Water Level Indicator	Solinst, Heron, Slope Indicator

### Equipment to Obtain from the County:

Keys to Bandix Road Gate, wells, and gates to flares
Grundfos Rediflow II pump controller and electrical cables

### Equipment Provided by Consultant:

Appropriate gas powered generator (Honda eu2000i or equivalent)
Power cord for generator
Extra fuel for generator in DOT-approved container(s)
Field logbook with appropriate field data forms
Pens
Sample bottles and coolers
Spray bottles
Appropriate PPE (see HASP)
5-gallon purge water buckets
Watch or phone for sample times
Utility knife or equivalent
Cell Phone

### Expendible Supplies:

0.45 micron in-line filters for dissolved metals samples
Nitrile gloves
Garbage bags
Ziploc-type bags
Paper towels
Ice
Distilled or deionized water
Liquinox™ or equivalent non-phosphate detergent
Chain of custody forms
Strapping tape (if shipping sample coolers)
Clear packing tape (if shipping sample coolers)
Calibration fluids for pH, specific conductance, DO, and ORP
Calibration gases (methane, oxygen, CO <sub>2</sub> ) and appropriate regulators and hoses
Extra batteries or charging cords for meters and water level indicator

Notes:

DOT = Department of Transportation

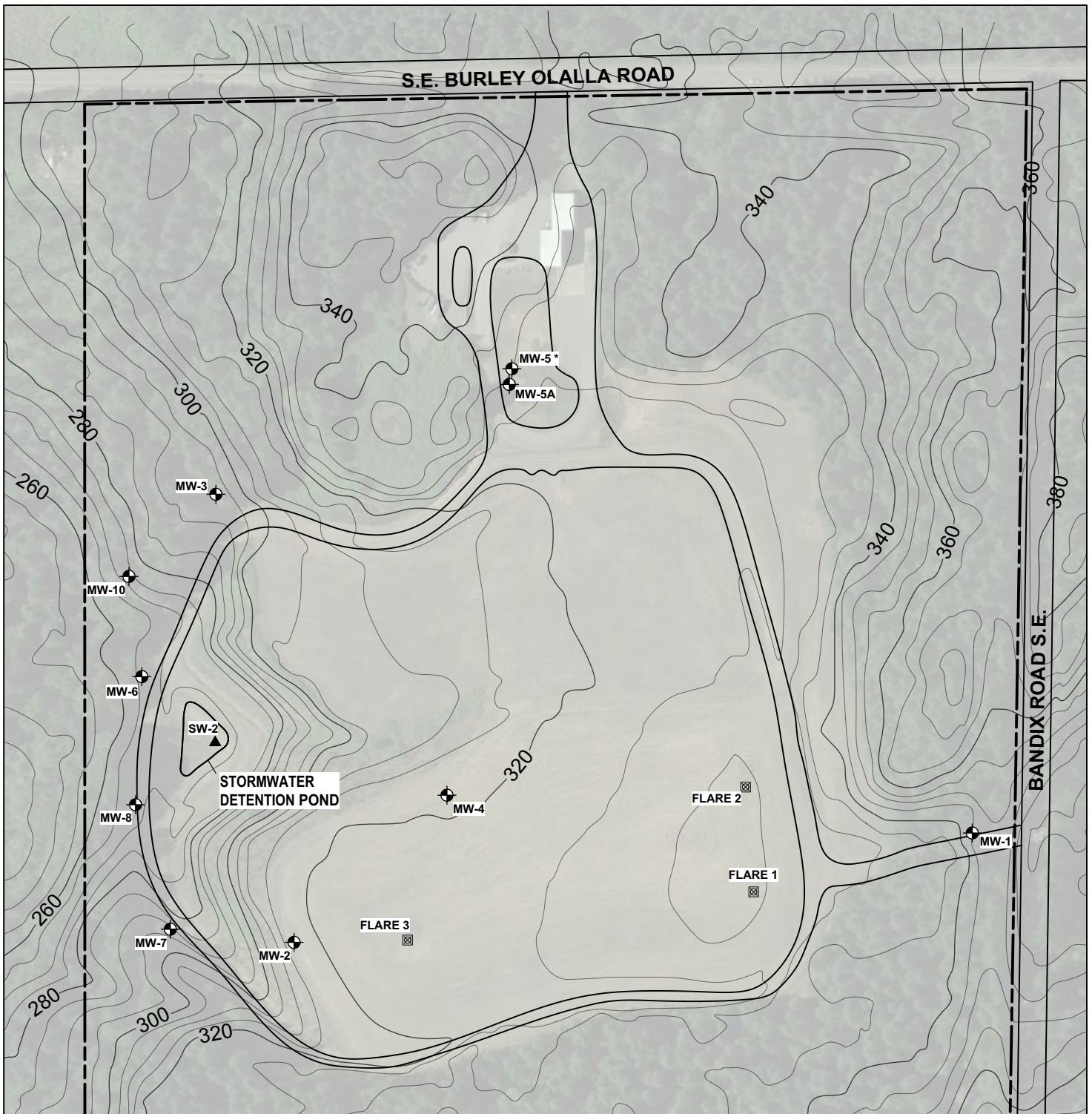
CO<sub>2</sub> = Carbon dioxide

HASP = Health and safety plan

ORP = Oxidation reduction potential

PPE = Personal protective equipment

YSI = Yellow Springs Instruments



**NOTES:**

**BASE MAP SOURCE:**  
GOOGLE EARTH

**TOPOGRAPHIC CONTOUR SOURCE:**  
KITSAP COUNTY PARCEL VIEWER

\*MW-5 IS COMPLETED IN A SHALLOW PERCHED GROUNDWATER ZONE

MW-2 MONITORING WELL LOCATION

SW-2 SURFACE WATER SAMPLING LOCATION

LANDFILL GAS FLARE

TOPOGRAPHIC ELEVATION CONTOUR

APPROXIMATE PROPERTY BOUNDARY

PERIMETER ACCESS ROAD

0 50 100 200

SCALE: 1" = 200'



1180 NW MAPLE ST, SUITE 310  
ISSAQUAH, WA 98027  
425.395.0010  
WWW.TRCCOMPANIES.COM

**FIGURE 1**  
OLALLA LANDFILL MONITORING WELL LOCATIONS

<b>REPORT</b> QUARTERLY MONITORING REPORT 3RD QUARTER (SEPTEMBER, 2020)	<b>PREPARED FOR</b> KITSAP COUNTY
<b>LOCATION</b> OLALLA LANDFILL KITSAP COUNTY, WASHINGTON	<b>PROJECT NUMBER</b> 382595
	<b>DATE</b> ..... 9/28/20
	<b>DRAWN BY</b> ..... JYT
	<b>REVIEWED BY</b> ..... DCK

## Depth to Water Measurement Field Data - Olalla Landfill Monitoring

Well	Time	Measuring Point Elevation (ft. NGVD <sup>1</sup> )	Depth to Water (ft.)	Comments and Well Inspection <sup>2</sup> Notes
MW-1	0634	343.79	76.01	Temp Pump
MW-2	0914	323.25	64.90	NO comment
MW-3	0950	296.95	44.75	NO comment
MW-4	0919	320.93	61.66	NO comment
MW-5	0940	334.17	10.46	well cap sealed on, broke off.
MW-5A	0945	332.53	75.37	NO comment
MW-6	1056	271.17	20.56	NO comment
MW-7	1255	280.43	25.14	NO comment
MW-8	1305	272.85	21.06	NO comment
MW-10	1023	279.21	29.63	NO comment

**Notes:**

<sup>1</sup>NGVD = National Geodetic Vertical Datum (1929)

<sup>2</sup>Observations regarding the condition of the well and surrounding area (e.g., protective casing, surface seal, cap, lock, bollards, soil conditions near the well such as depressions, ponded surface water, or other subsidence features, and any installed sampling equipment).



Multiparameter Probe Calibration Log - Olalla Landfill Groundwater Monitoring

Meter Type	Manufacturer	Model Number	Mfg. Serial#	Rental Co. Serial #	Date	Time
<p><b>Calibrated to Autocal Solution</b></p> <p>Calibration Solution Manufacturer _____ Lot Number _____ Exp. Date _____</p> <p>pH = _____ Turbidity = _____ Temperature = _____</p> <p>Conductivity = _____ Dissolved Oxygen = _____ ORP = _____</p> <p>Comments: <i>See attached</i></p>						
Meter Type	Manufacturer	Model Number	Mfg. Serial#	Rental Co. Serial #	Date	Time
<p><b>Calibrated to Autocal Solution</b></p> <p>Calibration Solution Manufacturer _____ Lot Number _____ Exp. Date _____</p> <p>pH = _____ Turbidity = _____ Temperature = _____</p> <p>Conductivity = _____ Dissolved Oxygen = _____ ORP = _____</p> <p>Comments:</p>						

# Groundwater Sampling Field Data - Olalla Landfill Monitoring

Station	MW-1	Date	6-13-23
Sample: ID	MW-1	Field Team: (Initials)	LB & EM
Field Conditions	overcast, ~ 60°		

## Low-Flow Purge Information

Well Diameter (in.)	2"	Purge Method :	Submersible pump
Well Depth (ft.)	87'	Other: :	
Depth to Water (ft.)	78.01'	Start Time	0832
Depth of Water Column		End Time	0900
1 Casing Volume (gal.)		Total Gallons Purged	1.5 gal
Controller setting (Hz)	N/A		

Time	Gallons	pH	Conductivity	NTU	DO	Temp.	ORP	Appearance
0836	0.2	6.39	0.123	1.81	8.45	10.5	5.9	Clear
0839	0.4	6.19	0.123	1.56	8.64	10.6	15.9	↓
0842	0.6	6.18	0.124	1.52	8.73	10.7	22.7	
0845	0.8	6.19	0.124	2.40	8.75	10.6	27.6	
0848	1.0	6.19	0.124	1.19	8.79	10.8	32.0	

## Sample Information

Sample Method(s) : Submersible pump

Analysis	Time	Bottle Type	Preservative/Filtration	Comments
Volatiles and VC	0855	(3) 40-mL VOA	HCl, cool to <4°C	
Total Coliform	↓	300-mL sterile AG or poly	Cool to <4°C	
Geochemical Parameters		500-mL HDPE	Cool to <4°C	
Nitrate/Nitrite		500-mL HDPE	Cool to <4°C	
TOC		250-mL AG	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
COD		250-mL HDPE	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
Total Metals		250-mL HDPE	HNO <sub>3</sub> to pH <2, cool to <4°C	
Dissolved Metals		250-mL HDPE	Field filter, HNO <sub>3</sub> to pH <2, cool to <4°C	

Sample End Time 0900

## Comments / Exceptions:

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Temp Pump

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Notes: Where multiple visits are required to complete sampling, parameters are to be checked prior to sampling for each visit. Enter data under field comments.

# Groundwater Sampling Field Data - Olalla Landfill Monitoring

Station	MW-3	Date	6-13-23
Sample: ID	MW-3	Field Team: (Initials)	LB + EM
Field Conditions	Overcast, 57°F		

## Low-Flow Purge Information

Well Diameter (in.)	2"	Purge Method :	Submersible pump
Well Depth (ft.)	55.00'	Other :	
Depth to Water (ft.)	44.75'	Start Time	0950
Depth of Water Column		End Time	1015
1 Casing Volume (gal.)		Total Gallons Purged	15 gal
Controller setting (Hz)	146.0		

Time	Gallons	pH	Conductivity	NTU	DO	Temp.	ORP	Appearance
0951	0.2	6.25	0.540	7.73	3.33	11.1	12.4	clear
0954	0.4	6.25	0.530	4.72	0.79	11.3	8.9	↓
0957	0.6	6.25	0.521	4.32	0.46	11.5	5.3	
1000	0.8	6.25	0.519	3.98	0.35	11.6	-1.3	
1003	1.0	6.26	0.518	3.19	0.27	11.7	-9.5	

## Sample Information

Sample Method(s) : Submersible pump

Analysis	Time	Bottle Type	Preservative/Filtration	Comments
Volatiles and VC	1010	(3) 40-mL VOA	HCl, cool to <4°C	
Total Coliform	↓	300-mL sterile AG or poly	Cool to <4°C	
Geochemical Parameters		500-mL HDPE	Cool to <4°C	
Nitrate/Nitrite		500-mL HDPE	Cool to <4°C	
TOC		250-mL AG	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
COD		250-mL HDPE	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
Total Metals		250-mL HDPE	HNO <sub>3</sub> to pH <2, cool to <4°C	
Dissolved Metals		250-mL HDPE	Field filter, HNO <sub>3</sub> to pH <2, cool to <4°C	

Sample End Time 1015

## Comments / Exceptions:

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Notes: Where multiple visits are required to complete sampling, parameters are to be checked prior to sampling for each visit. Enter data under field comments.

# Groundwater Sampling Field Data - Olalla Landfill Monitoring

Station	MW-10	Date	6-13-23
Sample: ID	MW-10	Field Team: (Initials)	LIB + EM
Field Conditions	Overcast, 60°F		

## Low-Flow Purge Information

Well Diameter (in.)	2"	Purge Method	Submersible pump
Well Depth (ft.)	47.00'	Other:	
Depth to Water (ft.)	29.63'	Start Time	1025
Depth of Water Column		End Time	1055
1 Casing Volume (gal.)		Total Gallons Purged	2 gal
Controller setting (Hz)	124.0		

Time	Gallons	pH	Conductivity	NTU	DO	Temp.	ORP	Appearance
1026	.2	6.65	0.390	6.25	8.27	10.8	33.1	clear, no odor
1029	.4	6.61	0.444	3.34	2.54	10.8	19.3	↓
1032	.6	6.63	0.465	3.94	0.61	11.1	7.1	
1035	.4	6.62	0.463	1.06	0.26	11.4	-14.3	
1038	1.0	6.64	0.461	0.73	0.09	11.6	-35.3	
1041	1.2	6.63	0.461	0.57	0.06	11.7	-42.9	
1044	1.4	6.64	0.462	0.50	0.03	11.7	-50.3	

## Sample Information

Sample Method(s) : Submersible pump

Analysis	Time	Bottle Type	Preservative/Filtration	Comments
Volatiles and VC	1050	(3) 40-mL VOA	HCl, cool to <4°C	
Total Coliform	↓	300-mL sterile AG or poly	Cool to <4°C	
Geochemical Parameters		500-mL HDPE	Cool to <4°C	
Nitrate/Nitrite		500-mL HDPE	Cool to <4°C	
TOC		250-mL AG	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
COD		250-mL HDPE	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
Total Metals		250-mL HDPE	HNO <sub>3</sub> to pH <2, cool to <4°C	
Dissolved Metals		250-mL HDPE	Field filter, HNO <sub>3</sub> to pH <2, cool to <4°C	

Sample End Time 1055

## Comments / Exceptions:

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Notes: Where multiple visits are required to complete sampling, parameters are to be checked prior to sampling for each visit. Enter data under field comments.

# Groundwater Sampling Field Data - Olalla Landfill Monitoring

Station	MW-6	Date	6-13-23
Sample: ID	MW-6	Field Team: (Initials)	UB + IEM
Field Conditions	Overcast, 60°		

## Low-Flow Purge Information

Well Diameter (in.)	2"	Purge Method	Submersible pump
Well Depth (ft.)	35.00'	Other:	
Depth to Water (ft.)	20.56	Start Time	10:57
Depth of Water Column		End Time	11:35
1 Casing Volume (gal.)		Total Gallons Purged	2.5 gal
Controller setting (Hz)	104.0		

Time	Gallons	pH	Conductivity	NTU	DO	Temp.	ORP	Appearance
1056	.2	6.76	0.240	36.3	3.63	10.9	-5.1	clear, no odor
1101	.4	6.71	0.247	21.1	2.01	11.2	-13.4	↓
1104	.6	6.67	0.302	12.6	1.20	11.4	-24.3	
1107	.8	6.65	0.302	11.3	0.64	11.5	-30.9	
1110	1.0	6.62	0.303	2.40	0.07	11.4	-39.3	
1113	1.2	6.62	0.304	2.70	0.03	11.3	-45.7	

## Sample Information

Sample Method(s) : Submersible pump

Analysis	Time	Bottle Type	Preservative/Filtration	Comments
Volatiles and VC	1125	(3) 40-mL VOA	HCl, cool to <4°C	
Total Coliform	↓	300-mL sterile AG or poly	Cool to <4°C	
Geochemical Parameters		500-mL HDPE	Cool to <4°C	
Nitrate/Nitrite		500-mL HDPE	Cool to <4°C	
TOC		250-mL AG	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
COD		250-mL HDPE	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
Total Metals		250-mL HDPE	HNO <sub>3</sub> to pH <2, cool to <4°C	
Dissolved Metals		250-mL HDPE	Field filter, HNO <sub>3</sub> to pH <2, cool to <4°C	

Sample End Time 1125

## Comments / Exceptions:

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Notes: Where multiple visits are required to complete sampling, parameters are to be checked prior to sampling for each visit. Enter data under field comments.

# Groundwater Sampling Field Data - Olalla Landfill Monitoring

Station	MW-8	Date	6-13-2023
Sample: ID	MW-8	Field Team: (Initials)	LR + EM
Field Conditions	Overcast, 60°F		

## Low-Flow Purge Information

Well Diameter (in.)	2"	Purge Method	Submersible pump
Well Depth (ft.)	28.00'	Other: :	
Depth to Water (ft.)	21.06	Start Time	1305
Depth of Water Column		End Time	1340
1 Casing Volume (gal.)		Total Gallons Purged	25 gal
Controller setting (Hz)	110.0		

Time	Gallons	pH	Conductivity	NTU	DO	Temp.	ORP	Appearance
1306	0.2	6.69	0.121	19.7	1.7	10.1	-66.9	Clear
1309	0.4	6.69	0.136	11.1	0.69	10.3	-69.3	↓
1312	0.6	6.69	0.151	7.47	0.49	10.4	-70.7	
1315	0.8	6.67	0.155	7.86	0.33	10.5	-72.4	
1318	1.0	6.65	0.157	6.99	0.27	10.6	-73.1	
1321	1.2	6.65	0.158	4.42	0.22	10.5	-74.3	

## Sample Information

Sample Method(s) : Submersible pump

Analysis	Time	Bottle Type	Preservative/Filtration	Comments
Volatiles and VC	1330	(3) 40-mL VOA	HCl, cool to <4°C	
Total Coliform	↓	300-mL sterile AG or poly	Cool to <4°C	
Geochemical Parameters		500-mL HDPE	Cool to <4°C	
Nitrate/Nitrite		500-mL HDPE	Cool to <4°C	
TOC		250-mL AG	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
COD		250-mL HDPE	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
Total Metals		250-mL HDPE	HNO <sub>3</sub> to pH <2, cool to <4°C	
Dissolved Metals		250-mL HDPE	Field filter, HNO <sub>3</sub> to pH <2, cool to <4°C	

Sample End Time 1340

## Comments / Exceptions:

Black particulate in H<sub>2</sub>O at start

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Notes: Where multiple visits are required to complete sampling, parameters are to be checked prior to sampling for each visit. Enter data under field comments.

## Landfill Gas Monitoring Field Data - Olalla Landfill Monitoring

Instrument Used:	GEM 2000	Date and Time:	6/13/23 @ 1150
Ambient Temperature:	62 ° F	Field Team:	LB + EM
Field Conditions:	62 ° F, Cloudy		

### Landfill Gas Data

Flare #	Time	Methane (% vol.)	% LEL	Oxygen (% vol.)	Carbon Dioxide (% vol.)	Temperatur e (°F)	Gas Pressure ("H <sub>2</sub> O)
3	1150	00.0	000%	19.0	1.4	62°F	0.10
2	1205	00.0	000%	20.9	0.1	62°F	0.10
1	1225	00.0	000%	21.0	0.1	62°F	0.12

### Comments / Inspection Results<sup>1</sup>

29.73 MM Hg

Flare 1 nozzle repaired

<sup>1</sup>Inspect the following: lock and gate operation, tightness of bolts and clamps, differential settlement, valve operation, debris or breaks in hose barb.

### YSI ProDSS RENTAL CALIBRATION CERTIFICATE

SERVICE TECHNICIAN: SM

DATE: 6/12/23

RENTAL CUSTOMER: TRC

#### INSTRUMENT INFORMATION

RENTAL I.D. NUMBER: YSI-ProDSS. 07

SERIAL NUMBER: 16F104825

#### CALIBRATION INFORMATION

PARAMETER:	STANDARD:	PASS ( )	LOT #
1. CONDUCTIVITY	1.000 $\mu$ Mhos	<u>X</u>	<u>057939</u>
2. pH ZERO	pH 7	<u>X</u>	<u>062494</u>
pH SLOPE	pH 4	<u>X</u>	<u>065579</u>
pH SLOPE	pH 10	<u>X</u>	<u>062496</u>
3. DISSOLVED OXYGEN	Air Calibration Barometric pressure = 760mmHg	<u>X</u>	N/A
4. TURBIDITY ZERO	0.0 NTU's	<u>X</u>	N/A
TURBIDITY SPAN	100 NTU's	<u>X</u>	N/A
5. REDOX (ORP)	231mV (YSI Zobell solution)	<u>X</u>	<u>040621</u>



# EQUIPCO

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## CES LANDTECH MODEL: GEM 2000 CALIBRATION CERTIFICATE

SERVICE TECHNICIAN: GM

DATE: 6/12/23

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### INSTRUMENT INFORMATION

RENTAL ID: GEM2000. 08

SERIAL NUMBER: GM07210/03

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### CALIBRATION INFORMATION

1..CALIBRATION GAS: 35 % CO<sub>2</sub>

LOT #: 573162

GAS RESPONSE: 35 % CO<sub>2</sub> ±2%

2. CALIBRATION GAS: 50 % Vol. Methane

LOT #: 573162

GAS RESPONSE: 50 % Vol. Methane ±2%

OXYGEN RESPONSE IN FRESH AIR ENVIRONMENT: 20.9%

OXYGEN DOWNSCALE RESPONSE CHECKED: 0% WITH 99.9% Nitrogen

THIS INSTRUMENT HAS BEEN CALIBRATED TO STANDARDS SET FORTH BY THE  
MANUFACTURER

Olalla Landfill - 533022

Q2 2023 GWS

6-13-23

Olalla, WA

L. Briant 

Scope: Quarterly GWS  
Staff: L. Brint & E. Miller  
conds: overcast, 54°F

6-13-2023

①

0400 E. Miller on-site

0410 L. Brint on-site.

0415 Review H&S for site, equip PPE.

0425 MOB to MW-1, gauge & begin purge of well.

0855 Sample MW-1

0910 MOB to MW-2 & MW-4, gauge wells

0920 MOB to MW-5 & MW-5A to gauge.  
↳ MW-5 cap secured on. Had to break off.  
will replace cap. ziploc over well for now.

0945 MOB to MW-3, begin purge.

1010 Sample MW-3, MOB to MW-10

1050 Sample MW-10, MOB to MW-6 (collected Dup here)

1125 Sample MW-6  
↳ collected Dup, MW-7

1140 Perform flare analysis on 3 on-site flares.

1205 Repair Flare 1 nozzle.

1225 complete Flare analysis, Lunch break.

LB

(2)

- 1255 mob to mw-7, gauge well
- 1300 mob to mw-8, begin Purge
- 1330 Sample mw-8
- 1345 mob equipment to vehicles.
- 1350 check all samples w/ COC, fill out & confirm analyses for all w/ scope of work.
- 1415 All samples/containers accounted for, lock up & exit facility
- 1425 TDR off-site

LB  
6/3/23

# Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number:	Turn-around Requested: <u>Standard</u>	Page: <u>1</u> of <u>1</u>
ARI Client Company: <u>TRC</u>	Phone: <u>425-395-0010</u>	Date: <u>6/13/23</u> Ice Present?
Client Contact: <u>ECaddey@TRCcompanies.com, Weisberg</u>	No. of Coolers:	Cooler Temps:



Analytical Resources, LLC  
 Analytical Chemists and Consultants  
 4611 South 134th Place, Suite 100  
 Tukwila, WA 98168  
 206-695-6200 206-695-6201 (fax)

Client Project Name: <u>Ollala Landfill PO# 196897</u>					Analysis Requested								Notes/Comments	
Client Project #: <u>633022</u> Samplers: <u>E. Miller, L. Briant</u>					VOC and VC	6Y SIM	Dissolved Metals As, Fe, Zn, Ba, Mn	Total Metals K, Na, Ca	Alkalinity, carbonate, bicarbonate	Nitrate, Nitrite, chloride, sulfate, PH	TOL, COD, Ammonia	Total coliform		
Sample ID	Date	Time	Matrix	No. Containers										
MW-1	6/13/23	0855	H <sub>2</sub> O	11	X	X	X	X	X	X	X			
MW-3		1010			X	X	X	X	X	X	X			
MW-10		1050			X	X	X	X	X	X	X			
MW-6		1125			X	X	X	X	X	X	X			
MW-17					X	X	X	X	X	X	X			
MW-7		1330			X	X	X	X	X	X	X			
Comments/Special Instructions					Relinquished by: (Signature) <u>EM</u>	Received by: (Signature)			Relinquished by: (Signature)	Received by: (Signature)				
					Printed Name: <u>Evan Miller</u>	Printed Name:			Printed Name:	Printed Name:				
					Company: <u>TRC</u>	Company:			Company:	Company:				
					Date & Time: <u>6/13/23</u>	Date & Time:			Date & Time:	Date & Time:				

**Limits of Liability:** ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

**Sample Retention Policy:** All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

# **Olalla Landfill Quarterly Monitoring Field Book September 2023**



**Olalla Landfill  
Kitsap County, Washington  
Project Number: 533022.0000. Task 3**

**TRC Environmental Corporation  
1180 NW Maple Street, Suite 310  
Issaquah, Washington 98027  
(425) 395-0010  
(425) 281-3629**

## Project Instructions - Olalla Landfill Quarterly Monitoring

- Access the landfill from the main entrance off SE Burley Olalla Rd. The gate code is 9300. Lock the gate after entry.
- Inspect each well and pump head and note any repairs that are needed.
- Collect depth to water measurements at all wells including interior landfill wells MW-2 and MW-4 and shallow well MW-5 (next to MW-5A).
- Collect groundwater samples from MW-1, MW-3, MW-6, MW-8, and MW-10. There are **no samples** from interior wells MW-2 and MW-4 or from cross-gradient wells MW-5A and MW-7. Use the lowest sustainable flowrate for sample collection. Purge water can be poured on the ground away from the wells.
- The dissolved metals samples for each location get field filtered through single use 0.45 micron in-line filters.
- Take a field duplicate at MW-8 and label it as MW-12. Note it as the field duplicate in the field book.
- Measure landfill gas at all three flares using the GEM 2000. Call me if the measurements look odd or if you're having trouble with the GEM 2000.
- Make sure all wells, flare gates, and main entrance gate are locked before you leave.



### 1.1.1 Field Duplicate Sample Identification

A field duplicate sample is collected from one of the four downgradient monitoring wells, (MW-3, MW-6, MW-8, or MW-10) during the quarterly monitoring events as described in Section 3.7.1. Duplicate sample locations will be rotated throughout the year such that each of the four downgradient monitoring wells will have one duplicate sample collected every year. Duplicate samples will be assigned fictitious sample identifiers using the following duplicate sample identification system:

- First quarter: MW-9 is the field duplicate of MW-3
- Second quarter: MW-17 is the field duplicate of MW-6
- Third quarter: MW-12 is the field duplicate of MW-8
- Fourth quarter: MW-13 is the field duplicate of MW-10



## September 2023 Quarterly Event Bottle Order Form

<b>Project Name</b>	Olalla Landfill Monitoring
<b>Project Number</b>	533022.0
<b>Client:</b>	TRC 1180 NW Maple St. Suite 310 Issaquah, WA 98027
<b>Client Contact:</b>	Wes Weisberg
<b>Lab PM:</b>	Kelly Bottem
<b># of Coolers:</b>	as needed
<b>Trip Blanks</b>	1 set (3 VOAs)

<b>Date of Bottle Request</b>	September 7, 2023
<b>Date Bottle are Needed</b>	September 21, 2023
<b>Estimated Date Samples will Return:</b>	September 21, 2023

<b>Order completed by:</b>	Laithan Briant
<b>YES</b>	Include LOOSE Labels
<b>YES</b>	Include COC's

Number of Samples	Analysis Requested	Bottles Per Sample	Typical Bottle Size and Type	Preservation	Total Bottles
<b>Groundwater Samples</b>					
7	Volatiles	3	40mL VOA	HCL	<b>21</b>
7	Vinyl chloride by SIM or Low Level	2	40mL VOA	HCL	<b>14</b>
7	Dissolved metals (As, Fe, Zn, Ba, Mn)	1	500 mL HDPE	Field Filtered/HNO <sub>3</sub>	<b>7</b>
7	Total metals (K, Na, Ca)	1	500 mL HDPE	HNO <sub>3</sub>	<b>7</b>
7	Alkalinity, carbonate, bicarbonate	1	Small OJ	-	<b>7</b>
7	Nitrate, nitrite, chloride, sulfate, pH	1	Large OJ	-	<b>7</b>
7	TOC, COD, ammonia	1	250 mL AG	H <sub>2</sub> SO <sub>4</sub>	<b>7</b>
7	Total coliform	1	Corning	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	<b>7</b>
<b>Surface Water Sample (Sampled in March or December)</b>					
0	pH	1	500 mL poly		<b>0</b>
0	Nitrate-Nitrogen	1			<b>0</b>
0	Fecal coliform	1	glass or poly	-	<b>0</b>

**Total Bottles: 77**

## Attachment B: Olalla Landfill MFS Monitoring Recommended Equipment List

Field Instruments Provided by Consultant:	Example
Multi-parameter meter or individual meters as noted:	YSI 556
pH meter	Orion 250A
Specific conductance meter	YSI Pro 30
Dissolved oxygen meter	YSI Model 50B
ORP meter	YSI ORP15
Turbidity meter	LaMott 2020
Flow-through cell for field parameter instruments	
Landfill gas meter (rented)	Landtech GEM 5000, or equivalent
Water Level Indicator	Solinst, Heron, Slope Indicator

### Equipment to Obtain from the County:

Keys to Bandix Road Gate, wells, and gates to flares
Grundfos Rediflow II pump controller and electrical cables

### Equipment Provided by Consultant:

Appropriate gas powered generator (Honda eu2000i or equivalent)
Power cord for generator
Extra fuel for generator in DOT-approved container(s)
Field logbook with appropriate field data forms
Pens
Sample bottles and coolers
Spray bottles
Appropriate PPE (see HASP)
5-gallon purge water buckets
Watch or phone for sample times
Utility knife or equivalent
Cell Phone

### Expendible Supplies:

0.45 micron in-line filters for dissolved metals samples
Nitrile gloves
Garbage bags
Ziploc-type bags
Paper towels
Ice
Distilled or deionized water
Liquinox™ or equivalent non-phosphate detergent
Chain of custody forms
Strapping tape (if shipping sample coolers)
Clear packing tape (if shipping sample coolers)
Calibration fluids for pH, specific conductance, DO, and ORP
Calibration gases (methane, oxygen, CO <sub>2</sub> ) and appropriate regulators and hoses
Extra batteries or charging cords for meters and water level indicator

Notes:

DOT = Department of Transportation

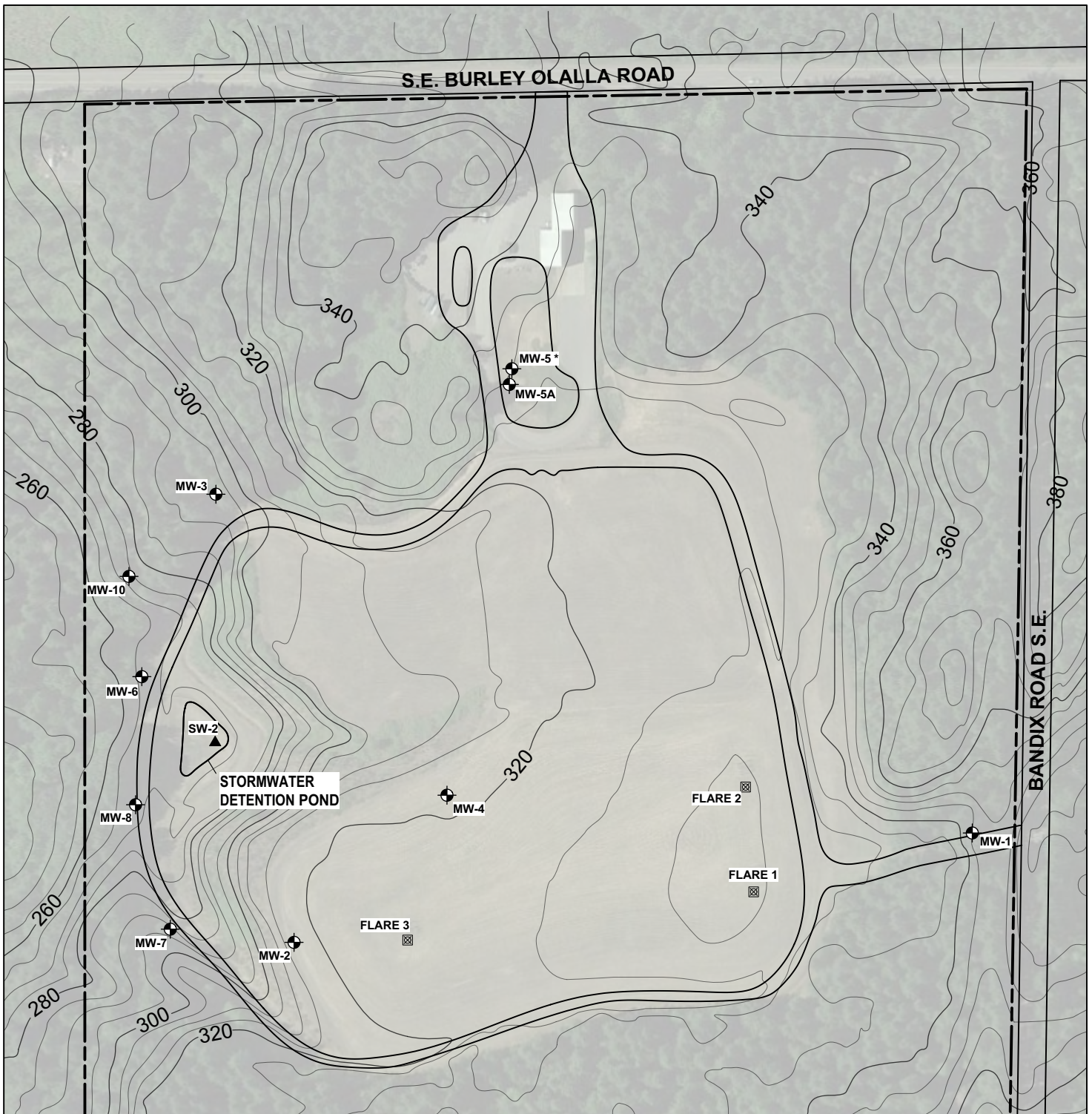
CO<sub>2</sub> = Carbon dioxide

HASP = Health and safety plan

ORP = Oxidation reduction potential

PPE = Personal protective equipment

YSI = Yellow Springs Instruments



**NOTES:**

**BASE MAP SOURCE:**  
GOOGLE EARTH

**TOPOGRAPHIC CONTOUR SOURCE:**  
KITSAP COUNTY PARCEL VIEWER

\*MW-5 IS COMPLETED IN A SHALLOW PERCHED GROUNDWATER ZONE

MW-2 MONITORING WELL LOCATION

SW-2 SURFACE WATER SAMPLING LOCATION

LANDFILL GAS FLARE

TOPOGRAPHIC ELEVATION CONTOUR

APPROXIMATE PROPERTY BOUNDARY

PERIMETER ACCESS ROAD

0 50 100 200

SCALE: 1" = 200'



1180 NW MAPLE ST, SUITE 310  
ISSAQUAH, WA 98027  
425.395.0010  
WWW.TRCCOMPANIES.COM

**FIGURE 1**  
OLALLA LANDFILL MONITORING WELL LOCATIONS

<b>REPORT</b> QUARTERLY MONITORING REPORT 3RD QUARTER (SEPTEMBER, 2020)	<b>PREPARED FOR</b> KITSAP COUNTY
<b>LOCATION</b> OLALLA LANDFILL KITSAP COUNTY, WASHINGTON	<b>PROJECT NUMBER</b> 382595
	<b>DATE</b> ..... 9/28/20
	<b>DRAWN BY</b> ..... JYT
	<b>REVIEWED BY</b> ..... DCK

## Depth to Water Measurement Field Data - Olalla Landfill Monitoring

Well	Time	Measuring Point Elevation (ft. NGVD <sup>1</sup> )	Depth to Water (ft.)	Comments and Well Inspection <sup>2</sup> Notes
MW-1	0825	343.79	78.63	Temp sub. Pump
MW-2	0913	323.25	66.15	NO comment
MW-3	0936	296.95	45.97	NO comment
MW-4	0914	320.93	63.11	NO comment
MW-5	0927	334.17	12.28	Temp well cap.
MW-5A	0930	332.53	76.39	NO comment
MW-6	1043	271.17	21.68	NO comment
MW-7	1325	280.43	26.36	NO comment.
MW-8	1243	272.85	22.14	NO comment.
MW-10	1010	279.21	30.82	NO comment.

**Notes:**

<sup>1</sup>NGVD = National Geodetic Vertical Datum (1929)

<sup>2</sup>Observations regarding the condition of the well and surrounding area (e.g., protective casing, surface seal, cap, lock, bollards, soil conditions near the well such as depressions, ponded surface water, or other subsidence features, and any installed sampling equipment).

Multiparameter Probe Calibration Log - Olalla Landfill Groundwater Monitoring

Meter Type	Manufacturer	Model Number	Mfg. Serial#	Rental Co. Serial #	Date	Time

Calibrated to Autocal Solution

Calibration Solution Manufacturer \_\_\_\_\_ Lot Number \_\_\_\_\_ Exp. Date \_\_\_\_\_

pH = \_\_\_\_\_ Turbidity = \_\_\_\_\_ Temperature = \_\_\_\_\_

Conductivity = \_\_\_\_\_ Dissolved Oxygen = \_\_\_\_\_ ORP = \_\_\_\_\_

Comments:

See attached

Meter Type	Manufacturer	Model Number	Mfg. Serial#	Rental Co. Serial #	Date	Time

Calibrated to Autocal Solution

Calibration Solution Manufacturer \_\_\_\_\_ Lot Number \_\_\_\_\_ Exp. Date \_\_\_\_\_

pH = \_\_\_\_\_ Turbidity = \_\_\_\_\_ Temperature = \_\_\_\_\_

Conductivity = \_\_\_\_\_ Dissolved Oxygen = \_\_\_\_\_ ORP = \_\_\_\_\_

Comments:

See attached

# Groundwater Sampling Field Data - Olalla Landfill Monitoring

Station	MW-1	Date	9-21-25
Sample: ID	MW-1	Field Team: (Initials)	UD JEM
Field Conditions	Sunny, 56°F		

## Low-Flow Purge Information

Well Diameter (in.)	2"	Purge Method	Submersible pump
Well Depth (ft.)	81'	Other: :	
Depth to Water (ft.)	78.63'	Start Time	0835
Depth of Water Column		End Time	0905
1 Casing Volume (gal.)		Total Gallons Purged	2-500
Controller setting (Hz)	N/A		

Time	Gallons	pH	Conductivity	NTU	DO	Temp.	ORP	Appearance
0839	0.3	6.56	0.134	5.51	9.33	10.6	277.0	Clear, no odor
0842	0.6	6.55	0.136	4.09	9.34	10.6	281.1	↓
0845	0.9	6.52	0.137	4.46	9.38	10.6	285.6	
0848	1.2	6.46	0.137	3.21	9.41	10.7	296.4	
0851	1.5	6.47	0.138	4.16	9.43	10.7	296.7	

## Sample Information

Sample Method(s) : Submersible pump

Analysis	Time	Bottle Type	Preservative/Filtration	Comments
Volatiles and VC	0855	(3) 40-mL VOA	HCl, cool to <4°C	
Total Coliform	↓	300-mL sterile AG or poly	Cool to <4°C	
Geochemical Parameters		500-mL HDPE	Cool to <4°C	
Nitrate/Nitrite		500-mL HDPE	Cool to <4°C	
TOC		250-mL AG	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
COD		250-mL HDPE	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
Total Metals		250-mL HDPE	HNO <sub>3</sub> to pH <2, cool to <4°C	
Dissolved Metals		250-mL HDPE	Field filter, HNO <sub>3</sub> to pH <2, cool to <4°C	

Sample End Time 0905

## Comments / Exceptions:

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Notes: Where multiple visits are required to complete sampling, parameters are to be checked prior to sampling for each visit. Enter data under field comments.

# Groundwater Sampling Field Data - Olalla Landfill Monitoring

Station	MW-3	Date	9-21-23
Sample: ID	MW-3	Field Team: (Initials)	LB + EM
Field Conditions	Sunny, 60°F		

## Low-Flow Purge Information

Well Diameter (in.)	2"	Purge Method :	Submersible pump
Well Depth (ft.)	55.00'	Other: :	
Depth to Water (ft.)	45.97'	Start Time	09:35
Depth of Water Column		End Time	10:00
1 Casing Volume (gal.)		Total Gallons Purged	2-gal
Controller setting (Hz)	150.0		

Time	Gallons	pH	Conductivity	NTU	DO	Temp.	ORP	Appearance
0937	0.2	6.31	0.455	4.05	4.02	11.1	347.7	Clean, no odor
0940	0.4	6.27	0.454	3.59	1.36	11.4	344.3	↓
0943	0.6	6.27	0.452	3.80	0.83	11.6	340.7	
0946	0.8	6.27	0.449	3.30	0.62	11.7	335.5	
0949	1.0	6.27	0.447	3.10	0.49	11.8	330.1	

## Sample Information

Sample Method(s) : Submersible pump

Analysis	Time	Bottle Type	Preservative/Filtration	Comments
Volatiles and VC	0950	(3) 40-mL VOA	HCl, cool to <4°C	
Total Coliform	↓	300-mL sterile AG or poly	Cool to <4°C	
Geochemical Parameters		500-mL HDPE	Cool to <4°C	
Nitrate/Nitrite		500-mL HDPE	Cool to <4°C	
TOC		250-mL AG	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
COD		250-mL HDPE	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
Total Metals		250-mL HDPE	HNO <sub>3</sub> to pH <2, cool to <4°C	
Dissolved Metals		250-mL HDPE	Field filter, HNO <sub>3</sub> to pH <2, cool to <4°C	

Sample End Time 1000

## Comments / Exceptions:

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Notes: Where multiple visits are required to complete sampling, parameters are to be checked prior to sampling for each visit. Enter data under field comments.

# Groundwater Sampling Field Data - Olalla Landfill Monitoring

Station	mw-10	Date	9-21-23
Sample: ID	mw-10	Field Team: (Initials)	LD-EM
Field Conditions	Sunny, 62°F		

## Low-Flow Purge Information

Well Diameter (in.)	2"	Purge Method	Submersible pump
Well Depth (ft.)	47.00'	Other: :	
Depth to Water (ft.)	30.62'	Start Time	1010
Depth of Water Column		End Time	1040
1 Casing Volume (gal.)		Total Gallons Purged	2-gal
Controller setting (Hz)	131.6		

Time	Gallons	pH	Conductivity	NTU	DO	Temp.	ORP	Appearance
1010	0.2	6.72	0.437	824	1.01	10.9	310.1	Clear, no odor
1013	0.4	6.71	0.444	2.77	0.46	11.5	278.7	↓
1016	0.6	6.71	0.442	2.53	0.39	11.6	253.3	
1019	0.6	6.71	0.439	2.41	0.19	11.7	244.9	
1022	1.0	6.71	0.440	2.17	0.15	11.7	238.1	

## Sample Information

Sample Method(s) : Submersible pump

Analysis	Time	Bottle Type	Preservative/Filtration	Comments
Volatiles and VC	1030	(3) 40-mL VOA	HCl, cool to <4°C	
Total Coliform	↓	300-mL sterile AG or poly	Cool to <4°C	
Geochemical Parameters		500-mL HDPE	Cool to <4°C	
Nitrate/Nitrite		500-mL HDPE	Cool to <4°C	
TOC		250-mL AG	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
COD		250-mL HDPE	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
Total Metals		250-mL HDPE	HNO <sub>3</sub> to pH <2, cool to <4°C	
Dissolved Metals		250-mL HDPE	Field filter, HNO <sub>3</sub> to pH <2, cool to <4°C	

Sample End Time 1040

## Comments / Exceptions:

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Notes: Where multiple visits are required to complete sampling, parameters are to be checked prior to sampling for each visit. Enter data under field comments.



# Groundwater Sampling Field Data - Olalla Landfill Monitoring

Station	MW-6	Date	9-21-23
Sample: ID	MW-6	Field Team: (Initials)	LB + EM
Field Conditions	Sunny, 63° F		

## Low-Flow Purge Information

Well Diameter (in.)	2"	Purge Method : Submersible pump	Other: :
Well Depth (ft.)	35.00'	Start Time	1043
Depth to Water (ft.)	21.66	End Time	1110
Depth of Water Column		Total Gallons Purged	2.5 gal
1 Casing Volume (gal.)			
Controller setting (Hz)	114.36		

Time	Gallons	pH	Conductivity	NTU	DO	Temp.	ORP	Appearance
1043	0.2	6.63	.394	4.53	0.69	11.5	65.1	clear, no odor
1046	0.4	6.61	.394	5.27	0.43	11.5	57.9	↓
1049	0.6	6.59	.394	3.76	0.36	11.6	54.9	
1052	0.8	6.58	.393	3.17	0.29	11.6	53.2	
1055	1.0	6.58	.392	3.02	0.22	11.6	51.8	
1058	1.2	6.58	.392	2.79	0.17	11.6	50.1	

## Sample Information

Sample Method(s) : Submersible pump

Analysis	Time	Bottle Type	Preservative/Filtration	Comments
Volatiles and VC	1100	(3) 40-mL VOA	HCl, cool to <4°C	
Total Coliform	↓	300-mL sterile AG or poly	Cool to <4°C	
Geochemical Parameters		500-mL HDPE	Cool to <4°C	
Nitrate/Nitrite		500-mL HDPE	Cool to <4°C	
TOC		250-mL AG	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
COD		250-mL HDPE	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
Total Metals		250-mL HDPE	HNO <sub>3</sub> to pH <2, cool to <4°C	
Dissolved Metals		250-mL HDPE	Field filter, HNO <sub>3</sub> to pH <2, cool to <4°C	

Sample End Time 1100

## Comments / Exceptions:

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Notes: Where multiple visits are required to complete sampling, parameters are to be checked prior to sampling for each visit. Enter data under field comments.

# Groundwater Sampling Field Data - Olalla Landfill Monitoring

Station	MW-6	Date	9-21-23
Sample: ID	MW-6	Field Team: (Initials)	LB + EM
Field Conditions	Sunny, 72°F		

## Low-Flow Purge Information

Well Diameter (in.)	2"	Purge Method : Submersible pump	Other :
Well Depth (ft.)	36.00'	Start Time	1245
Depth to Water (ft.)	72.14'	End Time	
Depth of Water Column		Total Gallons Purged	
1 Casing Volume (gal.)			
Controller setting (Hz)	15.0		

Time	Gallons	pH	Conductivity	NTU	DO	Temp.	ORP	Appearance
1245	0.2	7.16	0.114	19.7	2.14	10.6	161.8	clear, no odor
1248	0.4	6.91	0.114	17.6	0.99	10.9	58.3	↓
1251	0.6	6.83	0.124	15.0	0.67	10.9	62.1	
1254	0.8	6.76	0.133	11.1	0.52	11.0	46.9	
1257	1.0	6.74	0.135	7.99	0.43	11.0	44.1	
1300	1.2	6.72	0.136	5.60	0.38	11.1	43.3	
1303	1.4	6.72	0.137	4.28	0.36	11.0	44.5	

## Sample Information

Sample Method(s) : Submersible pump

Analysis	Time	Bottle Type	Preservative/Filtration	Comments
Volatiles and VC	1305	(3) 40-mL VOA	HCl, cool to <4°C	
Total Coliform	↓	300-mL sterile AG or poly	Cool to <4°C	
Geochemical Parameters		500-mL HDPE	Cool to <4°C	
Nitrate/Nitrite		500-mL HDPE	Cool to <4°C	
TOC		250-mL AG	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
COD		250-mL HDPE	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
Total Metals		250-mL HDPE	HNO <sub>3</sub> to pH <2, cool to <4°C	
Dissolved Metals		250-mL HDPE	Field filter, HNO <sub>3</sub> to pH <2, cool to <4°C	

Sample End Time 1310

## Comments / Exceptions:

Black particulate @ Start DUP collected → mw-12

Notes: Where multiple visits are required to complete sampling, parameters are to be checked prior to sampling for each visit. Enter data under field comments.

## Landfill Gas Monitoring Field Data - Olalla Landfill Monitoring

Instrument Used:	GEM 2000	Date and Time:	9/21/23 @ 1130
Ambient Temperature:	62° f	Field Team:	LB & EM
Field Conditions:	62° f, sunny. 30.11 inHg		

### Landfill Gas Data

Flare #	Time	Methane (% vol.)	% LEL	Oxygen (% vol.)	Carbon Dioxide (% vol.)	Temperatur e (°f)	Gas Pressure ("H <sub>2</sub> O)
3	1132	00.0	00.0	21.0	00.0	62°f	0.06
1	1149	00.0	00.0	20.7	00.0	62°f	0.10
2	1202	00.0	00.0	20.5	00.0	62°f	0.09

### Comments / Inspection Results<sup>1</sup>

30.11 inHg

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<sup>1</sup>Inspect the following: lock and gate operation, tightness of bolts and clamps, differential settlement, valve operation, debris or breaks in hose barb.

**EQUIPCO**

RENTALS

YSI ProDSS RENTAL  
CALIBRATION CERTIFICATESERVICE TECHNICIAN: OMDATE: 9/19/23RENTAL CUSTOMER: TRCINSTRUMENT INFORMATIONRENTAL I.D. NUMBER: YSI-ProDSS. 05SERIAL NUMBER: 16F102616CALIBRATION INFORMATION

PARAMETER:	STANDARD:	PASS ( )	LOT #
1. CONDUCTIVITY	1.000 $\mu$ Mhos	<u>X</u>	<u>057939</u>
2. pH ZERO	pH 7	<u>X</u>	<u>065579</u>
pH SLOPE	pH 4	<u>X</u>	<u>062494</u>
pH SLOPE	pH 10	<u>X</u>	<u>062496</u>
3. DISSOLVED OXYGEN	Air Calibration	<u>X</u>	N/A
	Barometric pressure = 760mmHg	<u>X</u>	N/A
4. TURBIDITY ZERO	0.0 NTU's	<u>X</u>	N/A
TURBIDITY SPAN	100 NTU's	<u>X</u>	N/A
5. REDOX (ORP)	231mV (YSI Zobell solution)	<u>X</u>	<u>040621</u>

# EQUIPCO

## CES LANDTECH MODEL: GEM 2000 CALIBRATION CERTIFICATE

SERVICE TECHNICIAN: VM

DATE: 9/19/23

### INSTRUMENT INFORMATION

RENTAL ID: GEM2000. 11

SERIAL NUMBER: GM07638/04

### CALIBRATION INFORMATION

1. CALIBRATION GAS: 35 % CO<sub>2</sub>

LOT #: 573162

GAS RESPONSE: 35 % CO<sub>2</sub>  $\pm 2\%$

2. CALIBRATION GAS: 50 % Vol. Methane

LOT #: 573162

GAS RESPONSE: 50 % Vol. Methane  $\pm 2\%$

OXYGEN RESPONSE IN FRESH AIR ENVIRONMENT: 20.9% ✓

OXYGEN DOWNSCALE RESPONSE CHECKED: 0% WITH 99.9% Nitrogen ✓

THIS INSTRUMENT HAS BEEN CALIBRATED TO STANDARDS SET FORTH BY THE  
MANUFACTURER

Olalla Landfill - Q3 GWS

09 21-23

Kitsap County

Olalla, WA

L. Bient 

conds: Sunny, 53°F  
Staff: L. Briant + E. Miller  
Scope: Q3 Groundwater Sampling

49  
①

0805 TRC on-site

0810 Equip PPE, review HHS + scope for site

0820 Enter facility, mob to MW-1 to gauge + purge well.

0855 Sample MW-1, mob to interior wells.

0915 Gauge MW-2 + MW-4.

0920 mob to MW-5 + MW-5A, gauge wells.

0930 mob to MW-3, begin purge.

0955 Sample MW-3.

1000 mob to MW-10.

1030 Sample MW-10, mob to MW-6.

1100 Sample MW-6.

1120 Prepare for flare analysis, confirm GEM2000 function.

1130 Begin flare analysis

1200 Finish flare analysis, mob back to vehicle

- 1210 Lunch break
- 1240 Mob to MW-8, begin purge
- 1305 Sample MW-8, collect dup.  
↳ MW-12
- 1320 mob to MW-7, gauge well.
- 1335 Fill out COC, confirm samples w/ chain
- 1355 Load equipment into vehicles, mob to front of site. Lock facility
- 1405 TRC off-site.

UB

9-21-23



# Chain of Custody Record & Laboratory Analysis Request



Analytical Resources, LLC  
 Analytical Chemists and Consultants  
 4611 South 134th Place, Suite 100  
 Tukwila, WA 98168  
 206-695-6200 206-695-6201 (fax)

ARI Assigned Number:	Turn-around Requested: <u>Standard</u>	Page: <u>1</u> of <u>1</u>
ARI Client Company: <u>TRC</u>	Phone: <u>425-395-0010</u>	Date: <u>9/21/23</u> Ice Present?
Client Contact: <u>Ecaddex@TRCcompanies.com, WWeisberg@</u>	No. of Coolers:	Cooler Temps:

Client Project Name:					Analysis Requested								Notes/Comments	
Client Project #:		Samplers:			VOC and VC	BY SIM	Dissolved Metals As, Fe, Zn, Pb, Mn	Total Metals K, Na, Ca	Alkalinity Carbonate, Bicarbonate	Nitrate, Nitrite Chloride, PH	Sulfate, PH	TOC, COD,		Ammonia
Sample ID	Date	Time	Matrix	No. Containers										
MW-1	9/21/23	0855	H <sub>2</sub> O	11	X	X	X	X	X	X	X	X		
MW-3		0950			X	X	X	X	X	X	X	X		
MW-10		1030			X	X	X	X	X	X	X	X		
MW-6		1100			X	X	X	X	X	X	X	X		
MW-8		1305			X	X	X	X	X	X	X	X		
MW-12	9/21/23		H <sub>2</sub> O	11	X	X	X	X	X	X	X	X		
Comments/Special Instructions					Relinquished by: (Signature) <u>[Signature]</u>	Received by: (Signature)			Relinquished by: (Signature)			Received by: (Signature)		
					Printed Name: <u>Evan Miller</u>	Printed Name:			Printed Name:			Printed Name:		
					Company: <u>TRC</u>	Company:			Company:			Company:		
					Date & Time: <u>9/21/23</u>	Date & Time:			Date & Time:			Date & Time:		

**Limits of Liability:** ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

**Sample Retention Policy:** All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

# **Olalla Landfill Quarterly Monitoring Field Book December 2023**



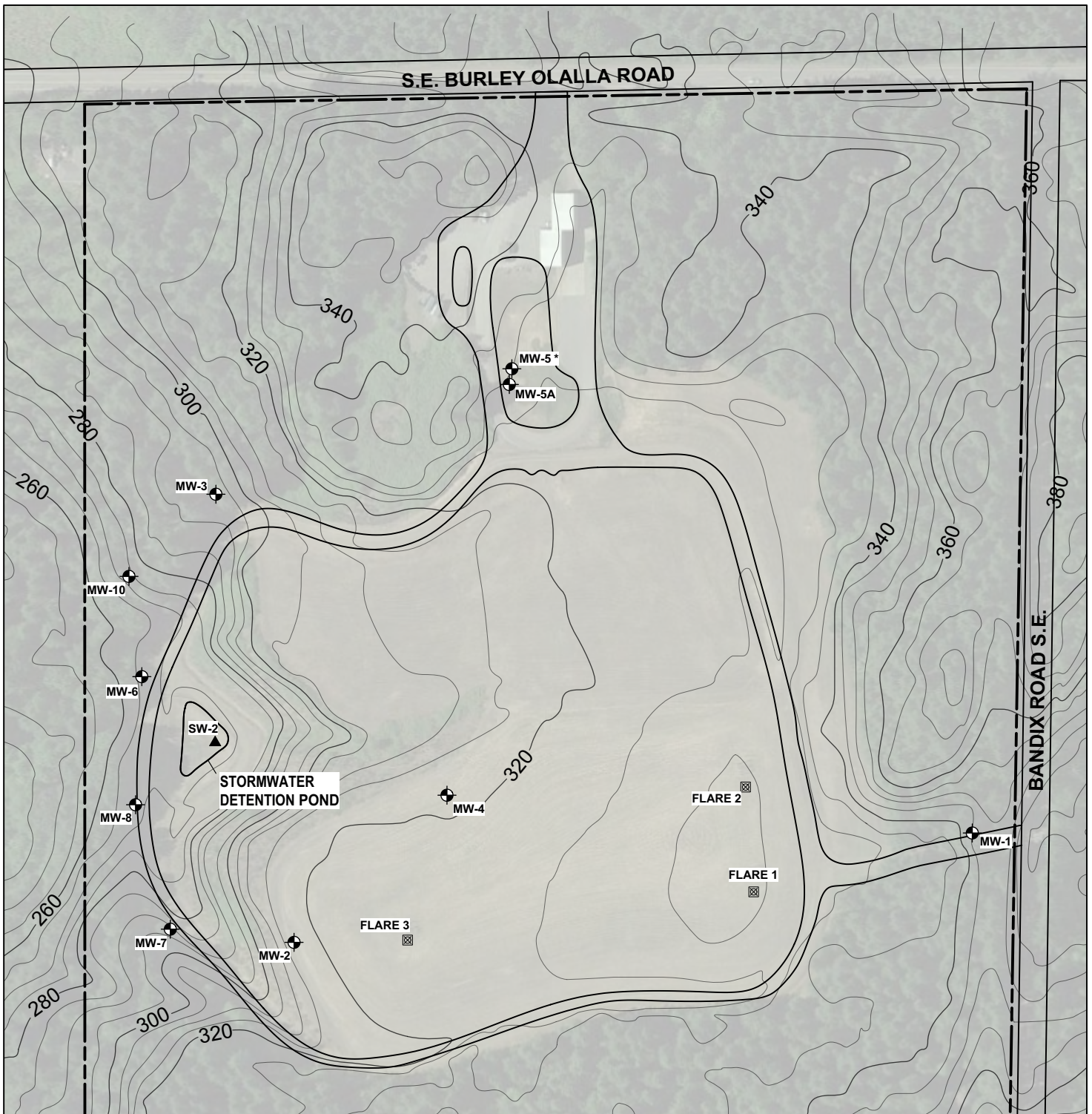
**Olalla Landfill  
Kitsap County, Washington  
Project Number: 533022.0000. Task 3**

**TRC Environmental Corporation  
1180 NW Maple Street, Suite 310  
Issaquah, Washington 98027  
(425) 395-0010  
(425) 281-3629**

## Project Instructions - Olalla Landfill Quarterly Monitoring

- Access the landfill from the main entrance off SE Burley Olalla Rd. The gate code is 9300. Lock the gate after entry.
- Inspect each well and pump head and note any repairs that are needed.
- Collect depth to water measurements at all wells including interior landfill wells MW-2 and MW-4 and shallow well MW-5 (next to MW-5A).
- Collect groundwater samples from MW-1, MW-3, MW-5A, MW-6, MW-7, MW-8, and MW-10. There are **no samples** from interior wells MW-2 and MW-4. Use the lowest sustainable flowrate for sample collection. Purge water can be poured on the ground away from the wells.
  - Samples from the cross-gradient wells MW-5A and MW-7 are only analyzed for vinyl chloride by SIM and dissolved metals (As, Fe and Mn).
  - The dissolved metals samples for each location get field filtered through single use 0.45 micron in-line filters.
  - Take a field duplicate at MW-10 and label it as MW-13. Note it as the field duplicate in the field book.
- Measure landfill gas at all three flares using the GEM 2000. Call me if the measurements look odd or if you're having trouble with the GEM 2000.
- Make sure all wells, flare gates, and main entrance gate are locked before you leave.





**NOTES:**

**BASE MAP SOURCE:**  
GOOGLE EARTH

**TOPOGRAPHIC CONTOUR SOURCE:**  
KITSAP COUNTY PARCEL VIEWER

\*MW-5 IS COMPLETED IN A SHALLOW PERCHED GROUNDWATER ZONE

MW-2 MONITORING WELL LOCATION

SW-2 SURFACE WATER SAMPLING LOCATION

LANDFILL GAS FLARE

TOPOGRAPHIC ELEVATION CONTOUR

APPROXIMATE PROPERTY BOUNDARY

PERIMETER ACCESS ROAD

N

0 50 100 200

SCALE: 1" = 200'



1180 NW MAPLE ST, SUITE 310  
 ISSAQUAH, WA 98027  
 425.395.0010  
 WWW.TRCCOMPANIES.COM

**FIGURE 1**  
 OLALLA LANDFILL MONITORING WELL LOCATIONS

<b>REPORT</b> QUARTERLY MONITORING REPORT 3RD QUARTER (SEPTEMBER, 2020)	<b>PREPARED FOR</b> KITSAP COUNTY
<b>LOCATION</b> OLALLA LANDFILL KITSAP COUNTY, WASHINGTON	<b>PROJECT NUMBER</b> 382595
	<b>DATE</b> ..... 9/28/20
	<b>DRAWN BY</b> ..... JYT
	<b>REVIEWED BY</b> ..... DCK

## December 2023 Quarterly Event Bottle Order Form

<b>Project Name</b>	Olalla Landfill Monitoring
<b>Project Number</b>	533022.0
<b>Client:</b>	TRC 1180 NW Maple St. Suite 310 Issaquah, WA 98027
<b>Client Contact:</b>	Wes Weisberg
<b>Lab PM:</b>	Kelly Bottem
<b># of Coolers:</b>	as needed
<b>Trip Blanks</b>	1 set (3 VOAs)

<b>Date of Bottle Request</b>	December 6, 2023
<b>Date Bottle are Needed</b>	December 20, 2023
<b>Estimated Date Samples will Return:</b>	December 20, 2023

<b>Order completed by:</b>	Laithan Briant
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<b>YES</b>	Include LOOSE Labels
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<b>YES</b>	Include COC's
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Number of Samples	Analysis Requested	Bottles Per Sample	Typical Bottle Size and Type	Preservation	Total Bottles
<b>Groundwater Samples</b>					
9	Volatiles	3	40mL VOA	HCL	<b>27</b>
9	Vinyl chloride by SIM or Low Level	2	40mL VOA	HCL	<b>18</b>
9	Dissolved metals (As, Fe, Zn, Ba, Mn)	1	500 mL HDPE	Field Filtered/HNO <sub>3</sub>	<b>9</b>
7	Total metals (K, Na, Ca)	1	500 mL HDPE	HNO <sub>3</sub>	<b>7</b>
7	Alkalinity, carbonate, bicarbonate	1	Small OJ	-	<b>7</b>
7	Nitrate, nitrite, chloride, sulfate, pH	1	Large OJ	-	<b>7</b>
7	TOC, COD, ammonia	1	250 mL AG	H <sub>2</sub> SO <sub>4</sub>	<b>7</b>
7	Total coliform	1	Corning	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	<b>7</b>
<b>Surface Water Sample (Sampled in March or December)</b>					
1	pH	1	500 mL poly		<b>1</b>
1	Nitrate-Nitrogen	1			<b>1</b>
1	Fecal coliform	1	glass or poly	-	<b>1</b>

**Total Bottles: 92**

## Depth to Water Measurement Field Data - Olalla Landfill Monitoring

Well	Time	Measuring Point Elevation (ft. NGVD <sup>1</sup> )	Depth to Water (ft.)	Comments and Well Inspection <sup>2</sup> Notes
MW-1	0842	343.79	79.61	Temp Pump installed.
MW-2	0925	323.25	65.75	No comment.
MW-3	1014	296.95	44.49	NO comment.
MW-4	0931	320.93	63.00	NO comment.
MW-5	0945	334.17	9.41	NO comment.
MW-5A	0940	332.53	76.69	NO comment.
MW-6	1235	271.17	20.02	NO comment.
MW-7	1337	280.43	25.36	NO comment.
MW-8	1304	272.85	20.60	NO comment.
MW-10	1046	279.21	29.20	NO comment.

**Notes:**

<sup>1</sup>NGVD = National Geodetic Vertical Datum (1929)

<sup>2</sup>Observations regarding the condition of the well and surrounding area (e.g., protective casing, surface seal, cap, lock, bollards, soil conditions near the well such as depressions, ponded surface water, or other subsidence features, and any installed sampling equipment).

Multiparameter Probe Calibration Log - Olalla Landfill Groundwater Monitoring

Meter Type	Manufacturer	Model Number	Mfg. Serial#	Rental Co. Serial #	Date	Time
<b>Calibrated to Autocal Solution</b>						
Calibration Solution Manufacturer _____ Lot Number _____ Exp. Date _____						
pH = _____ Turbidity = _____ Temperature = _____						
Conductivity = _____ Dissolved Oxygen = _____ ORP = _____						
Comments:						
Meter Type	Manufacturer	Model Number	Mfg. Serial#	Rental Co. Serial #	Date	Time
<b>Calibrated to Autocal Solution</b>						
Calibration Solution Manufacturer _____ Lot Number _____ Exp. Date _____						
pH = _____ Turbidity = _____ Temperature = _____						
Conductivity = _____ Dissolved Oxygen = _____ ORP = _____						
Comments:						

### 1.1.1 Field Duplicate Sample Identification

A field duplicate sample is collected from one of the four downgradient monitoring wells, (MW-3, MW-6, MW-8, or MW-10) during the quarterly monitoring events as described in Section 3.7.1. Duplicate sample locations will be rotated throughout the year such that each of the four downgradient monitoring wells will have one duplicate sample collected every year. Duplicate samples will be assigned fictitious sample identifiers using the following duplicate sample identification system:

- First quarter: MW-9 is the field duplicate of MW-3
- Second quarter: MW-17 is the field duplicate of MW-6
- Third quarter: MW-12 is the field duplicate of MW-8
- Fourth quarter: MW-13 is the field duplicate of MW-10



# Groundwater Sampling Field Data - Olalla Landfill Monitoring

Station	MW-1	Date	12-20-23
Sample: ID	MW-1	Field Team: (Initials)	LBTEM
Field Conditions	Overcast, 44°F		

## Low-Flow Purge Information

Well Diameter (in.)	2"	Purge Method	Submersible pump
Well Depth (ft.)	87.00'	Other:	
Depth to Water (ft.)	79.81'	Start Time	0645
Depth of Water Column	—	End Time	0920
1 Casing Volume (gal.)	—	Total Gallons Purged	2.0 gal.
Controller setting (Hz)	N/A		

Time	Gallons	pH	Conductivity	NTU	DO	Temp.	ORP	Appearance
0653	.3	6.81	.136	2.43	7.79	9.6	265	Clear
0656	.6	6.35	.134	5.94	9.10	10.3	279.5	↓
0659	.9	6.30	.134	5.59	9.16	10.5	245.0	
0902	1.2	6.26	.134	3.83	9.22	10.6	267.3	
0905	1.5	6.26	.133	3.36	9.27	10.6	290.7	

## Sample Information

Sample Method(s) : Submersible pump

Analysis	Time	Bottle Type	Preservative/Filtration	Comments
Volatiles and VC	0910	(3) 40-mL VOA	HCl, cool to <4°C	
Total Coliform	↓	300-mL sterile AG or poly	Cool to <4°C	
Geochemical Parameters		500-mL HDPE	Cool to <4°C	
Nitrate/Nitrite		500-mL HDPE	Cool to <4°C	
TOC		250-mL AG	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
COD		250-mL HDPE	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
Total Metals		250-mL HDPE	HNO <sub>3</sub> to pH <2, cool to <4°C	
Dissolved Metals		250-mL HDPE	Field filter, HNO <sub>3</sub> to pH <2, cool to <4°C	

Sample End Time 0920

## Comments / Exceptions:

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Notes: Where multiple visits are required to complete sampling, parameters are to be checked prior to sampling for each visit. Enter data under field comments.

# Groundwater Sampling Field Data - Olalla Landfill Monitoring

Station	MW-SA	Date	12-20-23
Sample: ID	MW-SA	Field Team: (Initials)	WTFEM
Field Conditions	Overcast, 44°F		

## Low-Flow Purge Information

Well Diameter (in.)	2"	Purge Method : Submersible pump	Other: :
Well Depth (ft.)	NM	Start Time	0945
Depth to Water (ft.)	76.69'	End Time	1015
Depth of Water Column	-	Total Gallons Purged	2.5 gal
1 Casing Volume (gal.)	-		
Controller setting (Hz)	215.0		

Time	Gallons	pH	Conductivity	NTU	DO	Temp.	ORP	Appearance
0950	0.3	6.79	.102	106	9.62	10.6	314.2	Clear
0953	0.6	6.80	.104	64.8	9.86	11.2	309.7	↓
0956	0.9	6.75	.105	17.6	9.80	11.4	310.1	
0959	1.2	6.72	.106	10.6	9.78	11.6	314.2	
1002	1.5	6.74	.106	8.2	9.77	11.7	313.2	
1005	1.8	6.75	.107	4.55	9.77	11.8	314.8	

## Sample Information

Sample Method(s) : Submersible pump

Analysis	Time	Bottle Type	Preservative/Filtration	Comments
Volatiles and VC	1010	(3) 40-mL VOA	HCl, cool to <4°C	
Total Coliform	↓	300-mL sterile AG or poly	Cool to <4°C	
Geochemical Parameters		500-mL HDPE	Cool to <4°C	
Nitrate/Nitrite		500-mL HDPE	Cool to <4°C	
TOC		250-mL AG	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
COD		250-mL HDPE	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
Total Metals		250-mL HDPE	HNO <sub>3</sub> to pH <2, cool to <4°C	
Dissolved Metals		250-mL HDPE	Field filter, HNO <sub>3</sub> to pH <2, cool to <4°C	

Sample End Time 1015

## Comments / Exceptions:

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Notes: Where multiple visits are required to complete sampling, parameters are to be checked prior to sampling for each visit. Enter data under field comments.

# Groundwater Sampling Field Data - Olalla Landfill Monitoring

Station	MW-3	Date	12-22-23
Sample: ID	MW-3	Field Team: (Initials)	LTFM
Field Conditions	overcast, 45°F		

## Low-Flow Purge Information

Well Diameter (in.)	2"	Purge Method : Submersible pump	Other: :
Well Depth (ft.)	55.00'	Start Time	1015
Depth to Water (ft.)	44.49'	End Time	1040
Depth of Water Column	-	Total Gallons Purged	2.904
1 Casing Volume (gal.)	-		
Controller setting (Hz)	144.9		

Time	Gallons	pH	Conductivity	NTU	DO	Temp.	ORP	Appearance
1014	.3	6.14	.443	5.61	1.81	10.6	353.5	Clear
1022	.6	6.18	.436	4.77	.89	11.1	352.7	↓
1025	.9	6.20	.432	4.80	.67	11.7	348.3	
1028	1.2	6.20	.429	4.35	.52	11.8	347.9	
1031	1.5	6.21	.426	3.41	.48	11.9	347.3	

## Sample Information

Sample Method(s) : Submersible pump

Analysis	Time	Bottle Type	Preservative/Filtration	Comments
Volatiles and VC	1035	(3) 40-mL VOA	HCl, cool to <4°C	
Total Coliform	↓	300-mL sterile AG or poly	Cool to <4°C	
Geochemical Parameters		500-mL HDPE	Cool to <4°C	
Nitrate/Nitrite		500-mL HDPE	Cool to <4°C	
TOC		250-mL AG	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
COD		250-mL HDPE	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
Total Metals		250-mL HDPE	HNO <sub>3</sub> to pH <2, cool to <4°C	
Dissolved Metals		250-mL HDPE	Field filter, HNO <sub>3</sub> to pH <2, cool to <4°C	

Sample End Time 1045

## Comments / Exceptions:

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Notes: Where multiple visits are required to complete sampling, parameters are to be checked prior to sampling for each visit. Enter data under field comments.

# Groundwater Sampling Field Data - Olalla Landfill Monitoring

Station	MW-10	Date	12-20-23
Sample: ID	MW-10	Field Team: (Initials)	LB BEN
Field Conditions	Overcast, 41S°F		

## Low-Flow Purge Information

Well Diameter (in.)	2"	Purge Method : Submersible pump	Other: :
Well Depth (ft.)	47.00'	Start Time	1045
Depth to Water (ft.)	21.20'	End Time	1120
Depth of Water Column	—	Total Gallons Purged	2 gal
1 Casing Volume (gal.)	—		
Controller setting (Hz)	134.2		

Time	Gallons	pH	Conductivity	NTU	DO	Temp.	ORP	Appearance
1047	.3	6.53	.413	15.6	1.27	10.6	336.7	clear
1050	.6	6.56	.416	10.9	.63	11.1	334.8	↓
1053	.9	6.57	.417	7.56	.44	11.3	332.1	
1056	1.2	6.56	.417	6.17	.31	11.4	329.3	
1059	1.5	6.57	.416	4.65	.25	11.6	326.3	

## Sample Information

Sample Method(s) : Submersible pump

Analysis	Time	Bottle Type	Preservative/Filtration	Comments
Volatiles and VC	1105	(3) 40-mL VOA	HCl, cool to <4°C	
Total Coliform	↓	300-mL sterile AG or poly	Cool to <4°C	
Geochemical Parameters		500-mL HDPE	Cool to <4°C	
Nitrate/Nitrite		500-mL HDPE	Cool to <4°C	
TOC		250-mL AG	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
COD		250-mL HDPE	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
Total Metals		250-mL HDPE	HNO <sub>3</sub> to pH <2, cool to <4°C	
Dissolved Metals		250-mL HDPE	Field filter, HNO <sub>3</sub> to pH <2, cool to <4°C	

Sample End Time 1115

## Comments / Exceptions:

MW-13 collected. Time 1112:05"

Notes: Where multiple visits are required to complete sampling, parameters are to be checked prior to sampling for each visit. Enter data under field comments.

# Groundwater Sampling Field Data - Olalla Landfill Monitoring

Station	MW-6	Date	12-20-23
Sample: ID	MW-6	Field Team: (Initials)	LO+EM
Field Conditions	Civexcel St, 47E		

## Low-Flow Purge Information

Well Diameter (in.)	2"	Purge Method : Submersible pump	Other: :
Well Depth (ft.)	35.00'	Start Time	1230
Depth to Water (ft.)	20.02'	End Time	1305
Depth of Water Column	—	Total Gallons Purged	2.0 gal
1 Casing Volume (gal.)	—		
Controller setting (Hz)	110.6		

Time	Gallons	pH	Conductivity	NTU	DO	Temp.	ORP	Appearance
1234	.3	6.66	.335	16.7	1.56	11.2	312.4	clear
1237	.6	6.44	.333	9.92	.63	11.3	312.3	↓
1240	.9	6.43	.332	9.42	.50	11.7	308.6	
1243	1.2	6.44	.331	5.10	.41	11.7	304.7	
1246	1.5	6.46	.331	4.71	.30	11.8	300.9	

## Sample Information

Sample Method(s) : Submersible pump

Analysis	Time	Bottle Type	Preservative/Filtration	Comments
Volatiles and VC	1250	(3) 40-mL VOA	HCl, cool to <4°C	
Total Coliform	↓	300-mL sterile AG or poly	Cool to <4°C	
Geochemical Parameters		500-mL HDPE	Cool to <4°C	
Nitrate/Nitrite		500-mL HDPE	Cool to <4°C	
TOC		250-mL AG	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
COD		250-mL HDPE	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
Total Metals		250-mL HDPE	HNO <sub>3</sub> to pH <2, cool to <4°C	
Dissolved Metals		250-mL HDPE	Field filter, HNO <sub>3</sub> to pH <2, cool to <4°C	

Sample End Time 1300

## Comments / Exceptions:

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Notes: Where multiple visits are required to complete sampling, parameters are to be checked prior to sampling for each visit. Enter data under field comments.

# Groundwater Sampling Field Data - Olalla Landfill Monitoring

Station	MW-8	Date	12-20-23
Sample: ID	MW-8	Field Team: (Initials)	LP+EM
Field Conditions	Overcast, 48°F		

## Low-Flow Purge Information

Well Diameter (in.)	2"	Purge Method : Submersible pump	Other: :
Well Depth (ft.)	36.00'	Start Time	1305
Depth to Water (ft.)	20.60'	End Time	1330
Depth of Water Column	-	Total Gallons Purged	2.5 gal.
1 Casing Volume (gal.)	-		
Controller setting (Hz)	121.6		

Time	Gallons	pH	Conductivity	NTU	DO	Temp.	ORP	Appearance
1306	.3	6.72	.299	40.4	2.30	10.6	253.0	clear
1309	.6	6.59	.225	17.9	.67	11.1	250.5	↓
1312	.9	6.62	.214	11.0	.52	11.2	244.3	
1315	1.2	6.61	.211	10.1	.36	11.4	234.1	
1318	1.5	6.60	.212	10.2	.25	11.4	229.6	

## Sample Information

Sample Method(s) : Submersible pump

Analysis	Time	Bottle Type	Preservative/Filtration	Comments
Volatiles and VC	1325	(3) 40-mL VOA	HCl, cool to <4°C	
Total Coliform	↓	300-mL sterile AG or poly	Cool to <4°C	
Geochemical Parameters		500-mL HDPE	Cool to <4°C	
Nitrate/Nitrite		500-mL HDPE	Cool to <4°C	
TOC		250-mL AG	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
COD		250-mL HDPE	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
Total Metals		250-mL HDPE	HNO <sub>3</sub> to pH <2, cool to <4°C	
Dissolved Metals		250-mL HDPE	Field filter, HNO <sub>3</sub> to pH <2, cool to <4°C	

Sample End Time 1330

## Comments / Exceptions:

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Notes: Where multiple visits are required to complete sampling, parameters are to be checked prior to sampling for each visit. Enter data under field comments.

# Groundwater Sampling Field Data - Olalla Landfill Monitoring

Station	MW-7	Date	12-20-23
Sample: ID	MW-7	Field Team: (Initials)	LD + EM
Field Conditions	Overcast, 46°F		

## Low-Flow Purge Information

Well Diameter (in.)	2"	Purge Method : Submersible pump	Other :
Well Depth (ft.)	N/A	Start Time	1336
Depth to Water (ft.)	25.38	End Time	1410
Depth of Water Column	—	Total Gallons Purged	3.0 gal
1 Casing Volume (gal.)	—		
Controller setting (Hz)	130.4		

Time	Gallons	pH	Conductivity	NTU	DO	Temp.	ORP	Appearance
1337	.3	6.67	.106	90.2	7.54	10.2	190.0	Clear
1340	.6	6.78	.107	67.3	7.26	10.7	192.2	↓
1343	.9	6.77	.107	41.8	7.22	10.9	193.8	
1346	1.2	6.76	.108	24.6	7.17	10.9	197.7	
1349	1.5	6.70	.108	12.9	7.10	10.9	203.6	
1352	1.8	6.70	.108	8.47	7.08	10.9	210.2	
1355	2.1	6.69	.108	6.28	7.06	10.9	218.3	
1358	2.4	6.67	.108	3.01	7.05	10.8	223.6	

## Sample Information

Sample Method(s) : Submersible pump

Analysis	Time	Bottle Type	Preservative/Filtration	Comments
Volatiles and VC	1400	(3) 40-mL VOA	HCl, cool to <4°C	
Total Coliform	↓	300-mL sterile AG or poly	Cool to <4°C	
Geochemical Parameters		500-mL HDPE	Cool to <4°C	
Nitrate/Nitrite		500-mL HDPE	Cool to <4°C	
TOC		250-mL AG	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
COD		250-mL HDPE	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
Total Metals		250-mL HDPE	HNO <sub>3</sub> to pH <2, cool to <4°C	
Dissolved Metals		250-mL HDPE	Field filter, HNO <sub>3</sub> to pH <2, cool to <4°C	

Sample End Time 1410

## Comments / Exceptions:

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Notes: Where multiple visits are required to complete sampling, parameters are to be checked prior to sampling for each visit. Enter data under field comments.

## Landfill Gas Monitoring Field Data - Olalla Landfill Monitoring

Instrument Used:	GEM 2000	Date and Time:	12/20/23 @ 1120
Ambient Temperature:	46 °F	Field Team:	LB + EM
Field Conditions:	46 °F, Cloudy		

### Landfill Gas Data

Flare #	Time	Methane (% vol.)	% LEL	Oxygen (% vol.)	Carbon Dioxide (% vol.)	Temperatur e (°F)	Gas Pressure ("H <sub>2</sub> O)
3	1128	00.0	00.0%	20.8	00.0	46 °F	0.05
1	1146	00.0	00.0%	20.7	00.1	46 °F	0.11
2	1159	00.0	00.0%	20.9	00.0	46 °F	0.07

### Comments / Inspection Results<sup>1</sup>

29.94 in Hg

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<sup>1</sup>Inspect the following: lock and gate operation, tightness of bolts and clamps, differential settlement, valve operation, debris or breaks in hose barb.



### YSI ProDSS RENTAL CALIBRATION CERTIFICATE

SERVICE TECHNICIAN: OM

DATE: 12/18/23

RENTAL CUSTOMER: TRC

#### INSTRUMENT INFORMATION

RENTAL I.D. NUMBER: YSI-ProDSS. 05

SERIAL NUMBER: 16F102616

#### CALIBRATION INFORMATION

PARAMETER:	STANDARD:	PASS ( )	LOT #
1. CONDUCTIVITY	1,000 $\mu$ Mhos	<u>X</u>	<u>051142</u>
2. pH ZERO	pH 7	<u>X</u>	<u>065579</u>
pH SLOPE	pH 4	<u>X</u>	<u>062494</u>
pH SLOPE	pH 10	<u>X</u>	<u>062496</u>
3. DISSOLVED OXYGEN	Air Calibration Barometric pressure = 760mmHg	<u>X</u>	N/A
<del>4. TURBIDITY ZERO</del>	<del>0.0 NTU's</del>	<del>—</del>	<del>N/A</del>
<del>TURBIDITY SPAN</del>	<del>100 NTU's</del>	<del>—</del>	<del>N/A</del>
5. REDOX (ORP)	231mV (YSI Zobell solution)	<u>X</u>	<u>040621</u>

# EQUIPCO

## CES LANDTECH MODEL: GEM 2000 CALIBRATION CERTIFICATE

SERVICE TECHNICIAN: QM

DATE: 12/18/23

### INSTRUMENT INFORMATION

RENTAL ID: GEM2000. 11

SERIAL NUMBER: 6M07638/04

### CALIBRATION INFORMATION

1. CALIBRATION GAS: 35 % CO<sub>2</sub>

LOT #: 573162

GAS RESPONSE: 35 % CO<sub>2</sub> ±2%

2. CALIBRATION GAS: 50 % Vol. Methane

LOT #: 573162

GAS RESPONSE: 50 % Vol. Methane ±2%

OXYGEN RESPONSE IN FRESH AIR ENVIRONMENT: 20.9% ✓

OXYGEN DOWNSCALE RESPONSE CHECKED: 0% WITH 99.9% Nitrogen ✓

THIS INSTRUMENT HAS BEEN CALIBRATED TO STANDARDS SET FORTH BY THE  
MANUFACTURER



# Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number:                      Turn-around Requested: Standard

ARI Client Company: TRC Phone: 425-395-0010

Client Contact: Eric Caddy, Wesley Weisberg

Client Project Name: Olla

Page: 1 of 1

Date: 12/20/23 Ice Present?           

No. of Coolers:            Cooler Temps:           

Analytical Resources, LLC  
 Analytical Chemists and Consultants  
 4611 South 134th Place, Suite 100  
 Tukwila, WA 98168  
 206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested			Notes/Comments
					VOC and VC 68 SIM	Dissolved Metals, As, Fe, Zn, Ba, Mn	Total metals K, Na, Ca	
MW-1	12/20/23	0910	H2O	11	X	X	X	
MW-5A		1010		3	X	X	X	Diss. Metals + VC by SIM only
MW-3		1035		11	X	X	X	
MW-10		1105		11	X	X	X	
MW-13		1205		11	X	X	X	
MW-6		1250		11	X	X	X	
MW-8		1325		11	X	X	X	
MW-7		1400		3	X	X	X	Diss. Metals + VC by SIM only

Comments/Special Instructions

Relinquished by: [Signature] Received by: [Signature]

Printed Name: Elm Miller Printed Name:                     

Company: TRC Company:                     

Date & Time: 12/20/23 Date & Time:                     

Relinquished by: [Signature] Received by: [Signature]

Printed Name:                      Printed Name:                     

Company:                      Company:                     

Date & Time:                      Date & Time:                     

**Limits of Liability:** ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

**Sample Retention Policy:** All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Olalla Landfill - 533022  
Q4 2023 GWS

Q4 GWS

12-20-23

Olalla, WA

L. Brient

Slope: Q4 GWS  
conds: overcast, 43°F

- 0625 TRC (L. Briant & E. Miller) on site
- 0630 Review H+S for site. Gain access to facility
- 0640 Mobilize to MW-1, begin set-up of field equipment
- 0910 Sample MW-1, mob to interior wells to gauge
- 0935 Finish gauging interior wells. Mob to MW-5 & SA.
- 0940 Gauge MW-5 & SA, begin sampling @ MW-SA
- 1010 Sample MW-SA, mob to MW-3
- 1035 Sample MW-3, mob to MW-10.
- 1105 Sample MW-10, collect Dup by MW-13. Sample time 11:05 on chem
- 1125 Begin flare analysis.
- 1150 Finish flare analysis.
- 1155 Lunch break.

1225 mob to mw-6, begin purge

1250 Sample mw-6, mob to mw-6

1325 Sample mw-6, mob to mw-7

1400 Sample mw-7

1410 Load equipment to vehicles, decon as needed.

1430 Evaluate stormwater conditions

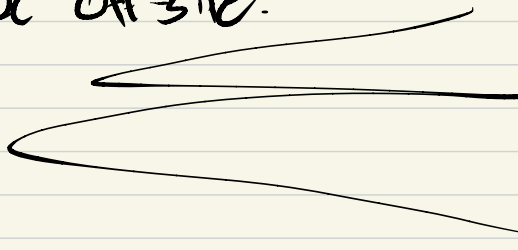
↳ will attempt to re-sample later.



1440 confirm samples, fill out & evaluate COC

1450 samples OK, begin to lock-up facility

1500 TRC off-site.



UB

12-20-23

Olalla Landfill

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Q4 2023 Sw Sampling

533022

1-29-24

Q4 2023

L. Brant



conds: overcast, 54°F

Scope: Q4 2023 SW Sampling

LB

①

0930 L. Briant on-site

0935 check-in w/ landfill staff. Inform of scope of work.

0940 mob to SW-2. Equip PPE & review H & S for site

0955 E. Miller on-site, equip PPE.

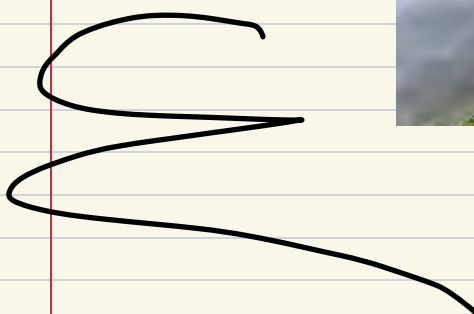
1000 Con Firm Calibration of equipment, mob to Sample Point <sup>9 sec attached.</sup>

1015 Sample SW-2

1020 Fill out CCL, confirm samples.

1030 Lock-up facility, check-out w/ staff.

1040 TRC off-site.



LB

1-29-24



# Groundwater Sampling Field Data - Olalla Landfill Monitoring

Station	SW-2	Date	1-29-24
Sample: ID	SW-2	Field Team: (Initials)	LG
Field Conditions	overcast, 56°F		

## Low-Flow Purge Information

Well Diameter (in.)	2"	Purge Method : Submersible pump	
Well Depth (ft.)	N/A	Other : Grab Sample	
Depth to Water (ft.)	↓	Start Time	1010
Depth of Water Column	↓	End Time	1030
1 Casing Volume (gal.)	↓	Total Gallons Purged	N/A
Controller setting (Hz)	↓		

Time	Gallons	pH	Conductivity	NTU	DO	Temp.	ORP	Appearance
1015	N/A	7.35	0.0415	N/A	10.71	9.5	118.4	Clear

## Sample Information

Sample Method(s) : Submersible pump

Analysis	Time	Bottle Type	Preservative/Filtration	Comments
Volatiles and VC		(3) 40-mL VOA	HCl, cool to <4°C	
<del>Coliform</del> Coliform	1015	300-mL sterile AG or poly	Cool to <4°C	
Geochemical Parameters		500-mL HDPE	Cool to <4°C	
Nitrate/Nitrite	1015	500-mL HDPE	Cool to <4°C	
TOC		250-mL AG	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
COD		250-mL HDPE	H <sub>2</sub> SO <sub>4</sub> to pH <2, cool to <4°C	
Total Metals		250-mL HDPE	HNO <sub>3</sub> to pH <2, cool to <4°C	
Dissolved Metals		250-mL HDPE	Field filter, HNO <sub>3</sub> to pH <2, cool to <4°C	
pH	1015			

Sample End Time 1030

## Comments / Exceptions:

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Notes: Where multiple visits are required to complete sampling, parameters are to be checked prior to sampling for each visit. Enter data under field comments.

## TRC Instrument Calibration Log

Site: Olalla Landfill - 533022

Date: 1-24-24

Calibrated By: L. Borcut

Log Sheet 5 of 1

	Meter Type	Manufacturer	Model Number	Mnfg. Serial#	EPI ID#	Rental Co. Serial#	Time
<b>1a</b>	<b>pH</b>						
<b>1b</b>	pH Electrode	<u>YSI</u>	<u>Pro Electro</u>	<u>21F0567</u>	<u>YSI 7</u>	<u>N/A</u>	<u>1000</u>
Calibrated:		<u>4.00</u>	to 4.00 buffer	<u>6.99</u>	to 7.00 buffer	<u>10.00</u>	to 10.00 buffer at <u>12.0</u> °C
Slope =		<u>Pass</u>	Comments: <u>N/A</u>				
<b>2</b>	<b>Conductivity</b>						
Specific Conductance: Calibrated _____ μS/cm to _____ μS/cm calibration standard							
Electrical Conductivity: Calibrated _____ μS/cm to _____ μS/cm calibration standard at _____ °C							
Comments:							
<b>3</b>	<b>Temperature</b>						
<b>4a</b>	<b>ORP Meter</b>						
<b>4b</b>	ORP Electrode						
<b>Electrode Filling Solution=</b>							
Use Orion 900001 electrode filling solution for dilute solutions that have a total ionic strength of <0.2 M.							
Using 900001 fill solution, the electrode will match the potential of a conventional calomel electrode.							
Electrode measured _____ millivolts at _____ °C in Zobell prepared on / /							
Table value for Zobell solution at this temperature is _____ mV.							
Electrode measured _____ millivolts at _____ °C using _____ solution.							
Table value for _____ fill solution at this temperature is _____ mV.							
<b>5</b>	<b>Turbidity</b>						
Calibrated turbidimeter to 0.02 NTUs reference standard.				Comments:			
<b>6a</b>	<b>DO Meter</b>						
Air-Calibration: Measured temperature _____ °C corresponds to _____ mg/L DO (from Table I)							
Atmospheric pressure / elevation correction factor _____ (from Table II)							
Corrected calibration value _____ mg/L DO (Table I value times Table II value)							
Comments:							



**Attachment 2:  
2023 Quarterly Monitoring Analytical Data Sheets**



**Analytical Resources, LLC**  
Analytical Chemists and Consultants  
Tukwila, WA

25 April 2023

Eric Caddy  
TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah, WA 98027

RE: Olalla Landfill (533022)

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)  
23C0527

Associated SDG ID(s)  
N/A

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I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclosed Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Kelly Bottem, Client Services Manager

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*





# Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: <u>230527</u>	Turn-around Requested: <u>standard</u>	Page: <u>1</u> of <u>1</u>
ARI Client Company: <u>TRC</u>	Phone: <u>425-395-0010</u>	Date: <u>3/22/23</u> Ice Present? <input type="checkbox"/>
Client Contact: <u>Eric Caddy</u>	No. of Coolers:	Cooler Temps:



Analytical Resources, LLC  
 Analytical Chemists and Consultants  
 4611 South 134th Place, Suite 100  
 Tukwila, WA 98168  
 206-695-6200 206-695-6201 (fax)

Client Project Name: <u>Olalla</u> PO#: <u>196897</u>					Analysis Requested								Notes/Comments	
Client Project #: <u>533022</u>		Samplers: <u>EM and LB</u>			Vac and VC	H SIM	Dissolved Metals As, Fe, Zn, Ba, Mn	Total Metals K, Na, Ca	Alkalinity Carbonate, bi-carbonate	Nitrate, nitrite, chloride, sulfate, PH	Toc, COD,	Ammonia	Total Coliform	
Sample ID	Date	Time	Matrix	No. Containers										
MW-1	3/22/23	0850	Water	11	X	X	X	X	X	X	X	X	Diss. metals need to be lab filtered. unpreserved.	
MW-3		1005			X	X	X	X	X	X	X	X		
MW-10		1045			X	X	X	X	X	X	X	X		
MW-6		1250			X	X	X	X	X	X	X	X		
MW-8		1325			X	X	X	X	X	X	X	X		
MW-9					X	X	X	X	X	X	X	X		
Comments/Special Instructions					Relinquished by: <u>EM</u> (Signature)		Received by: <u>R</u> (Signature)		Relinquished by:			Received by:		
					Printed Name: <u>EVAN MILLER</u>		Printed Name: <u>Rowan M.</u>		Printed Name:			Printed Name:		
					Company: <u>TRC</u>		Company: <u>ARI</u>		Company:			Company:		
					Date & Time: <u>3/22/23 1441</u>		Date & Time: <u>3/22/23 1441</u>		Date & Time:			Date & Time:		

**Limits of Liability:** ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

**Sample Retention Policy:** All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



WORK ORDER

23C0527

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: TRC Companies, Inc

Project Manager: Kelly Bottem

Project: Olalla Landfill

Project Number: 533022

Preservation Confirmation

Container ID	Container Type	pH	
23C0527-01 A	HDPE NM, 1000 mL		
23C0527-01 B	HDPE NM, 500 mL		
23C0527-01 C	HDPE NM, 500 mL, 1:1 HNO3	< 2	Pass
23C0527-01 D	Glass NM, Amber, 250 mL, 9N H2SO4	< 2	Pass
23C0527-01 E	Corning Plastic, 125 mL, Na2S2O3		
23C0527-01 F	VOA Vial, Clear, 40 mL, HCL		
23C0527-01 G	VOA Vial, Clear, 40 mL, HCL		
23C0527-01 H	VOA Vial, Clear, 40 mL, HCL		
23C0527-01 I	VOA Vial, Clear, 40 mL, HCL		
23C0527-01 J	VOA Vial, Clear, 40 mL, HCL		
23C0527-02 A	HDPE NM, 500 mL	> 2	Fail (1)
23C0527-03 A	HDPE NM, 1000 mL		
23C0527-03 B	HDPE NM, 500 mL		
23C0527-03 C	HDPE NM, 500 mL, 1:1 HNO3	< 2	Pass
23C0527-03 D	Glass NM, Amber, 250 mL, 9N H2SO4	< 2	Pass
23C0527-03 E	Corning Plastic, 125 mL, Na2S2O3		
23C0527-03 F	VOA Vial, Clear, 40 mL, HCL		
23C0527-03 G	VOA Vial, Clear, 40 mL, HCL		
23C0527-03 H	VOA Vial, Clear, 40 mL, HCL		
23C0527-03 I	VOA Vial, Clear, 40 mL, HCL		
23C0527-03 J	VOA Vial, Clear, 40 mL, HCL		
23C0527-04 A	HDPE NM, 500 mL	> 2	Fail (1)
23C0527-05 A	HDPE NM, 1000 mL		
23C0527-05 B	HDPE NM, 500 mL		
23C0527-05 C	HDPE NM, 500 mL, 1:1 HNO3	< 2	Pass
23C0527-05 D	Glass NM, Amber, 250 mL, 9N H2SO4	< 2	Pass
23C0527-05 E	Corning Plastic, 125 mL, Na2S2O3	<del>&lt; 2</del>	<del>Pass</del> <del>Pass</del>
23C0527-05 F	VOA Vial, Clear, 40 mL, HCL		
23C0527-05 G	VOA Vial, Clear, 40 mL, HCL		
23C0527-05 H	VOA Vial, Clear, 40 mL, HCL		
23C0527-05 I	VOA Vial, Clear, 40 mL, HCL		
23C0527-05 J	VOA Vial, Clear, 40 mL, HCL		
23C0527-06 A	HDPE NM, 500 mL	> 2	Fail (1)
23C0527-07 A	HDPE NM, 1000 mL		









TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
25-Apr-2023 17:53

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	23C0527-01	Water	22-Mar-2023 08:50	22-Mar-2023 14:41
MW-1	23C0527-02	Water	22-Mar-2023 08:50	22-Mar-2023 14:41
MW-3	23C0527-03	Water	22-Mar-2023 10:05	22-Mar-2023 14:41
MW-3	23C0527-04	Water	22-Mar-2023 10:05	22-Mar-2023 14:41
MW-10	23C0527-05	Water	22-Mar-2023 10:45	22-Mar-2023 14:41
MW-10	23C0527-06	Water	22-Mar-2023 10:45	22-Mar-2023 14:41
MW-6	23C0527-07	Water	22-Mar-2023 12:50	22-Mar-2023 14:41
MW-6	23C0527-08	Water	22-Mar-2023 12:50	22-Mar-2023 14:41
MW-8	23C0527-09	Water	22-Mar-2023 13:25	22-Mar-2023 14:41
MW-8	23C0527-10	Water	22-Mar-2023 13:25	22-Mar-2023 14:41
MW-9	23C0527-11	Water	22-Mar-2023 00:00	22-Mar-2023 14:41
MW-9	23C0527-12	Water	22-Mar-2023 00:00	22-Mar-2023 14:41



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
25-Apr-2023 17:53

## Work Order Case Narrative

### Volatiles - EPA Method SW8260D

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements with the exception of all associated "Q" flagged analytes which are out of control high in the CCAL. All associated samples that contain analyte have been flagged with a "Q" flag.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) contained hexachloro-1,3-Butadiene. Associated samples that contain analyte have been flagged with a "B" qualifier.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

### Volatiles - EPA Method SW8260DSIM

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

### Total and Dissolved Metals - EPA Method 200.8 and 6010D

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
25-Apr-2023 17:53

The matrix spike (MS) percent recoveries and the duplicate (DUP) relative percent difference (RPD) were within advisory control limits.

**Wet Chemistry**

The sample(s) were prepared and analyzed within the recommended holding times with the exception of pH which was sent to the lab outside of the holding time and select samples for coliforms which have been flagged with a "H" qualifier.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The reference material (SRM) percent recoveries were within control limits.

The matrix spike (MS) percent recoveries and the duplicate (DUP) relative percent difference (RPD) were within advisory control limits.



WORK ORDER

23C0527

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: TRC Companies, Inc

Project Manager: Kelly Bottem

Project: Olalla Landfill

Project Number: 533022

Preservation Confirmation

Container ID	Container Type	pH	
23C0527-01 A	HDPE NM, 1000 mL		
23C0527-01 B	HDPE NM, 500 mL		
23C0527-01 C	HDPE NM, 500 mL, 1:1 HNO3	< 2	Pass
23C0527-01 D	Glass NM, Amber, 250 mL, 9N H2SO4	< 2	Pass
23C0527-01 E	Corning Plastic, 125 mL, Na2S2O3		
23C0527-01 F	VOA Vial, Clear, 40 mL, HCL		
23C0527-01 G	VOA Vial, Clear, 40 mL, HCL		
23C0527-01 H	VOA Vial, Clear, 40 mL, HCL		
23C0527-01 I	VOA Vial, Clear, 40 mL, HCL		
23C0527-01 J	VOA Vial, Clear, 40 mL, HCL		
23C0527-02 A	HDPE NM, 500 mL	> 2	Fail
23C0527-03 A	HDPE NM, 1000 mL		
23C0527-03 B	HDPE NM, 500 mL		
23C0527-03 C	HDPE NM, 500 mL, 1:1 HNO3	< 2	Pass
23C0527-03 D	Glass NM, Amber, 250 mL, 9N H2SO4	< 2	Pass
23C0527-03 E	Corning Plastic, 125 mL, Na2S2O3		
23C0527-03 F	VOA Vial, Clear, 40 mL, HCL		
23C0527-03 G	VOA Vial, Clear, 40 mL, HCL		
23C0527-03 H	VOA Vial, Clear, 40 mL, HCL		
23C0527-03 I	VOA Vial, Clear, 40 mL, HCL		
23C0527-03 J	VOA Vial, Clear, 40 mL, HCL		
23C0527-04 A	HDPE NM, 500 mL	> 2	Fail
23C0527-05 A	HDPE NM, 1000 mL		
23C0527-05 B	HDPE NM, 500 mL		
23C0527-05 C	HDPE NM, 500 mL, 1:1 HNO3	< 2	Pass
23C0527-05 D	Glass NM, Amber, 250 mL, 9N H2SO4	< 2	Pass
23C0527-05 E	Corning Plastic, 125 mL, Na2S2O3	<del>&lt; 2</del>	<del>Pass</del>
23C0527-05 F	VOA Vial, Clear, 40 mL, HCL		
23C0527-05 G	VOA Vial, Clear, 40 mL, HCL		
23C0527-05 H	VOA Vial, Clear, 40 mL, HCL		
23C0527-05 I	VOA Vial, Clear, 40 mL, HCL		
23C0527-05 J	VOA Vial, Clear, 40 mL, HCL		
23C0527-06 A	HDPE NM, 500 mL	> 2	Fail
23C0527-07 A	HDPE NM, 1000 mL		





WORK ORDER

23C0527

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: TRC Companies, Inc

Project Manager: Kelly Bottem

Project: Olalla Landfill

Project Number: 533022

23C0527-07 B	HDPE NM, 500 mL		
23C0527-07 C	HDPE NM, 500 mL, 1:1 HNO3	CC	Pass
23C0527-07 D	Glass NM, Amber, 250 mL, 9N H2SO4	CC	pass
23C0527-07 E	Corning Plastic, 125 mL, Na2S2O3		
23C0527-07 F	VOA Vial, Clear, 40 mL, HCL		
23C0527-07 G	VOA Vial, Clear, 40 mL, HCL		
23C0527-07 H	VOA Vial, Clear, 40 mL, HCL		
23C0527-07 I	VOA Vial, Clear, 40 mL, HCL		
23C0527-07 J	VOA Vial, Clear, 40 mL, HCL		
23C0527-08 A	HDPE NM, 500 mL	72	Fail
23C0527-09 A	HDPE NM, 1000 mL		
23C0527-09 B	HDPE NM, 500 mL		
23C0527-09 C	HDPE NM, 500 mL, 1:1 HNO3	CC	Pass
23C0527-09 D	Glass NM, Amber, 250 mL, 9N H2SO4	CC	pass
23C0527-09 E	Corning Plastic, 125 mL, Na2S2O3		
23C0527-09 F	VOA Vial, Clear, 40 mL, HCL		
23C0527-09 G	VOA Vial, Clear, 40 mL, HCL		
23C0527-09 H	VOA Vial, Clear, 40 mL, HCL		
23C0527-09 I	VOA Vial, Clear, 40 mL, HCL		
23C0527-09 J	VOA Vial, Clear, 40 mL, HCL		
23C0527-10 A	HDPE NM, 500 mL	72	Fail
23C0527-11 A	HDPE NM, 1000 mL		
23C0527-11 B	HDPE NM, 500 mL		
23C0527-11 C	HDPE NM, 500 mL, 1:1 HNO3	CC	Pass
23C0527-11 D	Glass NM, Amber, 250 mL, 9N H2SO4	CC	Pass
23C0527-11 E	Corning Plastic, 125 mL, Na2S2O3		
23C0527-11 F	VOA Vial, Clear, 40 mL, HCL		
23C0527-11 G	VOA Vial, Clear, 40 mL, HCL		
23C0527-11 H	VOA Vial, Clear, 40 mL, HCL		
23C0527-11 I	VOA Vial, Clear, 40 mL, HCL		
23C0527-11 J	VOA Vial, Clear, 40 mL, HCL		
23C0527-12 A	HDPE NM, 500 mL	72	Fail

  
Preservation Confirmed By

3/22/23  
Date



# Cooler Receipt Form

ARI Client: TRC

Project Name: 01211a

COC No(s): \_\_\_\_\_ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: \_\_\_\_\_

Assigned ARI Job No: 230527

Tracking No: \_\_\_\_\_ (NA)

**Preliminary Examination Phase:**

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES  NO

Were custody papers included with the cooler? ..... YES  NO

Were custody papers properly filled out (ink, signed, etc.) ..... YES  NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 3.3° 5.6°

Time 1441

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 9708

Cooler Accepted by: [Signature] Date: 3/22/23 Time: 1441

**Complete custody forms and attach all shipping documents**

**Log-In Phase:**

Was a temperature blank included in the cooler? ..... YES  NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: \_\_\_\_\_

Was sufficient ice used (if appropriate)? ..... NA  YES  NO

How were bottles sealed in plastic bags? ..... Individually  Grouped  Not

Did all bottles arrive in good condition (unbroken)? ..... YES  NO

Were all bottle labels complete and legible? ..... YES  NO

Did the number of containers listed on COC match with the number of containers received? ..... YES  NO

Did all bottle labels and tags agree with custody papers? ..... YES  NO

Were all bottles used correct for the requested analyses? ..... YES  NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA  YES  NO

Were all VOC vials free of air bubbles? ..... NA  YES  NO

Was sufficient amount of sample sent in each bottle? ..... YES  NO

Date VOC Trip Blank was made at ARI..... NA

Were the sample(s) split by ARI?  NA YES  Date/Time: \_\_\_\_\_ Equipment: \_\_\_\_\_ Split by: \_\_\_\_\_

Samples Logged by: [Signature] Date: 3/22/23 Time: 1514 Labels checked by: \_\_\_\_\_

**\*\* Notify Project Manager of discrepancies or concerns \*\***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

**Additional Notes, Discrepancies, & Resolutions:**

By: \_\_\_\_\_ Date: \_\_\_\_\_



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
25-Apr-2023 17:53

**MW-1**  
**23C0527-01 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 03/22/2023 08:50

Instrument: NT2 Analyst: LH

Analyzed: 03/23/2023 16:47

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)  
Preparation Batch: BLC0619  
Prepared: 03/23/2023

Sample Size: 10 mL  
Final Volume: 10 mL

Extract ID: 23C0527-01 F

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U





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Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
25-Apr-2023 17:53

**MW-1**  
**23C0527-01 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 03/22/2023 08:50

Instrument: NT2 Analyst: LH

Analyzed: 03/23/2023 16:47

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U



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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
25-Apr-2023 17:53

**MW-1**  
**23C0527-01 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 03/22/2023 08:50

Instrument: NT2 Analyst: LH

Analyzed: 03/23/2023 16:47

**Analysis by: Analytical Resources, LLC**

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Hexachloro-1,3-Butadiene	87-68-3	1	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>113</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>			<i>80-120 %</i>	<i>100</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>			<i>80-120 %</i>	<i>89.0</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			<i>80-120 %</i>	<i>105</i>	<i>%</i>	



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Apr-2023 17:53
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**MW-1**  
**23C0527-01 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM Sampled: 03/22/2023 08:50  
Instrument: NT16 Analyst: PB Analyzed: 03/24/2023 13:16

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23C0527-01 G  
Preparation Batch: BLC0655 Sample Size: 10 mL  
Prepared: 03/24/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	ND	ng/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	115	%	



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Apr-2023 17:53
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**MW-1**  
**23C0527-01 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D Sampled: 03/22/2023 08:50  
Instrument: ICP3 Analyst: DOE Analyzed: 04/13/2023 10:39

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: TWC EPA 3010A Extract ID: 23C0527-01 C 01  
Preparation Batch: BLD0204 Sample Size: 25 mL  
Prepared: 04/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	1	0.0500	11.2	mg/L	
Potassium	7440-09-7	1	0.500	0.632	mg/L	
Sodium	7440-23-5	1	0.500	4.59	mg/L	



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Apr-2023 17:53
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**MW-1**  
**23C0527-01 (Water)**

**Wet Chemistry**

Method: EPA 325.2 Sampled: 03/22/2023 08:50  
Instrument: LACHAT2 Analyst: HL Analyzed: 04/06/2023 17:27

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-01 A  
Preparation Batch: BLD0141 Sample Size: 10 mL  
Prepared: 04/06/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	1.00	1.00	5.22	mg/L	



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Apr-2023 17:53
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**MW-1**  
**23C0527-01 (Water)**

**Wet Chemistry**

Method: EPA 353.2 Sampled: 03/22/2023 08:50  
Instrument: [CALC] Analyst: BF Analyzed: 03/22/2023 16:42

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: [CALC] Extract ID: 23C0527-01  
Preparation Batch: [CALC]  
Prepared: 03/22/2023 Final Volume: 1

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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Nitrate-N	14797-55-8	1	0.0200	0.715	mg/L	
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Instrument: LACHAT2 Analyst: BF Analyzed: 03/22/2023 16:42

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-01 A  
Preparation Batch: BLC0602 Sample Size: 10 mL  
Prepared: 03/22/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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Nitrate + Nitrite as N		1	0.010	0.010	0.715	mg/L	
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Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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Nitrite-N	14797-65-0	1	0.010	0.010	ND	mg/L	U
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TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Apr-2023 17:53
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**MW-1**  
**23C0527-01 (Water)**

**Wet Chemistry**

Method: EPA 375.2 Sampled: 03/22/2023 08:50  
Instrument: LACHAT2 Analyst: HAL Analyzed: 04/12/2023 13:00

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-01 A  
Preparation Batch: BLD0291 Sample Size: 10 mL  
Prepared: 04/12/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	2.00	2.00	4.06	mg/L	





TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Apr-2023 17:53
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**MW-1**  
**23C0527-01 (Water)**

**Wet Chemistry**

Method: EPA 410.4 Sampled: 03/22/2023 08:50  
Instrument: UV1800-1 Analyst: BF Analyzed: 04/05/2023 15:51

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-01 D  
Preparation Batch: BLD0044 Sample Size: 2 mL  
Prepared: 04/03/2023 Final Volume: 2 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
COD		1	10.0	10.0	ND	mg/L	U



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Apr-2023 17:53
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**MW-1**  
**23C0527-01 (Water)**

**Wet Chemistry**

Method: EPA 9060A Sampled: 03/22/2023 08:50  
Instrument: TOC-LCSH Analyst: RMS Analyzed: 04/05/2023 10:51

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-01 D  
Preparation Batch: BLD0087 Sample Size: 20 mL  
Prepared: 04/05/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	1.34	mg/L	



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Apr-2023 17:53
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**MW-1**  
**23C0527-01 (Water)**

**Wet Chemistry**

Method: SM 2320 B-97 Sampled: 03/22/2023 08:50  
Instrument: Accumet AB150 Analyst: UW Analyzed: 03/27/2023 13:35

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-01 B  
Preparation Batch: BLC0691 Sample Size: 100 mL  
Prepared: 03/27/2023 Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Bicarbonate		1	1.00	1.00	55.2	mg/L CaCO3	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Carbonate		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Hydroxide		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	55.2	mg/L CaCO3	



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Apr-2023 17:53
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**MW-1**  
**23C0527-01 (Water)**

**Wet Chemistry**

Method: SM 4500-H+ B-00 Sampled: 03/22/2023 08:50  
Instrument: Accumet AB150 Analyst: UW Analyzed: 03/22/2023 16:05

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-01 A  
Preparation Batch: BLC0600 Sample Size: 50 mL  
Prepared: 03/22/2023 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
pH		1	0.01	0.01	6.43	pH Units	H



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**MW-1**  
**23C0527-01 (Water)**

**Wet Chemistry**

Method: SM 4500-NH3 H-97 Sampled: 03/22/2023 08:50  
Instrument: LCHAT1 Analyst: MAM Analyzed: 04/05/2023 11:48

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-01 D  
Preparation Batch: BLD0079 Sample Size: 10 mL  
Prepared: 04/04/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.040	0.040	ND	mg/L	U



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**MW-1**  
**23C0527-01 (Water)**

**Microbiology**

Method: SM 9222B Sampled: 03/22/2023 08:50  
Instrument: N/A Analyst: UW Analyzed: 03/23/2023 16:50

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-01  
Preparation Batch: BLC0606 Sample Size: 100 mL  
Prepared: 03/22/2023 Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Coliforms		1	1	1	ND	CFU/100 ml	H, U



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**MW-1**  
**23C0527-02 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 Sampled: 03/22/2023 08:50  
Instrument: ICPMS2 Analyst: MCB Analyzed: 04/03/2023 20:40

**Analysis by: Analytical Resources, LLC**

Sample Preparation:	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Extract ID: 23C0527-02 A 02
	Preparation Batch: BLD0032	Final Volume: 25 mL	Filtration Batch: BLC0613
	Prepared: 04/03/2023		Filtration Date: 03/23/2023 09:24

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron, Dissolved	7439-89-6	1	20.0	ND	ug/L	U





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**MW-1**  
**23C0527-02 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED Sampled: 03/22/2023 08:50  
Instrument: ICPMS2 Analyst: MCB Analyzed: 04/03/2023 20:40

**Analysis by: Analytical Resources, LLC**

Sample Preparation:	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Extract ID: 23C0527-02 A 02
	Preparation Batch: BLD0032	Final Volume: 25 mL	Filtration Batch: BLC0613
	Prepared: 04/03/2023		Filtration Date: 03/23/2023 09:24

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Zinc, Dissolved	7440-66-6	1	6.00	ND	ug/L	U

Sample Preparation:	Preparation Method: RHN EPA 600/4-79-020 4.1.4 HNO3 matrix 5x	Sample Size: 100 mL	Extract ID: 23C0527-02 A 03
	Preparation Batch: BLD0094	Final Volume: 20 mL	Filtration Batch: BLC0613
	Prepared: 04/05/2023		Filtration Date: 03/23/2023 09:24

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0400	0.103	ug/L	



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**MW-1**  
**23C0527-02 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D Sampled: 03/22/2023 08:50  
Instrument: ICP3 Analyst: DOE Analyzed: 04/06/2023 09:41

**Analysis by: Analytical Resources, LLC**

Sample Preparation:	Preparation Method: WMN (No Prep)	Sample Size: 25 mL	Extract ID: 23C0527-02 A 04
	Preparation Batch: BLD0114	Final Volume: 25 mL	Filtration Batch: BLC0613
	Prepared: 04/05/2023		Filtration Date: 03/23/2023 09:24

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0060	ND	mg/L	U
Manganese, Dissolved	7439-96-5	1	0.0040	ND	mg/L	U



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**MW-3**  
**23C0527-03 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 03/22/2023 10:05

Instrument: NT2 Analyst: LH

Analyzed: 03/23/2023 17:08

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)  
Preparation Batch: BLC0619  
Prepared: 03/23/2023

Sample Size: 10 mL  
Final Volume: 10 mL

Extract ID: 23C0527-03 F

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U



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**MW-3**  
**23C0527-03 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 03/22/2023 10:05

Instrument: NT2 Analyst: LH

Analyzed: 03/23/2023 17:08

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U



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**MW-3**  
**23C0527-03 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 03/22/2023 10:05

Instrument: NT2 Analyst: LH

Analyzed: 03/23/2023 17:08

**Analysis by: Analytical Resources, LLC**

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>119</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>			<i>80-120 %</i>	<i>102</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>			<i>80-120 %</i>	<i>91.3</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			<i>80-120 %</i>	<i>100</i>	<i>%</i>	



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**MW-3**  
**23C0527-03 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM Sampled: 03/22/2023 10:05  
Instrument: NT16 Analyst: PB Analyzed: 03/24/2023 12:34

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23C0527-03 H  
Preparation Batch: BLC0655 Sample Size: 10 mL  
Prepared: 03/24/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	ND	ng/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	115	%	



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**MW-3**  
**23C0527-03 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D Sampled: 03/22/2023 10:05  
Instrument: ICP3 Analyst: DOE Analyzed: 04/13/2023 10:22

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: TWC EPA 3010A Extract ID: 23C0527-03 C 01  
Preparation Batch: BLD0204 Sample Size: 25 mL  
Prepared: 04/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	1	0.0500	63.8	mg/L	
Potassium	7440-09-7	1	0.500	0.887	mg/L	
Sodium	7440-23-5	1	0.500	9.79	mg/L	





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**MW-3**  
**23C0527-03 (Water)**

**Wet Chemistry**

Method: EPA 325.2 Sampled: 03/22/2023 10:05  
Instrument: LACHAT2 Analyst: HL Analyzed: 04/06/2023 17:34

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-03 A  
Preparation Batch: BLD0141 Sample Size: 10 mL  
Prepared: 04/06/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	1.00	1.00	3.03	mg/L	



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**MW-3**  
**23C0527-03 (Water)**

**Wet Chemistry**

Method: EPA 353.2 Sampled: 03/22/2023 10:05  
Instrument: [CALC] Analyst: BF Analyzed: 03/22/2023 16:56

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: [CALC] Extract ID: 23C0527-03  
Preparation Batch: [CALC]  
Prepared: 03/22/2023 Final Volume: 1

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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Nitrate-N	14797-55-8	1	0.0200	ND	mg/L	U
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Instrument: LACHAT2 Analyst: BF Analyzed: 03/22/2023 16:56

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-03 A  
Preparation Batch: BLC0602 Sample Size: 10 mL  
Prepared: 03/22/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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Nitrate + Nitrite as N		1	0.010	0.010	ND	mg/L	U
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Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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Nitrite-N	14797-65-0	1	0.010	0.010	ND	mg/L	U
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**MW-3**  
**23C0527-03 (Water)**

**Wet Chemistry**

Method: EPA 375.2 Sampled: 03/22/2023 10:05  
Instrument: LACHAT2 Analyst: HAL Analyzed: 04/12/2023 13:08

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-03 A  
Preparation Batch: BLD0291 Sample Size: 10 mL  
Prepared: 04/12/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	2.00	2.00	22.1	mg/L	



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**MW-3**  
**23C0527-03 (Water)**

**Wet Chemistry**

Method: EPA 410.4 Sampled: 03/22/2023 10:05  
Instrument: UV1800-1 Analyst: BF Analyzed: 04/05/2023 15:53

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-03 D  
Preparation Batch: BLD0044 Sample Size: 2 mL  
Prepared: 04/03/2023 Final Volume: 2 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
COD		1	10.0	10.0	ND	mg/L	U



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**MW-3**  
**23C0527-03 (Water)**

**Wet Chemistry**

Method: EPA 9060A Sampled: 03/22/2023 10:05  
Instrument: TOC-LCSH Analyst: RMS Analyzed: 04/05/2023 12:20

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-03 D  
Preparation Batch: BLD0087 Sample Size: 20 mL  
Prepared: 04/05/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	3.56	mg/L	



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**MW-3**  
**23C0527-03 (Water)**

**Wet Chemistry**

Method: SM 2320 B-97 Sampled: 03/22/2023 10:05  
Instrument: Accumet AB150 Analyst: UW Analyzed: 03/27/2023 13:35

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-03 B  
Preparation Batch: BLC0691 Sample Size: 50 mL  
Prepared: 03/27/2023 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Bicarbonate		1	1.00	1.00	299	mg/L CaCO3	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Carbonate		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Hydroxide		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	299	mg/L CaCO3	



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**MW-3**  
**23C0527-03 (Water)**

**Wet Chemistry**

Method: SM 4500-H+ B-00 Sampled: 03/22/2023 10:05  
Instrument: Accumet AB150 Analyst: UW Analyzed: 03/22/2023 16:05

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-03 A  
Preparation Batch: BLC0600 Sample Size: 50 mL  
Prepared: 03/22/2023 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
pH		1	0.01	0.01	6.20	pH Units	H



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**MW-3**  
**23C0527-03 (Water)**

**Wet Chemistry**

Method: SM 4500-NH3 H-97 Sampled: 03/22/2023 10:05  
Instrument: LCHAT1 Analyst: MAM Analyzed: 04/05/2023 11:52

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-03 D  
Preparation Batch: BLD0079 Sample Size: 10 mL  
Prepared: 04/04/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.040	0.040	ND	mg/L	U





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**MW-3**  
**23C0527-03 (Water)**

**Microbiology**

Method: SM 9222B Sampled: 03/22/2023 10:05  
Instrument: N/A Analyst: UW Analyzed: 03/23/2023 16:50

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-03  
Preparation Batch: BLC0606 Sample Size: 100 mL  
Prepared: 03/22/2023 Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Coliforms		1	1	1	ND	CFU/100 ml	U



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**MW-3**  
**23C0527-04 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 Sampled: 03/22/2023 10:05  
Instrument: ICPMS2 Analyst: MCB Analyzed: 04/03/2023 20:17

**Analysis by: Analytical Resources, LLC**

Sample Preparation:	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Extract ID: 23C0527-04 A 02
	Preparation Batch: BLD0032	Final Volume: 25 mL	Filtration Batch: BLC0613
	Prepared: 04/03/2023		Filtration Date: 03/23/2023 09:24

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron, Dissolved	7439-89-6	1	20.0	ND	ug/L	U



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**MW-3**  
**23C0527-04 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED Sampled: 03/22/2023 10:05  
Instrument: ICPMS2 Analyst: MCB Analyzed: 04/03/2023 20:17

**Analysis by: Analytical Resources, LLC**

Sample Preparation:	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Extract ID: 23C0527-04 A 02
	Preparation Batch: BLD0032	Final Volume: 25 mL	Filtration Batch: BLC0613
	Prepared: 04/03/2023		Filtration Date: 03/23/2023 09:24

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Zinc, Dissolved	7440-66-6	1	6.00	ND	ug/L	U

Sample Preparation:	Preparation Method: RHN EPA 600/4-79-020 4.1.4 HNO3 matrix 5x	Sample Size: 100 mL	Extract ID: 23C0527-04 A 03
	Preparation Batch: BLD0094	Final Volume: 20 mL	Filtration Batch: BLC0613
	Prepared: 04/05/2023		Filtration Date: 03/23/2023 09:24

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0400	0.115	ug/L	



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**MW-3**  
**23C0527-04 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D Sampled: 03/22/2023 10:05  
Instrument: ICP3 Analyst: DOE Analyzed: 04/06/2023 11:05

**Analysis by: Analytical Resources, LLC**

Sample Preparation:	Preparation Method: WMN (No Prep)	Sample Size: 25 mL	Extract ID: 23C0527-04 A 04
	Preparation Batch: BLD0114	Final Volume: 25 mL	Filtration Batch: BLC0613
	Prepared: 04/05/2023		Filtration Date: 03/23/2023 09:24

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0060	0.0195	mg/L	
Manganese, Dissolved	7439-96-5	1	0.0040	8.66	mg/L	



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**MW-10**  
**23C0527-05 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 03/22/2023 10:45

Instrument: NT2 Analyst: LH

Analyzed: 03/23/2023 17:29

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)  
Preparation Batch: BLC0619  
Prepared: 03/23/2023

Sample Size: 10 mL  
Final Volume: 10 mL

Extract ID: 23C0527-05 G

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U



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**MW-10**  
**23C0527-05 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 03/22/2023 10:45

Instrument: NT2 Analyst: LH

Analyzed: 03/23/2023 17:29

**Analysis by: Analytical Resources, LLC**

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U



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**MW-10**  
**23C0527-05 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 03/22/2023 10:45

Instrument: NT2 Analyst: LH

Analyzed: 03/23/2023 17:29

**Analysis by: Analytical Resources, LLC**

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>120</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>			<i>80-120 %</i>	<i>99.3</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>			<i>80-120 %</i>	<i>88.2</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			<i>80-120 %</i>	<i>100</i>	<i>%</i>	



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**MW-10**  
**23C0527-05 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM Sampled: 03/22/2023 10:45  
Instrument: NT16 Analyst: PB Analyzed: 03/24/2023 12:55

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23C0527-05 F  
Preparation Batch: BLC0655 Sample Size: 10 mL  
Prepared: 03/24/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	ND	ng/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	115	%	





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**MW-10**  
**23C0527-05 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D Sampled: 03/22/2023 10:45  
Instrument: ICP3 Analyst: DOE Analyzed: 04/13/2023 10:25

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: TWC EPA 3010A Extract ID: 23C0527-05 C 01  
Preparation Batch: BLD0204 Sample Size: 25 mL  
Prepared: 04/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	1	0.0500	42.5	mg/L	
Potassium	7440-09-7	1	0.500	1.22	mg/L	
Sodium	7440-23-5	1	0.500	14.5	mg/L	



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**MW-10**  
**23C0527-05 (Water)**

**Wet Chemistry**

Method: EPA 353.2 Sampled: 03/22/2023 10:45  
Instrument: [CALC] Analyst: BF Analyzed: 03/22/2023 16:57

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: [CALC] Extract ID: 23C0527-05  
Preparation Batch: [CALC]  
Prepared: 03/22/2023 Final Volume: 1

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.0200	ND	mg/L	U

Instrument: LCHAT2 Analyst: BF Analyzed: 03/22/2023 16:57

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-05 A  
Preparation Batch: BLC0602 Sample Size: 10 mL  
Prepared: 03/22/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate + Nitrite as N		1	0.010	0.010	ND	mg/L	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.010	0.010	ND	mg/L	U



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**MW-10**  
**23C0527-05 (Water)**

**Wet Chemistry**

Method: EPA 375.2 Sampled: 03/22/2023 10:45  
Instrument: LACHAT2 Analyst: HAL Analyzed: 04/12/2023 13:09

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-05 A  
Preparation Batch: BLD0291 Sample Size: 10 mL  
Prepared: 04/12/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	2.00	2.00	8.41	mg/L	



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**MW-10**  
**23C0527-05 (Water)**

**Wet Chemistry**

Method: EPA 410.4 Sampled: 03/22/2023 10:45  
Instrument: UV1800-1 Analyst: BF Analyzed: 04/05/2023 15:53

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-05 D  
Preparation Batch: BLD0044 Sample Size: 2 mL  
Prepared: 04/03/2023 Final Volume: 2 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
COD		1	10.0	10.0	ND	mg/L	U



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**MW-10**  
**23C0527-05 (Water)**

**Wet Chemistry**

Method: EPA 9060A Sampled: 03/22/2023 10:45  
Instrument: TOC-LCSH Analyst: RMS Analyzed: 04/05/2023 12:42

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-05 D  
Preparation Batch: BLD0087 Sample Size: 20 mL  
Prepared: 04/05/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	3.65	mg/L	



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**MW-10**  
**23C0527-05 (Water)**

**Wet Chemistry**

Method: SM 2320 B-97 Sampled: 03/22/2023 10:45  
Instrument: Accumet AB150 Analyst: UW Analyzed: 03/27/2023 13:35

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-05 B  
Preparation Batch: BLC0691 Sample Size: 50 mL  
Prepared: 03/27/2023 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Bicarbonate		1	1.00	1.00	248	mg/L CaCO3	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Carbonate		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Hydroxide		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	248	mg/L CaCO3	



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**MW-10**  
**23C0527-05 (Water)**

**Wet Chemistry**

Method: SM 4500-H+ B-00 Sampled: 03/22/2023 10:45  
Instrument: Accumet AB150 Analyst: UW Analyzed: 03/22/2023 16:05

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-05 A  
Preparation Batch: BLC0600 Sample Size: 50 mL  
Prepared: 03/22/2023 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
pH		1	0.01	0.01	6.54	pH Units	H



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**MW-10**  
**23C0527-05 (Water)**

**Wet Chemistry**

Method: SM 4500-NH3 H-97 Sampled: 03/22/2023 10:45  
Instrument: LCHAT1 Analyst: MAM Analyzed: 04/05/2023 11:54

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-05 D  
Preparation Batch: BLD0079 Sample Size: 10 mL  
Prepared: 04/04/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.040	0.040	0.057	mg/L	





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**MW-10**  
**23C0527-05 (Water)**

**Microbiology**

Method: SM 9222B Sampled: 03/22/2023 10:45  
Instrument: N/A Analyst: UW Analyzed: 03/23/2023 16:50

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-05  
Preparation Batch: BLC0606 Sample Size: 100 mL  
Prepared: 03/22/2023 Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Coliforms		1	1	1	ND	CFU/100 ml	U



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**MW-10**  
**23C0527-05RE1 (Water)**

**Wet Chemistry**

Method: EPA 325.2 Sampled: 03/22/2023 10:45  
Instrument: LACHAT2 Analyst: HL Analyzed: 04/06/2023 18:12

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-05RE1 A  
Preparation Batch: BLD0141 Sample Size: 10 mL  
Prepared: 04/06/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	5	5.00	5.00	12.6	mg/L	D



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**MW-10**  
**23C0527-06 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 Sampled: 03/22/2023 10:45  
Instrument: ICPMS1 Analyst: MCB Analyzed: 04/06/2023 20:10

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23C0527-06 A 02  
Preparation Batch: BLD0032 Filtration Batch: BLC0613  
Prepared: 04/03/2023 Final Volume: 25 mL Filtration Date: 03/23/2023 09:24

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron, Dissolved	7439-89-6	2	40.0	ND	ug/L	U



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**MW-10**  
**23C0527-06 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED Sampled: 03/22/2023 10:45  
Instrument: ICPMS2 Analyst: MCB Analyzed: 04/03/2023 20:22

**Analysis by: Analytical Resources, LLC**

Sample Preparation:	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Extract ID: 23C0527-06 A 02
	Preparation Batch: BLD0032	Final Volume: 25 mL	Filtration Batch: BLC0613
	Prepared: 04/03/2023		Filtration Date: 03/23/2023 09:24

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Zinc, Dissolved	7440-66-6	1	6.00	ND	ug/L	U

Sample Preparation:	Preparation Method: RHN EPA 600/4-79-020 4.1.4 HNO3 matrix 5x	Sample Size: 100 mL	Extract ID: 23C0527-06 A 03
	Preparation Batch: BLD0094	Final Volume: 20 mL	Filtration Batch: BLC0613
	Prepared: 04/05/2023		Filtration Date: 03/23/2023 09:24

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	2	0.0800	1.92	ug/L	D



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**MW-10**  
**23C0527-06 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D Sampled: 03/22/2023 10:45  
Instrument: ICP3 Analyst: DOE Analyzed: 04/06/2023 09:47

**Analysis by: Analytical Resources, LLC**

Sample Preparation:	Preparation Method: WMN (No Prep)	Sample Size: 25 mL	Extract ID: 23C0527-06 A 04
	Preparation Batch: BLD0114	Final Volume: 25 mL	Filtration Batch: BLC0613
	Prepared: 04/05/2023		Filtration Date: 03/23/2023 09:24

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0060	0.0168	mg/L	
Manganese, Dissolved	7439-96-5	1	0.0040	4.31	mg/L	



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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
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**MW-6**  
**23C0527-07 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 03/22/2023 12:50

Instrument: NT2 Analyst: LH

Analyzed: 03/23/2023 17:49

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)  
Preparation Batch: BLC0619  
Prepared: 03/23/2023

Sample Size: 10 mL  
Final Volume: 10 mL

Extract ID: 23C0527-07 G

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U



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Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
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**MW-6**  
**23C0527-07 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 03/22/2023 12:50

Instrument: NT2 Analyst: LH

Analyzed: 03/23/2023 17:49

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	2.30	ug/L	
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U



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**MW-6**  
**23C0527-07 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D Sampled: 03/22/2023 12:50  
Instrument: NT2 Analyst: LH Analyzed: 03/23/2023 17:49

**Analysis by: Analytical Resources, LLC**

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>116</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>			<i>80-120 %</i>	<i>100</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>			<i>80-120 %</i>	<i>87.0</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			<i>80-120 %</i>	<i>101</i>	<i>%</i>	





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**MW-6**  
**23C0527-07 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM Sampled: 03/22/2023 12:50  
Instrument: NT16 Analyst: PB Analyzed: 03/24/2023 18:14

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23C0527-07 F  
Preparation Batch: BLC0655 Sample Size: 10 mL  
Prepared: 03/24/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	ND	ng/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>115</i>	<i>%</i>	



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**MW-6**  
**23C0527-07 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D Sampled: 03/22/2023 12:50  
Instrument: ICP3 Analyst: DOE Analyzed: 04/13/2023 10:28

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: TWC EPA 3010A Extract ID: 23C0527-07 C 01  
Preparation Batch: BLD0204 Sample Size: 25 mL  
Prepared: 04/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	1	0.0500	21.9	mg/L	
Potassium	7440-09-7	1	0.500	1.96	mg/L	
Sodium	7440-23-5	1	0.500	4.95	mg/L	



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**MW-6**  
**23C0527-07 (Water)**

**Wet Chemistry**

Method: EPA 325.2 Sampled: 03/22/2023 12:50  
Instrument: LACHAT2 Analyst: HL Analyzed: 04/06/2023 17:38

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-07 A  
Preparation Batch: BLD0141 Sample Size: 10 mL  
Prepared: 04/06/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	1.00	1.00	2.44	mg/L	



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**MW-6**  
**23C0527-07 (Water)**

**Wet Chemistry**

Method: EPA 353.2 Sampled: 03/22/2023 12:50  
Instrument: [CALC] Analyst: BF Analyzed: 03/22/2023 16:58

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: [CALC] Extract ID: 23C0527-07  
Preparation Batch: [CALC]  
Prepared: 03/22/2023 Final Volume: 1

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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Nitrate-N	14797-55-8	1	0.0200	0.377	mg/L	
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Instrument: LACHAT2 Analyst: BF Analyzed: 03/22/2023 16:58

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-07 A  
Preparation Batch: BLC0602 Sample Size: 10 mL  
Prepared: 03/22/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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Nitrate + Nitrite as N		1	0.010	0.010	0.377	mg/L	
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Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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Nitrite-N	14797-65-0	1	0.010	0.010	ND	mg/L	U
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**MW-6**  
**23C0527-07 (Water)**

**Wet Chemistry**

Method: EPA 375.2 Sampled: 03/22/2023 12:50  
Instrument: LACHAT2 Analyst: HAL Analyzed: 04/12/2023 13:10

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-07 A  
Preparation Batch: BLD0291 Sample Size: 10 mL  
Prepared: 04/12/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	2.00	2.00	8.00	mg/L	



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**MW-6**  
**23C0527-07 (Water)**

**Wet Chemistry**

Method: EPA 410.4 Sampled: 03/22/2023 12:50  
Instrument: UV1800-1 Analyst: BF Analyzed: 04/05/2023 15:54

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-07 D  
Preparation Batch: BLD0044 Sample Size: 2 mL  
Prepared: 04/03/2023 Final Volume: 2 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
COD		1	10.0	10.0	ND	mg/L	U



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**MW-6**  
**23C0527-07 (Water)**

**Wet Chemistry**

Method: EPA 9060A Sampled: 03/22/2023 12:50  
Instrument: TOC-LCSH Analyst: RMS Analyzed: 04/05/2023 13:47

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-07 D  
Preparation Batch: BLD0087 Sample Size: 20 mL  
Prepared: 04/05/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	2.07	mg/L	



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**MW-6**  
**23C0527-07 (Water)**

**Wet Chemistry**

Method: SM 2320 B-97 Sampled: 03/22/2023 12:50  
Instrument: Accumet AB150 Analyst: UW Analyzed: 03/27/2023 13:35

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-07 B  
Preparation Batch: BLC0691 Sample Size: 50 mL  
Prepared: 03/27/2023 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Bicarbonate		1	1.00	1.00	133	mg/L CaCO3	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Carbonate		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Hydroxide		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	133	mg/L CaCO3	





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**MW-6**  
**23C0527-07 (Water)**

**Wet Chemistry**

Method: SM 4500-H+ B-00 Sampled: 03/22/2023 12:50  
Instrument: Accumet AB150 Analyst: UW Analyzed: 03/22/2023 16:05

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-07 A  
Preparation Batch: BLC0600 Sample Size: 50 mL  
Prepared: 03/22/2023 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
pH		1	0.01	0.01	6.64	pH Units	H



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**MW-6**  
**23C0527-07 (Water)**

**Wet Chemistry**

Method: SM 4500-NH3 H-97 Sampled: 03/22/2023 12:50  
Instrument: LCHAT1 Analyst: MAM Analyzed: 04/05/2023 11:55

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-07 D  
Preparation Batch: BLD0079 Sample Size: 10 mL  
Prepared: 04/04/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.040	0.040	0.671	mg/L	



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**MW-6**  
**23C0527-07 (Water)**

**Microbiology**

Method: SM 9222B Sampled: 03/22/2023 12:50  
Instrument: N/A Analyst: UW Analyzed: 03/23/2023 16:50

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-07  
Preparation Batch: BLC0606 Sample Size: 100 mL  
Prepared: 03/22/2023 Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Coliforms		1	1	1	ND	CFU/100 ml	U



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**MW-6**  
**23C0527-08 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 Sampled: 03/22/2023 12:50  
Instrument: ICPMS2 Analyst: MCB Analyzed: 04/03/2023 20:27

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23C0527-08 A 02  
Preparation Batch: BLD0032 Filtration Batch: BLC0613  
Prepared: 04/03/2023 Final Volume: 25 mL Filtration Date: 03/23/2023 09:24

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron, Dissolved	7439-89-6	1	20.0	94.5	ug/L	



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**MW-6**  
**23C0527-08 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED Sampled: 03/22/2023 12:50  
Instrument: ICPMS2 Analyst: MCB Analyzed: 04/03/2023 20:27

**Analysis by: Analytical Resources, LLC**

Sample Preparation:	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Extract ID: 23C0527-08 A 02
	Preparation Batch: BLD0032	Final Volume: 25 mL	Filtration Batch: BLC0613
	Prepared: 04/03/2023		Filtration Date: 03/23/2023 09:24

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Zinc, Dissolved	7440-66-6	1	6.00	ND	ug/L	U

Sample Preparation:	Preparation Method: RHN EPA 600/4-79-020 4.1.4 HNO3 matrix 5x	Sample Size: 100 mL	Extract ID: 23C0527-08 A 03
	Preparation Batch: BLD0094	Final Volume: 20 mL	Filtration Batch: BLC0613
	Prepared: 04/05/2023		Filtration Date: 03/23/2023 09:24

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0400	0.220	ug/L	



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**MW-6**  
**23C0527-08 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D Sampled: 03/22/2023 12:50  
Instrument: ICP3 Analyst: DOE Analyzed: 04/06/2023 09:19

**Analysis by: Analytical Resources, LLC**

Sample Preparation:	Preparation Method: WMN (No Prep)	Sample Size: 25 mL	Extract ID: 23C0527-08 A 04
	Preparation Batch: BLD0114	Final Volume: 25 mL	Filtration Batch: BLC0613
	Prepared: 04/05/2023		Filtration Date: 03/23/2023 09:24

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0060	0.0151	mg/L	
Manganese, Dissolved	7439-96-5	1	0.0040	0.501	mg/L	



TRC Companies, Inc  
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Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
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**MW-8**  
**23C0527-09 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 03/22/2023 13:25

Instrument: NT2 Analyst: LH

Analyzed: 03/23/2023 18:09

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)  
Preparation Batch: BLC0619  
Prepared: 03/23/2023

Sample Size: 10 mL  
Final Volume: 10 mL

Extract ID: 23C0527-09 F

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
25-Apr-2023 17:53

**MW-8**  
**23C0527-09 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 03/22/2023 13:25

Instrument: NT2 Analyst: LH

Analyzed: 03/23/2023 18:09

**Analysis by: Analytical Resources, LLC**

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U





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**MW-8**  
**23C0527-09 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D Sampled: 03/22/2023 13:25  
Instrument: NT2 Analyst: LH Analyzed: 03/23/2023 18:09

**Analysis by: Analytical Resources, LLC**

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>119</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>			<i>80-120 %</i>	<i>102</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>			<i>80-120 %</i>	<i>89.2</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			<i>80-120 %</i>	<i>102</i>	<i>%</i>	



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**MW-8**  
**23C0527-09 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM Sampled: 03/22/2023 13:25  
Instrument: NT16 Analyst: PB Analyzed: 03/24/2023 13:37

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23C0527-09 H  
Preparation Batch: BLC0655 Sample Size: 10 mL  
Prepared: 03/24/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	ND	ng/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	115	%	



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**MW-8**  
**23C0527-09 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D Sampled: 03/22/2023 13:25  
Instrument: ICP3 Analyst: DOE Analyzed: 04/13/2023 10:31

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: TWC EPA 3010A Extract ID: 23C0527-09 C 01  
Preparation Batch: BLD0204 Sample Size: 25 mL  
Prepared: 04/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	1	0.0500	14.2	mg/L	
Potassium	7440-09-7	1	0.500	0.939	mg/L	
Sodium	7440-23-5	1	0.500	6.16	mg/L	



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**MW-8**  
**23C0527-09 (Water)**

**Wet Chemistry**

Method: EPA 325.2 Sampled: 03/22/2023 13:25  
Instrument: LACHAT2 Analyst: HL Analyzed: 04/06/2023 17:39

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-09 A  
Preparation Batch: BLD0141 Sample Size: 10 mL  
Prepared: 04/06/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	1.00	1.00	2.11	mg/L	



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**MW-8**  
**23C0527-09 (Water)**

**Wet Chemistry**

Method: EPA 353.2 Sampled: 03/22/2023 13:25  
Instrument: [CALC] Analyst: BF Analyzed: 03/22/2023 16:59

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: [CALC] Extract ID: 23C0527-09  
Preparation Batch: [CALC]  
Prepared: 03/22/2023 Final Volume: 1

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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Nitrate-N	14797-55-8	1	0.0200	0.0348	mg/L	
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Instrument: LACHAT2 Analyst: BF Analyzed: 03/22/2023 16:59

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-09 A  
Preparation Batch: BLC0602 Sample Size: 10 mL  
Prepared: 03/22/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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Nitrate + Nitrite as N		1	0.010	0.010	0.035	mg/L	
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Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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Nitrite-N	14797-65-0	1	0.010	0.010	ND	mg/L	U
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**MW-8**  
**23C0527-09 (Water)**

**Wet Chemistry**

Method: EPA 375.2 Sampled: 03/22/2023 13:25  
Instrument: LACHAT2 Analyst: HAL Analyzed: 04/12/2023 13:11

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-09 A  
Preparation Batch: BLD0291 Sample Size: 10 mL  
Prepared: 04/12/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	2.00	2.00	3.66	mg/L	



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**MW-8**  
**23C0527-09 (Water)**

**Wet Chemistry**

Method: EPA 410.4 Sampled: 03/22/2023 13:25  
Instrument: UV1800-1 Analyst: BF Analyzed: 04/05/2023 15:54

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-09 D  
Preparation Batch: BLD0044 Sample Size: 2 mL  
Prepared: 04/03/2023 Final Volume: 2 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
COD		1	10.0	10.0	ND	mg/L	U



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**MW-8**  
**23C0527-09 (Water)**

**Wet Chemistry**

Method: EPA 9060A Sampled: 03/22/2023 13:25  
Instrument: TOC-LCSH Analyst: RMS Analyzed: 04/05/2023 14:12

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-09 D  
Preparation Batch: BLD0087 Sample Size: 20 mL  
Prepared: 04/05/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	0.80	mg/L	





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**MW-8**  
**23C0527-09 (Water)**

**Wet Chemistry**

Method: SM 2320 B-97 Sampled: 03/22/2023 13:25  
Instrument: Accumet AB150 Analyst: UW Analyzed: 03/27/2023 13:35

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-09 A  
Preparation Batch: BLC0691 Sample Size: 50 mL  
Prepared: 03/27/2023 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Bicarbonate		1	1.00	1.00	86.4	mg/L CaCO3	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Carbonate		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Hydroxide		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	86.4	mg/L CaCO3	



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**MW-8**  
**23C0527-09 (Water)**

**Wet Chemistry**

Method: SM 4500-H+ B-00 Sampled: 03/22/2023 13:25  
Instrument: Accumet AB150 Analyst: UW Analyzed: 03/22/2023 16:05

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-09 A  
Preparation Batch: BLC0600 Sample Size: 50 mL  
Prepared: 03/22/2023 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
pH		1	0.01	0.01	6.60	pH Units	H



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**MW-8**  
**23C0527-09 (Water)**

**Wet Chemistry**

Method: SM 4500-NH3 H-97 Sampled: 03/22/2023 13:25  
Instrument: LCHAT1 Analyst: MAM Analyzed: 04/05/2023 12:03

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-09 D  
Preparation Batch: BLD0079 Sample Size: 10 mL  
Prepared: 04/04/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.040	0.040	ND	mg/L	U



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Apr-2023 17:53
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**MW-8**  
**23C0527-09 (Water)**

**Microbiology**

Method: SM 9222B Sampled: 03/22/2023 13:25  
Instrument: N/A Analyst: UW Analyzed: 03/23/2023 16:50

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-09  
Preparation Batch: BLC0606 Sample Size: 100 mL  
Prepared: 03/22/2023 Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Coliforms		1	1	1	ND	CFU/100 ml	U



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**MW-8**  
**23C0527-10 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 Sampled: 03/22/2023 13:25  
Instrument: ICPMS2 Analyst: MCB Analyzed: 04/03/2023 20:31

**Analysis by: Analytical Resources, LLC**

Sample Preparation:	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Extract ID: 23C0527-10 A 02
	Preparation Batch: BLD0032	Final Volume: 25 mL	Filtration Batch: BLC0613
	Prepared: 04/03/2023		Filtration Date: 03/23/2023 09:24

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron, Dissolved	7439-89-6	1	20.0	46.5	ug/L	



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Apr-2023 17:53
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**MW-8**  
**23C0527-10 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED Sampled: 03/22/2023 13:25  
Instrument: ICPMS2 Analyst: MCB Analyzed: 04/03/2023 20:31

**Analysis by: Analytical Resources, LLC**

Sample Preparation:	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Extract ID: 23C0527-10 A 02
	Preparation Batch: BLD0032	Final Volume: 25 mL	Filtration Batch: BLC0613
	Prepared: 04/03/2023		Filtration Date: 03/23/2023 09:24

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Zinc, Dissolved	7440-66-6	1	6.00	ND	ug/L	U

Sample Preparation:	Preparation Method: RHN EPA 600/4-79-020 4.1.4 HNO3 matrix 5x	Sample Size: 100 mL	Extract ID: 23C0527-10 A 03
	Preparation Batch: BLD0094	Final Volume: 20 mL	Filtration Batch: BLC0613
	Prepared: 04/05/2023		Filtration Date: 03/23/2023 09:24

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0400	0.727	ug/L	



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**MW-8**  
**23C0527-10 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D Sampled: 03/22/2023 13:25  
Instrument: ICP3 Analyst: DOE Analyzed: 04/06/2023 09:50

**Analysis by: Analytical Resources, LLC**

Sample Preparation:	Preparation Method: WMN (No Prep)	Sample Size: 25 mL	Extract ID: 23C0527-10 A 04
	Preparation Batch: BLD0114	Final Volume: 25 mL	Filtration Batch: BLC0613
	Prepared: 04/05/2023		Filtration Date: 03/23/2023 09:24

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0060	ND	mg/L	U
Manganese, Dissolved	7439-96-5	1	0.0040	2.12	mg/L	



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
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**MW-9**  
**23C0527-11 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 03/22/2023 00:00

Instrument: NT2 Analyst: LH

Analyzed: 03/23/2023 18:30

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)  
Preparation Batch: BLC0619  
Prepared: 03/23/2023

Sample Size: 10 mL  
Final Volume: 10 mL

Extract ID: 23C0527-11 G

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U





TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
25-Apr-2023 17:53

**MW-9**  
**23C0527-11 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 03/22/2023 00:00

Instrument: NT2 Analyst: LH

Analyzed: 03/23/2023 18:30

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U



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**MW-9**  
**23C0527-11 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D Sampled: 03/22/2023 00:00  
Instrument: NT2 Analyst: LH Analyzed: 03/23/2023 18:30

**Analysis by: Analytical Resources, LLC**

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>125</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>			<i>80-120 %</i>	<i>101</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>			<i>80-120 %</i>	<i>89.3</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			<i>80-120 %</i>	<i>105</i>	<i>%</i>	



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**MW-9**  
**23C0527-11 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM Sampled: 03/22/2023 00:00  
Instrument: NT16 Analyst: PB Analyzed: 03/24/2023 13:58

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23C0527-11 I  
Preparation Batch: BLC0655 Sample Size: 10 mL  
Prepared: 03/24/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	ND	ng/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>116</i>	<i>%</i>	



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**MW-9**  
**23C0527-11 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D Sampled: 03/22/2023 00:00  
Instrument: ICP3 Analyst: DOE Analyzed: 04/13/2023 10:33

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: TWC EPA 3010A Extract ID: 23C0527-11 C 01  
Preparation Batch: BLD0204 Sample Size: 25 mL  
Prepared: 04/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	1	0.0500	61.6	mg/L	
Potassium	7440-09-7	1	0.500	0.857	mg/L	
Sodium	7440-23-5	1	0.500	9.40	mg/L	



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**MW-9**  
**23C0527-11 (Water)**

**Wet Chemistry**

Method: EPA 325.2 Sampled: 03/22/2023 00:00  
Instrument: LACHAT2 Analyst: HL Analyzed: 04/06/2023 17:40

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-11 A  
Preparation Batch: BLD0141 Sample Size: 10 mL  
Prepared: 04/06/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	1.00	1.00	3.06	mg/L	



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**MW-9**  
**23C0527-11 (Water)**

**Wet Chemistry**

Method: EPA 353.2 Sampled: 03/22/2023 00:00  
Instrument: [CALC] Analyst: BF Analyzed: 03/22/2023 17:00

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: [CALC] Extract ID: 23C0527-11  
Preparation Batch: [CALC]  
Prepared: 03/22/2023 Final Volume: 1

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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Nitrate-N	14797-55-8	1	0.0200	ND	mg/L	U
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Instrument: LACHAT2 Analyst: BF Analyzed: 03/22/2023 17:00

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-11 A  
Preparation Batch: BLC0602 Sample Size: 10 mL  
Prepared: 03/22/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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Nitrate + Nitrite as N		1	0.010	0.010	ND	mg/L	U
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Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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Nitrite-N	14797-65-0	1	0.010	0.010	ND	mg/L	U
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**MW-9**  
**23C0527-11 (Water)**

**Wet Chemistry**

Method: EPA 375.2 Sampled: 03/22/2023 00:00  
Instrument: LACHAT2 Analyst: HAL Analyzed: 04/12/2023 13:12

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-11 A  
Preparation Batch: BLD0291 Sample Size: 10 mL  
Prepared: 04/12/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	2.00	2.00	21.6	mg/L	



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**MW-9**  
**23C0527-11 (Water)**

**Wet Chemistry**

Method: EPA 410.4 Sampled: 03/22/2023 00:00  
Instrument: UV1800-1 Analyst: BF Analyzed: 04/05/2023 15:54

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-11 D  
Preparation Batch: BLD0044 Sample Size: 2 mL  
Prepared: 04/03/2023 Final Volume: 2 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
COD		1	10.0	10.0	ND	mg/L	U





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**MW-9**  
**23C0527-11 (Water)**

**Wet Chemistry**

Method: EPA 9060A Sampled: 03/22/2023 00:00  
Instrument: TOC-LCSH Analyst: RMS Analyzed: 04/05/2023 14:34

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-11 D  
Preparation Batch: BLD0087 Sample Size: 20 mL  
Prepared: 04/05/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	3.36	mg/L	



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**MW-9**  
**23C0527-11 (Water)**

**Wet Chemistry**

Method: SM 2320 B-97 Sampled: 03/22/2023 00:00  
Instrument: Accumet AB150 Analyst: UW Analyzed: 03/27/2023 13:35

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-11 B  
Preparation Batch: BLC0691 Sample Size: 50 mL  
Prepared: 03/27/2023 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Bicarbonate		1	1.00	1.00	297	mg/L CaCO3	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Carbonate		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Hydroxide		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	297	mg/L CaCO3	



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Apr-2023 17:53
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**MW-9**  
**23C0527-11 (Water)**

**Wet Chemistry**

Method: SM 4500-H+ B-00 Sampled: 03/22/2023 00:00  
Instrument: Accumet AB150 Analyst: UW Analyzed: 03/22/2023 16:05

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-11 A  
Preparation Batch: BLC0600 Sample Size: 50 mL  
Prepared: 03/22/2023 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
pH		1	0.01	0.01	6.22	pH Units	H



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**MW-9**  
**23C0527-11 (Water)**

**Wet Chemistry**

Method: SM 4500-NH3 H-97 Sampled: 03/22/2023 00:00  
Instrument: LCHAT1 Analyst: MAM Analyzed: 04/05/2023 12:04

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-11 D  
Preparation Batch: BLD0079 Sample Size: 10 mL  
Prepared: 04/04/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.040	0.040	ND	mg/L	U



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Apr-2023 17:53
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**MW-9**  
**23C0527-11 (Water)**

**Microbiology**

Method: SM 9222B Sampled: 03/22/2023 00:00  
Instrument: N/A Analyst: UW Analyzed: 03/23/2023 16:50

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23C0527-11  
Preparation Batch: BLC0606 Sample Size: 100 mL  
Prepared: 03/22/2023 Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Coliforms		1	1	1	ND	CFU/100 ml	H, U



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Apr-2023 17:53
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**MW-9**  
**23C0527-12 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 Sampled: 03/22/2023 00:00  
Instrument: ICPMS2 Analyst: MCB Analyzed: 04/03/2023 20:36

**Analysis by: Analytical Resources, LLC**

Sample Preparation:	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Extract ID: 23C0527-12 A 02
	Preparation Batch: BLD0032	Final Volume: 25 mL	Filtration Batch: BLC0613
	Prepared: 04/03/2023		Filtration Date: 03/23/2023 09:24

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron, Dissolved	7439-89-6	1	20.0	ND	ug/L	U



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Apr-2023 17:53
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**MW-9**  
**23C0527-12 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED Sampled: 03/22/2023 00:00  
Instrument: ICPMS2 Analyst: MCB Analyzed: 04/03/2023 20:36

**Analysis by: Analytical Resources, LLC**

Sample Preparation:	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Extract ID: 23C0527-12 A 02
	Preparation Batch: BLD0032	Final Volume: 25 mL	Filtration Batch: BLC0613
	Prepared: 04/03/2023		Filtration Date: 03/23/2023 09:24

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Zinc, Dissolved	7440-66-6	1	6.00	ND	ug/L	U

Sample Preparation:	Preparation Method: RHN EPA 600/4-79-020 4.1.4 HNO3 matrix 5x	Sample Size: 100 mL	Extract ID: 23C0527-12 A 03
	Preparation Batch: BLD0094	Final Volume: 20 mL	Filtration Batch: BLC0613
	Prepared: 04/05/2023		Filtration Date: 03/23/2023 09:24

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0400	0.110	ug/L	



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Apr-2023 17:53
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**MW-9**  
**23C0527-12 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D Sampled: 03/22/2023 00:00  
Instrument: ICP3 Analyst: DOE Analyzed: 04/06/2023 09:53

**Analysis by: Analytical Resources, LLC**

Sample Preparation:	Preparation Method: WMN (No Prep)	Sample Size: 25 mL	Extract ID: 23C0527-12 A 04
	Preparation Batch: BLD0114	Final Volume: 25 mL	Filtration Batch: BLC0613
	Prepared: 04/05/2023		Filtration Date: 03/23/2023 09:24

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0060	0.0191	mg/L	
Manganese, Dissolved	7439-96-5	1	0.0040	8.54	mg/L	





TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
25-Apr-2023 17:53

**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BLC0619 - EPA 8260D**

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLC0619-BLK1)</b>		Prepared: 23-Mar-2023 Analyzed: 23-Mar-2023 12:20								
Chloromethane	ND	0.50	ug/L							U
Vinyl Chloride	ND	0.10	ug/L							U
Bromomethane	ND	1.00	ug/L							U
Chloroethane	ND	0.20	ug/L							U
Trichlorofluoromethane	ND	0.20	ug/L							U
Acrolein	ND	5.00	ug/L							U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.20	ug/L							U
Acetone	ND	5.00	ug/L							U
1,1-Dichloroethene	ND	0.20	ug/L							U
Iodomethane	ND	1.00	ug/L							U
Methylene Chloride	ND	1.00	ug/L							U
Acrylonitrile	ND	1.00	ug/L							U
Carbon Disulfide	ND	0.20	ug/L							U
trans-1,2-Dichloroethene	ND	0.20	ug/L							U
Vinyl Acetate	ND	0.20	ug/L							U
1,1-Dichloroethane	ND	0.20	ug/L							U
2-Butanone	ND	5.00	ug/L							U
2,2-Dichloropropane	ND	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Chloroform	ND	0.20	ug/L							U
Bromochloromethane	ND	0.20	ug/L							U
1,1,1-Trichloroethane	ND	0.20	ug/L							U
1,1-Dichloropropene	ND	0.10	ug/L							U
Carbon tetrachloride	ND	0.20	ug/L							U
1,2-Dichloroethane	ND	0.20	ug/L							U
Benzene	ND	0.20	ug/L							U
Trichloroethene	ND	0.20	ug/L							U
1,2-Dichloropropane	ND	0.20	ug/L							U
Bromodichloromethane	ND	0.20	ug/L							U
Dibromomethane	ND	0.20	ug/L							U
2-Chloroethyl vinyl ether	ND	1.00	ug/L							U
4-Methyl-2-Pentanone	ND	2.50	ug/L							U
cis-1,3-Dichloropropene	ND	0.20	ug/L							U
Toluene	ND	0.20	ug/L							U
trans-1,3-Dichloropropene	ND	0.20	ug/L							U



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
25-Apr-2023 17:53

**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BLC0619 - EPA 8260D**

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLC0619-BLK1)</b>		Prepared: 23-Mar-2023 Analyzed: 23-Mar-2023 12:20								
2-Hexanone	ND	5.00	ug/L							U
1,1,2-Trichloroethane	ND	0.20	ug/L							U
1,3-Dichloropropane	ND	0.10	ug/L							U
Tetrachloroethene	ND	0.20	ug/L							U
Dibromochloromethane	ND	0.20	ug/L							U
1,2-Dibromoethane	ND	0.10	ug/L							U
Chlorobenzene	ND	0.20	ug/L							U
Ethylbenzene	ND	0.20	ug/L							U
1,1,1,2-Tetrachloroethane	ND	0.20	ug/L							U
m,p-Xylene	ND	0.40	ug/L							U
o-Xylene	ND	0.20	ug/L							U
Xylenes, total	ND	0.60	ug/L							U
Styrene	ND	0.20	ug/L							U
Bromoform	ND	0.20	ug/L							U
1,1,2,2-Tetrachloroethane	ND	0.20	ug/L							U
1,2,3-Trichloropropane	ND	0.25	ug/L							U
trans-1,4-Dichloro 2-Butene	ND	1.00	ug/L							U
n-Propylbenzene	ND	0.20	ug/L							U
Bromobenzene	ND	0.20	ug/L							U
Isopropyl Benzene	ND	0.20	ug/L							U
2-Chlorotoluene	ND	0.10	ug/L							U
4-Chlorotoluene	ND	0.20	ug/L							U
t-Butylbenzene	ND	0.20	ug/L							U
1,3,5-Trimethylbenzene	ND	0.20	ug/L							U
1,2,4-Trimethylbenzene	ND	0.20	ug/L							U
s-Butylbenzene	ND	0.20	ug/L							U
4-Isopropyl Toluene	ND	0.20	ug/L							U
1,3-Dichlorobenzene	ND	0.20	ug/L							U
1,4-Dichlorobenzene	ND	0.20	ug/L							U
n-Butylbenzene	ND	0.20	ug/L							U
1,2-Dichlorobenzene	ND	0.20	ug/L							U
1,2-Dibromo-3-chloropropane	ND	0.50	ug/L							U
1,2,4-Trichlorobenzene	ND	0.50	ug/L							U
Hexachloro-1,3-Butadiene	0.56	0.50	ug/L							
Naphthalene	ND	0.50	ug/L							U



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
25-Apr-2023 17:53

**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BLC0619 - EPA 8260D**

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLC0619-BLK1)</b>		Prepared: 23-Mar-2023 Analyzed: 23-Mar-2023 12:20								
1,2,3-Trichlorobenzene	ND	0.50	ug/L							U
Dichlorodifluoromethane	ND	0.20	ug/L							U
Methyl tert-butyl Ether	ND	0.50	ug/L							U
2-Pentanone	ND	5.00	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.00		ug/L	5.00		100	80-129			
<i>Surrogate: Toluene-d8</i>	4.97		ug/L	5.00		99.3	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.81		ug/L	5.00		96.2	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	5.08		ug/L	5.00		102	80-120			
<b>LCS (BLC0619-BS1)</b>		Prepared: 23-Mar-2023 Analyzed: 23-Mar-2023 11:18								
Chloromethane	10.7	0.50	ug/L	10.0		107	60-138			
Vinyl Chloride	10.3	0.10	ug/L	10.0		103	66-133			
Bromomethane	10.4	1.00	ug/L	10.0		104	72-131			
Chloroethane	10.3	0.20	ug/L	10.0		103	60-155			
Trichlorofluoromethane	10.8	0.20	ug/L	10.0		108	62-141			
Acrolein	50.8	5.00	ug/L	50.0		102	52-190			
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.4	0.20	ug/L	10.0		104	76-129			
Acetone	51.4	5.00	ug/L	50.0		103	58-142			
1,1-Dichloroethene	10.5	0.20	ug/L	10.0		105	69-135			
Iodomethane	10.4	1.00	ug/L	10.0		104	56-147			
Methylene Chloride	10.1	1.00	ug/L	10.0		101	65-135			
Acrylonitrile	10.1	1.00	ug/L	10.0		101	64-134			
Carbon Disulfide	10.9	0.20	ug/L	10.0		109	78-125			
trans-1,2-Dichloroethene	10.1	0.20	ug/L	10.0		101	78-128			
Vinyl Acetate	9.80	0.20	ug/L	10.0		98.0	55-138			
1,1-Dichloroethane	10.3	0.20	ug/L	10.0		103	76-124			
2-Butanone	53.4	5.00	ug/L	50.0		107	61-140			
2,2-Dichloropropane	9.68	0.20	ug/L	10.0		96.8	66-147			
cis-1,2-Dichloroethene	10.2	0.20	ug/L	10.0		102	80-121			
Chloroform	10.3	0.20	ug/L	10.0		103	80-122			
Bromochloromethane	10.2	0.20	ug/L	10.0		102	80-121			
1,1,1-Trichloroethane	11.3	0.20	ug/L	10.0		113	79-123			
1,1-Dichloropropene	10.4	0.10	ug/L	10.0		104	80-127			
Carbon tetrachloride	8.80	0.20	ug/L	10.0		88.0	53-137			
1,2-Dichloroethane	10.1	0.20	ug/L	10.0		101	75-123			



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
25-Apr-2023 17:53

**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BLC0619 - EPA 8260D**

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS (BLC0619-BS1)</b>		Prepared: 23-Mar-2023 Analyzed: 23-Mar-2023 11:18								
Benzene	10.6	0.20	ug/L	10.0		106	80-120			
Trichloroethene	10.3	0.20	ug/L	10.0		103	80-120			
1,2-Dichloropropane	10.4	0.20	ug/L	10.0		104	80-120			
Bromodichloromethane	10.8	0.20	ug/L	10.0		108	80-121			
Dibromomethane	10.3	0.20	ug/L	10.0		103	80-120			
2-Chloroethyl vinyl ether	10.4	1.00	ug/L	10.0		104	64-120			
4-Methyl-2-Pentanone	55.0	2.50	ug/L	50.0		110	67-133			
cis-1,3-Dichloropropene	11.3	0.20	ug/L	10.0		113	80-124			
Toluene	10.3	0.20	ug/L	10.0		103	80-120			
trans-1,3-Dichloropropene	9.46	0.20	ug/L	10.0		94.6	71-127			
2-Hexanone	55.5	5.00	ug/L	50.0		111	69-133			
1,1,2-Trichloroethane	10.3	0.20	ug/L	10.0		103	80-121			
1,3-Dichloropropane	10.1	0.10	ug/L	10.0		101	80-120			
Tetrachloroethene	9.91	0.20	ug/L	10.0		99.1	80-120			
Dibromochloromethane	8.53	0.20	ug/L	10.0		85.3	65-135			
1,2-Dibromoethane	11.4	0.10	ug/L	10.0		114	80-121			
Chlorobenzene	10.4	0.20	ug/L	10.0		104	80-120			
Ethylbenzene	10.3	0.20	ug/L	10.0		103	80-120			
1,1,1,2-Tetrachloroethane	8.54	0.20	ug/L	10.0		85.4	80-120			
m,p-Xylene	21.6	0.40	ug/L	20.0		108	80-121			
o-Xylene	10.6	0.20	ug/L	10.0		106	80-121			
Xylenes, total	32.2	0.60	ug/L	30.0		107	76-127			
Styrene	11.2	0.20	ug/L	10.0		112	80-124			
Bromoform	7.63	0.20	ug/L	10.0		76.3	51-134			Q
1,1,1,2-Tetrachloroethane	10.3	0.20	ug/L	10.0		103	77-123			
1,2,3-Trichloropropane	10.3	0.25	ug/L	10.0		103	76-125			
trans-1,4-Dichloro 2-Butene	9.85	1.00	ug/L	10.0		98.5	55-129			
n-Propylbenzene	11.1	0.20	ug/L	10.0		111	78-130			
Bromobenzene	10.2	0.20	ug/L	10.0		102	80-120			
Isopropyl Benzene	11.3	0.20	ug/L	10.0		113	80-128			
2-Chlorotoluene	10.4	0.10	ug/L	10.0		104	78-122			
4-Chlorotoluene	10.5	0.20	ug/L	10.0		105	80-121			
t-Butylbenzene	10.9	0.20	ug/L	10.0		109	78-125			
1,3,5-Trimethylbenzene	11.1	0.20	ug/L	10.0		111	80-129			
1,2,4-Trimethylbenzene	11.0	0.20	ug/L	10.0		110	80-127			



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
25-Apr-2023 17:53

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLC0619 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS (BLC0619-BS1)</b>					Prepared: 23-Mar-2023 Analyzed: 23-Mar-2023 11:18					
s-Butylbenzene	11.1	0.20	ug/L	10.0		111	78-129			
4-Isopropyl Toluene	11.2	0.20	ug/L	10.0		112	79-130			
1,3-Dichlorobenzene	10.2	0.20	ug/L	10.0		102	80-120			
1,4-Dichlorobenzene	10.2	0.20	ug/L	10.0		102	80-120			
n-Butylbenzene	11.2	0.20	ug/L	10.0		112	74-129			
1,2-Dichlorobenzene	10.1	0.20	ug/L	10.0		101	80-120			
1,2-Dibromo-3-chloropropane	8.25	0.50	ug/L	10.0		82.5	62-123			
1,2,4-Trichlorobenzene	10.8	0.50	ug/L	10.0		108	64-124			
Hexachloro-1,3-Butadiene	11.0	0.50	ug/L	10.0		110	65-145			B
Naphthalene	11.4	0.50	ug/L	10.0		114	50-134			
1,2,3-Trichlorobenzene	10.7	0.50	ug/L	10.0		107	49-133			
Dichlorodifluoromethane	11.0	0.20	ug/L	10.0		110	48-147			
Methyl tert-butyl Ether	10.6	0.50	ug/L	10.0		106	71-132			
2-Pentanone	52.9	5.00	ug/L	50.0		106	69-134			
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Surrogate: 1,2-Dichloroethane-d4	4.75		ug/L	5.00		95.0	80-129			
Surrogate: Toluene-d8	5.13		ug/L	5.00		103	80-120			
Surrogate: 4-Bromofluorobenzene	4.98		ug/L	5.00		99.7	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	5.00		ug/L	5.00		99.9	80-120			
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<b>LCS Dup (BLC0619-BSD1)</b>					Prepared: 23-Mar-2023 Analyzed: 23-Mar-2023 11:39					
Chloromethane	10.9	0.50	ug/L	10.0		109	60-138	1.87	30	
Vinyl Chloride	10.5	0.10	ug/L	10.0		105	66-133	2.52	30	
Bromomethane	10.6	1.00	ug/L	10.0		106	72-131	2.07	30	
Chloroethane	10.5	0.20	ug/L	10.0		105	60-155	1.87	30	
Trichlorofluoromethane	11.0	0.20	ug/L	10.0		110	62-141	1.80	30	
Acrolein	54.7	5.00	ug/L	50.0		109	52-190	7.27	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.6	0.20	ug/L	10.0		106	76-129	1.74	30	
Acetone	54.3	5.00	ug/L	50.0		109	58-142	5.65	30	
1,1-Dichloroethene	10.9	0.20	ug/L	10.0		109	69-135	3.65	30	
Iodomethane	10.7	1.00	ug/L	10.0		107	56-147	3.40	30	
Methylene Chloride	10.6	1.00	ug/L	10.0		106	65-135	5.16	30	
Acrylonitrile	10.9	1.00	ug/L	10.0		109	64-134	7.49	30	
Carbon Disulfide	11.1	0.20	ug/L	10.0		111	78-125	1.66	30	
trans-1,2-Dichloroethene	10.5	0.20	ug/L	10.0		105	78-128	3.80	30	
Vinyl Acetate	10.3	0.20	ug/L	10.0		103	55-138	5.21	30	



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
25-Apr-2023 17:53

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLC0619 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Alyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS Dup (BLC0619-BSD1)</b>		Prepared: 23-Mar-2023 Analyzed: 23-Mar-2023 11:39								
1,1-Dichloroethane	10.7	0.20	ug/L	10.0		107	76-124	3.88	30	
2-Butanone	56.9	5.00	ug/L	50.0		114	61-140	6.41	30	
2,2-Dichloropropane	9.90	0.20	ug/L	10.0		99.0	66-147	2.23	30	
cis-1,2-Dichloroethene	10.7	0.20	ug/L	10.0		107	80-121	4.56	30	
Chloroform	10.8	0.20	ug/L	10.0		108	80-122	4.78	30	
Bromochloromethane	10.6	0.20	ug/L	10.0		106	80-121	4.08	30	
1,1,1-Trichloroethane	11.5	0.20	ug/L	10.0		115	79-123	1.80	30	
1,1-Dichloropropene	10.8	0.10	ug/L	10.0		108	80-127	3.61	30	
Carbon tetrachloride	8.97	0.20	ug/L	10.0		89.7	53-137	1.90	30	
1,2-Dichloroethane	10.5	0.20	ug/L	10.0		105	75-123	3.55	30	
Benzene	11.0	0.20	ug/L	10.0		110	80-120	3.66	30	
Trichloroethene	10.7	0.20	ug/L	10.0		107	80-120	3.92	30	
1,2-Dichloropropane	10.9	0.20	ug/L	10.0		109	80-120	4.14	30	
Bromodichloromethane	11.1	0.20	ug/L	10.0		111	80-121	2.75	30	
Dibromomethane	10.6	0.20	ug/L	10.0		106	80-120	3.07	30	
2-Chloroethyl vinyl ether	10.9	1.00	ug/L	10.0		109	64-120	4.64	30	
4-Methyl-2-Pentanone	57.4	2.50	ug/L	50.0		115	67-133	4.20	30	
cis-1,3-Dichloropropene	11.7	0.20	ug/L	10.0		117	80-124	2.75	30	
Toluene	10.6	0.20	ug/L	10.0		106	80-120	3.18	30	
trans-1,3-Dichloropropene	9.88	0.20	ug/L	10.0		98.8	71-127	4.42	30	
2-Hexanone	58.7	5.00	ug/L	50.0		117	69-133	5.61	30	
1,1,2-Trichloroethane	10.7	0.20	ug/L	10.0		107	80-121	3.54	30	
1,3-Dichloropropane	10.8	0.10	ug/L	10.0		108	80-120	6.15	30	
Tetrachloroethene	10.3	0.20	ug/L	10.0		103	80-120	3.82	30	
Dibromochloromethane	8.90	0.20	ug/L	10.0		89.0	65-135	4.27	30	
1,2-Dibromoethane	11.7	0.10	ug/L	10.0		117	80-121	2.58	30	
Chlorobenzene	10.8	0.20	ug/L	10.0		108	80-120	4.55	30	
Ethylbenzene	10.8	0.20	ug/L	10.0		108	80-120	4.23	30	
1,1,1,2-Tetrachloroethane	8.96	0.20	ug/L	10.0		89.6	80-120	4.83	30	
m,p-Xylene	22.5	0.40	ug/L	20.0		112	80-121	4.04	30	
o-Xylene	11.1	0.20	ug/L	10.0		111	80-121	4.51	30	
Xylenes, total	33.5	0.60	ug/L	30.0		112	76-127	4.19	30	
Styrene	11.6	0.20	ug/L	10.0		116	80-124	3.76	30	
Bromoform	7.95	0.20	ug/L	10.0		79.5	51-134	4.09	30	Q
1,1,2,2-Tetrachloroethane	10.8	0.20	ug/L	10.0		108	77-123	4.29	30	



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
25-Apr-2023 17:53

**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BLC0619 - EPA 8260D**

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS Dup (BLC0619-BSD1)</b>				Prepared: 23-Mar-2023 Analyzed: 23-Mar-2023 11:39						
1,2,3-Trichloropropane	10.6	0.25	ug/L	10.0		106	76-125	2.72	30	
trans-1,4-Dichloro 2-Butene	9.90	1.00	ug/L	10.0		99.0	55-129	0.51	30	
n-Propylbenzene	11.3	0.20	ug/L	10.0		113	78-130	1.67	30	
Bromobenzene	10.5	0.20	ug/L	10.0		105	80-120	2.95	30	
Isopropyl Benzene	11.5	0.20	ug/L	10.0		115	80-128	2.10	30	
2-Chlorotoluene	10.6	0.10	ug/L	10.0		106	78-122	2.69	30	
4-Chlorotoluene	10.7	0.20	ug/L	10.0		107	80-121	1.29	30	
t-Butylbenzene	11.2	0.20	ug/L	10.0		112	78-125	2.82	30	
1,3,5-Trimethylbenzene	11.4	0.20	ug/L	10.0		114	80-129	2.75	30	
1,2,4-Trimethylbenzene	11.2	0.20	ug/L	10.0		112	80-127	2.07	30	
s-Butylbenzene	11.3	0.20	ug/L	10.0		113	78-129	1.75	30	
4-Isopropyl Toluene	11.3	0.20	ug/L	10.0		113	79-130	1.15	30	
1,3-Dichlorobenzene	10.5	0.20	ug/L	10.0		105	80-120	2.33	30	
1,4-Dichlorobenzene	10.4	0.20	ug/L	10.0		104	80-120	2.24	30	
n-Butylbenzene	11.1	0.20	ug/L	10.0		111	74-129	0.81	30	
1,2-Dichlorobenzene	10.4	0.20	ug/L	10.0		104	80-120	3.21	30	
1,2-Dibromo-3-chloropropane	9.20	0.50	ug/L	10.0		92.0	62-123	10.90	30	
1,2,4-Trichlorobenzene	11.0	0.50	ug/L	10.0		110	64-124	2.00	30	
Hexachloro-1,3-Butadiene	10.9	0.50	ug/L	10.0		109	65-145	0.97	30	B
Naphthalene	12.0	0.50	ug/L	10.0		120	50-134	4.68	30	
1,2,3-Trichlorobenzene	10.8	0.50	ug/L	10.0		108	49-133	0.90	30	
Dichlorodifluoromethane	11.1	0.20	ug/L	10.0		111	48-147	0.58	30	
Methyl tert-butyl Ether	11.0	0.50	ug/L	10.0		110	71-132	3.68	30	
2-Pentanone	56.3	5.00	ug/L	50.0		113	69-134	6.31	30	
Surrogate: 1,2-Dichloroethane-d4	5.12		ug/L	5.00		102	80-129			
Surrogate: Toluene-d8	5.04		ug/L	5.00		101	80-120			
Surrogate: 4-Bromofluorobenzene	4.99		ug/L	5.00		99.8	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	4.92		ug/L	5.00		98.4	80-120			



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Apr-2023 17:53
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Analysis by: Analytical Resources, LLC

**Volatile Organic Compounds - SIM - Quality Control**

**Batch BLC0655 - EPA 8260D-SIM**

Instrument: NT16 Analyst: PB

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLC0655-BLK1)</b>				Prepared: 24-Mar-2023 Analyzed: 24-Mar-2023 12:12						
Vinyl chloride	ND	20.0	ng/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5620		ng/L	5000		112	80-129			
<b>LCS (BLC0655-BS1)</b>				Prepared: 24-Mar-2023 Analyzed: 24-Mar-2023 10:28						
Vinyl chloride	2250	20.0	ng/L	2000		112	62-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5550		ng/L	5000		111	80-129			
<b>LCS Dup (BLC0655-BSD1)</b>				Prepared: 24-Mar-2023 Analyzed: 24-Mar-2023 11:12						
Vinyl chloride	2070	20.0	ng/L	2000		103	62-141	8.42	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5580		ng/L	5000		112	80-129			





TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Apr-2023 17:53
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**Analysis by: Analytical Resources, LLC**

**Metals and Metallic Compounds - Quality Control**

**Batch BLD0204 - EPA 6010D**

Instrument: ICP3 Analyst: DOE

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLD0204-BLK1)</b>		Prepared: 12-Apr-2023 Analyzed: 13-Apr-2023 09:49								
Calcium	ND	0.0500	mg/L							U
Potassium	ND	0.500	mg/L							U
Sodium	ND	0.500	mg/L							U
<b>LCS (BLD0204-BS1)</b>		Prepared: 12-Apr-2023 Analyzed: 13-Apr-2023 09:57								
Calcium	10.4	0.0500	mg/L	10.0		104	80-120			
Potassium	10.4	0.500	mg/L	10.0		104	80-120			
Sodium	10.3	0.500	mg/L	10.0		103	80-120			
<b>Duplicate (BLD0204-DUP1)</b>		<b>Source: 23C0527-01</b>		Prepared: 12-Apr-2023 Analyzed: 13-Apr-2023 10:42						
Calcium	11.6	0.0500	mg/L		11.2			3.42	20	
Potassium	0.649	0.500	mg/L		0.632			2.58	20	
Sodium	4.74	0.500	mg/L		4.59			3.23	20	
<b>Duplicate (BLD0204-DUP2)</b>		<b>Source: 23C0527-01</b>		Prepared: 12-Apr-2023 Analyzed: 14-Apr-2023 11:48						
Calcium	11.8	0.0500	mg/L		11.2			5.21	20	
Potassium	0.630	0.500	mg/L		0.632			0.33	20	
Sodium	4.80	0.500	mg/L		4.59			4.41	20	
<b>Matrix Spike (BLD0204-MS1)</b>		<b>Source: 23C0527-01</b>		Prepared: 12-Apr-2023 Analyzed: 13-Apr-2023 10:45						
Calcium	21.4	0.0500	mg/L	10.0	11.2	102	75-125			
Potassium	10.9	0.500	mg/L	10.0	0.632	102	75-125			
Sodium	14.8	0.500	mg/L	10.0	4.59	102	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
<b>Matrix Spike (BLD0204-MS2)</b>		<b>Source: 23C0527-01</b>		Prepared: 12-Apr-2023 Analyzed: 14-Apr-2023 11:50						
Calcium	21.8	0.0500	mg/L	10.0	11.2	106	75-125			
Potassium	11.0	0.500	mg/L	10.0	0.632	103	75-125			
Sodium	14.9	0.500	mg/L	10.0	4.59	103	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
<b>Matrix Spike Dup (BLD0204-MSD1)</b>		<b>Source: 23C0527-01</b>		Prepared: 12-Apr-2023 Analyzed: 13-Apr-2023 10:48						
Calcium	21.2	0.0500	mg/L	10.0	11.2	100	75-125	1.17	20	
Potassium	10.7	0.500	mg/L	10.0	0.632	101	75-125	1.29	20	
Sodium	14.6	0.500	mg/L	10.0	4.59	100	75-125	0.81	20	



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**Analysis by: Analytical Resources, LLC**

**Metals and Metallic Compounds - Quality Control**

**Batch BLD0204 - EPA 6010D**

Instrument: ICP3 Analyst: DOE

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Recovery limits for target analytes in MS/MSD QC samples are advisory only.

<b>Matrix Spike Dup (BLD0204-MSD2)</b>	<b>Source: 23C0527-01</b>			Prepared: 12-Apr-2023 Analyzed: 14-Apr-2023 11:53						
Calcium	21.4	0.0500	mg/L	10.0	11.2	103	75-125	1.62	20	
Potassium	10.9	0.500	mg/L	10.0	0.632	103	75-125	0.82	20	
Sodium	14.8	0.500	mg/L	10.0	4.59	102	75-125	1.14	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



TRC Companies, Inc  
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Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
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**Analysis by: Analytical Resources, LLC**

**Metals and Metallic Compounds (dissolved) - Quality Control**

**Batch BLD0032 - EPA 200.8**

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLD0032-BLK1)</b>			Prepared: 03-Apr-2023 Analyzed: 03-Apr-2023 19:14								
Iron, Dissolved	54	ND	36.0	ug/L							U
Zinc, Dissolved	66	ND	6.00	ug/L							U
<b>LCS (BLD0032-BS1)</b>			Prepared: 03-Apr-2023 Analyzed: 03-Apr-2023 19:19								
Iron, Dissolved	54	5010	36.0	ug/L	5000		100	80-120			
Zinc, Dissolved	66	79.5	6.00	ug/L	80.0		99.4	80-120			
<b>Duplicate (BLD0032-DUP1)</b>			Source: 23C0527-02 Prepared: 03-Apr-2023 Analyzed: 03-Apr-2023 20:45								
Iron, Dissolved	54	ND	36.0	ug/L		ND					U
Arsenic, Dissolved	75a	ND	0.200	ug/L		0.103			7.41	20	U
Zinc, Dissolved	66	ND	6.00	ug/L		ND					U
<b>Matrix Spike (BLD0032-MS1)</b>			Source: 23C0527-02 Prepared: 03-Apr-2023 Analyzed: 03-Apr-2023 20:50								
Iron, Dissolved	54	4490	36.0	ug/L	5000	ND	89.8	75-125			
Zinc, Dissolved	66	82.5	6.00	ug/L	80.0	ND	103	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
<b>Matrix Spike Dup (BLD0032-MSD1)</b>			Source: 23C0527-02 Prepared: 03-Apr-2023 Analyzed: 03-Apr-2023 20:56								
Iron, Dissolved	54	4560	36.0	ug/L	5000	ND	91.3	75-125	1.65	20	
Zinc, Dissolved	66	79.0	6.00	ug/L	80.0	ND	98.8	75-125	4.34	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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**Analysis by: Analytical Resources, LLC**

**Metals and Metallic Compounds (dissolved) - Quality Control**

**Batch BLD0094 - EPA 200.8 UCT-KED**

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLD0094-BLK1)</b>			Prepared: 05-Apr-2023 Analyzed: 06-Apr-2023 18:54								
Arsenic, Dissolved	75a	ND	0.0400	ug/L							U
<b>LCS (BLD0094-BS1)</b>			Prepared: 05-Apr-2023 Analyzed: 06-Apr-2023 18:59								
Arsenic, Dissolved	75a	4.60	0.0400	ug/L	5.00		92.0	80-120			
<b>LCS Dup (BLD0094-BSD1)</b>			Prepared: 05-Apr-2023 Analyzed: 06-Apr-2023 19:04								
Arsenic, Dissolved	75a	4.87	0.0400	ug/L	5.00		97.3	80-120	5.59	20	
<b>Duplicate (BLD0094-DUP1)</b>			<b>Source: 23C0527-12</b>			Prepared: 05-Apr-2023 Analyzed: 08-Apr-2023 01:35					
Arsenic, Dissolved	75a	0.136	0.0400	ug/L		0.110			21.20	20	L
<b>Matrix Spike (BLD0094-MS1)</b>			<b>Source: 23C0527-12</b>			Prepared: 05-Apr-2023 Analyzed: 08-Apr-2023 01:41					
Arsenic, Dissolved	75a	4.73	0.0400	ug/L	5.00	0.110	92.4	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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**Analysis by: Analytical Resources, LLC**

**Metals and Metallic Compounds (dissolved) - Quality Control**

**Batch BLD0114 - EPA 6010D**

Instrument: ICP3 Analyst: DOE

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLD0114-BLK1)</b>				Prepared: 05-Apr-2023 Analyzed: 06-Apr-2023 09:02						
Barium, Dissolved	ND	0.0060	mg/L							U
Manganese, Dissolved	ND	0.0040	mg/L							U
<b>LCS (BLD0114-BS1)</b>				Prepared: 05-Apr-2023 Analyzed: 06-Apr-2023 09:05						
Barium, Dissolved	2.00	0.0061	mg/L	2.00		100	80-120			
Manganese, Dissolved	0.507	0.0040	mg/L	0.500		101	80-120			
<b>Duplicate (BLD0114-DUP1)</b>				Source: 23C0527-08 Prepared: 05-Apr-2023 Analyzed: 06-Apr-2023 09:22						
Barium, Dissolved	0.0161	0.0060	mg/L		0.0151			6.41	20	
Manganese, Dissolved	0.527	0.0040	mg/L		0.501			5.14	20	
<b>Matrix Spike (BLD0114-MS1)</b>				Source: 23C0527-08 Prepared: 05-Apr-2023 Analyzed: 06-Apr-2023 09:25						
Barium, Dissolved	2.05	0.0061	mg/L	2.00	0.0151	102	75-125			
Manganese, Dissolved	1.02	0.0040	mg/L	0.500	0.501	105	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

<b>Matrix Spike Dup (BLD0114-MSD1)</b>				Source: 23C0527-08 Prepared: 05-Apr-2023 Analyzed: 06-Apr-2023 09:28						
Barium, Dissolved	2.06	0.0061	mg/L	2.00	0.0151	102	75-125	0.86	20	
Manganese, Dissolved	1.02	0.0040	mg/L	0.500	0.501	104	75-125	0.07	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Apr-2023 17:53
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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLC0600 - SM 4500-H+ B-00**

Instrument: Accumet AB150 Analyst: UW

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS (BLC0600-BS1)</b>						Prepared: 22-Mar-2023 Analyzed: 22-Mar-2023 16:05					
pH	6.97	0.01	0.01	pH Units	7.00		99.6	99.2-100.8			



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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLC0602 - EPA 353.2**

Instrument: LACHAT2 Analyst: BF

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLC0602-BLK1)</b>						Prepared: 22-Mar-2023 Analyzed: 22-Mar-2023 16:38					
Nitrate + Nitrite as N	ND	0.010	0.010	mg/L							U
Nitrite-N	ND	0.010	0.010	mg/L							U
<b>LCS (BLC0602-BS1)</b>						Prepared: 22-Mar-2023 Analyzed: 22-Mar-2023 16:39					
Nitrate + Nitrite as N	0.486	0.010	0.010	mg/L	0.500		97.2	90-110			
<b>LCS (BLC0602-BS2)</b>						Prepared: 22-Mar-2023 Analyzed: 22-Mar-2023 16:40					
Nitrite-N	0.502	0.010	0.010	mg/L	0.500		100	90-110			
<b>Duplicate (BLC0602-DUP1)</b>						Source: 23C0527-01 Prepared: 22-Mar-2023 Analyzed: 22-Mar-2023 16:43					
Nitrate + Nitrite as N	0.721	0.010	0.010	mg/L		0.715			0.84	20	
Nitrite-N	ND	0.010	0.010	mg/L		ND					U
<b>Matrix Spike (BLC0602-MS2)</b>						Source: 23C0527-01 Prepared: 22-Mar-2023 Analyzed: 22-Mar-2023 16:46					
Nitrite-N	0.523	0.010	0.010	mg/L	0.508	ND	103	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
<b>Matrix Spike (BLC0602-MS4)</b>						Source: 23C0527-01 Prepared: 22-Mar-2023 Analyzed: 22-Mar-2023 17:13					
Nitrate + Nitrite as N	1.61	0.050	0.050	mg/L	1.00	0.715	89.5	75-125			D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
<b>Matrix Spike Dup (BLC0602-MSD2)</b>						Source: 23C0527-01 Prepared: 22-Mar-2023 Analyzed: 22-Mar-2023 16:55					
Nitrite-N	0.514	0.010	0.010	mg/L	0.508	ND	101	75-125	1.74	200	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
<b>Matrix Spike Dup (BLC0602-MSD4)</b>						Source: 23C0527-01 Prepared: 22-Mar-2023 Analyzed: 22-Mar-2023 17:15					
Nitrate + Nitrite as N	1.60	0.050	0.050	mg/L	1.00	0.715	88.5	75-125	0.62	20	D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLC0691 - SM 2320 B-97**

Instrument: Accumet AB150 Analyst: UW

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLC0691-BLK1)</b>						Prepared: 27-Mar-2023 Analyzed: 27-Mar-2023 10:33					
Alkalinity, Total	ND	1.00	1.00	mg/L CaCO3							U
<b>Duplicate (BLC0691-DUP1)</b>						Source: 23C0527-01 Prepared: 27-Mar-2023 Analyzed: 27-Mar-2023 13:35					
Alkalinity, Total	55.4	1.00	1.00	mg/L CaCO3		55.2			0.38	20	
<b>Reference (BLC0691-SRM1)</b>						Prepared: 27-Mar-2023 Analyzed: 27-Mar-2023 10:33					
Alkalinity, Total	101	1.00	1.00	mg/L CaCO3	93.6		108	85.04-114.96			





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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLD0044 - EPA 410.4**

Instrument: UV1800-1 Analyst: BF

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLD0044-BLK1)</b>						Prepared: 03-Apr-2023 Analyzed: 05-Apr-2023 15:45					
COD	ND	10.0	10.0	mg/L							U
<b>Blank (BLD0044-BLK2)</b>						Prepared: 03-Apr-2023 Analyzed: 05-Apr-2023 15:50					
COD	ND	10.0	10.0	mg/L							U
<b>DL (BLD0044-BLK3)</b>						Prepared: 03-Apr-2023 Analyzed: 05-Apr-2023 15:53					
COD	ND	10.0	10.0	mg/L							U
<b>Blank (BLD0044-BLK4)</b>						Prepared: 03-Apr-2023 Analyzed: 05-Apr-2023 15:56					
COD	ND	10.0	10.0	mg/L							U
<b>LCS (BLD0044-BS1)</b>						Prepared: 03-Apr-2023 Analyzed: 05-Apr-2023 15:46					
COD	100	10.0	10.0	mg/L	100		100	90-110			
<b>LCS (BLD0044-BS2)</b>						Prepared: 03-Apr-2023 Analyzed: 05-Apr-2023 15:50					
COD	103	10.0	10.0	mg/L	100		103	90-110			
<b>DL (BLD0044-BS3)</b>						Prepared: 03-Apr-2023 Analyzed: 05-Apr-2023 15:54					
COD	101	10.0	10.0	mg/L	100		102	90-110			
<b>LCS (BLD0044-BS4)</b>						Prepared: 03-Apr-2023 Analyzed: 05-Apr-2023 15:56					
COD	100	10.0	10.0	mg/L	100		100	90-110			
<b>Duplicate (BLD0044-DUP1)</b>						Source: 23C0527-01 Prepared: 03-Apr-2023 Analyzed: 05-Apr-2023 15:52					
COD	ND	10.0	10.0	mg/L		ND					U
<b>Matrix Spike (BLD0044-MS1)</b>						Source: 23C0527-01 Prepared: 03-Apr-2023 Analyzed: 05-Apr-2023 15:52					
COD	98.1	20.0	20.0	mg/L	100	ND	98.0	90-110			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

<b>Matrix Spike Dup (BLD0044-MSD1)</b>						Source: 23C0527-01 Prepared: 03-Apr-2023 Analyzed: 05-Apr-2023 15:52					
COD	92.5	20.0	20.0	mg/L	100	ND	92.4	90-110	5.92	10	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Apr-2023 17:53
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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLD0079 - SM 4500-NH3 H-97**

Instrument: LCHAT1 Analyst: MAM

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLD0079-BLK1)</b>						Prepared: 04-Apr-2023 Analyzed: 05-Apr-2023 11:45					
Ammonia-N	ND	0.040	0.040	mg/L							U
<b>LCS (BLD0079-BS1)</b>						Prepared: 04-Apr-2023 Analyzed: 05-Apr-2023 11:46					
Ammonia-N	0.527	0.040	0.040	mg/L	0.500		105	90-110			
<b>Duplicate (BLD0079-DUP1)</b>						Source: 23C0527-01 Prepared: 04-Apr-2023 Analyzed: 05-Apr-2023 11:49					
Ammonia-N	ND	0.040	0.040	mg/L		ND					U
<b>Matrix Spike (BLD0079-MS3)</b>						Source: 23C0527-01 Prepared: 04-Apr-2023 Analyzed: 05-Apr-2023 13:21					
Ammonia-N	0.500	0.040	0.040	mg/L	0.500	ND	100	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

<b>Matrix Spike Dup (BLD0079-MSD3)</b>						Source: 23C0527-01 Prepared: 04-Apr-2023 Analyzed: 05-Apr-2023 13:22					
Ammonia-N	0.514	0.040	0.040	mg/L	0.500	ND	103	75-125	2.76	200	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLD0087 - EPA 9060A**

Instrument: TOC-LCSH Analyst: RMS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLD0087-BLK1)</b>						Prepared: 05-Apr-2023 Analyzed: 05-Apr-2023 10:15					
Total Organic Carbon	ND	0.50	0.50	mg/L							U
<b>LCS (BLD0087-BS1)</b>						Prepared: 05-Apr-2023 Analyzed: 05-Apr-2023 10:33					
Total Organic Carbon	20.33	0.50	0.50	mg/L	20.00		102	90-110			
<b>Duplicate (BLD0087-DUP1)</b>						Source: 23C0527-01 Prepared: 05-Apr-2023 Analyzed: 05-Apr-2023 11:21					
Total Organic Carbon	1.25	0.50	0.50	mg/L		1.34			7.49	20	
<b>Matrix Spike (BLD0087-MS1)</b>						Source: 23C0527-01 Prepared: 05-Apr-2023 Analyzed: 05-Apr-2023 11:43					
Total Organic Carbon	18.72	0.50	0.50	mg/L	20.00	1.34	86.9	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
<b>Matrix Spike Dup (BLD0087-MSD1)</b>						Source: 23C0527-01 Prepared: 05-Apr-2023 Analyzed: 05-Apr-2023 12:01					
Total Organic Carbon	18.66	0.50	0.50	mg/L	20.00	1.34	86.6	75-125	0.32	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											



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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLD0141 - EPA 325.2**

Instrument: LCHAT2 Analyst: HL

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLD0141-BLK1)</b>						Prepared: 06-Apr-2023 Analyzed: 06-Apr-2023 17:41					
Chloride	ND	1.00	1.00	mg/L							U
<b>LCS (BLD0141-BS1)</b>						Prepared: 06-Apr-2023 Analyzed: 06-Apr-2023 17:42					
Chloride	5.00	1.00	1.00	mg/L	5.00		100	90-110			
<b>Duplicate (BLD0141-DUP1)</b>						Source: 23C0527-01 Prepared: 06-Apr-2023 Analyzed: 06-Apr-2023 17:28					
Chloride	5.27	1.00	1.00	mg/L		5.22			0.95	20	
<b>Matrix Spike (BLD0141-MS2)</b>						Source: 23C0527-01 Prepared: 06-Apr-2023 Analyzed: 06-Apr-2023 18:16					
Chloride	7.55	5.00	5.00	mg/L	2.50	5.22	93.2	75-125			D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
<b>Matrix Spike Dup (BLD0141-MSD2)</b>						Source: 23C0527-01 Prepared: 06-Apr-2023 Analyzed: 06-Apr-2023 18:17					
Chloride	7.85	5.00	5.00	mg/L	2.50	5.22	105	75-125	3.90	20	D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Apr-2023 17:53
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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLD0291 - EPA 375.2**

Instrument: LCHAT2 Analyst: HAL

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLD0291-BLK1)</b>						Prepared: 12-Apr-2023 Analyzed: 12-Apr-2023 12:31					
Sulfate	ND	2.00	2.00	mg/L							U
<b>LCS (BLD0291-BS1)</b>						Prepared: 12-Apr-2023 Analyzed: 12-Apr-2023 12:32					
Sulfate	15.8	2.00	2.00	mg/L	15.0		105	90-110			



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**Analysis by: Analytical Resources, LLC**

**Microbiology - Quality Control**

**Batch BLC0606 - SM 9222B**

Instrument: N/A

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLC0606-BLK1)</b>						Prepared: 22-Mar-2023 Analyzed: 23-Mar-2023 16:50					
Total Coliforms	ND	1	1	CFU/100 ml							U



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
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**Certified Analyses included in this Report**

Analyte	Certifications
<b>EPA 200.8 in Water</b>	
Iron-54	NELAP,WADOE,DoD-ELAP
<b>EPA 200.8 UCT-KED in Water</b>	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Zinc-66	NELAP,WADOE,WA-DW,DoD-ELAP
<b>EPA 353.2 in Water</b>	
Nitrate + Nitrite as N	NELAP,DoD-ELAP,WADOE
Nitrite-N	WADOE,NELAP,DoD-ELAP
<b>EPA 375.2 in Water</b>	
Sulfate	WADOE,NELAP
<b>EPA 410.4 in Water</b>	
COD	DoD-ELAP,NELAP,WADOE
<b>EPA 6010D in Water</b>	
Calcium	WADOE,NELAP,DoD-ELAP
Potassium	WADOE,NELAP,DoD-ELAP
Sodium	DoD-ELAP,WADOE,NELAP
Barium	WADOE,NELAP,DoD-ELAP
Manganese	WADOE,NELAP,DoD-ELAP
<b>EPA 8260D in Water</b>	
Chloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Acrolein	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroeth	DoD-ELAP,ADEC,NELAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Iodomethane	DoD-ELAP,NELAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,WADOE



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Acrylonitrile	DoD-ELAP,NELAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Butanone	DoD-ELAP,NELAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE





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Project: Olalla Landfill  
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**Reported:**  
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m,p-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
Styrene	DoD-ELAP,NELAP,WADOE
Bromoform	DoD-ELAP,NELAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,WADOE
2-Pentanone	WADOE
<b>EPA 8260D-SIM in Water</b>	
Vinyl chloride	NELAP,WADOE
<b>EPA 9060A in Water</b>	
Total Organic Carbon	DoD-ELAP,WADOE,NELAP



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Apr-2023 17:53
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**SM 2320 B-97 in Water**

Alkalinity, Bicarbonate	NELAP,WADOE,WA-DW,DoD-ELAP
Alkalinity, Carbonate	WADOE,WA-DW,DoD-ELAP,NELAP
Alkalinity, Hydroxide	WADOE,WA-DW,DoD-ELAP,NELAP
Alkalinity, Total	DoD-ELAP,WADOE,WA-DW,NELAP

**SM 4500-H+ B-00 in Water**

pH	WADOE,NELAP,WA-DW
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**SM 4500-NH3 H-97 in Water**

Ammonia-N	WADOE,DoD-ELAP,NELAP
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**SM 9222B in Water**

Total Coliforms	WADOE
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Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2025
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program, PJLA Testing	66169	02/28/2025
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023
WADOE	WA Dept of Ecology	C558	06/30/2023
WA-DW	Ecology - Drinking Water	C558	06/30/2023



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**Reported:**  
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### Notes and Definitions

- \* Flagged value is not within established control limits.
- B This analyte was detected in the method blank.
- D The reported value is from a dilution
- E The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
- H Hold time violation - Hold time was exceeded.
- J Estimated concentration value detected below the reporting limit.
- L Analyte concentration is  $\leq 5$  times the reporting limit and the replicate control limit defaults to  $\pm$  RL instead of 20% RPD
- Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria ( $< 20\%$  RSD,  $< 20\%$  drift or minimum RRF)
- U This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- [2C] Indicates this result was quantified on the second column on a dual column analysis.



17 July 2023

Eric Caddy  
TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah, WA 98027

RE: Olalla Landfill (533022)

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)  
23F0313

Associated SDG ID(s)  
N/A

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I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclosed Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Kelly Bottem, Client Services Manager

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



# Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: <b>23F0313</b>	Turn-around Requested: <b>Standard</b>	Page: <b>1</b> of <b>1</b>
ARI Client Company: <b>TRC</b>	Phone: <b>425-395-0010</b>	Date: <b>6/13/23</b> Ice Present? <b>Yes</b>
Client Contact: <b>ECaddeY@TRCCOMPANIES.COM, WELLSBERG@</b>		No. of Coolers: <b>2</b> Cooler Temps: <b>11.4</b>



Analytical Resources, LLC  
Analytical Chemists and Consultants  
4611 South 134th Place, Suite 100  
Tukwila, WA 98168  
206-695-6200 206-695-6201 (fax)

Client Project Name: <b>Ollala Landfill POF# 196897</b>
Client Project #: <b>633022</b> Samplers: <b>E. Miller, L. Briant</b>

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested											Notes/Comments
					VOC and VC	6Y SIM	Dissolved metals As, Fe, Zn, BA, Mn	Total metals K, NA, Ca	Alkalinity carbonate, bicarbonate	Nitrate, Nitrite Chloride, Sulfide	PH	TOL, COD, Ammonia	Total Coliform			
MW-1	6/13/23	0855	H <sub>2</sub> O	11	X	X	X	X	X	X	X	X	X			
MW-3		1010			X	X	X	X	X	X	X	X	X			
MW-10		1050			X	X	X	X	X	X	X	X	X			
MW-6		1125			X	X	X	X	X	X	X	X	X			
MW-17					X	X	X	X	X	X	X	X	X			
MW-7		1330			X	X	X	X	X	X	X	X	X			

Comments/Special Instructions	Relinquished by: (Signature) <i>EM</i>	Received by: (Signature) <i>Nora Cate</i>	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: <b>E. Van Miller</b>	Printed Name: <b>Nora Cate</b>	Printed Name:	Printed Name:
	Company: <b>TRC</b>	Company: <b>ARI LLC</b>	Company:	Company:
	Date & Time: <b>6/13/23 1443</b>	Date & Time: <b>06/13/23 14:43</b>	Date & Time:	Date & Time:

**Limits of Liability:** ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

**Sample Retention Policy:** All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

## Olalla Landfill Updated Sample ID

Briant, Laithan <LBriant@trccompanies.com>

Mon 7/17/2023 11:09 AM

To: Kelly Bottem <kelly.bottem@arilabs.com>

Hey Kelly,

I looked at the data and noticed an issue with the COC. It looks **like MW-8 was incorrectly labeled as MW-7 on the COC**. I called ARI and a gentleman said he would send over the amended report (and Excel file) over to you with the correct IDs. Once ready, could you send over to me so I can update our files?

Thank you so much!

### **Laithan Briant, CESCL**

Environmental Scientist, EHS Compliance - Issaquah

Environmental Engineering, Construction, and Remediation



1180 NW Maple Street, Suite 310, Issaquah, WA 98027

T 425.395.0010 | C 425.996.2373 | [LBriant@trccompanies.com](mailto:LBriant@trccompanies.com)

[LinkedIn](#) | [Twitter](#) | [Blog](#) | [TRCcompanies.com](http://TRCcompanies.com)



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
17-Jul-2023 11:23

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	23F0313-01	Water	13-Jun-2023 08:55	13-Jun-2023 14:43
MW-1	23F0313-02	Water	13-Jun-2023 08:55	13-Jun-2023 14:43
MW-3	23F0313-03	Water	13-Jun-2023 10:10	13-Jun-2023 14:43
MW-3	23F0313-04	Water	13-Jun-2023 10:10	13-Jun-2023 14:43
MW-10	23F0313-05	Water	13-Jun-2023 10:50	13-Jun-2023 14:43
MW-10	23F0313-06	Water	13-Jun-2023 10:50	13-Jun-2023 14:43
MW-6	23F0313-07	Water	13-Jun-2023 11:25	13-Jun-2023 14:43
MW-6	23F0313-08	Water	13-Jun-2023 11:25	13-Jun-2023 14:43
MW-17	23F0313-09	Water	13-Jun-2023 00:00	13-Jun-2023 14:43
MW-17	23F0313-10	Water	13-Jun-2023 00:00	13-Jun-2023 14:43
MW-8	23F0313-11	Water	13-Jun-2023 13:30	13-Jun-2023 14:43
MW-8	23F0313-12	Water	13-Jun-2023 13:30	13-Jun-2023 14:43





TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
17-Jul-2023 11:23

## **Work Order Case Narrative**

### **Volatiles - EPA Method SW8260D**

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements with the exception of all associated "Q" flagged analytes which are out of control low in the CCAL. All associated samples that contain analyte have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

### **Volatiles - EPA Method 8260D-SIM (Selected Ion Monitoring)**

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

### **Total and Dissolved Metals - EPA Method 6010D and 200.8**

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.





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The matrix spike (MS) percent recoveries and the duplicate (DUP) relative percent difference (RPD) were within advisory control limits.

**Wet Chemistry**

The sample(s) were prepared and analyzed within the recommended holding times with the exception of pH which was sent to the lab outside of the holding time.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The reference material (SRM) percent recoveries were within control limits.

The matrix spike (MS) percent recoveries and the duplicate (DUP) relative percent difference (RPD) were within advisory control limits.





WORK ORDER

23F0313

Samples will be discarded 90 days after submission of a final report unless other instructions are received

<b>Client: TRC Companies, Inc</b>	<b>Project Manager: Kelly Bottem</b>
<b>Project: Olalla Landfill</b>	<b>Project Number: 533022</b>

23F0313-07 B	VOA Vial, Clear, 40 mL, HCL	
23F0313-07 C	VOA Vial, Clear, 40 mL, HCL	
23F0313-07 D	VOA Vial, Clear, 40 mL, HCL	
23F0313-07 E	VOA Vial, Clear, 40 mL, HCL	
23F0313-07 F	VOA Vial, Clear, 40 mL, HCL	
23F0313-07 G	HDPE NM, 1000 mL	
23F0313-07 H	HDPE NM, 500 mL, 1:1 HNO3	← 2 pass
23F0313-07 I	HDPE NM, 500 mL	
23F0313-07 J	Glass NM, Amber, 250 mL, 9N H2SO4	← 2 pass
23F0313-08 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	← 2 pass
23F0313-09 A	Corning Plastic, 125 mL, EDTA and Na2S2C	
23F0313-09 B	VOA Vial, Clear, 40 mL, HCL	
23F0313-09 C	VOA Vial, Clear, 40 mL, HCL	
23F0313-09 D	VOA Vial, Clear, 40 mL, HCL	
23F0313-09 E	VOA Vial, Clear, 40 mL, HCL	
23F0313-09 F	VOA Vial, Clear, 40 mL, HCL	
23F0313-09 G	HDPE NM, 1000 mL	
23F0313-09 H	HDPE NM, 500 mL, 1:1 HNO3	← 2 pass
23F0313-09 I	HDPE NM, 500 mL	
23F0313-09 J	Glass NM, Amber, 250 mL, 9N H2SO4	← 2 pass
23F0313-10 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	← 2 pass
23F0313-11 A	Corning Plastic, 125 mL, EDTA and Na2S2C	
23F0313-11 B	VOA Vial, Clear, 40 mL, HCL	
23F0313-11 C	VOA Vial, Clear, 40 mL, HCL	
23F0313-11 D	VOA Vial, Clear, 40 mL, HCL	
23F0313-11 E	VOA Vial, Clear, 40 mL, HCL	
23F0313-11 F	VOA Vial, Clear, 40 mL, HCL	
23F0313-11 G	HDPE NM, 1000 mL	
23F0313-11 H	HDPE NM, 500 mL, 1:1 HNO3	← 2 pass
23F0313-11 I	HDPE NM, 500 mL	
23F0313-11 J	Glass NM, Amber, 250 mL, 9N H2SO4	← 2 pass
23F0313-12 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	← 2 pass

Preservation Confirmed By

Date 6/13/23





Analytical Resources, LLC  
Analytical Chemists and Consultants

# Cooler Receipt Form

ARI Client: TRC

Project Name: Billata Landfill

COC No(s): \_\_\_\_\_ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: \_\_\_\_\_

Assigned ARI Job No: 23F0313

Tracking No: \_\_\_\_\_ (NA)

**Preliminary Examination Phase:**

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES  NO

Were custody papers included with the cooler? YES  NO

Were custody papers properly filled out (ink, signed, etc.) YES  NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 14:43

11.9 11.4

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 5009708

Cooler Accepted by: NC

Date: 06/13/23 Time: 14:43

**Complete custody forms and attach all shipping documents**

**Log-In Phase:**

Was a temperature blank included in the cooler? YES  NO

What kind of packing material was used? ... Bubble Wrap  Wet Ice  Gel Packs  Baggies  Foam Block  Paper  Other: \_\_\_\_\_

Was sufficient ice used (if appropriate)? NA  YES  NO

How were bottles sealed in plastic bags? Individually  Grouped  Not

Did all bottles arrive in good condition (unbroken)? YES  NO

Were all bottle labels complete and legible? YES  NO

Did the number of containers listed on COC match with the number of containers received? YES  NO

Did all bottle labels and tags agree with custody papers? YES  NO

Were all bottles used correct for the requested analyses? YES  NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA  YES  NO

Were all VOC vials free of air bubbles? NA  YES  NO

Was sufficient amount of sample sent in each bottle? YES  NO

Date VOC Trip Blank was made at ARI: NA

Were the sample(s) split by ARI? NA  YES  Date/Time: \_\_\_\_\_ Equipment: \_\_\_\_\_ Split by: \_\_\_\_\_

Samples Logged by: FL Date: June 13/23 Time: 14:56 Labels checked by: FL

**\*\* Notify Project Manager of discrepancies or concerns \*\***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

**Additional Notes, Discrepancies, & Resolutions:**

No time listed for MW-17. No sample time on labels  
COC calls out MW-7, ~~not~~ <sup>FL 6/13/23</sup> MW-8 was received. Sample  
time matches COC

By: FL Date: June 13/23





TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
17-Jul-2023 11:23

**MW-1**  
**23F0313-01 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 06/13/2023 08:55

Instrument: NT2 Analyst: LH

Analyzed: 06/14/2023 08:37

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 23F0313-01 B

Preparation Batch: BLF0395

Sample Size: 10 mL

Prepared: 06/14/2023

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U



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1180 NW Maple Street, Suite 310  
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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
17-Jul-2023 11:23

**MW-1**  
**23F0313-01 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 06/13/2023 08:55

Instrument: NT2 Analyst: LH

Analyzed: 06/14/2023 08:37

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U



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**MW-1**  
**23F0313-01 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D Sampled: 06/13/2023 08:55  
Instrument: NT2 Analyst: LH Analyzed: 06/14/2023 08:37

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Hexachloro-1,3-Butadiene	87-68-3	1	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>99.0</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>			<i>80-120 %</i>	<i>100</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>			<i>80-120 %</i>	<i>97.1</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			<i>80-120 %</i>	<i>103</i>	<i>%</i>	





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**MW-1**  
**23F0313-01 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM Sampled: 06/13/2023 08:55  
Instrument: NT16 Analyst: PB Analyzed: 06/15/2023 15:41

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23F0313-01 D  
Preparation Batch: BLF0454 Sample Size: 10 mL  
Prepared: 06/15/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	ND	ng/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>120</i>	<i>%</i>	



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**MW-1**  
**23F0313-01 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D Sampled: 06/13/2023 08:55  
Instrument: ICP3 Analyst: DOE Analyzed: 06/26/2023 12:07

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: TWC EPA 3010A Extract ID: 23F0313-01 H 01  
Preparation Batch: BLF0675 Sample Size: 25 mL  
Prepared: 06/26/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	1	0.0500	11.3	mg/L	
Potassium	7440-09-7	1	0.500	0.585	mg/L	
Sodium	7440-23-5	1	0.500	4.67	mg/L	



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**MW-1**  
**23F0313-01 (Water)**

**Wet Chemistry**

Method: EPA 325.2 Sampled: 06/13/2023 08:55  
Instrument: LACHAT2 Analyst: HAL Analyzed: 06/15/2023 17:11

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-01 G  
Preparation Batch: BLF0465 Sample Size: 10 mL  
Prepared: 06/15/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	1.00	1.00	5.20	mg/L	



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**MW-1**  
**23F0313-01 (Water)**

**Wet Chemistry**

Method: EPA 353.2 Sampled: 06/13/2023 08:55  
Instrument: [CALC] Analyst: HAL Analyzed: 06/14/2023 13:13

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: [CALC] Extract ID: 23F0313-01  
Preparation Batch: [CALC]  
Prepared: 06/14/2023 Final Volume: 1

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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Nitrate-N	14797-55-8	1	0.0200	0.778	mg/L	
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Instrument: LACHAT2 Analyst: HAL Analyzed: 06/14/2023 13:13

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-01 G  
Preparation Batch: BLF0409 Sample Size: 10 mL  
Prepared: 06/14/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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Nitrate + Nitrite as N		1	0.010	0.010	0.778	mg/L	
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Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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Nitrite-N	14797-65-0	1	0.010	0.010	ND	mg/L	U
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**MW-1**  
**23F0313-01 (Water)**

**Wet Chemistry**

Method: EPA 375.2 Sampled: 06/13/2023 08:55  
Instrument: LACHAT2 Analyst: HAL Analyzed: 06/21/2023 12:55

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-01 G  
Preparation Batch: BLF0584 Sample Size: 10 mL  
Prepared: 06/20/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	2.00	2.00	4.03	mg/L	



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**MW-1**  
**23F0313-01 (Water)**

**Wet Chemistry**

Method: EPA 410.4 Sampled: 06/13/2023 08:55  
Instrument: UV1800-2 Analyst: BF Analyzed: 06/15/2023 17:48

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-01 J  
Preparation Batch: BLF0458 Sample Size: 2 mL  
Prepared: 06/15/2023 Final Volume: 2 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
COD		1	10.0	10.0	ND	mg/L	U



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**MW-1**  
**23F0313-01 (Water)**

**Wet Chemistry**

Method: EPA 9060A Sampled: 06/13/2023 08:55  
Instrument: TOC-LCSH Analyst: RMS Analyzed: 06/26/2023 14:19

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-01 J  
Preparation Batch: BLF0697 Sample Size: 20 mL  
Prepared: 06/26/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	ND	mg/L	U



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 17-Jul-2023 11:23
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**MW-1**  
**23F0313-01 (Water)**

**Wet Chemistry**

Method: SM 2320 B-97 Sampled: 06/13/2023 08:55  
Instrument: Accumet AB150 Analyst: UW Analyzed: 06/14/2023 11:11

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-01 I  
Preparation Batch: BLF0403 Sample Size: 100 mL  
Prepared: 06/14/2023 Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Bicarbonate		1	1.00	1.00	54.0	mg/L CaCO3	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Carbonate		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	54.0	mg/L CaCO3	





TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 17-Jul-2023 11:23
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**MW-1**  
**23F0313-01 (Water)**

**Wet Chemistry**

Method: SM 4500-H+ B-00 Sampled: 06/13/2023 08:55  
Instrument: Accumet AB150 Analyst: EJK Analyzed: 06/14/2023 17:03

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-01 G  
Preparation Batch: BLF0390 Sample Size: 50 mL  
Prepared: 06/13/2023 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
pH		1	0.01	0.01	6.51	pH Units	H



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**MW-1**  
**23F0313-01 (Water)**

**Wet Chemistry**

Method: SM 4500-NH3 H-97 Sampled: 06/13/2023 08:55  
Instrument: LCHAT1 Analyst: HAL Analyzed: 06/20/2023 12:11

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-01 J  
Preparation Batch: BLF0519 Sample Size: 10 mL  
Prepared: 06/19/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.040	0.040	ND	mg/L	U



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**MW-1**  
**23F0313-01 (Water)**

**Microbiology**

Method: SM 9222B Sampled: 06/13/2023 08:55  
Instrument: N/A Analyst: UW Analyzed: 06/14/2023 14:15

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-01  
Preparation Batch: BLF0387 Sample Size: 100 mL  
Prepared: 06/13/2023 Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Coliforms		1	1	1	ND	CFU/100 ml	U



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 17-Jul-2023 11:23
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**MW-1**  
**23F0313-02 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 Sampled: 06/13/2023 08:55  
Instrument: ICPMS2 Analyst: MCB Analyzed: 06/22/2023 17:00

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23F0313-02 A 02  
Preparation Batch: BLF0535 Sample Size: 25 mL  
Prepared: 06/19/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron, Dissolved	7439-89-6	2	40.0	ND	ug/L	U



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 17-Jul-2023 11:23
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**MW-1**  
**23F0313-02 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED Sampled: 06/13/2023 08:55  
Instrument: ICPMS2 Analyst: MCB Analyzed: 06/21/2023 06:49

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23F0313-02 A 02  
Preparation Batch: BLF0535 Sample Size: 25 mL  
Prepared: 06/19/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Zinc, Dissolved	7440-66-6	1	6.00	ND	ug/L	U

Sample Preparation: Preparation Method: RHN EPA 600/4-79-020 4.1.4 HNO3 matrix 5x Extract ID: 23F0313-02 A 03  
Preparation Batch: BLF0821 Sample Size: 100 mL  
Prepared: 06/28/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0400	0.107	ug/L	



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 17-Jul-2023 11:23
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**MW-1**  
**23F0313-02 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D Sampled: 06/13/2023 08:55  
Instrument: ICP3 Analyst: DOE Analyzed: 06/20/2023 10:20

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: WMN (No Prep) Extract ID: 23F0313-02 A 01  
Preparation Batch: BLF0550 Sample Size: 25 mL  
Prepared: 06/19/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0060	ND	mg/L	U
Manganese, Dissolved	7439-96-5	1	0.0040	ND	mg/L	U



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
17-Jul-2023 11:23

**MW-3**  
**23F0313-03 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 06/13/2023 10:10

Instrument: NT2 Analyst: LH

Analyzed: 06/14/2023 08:57

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)  
Preparation Batch: BLF0395  
Prepared: 06/14/2023

Sample Size: 10 mL  
Final Volume: 10 mL

Extract ID: 23F0313-03 B

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
17-Jul-2023 11:23

**MW-3**  
**23F0313-03 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 06/13/2023 10:10

Instrument: NT2 Analyst: LH

Analyzed: 06/14/2023 08:57

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U





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**MW-3**  
**23F0313-03 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D Sampled: 06/13/2023 10:10  
Instrument: NT2 Analyst: LH Analyzed: 06/14/2023 08:57

**Analysis by: Analytical Resources, LLC**

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>96.1</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>			<i>80-120 %</i>	<i>99.0</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>			<i>80-120 %</i>	<i>101</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			<i>80-120 %</i>	<i>99.5</i>	<i>%</i>	



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**MW-3**  
**23F0313-03 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM Sampled: 06/13/2023 10:10  
Instrument: NT16 Analyst: PB Analyzed: 06/15/2023 16:03

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23F0313-03 E  
Preparation Batch: BLF0454 Sample Size: 10 mL  
Prepared: 06/15/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	ND	ng/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>121</i>	<i>%</i>	



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**MW-3**  
**23F0313-03 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D Sampled: 06/13/2023 10:10  
Instrument: ICP3 Analyst: DOE Analyzed: 06/26/2023 12:39

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: TWC EPA 3010A Extract ID: 23F0313-03 H 01  
Preparation Batch: BLF0675 Sample Size: 25 mL  
Prepared: 06/26/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	1	0.0500	57.7	mg/L	
Potassium	7440-09-7	1	0.500	0.829	mg/L	
Sodium	7440-23-5	1	0.500	9.00	mg/L	



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**MW-3**  
**23F0313-03 (Water)**

**Wet Chemistry**

Method: EPA 325.2 Sampled: 06/13/2023 10:10  
Instrument: LACHAT2 Analyst: HAL Analyzed: 06/15/2023 17:16

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-03 G  
Preparation Batch: BLF0465 Sample Size: 10 mL  
Prepared: 06/15/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	1.00	1.00	4.43	mg/L	



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**MW-3**  
**23F0313-03 (Water)**

**Wet Chemistry**

Method: EPA 353.2 Sampled: 06/13/2023 10:10  
Instrument: [CALC] Analyst: HAL Analyzed: 06/14/2023 13:27

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: [CALC] Extract ID: 23F0313-03  
Preparation Batch: [CALC]  
Prepared: 06/14/2023 Final Volume: 1

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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Nitrate-N	14797-55-8	1	0.0200	ND	mg/L	U
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Instrument: LACHAT2 Analyst: HAL Analyzed: 06/14/2023 13:27

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-03 G  
Preparation Batch: BLF0409  
Prepared: 06/14/2023 Sample Size: 10 mL  
Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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Nitrate + Nitrite as N		1	0.010	0.010	ND	mg/L	U
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Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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Nitrite-N	14797-65-0	1	0.010	0.010	ND	mg/L	U
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**MW-3**  
**23F0313-03 (Water)**

**Wet Chemistry**

Method: EPA 375.2 Sampled: 06/13/2023 10:10  
Instrument: LACHAT2 Analyst: HAL Analyzed: 06/21/2023 13:00

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-03 G  
Preparation Batch: BLF0584 Sample Size: 10 mL  
Prepared: 06/20/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	2.00	2.00	25.7	mg/L	



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**MW-3**  
**23F0313-03 (Water)**

**Wet Chemistry**

Method: EPA 410.4 Sampled: 06/13/2023 10:10  
Instrument: UV1800-2 Analyst: BF Analyzed: 06/15/2023 17:54

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-03 J  
Preparation Batch: BLF0458 Sample Size: 2 mL  
Prepared: 06/15/2023 Final Volume: 2 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
COD		1	10.0	10.0	ND	mg/L	U



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**MW-3**  
**23F0313-03 (Water)**

**Wet Chemistry**

Method: EPA 9060A Sampled: 06/13/2023 10:10  
Instrument: TOC-LCSH Analyst: RMS Analyzed: 06/26/2023 14:45

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-03 J  
Preparation Batch: BLF0697 Sample Size: 20 mL  
Prepared: 06/26/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	3.35	mg/L	





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**MW-3**  
**23F0313-03 (Water)**

**Wet Chemistry**

Method: SM 2320 B-97 Sampled: 06/13/2023 10:10  
Instrument: Accumet AB150 Analyst: UW Analyzed: 06/14/2023 10:47

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-03 I  
Preparation Batch: BLF0403 Sample Size: 100 mL  
Prepared: 06/14/2023 Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Bicarbonate		1	1.00	1.00	259	mg/L CaCO3	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Carbonate		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	259	mg/L CaCO3	



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**MW-3**  
**23F0313-03 (Water)**

**Wet Chemistry**

Method: SM 4500-H+ B-00 Sampled: 06/13/2023 10:10  
Instrument: Accumet AB150 Analyst: EJK Analyzed: 06/14/2023 17:03

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-03 G  
Preparation Batch: BLF0390 Sample Size: 50 mL  
Prepared: 06/13/2023 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
pH		1	0.01	0.01	6.30	pH Units	H



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**MW-3**  
**23F0313-03 (Water)**

**Wet Chemistry**

Method: SM 4500-NH3 H-97 Sampled: 06/13/2023 10:10  
Instrument: LCHAT1 Analyst: HAL Analyzed: 06/20/2023 12:16

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-03 J  
Preparation Batch: BLF0519 Sample Size: 10 mL  
Prepared: 06/19/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.040	0.040	ND	mg/L	U



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**MW-3**  
**23F0313-03 (Water)**

**Microbiology**

Method: SM 9222B Sampled: 06/13/2023 10:10  
Instrument: N/A Analyst: UW Analyzed: 06/14/2023 14:15

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-03  
Preparation Batch: BLF0387 Sample Size: 100 mL  
Prepared: 06/13/2023 Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Coliforms		1	1	1	ND	CFU/100 ml	U



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 17-Jul-2023 11:23
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**MW-3**  
**23F0313-04 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 Sampled: 06/13/2023 10:10  
Instrument: ICPMS1 Analyst: SKD Analyzed: 06/21/2023 19:47

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23F0313-04 A 02  
Preparation Batch: BLF0535 Sample Size: 25 mL  
Prepared: 06/19/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron, Dissolved	7439-89-6	1	20.0	ND	ug/L	U



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 17-Jul-2023 11:23
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**MW-3**  
**23F0313-04 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED Sampled: 06/13/2023 10:10  
Instrument: ICPMS1 Analyst: MCB Analyzed: 07/03/2023 20:20

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: RHN EPA 600/4-79-020 4.1.4 HNO3 matrix 5x Extract ID: 23F0313-04 A 03  
Preparation Batch: BLF0821 Sample Size: 100 mL  
Prepared: 06/28/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	2	0.0800	0.154	ug/L	D

Instrument: ICPMS2 Analyst: MCB Analyzed: 06/22/2023 18:09

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23F0313-04 A 02  
Preparation Batch: BLF0535 Sample Size: 25 mL  
Prepared: 06/19/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Zinc, Dissolved	7440-66-6	1	6.00	ND	ug/L	U



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 17-Jul-2023 11:23
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**MW-3**  
**23F0313-04 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D Sampled: 06/13/2023 10:10  
Instrument: ICP3 Analyst: DOE Analyzed: 06/20/2023 10:32

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: WMN (No Prep) Extract ID: 23F0313-04 A 01  
Preparation Batch: BLF0550 Sample Size: 25 mL  
Prepared: 06/19/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0060	0.0194	mg/L	
Manganese, Dissolved	7439-96-5	1	0.0040	8.32	mg/L	



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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
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**MW-10**  
**23F0313-05 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 06/13/2023 10:50

Instrument: NT2 Analyst: LH

Analyzed: 06/14/2023 09:17

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)  
Preparation Batch: BLF0395  
Prepared: 06/14/2023

Sample Size: 10 mL  
Final Volume: 10 mL

Extract ID: 23F0313-05 B

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U





TRC Companies, Inc  
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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
17-Jul-2023 11:23

**MW-10**  
**23F0313-05 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 06/13/2023 10:50

Instrument: NT2 Analyst: LH

Analyzed: 06/14/2023 09:17

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U



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**MW-10**  
**23F0313-05 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D Sampled: 06/13/2023 10:50  
Instrument: NT2 Analyst: LH Analyzed: 06/14/2023 09:17

**Analysis by: Analytical Resources, LLC**

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>97.9</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>			<i>80-120 %</i>	<i>100</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>			<i>80-120 %</i>	<i>97.3</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			<i>80-120 %</i>	<i>98.9</i>	<i>%</i>	



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**MW-10**  
**23F0313-05 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM Sampled: 06/13/2023 10:50  
Instrument: NT16 Analyst: PB Analyzed: 06/15/2023 16:25

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23F0313-05 C  
Preparation Batch: BLF0454 Sample Size: 10 mL  
Prepared: 06/15/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	ND	ng/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	122	%	



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**MW-10**  
**23F0313-05 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D Sampled: 06/13/2023 10:50  
Instrument: ICP3 Analyst: DOE Analyzed: 06/26/2023 12:42

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: TWC EPA 3010A Extract ID: 23F0313-05 H 01  
Preparation Batch: BLF0675 Sample Size: 25 mL  
Prepared: 06/26/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	1	0.0500	42.8	mg/L	
Potassium	7440-09-7	1	0.500	1.17	mg/L	
Sodium	7440-23-5	1	0.500	13.9	mg/L	



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**MW-10**  
**23F0313-05 (Water)**

**Wet Chemistry**

Method: EPA 353.2 Sampled: 06/13/2023 10:50  
Instrument: [CALC] Analyst: HAL Analyzed: 06/14/2023 13:28

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: [CALC] Extract ID: 23F0313-05  
Preparation Batch: [CALC]  
Prepared: 06/14/2023 Final Volume: 1

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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Nitrate-N	14797-55-8	1	0.0200	ND	mg/L	U
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Instrument: LACHAT2 Analyst: HAL Analyzed: 06/14/2023 13:28

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-05 G  
Preparation Batch: BLF0409 Sample Size: 10 mL  
Prepared: 06/14/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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Nitrate + Nitrite as N		1	0.010	0.010	ND	mg/L	U
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Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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Nitrite-N	14797-65-0	1	0.010	0.010	ND	mg/L	U
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**MW-10**  
**23F0313-05 (Water)**

**Wet Chemistry**

Method: EPA 375.2 Sampled: 06/13/2023 10:50  
Instrument: LACHAT2 Analyst: HAL Analyzed: 06/21/2023 13:01

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-05 G  
Preparation Batch: BLF0584 Sample Size: 10 mL  
Prepared: 06/20/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	2.00	2.00	11.6	mg/L	



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**MW-10**  
**23F0313-05 (Water)**

**Wet Chemistry**

Method: EPA 410.4 Sampled: 06/13/2023 10:50  
Instrument: UV1800-2 Analyst: BF Analyzed: 06/15/2023 17:55

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-05 J  
Preparation Batch: BLF0458 Sample Size: 2 mL  
Prepared: 06/15/2023 Final Volume: 2 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
COD		1	10.0	10.0	ND	mg/L	U



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**MW-10**  
**23F0313-05 (Water)**

**Wet Chemistry**

Method: EPA 9060A Sampled: 06/13/2023 10:50  
Instrument: TOC-LCSH Analyst: RMS Analyzed: 06/26/2023 17:02

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-05 J  
Preparation Batch: BLF0697 Sample Size: 20 mL  
Prepared: 06/26/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	3.13	mg/L	





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**MW-10**  
**23F0313-05 (Water)**

**Wet Chemistry**

Method: SM 2320 B-97 Sampled: 06/13/2023 10:50  
Instrument: Accumet AB150 Analyst: UW Analyzed: 06/14/2023 10:47

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-05 I  
Preparation Batch: BLF0403 Sample Size: 100 mL  
Prepared: 06/14/2023 Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Bicarbonate		1	1.00	1.00	239	mg/L CaCO3	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Carbonate		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	239	mg/L CaCO3	



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**MW-10**  
**23F0313-05 (Water)**

**Wet Chemistry**

Method: SM 4500-H+ B-00 Sampled: 06/13/2023 10:50  
Instrument: Accumet AB150 Analyst: EJK Analyzed: 06/14/2023 17:03

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-05 G  
Preparation Batch: BLF0390 Sample Size: 50 mL  
Prepared: 06/13/2023 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
pH		1	0.01	0.01	6.73	pH Units	H



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**MW-10**  
**23F0313-05 (Water)**

**Wet Chemistry**

Method: SM 4500-NH3 H-97 Sampled: 06/13/2023 10:50  
Instrument: LCHAT1 Analyst: HAL Analyzed: 06/20/2023 12:17

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-05 J  
Preparation Batch: BLF0519 Sample Size: 10 mL  
Prepared: 06/19/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.040	0.040	0.046	mg/L	



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**MW-10**  
**23F0313-05 (Water)**

**Microbiology**

Method: SM 9222B Sampled: 06/13/2023 10:50  
Instrument: N/A Analyst: UW Analyzed: 06/14/2023 14:15

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-05  
Preparation Batch: BLF0387 Sample Size: 100 mL  
Prepared: 06/13/2023 Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Coliforms		1	1	1	ND	CFU/100 ml	U



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**MW-10**  
**23F0313-05RE1 (Water)**

**Wet Chemistry**

Method: EPA 325.2 Sampled: 06/13/2023 10:50  
Instrument: LACHAT2 Analyst: HAL Analyzed: 06/15/2023 17:41

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-05RE1 G  
Preparation Batch: BLF0465 Sample Size: 10 mL  
Prepared: 06/15/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	2	2.00	2.00	11.4	mg/L	D



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 17-Jul-2023 11:23
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**MW-10**  
**23F0313-06 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 Sampled: 06/13/2023 10:50  
Instrument: ICPMS2 Analyst: MCB Analyzed: 06/22/2023 17:21

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23F0313-06 A 02  
Preparation Batch: BLF0535 Sample Size: 25 mL  
Prepared: 06/19/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron, Dissolved	7439-89-6	5	100	ND	ug/L	U



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**MW-10**  
**23F0313-06 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED Sampled: 06/13/2023 10:50  
Instrument: ICPMS2 Analyst: MCB Analyzed: 06/30/2023 01:09

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: RHN EPA 600/4-79-020 4.1.4 HNO3 matrix 5x Extract ID: 23F0313-06 A 03  
Preparation Batch: BLF0821 Sample Size: 100 mL  
Prepared: 06/28/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0400	1.87	ug/L	



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 17-Jul-2023 11:23
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**MW-10**  
**23F0313-06 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D Sampled: 06/13/2023 10:50  
Instrument: ICP3 Analyst: DOE Analyzed: 06/20/2023 10:35

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: WMN (No Prep) Extract ID: 23F0313-06 A 01  
Preparation Batch: BLF0550 Sample Size: 25 mL  
Prepared: 06/19/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0060	0.0159	mg/L	
Manganese, Dissolved	7439-96-5	1	0.0040	4.30	mg/L	





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**MW-10**  
**23F0313-06RE1 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED Sampled: 06/13/2023 10:50  
Instrument: ICPMS2 Analyst: MCB Analyzed: 06/22/2023 18:13

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23F0313-06RE1 A 02  
Preparation Batch: BLF0535 Sample Size: 25 mL  
Prepared: 06/19/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Zinc, Dissolved	7440-66-6	1	6.00	ND	ug/L	U



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
17-Jul-2023 11:23

**MW-6**  
**23F0313-07 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 06/13/2023 11:25

Instrument: NT2 Analyst: LH

Analyzed: 06/14/2023 09:37

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)  
Preparation Batch: BLF0395  
Prepared: 06/14/2023

Sample Size: 10 mL  
Final Volume: 10 mL

Extract ID: 23F0313-07 B

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
17-Jul-2023 11:23

**MW-6**  
**23F0313-07 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 06/13/2023 11:25

Instrument: NT2 Analyst: LH

Analyzed: 06/14/2023 09:37

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	1.88	ug/L	
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U



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**MW-6**  
**23F0313-07 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D Sampled: 06/13/2023 11:25  
Instrument: NT2 Analyst: LH Analyzed: 06/14/2023 09:37

**Analysis by: Analytical Resources, LLC**

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>98.8</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>			<i>80-120 %</i>	<i>99.3</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>			<i>80-120 %</i>	<i>98.2</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			<i>80-120 %</i>	<i>98.7</i>	<i>%</i>	



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**MW-6**  
**23F0313-07 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM Sampled: 06/13/2023 11:25  
Instrument: NT16 Analyst: PB Analyzed: 06/15/2023 16:48

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23F0313-07 C  
Preparation Batch: BLF0454 Sample Size: 10 mL  
Prepared: 06/15/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	25.3	ng/L	M
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>120</i>	<i>%</i>	



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**MW-6**  
**23F0313-07 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D Sampled: 06/13/2023 11:25  
Instrument: ICP3 Analyst: DOE Analyzed: 06/26/2023 12:45

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: TWC EPA 3010A Extract ID: 23F0313-07 H 01  
Preparation Batch: BLF0675 Sample Size: 25 mL  
Prepared: 06/26/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	1	0.0500	30.7	mg/L	
Potassium	7440-09-7	1	0.500	2.33	mg/L	
Sodium	7440-23-5	1	0.500	5.91	mg/L	



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**MW-6**  
**23F0313-07 (Water)**

**Wet Chemistry**

Method: EPA 325.2 Sampled: 06/13/2023 11:25  
Instrument: LACHAT2 Analyst: HAL Analyzed: 06/15/2023 17:18

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-07 G  
Preparation Batch: BLF0465 Sample Size: 10 mL  
Prepared: 06/15/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	1.00	1.00	3.02	mg/L	



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**MW-6**  
**23F0313-07 (Water)**

**Wet Chemistry**

Method: EPA 353.2 Sampled: 06/13/2023 11:25  
Instrument: [CALC] Analyst: HAL Analyzed: 06/14/2023 13:29

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: [CALC] Extract ID: 23F0313-07  
Preparation Batch: [CALC]  
Prepared: 06/14/2023 Final Volume: 1

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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Nitrate-N	14797-55-8	1	0.0200	ND	mg/L	U
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Instrument: LACHAT2 Analyst: HAL Analyzed: 06/14/2023 13:29

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-07 G  
Preparation Batch: BLF0409 Sample Size: 10 mL  
Prepared: 06/14/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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Nitrate + Nitrite as N		1	0.010	0.010	0.015	mg/L	
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Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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Nitrite-N	14797-65-0	1	0.010	0.010	ND	mg/L	U
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**MW-6**  
**23F0313-07 (Water)**

**Wet Chemistry**

Method: EPA 375.2 Sampled: 06/13/2023 11:25  
Instrument: LACHAT2 Analyst: HAL Analyzed: 06/21/2023 13:02

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-07 G  
Preparation Batch: BLF0584 Sample Size: 10 mL  
Prepared: 06/20/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	2.00	2.00	6.49	mg/L	



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**MW-6**  
**23F0313-07 (Water)**

**Wet Chemistry**

Method: EPA 410.4 Sampled: 06/13/2023 11:25  
Instrument: UV1800-2 Analyst: BF Analyzed: 06/15/2023 17:55

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-07 J  
Preparation Batch: BLF0458 Sample Size: 2 mL  
Prepared: 06/15/2023 Final Volume: 2 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
COD		1	10.0	10.0	ND	mg/L	U



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**MW-6**  
**23F0313-07 (Water)**

**Wet Chemistry**

Method: EPA 9060A Sampled: 06/13/2023 11:25  
Instrument: TOC-LCSH Analyst: RMS Analyzed: 06/26/2023 17:24

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-07 J  
Preparation Batch: BLF0697 Sample Size: 20 mL  
Prepared: 06/26/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	1.86	mg/L	



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**MW-6**  
**23F0313-07 (Water)**

**Wet Chemistry**

Method: SM 2320 B-97 Sampled: 06/13/2023 11:25  
Instrument: Accumet AB150 Analyst: UW Analyzed: 06/14/2023 10:47

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-07 I  
Preparation Batch: BLF0403 Sample Size: 100 mL  
Prepared: 06/14/2023 Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Bicarbonate		1	1.00	1.00	172	mg/L CaCO3	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Carbonate		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	172	mg/L CaCO3	



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**MW-6**  
**23F0313-07 (Water)**

**Wet Chemistry**

Method: SM 4500-H+ B-00 Sampled: 06/13/2023 11:25  
Instrument: Accumet AB150 Analyst: EJK Analyzed: 06/14/2023 17:03

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-07 G  
Preparation Batch: BLF0390 Sample Size: 50 mL  
Prepared: 06/13/2023 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
pH		1	0.01	0.01	6.65	pH Units	H



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**MW-6**  
**23F0313-07 (Water)**

**Wet Chemistry**

Method: SM 4500-NH3 H-97 Sampled: 06/13/2023 11:25  
Instrument: LCHAT1 Analyst: HAL Analyzed: 06/20/2023 12:18

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-07 J  
Preparation Batch: BLF0519 Sample Size: 10 mL  
Prepared: 06/19/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.040	0.040	0.789	mg/L	



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**MW-6**  
**23F0313-07 (Water)**

**Microbiology**

Method: SM 9222B Sampled: 06/13/2023 11:25  
Instrument: N/A Analyst: UW Analyzed: 06/14/2023 14:15

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-07  
Preparation Batch: BLF0387 Sample Size: 100 mL  
Prepared: 06/13/2023 Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Coliforms		1	1	1	ND	CFU/100 ml	U



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**MW-6**  
**23F0313-08 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 Sampled: 06/13/2023 11:25  
Instrument: ICPMS1 Analyst: SKD Analyzed: 06/21/2023 19:53

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23F0313-08 A 02  
Preparation Batch: BLF0535 Sample Size: 25 mL  
Prepared: 06/19/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron, Dissolved	7439-89-6	1	20.0	265	ug/L	





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**MW-6**  
**23F0313-08 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED Sampled: 06/13/2023 11:25  
Instrument: ICPMS2 Analyst: MCB Analyzed: 06/22/2023 18:17

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23F0313-08 A 02  
Preparation Batch: BLF0535 Sample Size: 25 mL  
Prepared: 06/19/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Zinc, Dissolved	7440-66-6	1	6.00	ND	ug/L	U

Sample Preparation: Preparation Method: RHN EPA 600/4-79-020 4.1.4 HNO3 matrix 5x Extract ID: 23F0313-08 A 03  
Preparation Batch: BLF0821 Sample Size: 100 mL  
Prepared: 06/28/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0400	0.463	ug/L	



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**MW-6**  
**23F0313-08 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D Sampled: 06/13/2023 11:25  
Instrument: ICP3 Analyst: DOE Analyzed: 06/20/2023 10:38

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: WMN (No Prep) Extract ID: 23F0313-08 A 01  
Preparation Batch: BLF0550 Sample Size: 25 mL  
Prepared: 06/19/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0060	0.0204	mg/L	
Manganese, Dissolved	7439-96-5	1	0.0040	0.542	mg/L	



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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

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**MW-17**  
**23F0313-09 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 06/13/2023 00:00

Instrument: NT2 Analyst: LH

Analyzed: 06/14/2023 09:58

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)  
Preparation Batch: BLF0395  
Prepared: 06/14/2023

Sample Size: 10 mL  
Final Volume: 10 mL

Extract ID: 23F0313-09 B

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U



TRC Companies, Inc  
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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
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MW-17  
23F0313-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 06/13/2023 00:00

Instrument: NT2 Analyst: LH

Analyzed: 06/14/2023 09:58

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	2.01	ug/L	
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U



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**MW-17**  
**23F0313-09 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D Sampled: 06/13/2023 00:00  
Instrument: NT2 Analyst: LH Analyzed: 06/14/2023 09:58

**Analysis by: Analytical Resources, LLC**

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>101</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>			<i>80-120 %</i>	<i>99.6</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>			<i>80-120 %</i>	<i>99.3</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			<i>80-120 %</i>	<i>102</i>	<i>%</i>	



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**MW-17**  
**23F0313-09 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM Sampled: 06/13/2023 00:00  
Instrument: NT16 Analyst: PB Analyzed: 06/15/2023 17:10

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23F0313-09 C  
Preparation Batch: BLF0454 Sample Size: 10 mL  
Prepared: 06/15/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	26.4	ng/L	M
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>121</i>	<i>%</i>	



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**MW-17**  
**23F0313-09 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D Sampled: 06/13/2023 00:00  
Instrument: ICP3 Analyst: DOE Analyzed: 06/26/2023 12:48

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: TWC EPA 3010A Extract ID: 23F0313-09 H 01  
Preparation Batch: BLF0675 Sample Size: 25 mL  
Prepared: 06/26/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	1	0.0500	30.1	mg/L	
Potassium	7440-09-7	1	0.500	2.40	mg/L	
Sodium	7440-23-5	1	0.500	5.86	mg/L	



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**MW-17**  
**23F0313-09 (Water)**

**Wet Chemistry**

Method: EPA 325.2 Sampled: 06/13/2023 00:00  
Instrument: LACHAT2 Analyst: HAL Analyzed: 06/15/2023 17:22

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-09 G  
Preparation Batch: BLF0465 Sample Size: 10 mL  
Prepared: 06/15/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	1.00	1.00	2.98	mg/L	





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**MW-17**  
**23F0313-09 (Water)**

**Wet Chemistry**

Method: EPA 353.2 Sampled: 06/13/2023 00:00  
Instrument: [CALC] Analyst: HAL Analyzed: 06/14/2023 13:31

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: [CALC] Extract ID: 23F0313-09  
Preparation Batch: [CALC]  
Prepared: 06/14/2023 Final Volume: 1

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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Nitrate-N	14797-55-8	1	0.0200	0.0539	mg/L	
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Instrument: LACHAT2 Analyst: HAL Analyzed: 06/14/2023 13:31

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-09 G  
Preparation Batch: BLF0409 Sample Size: 10 mL  
Prepared: 06/14/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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Nitrate + Nitrite as N		1	0.010	0.010	0.054	mg/L	
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Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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Nitrite-N	14797-65-0	1	0.010	0.010	ND	mg/L	U
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**MW-17**  
**23F0313-09 (Water)**

**Wet Chemistry**

Method: EPA 375.2 Sampled: 06/13/2023 00:00  
Instrument: LACHAT2 Analyst: HAL Analyzed: 06/21/2023 13:04

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-09 G  
Preparation Batch: BLF0584 Sample Size: 10 mL  
Prepared: 06/20/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	2.00	2.00	6.22	mg/L	



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**MW-17**  
**23F0313-09 (Water)**

**Wet Chemistry**

Method: EPA 410.4 Sampled: 06/13/2023 00:00  
Instrument: UV1800-2 Analyst: BF Analyzed: 06/15/2023 17:55

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-09 J  
Preparation Batch: BLF0458 Sample Size: 2 mL  
Prepared: 06/15/2023 Final Volume: 2 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
COD		1	10.0	10.0	ND	mg/L	U



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**MW-17**  
**23F0313-09 (Water)**

**Wet Chemistry**

Method: EPA 9060A Sampled: 06/13/2023 00:00  
Instrument: TOC-LCSH Analyst: RMS Analyzed: 06/26/2023 17:46

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-09 J  
Preparation Batch: BLF0697 Sample Size: 20 mL  
Prepared: 06/26/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	1.77	mg/L	



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**MW-17**  
**23F0313-09 (Water)**

**Wet Chemistry**

Method: SM 2320 B-97 Sampled: 06/13/2023 00:00  
Instrument: Accumet AB150 Analyst: UW Analyzed: 06/14/2023 10:47

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-09 I  
Preparation Batch: BLF0403 Sample Size: 100 mL  
Prepared: 06/14/2023 Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Bicarbonate		1	1.00	1.00	165	mg/L CaCO3	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Carbonate		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	165	mg/L CaCO3	



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**MW-17**  
**23F0313-09 (Water)**

**Wet Chemistry**

Method: SM 4500-H+ B-00 Sampled: 06/13/2023 00:00  
Instrument: Accumet AB150 Analyst: EJK Analyzed: 06/14/2023 17:03

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-09 G  
Preparation Batch: BLF0390 Sample Size: 50 mL  
Prepared: 06/13/2023 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
pH		1	0.01	0.01	6.67	pH Units	H



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**MW-17**  
**23F0313-09 (Water)**

**Wet Chemistry**

Method: SM 4500-NH3 H-97 Sampled: 06/13/2023 00:00  
Instrument: LACHAT1 Analyst: HAL Analyzed: 06/20/2023 12:26

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-09 J  
Preparation Batch: BLF0519 Sample Size: 10 mL  
Prepared: 06/19/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.040	0.040	0.798	mg/L	



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**MW-17**  
**23F0313-09 (Water)**

**Microbiology**

Method: SM 9222B Sampled: 06/13/2023 00:00  
Instrument: N/A Analyst: UW Analyzed: 06/14/2023 14:15

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-09  
Preparation Batch: BLF0387 Sample Size: 100 mL  
Prepared: 06/13/2023 Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Coliforms		1	1	1	ND	CFU/100 ml	H, U





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**MW-17**  
**23F0313-10 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 Sampled: 06/13/2023 00:00  
Instrument: ICPMS1 Analyst: SKD Analyzed: 06/21/2023 19:56

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23F0313-10 A 02  
Preparation Batch: BLF0535 Sample Size: 25 mL  
Prepared: 06/19/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron, Dissolved	7439-89-6	1	20.0	258	ug/L	



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**MW-17**  
**23F0313-10 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED Sampled: 06/13/2023 00:00  
Instrument: ICPMS2 Analyst: MCB Analyzed: 06/22/2023 18:21

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23F0313-10 A 02  
Preparation Batch: BLF0535 Sample Size: 25 mL  
Prepared: 06/19/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Zinc, Dissolved	7440-66-6	1	6.00	ND	ug/L	U

Sample Preparation: Preparation Method: RHN EPA 600/4-79-020 4.1.4 HNO3 matrix 5x Extract ID: 23F0313-10 A 03  
Preparation Batch: BLF0821 Sample Size: 100 mL  
Prepared: 06/28/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0400	0.471	ug/L	



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**MW-17**  
**23F0313-10 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D Sampled: 06/13/2023 00:00  
Instrument: ICP3 Analyst: DOE Analyzed: 06/20/2023 10:41

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: WMN (No Prep) Extract ID: 23F0313-10 A 01  
Preparation Batch: BLF0550 Sample Size: 25 mL  
Prepared: 06/19/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0060	0.0206	mg/L	
Manganese, Dissolved	7439-96-5	1	0.0040	0.637	mg/L	



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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
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**MW-8**  
**23F0313-11 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 06/13/2023 13:30

Instrument: NT2 Analyst: LH

Analyzed: 06/14/2023 10:18

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)  
Preparation Batch: BLF0395  
Prepared: 06/14/2023

Sample Size: 10 mL  
Final Volume: 10 mL

Extract ID: 23F0313-11 B

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U



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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
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**MW-8**  
**23F0313-11 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 06/13/2023 13:30

Instrument: NT2 Analyst: LH

Analyzed: 06/14/2023 10:18

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U



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**MW-8**  
**23F0313-11 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D Sampled: 06/13/2023 13:30  
Instrument: NT2 Analyst: LH Analyzed: 06/14/2023 10:18

**Analysis by: Analytical Resources, LLC**

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>99.3</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>			<i>80-120 %</i>	<i>98.3</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>			<i>80-120 %</i>	<i>93.0</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			<i>80-120 %</i>	<i>102</i>	<i>%</i>	



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**MW-8**  
**23F0313-11 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM Sampled: 06/13/2023 13:30  
Instrument: NT16 Analyst: PB Analyzed: 06/15/2023 17:32

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23F0313-11 C  
Preparation Batch: BLF0454 Sample Size: 10 mL  
Prepared: 06/15/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	ND	ng/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>121</i>	<i>%</i>	



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**MW-8**  
**23F0313-11 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D Sampled: 06/13/2023 13:30  
Instrument: ICP3 Analyst: DOE Analyzed: 06/26/2023 12:51

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: TWC EPA 3010A Extract ID: 23F0313-11 H 01  
Preparation Batch: BLF0675 Sample Size: 25 mL  
Prepared: 06/26/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	1	0.0500	15.0	mg/L	
Potassium	7440-09-7	1	0.500	0.943	mg/L	
Sodium	7440-23-5	1	0.500	6.39	mg/L	





TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 17-Jul-2023 11:23
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**MW-8**  
**23F0313-11 (Water)**

**Wet Chemistry**

Method: EPA 325.2 Sampled: 06/13/2023 13:30  
Instrument: LACHAT2 Analyst: HAL Analyzed: 06/15/2023 17:23

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-11 G  
Preparation Batch: BLF0465 Sample Size: 10 mL  
Prepared: 06/15/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	1.00	1.00	2.29	mg/L	



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**MW-8**  
**23F0313-11 (Water)**

**Wet Chemistry**

Method: EPA 353.2 Sampled: 06/13/2023 13:30  
Instrument: [CALC] Analyst: HAL Analyzed: 06/14/2023 13:32

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: [CALC] Extract ID: 23F0313-11  
Preparation Batch: [CALC]  
Prepared: 06/14/2023 Final Volume: 1

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
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Nitrate-N	14797-55-8	1	0.0200	ND	mg/L	U
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Instrument: LACHAT2 Analyst: HAL Analyzed: 06/14/2023 13:32

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-11 G  
Preparation Batch: BLF0409  
Prepared: 06/14/2023 Sample Size: 10 mL  
Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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Nitrate + Nitrite as N		1	0.010	0.010	ND	mg/L	U
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Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
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Nitrite-N	14797-65-0	1	0.010	0.010	ND	mg/L	U
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**MW-8**  
**23F0313-11 (Water)**

**Wet Chemistry**

Method: EPA 375.2 Sampled: 06/13/2023 13:30  
Instrument: LACHAT2 Analyst: HAL Analyzed: 06/21/2023 13:05

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-11 G  
Preparation Batch: BLF0584 Sample Size: 10 mL  
Prepared: 06/20/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	2.00	2.00	4.30	mg/L	



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**MW-8**  
**23F0313-11 (Water)**

**Wet Chemistry**

Method: EPA 410.4 Sampled: 06/13/2023 13:30  
Instrument: UV1800-2 Analyst: BF Analyzed: 06/15/2023 17:56

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-11 J  
Preparation Batch: BLF0458 Sample Size: 2 mL  
Prepared: 06/15/2023 Final Volume: 2 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
COD		1	10.0	10.0	ND	mg/L	U



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**MW-8**  
**23F0313-11 (Water)**

**Wet Chemistry**

Method: EPA 9060A Sampled: 06/13/2023 13:30  
Instrument: TOC-LCSH Analyst: RMS Analyzed: 06/26/2023 18:12

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-11 J  
Preparation Batch: BLF0697 Sample Size: 20 mL  
Prepared: 06/26/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	0.91	mg/L	



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**MW-8**  
**23F0313-11 (Water)**

**Wet Chemistry**

Method: SM 2320 B-97 Sampled: 06/13/2023 13:30  
Instrument: Accumet AB150 Analyst: UW Analyzed: 06/14/2023 11:11

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-11 I  
Preparation Batch: BLF0403 Sample Size: 100 mL  
Prepared: 06/14/2023 Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Bicarbonate		1	1.00	1.00	105	mg/L CaCO3	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Carbonate		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	105	mg/L CaCO3	



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**MW-8**  
**23F0313-11 (Water)**

**Wet Chemistry**

Method: SM 4500-H+ B-00 Sampled: 06/13/2023 13:30  
Instrument: Accumet AB150 Analyst: EJK Analyzed: 06/14/2023 17:03

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-11 G  
Preparation Batch: BLF0390 Sample Size: 50 mL  
Prepared: 06/13/2023 Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
pH		1	0.01	0.01	6.72	pH Units	H



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**MW-8**  
**23F0313-11 (Water)**

**Wet Chemistry**

Method: SM 4500-NH3 H-97 Sampled: 06/13/2023 13:30  
Instrument: LACHAT1 Analyst: HAL Analyzed: 06/20/2023 12:28

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-11 J  
Preparation Batch: BLF0519 Sample Size: 10 mL  
Prepared: 06/19/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.040	0.040	ND	mg/L	U





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**MW-8**  
**23F0313-11 (Water)**

**Microbiology**

Method: SM 9222B Sampled: 06/13/2023 13:30  
Instrument: N/A Analyst: UW Analyzed: 06/14/2023 14:15

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23F0313-11  
Preparation Batch: BLF0387 Sample Size: 100 mL  
Prepared: 06/13/2023 Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Coliforms		1	1	1	ND	CFU/100 ml	U



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**MW-8**  
**23F0313-12 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 Sampled: 06/13/2023 13:30  
Instrument: ICPMS1 Analyst: SKD Analyzed: 06/21/2023 19:59

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23F0313-12 A 02  
Preparation Batch: BLF0535 Sample Size: 25 mL  
Prepared: 06/19/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron, Dissolved	7439-89-6	1	20.0	440	ug/L	



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**MW-8**  
**23F0313-12 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED Sampled: 06/13/2023 13:30  
Instrument: ICPMS2 Analyst: MCB Analyzed: 06/22/2023 18:26

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23F0313-12 A 02  
Preparation Batch: BLF0535 Sample Size: 25 mL  
Prepared: 06/19/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Zinc, Dissolved	7440-66-6	1	6.00	ND	ug/L	U

Sample Preparation: Preparation Method: RHN EPA 600/4-79-020 4.1.4 HNO3 matrix 5x Extract ID: 23F0313-12 A 03  
Preparation Batch: BLF0821 Sample Size: 100 mL  
Prepared: 06/28/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0400	0.780	ug/L	



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**MW-8**  
**23F0313-12 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D Sampled: 06/13/2023 13:30  
Instrument: ICP3 Analyst: DOE Analyzed: 06/20/2023 11:29

**Analysis by: Analytical Resources, LLC**

Sample Preparation: Preparation Method: WMN (No Prep) Extract ID: 23F0313-12 A 01  
Preparation Batch: BLF0550 Sample Size: 25 mL  
Prepared: 06/19/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0060	ND	mg/L	U
Manganese, Dissolved	7439-96-5	1	0.0040	1.99	mg/L	



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
17-Jul-2023 11:23

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLF0395 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLF0395-BLK1)</b>		Prepared: 14-Jun-2023 Analyzed: 14-Jun-2023 08:16								
Chloromethane	ND	0.50	ug/L							U
Vinyl Chloride	ND	0.20	ug/L							U
Bromomethane	ND	1.00	ug/L							U
Chloroethane	ND	0.20	ug/L							U
Trichlorofluoromethane	ND	0.20	ug/L							U
Acrolein	ND	5.00	ug/L							U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.20	ug/L							U
Acetone	ND	5.00	ug/L							U
1,1-Dichloroethene	ND	0.20	ug/L							U
Iodomethane	ND	1.00	ug/L							U
Methylene Chloride	ND	1.00	ug/L							U
Acrylonitrile	ND	1.00	ug/L							U
Carbon Disulfide	ND	0.20	ug/L							U
trans-1,2-Dichloroethene	ND	0.20	ug/L							U
Vinyl Acetate	ND	0.20	ug/L							U
1,1-Dichloroethane	ND	0.20	ug/L							U
2-Butanone	ND	5.00	ug/L							U
2,2-Dichloropropane	ND	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Chloroform	ND	0.20	ug/L							U
Bromochloromethane	ND	0.20	ug/L							U
1,1,1-Trichloroethane	ND	0.20	ug/L							U
1,1-Dichloropropene	ND	0.20	ug/L							U
Carbon tetrachloride	ND	0.20	ug/L							U
1,2-Dichloroethane	ND	0.20	ug/L							U
Benzene	ND	0.20	ug/L							U
Trichloroethene	ND	0.20	ug/L							U
1,2-Dichloropropane	ND	0.20	ug/L							U
Bromodichloromethane	ND	0.20	ug/L							U
Dibromomethane	ND	0.20	ug/L							U
2-Chloroethyl vinyl ether	ND	1.00	ug/L							U
4-Methyl-2-Pentanone	ND	5.00	ug/L							U
cis-1,3-Dichloropropene	ND	0.20	ug/L							U
Toluene	ND	0.20	ug/L							U
trans-1,3-Dichloropropene	ND	0.20	ug/L							U



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
17-Jul-2023 11:23

**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BLF0395 - EPA 8260D**

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLF0395-BLK1)</b>										
Prepared: 14-Jun-2023 Analyzed: 14-Jun-2023 08:16										
2-Hexanone	ND	5.00	ug/L							U
1,1,2-Trichloroethane	ND	0.20	ug/L							U
1,3-Dichloropropane	ND	0.20	ug/L							U
Tetrachloroethene	ND	0.20	ug/L							U
Dibromochloromethane	ND	0.20	ug/L							U
1,2-Dibromoethane	ND	0.20	ug/L							U
Chlorobenzene	ND	0.20	ug/L							U
Ethylbenzene	ND	0.20	ug/L							U
1,1,1,2-Tetrachloroethane	ND	0.20	ug/L							U
m,p-Xylene	ND	0.40	ug/L							U
o-Xylene	ND	0.20	ug/L							U
Xylenes, total	ND	0.60	ug/L							U
Styrene	ND	0.20	ug/L							U
Bromoform	ND	0.20	ug/L							U
1,1,2,2-Tetrachloroethane	ND	0.20	ug/L							U
1,2,3-Trichloropropane	ND	0.50	ug/L							U
trans-1,4-Dichloro 2-Butene	ND	1.00	ug/L							U
n-Propylbenzene	ND	0.20	ug/L							U
Bromobenzene	ND	0.20	ug/L							U
Isopropyl Benzene	ND	0.20	ug/L							U
2-Chlorotoluene	ND	0.20	ug/L							U
4-Chlorotoluene	ND	0.20	ug/L							U
t-Butylbenzene	ND	0.20	ug/L							U
1,3,5-Trimethylbenzene	ND	0.20	ug/L							U
1,2,4-Trimethylbenzene	ND	0.20	ug/L							U
s-Butylbenzene	ND	0.20	ug/L							U
4-Isopropyl Toluene	ND	0.20	ug/L							U
1,3-Dichlorobenzene	ND	0.20	ug/L							U
1,4-Dichlorobenzene	ND	0.20	ug/L							U
n-Butylbenzene	ND	0.20	ug/L							U
1,2-Dichlorobenzene	ND	0.20	ug/L							U
1,2-Dibromo-3-chloropropane	ND	0.50	ug/L							U
1,2,4-Trichlorobenzene	ND	0.50	ug/L							U
Hexachloro-1,3-Butadiene	ND	2.00	ug/L							U
Naphthalene	ND	0.50	ug/L							U



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
17-Jul-2023 11:23

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLF0395 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLF0395-BLK1)</b>										
					Prepared: 14-Jun-2023 Analyzed: 14-Jun-2023 08:16					
1,2,3-Trichlorobenzene	ND	0.50	ug/L							U
Dichlorodifluoromethane	ND	0.20	ug/L							U
Methyl tert-butyl Ether	ND	0.50	ug/L							U
2-Pentanone	ND	5.00	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.73		ug/L	5.00		94.6	80-129			
<i>Surrogate: Toluene-d8</i>	4.95		ug/L	5.00		99.1	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.88		ug/L	5.00		97.5	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	5.06		ug/L	5.00		101	80-120			
<b>LCS (BLF0395-BS1)</b>										
					Prepared: 14-Jun-2023 Analyzed: 14-Jun-2023 06:55					
Chloromethane	8.48	0.50	ug/L	10.0		84.8	60-138			
Vinyl Chloride	9.77	0.20	ug/L	10.0		97.7	66-133			
Bromomethane	9.56	1.00	ug/L	10.0		95.6	72-131			
Chloroethane	9.77	0.20	ug/L	10.0		97.7	60-155			
Trichlorofluoromethane	10.4	0.20	ug/L	10.0		104	62-141			
Acrolein	46.8	5.00	ug/L	50.0		93.6	52-190			
1,1,2-Trichloro-1,2,2-Trifluoroethane	9.95	0.20	ug/L	10.0		99.5	76-129			
Acetone	41.5	5.00	ug/L	50.0		83.0	58-142			
1,1-Dichloroethene	9.73	0.20	ug/L	10.0		97.3	69-135			
Iodomethane	9.82	1.00	ug/L	10.0		98.2	56-147			
Methylene Chloride	9.32	1.00	ug/L	10.0		93.2	65-135			
Acrylonitrile	8.91	1.00	ug/L	10.0		89.1	64-134			
Carbon Disulfide	9.57	0.20	ug/L	10.0		95.7	78-125			
trans-1,2-Dichloroethene	9.31	0.20	ug/L	10.0		93.1	78-128			
Vinyl Acetate	9.55	0.20	ug/L	10.0		95.5	55-138			
1,1-Dichloroethane	9.48	0.20	ug/L	10.0		94.8	76-124			
2-Butanone	44.0	5.00	ug/L	50.0		88.0	61-140			
2,2-Dichloropropane	11.6	0.20	ug/L	10.0		116	66-147			
cis-1,2-Dichloroethene	9.73	0.20	ug/L	10.0		97.3	80-121			
Chloroform	9.55	0.20	ug/L	10.0		95.5	80-122			
Bromochloromethane	9.49	0.20	ug/L	10.0		94.9	80-121			
1,1,1-Trichloroethane	10.8	0.20	ug/L	10.0		108	79-123			
1,1-Dichloropropene	9.78	0.20	ug/L	10.0		97.8	80-127			
Carbon tetrachloride	8.66	0.20	ug/L	10.0		86.6	53-137			
1,2-Dichloroethane	9.54	0.20	ug/L	10.0		95.4	75-123			



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
17-Jul-2023 11:23

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLF0395 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS (BLF0395-BS1)</b>		Prepared: 14-Jun-2023 Analyzed: 14-Jun-2023 06:55								
Benzene	9.85	0.20	ug/L	10.0		98.5	80-120			
Trichloroethene	9.52	0.20	ug/L	10.0		95.2	80-120			
1,2-Dichloropropane	9.70	0.20	ug/L	10.0		97.0	80-120			
Bromodichloromethane	10.6	0.20	ug/L	10.0		106	80-121			
Dibromomethane	9.46	0.20	ug/L	10.0		94.6	80-120			
2-Chloroethyl vinyl ether	9.84	1.00	ug/L	10.0		98.4	64-120			
4-Methyl-2-Pentanone	48.0	5.00	ug/L	50.0		96.1	67-133			
cis-1,3-Dichloropropene	10.9	0.20	ug/L	10.0		109	80-124			
Toluene	9.78	0.20	ug/L	10.0		97.8	80-120			
trans-1,3-Dichloropropene	9.33	0.20	ug/L	10.0		93.3	71-127			
2-Hexanone	45.0	5.00	ug/L	50.0		90.1	69-133			
1,1,2-Trichloroethane	9.67	0.20	ug/L	10.0		96.7	80-121			
1,3-Dichloropropane	9.24	0.20	ug/L	10.0		92.4	80-120			
Tetrachloroethene	9.29	0.20	ug/L	10.0		92.9	80-120			
Dibromochloromethane	8.04	0.20	ug/L	10.0		80.4	65-135			
1,2-Dibromoethane	10.6	0.20	ug/L	10.0		106	80-121			
Chlorobenzene	9.25	0.20	ug/L	10.0		92.5	80-120			
Ethylbenzene	9.45	0.20	ug/L	10.0		94.5	80-120			
1,1,1,2-Tetrachloroethane	8.40	0.20	ug/L	10.0		84.0	80-120			
m,p-Xylene	19.3	0.40	ug/L	20.0		96.3	80-121			
o-Xylene	9.73	0.20	ug/L	10.0		97.3	80-121			
Xylenes, total	29.0	0.60	ug/L	30.0		96.6	76-127			
Styrene	9.89	0.20	ug/L	10.0		98.9	80-124			
Bromoform	8.64	0.20	ug/L	10.0		86.4	51-134			
1,1,2,2-Tetrachloroethane	9.07	0.20	ug/L	10.0		90.7	77-123			
1,2,3-Trichloropropane	8.83	0.50	ug/L	10.0		88.3	76-125			
trans-1,4-Dichloro 2-Butene	9.30	1.00	ug/L	10.0		93.0	55-129			
n-Propylbenzene	9.59	0.20	ug/L	10.0		95.9	78-130			
Bromobenzene	9.10	0.20	ug/L	10.0		91.0	80-120			
Isopropyl Benzene	9.63	0.20	ug/L	10.0		96.3	80-128			
2-Chlorotoluene	9.24	0.20	ug/L	10.0		92.4	78-122			
4-Chlorotoluene	9.05	0.20	ug/L	10.0		90.5	80-121			
t-Butylbenzene	9.44	0.20	ug/L	10.0		94.4	78-125			
1,3,5-Trimethylbenzene	9.76	0.20	ug/L	10.0		97.6	80-129			
1,2,4-Trimethylbenzene	9.81	0.20	ug/L	10.0		98.1	80-127			





TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
17-Jul-2023 11:23

**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BLF0395 - EPA 8260D**

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS (BLF0395-BS1)</b>		Prepared: 14-Jun-2023 Analyzed: 14-Jun-2023 06:55								
s-Butylbenzene	9.55	0.20	ug/L	10.0		95.5	78-129			
4-Isopropyl Toluene	9.42	0.20	ug/L	10.0		94.2	79-130			
1,3-Dichlorobenzene	9.13	0.20	ug/L	10.0		91.3	80-120			
1,4-Dichlorobenzene	9.07	0.20	ug/L	10.0		90.7	80-120			
n-Butylbenzene	9.52	0.20	ug/L	10.0		95.2	74-129			
1,2-Dichlorobenzene	9.13	0.20	ug/L	10.0		91.3	80-120			
1,2-Dibromo-3-chloropropane	7.90	0.50	ug/L	10.0		79.0	62-123			Q
1,2,4-Trichlorobenzene	9.43	0.50	ug/L	10.0		94.3	64-124			
Hexachloro-1,3-Butadiene	9.12	2.00	ug/L	10.0		91.2	65-145			
Naphthalene	9.37	0.50	ug/L	10.0		93.7	50-134			
1,2,3-Trichlorobenzene	9.17	0.50	ug/L	10.0		91.7	49-133			
Dichlorodifluoromethane	9.78	0.20	ug/L	10.0		97.8	48-147			
Methyl tert-butyl Ether	11.3	0.50	ug/L	10.0		113	71-132			
2-Pentanone	45.6	5.00	ug/L	50.0		91.2	69-134			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.85		ug/L	5.00		96.9	80-129			
<i>Surrogate: Toluene-d8</i>	5.06		ug/L	5.00		101	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.95		ug/L	5.00		98.9	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	5.01		ug/L	5.00		100	80-120			
<b>LCS Dup (BLF0395-BSD1)</b>		Prepared: 14-Jun-2023 Analyzed: 14-Jun-2023 07:36								
Chloromethane	8.64	0.50	ug/L	10.0		86.4	60-138	1.83	30	
Vinyl Chloride	9.72	0.20	ug/L	10.0		97.2	66-133	0.54	30	
Bromomethane	9.56	1.00	ug/L	10.0		95.6	72-131	0.10	30	
Chloroethane	9.96	0.20	ug/L	10.0		99.6	60-155	1.86	30	
Trichlorofluoromethane	10.4	0.20	ug/L	10.0		104	62-141	0.30	30	
Acrolein	47.7	5.00	ug/L	50.0		95.4	52-190	1.86	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.1	0.20	ug/L	10.0		101	76-129	1.09	30	
Acetone	42.9	5.00	ug/L	50.0		85.7	58-142	3.15	30	
1,1-Dichloroethene	9.79	0.20	ug/L	10.0		97.9	69-135	0.53	30	
Iodomethane	9.83	1.00	ug/L	10.0		98.3	56-147	0.07	30	
Methylene Chloride	9.26	1.00	ug/L	10.0		92.6	65-135	0.63	30	
Acrylonitrile	9.12	1.00	ug/L	10.0		91.2	64-134	2.30	30	
Carbon Disulfide	9.74	0.20	ug/L	10.0		97.4	78-125	1.76	30	
trans-1,2-Dichloroethene	9.47	0.20	ug/L	10.0		94.7	78-128	1.76	30	
Vinyl Acetate	9.98	0.20	ug/L	10.0		99.8	55-138	4.36	30	



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
17-Jul-2023 11:23

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLF0395 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Alyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS Dup (BLF0395-BSD1)</b>		Prepared: 14-Jun-2023 Analyzed: 14-Jun-2023 07:36								
1,1-Dichloroethane	9.59	0.20	ug/L	10.0		95.9	76-124	1.09	30	
2-Butanone	44.9	5.00	ug/L	50.0		89.8	61-140	2.04	30	
2,2-Dichloropropane	11.9	0.20	ug/L	10.0		119	66-147	2.24	30	
cis-1,2-Dichloroethene	9.78	0.20	ug/L	10.0		97.8	80-121	0.49	30	
Chloroform	9.61	0.20	ug/L	10.0		96.1	80-122	0.71	30	
Bromochloromethane	9.51	0.20	ug/L	10.0		95.1	80-121	0.22	30	
1,1,1-Trichloroethane	10.9	0.20	ug/L	10.0		109	79-123	1.37	30	
1,1-Dichloropropene	9.81	0.20	ug/L	10.0		98.1	80-127	0.34	30	
Carbon tetrachloride	8.84	0.20	ug/L	10.0		88.4	53-137	2.02	30	
1,2-Dichloroethane	9.39	0.20	ug/L	10.0		93.9	75-123	1.60	30	
Benzene	9.78	0.20	ug/L	10.0		97.8	80-120	0.72	30	
Trichloroethene	9.67	0.20	ug/L	10.0		96.7	80-120	1.53	30	
1,2-Dichloropropane	9.63	0.20	ug/L	10.0		96.3	80-120	0.74	30	
Bromodichloromethane	10.6	0.20	ug/L	10.0		106	80-121	0.31	30	
Dibromomethane	9.44	0.20	ug/L	10.0		94.4	80-120	0.15	30	
2-Chloroethyl vinyl ether	9.70	1.00	ug/L	10.0		97.0	64-120	1.41	30	
4-Methyl-2-Pentanone	48.1	5.00	ug/L	50.0		96.2	67-133	0.17	30	
cis-1,3-Dichloropropene	11.1	0.20	ug/L	10.0		111	80-124	1.09	30	
Toluene	9.78	0.20	ug/L	10.0		97.8	80-120	0.03	30	
trans-1,3-Dichloropropene	9.41	0.20	ug/L	10.0		94.1	71-127	0.85	30	
2-Hexanone	46.1	5.00	ug/L	50.0		92.3	69-133	2.41	30	
1,1,2-Trichloroethane	9.51	0.20	ug/L	10.0		95.1	80-121	1.65	30	
1,3-Dichloropropane	9.46	0.20	ug/L	10.0		94.6	80-120	2.42	30	
Tetrachloroethene	9.35	0.20	ug/L	10.0		93.5	80-120	0.65	30	
Dibromochloromethane	8.19	0.20	ug/L	10.0		81.9	65-135	1.89	30	
1,2-Dibromoethane	10.5	0.20	ug/L	10.0		105	80-121	0.98	30	
Chlorobenzene	9.47	0.20	ug/L	10.0		94.7	80-120	2.36	30	
Ethylbenzene	9.66	0.20	ug/L	10.0		96.6	80-120	2.18	30	
1,1,1,2-Tetrachloroethane	8.68	0.20	ug/L	10.0		86.8	80-120	3.19	30	
m,p-Xylene	19.7	0.40	ug/L	20.0		98.7	80-121	2.41	30	
o-Xylene	9.86	0.20	ug/L	10.0		98.6	80-121	1.28	30	
Xylenes, total	29.6	0.60	ug/L	30.0		98.6	76-127	2.03	30	
Styrene	10.1	0.20	ug/L	10.0		101	80-124	2.42	30	
Bromoform	8.67	0.20	ug/L	10.0		86.7	51-134	0.32	30	
1,1,2,2-Tetrachloroethane	9.26	0.20	ug/L	10.0		92.6	77-123	2.10	30	



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
17-Jul-2023 11:23

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLF0395 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS Dup (BLF0395-BSD1)</b>				Prepared: 14-Jun-2023 Analyzed: 14-Jun-2023 07:36						
1,2,3-Trichloropropane	9.06	0.50	ug/L	10.0		90.6	76-125	2.63	30	
trans-1,4-Dichloro 2-Butene	8.91	1.00	ug/L	10.0		89.1	55-129	4.33	30	
n-Propylbenzene	9.67	0.20	ug/L	10.0		96.7	78-130	0.81	30	
Bromobenzene	9.31	0.20	ug/L	10.0		93.1	80-120	2.36	30	
Isopropyl Benzene	9.63	0.20	ug/L	10.0		96.3	80-128	0.01	30	
2-Chlorotoluene	9.26	0.20	ug/L	10.0		92.6	78-122	0.22	30	
4-Chlorotoluene	9.48	0.20	ug/L	10.0		94.8	80-121	4.59	30	
t-Butylbenzene	9.52	0.20	ug/L	10.0		95.2	78-125	0.87	30	
1,3,5-Trimethylbenzene	9.79	0.20	ug/L	10.0		97.9	80-129	0.36	30	
1,2,4-Trimethylbenzene	9.83	0.20	ug/L	10.0		98.3	80-127	0.28	30	
s-Butylbenzene	9.54	0.20	ug/L	10.0		95.4	78-129	0.09	30	
4-Isopropyl Toluene	9.44	0.20	ug/L	10.0		94.4	79-130	0.24	30	
1,3-Dichlorobenzene	9.16	0.20	ug/L	10.0		91.6	80-120	0.26	30	
1,4-Dichlorobenzene	9.22	0.20	ug/L	10.0		92.2	80-120	1.68	30	
n-Butylbenzene	9.35	0.20	ug/L	10.0		93.5	74-129	1.82	30	
1,2-Dichlorobenzene	9.04	0.20	ug/L	10.0		90.4	80-120	0.94	30	
1,2-Dibromo-3-chloropropane	8.06	0.50	ug/L	10.0		80.6	62-123	1.95	30	Q
1,2,4-Trichlorobenzene	9.33	0.50	ug/L	10.0		93.3	64-124	1.15	30	
Hexachloro-1,3-Butadiene	8.93	2.00	ug/L	10.0		89.3	65-145	2.07	30	
Naphthalene	9.37	0.50	ug/L	10.0		93.7	50-134	0.05	30	
1,2,3-Trichlorobenzene	9.06	0.50	ug/L	10.0		90.6	49-133	1.18	30	
Dichlorodifluoromethane	9.88	0.20	ug/L	10.0		98.8	48-147	0.98	30	
Methyl tert-butyl Ether	11.6	0.50	ug/L	10.0		116	71-132	2.33	30	
2-Pentanone	45.3	5.00	ug/L	50.0		90.5	69-134	0.77	30	
Surrogate: 1,2-Dichloroethane-d4	4.68		ug/L	5.00		93.7	80-129			
Surrogate: Toluene-d8	5.11		ug/L	5.00		102	80-120			
Surrogate: 4-Bromofluorobenzene	5.11		ug/L	5.00		102	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	4.84		ug/L	5.00		96.8	80-120			



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 17-Jul-2023 11:23
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Analysis by: Analytical Resources, LLC

**Volatile Organic Compounds - SIM - Quality Control**

**Batch BLF0454 - EPA 8260D-SIM**

Instrument: NT16 Analyst: PB

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLF0454-BLK1)</b>				Prepared: 15-Jun-2023 Analyzed: 15-Jun-2023 13:34						
Vinyl chloride	ND	20.0	ng/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5920		ng/L	5000	118		80-129			
<b>LCS (BLF0454-BS1)</b>				Prepared: 15-Jun-2023 Analyzed: 15-Jun-2023 12:49						
Vinyl chloride	2210	20.0	ng/L	2000		111	62-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5680		ng/L	5000	114		80-129			
<b>LCS Dup (BLF0454-BSD1)</b>				Prepared: 15-Jun-2023 Analyzed: 15-Jun-2023 13:13						
Vinyl chloride	2030	20.0	ng/L	2000		102	62-141	8.45	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5650		ng/L	5000	113		80-129			



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 17-Jul-2023 11:23
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**Analysis by: Analytical Resources, LLC**

**Metals and Metallic Compounds - Quality Control**

**Batch BLF0675 - EPA 6010D**

Instrument: ICP3 Analyst: DOE

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLF0675-BLK1)</b>				Prepared: 26-Jun-2023 Analyzed: 26-Jun-2023 13:18						
Calcium	ND	0.0500	mg/L							U
Potassium	ND	0.500	mg/L							U
Sodium	ND	0.500	mg/L							U

<b>LCS (BLF0675-BS1)</b>				Prepared: 26-Jun-2023 Analyzed: 26-Jun-2023 12:04						
Calcium	10.1	0.0500	mg/L	10.0		101	80-120			
Potassium	10.0	0.500	mg/L	10.0		100	80-120			
Sodium	9.88	0.500	mg/L	10.0		98.8	80-120			

<b>Duplicate (BLF0675-DUP1)</b>				Source: 23F0313-01 Prepared: 26-Jun-2023 Analyzed: 26-Jun-2023 12:10						
Calcium	10.7	0.0500	mg/L		11.3			5.75	20	
Potassium	0.549	0.500	mg/L		0.585			6.26	20	
Sodium	4.42	0.500	mg/L		4.67			5.47	20	

<b>Matrix Spike (BLF0675-MS1)</b>				Source: 23F0313-01 Prepared: 26-Jun-2023 Analyzed: 26-Jun-2023 12:13						
Calcium	21.7	0.0500	mg/L	10.0	11.3	104	75-125			
Potassium	10.7	0.500	mg/L	10.0	0.585	101	75-125			
Sodium	14.6	0.500	mg/L	10.0	4.67	99.0	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

<b>Matrix Spike Dup (BLF0675-MSD1)</b>				Source: 23F0313-01 Prepared: 26-Jun-2023 Analyzed: 26-Jun-2023 12:16						
Calcium	21.6	0.0500	mg/L	10.0	11.3	103	75-125	0.53	20	
Potassium	10.6	0.500	mg/L	10.0	0.585	100	75-125	0.69	20	
Sodium	14.6	0.500	mg/L	10.0	4.67	98.9	75-125	0.08	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
17-Jul-2023 11:23

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BLF0535 - EPA 200.8 UCT-KED

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLF0535-BLK1)</b>					Prepared: 19-Jun-2023 Analyzed: 20-Jun-2023 19:48						
Zinc, Dissolved	66	ND	6.00	ug/L							U
<b>Blank (BLF0535-BLK3)</b>					Prepared: 19-Jun-2023 Analyzed: 22-Jun-2023 16:38						
Iron, Dissolved	54	ND	36.0	ug/L							U
<b>LCS (BLF0535-BS1)</b>					Prepared: 19-Jun-2023 Analyzed: 20-Jun-2023 19:52						
Zinc, Dissolved	66	81.0	6.00	ug/L	80.0		101	80-120			
<b>LCS (BLF0535-BS3)</b>					Prepared: 19-Jun-2023 Analyzed: 22-Jun-2023 16:42						
Iron, Dissolved	54	4880	36.0	ug/L	5000		97.6	80-120			
<b>Duplicate (BLF0535-DUP1)</b>					Source: 23F0313-02 Prepared: 19-Jun-2023 Analyzed: 21-Jun-2023 06:54						
Zinc, Dissolved	66	ND	6.00	ug/L		ND					U
<b>Duplicate (BLF0535-DUP3)</b>					Source: 23F0313-02 Prepared: 19-Jun-2023 Analyzed: 22-Jun-2023 17:05						
Iron, Dissolved	54	ND	72.0	ug/L		ND					U
<b>Matrix Spike (BLF0535-MS1)</b>					Source: 23F0313-02 Prepared: 19-Jun-2023 Analyzed: 21-Jun-2023 06:59						
Zinc, Dissolved	66	77.9	6.00	ug/L	80.0	ND	97.3	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
<b>Matrix Spike (BLF0535-MS3)</b>					Source: 23F0313-02 Prepared: 19-Jun-2023 Analyzed: 22-Jun-2023 17:09						
Iron, Dissolved	54	4380	72.0	ug/L	5000	ND	87.7	75-125			D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
<b>Matrix Spike Dup (BLF0535-MSD1)</b>					Source: 23F0313-02 Prepared: 19-Jun-2023 Analyzed: 21-Jun-2023 07:05						
Zinc, Dissolved	66	81.4	6.00	ug/L	80.0	ND	102	75-125	4.42	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
<b>Matrix Spike Dup (BLF0535-MSD3)</b>					Source: 23F0313-02 Prepared: 19-Jun-2023 Analyzed: 22-Jun-2023 17:15						
Iron, Dissolved	54	4510	72.0	ug/L	5000	ND	90.3	75-125	2.96	20	D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 17-Jul-2023 11:23
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**Analysis by: Analytical Resources, LLC**

**Metals and Metallic Compounds (dissolved) - Quality Control**

**Batch BLF0550 - EPA 6010D**

Instrument: ICP3 Analyst: DOE

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLF0550-BLK1)</b>		Prepared: 19-Jun-2023 Analyzed: 20-Jun-2023 10:15								
Barium, Dissolved	ND	0.0060	mg/L							U
Manganese, Dissolved	ND	0.0040	mg/L							U
<b>LCS (BLF0550-BS1)</b>		Prepared: 19-Jun-2023 Analyzed: 20-Jun-2023 10:17								
Barium, Dissolved	2.11	0.0062	mg/L	2.00		105	80-120			
Manganese, Dissolved	0.534	0.0041	mg/L	0.500		107	80-120			
<b>Duplicate (BLF0550-DUP1)</b>		<b>Source: 23F0313-02</b>		Prepared: 19-Jun-2023 Analyzed: 20-Jun-2023 10:23						
Barium, Dissolved	ND	0.0060	mg/L		ND					U
Manganese, Dissolved	ND	0.0040	mg/L		ND					U
<b>Matrix Spike (BLF0550-MS1)</b>		<b>Source: 23F0313-02</b>		Prepared: 19-Jun-2023 Analyzed: 20-Jun-2023 10:26						
Barium, Dissolved	2.12	0.0062	mg/L	2.00	ND	106	75-125			
Manganese, Dissolved	0.532	0.0041	mg/L	0.500	ND	106	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

<b>Matrix Spike Dup (BLF0550-MSD1)</b>		<b>Source: 23F0313-02</b>		Prepared: 19-Jun-2023 Analyzed: 20-Jun-2023 10:29						
Barium, Dissolved	2.13	0.0062	mg/L	2.00	ND	106	75-125	0.51	20	
Manganese, Dissolved	0.536	0.0041	mg/L	0.500	ND	107	75-125	0.75	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 17-Jul-2023 11:23
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**Analysis by: Analytical Resources, LLC**

**Metals and Metallic Compounds (dissolved) - Quality Control**

**Batch BLF0821 - EPA 200.8 UCT-KED**

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Duplicate (BLF0821-DUP1)</b>			<b>Source: 23F0313-04</b>			Prepared: 28-Jun-2023 Analyzed: 03-Jul-2023 20:25					
Arsenic, Dissolved	75a	0.158	0.0800	ug/L		0.154			2.57	20	D
<b>Matrix Spike (BLF0821-MS1)</b>			<b>Source: 23F0313-04</b>			Prepared: 28-Jun-2023 Analyzed: 03-Jul-2023 20:30					
Arsenic, Dissolved	75a	4.94	0.0800	ug/L	5.00	0.154	95.8	75-125			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLF0821-BLK1)</b>						Prepared: 28-Jun-2023 Analyzed: 29-Jun-2023 16:51					
Arsenic, Dissolved	75a	ND	0.0400	ug/L							U
<b>LCS (BLF0821-BS1)</b>						Prepared: 28-Jun-2023 Analyzed: 29-Jun-2023 16:55					
Arsenic, Dissolved	75a	4.97	0.0400	ug/L	5.00		99.4	80-120			
<b>LCS Dup (BLF0821-BSD1)</b>						Prepared: 28-Jun-2023 Analyzed: 29-Jun-2023 17:00					
Arsenic, Dissolved	75a	4.78	0.0400	ug/L	5.00		95.7	80-120	3.83	20	





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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLF0390 - SM 4500-H+ B-00**

Instrument: Accumet AB150 Analyst: EJK

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS (BLF0390-BS1)</b>						Prepared: 13-Jun-2023 Analyzed: 14-Jun-2023 17:03					
pH	7.05	0.01	0.01	pH Units	7.00		101	99.2-100.8			



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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLF0403 - SM 2320 B-97**

Instrument: Accumet AB150 Analyst: UW

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLF0403-BLK1)</b>						Prepared: 14-Jun-2023 Analyzed: 14-Jun-2023 11:11					
Alkalinity, Total	ND	1.00	1.00	mg/L CaCO3							U
<b>Reference (BLF0403-SRM1)</b>						Prepared: 14-Jun-2023 Analyzed: 14-Jun-2023 11:11					
Alkalinity, Total	104	1.00	1.00	mg/L CaCO3	93.6		111	85.04-114.96			



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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLF0409 - EPA 353.2**

Instrument: LCHAT2 Analyst: HAL

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLF0409-BLK1)</b>						Prepared: 14-Jun-2023 Analyzed: 14-Jun-2023 13:07					
Nitrate + Nitrite as N	ND	0.010	0.010	mg/L							U
Nitrite-N	ND	0.010	0.010	mg/L							U
<b>LCS (BLF0409-BS1)</b>						Prepared: 14-Jun-2023 Analyzed: 14-Jun-2023 13:08					
Nitrate + Nitrite as N	0.518	0.010	0.010	mg/L	0.500		104	90-110			
<b>LCS (BLF0409-BS2)</b>						Prepared: 14-Jun-2023 Analyzed: 14-Jun-2023 13:10					
Nitrite-N	0.500	0.010	0.010	mg/L	0.500		100	90-110			
<b>Duplicate (BLF0409-DUP1)</b>						Source: 23F0313-01 Prepared: 14-Jun-2023 Analyzed: 14-Jun-2023 13:14					
Nitrate + Nitrite as N	0.777	0.010	0.010	mg/L		0.778			0.13	20	
Nitrite-N	ND	0.010	0.010	mg/L		ND					U
<b>Matrix Spike (BLF0409-MS2)</b>						Source: 23F0313-01 Prepared: 14-Jun-2023 Analyzed: 14-Jun-2023 13:17					
Nitrite-N	0.510	0.010	0.010	mg/L	0.508	ND	100	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
<b>DL (BLF0409-MS3)</b>						Source: 23F0313-01 Prepared: 14-Jun-2023 Analyzed: 14-Jun-2023 13:33					
Nitrate + Nitrite as N	3.39	0.010	0.050	mg/L	2.47	0.778	105	75-125			D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
<b>Matrix Spike Dup (BLF0409-MSD2)</b>						Source: 23F0313-01 Prepared: 14-Jun-2023 Analyzed: 14-Jun-2023 13:26					
Nitrite-N	0.515	0.010	0.010	mg/L	0.508	ND	101	75-125	0.98	200	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
<b>Matrix Spike Dup (BLF0409-MSD3)</b>						Source: 23F0313-01 Prepared: 14-Jun-2023 Analyzed: 14-Jun-2023 13:34					
Nitrate + Nitrite as N	3.41	0.010	0.050	mg/L	2.47	0.778	106	75-125	0.74	20	D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLF0458 - EPA 410.4**

Instrument: UV1800-2 Analyst: BF

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLF0458-BLK1)</b>						Prepared: 15-Jun-2023 Analyzed: 15-Jun-2023 17:47					
COD	ND	10.0	10.0	mg/L							U
<b>Blank (BLF0458-BLK2)</b>						Prepared: 15-Jun-2023 Analyzed: 15-Jun-2023 17:56					
COD	ND	10.0	10.0	mg/L							U
<b>LCS (BLF0458-BS1)</b>						Prepared: 15-Jun-2023 Analyzed: 15-Jun-2023 17:47					
COD	101	10.0	10.0	mg/L	100	101	90-110				
<b>LCS (BLF0458-BS2)</b>						Prepared: 15-Jun-2023 Analyzed: 15-Jun-2023 17:57					
COD	102	10.0	10.0	mg/L	100	102	90-110				
<b>Duplicate (BLF0458-DUP1)</b>						Source: 23F0313-01 Prepared: 15-Jun-2023 Analyzed: 15-Jun-2023 17:52					
COD	ND	10.0	10.0	mg/L		ND					U
<b>Matrix Spike (BLF0458-MS1)</b>						Source: 23F0313-01 Prepared: 15-Jun-2023 Analyzed: 15-Jun-2023 17:54					
COD	94.1	20.0	20.0	mg/L	100	ND	94.1	90-110			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
<b>Matrix Spike Dup (BLF0458-MSD1)</b>						Source: 23F0313-01 Prepared: 15-Jun-2023 Analyzed: 15-Jun-2023 17:54					
COD	91.8	20.0	20.0	mg/L	100	ND	91.7	90-110	2.49	10	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											



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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLF0465 - EPA 325.2**

Instrument: LCHAT2 Analyst: HAL

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLF0465-BLK1)</b>						Prepared: 15-Jun-2023 Analyzed: 15-Jun-2023 17:07					
Chloride	ND	1.00	1.00	mg/L							U
<b>LCS (BLF0465-BS1)</b>						Prepared: 15-Jun-2023 Analyzed: 15-Jun-2023 17:09					
Chloride	4.73	1.00	1.00	mg/L	5.00		94.6	90-110			
<b>Duplicate (BLF0465-DUP1)</b>						Source: 23F0313-01 Prepared: 15-Jun-2023 Analyzed: 15-Jun-2023 17:12					
Chloride	5.15	1.00	1.00	mg/L		5.20			0.97	20	
<b>Matrix Spike (BLF0465-MS1)</b>						Source: 23F0313-01 Prepared: 15-Jun-2023 Analyzed: 15-Jun-2023 17:13					
Chloride	10.3	1.00	1.00	mg/L	5.00	5.20	102	75-125			E

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

<b>Matrix Spike Dup (BLF0465-MSD1)</b>						Source: 23F0313-01 Prepared: 15-Jun-2023 Analyzed: 15-Jun-2023 17:15					
Chloride	10.5	1.00	1.00	mg/L	5.00	5.20	106	75-125	1.92	20	E

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLF0519 - SM 4500-NH3 H-97**

Instrument: LCHAT1 Analyst: HAL

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLF0519-BLK1)</b>						Prepared: 19-Jun-2023 Analyzed: 20-Jun-2023 12:08					
Ammonia-N	ND	0.040	0.040	mg/L							U
<b>LCS (BLF0519-BS1)</b>						Prepared: 19-Jun-2023 Analyzed: 20-Jun-2023 12:09					
Ammonia-N	0.503	0.040	0.040	mg/L	0.500		101	90-110			
<b>Duplicate (BLF0519-DUP1)</b>						Source: 23F0313-01 Prepared: 19-Jun-2023 Analyzed: 20-Jun-2023 12:12					
Ammonia-N	ND	0.040	0.040	mg/L		ND					U
<b>Matrix Spike (BLF0519-MS1)</b>						Source: 23F0313-01 Prepared: 19-Jun-2023 Analyzed: 20-Jun-2023 12:13					
Ammonia-N	0.489	0.040	0.040	mg/L	0.501	ND	97.7	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

<b>Matrix Spike Dup (BLF0519-MSD1)</b>						Source: 23F0313-01 Prepared: 19-Jun-2023 Analyzed: 20-Jun-2023 12:15					
Ammonia-N	0.499	0.040	0.040	mg/L	0.501	ND	99.7	75-125	2.02	200	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 17-Jul-2023 11:23
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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLF0584 - EPA 375.2**

Instrument: LCHAT2 Analyst: HAL

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLF0584-BLK1)</b>						Prepared: 20-Jun-2023 Analyzed: 21-Jun-2023 12:45					
Sulfate	ND	2.00	2.00	mg/L							U
<b>LCS (BLF0584-BS1)</b>						Prepared: 20-Jun-2023 Analyzed: 21-Jun-2023 12:46					
Sulfate	14.6	2.00	2.00	mg/L	15.0		97.3	90-110			
<b>Duplicate (BLF0584-DUP1)</b>						Source: 23F0313-01 Prepared: 20-Jun-2023 Analyzed: 21-Jun-2023 12:56					
Sulfate	4.37	2.00	2.00	mg/L		4.03			8.10	20	
<b>Matrix Spike (BLF0584-MS1)</b>						Source: 23F0313-01 Prepared: 20-Jun-2023 Analyzed: 21-Jun-2023 12:58					
Sulfate	16.5	2.00	2.00	mg/L	15.0	4.03	83.1	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

<b>Matrix Spike Dup (BLF0584-MSD1)</b>						Source: 23F0313-01 Prepared: 20-Jun-2023 Analyzed: 21-Jun-2023 12:59					
Sulfate	16.6	2.00	2.00	mg/L	15.0	4.03	83.7	75-125	0.60	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLF0697 - EPA 9060A**

Instrument: TOC-LCSH Analyst: RMS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLF0697-BLK1)</b>						Prepared: 26-Jun-2023 Analyzed: 26-Jun-2023 12:43					
Total Organic Carbon	ND	0.50	0.50	mg/L							U
<b>LCS (BLF0697-BS1)</b>						Prepared: 26-Jun-2023 Analyzed: 26-Jun-2023 13:05					
Total Organic Carbon	21.17	0.50	0.50	mg/L	20.00		106	90-110			
<b>Duplicate (BLF0697-DUP1)</b>						Source: 23F0313-03 Prepared: 26-Jun-2023 Analyzed: 26-Jun-2023 15:04					
Total Organic Carbon	3.60	0.50	0.50	mg/L		3.35			7.17	20	
<b>Matrix Spike (BLF0697-MS1)</b>						Source: 23F0313-03 Prepared: 26-Jun-2023 Analyzed: 26-Jun-2023 15:27					
Total Organic Carbon	23.23	0.50	0.50	mg/L	20.00	3.35	99.4	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
<b>Matrix Spike Dup (BLF0697-MSD1)</b>						Source: 23F0313-03 Prepared: 26-Jun-2023 Analyzed: 26-Jun-2023 16:36					
Total Organic Carbon	22.57	0.50	0.50	mg/L	20.00	3.35	96.1	75-125	2.88	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											





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**Analysis by: Analytical Resources, LLC**

**Microbiology - Quality Control**

**Batch BLF0387 - SM 9222B**

Instrument: N/A

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLF0387-BLK1)</b>						Prepared: 13-Jun-2023 Analyzed: 14-Jun-2023 14:15					
Total Coliforms	ND	1	1	CFU/100 ml							U



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
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**Certified Analyses included in this Report**

Analyte	Certifications
<b>EPA 200.8 in Water</b>	
Iron-54	NELAP,WADOE,DoD-ELAP
<b>EPA 200.8 UCT-KED in Water</b>	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Zinc-66	NELAP,WADOE,WA-DW,DoD-ELAP
<b>EPA 353.2 in Water</b>	
Nitrate + Nitrite as N	NELAP,DoD-ELAP,WADOE
Nitrite-N	WADOE,NELAP,DoD-ELAP
<b>EPA 375.2 in Water</b>	
Sulfate	WADOE,NELAP
<b>EPA 410.4 in Water</b>	
COD	DoD-ELAP,NELAP,WADOE
<b>EPA 6010D in Water</b>	
Calcium	WADOE,NELAP,DoD-ELAP
Potassium	WADOE,NELAP,DoD-ELAP
Sodium	DoD-ELAP,WADOE,NELAP
Barium	WADOE,NELAP,DoD-ELAP
Manganese	WADOE,NELAP,DoD-ELAP
<b>EPA 8260D in Water</b>	
Chloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Acrolein	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroeth	DoD-ELAP,ADEC,NELAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Iodomethane	DoD-ELAP,NELAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,WADOE



TRC Companies, Inc  
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Project: Olalla Landfill  
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Acrylonitrile	DoD-ELAP,NELAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Butanone	DoD-ELAP,NELAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE



TRC Companies, Inc  
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Project: Olalla Landfill  
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Reported:  
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m,p-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
Styrene	DoD-ELAP,NELAP,WADOE
Bromoform	DoD-ELAP,NELAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,WADOE
2-Pentanone	WADOE

**EPA 8260D-SIM in Water**

Vinyl chloride NELAP,WADOE

**EPA 9060A in Water**

Total Organic Carbon DoD-ELAP,WADOE,NELAP



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 17-Jul-2023 11:23
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**SM 2320 B-97 in Water**

Alkalinity, Bicarbonate	NELAP,WADOE,WA-DW,DoD-ELAP
Alkalinity, Carbonate	WADOE,WA-DW,DoD-ELAP,NELAP
Alkalinity, Total	DoD-ELAP,WADOE,WA-DW,NELAP

**SM 4500-H+ B-00 in Water**

pH	WADOE,NELAP,WA-DW
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**SM 4500-NH3 H-97 in Water**

Ammonia-N	WADOE,DoD-ELAP,NELAP
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**SM 9222B in Water**

Total Coliforms	WADOE
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Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2025
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program, PJLA Testing	66169	02/28/2025
WADOE	WA Dept of Ecology	C558	06/30/2023
WA-DW	Ecology - Drinking Water	C558	06/30/2023



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
17-Jul-2023 11:23

### Notes and Definitions

- \* Flagged value is not within established control limits.
- B This analyte was detected in the method blank.
- D The reported value is from a dilution
- E The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
- H Hold time violation - Hold time was exceeded.
- HC The natural concentration of the spiked analyte is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
- J Estimated concentration value detected below the reporting limit.
- M Estimated value for a GC/MS analyte detected and confirmed by an analyst but with low spectral match parameters.
- Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
- U This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- [2C] Indicates this result was quantified on the second column on a dual column analysis.



25 October 2023

Eric Caddy  
TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah, WA 98027

RE: Olalla Landfill (533022)

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)  
23I0529

Associated SDG ID(s)  
N/A

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I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclosed Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Kelly Bottem, Client Services Manager

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*





# Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 2310529 Turn-around Requested: Standard

ARI Client Company: TRC Phone: 425-395-0010

Client Contact: Ecaddex@TRCcompanies.com, WWeisberg@ " "

Client Project Name: Olalla Land Fill Po# 196897

Client Project #: 533022 Samplers: E. Miller, L. Briant

Page: 1 of 1

Date: 9/21/23 Ice Present? yes

No. of Coolers: 2 Cooler Temps: 12.2 9/21/23



Analytical Resources, LLC  
Analytical Chemists and Consultants  
4611 South 134th Place, Suite 100  
Tukwila, WA 98168  
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested											Notes/Comments
					VOL and VC BY SIM	Dissolved Metals AS, Fe, Zn, Pb, Mn	Total Metals K, Na, Ca	Alkalinity carbonate, bicarbonate	Nitrate, Nitrite Chloride, PH Sulfate, PH	TOC, COD, Ammonia	Total Coliform					
MW-1	9/21/23	0855	H <sub>2</sub> O	11	X	X	X	X	X	X	X	X				
MW-3		0950			X	X	X	X	X	X	X	X				
MW-10		1030			X	X	X	X	X	X	X	X				
MW-6		1100			X	X	X	X	X	X	X	X				
MW-8		1305			X	X	X	X	X	X	X	X				
MW-12	9/21/23		H <sub>2</sub> O	11	X	X	X	X	X	X	X	X				

Comments/Special Instructions	Relinquished by: (Signature) <u>EML</u>	Received by: (Signature) <u>Rovan m.</u>	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: <u>Evan Miller</u>	Printed Name: <u>Rovan m.</u>	Printed Name:	Printed Name:
	Company: <u>TRC</u>	Company: <u>ARI</u>	Company:	Company:
	Date & Time: <u>9/21/23 1426</u>	Date & Time: <u>9/21/23 1426</u>	Date & Time:	Date & Time:

**Limits of Liability:** ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

**Sample Retention Policy:** All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.





TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
25-Oct-2023 17:05

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	23I0529-01	Water	21-Sep-2023 08:55	21-Sep-2023 14:26
MW-1	23I0529-02	Water	21-Sep-2023 08:55	21-Sep-2023 14:26
MW-3	23I0529-03	Water	21-Sep-2023 09:50	21-Sep-2023 14:26
MW-3	23I0529-04	Water	21-Sep-2023 09:50	21-Sep-2023 14:26
MW-10	23I0529-05	Water	21-Sep-2023 10:30	21-Sep-2023 14:26
MW-10	23I0529-06	Water	21-Sep-2023 10:30	21-Sep-2023 14:26
MW-6	23I0529-07	Water	21-Sep-2023 11:00	21-Sep-2023 14:26
MW-6	23I0529-08	Water	21-Sep-2023 11:00	21-Sep-2023 14:26
MW-8	23I0529-09	Water	21-Sep-2023 13:05	21-Sep-2023 14:26
MW-8	23I0529-10	Water	21-Sep-2023 13:05	21-Sep-2023 14:26
MW-12	23I0529-11	Water	21-Sep-2023 00:00	21-Sep-2023 14:26
MW-12	23I0529-12	Water	21-Sep-2023 00:00	21-Sep-2023 14:26
Trip Blanks	23I0529-13	Water	21-Sep-2023 08:55	21-Sep-2023 14:26



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Reported:  
25-Oct-2023 17:05

## Work Order Case Narrative

### Volatiles - EPA Method SW8260D

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

### Volatiles - EPA Method 8260D-SIM (Selected Ion Monitoring)

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

### Total and Dissolved Metals - EPA Method 200.8 and 6010D

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The matrix spike (MS) percent recoveries and the duplicate (DUP) relative percent difference (RPD) were within advisory



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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
25-Oct-2023 17:05

control limits.

**Wet Chemistry**

The sample(s) were prepared and analyzed within the recommended holding times with the exception of pH which was sent to the lab outside of the holding time.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The reference material (SRM) percent recoveries were within control limits.

The matrix spike (MS) percent recoveries and the duplicate (DUP) relative percent difference (RPD) were within advisory control limits.



WORK ORDER

23I0529

Samples will be discarded 90 days after submission of a final report unless other instructions are received.

Client: TRC Companies, Inc

Project Manager: Kelly Bottem

Project: Olalla Landfill

Project Number: 533022

Preservation Confirmation

Container ID	Container Type	pH	
23I0529-01 A	HDPE NM, 1000 mL		
23I0529-01 B	HDPE NM, 500 mL		
23I0529-01 C	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass (CP)
23I0529-01 D	Glass NM, Amber, 250 mL, 9N H2SO4	<2	P
23I0529-01 E	Corning Plastic, 125 mL, Na2S2O3		
23I0529-01 F	VOA Vial, Clear, 40 mL, HCL		
23I0529-01 G	VOA Vial, Clear, 40 mL, HCL		
23I0529-01 H	VOA Vial, Clear, 40 mL, HCL		
23I0529-01 I	VOA Vial, Clear, 40 mL, HCL		
23I0529-01 J	VOA Vial, Clear, 40 mL, HCL		
23I0529-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
23I0529-03 A	HDPE NM, 1000 mL		
23I0529-03 B	HDPE NM, 500 mL		
23I0529-03 C	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23I0529-03 D	Glass NM, Amber, 250 mL, 9N H2SO4	<2	P
23I0529-03 E	Corning Plastic, 125 mL, Na2S2O3		
23I0529-03 F	VOA Vial, Clear, 40 mL, HCL		
23I0529-03 G	VOA Vial, Clear, 40 mL, HCL		
23I0529-03 H	VOA Vial, Clear, 40 mL, HCL		
23I0529-03 I	VOA Vial, Clear, 40 mL, HCL		
23I0529-03 J	VOA Vial, Clear, 40 mL, HCL		
23I0529-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
23I0529-05 A	HDPE NM, 1000 mL		
23I0529-05 B	HDPE NM, 500 mL		
23I0529-05 C	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23I0529-05 D	Glass NM, Amber, 250 mL, 9N H2SO4	<2	P
23I0529-05 E	Corning Plastic, 125 mL, Na2S2O3		
23I0529-05 F	VOA Vial, Clear, 40 mL, HCL		
23I0529-05 G	VOA Vial, Clear, 40 mL, HCL		
23I0529-05 H	VOA Vial, Clear, 40 mL, HCL		
23I0529-05 I	VOA Vial, Clear, 40 mL, HCL		
23I0529-05 J	VOA Vial, Clear, 40 mL, HCL		
23I0529-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
23I0529-07 A	HDPE NM, 1000 mL		





WORK ORDER

2310529

Samples will be discarded 90 days after submission of a final report unless other instructions are received.

<b>Client:</b> TRC Companies, Inc	<b>Project Manager:</b> Kelly Bottem
<b>Project:</b> Olalla Landfill	<b>Project Number:</b> 533022

2310529-07 B	HDPE NM, 500 mL		
2310529-07 C	HDPE NM, 500 mL, 1:1 HNO3	↪	Pass (CP)
2310529-07 D	Glass NM, Amber, 250 mL, 9N H2SO4	↪	P
2310529-07 E	Corning Plastic, 125 mL, Na2S2O3		
2310529-07 F	VOA Vial, Clear, 40 mL, HCL		
2310529-07 G	VOA Vial, Clear, 40 mL, HCL		
2310529-07 H	VOA Vial, Clear, 40 mL, HCL		
2310529-07 I	VOA Vial, Clear, 40 mL, HCL		
2310529-07 J	VOA Vial, Clear, 40 mL, HCL		
2310529-08 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	↪	P
2310529-09 A	HDPE NM, 1000 mL		
2310529-09 B	HDPE NM, 500 mL		
2310529-09 C	HDPE NM, 500 mL, 1:1 HNO3	↪	P
2310529-09 D	Glass NM, Amber, 250 mL, 9N H2SO4	↪	P
2310529-09 E	Corning Plastic, 125 mL, Na2S2O3		
2310529-09 F	VOA Vial, Clear, 40 mL, HCL		
2310529-09 G	VOA Vial, Clear, 40 mL, HCL		
2310529-09 H	VOA Vial, Clear, 40 mL, HCL		
2310529-09 I	VOA Vial, Clear, 40 mL, HCL		
2310529-09 J	VOA Vial, Clear, 40 mL, HCL		
2310529-10 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	↪	P
2310529-11 A	HDPE NM, 1000 mL		
2310529-11 B	HDPE NM, 500 mL		
2310529-11 C	HDPE NM, 500 mL, 1:1 HNO3	↪	P
2310529-11 D	Glass NM, Amber, 250 mL, 9N H2SO4	↪	P
2310529-11 E	Corning Plastic, 125 mL, Na2S2O3		
2310529-11 F	VOA Vial, Clear, 40 mL, HCL		
2310529-11 G	VOA Vial, Clear, 40 mL, HCL		
2310529-11 H	VOA Vial, Clear, 40 mL, HCL		
2310529-11 I	VOA Vial, Clear, 40 mL, HCL		
2310529-11 J	VOA Vial, Clear, 40 mL, HCL		
2310529-12 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	↪	P
2310529-13 A	VOA Vial, Clear, 40 mL, HCL		
2310529-13 B	VOA Vial, Clear, 40 mL, HCL		
2310529-13 C	VOA Vial, Clear, 40 mL, HCL		



**WORK ORDER**

23I0529

Samples will be discarded 90 days after submission of a final report unless other instructions are received.

**Client:** TRC Companies, Inc

**Project Manager:** Kelly Bottem

**Project:** Olalla Landfill

**Project Number:** 533022

*JS*

Preservation Confirmed By

*09/21/23*

Date





# Cooler Receipt Form

ARI Client: TRC

Project Name: Atlanta Land Fill

COC No(s): \_\_\_\_\_ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: \_\_\_\_\_

Assigned ARI Job No: 2370529

Tracking No: \_\_\_\_\_ (NA)

**Preliminary Examination Phase:**

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES (NO)

Were custody papers included with the cooler? YES (YES) NO

Were custody papers properly filled out (ink, signed, etc.) YES (YES) NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1420 4.0° 12.4°

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 9708

Cooler Accepted by: [Signature] Date: 9/21/23 Time: 1426

**Complete custody forms and attach all shipping documents**

**Log-In Phase:**

Was a temperature blank included in the cooler? YES (NO)

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: \_\_\_\_\_

Was sufficient ice used (if appropriate)? NA YES (NO)

How were bottles sealed in plastic bags? Individually Grouped (Not)

Did all bottles arrive in good condition (unbroken)? YES (YES) NO

Were all bottle labels complete and legible? YES (YES) NO

Did the number of containers listed on COC match with the number of containers received? YES (YES) NO

Did all bottle labels and tags agree with custody papers? YES (YES) NO

Were all bottles used correct for the requested analyses? YES (YES) NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES (YES) NO

Were all VOC vials free of air bubbles? NA YES (YES) NO

Was sufficient amount of sample sent in each bottle? YES (YES) NO

Date VOC Trip Blank was made at ARI... NA 09/20/23

Were the sample(s) split by ARI? (NA) YES Date/Time: \_\_\_\_\_ Equipment: \_\_\_\_\_ Split by: \_\_\_\_\_

Samples Logged by: JBS Date: 09/21/23 Time: 1457 Labels checked by: JBS

**\*\* Notify Project Manager of discrepancies or concerns \*\***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

**Additional Notes, Discrepancies, & Resolutions:**

sample time is not listed on COC, nor sample bottles for MW-12. Logged as ☐☐:☐☐

By: JBS Date: 09/21/23







TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
25-Oct-2023 17:05

**MW-1**  
**23I0529-01 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 09/21/2023 08:55

Instrument: NT3 Analyst: TWC

Analyzed: 09/21/2023 17:34

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)  
Preparation Batch: BLI0632  
Prepared: 09/21/2023

Sample Size: 10 mL  
Final Volume: 10 mL

Extract ID: 23I0529-01 F

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U



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Reported:  
25-Oct-2023 17:05

**MW-1**  
**23I0529-01 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 09/21/2023 08:55

Instrument: NT3 Analyst: TWC

Analyzed: 09/21/2023 17:34

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
25-Oct-2023 17:05

**MW-1**  
**23I0529-01 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 09/21/2023 08:55

Instrument: NT3 Analyst: TWC

Analyzed: 09/21/2023 17:34

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>113</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>			<i>80-120 %</i>	<i>98.4</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>			<i>80-120 %</i>	<i>93.0</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			<i>80-120 %</i>	<i>104</i>	<i>%</i>	



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**MW-1**  
**23I0529-01 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 09/21/2023 08:55
Instrument: NT16 Analyst: TWC	Analyzed: 09/21/2023 19:10
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23I0529-01 I
Preparation Batch: BLI0637	Sample Size: 10 mL
Prepared: 09/21/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	ND	ng/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>108</i>	<i>%</i>	



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**MW-1**  
**23I0529-01 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 09/21/2023 08:55
Instrument: ICP3 Analyst: DOE	Analyzed: 10/03/2023 09:38
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 23I0529-01 C 01
Preparation Batch: BLJ0007	Sample Size: 25 mL
Prepared: 10/02/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	1	0.0500	12.9	mg/L	
Potassium	7440-09-7	1	0.500	0.595	mg/L	
Sodium	7440-23-5	1	0.500	5.15	mg/L	
Sodium	7440-23-5	1	50.0	ND	mg/L	U



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**MW-1**  
**23I0529-01 (Water)**

**Wet Chemistry**

Method: EPA 325.2	Instrument: LACHAT2 Analyst: RMS	Sampled: 09/21/2023 08:55 Analyzed: 09/27/2023 07:41
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BLI0809 Prepared: 09/26/2023	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23I0529-01 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	1.00	1.00	6.86	mg/L	



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**MW-1**  
**23I0529-01 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Sampled: 09/21/2023 08:55
Instrument: [CALC] Analyst: EJK	Analyzed: 09/21/2023 19:21
Sample Preparation: Preparation Method: [CALC]	Extract ID: 23I0529-01
Preparation Batch: [CALC]	
Prepared: 09/21/2023	Final Volume: 1

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.0200	0.225	mg/L	



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**MW-1**  
**23I0529-01 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Instrument: LACHAT2 Analyst: EJK	Sampled: 09/21/2023 08:55 Analyzed: 09/21/2023 19:21
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BLI0669 Prepared: 09/21/2023	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23I0529-01 D

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate + Nitrite as N		1	0.010	0.010	0.225	mg/L	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.010	0.010	ND	mg/L	U





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**MW-1**  
**23I0529-01 (Water)**

**Wet Chemistry**

Method: EPA 375.2	Sampled: 09/21/2023 08:55
Instrument: LACHAT2 Analyst: RMS	Analyzed: 09/26/2023 06:59
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-01 A
Preparation Batch: BLI0737	Sample Size: 10 mL
Prepared: 09/25/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	2.00	2.00	4.37	mg/L	



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**MW-1**  
**23I0529-01 (Water)**

**Wet Chemistry**

Method: EPA 410.4	Sampled: 09/21/2023 08:55
Instrument: UV1800-1 Analyst: BF	Analyzed: 10/17/2023 11:38
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-01 D
Preparation Batch: BLJ0460	Sample Size: 2 mL
Prepared: 10/13/2023	Final Volume: 2 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
COD		1	10.0	10.0	ND	mg/L	U



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**MW-1**  
**23I0529-01 (Water)**

**Wet Chemistry**

Method: EPA 9060A	Instrument: TOC-LCSH Analyst: RMS	Sampled: 09/21/2023 08:55	Analyzed: 10/05/2023 16:09
Sample Preparation:	Preparation Method: No Prep Wet Chem	Sample Size: 20 mL	Extract ID: 23I0529-01 D
	Preparation Batch: BLJ0164	Final Volume: 20 mL	
	Prepared: 10/05/2023		

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	0.69	mg/L	



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**MW-1**  
**23I0529-01 (Water)**

**Wet Chemistry**

Method: SM 2320 B-97	Sampled: 09/21/2023 08:55
Instrument: Accumet AB150 Analyst: UW	Analyzed: 09/22/2023 16:00
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-01 B
Preparation Batch: BLI0693	Sample Size: 100 mL
Prepared: 09/22/2023	Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Bicarbonate		1	1.00	1.00	213	mg/L CaCO3	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Carbonate		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Hydroxide		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	213	mg/L CaCO3	



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**MW-1**  
**23I0529-01 (Water)**

**Wet Chemistry**

Method: SM 4500-H+ B-00	Sampled: 09/21/2023 08:55
Instrument: Accumet AB150 Analyst: SRB	Analyzed: 09/21/2023 16:37
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-01 A
Preparation Batch: BLI0660	Sample Size: 50 mL
Prepared: 09/21/2023	Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
pH		1	0.01	0.01	6.38	pH Units	H



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**MW-1**  
**23I0529-01 (Water)**

**Wet Chemistry**

Method: SM 4500-NH3 H-97	Sampled: 09/21/2023 08:55
Instrument: LCHAT1 Analyst: MAM	Analyzed: 10/04/2023 14:52
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-01 D
Preparation Batch: BLJ0051	Sample Size: 10 mL
Prepared: 10/03/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.040	0.040	ND	mg/L	U



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**MW-1**  
**23I0529-01 (Water)**

**Microbiology**

Method: SM 9222B	Sampled: 09/21/2023 08:55
Instrument: N/A Analyst: EML2	Analyzed: 09/22/2023 14:33
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-01
Preparation Batch: BLI0653	Sample Size: 100 mL
Prepared: 09/21/2023	Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Coliforms		1	1	1	ND	CFU/100 ml	U



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**MW-1**  
**23I0529-02 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 09/21/2023 08:55
Instrument: ICPMS2 Analyst: MCB	Analyzed: 10/07/2023 02:48
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23I0529-02 A 02
Preparation Batch: BLJ0067	Sample Size: 25 mL
Prepared: 10/03/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Zinc, Dissolved	7440-66-6	1	6.00	ND	ug/L	U





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**MW-1**  
**23I0529-02 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 09/21/2023 08:55
Instrument: ICPMS2 Analyst: MCB	Analyzed: 10/20/2023 17:50
Sample Preparation: Preparation Method: RHN EPA 600/4-79-020 4.1.4 HNO3 matrix 5x	Extract ID: 23I0529-02 A 03
Preparation Batch: BLJ0624	Sample Size: 100 mL
Prepared: 10/20/2023	Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0400	0.120	ug/L	



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Oct-2023 17:05
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**MW-1**  
**23I0529-02 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8	Sampled: 09/21/2023 08:55
Instrument: ICPMS1 Analyst: HAL	Analyzed: 10/10/2023 23:09
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23I0529-02 A
Preparation Batch: BLJ0067	Sample Size: 25 mL
Prepared: 10/03/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron, Dissolved	7439-89-6	1	20.0	ND	ug/L	U



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Oct-2023 17:05
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**MW-1**  
**23I0529-02 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D	Sampled: 09/21/2023 08:55
Instrument: ICP3 Analyst: DOE	Analyzed: 10/04/2023 12:35
Sample Preparation: Preparation Method: WMN (No Prep)	Extract ID: 23I0529-02 A 01
Preparation Batch: BLJ0073	Sample Size: 25 mL
Prepared: 10/03/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0060	ND	mg/L	U
Manganese, Dissolved	7439-96-5	1	0.0040	ND	mg/L	U



TRC Companies, Inc  
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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

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**MW-3**  
**23I0529-03 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 09/21/2023 09:50

Instrument: NT3 Analyst: TWC

Analyzed: 09/21/2023 17:56

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 23I0529-03 G

Preparation Batch: BLI0632

Sample Size: 10 mL

Prepared: 09/21/2023

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U



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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
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**MW-3**  
**23I0529-03 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 09/21/2023 09:50

Instrument: NT3 Analyst: TWC

Analyzed: 09/21/2023 17:56

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.50	ND	ug/L	U



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**MW-3**  
**23I0529-03 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D Sampled: 09/21/2023 09:50  
Instrument: NT3 Analyst: TWC Analyzed: 09/21/2023 17:56

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Pentanone	107-87-9	1	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	116	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	99.5	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	95.5	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	105	%	



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**MW-3**  
**23I0529-03 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 09/21/2023 09:50
Instrument: NT16 Analyst: TWC	Analyzed: 09/21/2023 19:30
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23I0529-03 F
Preparation Batch: BLI0637	Sample Size: 10 mL
Prepared: 09/21/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	ND	ng/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>109</i>	<i>%</i>	



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**MW-3**  
**23I0529-03 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 09/21/2023 09:50
Instrument: ICP3 Analyst: DOE	Analyzed: 10/04/2023 10:39
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 23I0529-03 C 01
Preparation Batch: BLJ0007	Sample Size: 25 mL
Prepared: 10/02/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	1	0.0500	51.9	mg/L	
Potassium	7440-09-7	1	0.500	0.792	mg/L	
Sodium	7440-23-5	1	0.500	9.50	mg/L	





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**MW-3**  
**23I0529-03 (Water)**

**Wet Chemistry**

Method: EPA 325.2	Sampled: 09/21/2023 09:50
Instrument: LACHAT2 Analyst: RMS	Analyzed: 09/27/2023 07:42
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-03 A
Preparation Batch: BLI0809	Sample Size: 10 mL
Prepared: 09/26/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	1.00	1.00	4.26	mg/L	



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**MW-3**  
**23I0529-03 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Sampled: 09/21/2023 09:50
Instrument: [CALC] Analyst: EJK	Analyzed: 09/21/2023 19:35
Sample Preparation: Preparation Method: [CALC]	Extract ID: 23I0529-03
Preparation Batch: [CALC]	
Prepared: 09/21/2023	Final Volume: 1

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.0200	ND	mg/L	U



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**MW-3**  
**23I0529-03 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Instrument: LACHAT2 Analyst: EJK	Sampled: 09/21/2023 09:50 Analyzed: 09/21/2023 19:35
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BLI0669 Prepared: 09/21/2023	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23I0529-03 D

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate + Nitrite as N		1	0.010	0.010	ND	mg/L	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.010	0.010	ND	mg/L	U



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**MW-3**  
**23I0529-03 (Water)**

**Wet Chemistry**

Method: EPA 375.2	Instrument: LACHAT2 Analyst: RMS	Sampled: 09/21/2023 09:50 Analyzed: 09/26/2023 07:32
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BLI0737 Prepared: 09/25/2023	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23I0529-03 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	2.00	2.00	18.7	mg/L	



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**MW-3**  
**23I0529-03 (Water)**

**Wet Chemistry**

Method: EPA 410.4	Sampled: 09/21/2023 09:50
Instrument: UV1800-1 Analyst: BF	Analyzed: 10/17/2023 11:38
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-03 D
Preparation Batch: BLJ0460	Sample Size: 2 mL
Prepared: 10/13/2023	Final Volume: 2 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
COD		1	10.0	10.0	ND	mg/L	U



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**MW-3**  
**23I0529-03 (Water)**

**Wet Chemistry**

Method: EPA 9060A	Sampled: 09/21/2023 09:50
Instrument: TOC-LCSH Analyst: RMS	Analyzed: 10/05/2023 16:30
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-03 D
Preparation Batch: BLJ0164	Sample Size: 20 mL
Prepared: 10/05/2023	Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	2.61	mg/L	



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**MW-3**  
**23I0529-03 (Water)**

**Wet Chemistry**

Method: SM 2320 B-97	Instrument: Accumet AB150	Analyst: UW	Sampled: 09/21/2023 09:50	Analyzed: 09/22/2023 14:16
Sample Preparation:	Preparation Method: No Prep Wet Chem	Preparation Batch: BLI0693	Sample Size: 100 mL	Final Volume: 100 mL
	Prepared: 09/22/2023		Extract ID: 23I0529-03 B	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Bicarbonate		1	1.00	1.00	54.8	mg/L CaCO3	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Carbonate		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Hydroxide		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	54.8	mg/L CaCO3	



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**MW-3**  
**23I0529-03 (Water)**

**Wet Chemistry**

Method: SM 4500-H+ B-00	Sampled: 09/21/2023 09:50
Instrument: Accumet AB150 Analyst: SRB	Analyzed: 09/21/2023 16:37
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-03 A
Preparation Batch: BLI0660	Sample Size: 50 mL
Prepared: 09/21/2023	Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
pH		1	0.01	0.01	6.40	pH Units	H





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**MW-3**  
**23I0529-03 (Water)**

**Wet Chemistry**

Method: SM 4500-NH3 H-97	Sampled: 09/21/2023 09:50
Instrument: LCHAT1 Analyst: MAM	Analyzed: 10/04/2023 14:57
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-03 D
Preparation Batch: BLJ0051	Sample Size: 10 mL
Prepared: 10/03/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.040	0.040	ND	mg/L	U



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**MW-3**  
**23I0529-03 (Water)**

**Microbiology**

Method: SM 9222B	Sampled: 09/21/2023 09:50
Instrument: N/A Analyst: EML2	Analyzed: 09/22/2023 14:33
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-03
Preparation Batch: BLI0653	Sample Size: 100 mL
Prepared: 09/21/2023	Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Coliforms		1	1	1	ND	CFU/100 ml	U



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**MW-3**  
**23I0529-04 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 09/21/2023 09:50
Instrument: ICPMS2 Analyst: MCB	Analyzed: 10/07/2023 02:30
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23I0529-04 A 02
Preparation Batch: BLJ0067	Sample Size: 25 mL
Prepared: 10/03/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Zinc, Dissolved	7440-66-6	1	6.00	ND	ug/L	U



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**MW-3**  
**23I0529-04 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 09/21/2023 09:50
Instrument: ICPMS2 Analyst: MCB	Analyzed: 10/20/2023 17:53
Sample Preparation: Preparation Method: RHN EPA 600/4-79-020 4.1.4 HNO3 matrix 5x	Extract ID: 23I0529-04 A 03
Preparation Batch: BLJ0624	Sample Size: 100 mL
Prepared: 10/20/2023	Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0400	0.110	ug/L	



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**MW-3**  
**23I0529-04 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8	Sampled: 09/21/2023 09:50
Instrument: ICPMS1 Analyst: HAL	Analyzed: 10/10/2023 22:55
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23I0529-04 A
Preparation Batch: BLJ0067	Sample Size: 25 mL
Prepared: 10/03/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron, Dissolved	7439-89-6	1	20.0	ND	ug/L	U



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**MW-3**  
**23I0529-04 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D	Preparation Method: WMN (No Prep)	Sample Size: 25 mL	Sampled: 09/21/2023 09:50
Instrument: ICP3 Analyst: DOE	Preparation Batch: BLJ0073	Final Volume: 25 mL	Analyzed: 10/04/2023 11:31
Sample Preparation:	Prepared: 10/03/2023	Extract ID: 23I0529-04 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0060	0.0150	mg/L	
Manganese, Dissolved	7439-96-5	1	0.0040	5.02	mg/L	



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Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

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**MW-10**  
**23I0529-05 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 09/21/2023 10:30

Instrument: NT3 Analyst: TWC

Analyzed: 09/21/2023 18:18

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 23I0529-05 G

Preparation Batch: BLI0632

Sample Size: 10 mL

Prepared: 09/21/2023

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U



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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

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**MW-10**  
**23I0529-05 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 09/21/2023 10:30

Instrument: NT3 Analyst: TWC

Analyzed: 09/21/2023 18:18

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.50	ND	ug/L	U





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**MW-10**  
**23I0529-05 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D Sampled: 09/21/2023 10:30  
Instrument: NT3 Analyst: TWC Analyzed: 09/21/2023 18:18

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Pentanone	107-87-9	1	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	121	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	98.4	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	94.4	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	107	%	



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**MW-10**  
**23I0529-05 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 09/21/2023 10:30
Instrument: NT16 Analyst: TWC	Analyzed: 09/21/2023 19:51
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23I0529-05 F
Preparation Batch: BLI0637	Sample Size: 10 mL
Prepared: 09/21/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	ND	ng/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	109	%	



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**MW-10**  
**23I0529-05 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 09/21/2023 10:30
Instrument: ICP3 Analyst: DOE	Analyzed: 10/04/2023 10:42
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 23I0529-05 C 01
Preparation Batch: BLJ0007	Sample Size: 25 mL
Prepared: 10/02/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	1	0.0500	42.2	mg/L	
Potassium	7440-09-7	1	0.500	1.10	mg/L	
Sodium	7440-23-5	1	0.500	12.9	mg/L	



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**MW-10**  
**23I0529-05 (Water)**

**Wet Chemistry**

Method: EPA 325.2	Instrument: LACHAT2 Analyst: RMS	Sampled: 09/21/2023 10:30 Analyzed: 09/27/2023 07:43
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BLI0809 Prepared: 09/26/2023	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23I0529-05 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	1.00	1.00	8.64	mg/L	



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**MW-10**  
**23I0529-05 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Sampled: 09/21/2023 10:30
Instrument: [CALC] Analyst: EJK	Analyzed: 09/21/2023 19:36
Sample Preparation: Preparation Method: [CALC] Preparation Batch: [CALC] Prepared: 09/21/2023	Extract ID: 23I0529-05
Final Volume: 1	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.0200	ND	mg/L	U



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Oct-2023 17:05
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**MW-10**  
**23I0529-05 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Sampled: 09/21/2023 10:30
Instrument: LACHAT2 Analyst: EJK	Analyzed: 09/21/2023 19:36
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-05 D
Preparation Batch: BLI0669	Sample Size: 10 mL
Prepared: 09/21/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate + Nitrite as N		1	0.010	0.010	ND	mg/L	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.010	0.010	ND	mg/L	U



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**MW-10**  
**23I0529-05 (Water)**

**Wet Chemistry**

Method: EPA 375.2	Instrument: LACHAT2 Analyst: RMS	Sampled: 09/21/2023 10:30 Analyzed: 09/26/2023 07:33
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BLI0737 Prepared: 09/25/2023	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23I0529-05 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	2.00	2.00	11.1	mg/L	



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**MW-10**  
**23I0529-05 (Water)**

**Wet Chemistry**

Method: EPA 410.4	Sampled: 09/21/2023 10:30
Instrument: UV1800-1 Analyst: BF	Analyzed: 10/17/2023 11:39
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-05 D
Preparation Batch: BLJ0460	Sample Size: 2 mL
Prepared: 10/13/2023	Final Volume: 2 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
COD		1	10.0	10.0	ND	mg/L	U





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**MW-10**  
**23I0529-05 (Water)**

**Wet Chemistry**

Method: EPA 9060A	Instrument: TOC-LCSH Analyst: RMS	Sampled: 09/21/2023 10:30 Analyzed: 10/05/2023 19:01
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BLJ0164 Prepared: 10/05/2023	Sample Size: 20 mL Final Volume: 20 mL Extract ID: 23I0529-05 D

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	3.15	mg/L	



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**MW-10**  
**23I0529-05 (Water)**

**Wet Chemistry**

Method: SM 2320 B-97	Instrument: Accumet AB150	Analyst: UW	Sampled: 09/21/2023 10:30	Analyzed: 09/22/2023 16:00
Sample Preparation:	Preparation Method: No Prep Wet Chem	Preparation Batch: BLI0693	Sample Size: 100 mL	Final Volume: 100 mL
	Prepared: 09/22/2023		Extract ID: 23I0529-05 B	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Bicarbonate		1	1.00	1.00	211	mg/L CaCO3	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Carbonate		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Hydroxide		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	211	mg/L CaCO3	



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**MW-10**  
**23I0529-05 (Water)**

**Wet Chemistry**

Method: SM 4500-H+ B-00	Sampled: 09/21/2023 10:30
Instrument: Accumet AB150 Analyst: SRB	Analyzed: 09/21/2023 16:37
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-05 A
Preparation Batch: BLI0660	Sample Size: 50 mL
Prepared: 09/21/2023	Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
pH		1	0.01	0.01	6.59	pH Units	H



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**MW-10**  
**23I0529-05 (Water)**

**Wet Chemistry**

Method: SM 4500-NH3 H-97	Sampled: 09/21/2023 10:30
Instrument: LCHAT1 Analyst: MAM	Analyzed: 10/04/2023 15:05
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-05 D
Preparation Batch: BLJ0051	Sample Size: 10 mL
Prepared: 10/03/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.040	0.040	0.047	mg/L	



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**MW-10**  
**23I0529-05 (Water)**

**Microbiology**

Method: SM 9222B	Sampled: 09/21/2023 10:30
Instrument: N/A Analyst: EML2	Analyzed: 09/22/2023 14:33
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-05
Preparation Batch: BLI0653	Sample Size: 100 mL
Prepared: 09/21/2023	Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Coliforms		1	1	1	ND	CFU/100 ml	U



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**MW-10**  
**23I0529-06 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 09/21/2023 10:30
Instrument: ICPMS2 Analyst: MCB	Analyzed: 10/07/2023 02:34
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23I0529-06 A 02
Preparation Batch: BLJ0067	Sample Size: 25 mL
Prepared: 10/03/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Zinc, Dissolved	7440-66-6	1	6.00	ND	ug/L	U



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**MW-10**  
**23I0529-06 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 09/21/2023 10:30
Instrument: ICPMS2 Analyst: MCB	Analyzed: 10/20/2023 18:00
Sample Preparation: Preparation Method: RHN EPA 600/4-79-020 4.1.4 HNO3 matrix 5x	Extract ID: 23I0529-06 A 03
Preparation Batch: BLJ0624	Sample Size: 100 mL
Prepared: 10/20/2023	Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0400	1.85	ug/L	



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**MW-10**  
**23I0529-06 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8	Sampled: 09/21/2023 10:30
Instrument: ICPMS1 Analyst: HAL	Analyzed: 10/10/2023 22:58
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23I0529-06 A
Preparation Batch: BLJ0067	Sample Size: 25 mL
Prepared: 10/03/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron, Dissolved	7439-89-6	2	40.0	120	ug/L	D





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**MW-10**  
**23I0529-06 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D	Sampled: 09/21/2023 10:30
Instrument: ICP3 Analyst: DOE	Analyzed: 10/04/2023 12:38
Sample Preparation: Preparation Method: WMN (No Prep)	Extract ID: 23I0529-06 A 01
Preparation Batch: BLJ0073	Sample Size: 25 mL
Prepared: 10/03/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0060	0.0141	mg/L	
Manganese, Dissolved	7439-96-5	1	0.0040	3.74	mg/L	



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Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
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**MW-6**  
**23I0529-07 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 09/21/2023 11:00

Instrument: NT3 Analyst: TWC

Analyzed: 09/21/2023 18:40

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 23I0529-07 G

Preparation Batch: BLI0632

Sample Size: 10 mL

Prepared: 09/21/2023

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U



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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
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**MW-6**  
**23I0529-07 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 09/21/2023 11:00

Instrument: NT3 Analyst: TWC

Analyzed: 09/21/2023 18:40

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	2.05	ug/L	
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.50	ND	ug/L	U



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**MW-6**  
**23I0529-07 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D Sampled: 09/21/2023 11:00  
Instrument: NT3 Analyst: TWC Analyzed: 09/21/2023 18:40

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Pentanone	107-87-9	1	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	115	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	101	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	97.1	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	103	%	



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**MW-6**  
**23I0529-07 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 09/21/2023 11:00
Instrument: NT16 Analyst: TWC	Analyzed: 09/21/2023 20:11
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23I0529-07 F
Preparation Batch: BLI0637	Sample Size: 10 mL
Prepared: 09/21/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	ND	ng/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>108</i>	<i>%</i>	



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**MW-6**  
**23I0529-07 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 09/21/2023 11:00
Instrument: ICP3 Analyst: DOE	Analyzed: 10/04/2023 10:45
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 23I0529-07 C 01
Preparation Batch: BLJ0007	Sample Size: 25 mL
Prepared: 10/02/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	1	0.0500	39.3	mg/L	
Potassium	7440-09-7	1	0.500	2.89	mg/L	
Sodium	7440-23-5	1	0.500	7.43	mg/L	



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**MW-6**  
**23I0529-07 (Water)**

**Wet Chemistry**

Method: EPA 325.2	Sampled: 09/21/2023 11:00
Instrument: LACHAT2 Analyst: RMS	Analyzed: 09/27/2023 07:44
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-07 A
Preparation Batch: BLI0809	Sample Size: 10 mL
Prepared: 09/26/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	1.00	1.00	2.61	mg/L	



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**MW-6**  
**23I0529-07 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Sampled: 09/21/2023 11:00
Instrument: [CALC] Analyst: EJK	Analyzed: 09/21/2023 19:37
Sample Preparation: Preparation Method: [CALC] Preparation Batch: [CALC] Prepared: 09/21/2023	Extract ID: 23I0529-07
Final Volume: 1	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.0200	ND	mg/L	U





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**MW-6**  
**23I0529-07 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Instrument: LACHAT2 Analyst: EJK	Sampled: 09/21/2023 11:00 Analyzed: 09/21/2023 19:37
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BLI0669 Prepared: 09/21/2023	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23I0529-07 D

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate + Nitrite as N		1	0.010	0.010	ND	mg/L	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.010	0.010	ND	mg/L	U



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Oct-2023 17:05
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**MW-6**  
**23I0529-07 (Water)**

**Wet Chemistry**

Method: EPA 375.2	Sampled: 09/21/2023 11:00
Instrument: LACHAT2 Analyst: RMS	Analyzed: 09/26/2023 07:35
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-07 A
Preparation Batch: BLI0737	Sample Size: 10 mL
Prepared: 09/25/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	2.00	2.00	7.52	mg/L	



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**MW-6**  
**23I0529-07 (Water)**

**Wet Chemistry**

Method: EPA 410.4	Sampled: 09/21/2023 11:00
Instrument: UV1800-1 Analyst: BF	Analyzed: 10/17/2023 11:41
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-07 D
Preparation Batch: BLJ0460	Sample Size: 2 mL
Prepared: 10/13/2023	Final Volume: 2 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
COD		1	10.0	10.0	ND	mg/L	U



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**MW-6**  
**23I0529-07 (Water)**

**Wet Chemistry**

Method: EPA 9060A	Instrument: TOC-LCSH Analyst: RMS	Sampled: 09/21/2023 11:00	Analyzed: 10/05/2023 19:28
Sample Preparation:	Preparation Method: No Prep Wet Chem	Sample Size: 20 mL	Extract ID: 23I0529-07 D
	Preparation Batch: BLJ0164	Final Volume: 20 mL	
	Prepared: 10/05/2023		

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	2.06	mg/L	



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**MW-6**  
**23I0529-07 (Water)**

**Wet Chemistry**

Method: SM 2320 B-97	Instrument: Accumet AB150	Analyst: UW	Sampled: 09/21/2023 11:00	Analyzed: 09/22/2023 16:00
Sample Preparation:	Preparation Method: No Prep Wet Chem	Preparation Batch: BLI0693	Sample Size: 100 mL	Final Volume: 100 mL
	Prepared: 09/22/2023		Extract ID: 23I0529-07 B	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Bicarbonate		1	1.00	1.00	198	mg/L CaCO3	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Carbonate		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Hydroxide		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	198	mg/L CaCO3	



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**MW-6**  
**23I0529-07 (Water)**

**Wet Chemistry**

Method: SM 4500-H+ B-00	Instrument: Accumet AB150	Analyst: SRB	Sampled: 09/21/2023 11:00	Analyzed: 09/21/2023 16:37
Sample Preparation:	Preparation Method: No Prep Wet Chem	Preparation Batch: BLI0660	Sample Size: 50 mL	Extract ID: 23I0529-07 A
	Prepared: 09/21/2023		Final Volume: 50 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
pH		1	0.01	0.01	6.52	pH Units	H



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**MW-6**  
**23I0529-07 (Water)**

**Microbiology**

Method: SM 9222B	Sampled: 09/21/2023 11:00
Instrument: N/A Analyst: EML2	Analyzed: 09/22/2023 14:33
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-07
Preparation Batch: BLI0653	Sample Size: 100 mL
Prepared: 09/21/2023	Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Coliforms		1	1	1	ND	CFU/100 ml	U



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**MW-6**  
**23I0529-07RE2 (Water)**

**Wet Chemistry**

Method: SM 4500-NH3 H-97	Sampled: 09/21/2023 11:00
Instrument: LCHAT1 Analyst: MAM	Analyzed: 10/04/2023 15:52
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-07RE2 D
Preparation Batch: BLJ0051	Sample Size: 10 mL
Prepared: 10/03/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	2	0.080	0.080	1.13	mg/L	D





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**MW-6**  
**23I0529-08 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 09/21/2023 11:00
Instrument: ICPMS2 Analyst: MCB	Analyzed: 10/07/2023 02:37
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23I0529-08 A 02
Preparation Batch: BLJ0067	Sample Size: 25 mL
Prepared: 10/03/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Zinc, Dissolved	7440-66-6	1	6.00	ND	ug/L	U



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**MW-6**  
**23I0529-08 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 09/21/2023 11:00
Instrument: ICPMS2 Analyst: MCB	Analyzed: 10/20/2023 18:06
Sample Preparation: Preparation Method: RHN EPA 600/4-79-020 4.1.4 HNO3 matrix 5x	Extract ID: 23I0529-08 A 03
Preparation Batch: BLJ0624	Sample Size: 100 mL
Prepared: 10/20/2023	Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0400	0.419	ug/L	



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**MW-6**  
**23I0529-08 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8	Sampled: 09/21/2023 11:00
Instrument: ICPMS1 Analyst: HAL	Analyzed: 10/10/2023 23:01
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23I0529-08 A
Preparation Batch: BLJ0067	Sample Size: 25 mL
Prepared: 10/03/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron, Dissolved	7439-89-6	2	40.0	391	ug/L	D



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**MW-6**  
**23I0529-08 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D	Sampled: 09/21/2023 11:00
Instrument: ICP3 Analyst: DOE	Analyzed: 10/04/2023 12:41
Sample Preparation: Preparation Method: WMN (No Prep)	Extract ID: 23I0529-08 A 01
Preparation Batch: BLJ0073	Sample Size: 25 mL
Prepared: 10/03/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0060	0.0257	mg/L	
Manganese, Dissolved	7439-96-5	1	0.0040	0.462	mg/L	



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**MW-8**  
**23I0529-09 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 09/21/2023 13:05

Instrument: NT3 Analyst: TWC

Analyzed: 09/21/2023 19:02

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 23I0529-09 G

Preparation Batch: BLI0632

Sample Size: 10 mL

Prepared: 09/21/2023

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U



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Project Manager: Eric Caddy

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**MW-8**  
**23I0529-09 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 09/21/2023 13:05

Instrument: NT3 Analyst: TWC

Analyzed: 09/21/2023 19:02

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.50	ND	ug/L	U



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**MW-8**  
**23I0529-09 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D Sampled: 09/21/2023 13:05  
Instrument: NT3 Analyst: TWC Analyzed: 09/21/2023 19:02

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Pentanone	107-87-9	1	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	114	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	100	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	100	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	102	%	



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**MW-8**  
**23I0529-09 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 09/21/2023 13:05
Instrument: NT16 Analyst: TWC	Analyzed: 09/21/2023 20:32
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23I0529-09 F
Preparation Batch: BLI0637	Sample Size: 10 mL
Prepared: 09/21/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	ND	ng/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>107</i>	<i>%</i>	





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**MW-8**  
**23I0529-09 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 09/21/2023 13:05
Instrument: ICP3 Analyst: DOE	Analyzed: 10/04/2023 10:48
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 23I0529-09 C 01
Preparation Batch: BLJ0007	Sample Size: 25 mL
Prepared: 10/02/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	1	0.0500	10.8	mg/L	
Potassium	7440-09-7	1	0.500	0.850	mg/L	
Sodium	7440-23-5	1	0.500	6.09	mg/L	



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**MW-8**  
**23I0529-09 (Water)**

**Wet Chemistry**

Method: EPA 325.2	Instrument: LACHAT2 Analyst: RMS	Sampled: 09/21/2023 13:05 Analyzed: 09/27/2023 07:53
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BLI0809 Prepared: 09/26/2023	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23I0529-09 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	1.00	1.00	2.27	mg/L	



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**MW-8**  
**23I0529-09 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Sampled: 09/21/2023 13:05
Instrument: [CALC] Analyst: EJK	Analyzed: 09/21/2023 19:39
Sample Preparation: Preparation Method: [CALC] Preparation Batch: [CALC] Prepared: 09/21/2023	Extract ID: 23I0529-09
Final Volume: 1	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.0200	0.0342	mg/L	



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**MW-8**  
**23I0529-09 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Sampled: 09/21/2023 13:05
Instrument: LACHAT2 Analyst: EJK	Analyzed: 09/21/2023 19:39
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-09 D
Preparation Batch: BLI0669	Sample Size: 10 mL
Prepared: 09/21/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate + Nitrite as N		1	0.010	0.010	0.034	mg/L	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.010	0.010	ND	mg/L	U



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**MW-8**  
**23I0529-09 (Water)**

**Wet Chemistry**

Method: EPA 375.2	Instrument: LACHAT2 Analyst: RMS	Sampled: 09/21/2023 13:05 Analyzed: 09/26/2023 07:36
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BLI0737 Prepared: 09/25/2023	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23I0529-09 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	2.00	2.00	3.86	mg/L	



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**MW-8**  
**23I0529-09 (Water)**

**Wet Chemistry**

Method: EPA 410.4	Sampled: 09/21/2023 13:05
Instrument: UV1800-1 Analyst: BF	Analyzed: 10/17/2023 11:42
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-09 D
Preparation Batch: BLJ0460	Sample Size: 2 mL
Prepared: 10/13/2023	Final Volume: 2 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
COD		1	10.0	10.0	ND	mg/L	U



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**MW-8**  
**23I0529-09 (Water)**

**Wet Chemistry**

Method: EPA 9060A	Sampled: 09/21/2023 13:05
Instrument: TOC-LCSH Analyst: RMS	Analyzed: 10/05/2023 19:50
Sample Preparation:	Preparation Method: No Prep Wet Chem
	Preparation Batch: BLJ0164
	Prepared: 10/05/2023
	Sample Size: 20 mL
	Final Volume: 20 mL
	Extract ID: 23I0529-09 D

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	0.75	mg/L	



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**MW-8**  
**23I0529-09 (Water)**

**Wet Chemistry**

Method: SM 2320 B-97	Instrument: Accumet AB150	Analyst: UW	Sampled: 09/21/2023 13:05	Analyzed: 09/22/2023 14:16
Sample Preparation:	Preparation Method: No Prep Wet Chem	Preparation Batch: BLI0693	Sample Size: 100 mL	Final Volume: 100 mL
	Prepared: 09/22/2023		Extract ID: 23I0529-09 B	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Bicarbonate		1	1.00	1.00	71.3	mg/L CaCO3	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Carbonate		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Hydroxide		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	71.3	mg/L CaCO3	





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**MW-8**  
**23I0529-09 (Water)**

**Wet Chemistry**

Method: SM 4500-H+ B-00	Sampled: 09/21/2023 13:05
Instrument: Accumet AB150 Analyst: SRB	Analyzed: 09/21/2023 16:37
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-09 A
Preparation Batch: BLI0660	Sample Size: 50 mL
Prepared: 09/21/2023	Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
pH		1	0.01	0.01	6.55	pH Units	H



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**MW-8**  
**23I0529-09 (Water)**

**Wet Chemistry**

Method: SM 4500-NH3 H-97	Instrument: LACHAT1 Analyst: MAM	Sampled: 09/21/2023 13:05 Analyzed: 10/04/2023 15:07
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BLJ0051 Prepared: 10/03/2023	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23I0529-09 D

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.040	0.040	ND	mg/L	U



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**MW-8**  
**23I0529-09 (Water)**

**Microbiology**

Method: SM 9222B	Sampled: 09/21/2023 13:05
Instrument: N/A Analyst: EML2	Analyzed: 09/22/2023 14:33
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-09
Preparation Batch: BLI0653	Sample Size: 100 mL
Prepared: 09/21/2023	Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Coliforms		1	1	1	ND	CFU/100 ml	U



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**MW-8**  
**23I0529-10 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 09/21/2023 13:05
Instrument: ICPMS2 Analyst: MCB	Analyzed: 10/07/2023 02:41
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23I0529-10 A 02
Preparation Batch: BLJ0067	Sample Size: 25 mL
Prepared: 10/03/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Zinc, Dissolved	7440-66-6	1	6.00	ND	ug/L	U



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**MW-8**  
**23I0529-10 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 09/21/2023 13:05
Instrument: ICPMS2 Analyst: MCB	Analyzed: 10/20/2023 18:09
Sample Preparation: Preparation Method: RHN EPA 600/4-79-020 4.1.4 HNO3 matrix 5x	Extract ID: 23I0529-10 A 03
Preparation Batch: BLJ0624	Sample Size: 100 mL
Prepared: 10/20/2023	Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0400	1.15	ug/L	



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**MW-8**  
**23I0529-10 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8	Sampled: 09/21/2023 13:05
Instrument: ICPMS1 Analyst: HAL	Analyzed: 10/10/2023 23:03
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23I0529-10 A
Preparation Batch: BLJ0067	Sample Size: 25 mL
Prepared: 10/03/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron, Dissolved	7439-89-6	1	20.0	317	ug/L	



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Project Number: 533022  
Project Manager: Eric Caddy

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**MW-8**  
**23I0529-10 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D	Sampled: 09/21/2023 13:05
Instrument: ICP3 Analyst: DOE	Analyzed: 10/04/2023 12:44
Sample Preparation: Preparation Method: WMN (No Prep)	Extract ID: 23I0529-10 A 01
Preparation Batch: BLJ0073	Sample Size: 25 mL
Prepared: 10/03/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0060	ND	mg/L	U
Manganese, Dissolved	7439-96-5	1	0.0040	1.52	mg/L	



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Project Number: 533022  
Project Manager: Eric Caddy

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**MW-12**  
**23I0529-11 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 09/21/2023 00:00

Instrument: NT3 Analyst: TWC

Analyzed: 09/21/2023 19:25

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 23I0529-11 G

Preparation Batch: BLI0632

Sample Size: 10 mL

Prepared: 09/21/2023

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U





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Project Number: 533022  
Project Manager: Eric Caddy

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MW-12  
23I0529-11 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 09/21/2023 00:00

Instrument: NT3 Analyst: TWC

Analyzed: 09/21/2023 19:25

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.50	ND	ug/L	U



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**MW-12**  
**23I0529-11 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D Sampled: 09/21/2023 00:00  
Instrument: NT3 Analyst: TWC Analyzed: 09/21/2023 19:25

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Pentanone	107-87-9	1	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	109	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	98.6	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	93.6	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	103	%	



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**MW-12**  
**23I0529-11 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 09/21/2023 00:00
Instrument: NT16 Analyst: TWC	Analyzed: 09/21/2023 20:53
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23I0529-11 F
Preparation Batch: BLI0637	Sample Size: 10 mL
Prepared: 09/21/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	ND	ng/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	107	%	



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**MW-12**  
**23I0529-11 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 09/21/2023 00:00
Instrument: ICP3 Analyst: DOE	Analyzed: 10/04/2023 10:51
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 23I0529-11 C 01
Preparation Batch: BLJ0007	Sample Size: 25 mL
Prepared: 10/02/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	1	0.0500	11.6	mg/L	
Potassium	7440-09-7	1	0.500	0.913	mg/L	
Sodium	7440-23-5	1	0.500	6.30	mg/L	



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**MW-12**  
**23I0529-11 (Water)**

**Wet Chemistry**

Method: EPA 325.2	Instrument: LACHAT2 Analyst: RMS	Sampled: 09/21/2023 00:00 Analyzed: 09/27/2023 07:55
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BLI0809 Prepared: 09/26/2023	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23I0529-11 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	1.00	1.00	2.25	mg/L	



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**MW-12**  
**23I0529-11 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Sampled: 09/21/2023 00:00
Instrument: [CALC] Analyst: EJK	Analyzed: 09/21/2023 19:40
Sample Preparation: Preparation Method: [CALC] Preparation Batch: [CALC] Prepared: 09/21/2023	Extract ID: 23I0529-11
Final Volume: 1	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.0200	0.0317	mg/L	



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**MW-12**  
**23I0529-11 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Instrument: LACHAT2 Analyst: EJK	Sampled: 09/21/2023 00:00 Analyzed: 09/21/2023 19:40
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BLI0669 Prepared: 09/21/2023	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23I0529-11 D

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate + Nitrite as N		1	0.010	0.010	0.032	mg/L	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.010	0.010	ND	mg/L	U



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**MW-12**  
**23I0529-11 (Water)**

**Wet Chemistry**

Method: EPA 375.2	Instrument: LACHAT2 Analyst: RMS	Sampled: 09/21/2023 00:00 Analyzed: 09/26/2023 07:37
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BLI0737 Prepared: 09/25/2023	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23I0529-11 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	2.00	2.00	3.83	mg/L	





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**MW-12**  
**23I0529-11 (Water)**

**Wet Chemistry**

Method: EPA 410.4	Sampled: 09/21/2023 00:00
Instrument: UV1800-1 Analyst: BF	Analyzed: 10/17/2023 11:42
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-11 D
Preparation Batch: BLJ0460	Sample Size: 2 mL
Prepared: 10/13/2023	Final Volume: 2 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
COD		1	10.0	10.0	ND	mg/L	U



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**MW-12**  
**23I0529-11 (Water)**

**Wet Chemistry**

Method: EPA 9060A	Instrument: TOC-LCSH Analyst: RMS	Sampled: 09/21/2023 00:00 Analyzed: 10/05/2023 20:12
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BLJ0164 Prepared: 10/05/2023	Sample Size: 20 mL Final Volume: 20 mL Extract ID: 23I0529-11 D

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	0.70	mg/L	



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**MW-12**  
**23I0529-11 (Water)**

**Wet Chemistry**

Method: SM 2320 B-97	Sampled: 09/21/2023 00:00
Instrument: Accumet AB150 Analyst: UW	Analyzed: 09/22/2023 14:16
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-11 B
Preparation Batch: BLI0693	Sample Size: 100 mL
Prepared: 09/22/2023	Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Bicarbonate		1	1.00	1.00	70.1	mg/L CaCO3	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Carbonate		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Hydroxide		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	70.1	mg/L CaCO3	



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**MW-12**  
**23I0529-11 (Water)**

**Wet Chemistry**

Method: SM 4500-H+ B-00	Instrument: Accumet AB150	Analyst: SRB	Sampled: 09/21/2023 00:00	Analyzed: 09/21/2023 16:37
Sample Preparation:	Preparation Method: No Prep Wet Chem	Preparation Batch: BLI0660	Sample Size: 50 mL	Final Volume: 50 mL
	Prepared: 09/21/2023		Extract ID: 23I0529-11 A	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
pH		1	0.01	0.01	6.51	pH Units	H



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**MW-12**  
**23I0529-11 (Water)**

**Wet Chemistry**

Method: SM 4500-NH3 H-97	Sampled: 09/21/2023 00:00
Instrument: LCHAT1 Analyst: MAM	Analyzed: 10/04/2023 15:08
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-11 D
Preparation Batch: BLJ0051	Sample Size: 10 mL
Prepared: 10/03/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.040	0.040	ND	mg/L	U



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**MW-12**  
**23I0529-11 (Water)**

**Microbiology**

Method: SM 9222B	Sampled: 09/21/2023 00:00
Instrument: N/A Analyst: EML2	Analyzed: 09/22/2023 14:33
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23I0529-11
Preparation Batch: BLI0653	Sample Size: 100 mL
Prepared: 09/21/2023	Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Coliforms		1	1	1	ND	CFU/100 ml	H, U



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**MW-12**  
**23I0529-12 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 09/21/2023 00:00
Instrument: ICPMS2 Analyst: MCB	Analyzed: 10/07/2023 02:45
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23I0529-12 A 02
Preparation Batch: BLJ0067	Sample Size: 25 mL
Prepared: 10/03/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Zinc, Dissolved	7440-66-6	1	6.00	ND	ug/L	U



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Oct-2023 17:05
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**MW-12**  
**23I0529-12 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 09/21/2023 00:00
Instrument: ICPMS2 Analyst: MCB	Analyzed: 10/20/2023 18:14
Sample Preparation: Preparation Method: RHN EPA 600/4-79-020 4.1.4 HNO3 matrix 5x	Extract ID: 23I0529-12 A 03
Preparation Batch: BLJ0624	Sample Size: 100 mL
Prepared: 10/20/2023	Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0400	1.09	ug/L	





TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Oct-2023 17:05
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**MW-12**  
**23I0529-12 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8	Sampled: 09/21/2023 00:00
Instrument: ICPMS1 Analyst: HAL	Analyzed: 10/10/2023 23:06
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23I0529-12 A
Preparation Batch: BLJ0067	Sample Size: 25 mL
Prepared: 10/03/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron, Dissolved	7439-89-6	1	20.0	313	ug/L	



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Oct-2023 17:05
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**MW-12**  
**23I0529-12 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D	Sampled: 09/21/2023 00:00
Instrument: ICP3 Analyst: DOE	Analyzed: 10/04/2023 12:47
Sample Preparation: Preparation Method: WMN (No Prep)	Extract ID: 23I0529-12 A 01
Preparation Batch: BLJ0073	Sample Size: 25 mL
Prepared: 10/03/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0060	ND	mg/L	U
Manganese, Dissolved	7439-96-5	1	0.0040	1.52	mg/L	



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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

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**Trip Blanks**  
**23I0529-13 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 09/21/2023 08:55

Instrument: NT3 Analyst: TWC

Analyzed: 09/21/2023 17:12

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 23I0529-13 B

Preparation Batch: BLI0632

Sample Size: 10 mL

Prepared: 09/21/2023

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U



TRC Companies, Inc  
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Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
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**Trip Blanks**  
**23I0529-13 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 09/21/2023 08:55

Instrument: NT3 Analyst: TWC

Analyzed: 09/21/2023 17:12

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.50	ND	ug/L	U



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**Trip Blanks**  
**23I0529-13 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D Sampled: 09/21/2023 08:55  
Instrument: NT3 Analyst: TWC Analyzed: 09/21/2023 17:12

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Pentanone	107-87-9	1	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	106	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	101	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	96.9	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	101	%	



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**Trip Blanks**  
**23I0529-13 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 09/21/2023 08:55
Instrument: NT16 Analyst: TWC	Analyzed: 09/21/2023 18:49
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23I0529-13 A
Preparation Batch: BLI0637	Sample Size: 10 mL
Prepared: 09/21/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	ND	ng/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>108</i>	<i>%</i>	



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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
25-Oct-2023 17:05

**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BLI0632 - EPA 8260D**

Instrument: NT3 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLI0632-BLK1)</b>		Prepared: 21-Sep-2023 Analyzed: 21-Sep-2023 12:45								
Chloromethane	ND	0.50	ug/L							U
Vinyl Chloride	ND	0.20	ug/L							U
Bromomethane	ND	1.00	ug/L							U
Chloroethane	ND	0.20	ug/L							U
Trichlorofluoromethane	ND	0.20	ug/L							U
Acrolein	ND	5.00	ug/L							U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.20	ug/L							U
Acetone	ND	5.00	ug/L							U
1,1-Dichloroethene	ND	0.20	ug/L							U
Iodomethane	ND	1.00	ug/L							U
Methylene Chloride	ND	1.00	ug/L							U
Acrylonitrile	ND	1.00	ug/L							U
Carbon Disulfide	ND	0.20	ug/L							U
trans-1,2-Dichloroethene	ND	0.20	ug/L							U
Vinyl Acetate	ND	0.20	ug/L							U
1,1-Dichloroethane	ND	0.20	ug/L							U
2-Butanone	ND	5.00	ug/L							U
2,2-Dichloropropane	ND	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Chloroform	ND	0.20	ug/L							U
Bromochloromethane	ND	0.20	ug/L							U
1,1,1-Trichloroethane	ND	0.20	ug/L							U
1,1-Dichloropropene	ND	0.20	ug/L							U
Carbon tetrachloride	ND	0.20	ug/L							U
1,2-Dichloroethane	ND	0.20	ug/L							U
Benzene	ND	0.20	ug/L							U
Trichloroethene	ND	0.20	ug/L							U
1,2-Dichloropropane	ND	0.20	ug/L							U
Bromodichloromethane	ND	0.20	ug/L							U
Dibromomethane	ND	0.20	ug/L							U
2-Chloroethyl vinyl ether	ND	1.00	ug/L							U
4-Methyl-2-Pentanone	ND	5.00	ug/L							U
cis-1,3-Dichloropropene	ND	0.20	ug/L							U
Toluene	ND	0.20	ug/L							U
trans-1,3-Dichloropropene	ND	0.20	ug/L							U



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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
25-Oct-2023 17:05

**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BLI0632 - EPA 8260D**

Instrument: NT3 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLI0632-BLK1)</b>		Prepared: 21-Sep-2023 Analyzed: 21-Sep-2023 12:45								
2-Hexanone	ND	5.00	ug/L							U
1,1,2-Trichloroethane	ND	0.20	ug/L							U
1,3-Dichloropropane	ND	0.20	ug/L							U
Tetrachloroethene	ND	0.20	ug/L							U
Dibromochloromethane	ND	0.20	ug/L							U
1,2-Dibromoethane	ND	0.20	ug/L							U
Chlorobenzene	ND	0.20	ug/L							U
Ethylbenzene	ND	0.20	ug/L							U
1,1,1,2-Tetrachloroethane	ND	0.20	ug/L							U
m,p-Xylene	ND	0.40	ug/L							U
o-Xylene	ND	0.20	ug/L							U
Xylenes, total	ND	0.60	ug/L							U
Styrene	ND	0.20	ug/L							U
Bromoform	ND	0.20	ug/L							U
1,1,2,2-Tetrachloroethane	ND	0.20	ug/L							U
1,2,3-Trichloropropane	ND	0.50	ug/L							U
trans-1,4-Dichloro 2-Butene	ND	1.00	ug/L							U
n-Propylbenzene	ND	0.20	ug/L							U
Bromobenzene	ND	0.20	ug/L							U
Isopropyl Benzene	ND	0.20	ug/L							U
2-Chlorotoluene	ND	0.20	ug/L							U
4-Chlorotoluene	ND	0.20	ug/L							U
t-Butylbenzene	ND	0.20	ug/L							U
1,3,5-Trimethylbenzene	ND	0.20	ug/L							U
1,2,4-Trimethylbenzene	ND	0.20	ug/L							U
s-Butylbenzene	ND	0.20	ug/L							U
4-Isopropyl Toluene	ND	0.20	ug/L							U
1,3-Dichlorobenzene	ND	0.20	ug/L							U
1,4-Dichlorobenzene	ND	0.20	ug/L							U
n-Butylbenzene	ND	0.20	ug/L							U
1,2-Dichlorobenzene	ND	0.20	ug/L							U
1,2-Dibromo-3-chloropropane	ND	0.50	ug/L							U
1,2,4-Trichlorobenzene	ND	0.50	ug/L							U
Hexachloro-1,3-Butadiene	ND	2.00	ug/L							U
Naphthalene	ND	0.50	ug/L							U





TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
25-Oct-2023 17:05

**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BLI0632 - EPA 8260D**

Instrument: NT3 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLI0632-BLK1)</b>		Prepared: 21-Sep-2023 Analyzed: 21-Sep-2023 12:45								
1,2,3-Trichlorobenzene	ND	0.50	ug/L							U
Dichlorodifluoromethane	ND	0.20	ug/L							U
Methyl tert-butyl Ether	ND	0.50	ug/L							U
2-Pentanone	ND	5.00	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.19		ug/L	5.00		104	80-129			
<i>Surrogate: Toluene-d8</i>	4.98		ug/L	5.00		99.6	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.72		ug/L	5.00		94.4	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	5.00		ug/L	5.00		99.9	80-120			



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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
25-Oct-2023 17:05

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLI0632 - EPA 8260D

Instrument: NT3 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS (BLI0632-BS1)</b>		Prepared: 21-Sep-2023 Analyzed: 21-Sep-2023 11:16								
Chloromethane	9.52	0.50	ug/L	10.0		95.2	60-138			
Vinyl Chloride	10.3	0.20	ug/L	10.0		103	66-133			
Bromomethane	10.3	1.00	ug/L	10.0		103	72-131			
Chloroethane	10.3	0.20	ug/L	10.0		103	60-155			
Trichlorofluoromethane	10.4	0.20	ug/L	10.0		104	62-141			
Acrolein	52.0	5.00	ug/L	50.0		104	52-190			
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.5	0.20	ug/L	10.0		105	76-129			
Acetone	47.0	5.00	ug/L	50.0		94.0	58-142			
1,1-Dichloroethene	10.1	0.20	ug/L	10.0		101	69-135			
Iodomethane	10.5	1.00	ug/L	10.0		105	56-147			
Methylene Chloride	9.81	1.00	ug/L	10.0		98.1	65-135			
Acrylonitrile	8.54	1.00	ug/L	10.0		85.4	64-134			
Carbon Disulfide	10.2	0.20	ug/L	10.0		102	78-125			
trans-1,2-Dichloroethene	10.2	0.20	ug/L	10.0		102	78-128			
Vinyl Acetate	9.83	0.20	ug/L	10.0		98.3	55-138			
1,1-Dichloroethane	9.96	0.20	ug/L	10.0		99.6	76-124			
2-Butanone	48.7	5.00	ug/L	50.0		97.4	61-140			
2,2-Dichloropropane	10.5	0.20	ug/L	10.0		105	66-147			
cis-1,2-Dichloroethene	9.81	0.20	ug/L	10.0		98.1	80-121			
Chloroform	10.3	0.20	ug/L	10.0		103	80-122			
Bromochloromethane	9.93	0.20	ug/L	10.0		99.3	80-121			
1,1,1-Trichloroethane	10.1	0.20	ug/L	10.0		101	79-123			
1,1-Dichloropropene	10.2	0.20	ug/L	10.0		102	80-127			
Carbon tetrachloride	10.4	0.20	ug/L	10.0		104	53-137			
1,2-Dichloroethane	9.62	0.20	ug/L	10.0		96.2	75-123			
Benzene	10.4	0.20	ug/L	10.0		104	80-120			
Trichloroethene	9.66	0.20	ug/L	10.0		96.6	80-120			
1,2-Dichloropropane	9.99	0.20	ug/L	10.0		99.9	80-120			
Bromodichloromethane	10.3	0.20	ug/L	10.0		103	80-121			
Dibromomethane	10.1	0.20	ug/L	10.0		101	80-120			
2-Chloroethyl vinyl ether	9.97	1.00	ug/L	10.0		99.7	64-120			
4-Methyl-2-Pentanone	48.0	5.00	ug/L	50.0		96.0	67-133			
cis-1,3-Dichloropropene	10.2	0.20	ug/L	10.0		102	80-124			
Toluene	10.1	0.20	ug/L	10.0		101	80-120			
trans-1,3-Dichloropropene	10.2	0.20	ug/L	10.0		102	71-127			



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
25-Oct-2023 17:05

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLI0632 - EPA 8260D

Instrument: NT3 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS (BLI0632-BS1)</b>		Prepared: 21-Sep-2023 Analyzed: 21-Sep-2023 11:16								
2-Hexanone	49.0	5.00	ug/L	50.0		98.1	69-133			
1,1,2-Trichloroethane	10.1	0.20	ug/L	10.0		101	80-121			
1,3-Dichloropropane	9.82	0.20	ug/L	10.0		98.2	80-120			
Tetrachloroethene	9.99	0.20	ug/L	10.0		99.9	80-120			
Dibromochloromethane	10.8	0.20	ug/L	10.0		108	65-135			
1,2-Dibromoethane	10.2	0.20	ug/L	10.0		102	80-121			
Chlorobenzene	10.1	0.20	ug/L	10.0		101	80-120			
Ethylbenzene	10.1	0.20	ug/L	10.0		101	80-120			
1,1,1,2-Tetrachloroethane	10.2	0.20	ug/L	10.0		102	80-120			
m,p-Xylene	20.3	0.40	ug/L	20.0		102	80-121			
o-Xylene	10.4	0.20	ug/L	10.0		104	80-121			
Xylenes, total	30.7	0.60	ug/L	30.0		102	76-127			
Styrene	10.5	0.20	ug/L	10.0		105	80-124			
Bromoform	9.13	0.20	ug/L	10.0		91.3	51-134			
1,1,2,2-Tetrachloroethane	9.91	0.20	ug/L	10.0		99.1	77-123			
1,2,3-Trichloropropane	9.22	0.50	ug/L	10.0		92.2	76-125			
trans-1,4-Dichloro 2-Butene	9.68	1.00	ug/L	10.0		96.8	55-129			
n-Propylbenzene	10.3	0.20	ug/L	10.0		103	78-130			
Bromobenzene	9.70	0.20	ug/L	10.0		97.0	80-120			
Isopropyl Benzene	10.2	0.20	ug/L	10.0		102	80-128			
2-Chlorotoluene	9.65	0.20	ug/L	10.0		96.5	78-122			
4-Chlorotoluene	10.4	0.20	ug/L	10.0		104	80-121			
t-Butylbenzene	10.1	0.20	ug/L	10.0		101	78-125			
1,3,5-Trimethylbenzene	10.0	0.20	ug/L	10.0		100	80-129			
1,2,4-Trimethylbenzene	10.2	0.20	ug/L	10.0		102	80-127			
s-Butylbenzene	10.3	0.20	ug/L	10.0		103	78-129			
4-Isopropyl Toluene	10.4	0.20	ug/L	10.0		104	79-130			
1,3-Dichlorobenzene	9.74	0.20	ug/L	10.0		97.4	80-120			
1,4-Dichlorobenzene	9.73	0.20	ug/L	10.0		97.3	80-120			
n-Butylbenzene	10.5	0.20	ug/L	10.0		105	74-129			
1,2-Dichlorobenzene	9.77	0.20	ug/L	10.0		97.7	80-120			
1,2-Dibromo-3-chloropropane	9.22	0.50	ug/L	10.0		92.2	62-123			
1,2,4-Trichlorobenzene	9.98	0.50	ug/L	10.0		99.8	64-124			
Hexachloro-1,3-Butadiene	10.0	2.00	ug/L	10.0		100	65-145			
Naphthalene	9.95	0.50	ug/L	10.0		99.5	50-134			



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
25-Oct-2023 17:05

**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BLI0632 - EPA 8260D**

Instrument: NT3 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS (BLI0632-BS1)</b>		Prepared: 21-Sep-2023 Analyzed: 21-Sep-2023 11:16								
1,2,3-Trichlorobenzene	10.1	0.50	ug/L	10.0		101	49-133			
Dichlorodifluoromethane	10.0	0.20	ug/L	10.0		100	48-147			
Methyl tert-butyl Ether	10.2	0.50	ug/L	10.0		102	71-132			
2-Pentanone	48.2	5.00	ug/L	50.0		96.5	69-134			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.14		ug/L	5.00		103	80-129			
<i>Surrogate: Toluene-d8</i>	5.06		ug/L	5.00		101	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.92		ug/L	5.00		98.5	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	4.92		ug/L	5.00		98.4	80-120			



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**Reported:**  
25-Oct-2023 17:05

**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BLI0632 - EPA 8260D**

Instrument: NT3 Analyst: TWC

QC Sample/Alyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS Dup (BLI0632-BSD1)</b>		Prepared: 21-Sep-2023 Analyzed: 21-Sep-2023 12:00								
Chloromethane	10.3	0.50	ug/L	10.0		103	60-138	7.83	30	
Vinyl Chloride	10.8	0.20	ug/L	10.0		108	66-133	4.65	30	
Bromomethane	11.1	1.00	ug/L	10.0		111	72-131	7.56	30	
Chloroethane	10.7	0.20	ug/L	10.0		107	60-155	3.98	30	
Trichlorofluoromethane	10.8	0.20	ug/L	10.0		108	62-141	4.21	30	
Acrolein	61.3	5.00	ug/L	50.0		123	52-190	16.40	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.4	0.20	ug/L	10.0		104	76-129	0.97	30	
Acetone	50.8	5.00	ug/L	50.0		102	58-142	7.85	30	
1,1-Dichloroethene	10.5	0.20	ug/L	10.0		105	69-135	3.93	30	
Iodomethane	10.8	1.00	ug/L	10.0		108	56-147	3.52	30	
Methylene Chloride	10.7	1.00	ug/L	10.0		107	65-135	8.66	30	
Acrylonitrile	9.85	1.00	ug/L	10.0		98.5	64-134	14.30	30	
Carbon Disulfide	10.8	0.20	ug/L	10.0		108	78-125	5.31	30	
trans-1,2-Dichloroethene	10.7	0.20	ug/L	10.0		107	78-128	4.83	30	
Vinyl Acetate	10.5	0.20	ug/L	10.0		105	55-138	6.80	30	
1,1-Dichloroethane	10.6	0.20	ug/L	10.0		106	76-124	5.94	30	
2-Butanone	52.0	5.00	ug/L	50.0		104	61-140	6.49	30	
2,2-Dichloropropane	10.5	0.20	ug/L	10.0		105	66-147	0.12	30	
cis-1,2-Dichloroethene	10.4	0.20	ug/L	10.0		104	80-121	6.19	30	
Chloroform	10.8	0.20	ug/L	10.0		108	80-122	4.56	30	
Bromochloromethane	10.5	0.20	ug/L	10.0		105	80-121	5.70	30	
1,1,1-Trichloroethane	10.7	0.20	ug/L	10.0		107	79-123	6.31	30	
1,1-Dichloropropene	10.6	0.20	ug/L	10.0		106	80-127	3.95	30	
Carbon tetrachloride	10.7	0.20	ug/L	10.0		107	53-137	2.78	30	
1,2-Dichloroethane	9.99	0.20	ug/L	10.0		99.9	75-123	3.85	30	
Benzene	10.8	0.20	ug/L	10.0		108	80-120	4.15	30	
Trichloroethene	10.0	0.20	ug/L	10.0		100	80-120	3.76	30	
1,2-Dichloropropane	10.7	0.20	ug/L	10.0		107	80-120	6.96	30	
Bromodichloromethane	10.6	0.20	ug/L	10.0		106	80-121	2.54	30	
Dibromomethane	10.3	0.20	ug/L	10.0		103	80-120	1.93	30	
2-Chloroethyl vinyl ether	10.4	1.00	ug/L	10.0		104	64-120	4.57	30	
4-Methyl-2-Pentanone	49.8	5.00	ug/L	50.0		99.7	67-133	3.75	30	
cis-1,3-Dichloropropene	10.7	0.20	ug/L	10.0		107	80-124	4.04	30	
Toluene	10.6	0.20	ug/L	10.0		106	80-120	4.18	30	
trans-1,3-Dichloropropene	10.5	0.20	ug/L	10.0		105	71-127	3.27	30	



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
25-Oct-2023 17:05

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLI0632 - EPA 8260D

Instrument: NT3 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS Dup (BLI0632-BSD1)</b>		Prepared: 21-Sep-2023 Analyzed: 21-Sep-2023 12:00								
2-Hexanone	51.5	5.00	ug/L	50.0		103	69-133	4.84	30	
1,1,2-Trichloroethane	10.5	0.20	ug/L	10.0		105	80-121	4.80	30	
1,3-Dichloropropane	10.6	0.20	ug/L	10.0		106	80-120	7.84	30	
Tetrachloroethene	10.4	0.20	ug/L	10.0		104	80-120	3.59	30	
Dibromochloromethane	11.1	0.20	ug/L	10.0		111	65-135	2.72	30	
1,2-Dibromoethane	10.6	0.20	ug/L	10.0		106	80-121	3.72	30	
Chlorobenzene	10.8	0.20	ug/L	10.0		108	80-120	5.89	30	
Ethylbenzene	10.6	0.20	ug/L	10.0		106	80-120	5.46	30	
1,1,1,2-Tetrachloroethane	10.9	0.20	ug/L	10.0		109	80-120	6.16	30	
m,p-Xylene	21.3	0.40	ug/L	20.0		106	80-121	4.55	30	
o-Xylene	11.0	0.20	ug/L	10.0		110	80-121	6.13	30	
Xylenes, total	32.3	0.60	ug/L	30.0		108	76-127	5.08	30	
Styrene	10.9	0.20	ug/L	10.0		109	80-124	3.67	30	
Bromoform	9.87	0.20	ug/L	10.0		98.7	51-134	7.76	30	
1,1,2,2-Tetrachloroethane	10.7	0.20	ug/L	10.0		107	77-123	7.77	30	
1,2,3-Trichloropropane	10.4	0.50	ug/L	10.0		104	76-125	11.80	30	
trans-1,4-Dichloro 2-Butene	10.2	1.00	ug/L	10.0		102	55-129	5.05	30	
n-Propylbenzene	10.8	0.20	ug/L	10.0		108	78-130	4.54	30	
Bromobenzene	10.6	0.20	ug/L	10.0		106	80-120	8.60	30	
Isopropyl Benzene	10.7	0.20	ug/L	10.0		107	80-128	4.91	30	
2-Chlorotoluene	10.6	0.20	ug/L	10.0		106	78-122	8.94	30	
4-Chlorotoluene	11.2	0.20	ug/L	10.0		112	80-121	7.38	30	
t-Butylbenzene	10.8	0.20	ug/L	10.0		108	78-125	6.91	30	
1,3,5-Trimethylbenzene	10.7	0.20	ug/L	10.0		107	80-129	7.03	30	
1,2,4-Trimethylbenzene	10.8	0.20	ug/L	10.0		108	80-127	5.74	30	
s-Butylbenzene	10.5	0.20	ug/L	10.0		105	78-129	1.79	30	
4-Isopropyl Toluene	10.6	0.20	ug/L	10.0		106	79-130	2.40	30	
1,3-Dichlorobenzene	10.5	0.20	ug/L	10.0		105	80-120	7.68	30	
1,4-Dichlorobenzene	10.4	0.20	ug/L	10.0		104	80-120	6.77	30	
n-Butylbenzene	10.4	0.20	ug/L	10.0		104	74-129	0.99	30	
1,2-Dichlorobenzene	10.6	0.20	ug/L	10.0		106	80-120	8.14	30	
1,2-Dibromo-3-chloropropane	10.2	0.50	ug/L	10.0		102	62-123	10.40	30	
1,2,4-Trichlorobenzene	10.2	0.50	ug/L	10.0		102	64-124	2.57	30	
Hexachloro-1,3-Butadiene	8.37	2.00	ug/L	10.0		83.7	65-145	17.90	30	
Naphthalene	10.8	0.50	ug/L	10.0		108	50-134	8.26	30	



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Oct-2023 17:05
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Analysis by: Analytical Resources, LLC

**Volatile Organic Compounds - Quality Control**

**Batch BLI0632 - EPA 8260D**

Instrument: NT3 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS Dup (BLI0632-BSD1)</b>		Prepared: 21-Sep-2023 Analyzed: 21-Sep-2023 12:00								
1,2,3-Trichlorobenzene	10.3	0.50	ug/L	10.0		103	49-133	2.93	30	
Dichlorodifluoromethane	10.1	0.20	ug/L	10.0		101	48-147	0.93	30	
Methyl tert-butyl Ether	10.8	0.50	ug/L	10.0		108	71-132	5.40	30	
2-Pentanone	51.4	5.00	ug/L	50.0		103	69-134	6.31	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.97		ug/L	5.00		99.4	80-129			
<i>Surrogate: Toluene-d8</i>	5.00		ug/L	5.00		100	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	5.03		ug/L	5.00		101	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	4.83		ug/L	5.00		96.6	80-120			



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
25-Oct-2023 17:05

**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BLI0632 - EPA 8260D**

**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - SIM - Quality Control**

**Batch BLI0637 - EPA 8260D-SIM**

Instrument: NT16 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLI0637-BLK1)</b>				Prepared: 21-Sep-2023 Analyzed: 21-Sep-2023 13:39						
Vinyl chloride	ND	20.0	ng/L							U
Surrogate: 1,2-Dichloroethane-d4	5280		ng/L	5000		106	80-129			





TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Oct-2023 17:05
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**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - SIM - Quality Control**

**Batch BLI0637 - EPA 8260D-SIM**

Instrument: NT16 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS (BLI0637-BS1)</b>				Prepared: 21-Sep-2023 Analyzed: 21-Sep-2023 12:37						
Vinyl chloride	2340	20.0	ng/L	2000		117	62-141			
Surrogate: 1,2-Dichloroethane-d4	5130		ng/L	5000		103	80-129			



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Oct-2023 17:05
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Analysis by: Analytical Resources, LLC

**Volatile Organic Compounds - SIM - Quality Control**

**Batch BLI0637 - EPA 8260D-SIM**

Instrument: NT16 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS Dup (BLI0637-BSD1)</b>				Prepared: 21-Sep-2023 Analyzed: 21-Sep-2023 12:58						
Vinyl chloride	2190	20.0	ng/L	2000		110	62-141	6.25	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5380		ng/L	5000		108	80-129			



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Oct-2023 17:05
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Analysis by: Analytical Resources, LLC

**Volatile Organic Compounds - SIM - Quality Control**

Batch BLI0637 - EPA 8260D-SIM

Analysis by: Analytical Resources, LLC

**Metals and Metallic Compounds - Quality Control**

Batch BLJ0007 - EPA 6010D

Instrument: ICP3 Analyst: DOE

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLJ0007-BLK1)</b>					Prepared: 02-Oct-2023 Analyzed: 03-Oct-2023 09:05					
Calcium	ND	0.0500	mg/L							U
Potassium	ND	0.500	mg/L							U
Sodium	ND	0.500	mg/L							U
Sodium	ND	50.0	mg/L							U
<b>LCS (BLJ0007-BS1)</b>					Prepared: 02-Oct-2023 Analyzed: 03-Oct-2023 09:07					
Calcium	9.80	0.0500	mg/L	10.0		98.0	80-120			
Potassium	9.75	0.500	mg/L	10.0		97.5	80-120			
Sodium	9.96	0.500	mg/L	10.0		99.6	80-120			
<b>Duplicate (BLJ0007-DUP1)</b>					Source: 2310529-01 Prepared: 02-Oct-2023 Analyzed: 03-Oct-2023 09:41					
Calcium	13.1	0.0500	mg/L		12.9			1.93	20	
Potassium	0.613	0.500	mg/L		0.595			2.93	20	
Sodium	5.25	0.500	mg/L		5.15			2.05	20	
Sodium	ND	50.0	mg/L		ND					U
<b>Matrix Spike (BLJ0007-MS1)</b>					Source: 2310529-01 Prepared: 02-Oct-2023 Analyzed: 03-Oct-2023 09:44					
Calcium	22.2	0.0500	mg/L	10.0	12.9	93.7	75-125			
Potassium	10.3	0.500	mg/L	10.0	0.595	97.4	75-125			
Sodium	15.1	0.500	mg/L	10.0	5.15	99.7	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

<b>Matrix Spike Dup (BLJ0007-MSD1)</b>					Source: 2310529-01 Prepared: 02-Oct-2023 Analyzed: 03-Oct-2023 09:47					
Calcium	22.7	0.0500	mg/L	10.0	12.9	98.0	75-125	1.92	20	
Potassium	10.5	0.500	mg/L	10.0	0.595	99.1	75-125	1.63	20	
Sodium	15.1	0.500	mg/L	10.0	5.15	100	75-125	0.18	20	
Sodium	ND	50.0	mg/L	10.0	ND	83.7	75-125			U

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Oct-2023 17:05
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**Analysis by: Analytical Resources, LLC**

**Metals and Metallic Compounds (dissolved) - Quality Control**

**Batch BLJ0067 - EPA 200.8**

Instrument: ICPMS1 Analyst: HAL

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Duplicate (BLJ0067-DUP2)</b>			<b>Source: 2310529-02</b>		Prepared: 03-Oct-2023		Analyzed: 10-Oct-2023 23:12				
Iron, Dissolved	54	ND	36.0	ug/L		ND					U

<b>Matrix Spike (BLJ0067-MS2)</b>			<b>Source: 2310529-02</b>		Prepared: 03-Oct-2023		Analyzed: 10-Oct-2023 23:15				
Iron, Dissolved	54	4410	36.0	ug/L	5000	ND	88.3	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

<b>Matrix Spike Dup (BLJ0067-MSD2)</b>			<b>Source: 2310529-02</b>		Prepared: 03-Oct-2023		Analyzed: 10-Oct-2023 23:18				
Iron, Dissolved	54	4440	36.0	ug/L	5000	ND	88.9	75-125	0.68	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLJ0067-BLK1)</b>					Prepared: 03-Oct-2023		Analyzed: 04-Oct-2023 19:47				
Iron, Dissolved	54	ND	36.0	ug/L							U
Zinc, Dissolved	66	ND	6.00	ug/L							U

<b>LCS (BLJ0067-BS1)</b>					Prepared: 03-Oct-2023		Analyzed: 04-Oct-2023 19:51				
Iron, Dissolved	54	4630	36.0	ug/L	5000		92.7	80-120			
Zinc, Dissolved	66	80.1	6.00	ug/L	80.0		100	80-120			

<b>Duplicate (BLJ0067-DUP1)</b>			<b>Source: 2310529-02</b>		Prepared: 03-Oct-2023		Analyzed: 07-Oct-2023 02:52				
Zinc, Dissolved	66	ND	6.00	ug/L		ND					U

<b>Matrix Spike (BLJ0067-MS1)</b>			<b>Source: 2310529-02</b>		Prepared: 03-Oct-2023		Analyzed: 07-Oct-2023 02:55				
Zinc, Dissolved	66	73.7	6.00	ug/L	80.0	ND	92.2	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

<b>Matrix Spike Dup (BLJ0067-MSD1)</b>			<b>Source: 2310529-02</b>		Prepared: 03-Oct-2023		Analyzed: 07-Oct-2023 02:59				
Zinc, Dissolved	66	73.8	6.00	ug/L	80.0	ND	92.3	75-125	0.08	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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**Analysis by: Analytical Resources, LLC**

**Metals and Metallic Compounds (dissolved) - Quality Control**

**Batch BLJ0073 - EPA 6010D**

Instrument: ICP3 Analyst: DOE

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLJ0073-BLK1)</b>		Prepared: 03-Oct-2023 Analyzed: 04-Oct-2023 11:58								
Barium, Dissolved	ND	0.0060	mg/L							U
Manganese, Dissolved	ND	0.0040	mg/L							U
<b>LCS (BLJ0073-BS1)</b>		Prepared: 03-Oct-2023 Analyzed: 04-Oct-2023 12:00								
Barium, Dissolved	1.80	0.0061	mg/L	2.00		90.1	80-120			
Manganese, Dissolved	0.448	0.0040	mg/L	0.500		89.6	80-120			
<b>Duplicate (BLJ0073-DUP1)</b>		<b>Source: 23I0529-04</b>		Prepared: 03-Oct-2023 Analyzed: 04-Oct-2023 11:34						
Barium, Dissolved	0.0151	0.0060	mg/L		0.0150			0.66	20	
Manganese, Dissolved	5.03	0.0040	mg/L		5.02			0.15	20	
<b>Matrix Spike (BLJ0073-MS1)</b>		<b>Source: 23I0529-04</b>		Prepared: 03-Oct-2023 Analyzed: 04-Oct-2023 11:37						
Barium, Dissolved	1.79	0.0061	mg/L	2.00	0.0150	89.0	75-125			
Manganese, Dissolved	5.45	0.0040	mg/L	0.500	5.02	85.9	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
<b>Matrix Spike Dup (BLJ0073-MSD1)</b>		<b>Source: 23I0529-04</b>		Prepared: 03-Oct-2023 Analyzed: 04-Oct-2023 11:40						
Barium, Dissolved	1.80	0.0061	mg/L	2.00	0.0150	89.5	75-125	0.54	20	
Manganese, Dissolved	5.46	0.0040	mg/L	0.500	5.02	87.7	75-125	0.16	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										



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**Analysis by: Analytical Resources, LLC**

**Metals and Metallic Compounds (dissolved) - Quality Control**

**Batch BLJ0624 - EPA 200.8 UCT-KED**

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLJ0624-BLK1)</b>						Prepared: 20-Oct-2023 Analyzed: 20-Oct-2023 16:41					
Arsenic, Dissolved	75a	ND	0.0400	ug/L							U
<b>LCS (BLJ0624-BS1)</b>						Prepared: 20-Oct-2023 Analyzed: 20-Oct-2023 16:46					
Arsenic, Dissolved	75a	4.69	0.0400	ug/L	5.00		93.8	80-120			
<b>LCS Dup (BLJ0624-BSD1)</b>						Prepared: 20-Oct-2023 Analyzed: 20-Oct-2023 16:50					
Arsenic, Dissolved	75a	4.72	0.0400	ug/L	5.00		94.5	80-120	0.74	20	
<b>Duplicate (BLJ0624-DUP1)</b>			<b>Source: 23I0529-12</b>			Prepared: 20-Oct-2023 Analyzed: 20-Oct-2023 18:18					
Arsenic, Dissolved	75a	1.09	0.0400	ug/L		1.09			0.51	20	
<b>Matrix Spike (BLJ0624-MS1)</b>			<b>Source: 23I0529-12</b>			Prepared: 20-Oct-2023 Analyzed: 20-Oct-2023 18:21					
Arsenic, Dissolved	75a	5.86	0.0400	ug/L	5.00	1.09	95.5	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLI0660 - SM 4500-H+ B-00**

Instrument: Accumet AB150 Analyst: SRB

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS (BLI0660-BS1)</b>						Prepared: 21-Sep-2023 Analyzed: 21-Sep-2023 16:37					
pH	7.01	0.01	0.01	pH Units	7.00		100	99.2-100.8			



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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLI0669 - EPA 353.2**

Instrument: LCHAT2 Analyst: EJK

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLI0669-BLK1)</b>					Prepared: 21-Sep-2023 Analyzed: 21-Sep-2023 19:15						
Nitrate + Nitrite as N	ND	0.010	0.010	mg/L							U
Nitrite-N	ND	0.010	0.010	mg/L							U
<b>LCS (BLI0669-BS1)</b>					Prepared: 21-Sep-2023 Analyzed: 21-Sep-2023 19:16						
Nitrate + Nitrite as N	0.512	0.010	0.010	mg/L	0.500		102	90-110			
<b>LCS (BLI0669-BS2)</b>					Prepared: 21-Sep-2023 Analyzed: 21-Sep-2023 19:18						
Nitrite-N	0.474	0.010	0.010	mg/L	0.500		94.8	90-110			
<b>Duplicate (BLI0669-DUP1)</b>					Source: 23I0529-01 Prepared: 21-Sep-2023 Analyzed: 21-Sep-2023 19:22						
Nitrate + Nitrite as N	0.231	0.010	0.010	mg/L		0.225			2.63	20	
Nitrite-N	ND	0.010	0.010	mg/L		ND					U
<b>Matrix Spike (BLI0669-MS1)</b>					Source: 23I0529-01 Prepared: 21-Sep-2023 Analyzed: 21-Sep-2023 19:23						
Nitrate + Nitrite as N	0.683	0.010	0.010	mg/L	0.500	0.225	91.6	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
<b>Matrix Spike (BLI0669-MS3)</b>					Source: 23I0529-01 Prepared: 21-Sep-2023 Analyzed: 21-Sep-2023 19:33						
Nitrite-N	0.477	0.010	0.010	mg/L	0.508	ND	93.9	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
<b>Matrix Spike Dup (BLI0669-MSD1)</b>					Source: 23I0529-01 Prepared: 21-Sep-2023 Analyzed: 21-Sep-2023 19:32						
Nitrate + Nitrite as N	0.700	0.010	0.010	mg/L	0.500	0.225	95.0	75-125	2.46	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
<b>Matrix Spike Dup (BLI0669-MSD3)</b>					Source: 23I0529-01 Prepared: 21-Sep-2023 Analyzed: 21-Sep-2023 19:34						
Nitrite-N	0.491	0.010	0.010	mg/L	0.508	ND	96.7	75-125	2.89	200	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											





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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLI0693 - SM 2320 B-97**

Instrument: Accumet AB150 Analyst: UW

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLI0693-BLK1)</b>						Prepared: 22-Sep-2023 Analyzed: 22-Sep-2023 14:16					
Alkalinity, Total	ND	1.00	1.00	mg/L CaCO3							U
<b>Reference (BLI0693-SRM1)</b>						Prepared: 22-Sep-2023 Analyzed: 22-Sep-2023 16:00					
Alkalinity, Total	101	1.00	1.00	mg/L CaCO3	102		99.2	85-114.06			



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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLI0737 - EPA 375.2**

Instrument: LCHAT2 Analyst: RMS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLI0737-BLK1)</b>						Prepared: 25-Sep-2023 Analyzed: 26-Sep-2023 06:57					
Sulfate	ND	2.00	2.00	mg/L							U
<b>LCS (BLI0737-BS1)</b>						Prepared: 25-Sep-2023 Analyzed: 26-Sep-2023 06:58					
Sulfate	14.6	2.00	2.00	mg/L	15.0		97.3	90-110			
<b>Duplicate (BLI0737-DUP1)</b>						Source: 2310529-01 Prepared: 25-Sep-2023 Analyzed: 26-Sep-2023 07:07					
Sulfate	4.04	2.00	2.00	mg/L		4.37			7.85	20	
<b>Matrix Spike (BLI0737-MS1)</b>						Source: 2310529-01 Prepared: 25-Sep-2023 Analyzed: 26-Sep-2023 07:08					
Sulfate	16.8	2.00	2.00	mg/L	15.0	4.37	82.8	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

<b>Matrix Spike Dup (BLI0737-MSD1)</b>						Source: 2310529-01 Prepared: 25-Sep-2023 Analyzed: 26-Sep-2023 07:10					
Sulfate	17.1	2.00	2.00	mg/L	15.0	4.37	84.8	75-125	1.77	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLI0809 - EPA 325.2**

Instrument: LCHAT2 Analyst: RMS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLI0809-BLK1)</b>						Prepared: 26-Sep-2023 Analyzed: 27-Sep-2023 07:15					
Chloride	ND	1.00	1.00	mg/L							U
<b>LCS (BLI0809-BS1)</b>						Prepared: 26-Sep-2023 Analyzed: 27-Sep-2023 07:16					
Chloride	5.00	1.00	1.00	mg/L	5.00		100	90-110			



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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLJ0051 - SM 4500-NH3 H-97**

Instrument: LCHAT1 Analyst: MAM

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLJ0051-BLK1)</b>						Prepared: 03-Oct-2023 Analyzed: 04-Oct-2023 14:49					
Ammonia-N	ND	0.040	0.040	mg/L							U
<b>LCS (BLJ0051-BS1)</b>						Prepared: 03-Oct-2023 Analyzed: 04-Oct-2023 14:51					
Ammonia-N	0.469	0.040	0.040	mg/L	0.500		93.8	90-110			
<b>Duplicate (BLJ0051-DUP1)</b>						Source: 2310529-01 Prepared: 03-Oct-2023 Analyzed: 04-Oct-2023 14:53					
Ammonia-N	ND	0.040	0.040	mg/L		ND					U
<b>Matrix Spike (BLJ0051-MS1)</b>						Source: 2310529-01 Prepared: 03-Oct-2023 Analyzed: 04-Oct-2023 14:54					
Ammonia-N	0.515	0.040	0.040	mg/L	0.501	ND	103	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

<b>Matrix Spike Dup (BLJ0051-MSD1)</b>						Source: 2310529-01 Prepared: 03-Oct-2023 Analyzed: 04-Oct-2023 14:55					
Ammonia-N	0.510	0.040	0.040	mg/L	0.501	ND	102	75-125	0.98	200	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Oct-2023 17:05
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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLJ0164 - EPA 9060A**

Instrument: TOC-LCSH Analyst: RMS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLJ0164-BLK1)</b>						Prepared: 05-Oct-2023 Analyzed: 05-Oct-2023 10:15					
Total Organic Carbon	ND	0.50	0.50	mg/L							U
<b>LCS (BLJ0164-BS1)</b>						Prepared: 05-Oct-2023 Analyzed: 05-Oct-2023 10:37					
Total Organic Carbon	20.15	0.50	0.50	mg/L	20.00		101	90-110			
<b>Duplicate (BLJ0164-DUP1)</b>						Source: 2310529-03 Prepared: 05-Oct-2023 Analyzed: 05-Oct-2023 16:49					
Total Organic Carbon	2.71	0.50	0.50	mg/L		2.61			3.61	20	
<b>Matrix Spike (BLJ0164-MS1)</b>						Source: 2310529-03 Prepared: 05-Oct-2023 Analyzed: 05-Oct-2023 17:12					
Total Organic Carbon	20.57	0.50	0.50	mg/L	20.00	2.61	89.8	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

<b>Matrix Spike Dup (BLJ0164-MSD1)</b>						Source: 2310529-03 Prepared: 05-Oct-2023 Analyzed: 05-Oct-2023 17:32					
Total Organic Carbon	20.59	0.50	0.50	mg/L	20.00	2.61	89.9	75-125	0.10	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	Reported: 25-Oct-2023 17:05
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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLJ0460 - EPA 410.4**

Instrument: UV1800-1 Analyst: BF

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLJ0460-BLK1)</b>						Prepared: 13-Oct-2023 Analyzed: 17-Oct-2023 11:36					
COD	ND	10.0	10.0	mg/L							U
<b>Blank (BLJ0460-BLK2)</b>						Prepared: 13-Oct-2023 Analyzed: 17-Oct-2023 11:42					
COD	ND	10.0	10.0	mg/L							U
<b>DL (BLJ0460-BLK3)</b>						Prepared: 13-Oct-2023 Analyzed: 17-Oct-2023 11:49					
COD	ND	10.0	10.0	mg/L							U
<b>Blank (BLJ0460-BLK4)</b>						Prepared: 13-Oct-2023 Analyzed: 17-Oct-2023 11:51					
COD	ND	10.0	10.0	mg/L							U
<b>LCS (BLJ0460-BS1)</b>						Prepared: 13-Oct-2023 Analyzed: 17-Oct-2023 11:37					
COD	103	10.0	10.0	mg/L	100		103	90-110			
<b>LCS (BLJ0460-BS2)</b>						Prepared: 13-Oct-2023 Analyzed: 17-Oct-2023 11:43					
COD	104	10.0	10.0	mg/L	100		104	90-110			
<b>DL (BLJ0460-BS3)</b>						Prepared: 13-Oct-2023 Analyzed: 17-Oct-2023 11:49					
COD	104	10.0	10.0	mg/L	100		104	90-110			
<b>LCS (BLJ0460-BS4)</b>						Prepared: 13-Oct-2023 Analyzed: 17-Oct-2023 11:51					
COD	103	10.0	10.0	mg/L	100		103	90-110			
<b>Duplicate (BLJ0460-DUP1)</b>						Source: 23I0529-05 Prepared: 13-Oct-2023 Analyzed: 17-Oct-2023 11:39					
COD	ND	10.0	10.0	mg/L		ND					U
<b>Matrix Spike (BLJ0460-MS1)</b>						Source: 23I0529-05 Prepared: 13-Oct-2023 Analyzed: 17-Oct-2023 11:39					
COD	101	20.0	20.0	mg/L	100	ND	101	90-110			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
<b>Matrix Spike Dup (BLJ0460-MSD1)</b>						Source: 23I0529-05 Prepared: 13-Oct-2023 Analyzed: 17-Oct-2023 11:40					
COD	94.9	20.0	20.0	mg/L	100	ND	94.8	90-110	6.05	10	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Oct-2023 17:05
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**Analysis by: Analytical Resources, LLC**

**Microbiology - Quality Control**

**Batch BLI0653 - SM 9222B**

Instrument: N/A

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLI0653-BLK1)</b>						Prepared: 21-Sep-2023 Analyzed: 22-Sep-2023 14:33					
Total Coliforms	ND	1	1	CFU/100 ml							U



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
25-Oct-2023 17:05

**Certified Analyses included in this Report**

Analyte	Certifications
<b>EPA 200.8 in Water</b>	
Iron-54	NELAP,WADOE,DoD-ELAP
<b>EPA 200.8 UCT-KED in Water</b>	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Zinc-66	NELAP,WADOE,WA-DW,DoD-ELAP
<b>EPA 353.2 in Water</b>	
Nitrate + Nitrite as N	NELAP,DoD-ELAP,WADOE
Nitrite-N	WADOE,NELAP,DoD-ELAP
<b>EPA 375.2 in Water</b>	
Sulfate	WADOE,NELAP
<b>EPA 410.4 in Water</b>	
COD	DoD-ELAP,NELAP,WADOE
<b>EPA 6010D in Water</b>	
Calcium	WADOE,NELAP,DoD-ELAP
Potassium	WADOE,NELAP,DoD-ELAP
Sodium	DoD-ELAP,WADOE,NELAP
Sodium-1	DoD-ELAP
Barium	WADOE,NELAP,DoD-ELAP
Manganese	WADOE,NELAP,DoD-ELAP
<b>EPA 8260D in Water</b>	
Chloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Acrolein	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroeth	DoD-ELAP,ADEC,NELAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Iodomethane	DoD-ELAP,NELAP,WADOE





TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
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Methylene Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Butanone	DoD-ELAP,NELAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,WADOE



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
25-Oct-2023 17:05

1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
Styrene	DoD-ELAP,NELAP,WADOE
Bromoform	DoD-ELAP,NELAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,WADOE
2-Pentanone	WADOE

**EPA 8260D-SIM in Water**

Vinyl chloride NELAP,WADOE

**EPA 9060A in Water**



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 25-Oct-2023 17:05
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Total Organic Carbon	DoD-ELAP,WADOE,NELAP
<b>SM 2320 B-97 in Water</b>	
Alkalinity, Bicarbonate	NELAP,WADOE,WA-DW,DoD-ELAP
Alkalinity, Carbonate	WADOE,WA-DW,DoD-ELAP,NELAP
Alkalinity, Hydroxide	WADOE,WA-DW,DoD-ELAP,NELAP
Alkalinity, Total	DoD-ELAP,WADOE,WA-DW,NELAP
<b>SM 4500-H+ B-00 in Water</b>	
pH	WADOE,NELAP,WA-DW
<b>SM 4500-NH3 H-97 in Water</b>	
Ammonia-N	WADOE,DoD-ELAP,NELAP
<b>SM 9222B in Water</b>	
Total Coliforms	WADOE

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2025
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program, PJLA Testing	66169	02/28/2025
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2024



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**Reported:**  
25-Oct-2023 17:05

### Notes and Definitions

- \* Flagged value is not within established control limits.
- B This analyte was detected in the method blank.
- D The reported value is from a dilution
- H Hold time violation - Hold time was exceeded.
- J Estimated concentration value detected below the reporting limit.
- U This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- [2C] Indicates this result was quantified on the second column on a dual column analysis.



**Analytical Resources, LLC**  
Analytical Chemists and Consultants  
Tukwila, WA

15 January 2024

Eric Caddy  
TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah, WA 98027

RE: Olalla Landfill (533022)

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)  
23L0546

Associated SDG ID(s)  
N/A

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I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclosed Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Kelly Bottem, Client Services Manager

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



# Chain of Custody Record & Laboratory Analysis Request



Analytical Resources, LLC  
 Analytical Chemists and Consultants  
 4611 South 134th Place, Suite 100  
 Tukwila, WA 98168  
 206-695-6200 206-695-6201 (fax)

ARI Assigned Number: <b>7320546</b>	Turn-around Requested: <b>Standard</b>	Page: <b>1</b> of <b>1</b>
ARI Client Company: <b>TRC</b>	Phone: <b>425-345-0010</b>	Date: <b>12/20/23</b> Ice Present? <b>X</b>
Client Contact: <b>Eric Caddy, Wesley Weisberg</b>	No. of Coolers: <b>2</b>	Cooler Temps: <b>7.800 6.000</b>

Client Project Name: <b>Olalla</b>	Analysis Requested					Notes/Comments	
Client Project #: <b>533022</b>	Samplers: <b>E. Miller</b>	VOC and VC by SIM	Dissolved Metals, As, Fe, Zn, Benz/PAH	Total Metals Pb, Ni, Cu	Alkalinity carbonate, bicarbonate	Nitrate, nitrite, Chloride, Sulfate, PH	TOC, COD, Ammonia

Sample ID	Date	Time	Matrix	No. Containers	VOC and VC by SIM	Dissolved Metals, As, Fe, Zn, Benz/PAH	Total Metals Pb, Ni, Cu	Alkalinity carbonate, bicarbonate	Nitrate, nitrite, Chloride, Sulfate, PH	TOC, COD, Ammonia	Notes/Comments
MW-1	12/20/23	0910	H <sub>2</sub> O	11	X	X	X	X	X	X	
MW-5A	↓	1010	↓	3	X	X					Diss. Metals & VC by SIM only
MW-3		1035		11	X	X	X	X	X	X	
MW-10		1105		11	X	X	X	X	X	X	
MW-13		1205		11	X	X	X	X	X	X	
MW-6		1250		11	X	X	X	X	X	X	
MW-8		1325		11	X	X	X	X	X	X	
MW-7		↓		1400	↓	3	X	X			

Comments/Special Instructions	Relinquished by: (Signature) <i>EM</i>	Received by: (Signature) <i>Matthew Parker</i>	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: <b>Eric Miller</b>	Printed Name: <b>Matthew Parker</b>	Printed Name:	Printed Name:
	Company: <b>TRC</b>	Company: <b>ARLLC</b>	Company:	Company:
	Date & Time: <b>12/20/23 1501</b>	Date & Time: <b>12/20/23 1501</b>	Date & Time:	Date & Time:

**Limits of Liability:** ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

**Sample Retention Policy:** All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.





TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
15-Jan-2024 17:56

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	23L0546-01	Water	20-Dec-2023 09:10	20-Dec-2023 15:01
MW-1	23L0546-02	Water	20-Dec-2023 09:10	20-Dec-2023 15:01
MW-5A	23L0546-03	Water	20-Dec-2023 10:10	20-Dec-2023 15:01
MW-3	23L0546-04	Water	20-Dec-2023 10:35	20-Dec-2023 15:01
MW-3	23L0546-05	Water	20-Dec-2023 10:35	20-Dec-2023 15:01
MW-10	23L0546-06	Water	20-Dec-2023 11:05	20-Dec-2023 15:01
MW-10	23L0546-07	Water	20-Dec-2023 11:05	20-Dec-2023 15:01
MW-13	23L0546-08	Water	20-Dec-2023 12:05	20-Dec-2023 15:01
MW-13	23L0546-09	Water	20-Dec-2023 12:05	20-Dec-2023 15:01
MW-6	23L0546-10	Water	20-Dec-2023 12:50	20-Dec-2023 15:01
MW-6	23L0546-11	Water	20-Dec-2023 12:50	20-Dec-2023 15:01
MW-8	23L0546-12	Water	20-Dec-2023 13:25	20-Dec-2023 15:01
MW-8	23L0546-13	Water	20-Dec-2023 13:25	20-Dec-2023 15:01
MW-7	23L0546-14	Water	20-Dec-2023 14:00	20-Dec-2023 15:01
Trip Blanks	23L0546-15	Water	20-Dec-2023 09:10	20-Dec-2023 15:01



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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
15-Jan-2024 17:56

## **Work Order Case Narrative**

### **Volatiles - EPA Method SW8260D**

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

### **Volatiles - EPA Method 8260D-SIM (Selected Ion Monitoring)**

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

### **Total and Dissolved Metals - EPA Method 200.8 and 6010D**

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The dissolved metals method blank(s) contained arsenic. Samples that contain arsenic have been flagged with a "B" qualifier and samples that had back up sample volumes were re-prepped and analyzed.

The blank spike (BS/LCS) percent recoveries were within control limits.





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Reported:  
15-Jan-2024 17:56

The matrix spike (MS) percent recoveries and the duplicate (DUP) relative percent difference (RPD) were within advisory control limits.

### **Wet Chemistry**

The sample(s) were prepared and analyzed within the recommended holding times with the exception of nitrate and nitrite which were analyzed outside of the holding time.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The reference material (SRM) percent recoveries were within control limits.

The matrix spike (MS) percent recoveries and the duplicate (DUP) relative percent difference (RPD) were within advisory control limits with the exception of analytes flagged on the associated forms.



WORK ORDER

23L0546

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: TRC Companies, Inc

Project Manager: Kelly Bottem

Project: Olalla Landfill

Project Number: 533022

Preservation Confirmation

Container ID	Container Type	pH	
23L0546-01 A	HDPE NM, 1000 mL		
23L0546-01 B	HDPE NM, 500 mL		
23L0546-01 C	Corning Plastic, 125 mL, Na2S2O3		
23L0546-01 D	Glass NM, Amber, 250 mL, 9N H2SO4	<2	Pass(P)
23L0546-01 E	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23L0546-01 F	VOA Vial, Clear, 40 mL, HCL		
23L0546-01 G	VOA Vial, Clear, 40 mL, HCL		
23L0546-01 H	VOA Vial, Clear, 40 mL, HCL		
23L0546-01 I	VOA Vial, Clear, 40 mL, HCL		
23L0546-01 J	VOA Vial, Clear, 40 mL, HCL		
23L0546-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
23L0546-03 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
23L0546-03 B	VOA Vial, Clear, 40 mL, HCL		
23L0546-03 C	VOA Vial, Clear, 40 mL, HCL		
23L0546-04 A	HDPE NM, 1000 mL		
23L0546-04 B	HDPE NM, 500 mL		
23L0546-04 C	Corning Plastic, 125 mL, Na2S2O3		
23L0546-04 D	Glass NM, Amber, 250 mL, 9N H2SO4	<2	P
23L0546-04 E	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23L0546-04 F	VOA Vial, Clear, 40 mL, HCL	Bubble	
23L0546-04 G	VOA Vial, Clear, 40 mL, HCL		
23L0546-04 H	VOA Vial, Clear, 40 mL, HCL		
23L0546-04 I	VOA Vial, Clear, 40 mL, HCL		
23L0546-04 J	VOA Vial, Clear, 40 mL, HCL		
23L0546-05 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
23L0546-06 A	HDPE NM, 1000 mL		
23L0546-06 B	HDPE NM, 500 mL		
23L0546-06 C	Corning Plastic, 125 mL, Na2S2O3		
23L0546-06 D	Glass NM, Amber, 250 mL, 9N H2SO4	<2	P
23L0546-06 E	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23L0546-06 F	VOA Vial, Clear, 40 mL, HCL	Bubble	
23L0546-06 G	VOA Vial, Clear, 40 mL, HCL		
23L0546-06 H	VOA Vial, Clear, 40 mL, HCL		
23L0546-06 I	VOA Vial, Clear, 40 mL, HCL		





WORK ORDER

23L0546

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: TRC Companies, Inc

Project Manager: Kelly Bottem

Project: Olalla Landfill

Project Number: 533022

23L0546-06 J	VOA Vial, Clear, 40 mL, HCL		
23L0546-07 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass (P)
23L0546-08 A	HDPE NM, 1000 mL		
23L0546-08 B	HDPE NM, 500 mL		
23L0546-08 C	Corning Plastic, 125 mL, Na2S2O3		
23L0546-08 D	Glass NM, Amber, 250 mL, 9N H2SO4	<2	P
23L0546-08 E	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23L0546-08 F	VOA Vial, Clear, 40 mL, HCL	Bubble	
23L0546-08 G	VOA Vial, Clear, 40 mL, HCL		
23L0546-08 H	VOA Vial, Clear, 40 mL, HCL		
23L0546-08 I	VOA Vial, Clear, 40 mL, HCL		
23L0546-08 J	VOA Vial, Clear, 40 mL, HCL		
23L0546-09 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
23L0546-10 A	HDPE NM, 1000 mL		
23L0546-10 B	HDPE NM, 500 mL		
23L0546-10 C	Corning Plastic, 125 mL, Na2S2O3		
23L0546-10 D	Glass NM, Amber, 250 mL, 9N H2SO4	<2	P
23L0546-10 E	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23L0546-10 F	VOA Vial, Clear, 40 mL, HCL	Bubble	
23L0546-10 G	VOA Vial, Clear, 40 mL, HCL		
23L0546-10 H	VOA Vial, Clear, 40 mL, HCL		
23L0546-10 I	VOA Vial, Clear, 40 mL, HCL		
23L0546-10 J	VOA Vial, Clear, 40 mL, HCL		
23L0546-11 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
23L0546-12 A	HDPE NM, 1000 mL		
23L0546-12 B	HDPE NM, 500 mL		
23L0546-12 C	Corning Plastic, 125 mL, Na2S2O3		
23L0546-12 D	Glass NM, Amber, 250 mL, 9N H2SO4	<2	P
23L0546-12 E	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23L0546-12 F	VOA Vial, Clear, 40 mL, HCL		
23L0546-12 G	VOA Vial, Clear, 40 mL, HCL		
23L0546-12 H	VOA Vial, Clear, 40 mL, HCL		
23L0546-12 I	VOA Vial, Clear, 40 mL, HCL		
23L0546-12 J	VOA Vial, Clear, 40 mL, HCL		
23L0546-13 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
23L0546-14 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P



WORK ORDER

23L0546

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: TRC Companies, Inc

Project Manager: Kelly Bottem

Project: Olalla Landfill

Project Number: 533022

23L0546-14 B VOA Vial, Clear, 40 mL, HCL

23L0546-14 C VOA Vial, Clear, 40 mL, HCL

23L0546-15 A VOA Vial, Clear, 40 mL, HCL

23L0546-15 B VOA Vial, Clear, 40 mL, HCL

23L0546-15 C VOA Vial, Clear, 40 mL, HCL

*JS*

Preservation Confirmed By

*12/20/23*

Date





# Cooler Receipt Form

ARI Client: TRC  
 COC No(s): \_\_\_\_\_ (NA)  
 Assigned ARI Job No: 23L4546

Project Name: Oliver  
 Delivered by: Fed-Ex UPS Courier Hand Delivered Other: \_\_\_\_\_  
 Tracking No: \_\_\_\_\_ (NA)

**Preliminary Examination Phase:**

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES NO  
 Were custody papers included with the cooler? ..... YES NO  
 Were custody papers properly filled out (ink, signed, etc.) ..... YES NO  
 Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)  
 Time 1501 60 7.5\*  
 If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 8009708

Cooler Accepted by: MD Date: 12/20/23 Time: 1501

**Complete custody forms and attach all shipping documents**

**Log-In Phase:**

Was a temperature blank included in the cooler? ..... YES NO  
 What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: \_\_\_\_\_  
 Was sufficient ice used (if appropriate)? ..... NA YES NO \*  
 How were bottles sealed in plastic bags? ..... Individually Grouped Not  
 Did all bottles arrive in good condition (unbroken)? ..... YES NO  
 Were all bottle labels complete and legible? ..... YES NO  
 Did the number of containers listed on COC match with the number of containers received? ..... YES NO  
 Did all bottle labels and tags agree with custody papers? ..... YES NO  
 Were all bottles used correct for the requested analyses? ..... YES NO  
 Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES NO  
 Were all VOC vials free of air bubbles? ..... NA YES NO  
 Was sufficient amount of sample sent in each bottle? ..... YES NO  
 Date VOC Trip Blank was made at ARI ..... NA 12/18/23  
 Were the sample(s) split by ARI? NA YES Date/Time: \_\_\_\_\_ Equipment: \_\_\_\_\_ Split by: \_\_\_\_\_

Samples Logged by: JSW Date: 12/20/23 Time: 1537 Labels checked by: JSW

**\*\* Notify Project Manager of discrepancies or concerns \*\***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

**Additional Notes, Discrepancies, & Resolutions:**

vials w/ air bubbles marked on preservation sheet  
 lab to determine sizes. Client did not annotate  
 T. coli on Col, logged since bottles were provided.  
 Trip blanks were not on Col, logged as final sample.  
 By: JSW Date: 12/20/23 Client did not mark MW-7 as  
 field filtered on bottle.





TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
15-Jan-2024 17:56

**MW-1**  
**23L0546-01 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 12/20/2023 09:10

Instrument: NT3 Analyst: PKC

Analyzed: 12/21/2023 13:30

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)  
Preparation Batch: BLL0616  
Prepared: 12/21/2023

Sample Size: 10 mL  
Final Volume: 10 mL

Extract ID: 23L0546-01 G

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U





TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
15-Jan-2024 17:56

**MW-1**  
**23L0546-01 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 12/20/2023 09:10

Instrument: NT3 Analyst: PKC

Analyzed: 12/21/2023 13:30

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U





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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
15-Jan-2024 17:56

**MW-1**  
**23L0546-01 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 12/20/2023 09:10

Instrument: NT3 Analyst: PKC

Analyzed: 12/21/2023 13:30

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>95.8</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>			<i>80-120 %</i>	<i>96.7</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>			<i>80-120 %</i>	<i>104</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			<i>80-120 %</i>	<i>98.2</i>	<i>%</i>	



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**MW-1**  
**23L0546-01 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 12/20/2023 09:10
Instrument: NT16 Analyst: PB	Analyzed: 12/22/2023 15:18
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23L0546-01 H
Preparation Batch: BLL0651	Sample Size: 10 mL
Prepared: 12/22/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	ND	ng/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>98.8</i>	<i>%</i>	



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**MW-1**  
**23L0546-01 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Instrument: ICP3 Analyst: DOE	Sampled: 12/20/2023 09:10 Analyzed: 01/03/2024 09:57
Sample Preparation:	Preparation Method: TWC EPA 3010A Preparation Batch: BMA0012 Prepared: 01/02/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 23L0546-01 E 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	1	0.0500	12.9	mg/L	
Potassium	7440-09-7	1	0.500	0.640	mg/L	
Sodium	7440-23-5	1	0.500	4.90	mg/L	



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**MW-1**  
**23L0546-01 (Water)**

**Wet Chemistry**

Method: EPA 325.2	Instrument: LACHAT2 Analyst: CB	Sampled: 12/20/2023 09:10 Analyzed: 01/10/2024 17:19
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BMA0234 Prepared: 01/10/2024	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23L0546-01 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	1.00	1.00	6.78	mg/L	



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**MW-1**  
**23L0546-01 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Instrument: [CALC] Analyst: EJK	Sampled: 12/20/2023 09:10 Analyzed: 12/28/2023 10:07
Sample Preparation:	Preparation Method: [CALC] Preparation Batch: [CALC] Prepared: 12/26/2023	Extract ID: 23L0546-01
	Final Volume: 1	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.0200	0.202	mg/L	H



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**MW-1**  
**23L0546-01 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Instrument: LACHAT2 Analyst: EJK	Sampled: 12/20/2023 09:10 Analyzed: 12/22/2023 13:02
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BLL0624 Prepared: 12/21/2023	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23L0546-01 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.010	0.010	ND	mg/L	H, U



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**MW-1**  
**23L0546-01 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Instrument: LACHAT2 Analyst: CB	Sampled: 12/20/2023 09:10
Sample Preparation:	Preparation Method: No Prep Wet Chem	Analyzed: 12/28/2023 10:07
	Preparation Batch: BLL0698	Extract ID: 23L0546-01 D
	Prepared: 12/26/2023	
	Sample Size: 10 mL	
	Final Volume: 10 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate + Nitrite as N		1	0.010	0.010	0.202	mg/L	



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**MW-1**  
**23L0546-01 (Water)**

**Wet Chemistry**

Method: EPA 375.2	Instrument: LACHAT2 Analyst: CB	Sampled: 12/20/2023 09:10 Analyzed: 01/08/2024 13:17
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BMA0144 Prepared: 01/08/2024	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23L0546-01 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	2.00	2.00	4.15	mg/L	





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**MW-1**  
**23L0546-01 (Water)**

**Wet Chemistry**

Method: EPA 9060A	Instrument: TOC-LCSH Analyst: RMS	Sampled: 12/20/2023 09:10	Analyzed: 01/10/2024 06:07
Sample Preparation:	Preparation Method: No Prep Wet Chem	Sample Size: 20 mL	Extract ID: 23L0546-01 D
	Preparation Batch: BMA0206	Final Volume: 20 mL	
	Prepared: 01/10/2024		

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	0.65	mg/L	



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**MW-1**  
**23L0546-01 (Water)**

**Wet Chemistry**

Method: SM 2320 B-97	Sampled: 12/20/2023 09:10
Instrument: Accumet AB150 Analyst: UW	Analyzed: 12/21/2023 09:26
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23L0546-01 B
Preparation Batch: BLL0604	Sample Size: 50 mL
Prepared: 12/21/2023	Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Bicarbonate		1	1.00	1.00	54.8	mg/L CaCO3	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Carbonate		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Hydroxide		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	54.8	mg/L CaCO3	



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**MW-1**  
**23L0546-01 (Water)**

**Wet Chemistry**

Method: SM 4500-H+ B-00	Sampled: 12/20/2023 09:10
Instrument: Accumet AB150 Analyst: PNG	Analyzed: 12/20/2023 16:15
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23L0546-01 A
Preparation Batch: BLL0596	Sample Size: 50 mL
Prepared: 12/20/2023	Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
pH		1	0.01	0.01	6.39	pH Units	H



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**MW-1**  
**23L0546-01 (Water)**

**Wet Chemistry**

Method: SM 4500-NH3 H-97	Sampled: 12/20/2023 09:10	
Instrument: LCHAT1 Analyst: EJK	Analyzed: 01/04/2024 11:30	
Sample Preparation:	Preparation Method: No Prep Wet Chem	Extract ID: 23L0546-01 B
	Preparation Batch: BMA0059	Sample Size: 10 mL
	Prepared: 01/03/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.040	0.040	ND	mg/L	U



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**MW-1**  
**23L0546-01 (Water)**

**Microbiology**

Method: SM 9222B	Sampled: 12/20/2023 09:10
Instrument: N/A Analyst: UW	Analyzed: 12/21/2023 15:00
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23L0546-01
Preparation Batch: BLL0593	Sample Size: 100 mL
Prepared: 12/20/2023	Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Coliforms		1	1	1	ND	CFU/100 ml	U



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**MW-1**  
**23L0546-01RE1 (Water)**

**Wet Chemistry**

Method: EPA 410.4	Instrument: UV1800-1	Analyst: CDE	Sampled: 12/20/2023 09:10	Analyzed: 01/08/2024 17:58
Sample Preparation:	Preparation Method: No Prep Wet Chem	Preparation Batch: BLL0770	Sample Size: 2 mL	Final Volume: 2 mL
	Prepared: 12/28/2023		Extract ID: 23L0546-01RE1 D	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
COD		1	10.0	10.0	ND	mg/L	U



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**MW-1**  
**23L0546-02 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 12/20/2023 09:10
Instrument: ICPMS2 Analyst: MCB	Analyzed: 12/29/2023 19:47
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23L0546-02 A 01
Preparation Batch: BLL0785	Sample Size: 25 mL
Prepared: 12/29/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Zinc, Dissolved	7440-66-6	1	6.00	ND	ug/L	U



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**MW-1**  
**23L0546-02 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8	Sampled: 12/20/2023 09:10
Instrument: ICPMS2 Analyst: MCB	Analyzed: 01/09/2024 01:09
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23L0546-02 A 01
Preparation Batch: BLL0785	Sample Size: 25 mL
Prepared: 12/29/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron, Dissolved	7439-89-6	2	40.0	ND	ug/L	U





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**MW-1**  
**23L0546-02 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D	Sampled: 12/20/2023 09:10
Instrument: ICP3 Analyst: DOE	Analyzed: 01/05/2024 11:21
Sample Preparation: Preparation Method: WMN (No Prep)	Extract ID: 23L0546-02 A 03
Preparation Batch: BMA0024	Sample Size: 25 mL
Prepared: 01/02/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0060	ND	mg/L	U
Manganese, Dissolved	7439-96-5	1	0.0040	ND	mg/L	U



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**MW-1**  
**23L0546-02RE1 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 12/20/2023 09:10
Instrument: ICPMS2 Analyst: DOE	Analyzed: 01/09/2024 21:43
Sample Preparation: Preparation Method: RHN EPA 600/4-79-020 4.1.4 HNO3 matrix 5x Preparation Batch: BMA0184 Prepared: 01/09/2024	Extract ID: 23L0546-02RE1 A 04 Sample Size: 100 mL Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0400	0.0914	ug/L	



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**MW-5A**  
**23L0546-03 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 12/20/2023 10:10
Instrument: NT16 Analyst: PB	Analyzed: 12/22/2023 15:39
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23L0546-03 B
Preparation Batch: BLL0651	Sample Size: 10 mL
Prepared: 12/22/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	ND	ng/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>101</i>	<i>%</i>	



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**MW-5A**  
**23L0546-03 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 12/20/2023 10:10
Instrument: ICPMS1 Analyst: HAL	Analyzed: 01/03/2024 21:31
Sample Preparation:	Preparation Method: RHN EPA 600/4-79-020 4.1.4 HNO3 matrix 5x
	Preparation Batch: BMA0013
	Prepared: 01/02/2024
	Sample Size: 100 mL
	Final Volume: 20 mL
	Extract ID: 23L0546-03 A 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0400	0.200	ug/L	B



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**MW-5A**  
**23L0546-03 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 12/20/2023 10:10
Instrument: ICPMS2 Analyst: MCB	Analyzed: 12/29/2023 19:40
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23L0546-03 A 01
Preparation Batch: BLL0785	Sample Size: 25 mL
Prepared: 12/29/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Zinc, Dissolved	7440-66-6	1	6.00	ND	ug/L	U



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**MW-5A**  
**23L0546-03 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8	Sampled: 12/20/2023 10:10
Instrument: ICPMS2 Analyst: MCB	Analyzed: 12/29/2023 19:40
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23L0546-03 A 01
Preparation Batch: BLL0785	Sample Size: 25 mL
Prepared: 12/29/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron, Dissolved	7439-89-6	1	20.0	ND	ug/L	U



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**MW-5A**  
**23L0546-03 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D	Sampled: 12/20/2023 10:10
Instrument: ICP3 Analyst: DOE	Analyzed: 01/05/2024 12:03
Sample Preparation: Preparation Method: WMN (No Prep)	Extract ID: 23L0546-03 A 03
Preparation Batch: BMA0024	Sample Size: 25 mL
Prepared: 01/02/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0060	ND	mg/L	U
Manganese, Dissolved	7439-96-5	1	0.0040	ND	mg/L	U



TRC Companies, Inc  
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Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
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**MW-3**  
**23L0546-04 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 12/20/2023 10:35

Instrument: NT3 Analyst: PKC

Analyzed: 12/21/2023 13:52

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 23L0546-04 H

Preparation Batch: BLL0616

Sample Size: 10 mL

Prepared: 12/21/2023

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U





TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
15-Jan-2024 17:56

**MW-3**  
**23L0546-04 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 12/20/2023 10:35

Instrument: NT3 Analyst: PKC

Analyzed: 12/21/2023 13:52

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.50	ND	ug/L	U



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**MW-3**  
**23L0546-04 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D Sampled: 12/20/2023 10:35  
Instrument: NT3 Analyst: PKC Analyzed: 12/21/2023 13:52

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Pentanone	107-87-9	1	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	110	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	97.3	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	104	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	101	%	



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**MW-3**  
**23L0546-04 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 12/20/2023 10:35
Instrument: NT16 Analyst: PB	Analyzed: 12/22/2023 15:59
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23L0546-04 I
Preparation Batch: BLL0651	Sample Size: 10 mL
Prepared: 12/22/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	ND	ng/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>99.1</i>	<i>%</i>	



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**MW-3**  
**23L0546-04 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Preparation Method: TWC EPA 3010A	Sample Size: 25 mL	Sampled: 12/20/2023 10:35
Instrument: ICP3 Analyst: DOE	Preparation Batch: BMA0012	Final Volume: 25 mL	Analyzed: 01/03/2024 11:01
Sample Preparation:	Prepared: 01/02/2024	Extract ID: 23L0546-04 E 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	1	0.0500	51.9	mg/L	
Potassium	7440-09-7	1	0.500	0.787	mg/L	
Sodium	7440-23-5	1	0.500	9.47	mg/L	



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**MW-3**  
**23L0546-04 (Water)**

**Wet Chemistry**

Method: EPA 325.2	Instrument: LACHAT2 Analyst: CB	Sampled: 12/20/2023 10:35 Analyzed: 01/10/2024 17:20
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BMA0234 Prepared: 01/10/2024	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23L0546-04 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	1.00	1.00	6.37	mg/L	



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**MW-3**  
**23L0546-04 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Sampled: 12/20/2023 10:35
Instrument: [CALC] Analyst: EJK	Analyzed: 12/28/2023 10:27
Sample Preparation: Preparation Method: [CALC] Preparation Batch: [CALC] Prepared: 12/26/2023	Extract ID: 23L0546-04
Final Volume: 1	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.0200	ND	mg/L	U, H



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**MW-3**  
**23L0546-04 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Instrument: LACHAT2 Analyst: EJK	Sampled: 12/20/2023 10:35 Analyzed: 12/22/2023 13:03
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BLL0624 Prepared: 12/21/2023	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23L0546-04 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.010	0.010	ND	mg/L	H, U



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**MW-3**  
**23L0546-04 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Instrument: LACHAT2	Analyst: CB	Sampled: 12/20/2023 10:35	Analyzed: 12/28/2023 10:27
Sample Preparation:	Preparation Method: No Prep Wet Chem	Preparation Batch: BLL0698	Sample Size: 10 mL	Final Volume: 10 mL
	Prepared: 12/26/2023		Extract ID: 23L0546-04 D	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate + Nitrite as N		1	0.010	0.010	ND	mg/L	U





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**MW-3**  
**23L0546-04 (Water)**

**Wet Chemistry**

Method: EPA 375.2	Instrument: LACHAT2 Analyst: CB	Sampled: 12/20/2023 10:35 Analyzed: 01/08/2024 13:18
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BMA0144 Prepared: 01/08/2024	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23L0546-04 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	2.00	2.00	21.6	mg/L	



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**MW-3**  
**23L0546-04 (Water)**

**Wet Chemistry**

Method: EPA 9060A	Instrument: TOC-LCSH Analyst: RMS	Sampled: 12/20/2023 10:35 Analyzed: 01/10/2024 07:37
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BMA0206 Prepared: 01/10/2024	Sample Size: 20 mL Final Volume: 20 mL Extract ID: 23L0546-04 D

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	2.72	mg/L	



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**MW-3**  
**23L0546-04 (Water)**

**Wet Chemistry**

Method: SM 2320 B-97	Sampled: 12/20/2023 10:35
Instrument: Accumet AB150 Analyst: UW	Analyzed: 12/21/2023 09:26
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23L0546-04 B
Preparation Batch: BLL0604	Sample Size: 50 mL
Prepared: 12/21/2023	Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Bicarbonate		1	1.00	1.00	206	mg/L CaCO3	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Carbonate		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Hydroxide		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	206	mg/L CaCO3	



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**MW-3**  
**23L0546-04 (Water)**

**Wet Chemistry**

Method: SM 4500-H+ B-00	Sampled: 12/20/2023 10:35
Instrument: Accumet AB150 Analyst: PNG	Analyzed: 12/20/2023 16:15
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23L0546-04 A
Preparation Batch: BLL0596	Sample Size: 50 mL
Prepared: 12/20/2023	Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
pH		1	0.01	0.01	6.40	pH Units	H



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**MW-3**  
**23L0546-04 (Water)**

**Wet Chemistry**

Method: SM 4500-NH3 H-97	Sampled: 12/20/2023 10:35
Instrument: LCHAT1 Analyst: EJK	Analyzed: 01/04/2024 11:32
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23L0546-04 B
Preparation Batch: BMA0059	Sample Size: 10 mL
Prepared: 01/03/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.040	0.040	ND	mg/L	U



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**MW-3**  
**23L0546-04 (Water)**

**Microbiology**

Method: SM 9222B Sampled: 12/20/2023 10:35  
Instrument: N/A Analyst: UW Analyzed: 12/21/2023 15:00

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 23L0546-04  
Preparation Batch: BLL0593 Sample Size: 100 mL  
Prepared: 12/20/2023 Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Coliforms		1	1	1	ND	CFU/100 ml	U



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**MW-3**  
**23L0546-04RE1 (Water)**

**Wet Chemistry**

Method: EPA 410.4	Instrument: UV1800-1	Analyst: CDE	Sampled: 12/20/2023 10:35	Analyzed: 01/08/2024 18:00
Sample Preparation:	Preparation Method: No Prep Wet Chem	Preparation Batch: BLL0770	Sample Size: 2 mL	Final Volume: 2 mL
	Prepared: 12/28/2023		Extract ID: 23L0546-04RE1 D	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
COD		1	10.0	10.0	ND	mg/L	U



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**MW-3**  
**23L0546-05 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 12/20/2023 10:35
Instrument: ICPMS2 Analyst: MCB	Analyzed: 12/29/2023 19:44
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23L0546-05 A 01
Preparation Batch: BLL0785	Sample Size: 25 mL
Prepared: 12/29/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Zinc, Dissolved	7440-66-6	1	6.00	ND	ug/L	U





TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**MW-3**  
**23L0546-05 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8	Sampled: 12/20/2023 10:35
Instrument: ICPMS2 Analyst: MCB	Analyzed: 12/29/2023 19:44
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23L0546-05 A 01
Preparation Batch: BLL0785	Sample Size: 25 mL
Prepared: 12/29/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron, Dissolved	7439-89-6	1	20.0	ND	ug/L	U



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**MW-3**  
**23L0546-05 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D	Preparation Method: WMN (No Prep)		Sampled: 12/20/2023 10:35
Instrument: ICP3 Analyst: DOE	Preparation Batch: BMA0024	Sample Size: 25 mL	Analyzed: 01/05/2024 11:36
Sample Preparation:	Prepared: 01/02/2024	Final Volume: 25 mL	Extract ID: 23L0546-05 A 03

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0060	0.0153	mg/L	
Manganese, Dissolved	7439-96-5	1	0.0040	4.96	mg/L	



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**MW-3**  
**23L0546-05RE1 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 12/20/2023 10:35
Instrument: ICPMS2 Analyst: DOE	Analyzed: 01/09/2024 21:46
Sample Preparation: Preparation Method: RHN EPA 600/4-79-020 4.1.4 HNO3 matrix 5x Preparation Batch: BMA0184 Prepared: 01/09/2024	Extract ID: 23L0546-05RE1 A 04 Sample Size: 100 mL Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0400	0.140	ug/L	



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
15-Jan-2024 17:56

**MW-10**  
**23L0546-06 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 12/20/2023 11:05

Instrument: NT3 Analyst: PKC

Analyzed: 12/21/2023 14:14

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 23L0546-06 I

Preparation Batch: BLL0616

Sample Size: 10 mL

Prepared: 12/21/2023

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U



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1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
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**MW-10**  
**23L0546-06 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 12/20/2023 11:05

Instrument: NT3 Analyst: PKC

Analyzed: 12/21/2023 14:14

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.50	ND	ug/L	U



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**MW-10**  
**23L0546-06 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D Sampled: 12/20/2023 11:05  
Instrument: NT3 Analyst: PKC Analyzed: 12/21/2023 14:14

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Pentanone	107-87-9	1	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	104	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	97.8	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	98.2	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	102	%	



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**MW-10**  
**23L0546-06 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 12/20/2023 11:05
Instrument: NT16 Analyst: PB	Analyzed: 12/22/2023 16:20
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23L0546-06 J
Preparation Batch: BLL0651	Sample Size: 10 mL
Prepared: 12/22/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	ND	ng/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>100</i>	<i>%</i>	



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**MW-10**  
**23L0546-06 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 12/20/2023 11:05
Instrument: ICP3 Analyst: DOE	Analyzed: 01/03/2024 11:04
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 23L0546-06 E 01
Preparation Batch: BMA0012	Sample Size: 25 mL
Prepared: 01/02/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	1	0.0500	43.1	mg/L	
Potassium	7440-09-7	1	0.500	1.07	mg/L	
Sodium	7440-23-5	1	0.500	9.95	mg/L	





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**MW-10**  
**23L0546-06 (Water)**

**Wet Chemistry**

Method: EPA 325.2	Instrument: LACHAT2 Analyst: CB	Sampled: 12/20/2023 11:05 Analyzed: 01/10/2024 17:29
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BMA0234 Prepared: 01/10/2024	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23L0546-06 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	1.00	1.00	6.11	mg/L	



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**MW-10**  
**23L0546-06 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Sampled: 12/20/2023 11:05
Instrument: [CALC] Analyst: EJK	Analyzed: 12/28/2023 10:28
Sample Preparation: Preparation Method: [CALC] Preparation Batch: [CALC] Prepared: 12/26/2023	Extract ID: 23L0546-06
Final Volume: 1	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.0200	ND	mg/L	U, H



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**MW-10**  
**23L0546-06 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Instrument: LACHAT2 Analyst: EJK	Sampled: 12/20/2023 11:05 Analyzed: 12/22/2023 13:04
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BLL0624 Prepared: 12/21/2023	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23L0546-06 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.010	0.010	ND	mg/L	H, U



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**MW-10**  
**23L0546-06 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Instrument: LACHAT2 Analyst: CB	Sampled: 12/20/2023 11:05 Analyzed: 12/28/2023 10:28
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BLL0698 Prepared: 12/26/2023	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23L0546-06 D

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate + Nitrite as N		1	0.010	0.010	ND	mg/L	U



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**MW-10**  
**23L0546-06 (Water)**

**Wet Chemistry**

Method: EPA 9060A	Instrument: TOC-LCSH Analyst: RMS	Sampled: 12/20/2023 11:05	Analyzed: 01/10/2024 07:59
Sample Preparation:	Preparation Method: No Prep Wet Chem	Sample Size: 20 mL	Extract ID: 23L0546-06 D
	Preparation Batch: BMA0206	Final Volume: 20 mL	
	Prepared: 01/10/2024		

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	2.94	mg/L	



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**MW-10**  
**23L0546-06 (Water)**

**Wet Chemistry**

Method: SM 2320 B-97	Instrument: Accumet AB150	Analyst: UW	Sampled: 12/20/2023 11:05	Analyzed: 12/21/2023 09:26
Sample Preparation:	Preparation Method: No Prep Wet Chem	Preparation Batch: BLL0604	Sample Size: 50 mL	Final Volume: 50 mL
	Prepared: 12/21/2023		Extract ID: 23L0546-06 B	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Bicarbonate		1	1.00	1.00	206	mg/L CaCO3	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Carbonate		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Hydroxide		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	206	mg/L CaCO3	



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**MW-10**  
**23L0546-06 (Water)**

**Wet Chemistry**

Method: SM 4500-H+ B-00	Sampled: 12/20/2023 11:05
Instrument: Accumet AB150 Analyst: PNG	Analyzed: 12/20/2023 16:15
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23L0546-06 A
Preparation Batch: BLL0596	Sample Size: 50 mL
Prepared: 12/20/2023	Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
pH		1	0.01	0.01	6.60	pH Units	H



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**MW-10**  
**23L0546-06 (Water)**

**Wet Chemistry**

Method: SM 4500-NH3 H-97	Sampled: 12/20/2023 11:05
Instrument: LCHAT1 Analyst: EJK	Analyzed: 01/04/2024 11:43
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23L0546-06 B
Preparation Batch: BMA0059	Sample Size: 10 mL
Prepared: 01/03/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.040	0.040	ND	mg/L	U





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**MW-10**  
**23L0546-06 (Water)**

**Microbiology**

Method: SM 9222B	Sampled: 12/20/2023 11:05
Instrument: N/A Analyst: UW	Analyzed: 12/21/2023 15:00
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23L0546-06
Preparation Batch: BLL0593	Sample Size: 100 mL
Prepared: 12/20/2023	Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Coliforms		1	1	1	ND	CFU/100 ml	U



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**MW-10**  
**23L0546-06RE1 (Water)**

**Wet Chemistry**

Method: EPA 410.4	Instrument: UV1800-1	Analyst: CDE	Sampled: 12/20/2023 11:05	Analyzed: 01/08/2024 18:01
Sample Preparation:	Preparation Method: No Prep Wet Chem	Preparation Batch: BLL0770	Sample Size: 2 mL	Extract ID: 23L0546-06RE1 D
	Prepared: 12/28/2023		Final Volume: 2 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
COD		1	10.0	10.0	ND	mg/L	U



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**MW-10**  
**23L0546-06RE2 (Water)**

**Wet Chemistry**

Method: EPA 375.2	Instrument: LACHAT2 Analyst: CB	Sampled: 12/20/2023 11:05 Analyzed: 01/08/2024 13:39
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BMA0144 Prepared: 01/08/2024	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23L0546-06RE2 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	2.00	2.00	6.26	mg/L	



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**MW-10**  
**23L0546-07 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 12/20/2023 11:05
Instrument: ICPMS1 Analyst: HAL	Analyzed: 01/03/2024 21:11
Sample Preparation: Preparation Method: RHN EPA 600/4-79-020 4.1.4 HNO3 matrix 5x	Extract ID: 23L0546-07 A
Preparation Batch: BMA0013	Sample Size: 100 mL
Prepared: 01/02/2024	Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0400	1.43	ug/L	B



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**MW-10**  
**23L0546-07 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 12/20/2023 11:05
Instrument: ICPMS2 Analyst: MCB	Analyzed: 01/09/2024 00:46
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23L0546-07 A 01
Preparation Batch: BLL0785	Sample Size: 25 mL
Prepared: 12/29/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Zinc, Dissolved	7440-66-6	5	30.0	ND	ug/L	U



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**MW-10**  
**23L0546-07 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8	Sampled: 12/20/2023 11:05
Instrument: ICPMS2 Analyst: MCB	Analyzed: 01/09/2024 00:46
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23L0546-07 A 01
Preparation Batch: BLL0785	Sample Size: 25 mL
Prepared: 12/29/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron, Dissolved	7439-89-6	5	100	ND	ug/L	U



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**MW-10**  
**23L0546-07 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D	Sampled: 12/20/2023 11:05
Instrument: ICP3 Analyst: DOE	Analyzed: 01/05/2024 11:39
Sample Preparation: Preparation Method: WMN (No Prep)	Extract ID: 23L0546-07 A 03
Preparation Batch: BMA0024	Sample Size: 25 mL
Prepared: 01/02/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0060	0.0134	mg/L	
Manganese, Dissolved	7439-96-5	1	0.0040	3.78	mg/L	



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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

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**MW-13**  
**23L0546-08 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 12/20/2023 12:05

Instrument: NT3 Analyst: PKC

Analyzed: 12/21/2023 14:36

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 23L0546-08 H

Preparation Batch: BLL0616

Sample Size: 10 mL

Prepared: 12/21/2023

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U





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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
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**MW-13**  
**23L0546-08 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 12/20/2023 12:05

Instrument: NT3 Analyst: PKC

Analyzed: 12/21/2023 14:36

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.50	ND	ug/L	U



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**MW-13**  
**23L0546-08 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D Sampled: 12/20/2023 12:05  
Instrument: NT3 Analyst: PKC Analyzed: 12/21/2023 14:36

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Pentanone	107-87-9	1	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	107	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	97.6	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	103	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	104	%	



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**MW-13**  
**23L0546-08 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 12/20/2023 12:05
Instrument: NT16 Analyst: PB	Analyzed: 12/22/2023 16:40
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23L0546-08 I
Preparation Batch: BLL0651	Sample Size: 10 mL
Prepared: 12/22/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	ND	ng/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>99.5</i>	<i>%</i>	



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**MW-13**  
**23L0546-08 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Instrument: ICP3 Analyst: DOE	Sampled: 12/20/2023 12:05 Analyzed: 01/03/2024 11:07
Sample Preparation:	Preparation Method: TWC EPA 3010A Preparation Batch: BMA0012 Prepared: 01/02/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 23L0546-08 E 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	1	0.0500	42.1	mg/L	
Potassium	7440-09-7	1	0.500	1.10	mg/L	
Sodium	7440-23-5	1	0.500	9.77	mg/L	



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**MW-13**  
**23L0546-08 (Water)**

**Wet Chemistry**

Method: EPA 325.2	Instrument: LACHAT2 Analyst: CB	Sampled: 12/20/2023 12:05 Analyzed: 01/10/2024 17:31
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BMA0234 Prepared: 01/10/2024	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23L0546-08 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	1.00	1.00	6.09	mg/L	



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**MW-13**  
**23L0546-08 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Sampled: 12/20/2023 12:05
Instrument: [CALC] Analyst: EJK	Analyzed: 12/28/2023 10:41
Sample Preparation: Preparation Method: [CALC] Preparation Batch: [CALC] Prepared: 12/26/2023	Extract ID: 23L0546-08
Final Volume: 1	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.0200	ND	mg/L	U, H



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**MW-13**  
**23L0546-08 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Instrument: LACHAT2	Analyst: EJK	Sampled: 12/20/2023 12:05	Analyzed: 12/22/2023 13:05
Sample Preparation:	Preparation Method: No Prep Wet Chem	Preparation Batch: BLL0624	Sample Size: 10 mL	Final Volume: 10 mL
	Prepared: 12/21/2023		Extract ID: 23L0546-08 A	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.010	0.010	ND	mg/L	H, U



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**MW-13**  
**23L0546-08 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Instrument: LACHAT2	Analyst: CB	Sampled: 12/20/2023 12:05	Analyzed: 12/28/2023 10:41
Sample Preparation:	Preparation Method: No Prep Wet Chem	Preparation Batch: BLL0698	Sample Size: 10 mL	Final Volume: 10 mL
	Prepared: 12/26/2023		Extract ID: 23L0546-08 D	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate + Nitrite as N		1	0.010	0.010	ND	mg/L	U





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**MW-13**  
**23L0546-08 (Water)**

**Wet Chemistry**

Method: EPA 9060A	Sampled: 12/20/2023 12:05
Instrument: TOC-LCSH Analyst: RMS	Analyzed: 01/10/2024 09:02
Sample Preparation:	Preparation Method: No Prep Wet Chem
	Preparation Batch: BMA0206
	Prepared: 01/10/2024
	Sample Size: 20 mL
	Final Volume: 20 mL
	Extract ID: 23L0546-08 D

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	2.93	mg/L	



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**MW-13**  
**23L0546-08 (Water)**

**Wet Chemistry**

Method: SM 2320 B-97	Instrument: Accumet AB150	Analyst: UW	Sampled: 12/20/2023 12:05	Analyzed: 12/21/2023 09:26
Sample Preparation:	Preparation Method: No Prep Wet Chem	Preparation Batch: BLL0604	Sample Size: 50 mL	Final Volume: 50 mL
	Prepared: 12/21/2023		Extract ID: 23L0546-08 B	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Bicarbonate		1	1.00	1.00	209	mg/L CaCO3	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Carbonate		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Hydroxide		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	209	mg/L CaCO3	



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**MW-13**  
**23L0546-08 (Water)**

**Wet Chemistry**

Method: SM 4500-H+ B-00	Instrument: Accumet AB150	Analyst: PNG	Sampled: 12/20/2023 12:05	Analyzed: 12/20/2023 16:15
Sample Preparation:	Preparation Method: No Prep Wet Chem	Preparation Batch: BLL0596	Sample Size: 50 mL	Extract ID: 23L0546-08 A
	Prepared: 12/20/2023		Final Volume: 50 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
pH		1	0.01	0.01	6.62	pH Units	H



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**MW-13**  
**23L0546-08 (Water)**

**Wet Chemistry**

Method: SM 4500-NH3 H-97	Sampled: 12/20/2023 12:05
Instrument: LCHAT1 Analyst: EJK	Analyzed: 01/04/2024 11:48
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23L0546-08 B
Preparation Batch: BMA0059	Sample Size: 10 mL
Prepared: 01/03/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.040	0.040	ND	mg/L	U



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**MW-13**  
**23L0546-08 (Water)**

**Microbiology**

Method: SM 9222B	Sampled: 12/20/2023 12:05
Instrument: N/A Analyst: UW	Analyzed: 12/21/2023 15:00
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23L0546-08
Preparation Batch: BLL0593	Sample Size: 100 mL
Prepared: 12/20/2023	Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Coliforms		1	1	1	ND	CFU/100 ml	U



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**MW-13**  
**23L0546-08RE1 (Water)**

**Wet Chemistry**

Method: EPA 375.2	Instrument: LACHAT2 Analyst: CB	Sampled: 12/20/2023 12:05	Analyzed: 01/08/2024 13:35
Sample Preparation:	Preparation Method: No Prep Wet Chem	Sample Size: 10 mL	Extract ID: 23L0546-08RE1 A
	Preparation Batch: BMA0144	Final Volume: 10 mL	
	Prepared: 01/08/2024		

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	2.00	2.00	6.17	mg/L	



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**MW-13**  
**23L0546-08RE1 (Water)**

**Wet Chemistry**

Method: EPA 410.4	Instrument: UV1800-1	Analyst: CDE	Sampled: 12/20/2023 12:05	Analyzed: 01/08/2024 18:02
Sample Preparation:	Preparation Method: No Prep Wet Chem	Preparation Batch: BLL0770	Sample Size: 2 mL	Final Volume: 2 mL
	Prepared: 12/28/2023		Extract ID: 23L0546-08RE1 D	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
COD		1	10.0	10.0	ND	mg/L	U



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**MW-13**  
**23L0546-09 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 12/20/2023 12:05
Instrument: ICPMS1 Analyst: HAL	Analyzed: 01/03/2024 21:15
Sample Preparation: Preparation Method: RHN EPA 600/4-79-020 4.1.4 HNO3 matrix 5x	Extract ID: 23L0546-09 A
Preparation Batch: BMA0013	Sample Size: 100 mL
Prepared: 01/02/2024	Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0400	1.70	ug/L	B





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**MW-13**  
**23L0546-09 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 12/20/2023 12:05
Instrument: ICPMS2 Analyst: MCB	Analyzed: 01/09/2024 00:51
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23L0546-09 A 01
Preparation Batch: BLL0785	Sample Size: 25 mL
Prepared: 12/29/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Zinc, Dissolved	7440-66-6	5	30.0	ND	ug/L	U



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**MW-13**  
**23L0546-09 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8	Sampled: 12/20/2023 12:05
Instrument: ICPMS2 Analyst: MCB	Analyzed: 01/09/2024 00:51
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23L0546-09 A 01
Preparation Batch: BLL0785	Sample Size: 25 mL
Prepared: 12/29/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron, Dissolved	7439-89-6	5	100	ND	ug/L	U



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**MW-13**  
**23L0546-09 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D	Preparation Method: WMN (No Prep)	Sample Size: 25 mL	Sampled: 12/20/2023 12:05
Instrument: ICP3 Analyst: DOE	Preparation Batch: BMA0024	Final Volume: 25 mL	Analyzed: 01/05/2024 11:42
Sample Preparation:	Prepared: 01/02/2024	Extract ID: 23L0546-09 A 03	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0060	0.0133	mg/L	
Manganese, Dissolved	7439-96-5	1	0.0040	3.69	mg/L	



TRC Companies, Inc  
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Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

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**MW-6**  
**23L0546-10 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 12/20/2023 12:50

Instrument: NT3 Analyst: PKC

Analyzed: 12/21/2023 14:58

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 23L0546-10 G

Preparation Batch: BLL0616

Sample Size: 10 mL

Prepared: 12/21/2023

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U



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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
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**MW-6**  
**23L0546-10 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 12/20/2023 12:50

Instrument: NT3 Analyst: PKC

Analyzed: 12/21/2023 14:58

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	2.42	ug/L	
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.50	ND	ug/L	U



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**MW-6**  
**23L0546-10 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D Sampled: 12/20/2023 12:50  
Instrument: NT3 Analyst: PKC Analyzed: 12/21/2023 14:58

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Pentanone	107-87-9	1	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	102	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	98.3	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	101	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	103	%	



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**MW-6**  
**23L0546-10 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 12/20/2023 12:50
Instrument: NT16 Analyst: PB	Analyzed: 12/22/2023 17:01
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23L0546-10 H
Preparation Batch: BLL0651	Sample Size: 10 mL
Prepared: 12/22/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	ND	ng/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	102	%	



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**MW-6**  
**23L0546-10 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 12/20/2023 12:50
Instrument: ICP3 Analyst: SH	Analyzed: 01/08/2024 13:30
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 23L0546-10 E 01
Preparation Batch: BMA0012	Sample Size: 25 mL
Prepared: 01/02/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	1	0.0500	33.3	mg/L	
Potassium	7440-09-7	1	0.500	2.21	mg/L	
Sodium	7440-23-5	1	0.500	6.31	mg/L	





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**MW-6**  
**23L0546-10 (Water)**

**Wet Chemistry**

Method: EPA 325.2	Instrument: LACHAT2 Analyst: CB	Sampled: 12/20/2023 12:50 Analyzed: 01/10/2024 17:35
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BMA0234 Prepared: 01/10/2024	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23L0546-10 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	1.00	1.00	3.06	mg/L	



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**MW-6**  
**23L0546-10 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Sampled: 12/20/2023 12:50
Instrument: [CALC] Analyst: EJK	Analyzed: 12/28/2023 10:42
Sample Preparation: Preparation Method: [CALC] Preparation Batch: [CALC] Prepared: 12/26/2023	Extract ID: 23L0546-10
Final Volume: 1	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.0200	ND	mg/L	U, H



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**MW-6**  
**23L0546-10 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Instrument: LACHAT2 Analyst: EJK	Sampled: 12/20/2023 12:50 Analyzed: 12/22/2023 13:06
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BLL0624 Prepared: 12/21/2023	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23L0546-10 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.010	0.010	ND	mg/L	H, U



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**MW-6**  
**23L0546-10 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Instrument: LACHAT2 Analyst: CB	Sampled: 12/20/2023 12:50	Analyzed: 12/28/2023 10:42
Sample Preparation:	Preparation Method: No Prep Wet Chem	Sample Size: 10 mL	Extract ID: 23L0546-10 D
	Preparation Batch: BLL0698	Final Volume: 10 mL	
	Prepared: 12/26/2023		

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate + Nitrite as N		1	0.010	0.010	ND	mg/L	U



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**MW-6**  
**23L0546-10 (Water)**

**Wet Chemistry**

Method: EPA 9060A	Instrument: TOC-LCSH Analyst: RMS	Sampled: 12/20/2023 12:50	Analyzed: 01/10/2024 09:26
Sample Preparation:	Preparation Method: No Prep Wet Chem	Sample Size: 20 mL	Extract ID: 23L0546-10 D
	Preparation Batch: BMA0206	Final Volume: 20 mL	
	Prepared: 01/10/2024		

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	1.84	mg/L	



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**MW-6**  
**23L0546-10 (Water)**

**Wet Chemistry**

Method: SM 2320 B-97	Sampled: 12/20/2023 12:50
Instrument: Accumet AB150 Analyst: UW	Analyzed: 12/21/2023 09:26
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23L0546-10 B
Preparation Batch: BLL0604	Sample Size: 50 mL
Prepared: 12/21/2023	Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Bicarbonate		1	1.00	1.00	175	mg/L CaCO3	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Carbonate		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Hydroxide		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	175	mg/L CaCO3	



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**MW-6**  
**23L0546-10 (Water)**

**Wet Chemistry**

Method: SM 4500-H+ B-00	Sampled: 12/20/2023 12:50
Instrument: Accumet AB150 Analyst: PNG	Analyzed: 12/20/2023 16:15
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23L0546-10 A
Preparation Batch: BLL0596	Sample Size: 50 mL
Prepared: 12/20/2023	Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
pH		1	0.01	0.01	6.58	pH Units	H



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**MW-6**  
**23L0546-10 (Water)**

**Wet Chemistry**

Method: SM 4500-NH3 H-97	Sampled: 12/20/2023 12:50
Instrument: LCHAT1 Analyst: EJK	Analyzed: 01/04/2024 11:45
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23L0546-10 B
Preparation Batch: BMA0059	Sample Size: 10 mL
Prepared: 01/03/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.040	0.040	ND	mg/L	U





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**MW-6**  
**23L0546-10 (Water)**

**Microbiology**

Method: SM 9222B	Sampled: 12/20/2023 12:50
Instrument: N/A Analyst: UW	Analyzed: 12/21/2023 15:00
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23L0546-10
Preparation Batch: BLL0593	Sample Size: 100 mL
Prepared: 12/20/2023	Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Coliforms		1	1	1	ND	CFU/100 ml	U



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**MW-6**  
**23L0546-10RE1 (Water)**

**Wet Chemistry**

Method: EPA 375.2	Instrument: LACHAT2 Analyst: CB	Sampled: 12/20/2023 12:50 Analyzed: 01/08/2024 13:36
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BMA0144 Prepared: 01/08/2024	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23L0546-10RE1 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	2.00	2.00	5.65	mg/L	



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**MW-6**  
**23L0546-10RE1 (Water)**

**Wet Chemistry**

Method: EPA 410.4	Sampled: 12/20/2023 12:50
Instrument: UV1800-1 Analyst: CDE	Analyzed: 01/08/2024 18:03
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23L0546-10RE1 D
Preparation Batch: BLL0770	Sample Size: 2 mL
Prepared: 12/28/2023	Final Volume: 2 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
COD		1	10.0	10.0	ND	mg/L	U



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**MW-6**  
**23L0546-11 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 12/20/2023 12:50
Instrument: ICPMS2 Analyst: MCB	Analyzed: 01/09/2024 00:55
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23L0546-11 A 01
Preparation Batch: BLL0785	Sample Size: 25 mL
Prepared: 12/29/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Zinc, Dissolved	7440-66-6	5	30.0	ND	ug/L	U



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**MW-6**  
**23L0546-11 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8	Sampled: 12/20/2023 12:50
Instrument: ICPMS2 Analyst: MCB	Analyzed: 01/09/2024 00:55
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23L0546-11 A 01
Preparation Batch: BLL0785	Sample Size: 25 mL
Prepared: 12/29/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron, Dissolved	7439-89-6	5	100	130	ug/L	D



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**MW-6**  
**23L0546-11 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D

Sampled: 12/20/2023 12:50

Instrument: ICP3 Analyst: DOE

Analyzed: 01/05/2024 11:55

Sample Preparation:

Preparation Method: WMN (No Prep)

Extract ID: 23L0546-11 A 03

Preparation Batch: BMA0024

Sample Size: 25 mL

Prepared: 01/02/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0060	0.0217	mg/L	
Manganese, Dissolved	7439-96-5	1	0.0040	0.374	mg/L	



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**MW-6**  
**23L0546-11RE1 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 12/20/2023 12:50
Instrument: ICPMS2 Analyst: DOE	Analyzed: 01/09/2024 21:50
Sample Preparation: Preparation Method: RHN EPA 600/4-79-020 4.1.4 HNO3 matrix 5x Preparation Batch: BMA0184 Prepared: 01/09/2024	Extract ID: 23L0546-11RE1 A 04 Sample Size: 100 mL Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0400	0.298	ug/L	



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**MW-8**  
**23L0546-12 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 12/20/2023 13:25

Instrument: NT3 Analyst: PKC

Analyzed: 12/21/2023 15:21

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 23L0546-12 F

Preparation Batch: BLL0616

Sample Size: 10 mL

Prepared: 12/21/2023

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U





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**MW-8**  
**23L0546-12 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 12/20/2023 13:25

Instrument: NT3 Analyst: PKC

Analyzed: 12/21/2023 15:21

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.50	ND	ug/L	U



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**MW-8**  
**23L0546-12 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D Sampled: 12/20/2023 13:25  
Instrument: NT3 Analyst: PKC Analyzed: 12/21/2023 15:21

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Pentanone	107-87-9	1	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	107	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	94.4	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	100	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	100	%	



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**MW-8**  
**23L0546-12 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 12/20/2023 13:25
Instrument: NT16 Analyst: PB	Analyzed: 12/22/2023 17:21
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23L0546-12 G
Preparation Batch: BLL0651	Sample Size: 10 mL
Prepared: 12/22/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	ND	ng/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	98.8	%	



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**MW-8**  
**23L0546-12 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 12/20/2023 13:25
Instrument: ICP3 Analyst: DOE	Analyzed: 01/03/2024 11:12
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 23L0546-12 E 01
Preparation Batch: BMA0012	Sample Size: 25 mL
Prepared: 01/02/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Calcium	7440-70-2	1	0.0500	22.4	mg/L	
Potassium	7440-09-7	1	0.500	0.855	mg/L	
Sodium	7440-23-5	1	0.500	7.63	mg/L	



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**MW-8**  
**23L0546-12 (Water)**

**Wet Chemistry**

Method: EPA 325.2	Instrument: LACHAT2 Analyst: CB	Sampled: 12/20/2023 13:25	Analyzed: 01/10/2024 17:37
Sample Preparation:	Preparation Method: No Prep Wet Chem	Sample Size: 10 mL	Extract ID: 23L0546-12 A
	Preparation Batch: BMA0234	Final Volume: 10 mL	
	Prepared: 01/10/2024		

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloride	16887-00-6	1	1.00	1.00	2.25	mg/L	



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**MW-8**  
**23L0546-12 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Sampled: 12/20/2023 13:25
Instrument: [CALC] Analyst: EJK	Analyzed: 12/28/2023 10:44
Sample Preparation: Preparation Method: [CALC] Preparation Batch: [CALC] Prepared: 12/26/2023	Extract ID: 23L0546-12
Final Volume: 1	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.0200	ND	mg/L	U



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**MW-8**  
**23L0546-12 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Instrument: LACHAT2 Analyst: EJK	Sampled: 12/20/2023 13:25 Analyzed: 12/22/2023 13:07
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BLL0624 Prepared: 12/21/2023	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 23L0546-12 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.010	0.010	ND	mg/L	U



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**MW-8**  
**23L0546-12 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Instrument: LACHAT2 Analyst: CB	Sampled: 12/20/2023 13:25	Analyzed: 12/28/2023 10:44
Sample Preparation:	Preparation Method: No Prep Wet Chem	Sample Size: 10 mL	Extract ID: 23L0546-12 D
	Preparation Batch: BLL0698	Final Volume: 10 mL	
	Prepared: 12/26/2023		

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate + Nitrite as N		1	0.010	0.010	0.020	mg/L	





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**MW-8**  
**23L0546-12 (Water)**

**Wet Chemistry**

Method: EPA 9060A	Sampled: 12/20/2023 13:25
Instrument: TOC-LCSH Analyst: RMS	Analyzed: 01/10/2024 09:52
Sample Preparation:	Preparation Method: No Prep Wet Chem
	Preparation Batch: BMA0206
	Prepared: 01/10/2024
	Sample Size: 20 mL
	Final Volume: 20 mL
	Extract ID: 23L0546-12 D

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	0.68	mg/L	



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**MW-8**  
**23L0546-12 (Water)**

**Wet Chemistry**

Method: SM 2320 B-97	Instrument: Accumet AB150	Analyst: UW	Sampled: 12/20/2023 13:25	Analyzed: 12/21/2023 09:26
Sample Preparation:	Preparation Method: No Prep Wet Chem	Preparation Batch: BLL0604	Sample Size: 50 mL	Final Volume: 50 mL
	Prepared: 12/21/2023		Extract ID: 23L0546-12 B	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Bicarbonate		1	1.00	1.00	105	mg/L CaCO3	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Carbonate		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Hydroxide		1	1.00	1.00	ND	mg/L CaCO3	U

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Alkalinity, Total		1	1.00	1.00	105	mg/L CaCO3	



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**MW-8**  
**23L0546-12 (Water)**

**Wet Chemistry**

Method: SM 4500-H+ B-00	Sampled: 12/20/2023 13:25
Instrument: Accumet AB150 Analyst: PNG	Analyzed: 12/20/2023 16:15
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23L0546-12 A
Preparation Batch: BLL0596	Sample Size: 50 mL
Prepared: 12/20/2023	Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
pH		1	0.01	0.01	6.67	pH Units	H



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**MW-8**  
**23L0546-12 (Water)**

**Wet Chemistry**

Method: SM 4500-NH3 H-97	Sampled: 12/20/2023 13:25
Instrument: LCHAT1 Analyst: EJK	Analyzed: 01/04/2024 11:46
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23L0546-12 B
Preparation Batch: BMA0059	Sample Size: 10 mL
Prepared: 01/03/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Ammonia-N	7664-41-7	1	0.040	0.040	ND	mg/L	U



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**MW-8**  
**23L0546-12 (Water)**

**Microbiology**

Method: SM 9222B	Sampled: 12/20/2023 13:25
Instrument: N/A Analyst: UW	Analyzed: 12/21/2023 15:00
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 23L0546-12
Preparation Batch: BLL0593	Sample Size: 100 mL
Prepared: 12/20/2023	Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Coliforms		1	1	1	ND	CFU/100 ml	U



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**MW-8**  
**23L0546-12RE1 (Water)**

**Wet Chemistry**

Method: EPA 375.2	Instrument: LACHAT2 Analyst: CB	Sampled: 12/20/2023 13:25	Analyzed: 01/08/2024 13:38
Sample Preparation:	Preparation Method: No Prep Wet Chem	Sample Size: 10 mL	Extract ID: 23L0546-12RE1 A
	Preparation Batch: BMA0144	Final Volume: 10 mL	
	Prepared: 01/08/2024		

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	2.00	2.00	4.40	mg/L	



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**MW-8**  
**23L0546-12RE1 (Water)**

**Wet Chemistry**

Method: EPA 410.4	Instrument: UV1800-1	Analyst: CDE	Sampled: 12/20/2023 13:25	Analyzed: 01/08/2024 18:03
Sample Preparation:	Preparation Method: No Prep Wet Chem	Preparation Batch: BLL0770	Sample Size: 2 mL	Final Volume: 2 mL
	Prepared: 12/28/2023		Extract ID: 23L0546-12RE1 D	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
COD		1	10.0	10.0	ND	mg/L	U



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**MW-8**  
**23L0546-13 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 12/20/2023 13:25
Instrument: ICPMS1 Analyst: HAL	Analyzed: 01/03/2024 21:23
Sample Preparation: Preparation Method: RHN EPA 600/4-79-020 4.1.4 HNO3 matrix 5x	Extract ID: 23L0546-13 A
Preparation Batch: BMA0013	Sample Size: 100 mL
Prepared: 01/02/2024	Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0400	1.36	ug/L	B





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**MW-8**  
**23L0546-13 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 12/20/2023 13:25
Instrument: ICPMS2 Analyst: MCB	Analyzed: 01/09/2024 01:00
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23L0546-13 A 01
Preparation Batch: BLL0785	Sample Size: 25 mL
Prepared: 12/29/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Zinc, Dissolved	7440-66-6	5	30.0	ND	ug/L	U



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**MW-8**  
**23L0546-13 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8	Sampled: 12/20/2023 13:25
Instrument: ICPMS2 Analyst: MCB	Analyzed: 01/09/2024 01:00
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23L0546-13 A 01
Preparation Batch: BLL0785	Sample Size: 25 mL
Prepared: 12/29/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron, Dissolved	7439-89-6	5	100	344	ug/L	D



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**MW-8**  
**23L0546-13 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D	Sampled: 12/20/2023 13:25
Instrument: ICP3 Analyst: DOE	Analyzed: 01/05/2024 11:58
Sample Preparation: Preparation Method: WMN (No Prep)	Extract ID: 23L0546-13 A 03
Preparation Batch: BMA0024	Sample Size: 25 mL
Prepared: 01/02/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0060	ND	mg/L	U
Manganese, Dissolved	7439-96-5	1	0.0040	1.19	mg/L	



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**MW-7**  
**23L0546-14 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 12/20/2023 14:00
Instrument: NT16 Analyst: PB	Analyzed: 12/22/2023 17:42
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23L0546-14 B
Preparation Batch: BLL0651	Sample Size: 10 mL
Prepared: 12/22/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	ND	ng/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>101</i>	<i>%</i>	



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**MW-7**  
**23L0546-14 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 12/20/2023 14:00
Instrument: ICPMS2 Analyst: MCB	Analyzed: 01/09/2024 01:04
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23L0546-14 A 01
Preparation Batch: BLL0785	Sample Size: 25 mL
Prepared: 12/29/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Zinc, Dissolved	7440-66-6	2	12.0	ND	ug/L	U



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**MW-7**  
**23L0546-14 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8	Sampled: 12/20/2023 14:00
Instrument: ICPMS2 Analyst: MCB	Analyzed: 01/09/2024 01:04
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23L0546-14 A 01
Preparation Batch: BLL0785	Sample Size: 25 mL
Prepared: 12/29/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron, Dissolved	7439-89-6	2	40.0	ND	ug/L	U



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**MW-7**  
**23L0546-14 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D	Sampled: 12/20/2023 14:00
Instrument: ICP3 Analyst: DOE	Analyzed: 01/05/2024 12:00
Sample Preparation: Preparation Method: WMN (No Prep)	Extract ID: 23L0546-14 A 03
Preparation Batch: BMA0024	Sample Size: 25 mL
Prepared: 01/02/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0060	ND	mg/L	U
Manganese, Dissolved	7439-96-5	1	0.0040	ND	mg/L	U



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**MW-7**  
**23L0546-14RE1 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 12/20/2023 14:00
Instrument: ICPMS2 Analyst: DOE	Analyzed: 01/09/2024 21:54
Sample Preparation: Preparation Method: RHN EPA 600/4-79-020 4.1.4 HNO3 matrix 5x Preparation Batch: BMA0184 Prepared: 01/09/2024	Extract ID: 23L0546-14RE1 A 04 Sample Size: 100 mL Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0400	0.398	ug/L	





TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
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**Trip Blanks**  
**23L0546-15 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 12/20/2023 09:10

Instrument: NT3 Analyst: PKC

Analyzed: 12/21/2023 12:21

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 23L0546-15 A

Preparation Batch: BLL0616

Sample Size: 10 mL

Prepared: 12/21/2023

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.20	ND	ug/L	U
Acrolein	107-02-8	1	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.20	ND	ug/L	U
Acetone	67-64-1	1	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.20	ND	ug/L	U



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
15-Jan-2024 17:56

**Trip Blanks**  
**23L0546-15 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D

Sampled: 12/20/2023 09:10

Instrument: NT3 Analyst: PKC

Analyzed: 12/21/2023 12:21

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Hexanone	591-78-6	1	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.50	ND	ug/L	U



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**Trip Blanks**  
**23L0546-15 (Water)**

**Volatile Organic Compounds**

Method: EPA 8260D Sampled: 12/20/2023 09:10  
Instrument: NT3 Analyst: PKC Analyzed: 12/21/2023 12:21

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
2-Pentanone	107-87-9	1	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	99.2	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	96.5	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	101	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>			80-120 %	97.8	%	



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**Trip Blanks**  
**23L0546-15 (Water)**

**Volatile Organic Compounds - SIM**

Method: EPA 8260D-SIM	Sampled: 12/20/2023 09:10
Instrument: NT16 Analyst: PB	Analyzed: 12/22/2023 14:16
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23L0546-15 B
Preparation Batch: BLL0651	Sample Size: 10 mL
Prepared: 12/22/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	20.0	ND	ng/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	97.0	%	



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BLL0616 - EPA 8260D**

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLL0616-BLK2)</b>		Prepared: 21-Dec-2023 Analyzed: 21-Dec-2023 11:59								
Chloromethane	ND	0.50	ug/L							U
Vinyl Chloride	ND	0.20	ug/L							U
Bromomethane	ND	1.00	ug/L							U
Chloroethane	ND	0.20	ug/L							U
Trichlorofluoromethane	ND	0.20	ug/L							U
Acrolein	ND	5.00	ug/L							U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.20	ug/L							U
Acetone	ND	5.00	ug/L							U
1,1-Dichloroethene	ND	0.20	ug/L							U
Iodomethane	ND	1.00	ug/L							U
Methylene Chloride	ND	1.00	ug/L							U
Acrylonitrile	ND	1.00	ug/L							U
Carbon Disulfide	ND	0.20	ug/L							U
trans-1,2-Dichloroethene	ND	0.20	ug/L							U
Vinyl Acetate	ND	0.20	ug/L							U
1,1-Dichloroethane	ND	0.20	ug/L							U
2-Butanone	ND	5.00	ug/L							U
2,2-Dichloropropane	ND	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Chloroform	ND	0.20	ug/L							U
Bromochloromethane	ND	0.20	ug/L							U
1,1,1-Trichloroethane	ND	0.20	ug/L							U
1,1-Dichloropropene	ND	0.20	ug/L							U
Carbon tetrachloride	ND	0.20	ug/L							U
1,2-Dichloroethane	ND	0.20	ug/L							U
Benzene	ND	0.20	ug/L							U
Trichloroethene	ND	0.20	ug/L							U
1,2-Dichloropropane	ND	0.20	ug/L							U
Bromodichloromethane	ND	0.20	ug/L							U
Dibromomethane	ND	0.20	ug/L							U
2-Chloroethyl vinyl ether	ND	1.00	ug/L							U
4-Methyl-2-Pentanone	ND	5.00	ug/L							U
cis-1,3-Dichloropropene	ND	0.20	ug/L							U
Toluene	ND	0.20	ug/L							U
trans-1,3-Dichloropropene	ND	0.20	ug/L							U



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
15-Jan-2024 17:56

**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BLL0616 - EPA 8260D**

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLL0616-BLK2)</b>		Prepared: 21-Dec-2023 Analyzed: 21-Dec-2023 11:59								
2-Hexanone	ND	5.00	ug/L							U
1,1,2-Trichloroethane	ND	0.20	ug/L							U
1,3-Dichloropropane	ND	0.20	ug/L							U
Tetrachloroethene	ND	0.20	ug/L							U
Dibromochloromethane	ND	0.20	ug/L							U
1,2-Dibromoethane	ND	0.20	ug/L							U
Chlorobenzene	ND	0.20	ug/L							U
Ethylbenzene	ND	0.20	ug/L							U
1,1,1,2-Tetrachloroethane	ND	0.20	ug/L							U
m,p-Xylene	ND	0.40	ug/L							U
o-Xylene	ND	0.20	ug/L							U
Xylenes, total	ND	0.60	ug/L							U
Styrene	ND	0.20	ug/L							U
Bromoform	ND	0.20	ug/L							U
1,1,2,2-Tetrachloroethane	ND	0.20	ug/L							U
1,2,3-Trichloropropane	ND	0.50	ug/L							U
trans-1,4-Dichloro 2-Butene	ND	1.00	ug/L							U
n-Propylbenzene	ND	0.20	ug/L							U
Bromobenzene	ND	0.20	ug/L							U
Isopropyl Benzene	ND	0.20	ug/L							U
2-Chlorotoluene	ND	0.20	ug/L							U
4-Chlorotoluene	ND	0.20	ug/L							U
t-Butylbenzene	ND	0.20	ug/L							U
1,3,5-Trimethylbenzene	ND	0.20	ug/L							U
1,2,4-Trimethylbenzene	ND	0.20	ug/L							U
s-Butylbenzene	ND	0.20	ug/L							U
4-Isopropyl Toluene	ND	0.20	ug/L							U
1,3-Dichlorobenzene	ND	0.20	ug/L							U
1,4-Dichlorobenzene	ND	0.20	ug/L							U
n-Butylbenzene	ND	0.20	ug/L							U
1,2-Dichlorobenzene	ND	0.20	ug/L							U
1,2-Dibromo-3-chloropropane	ND	0.50	ug/L							U
1,2,4-Trichlorobenzene	ND	0.50	ug/L							U
Hexachloro-1,3-Butadiene	ND	2.00	ug/L							U
Naphthalene	ND	0.50	ug/L							U



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
15-Jan-2024 17:56

**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BLL0616 - EPA 8260D**

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLL0616-BLK2)</b>										
					Prepared: 21-Dec-2023 Analyzed: 21-Dec-2023 11:59					
1,2,3-Trichlorobenzene	ND	0.50	ug/L							U
Dichlorodifluoromethane	ND	0.20	ug/L							U
Methyl tert-butyl Ether	ND	0.50	ug/L							U
2-Pentanone	ND	5.00	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.89		ug/L	5.00		97.7	80-129			
<i>Surrogate: Toluene-d8</i>	4.90		ug/L	5.00		98.0	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	5.35		ug/L	5.00		107	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	4.92		ug/L	5.00		98.4	80-120			



TRC Companies, Inc  
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Project: Olalla Landfill  
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Project Manager: Eric Caddy

**Reported:**  
15-Jan-2024 17:56

**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BLL0616 - EPA 8260D**

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS (BLL0616-BS2)</b>		Prepared: 21-Dec-2023 Analyzed: 21-Dec-2023 10:30								
Chloromethane	9.24	0.50	ug/L	10.0		92.4	60-138			
Vinyl Chloride	9.34	0.20	ug/L	10.0		93.4	66-133			
Bromomethane	9.36	1.00	ug/L	10.0		93.6	72-131			
Chloroethane	9.64	0.20	ug/L	10.0		96.4	60-155			
Trichlorofluoromethane	10.2	0.20	ug/L	10.0		102	62-141			
Acrolein	44.6	5.00	ug/L	50.0		89.3	52-190			
1,1,2-Trichloro-1,2,2-Trifluoroethane	9.32	0.20	ug/L	10.0		93.2	76-129			
Acetone	45.1	5.00	ug/L	50.0		90.1	58-142			
1,1-Dichloroethene	9.78	0.20	ug/L	10.0		97.8	69-135			
Iodomethane	9.39	1.00	ug/L	10.0		93.9	56-147			
Methylene Chloride	9.67	1.00	ug/L	10.0		96.7	65-135			
Acrylonitrile	8.66	1.00	ug/L	10.0		86.6	64-134			
Carbon Disulfide	8.97	0.20	ug/L	10.0		89.7	78-125			
trans-1,2-Dichloroethene	9.17	0.20	ug/L	10.0		91.7	78-128			
Vinyl Acetate	9.43	0.20	ug/L	10.0		94.3	55-138			
1,1-Dichloroethane	9.80	0.20	ug/L	10.0		98.0	76-124			
2-Butanone	46.1	5.00	ug/L	50.0		92.1	61-140			
2,2-Dichloropropane	10.6	0.20	ug/L	10.0		106	66-147			
cis-1,2-Dichloroethene	8.92	0.20	ug/L	10.0		89.2	80-121			
Chloroform	9.92	0.20	ug/L	10.0		99.2	80-122			
Bromochloromethane	9.32	0.20	ug/L	10.0		93.2	80-121			
1,1,1-Trichloroethane	10.0	0.20	ug/L	10.0		100	79-123			
1,1-Dichloropropene	9.95	0.20	ug/L	10.0		99.5	80-127			
Carbon tetrachloride	10.3	0.20	ug/L	10.0		103	53-137			
1,2-Dichloroethane	10.1	0.20	ug/L	10.0		101	75-123			
Benzene	9.78	0.20	ug/L	10.0		97.8	80-120			
Trichloroethene	9.77	0.20	ug/L	10.0		97.7	80-120			
1,2-Dichloropropane	9.51	0.20	ug/L	10.0		95.1	80-120			
Bromodichloromethane	9.70	0.20	ug/L	10.0		97.0	80-121			
Dibromomethane	9.35	0.20	ug/L	10.0		93.5	80-120			
2-Chloroethyl vinyl ether	9.49	1.00	ug/L	10.0		94.9	64-120			
4-Methyl-2-Pentanone	46.4	5.00	ug/L	50.0		92.8	67-133			
cis-1,3-Dichloropropene	10.1	0.20	ug/L	10.0		101	80-124			
Toluene	9.65	0.20	ug/L	10.0		96.5	80-120			
trans-1,3-Dichloropropene	10.4	0.20	ug/L	10.0		104	71-127			





TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
15-Jan-2024 17:56

**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BLL0616 - EPA 8260D**

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS (BLL0616-BS2)</b>		Prepared: 21-Dec-2023 Analyzed: 21-Dec-2023 10:30								
2-Hexanone	48.8	5.00	ug/L	50.0		97.6	69-133			
1,1,2-Trichloroethane	9.34	0.20	ug/L	10.0		93.4	80-121			
1,3-Dichloropropane	9.48	0.20	ug/L	10.0		94.8	80-120			
Tetrachloroethene	9.80	0.20	ug/L	10.0		98.0	80-120			
Dibromochloromethane	9.55	0.20	ug/L	10.0		95.5	65-135			
1,2-Dibromoethane	9.40	0.20	ug/L	10.0		94.0	80-121			
Chlorobenzene	10.0	0.20	ug/L	10.0		100	80-120			
Ethylbenzene	10.0	0.20	ug/L	10.0		100	80-120			
1,1,1,2-Tetrachloroethane	9.67	0.20	ug/L	10.0		96.7	80-120			
m,p-Xylene	20.4	0.40	ug/L	20.0		102	80-121			
o-Xylene	10.0	0.20	ug/L	10.0		100	80-121			
Xylenes, total	30.4	0.60	ug/L	30.0		101	76-127			
Styrene	10.2	0.20	ug/L	10.0		102	80-124			
Bromoform	8.64	0.20	ug/L	10.0		86.4	51-134			
1,1,2,2-Tetrachloroethane	9.61	0.20	ug/L	10.0		96.1	77-123			
1,2,3-Trichloropropane	9.66	0.50	ug/L	10.0		96.6	76-125			
trans-1,4-Dichloro 2-Butene	9.12	1.00	ug/L	10.0		91.2	55-129			
n-Propylbenzene	10.5	0.20	ug/L	10.0		105	78-130			
Bromobenzene	10.1	0.20	ug/L	10.0		101	80-120			
Isopropyl Benzene	9.87	0.20	ug/L	10.0		98.7	80-128			
2-Chlorotoluene	10.3	0.20	ug/L	10.0		103	78-122			
4-Chlorotoluene	10.2	0.20	ug/L	10.0		102	80-121			
t-Butylbenzene	9.89	0.20	ug/L	10.0		98.9	78-125			
1,3,5-Trimethylbenzene	9.63	0.20	ug/L	10.0		96.3	80-129			
1,2,4-Trimethylbenzene	10.4	0.20	ug/L	10.0		104	80-127			
s-Butylbenzene	9.76	0.20	ug/L	10.0		97.6	78-129			
4-Isopropyl Toluene	10.2	0.20	ug/L	10.0		102	79-130			
1,3-Dichlorobenzene	10.0	0.20	ug/L	10.0		100	80-120			
1,4-Dichlorobenzene	10.2	0.20	ug/L	10.0		102	80-120			
n-Butylbenzene	10.3	0.20	ug/L	10.0		103	74-129			
1,2-Dichlorobenzene	10.4	0.20	ug/L	10.0		104	80-120			
1,2-Dibromo-3-chloropropane	9.62	0.50	ug/L	10.0		96.2	62-123			
1,2,4-Trichlorobenzene	10.9	0.50	ug/L	10.0		109	64-124			
Hexachloro-1,3-Butadiene	10.3	2.00	ug/L	10.0		103	65-145			
Naphthalene	8.96	0.50	ug/L	10.0		89.6	50-134			



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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Analysis by: Analytical Resources, LLC

**Volatile Organic Compounds - Quality Control**

**Batch BLL0616 - EPA 8260D**

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS (BLL0616-BS2)</b>		Prepared: 21-Dec-2023 Analyzed: 21-Dec-2023 10:30								
1,2,3-Trichlorobenzene	10.6	0.50	ug/L	10.0		106	49-133			
Dichlorodifluoromethane	9.80	0.20	ug/L	10.0		98.0	48-147			
Methyl tert-butyl Ether	9.65	0.50	ug/L	10.0		96.5	71-132			
2-Pentanone	49.0	5.00	ug/L	50.0		97.9	69-134			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.98		ug/L	5.00		99.6	80-129			
<i>Surrogate: Toluene-d8</i>	4.93		ug/L	5.00		98.5	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.99		ug/L	5.00		99.8	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	5.15		ug/L	5.00		103	80-120			



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
15-Jan-2024 17:56

**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BLL0616 - EPA 8260D**

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS Dup (BLL0616-BSD2)</b>		Prepared: 21-Dec-2023 Analyzed: 21-Dec-2023 11:15								
Chloromethane	10.2	0.50	ug/L	10.0		102	60-138	10.00	30	
Vinyl Chloride	10.7	0.20	ug/L	10.0		107	66-133	13.30	30	
Bromomethane	10.5	1.00	ug/L	10.0		105	72-131	11.50	30	
Chloroethane	10.6	0.20	ug/L	10.0		106	60-155	9.33	30	
Trichlorofluoromethane	11.0	0.20	ug/L	10.0		110	62-141	8.16	30	
Acrolein	48.7	5.00	ug/L	50.0		97.4	52-190	8.71	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.5	0.20	ug/L	10.0		105	76-129	11.60	30	
Acetone	51.1	5.00	ug/L	50.0		102	58-142	12.50	30	
1,1-Dichloroethene	10.8	0.20	ug/L	10.0		108	69-135	10.00	30	
Iodomethane	10.4	1.00	ug/L	10.0		104	56-147	10.70	30	
Methylene Chloride	11.0	1.00	ug/L	10.0		110	65-135	12.70	30	
Acrylonitrile	9.90	1.00	ug/L	10.0		99.0	64-134	13.40	30	
Carbon Disulfide	9.96	0.20	ug/L	10.0		99.6	78-125	10.40	30	
trans-1,2-Dichloroethene	10.0	0.20	ug/L	10.0		100	78-128	9.13	30	
Vinyl Acetate	10.9	0.20	ug/L	10.0		109	55-138	14.40	30	
1,1-Dichloroethane	10.9	0.20	ug/L	10.0		109	76-124	11.00	30	
2-Butanone	52.0	5.00	ug/L	50.0		104	61-140	12.20	30	
2,2-Dichloropropane	11.3	0.20	ug/L	10.0		113	66-147	6.57	30	
cis-1,2-Dichloroethene	10.3	0.20	ug/L	10.0		103	80-121	14.40	30	
Chloroform	10.7	0.20	ug/L	10.0		107	80-122	7.58	30	
Bromochloromethane	10.3	0.20	ug/L	10.0		103	80-121	10.50	30	
1,1,1-Trichloroethane	11.2	0.20	ug/L	10.0		112	79-123	11.10	30	
1,1-Dichloropropene	10.7	0.20	ug/L	10.0		107	80-127	7.63	30	
Carbon tetrachloride	11.6	0.20	ug/L	10.0		116	53-137	11.80	30	
1,2-Dichloroethane	11.0	0.20	ug/L	10.0		110	75-123	8.70	30	
Benzene	10.8	0.20	ug/L	10.0		108	80-120	9.83	30	
Trichloroethene	11.1	0.20	ug/L	10.0		111	80-120	12.30	30	
1,2-Dichloropropane	10.6	0.20	ug/L	10.0		106	80-120	10.40	30	
Bromodichloromethane	10.8	0.20	ug/L	10.0		108	80-121	11.10	30	
Dibromomethane	10.5	0.20	ug/L	10.0		105	80-120	11.20	30	
2-Chloroethyl vinyl ether	11.0	1.00	ug/L	10.0		110	64-120	15.10	30	
4-Methyl-2-Pentanone	52.8	5.00	ug/L	50.0		106	67-133	12.90	30	
cis-1,3-Dichloropropene	11.2	0.20	ug/L	10.0		112	80-124	9.63	30	
Toluene	10.9	0.20	ug/L	10.0		109	80-120	12.40	30	
trans-1,3-Dichloropropene	11.0	0.20	ug/L	10.0		110	71-127	5.96	30	



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
15-Jan-2024 17:56

**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BLL0616 - EPA 8260D**

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS Dup (BLL0616-BSD2)</b>		Prepared: 21-Dec-2023 Analyzed: 21-Dec-2023 11:15								
2-Hexanone	55.1	5.00	ug/L	50.0		110	69-133	12.20	30	
1,1,2-Trichloroethane	10.2	0.20	ug/L	10.0		102	80-121	8.92	30	
1,3-Dichloropropane	11.1	0.20	ug/L	10.0		111	80-120	15.40	30	
Tetrachloroethene	11.2	0.20	ug/L	10.0		112	80-120	13.30	30	
Dibromochloromethane	11.1	0.20	ug/L	10.0		111	65-135	14.80	30	
1,2-Dibromoethane	10.5	0.20	ug/L	10.0		105	80-121	11.40	30	
Chlorobenzene	11.1	0.20	ug/L	10.0		111	80-120	9.80	30	
Ethylbenzene	11.2	0.20	ug/L	10.0		112	80-120	11.50	30	
1,1,1,2-Tetrachloroethane	11.2	0.20	ug/L	10.0		112	80-120	15.00	30	
m,p-Xylene	22.3	0.40	ug/L	20.0		111	80-121	8.96	30	
o-Xylene	11.1	0.20	ug/L	10.0		111	80-121	10.20	30	
Xylenes, total	33.4	0.60	ug/L	30.0		111	76-127	9.36	30	
Styrene	11.4	0.20	ug/L	10.0		114	80-124	11.10	30	
Bromoform	9.44	0.20	ug/L	10.0		94.4	51-134	8.87	30	
1,1,2,2-Tetrachloroethane	10.5	0.20	ug/L	10.0		105	77-123	9.32	30	
1,2,3-Trichloropropane	10.8	0.50	ug/L	10.0		108	76-125	11.40	30	
trans-1,4-Dichloro 2-Butene	9.89	1.00	ug/L	10.0		98.9	55-129	8.16	30	
n-Propylbenzene	11.2	0.20	ug/L	10.0		112	78-130	7.12	30	
Bromobenzene	11.0	0.20	ug/L	10.0		110	80-120	8.32	30	
Isopropyl Benzene	11.3	0.20	ug/L	10.0		113	80-128	13.80	30	
2-Chlorotoluene	10.9	0.20	ug/L	10.0		109	78-122	5.99	30	
4-Chlorotoluene	10.8	0.20	ug/L	10.0		108	80-121	5.84	30	
t-Butylbenzene	11.4	0.20	ug/L	10.0		114	78-125	14.00	30	
1,3,5-Trimethylbenzene	11.2	0.20	ug/L	10.0		112	80-129	15.10	30	
1,2,4-Trimethylbenzene	11.2	0.20	ug/L	10.0		112	80-127	7.50	30	
s-Butylbenzene	10.7	0.20	ug/L	10.0		107	78-129	9.59	30	
4-Isopropyl Toluene	11.3	0.20	ug/L	10.0		113	79-130	9.91	30	
1,3-Dichlorobenzene	10.8	0.20	ug/L	10.0		108	80-120	7.21	30	
1,4-Dichlorobenzene	10.8	0.20	ug/L	10.0		108	80-120	5.24	30	
n-Butylbenzene	11.2	0.20	ug/L	10.0		112	74-129	7.95	30	
1,2-Dichlorobenzene	11.1	0.20	ug/L	10.0		111	80-120	6.76	30	
1,2-Dibromo-3-chloropropane	10.8	0.50	ug/L	10.0		108	62-123	11.80	30	
1,2,4-Trichlorobenzene	12.2	0.50	ug/L	10.0		122	64-124	12.00	30	
Hexachloro-1,3-Butadiene	11.8	2.00	ug/L	10.0		118	65-145	13.10	30	
Naphthalene	10.2	0.50	ug/L	10.0		102	50-134	12.60	30	



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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Analysis by: Analytical Resources, LLC

**Volatile Organic Compounds - Quality Control**

**Batch BLL0616 - EPA 8260D**

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS Dup (BLL0616-BSD2)</b>		Prepared: 21-Dec-2023 Analyzed: 21-Dec-2023 11:15								
1,2,3-Trichlorobenzene	12.2	0.50	ug/L	10.0		122	49-133	14.30	30	
Dichlorodifluoromethane	10.4	0.20	ug/L	10.0		104	48-147	5.64	30	
Methyl tert-butyl Ether	11.1	0.50	ug/L	10.0		111	71-132	14.00	30	
2-Pentanone	53.6	5.00	ug/L	50.0		107	69-134	9.04	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.21		ug/L	5.00		104	80-129			
<i>Surrogate: Toluene-d8</i>	4.93		ug/L	5.00		98.6	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	5.12		ug/L	5.00		102	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	4.99		ug/L	5.00		99.9	80-120			



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - Quality Control**

**Batch BLL0616 - EPA 8260D**

**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - SIM - Quality Control**

**Batch BLL0651 - EPA 8260D-SIM**

Instrument: NT16 Analyst: PB

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLL0651-BLK1)</b>					Prepared: 22-Dec-2023 Analyzed: 22-Dec-2023 11:56					
Vinyl chloride	ND	20.0	ng/L							U
Surrogate: 1,2-Dichloroethane-d4	4830		ng/L	5000		96.7	80-129			



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**Analysis by: Analytical Resources, LLC**

**Volatile Organic Compounds - SIM - Quality Control**

**Batch BLL0651 - EPA 8260D-SIM**

Instrument: NT16 Analyst: PB

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS (BLL0651-BS1)</b>				Prepared: 22-Dec-2023 Analyzed: 22-Dec-2023 10:59						
Vinyl chloride	2010	20.0	ng/L	2000		101	62-141			
Surrogate: 1,2-Dichloroethane-d4	4990		ng/L	5000		99.8	80-129			



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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Analysis by: Analytical Resources, LLC

**Volatile Organic Compounds - SIM - Quality Control**

**Batch BLL0651 - EPA 8260D-SIM**

Instrument: NT16 Analyst: PB

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS Dup (BLL0651-BSD1)</b>				Prepared: 22-Dec-2023 Analyzed: 22-Dec-2023 11:36						
Vinyl chloride	1940	20.0	ng/L	2000		97.2	62-141	3.37	30	
Surrogate: 1,2-Dichloroethane-d4	4950		ng/L	5000		98.9	80-129			





TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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Analysis by: Analytical Resources, LLC

**Volatile Organic Compounds - SIM - Quality Control**

Batch BLL0651 - EPA 8260D-SIM

Analysis by: Analytical Resources, LLC

**Metals and Metallic Compounds - Quality Control**

Batch BMA0012 - EPA 6010D

Instrument: ICP3 Analyst: DOE

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMA0012-BLK1)</b>				Prepared: 02-Jan-2024 Analyzed: 03-Jan-2024 09:45						
Calcium	ND	0.0500	mg/L							U
Potassium	ND	0.500	mg/L							U
Sodium	ND	0.500	mg/L							U
<b>LCS (BMA0012-BS1)</b>				Prepared: 02-Jan-2024 Analyzed: 03-Jan-2024 09:48						
Calcium	10.1	0.0500	mg/L	10.0		101	80-120			
Potassium	10.1	0.500	mg/L	10.0		101	80-120			
Sodium	10.0	0.500	mg/L	10.0		100	80-120			
<b>Matrix Spike (BMA0012-MS1)</b>				Source: 23L0546-01 Prepared: 02-Jan-2024 Analyzed: 03-Jan-2024 10:02						
Calcium	23.5	0.0500	mg/L	10.0	12.9	106	75-125			
Potassium	10.9	0.500	mg/L	10.0	0.640	103	75-125			
Sodium	15.2	0.500	mg/L	10.0	4.90	103	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
<b>Matrix Spike Dup (BMA0012-MSD1)</b>				Source: 23L0546-01 Prepared: 02-Jan-2024 Analyzed: 03-Jan-2024 10:05						
Calcium	23.3	0.0500	mg/L	10.0	12.9	105	75-125	0.70	20	
Potassium	10.7	0.500	mg/L	10.0	0.640	100	75-125	2.25	20	
Sodium	15.0	0.500	mg/L	10.0	4.90	101	75-125	1.44	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**Analysis by: Analytical Resources, LLC**

**Metals and Metallic Compounds (dissolved) - Quality Control**

**Batch BLL0785 - EPA 200.8**

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLL0785-BLK1)</b>			Prepared: 29-Dec-2023 Analyzed: 29-Dec-2023 18:38								
Iron, Dissolved	54	ND	36.0	ug/L							U
Zinc, Dissolved	66	ND	6.00	ug/L							U
<b>LCS (BLL0785-BS1)</b>			Prepared: 29-Dec-2023 Analyzed: 29-Dec-2023 18:46								
Iron, Dissolved	54	4770	36.0	ug/L	5000		95.5	80-120			
Zinc, Dissolved	66	76.1	6.00	ug/L	80.0		95.1	80-120			
<b>Duplicate (BLL0785-DUP1)</b>			Source: 23L0546-02		Prepared: 29-Dec-2023 Analyzed: 29-Dec-2023 19:51						
Zinc, Dissolved	66	ND	6.00	ug/L		ND					U
<b>Duplicate (BLL0785-DUP2)</b>			Source: 23L0546-02		Prepared: 29-Dec-2023 Analyzed: 09-Jan-2024 01:14						
Iron, Dissolved	54	ND	72.0	ug/L		ND					U
<b>Matrix Spike (BLL0785-MS1)</b>			Source: 23L0546-02		Prepared: 29-Dec-2023 Analyzed: 29-Dec-2023 19:54						
Zinc, Dissolved	66	77.5	6.00	ug/L	80.0	ND	96.8	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
<b>Matrix Spike (BLL0785-MS2)</b>			Source: 23L0546-02		Prepared: 29-Dec-2023 Analyzed: 09-Jan-2024 01:19						
Iron, Dissolved	54	4480	72.0	ug/L	5000	ND	89.5	75-125			D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
<b>Matrix Spike Dup (BLL0785-MSD1)</b>			Source: 23L0546-02		Prepared: 29-Dec-2023 Analyzed: 29-Dec-2023 19:58						
Zinc, Dissolved	66	80.9	6.00	ug/L	80.0	ND	101	75-125	4.34	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
<b>Matrix Spike Dup (BLL0785-MSD2)</b>			Source: 23L0546-02		Prepared: 29-Dec-2023 Analyzed: 09-Jan-2024 01:25						
Iron, Dissolved	54	4580	72.0	ug/L	5000	ND	91.6	75-125	2.29	20	D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**Analysis by: Analytical Resources, LLC**

**Metals and Metallic Compounds (dissolved) - Quality Control**

**Batch BMA0013 - EPA 200.8 UCT-KED**

Instrument: ICPMS1 Analyst: HAL

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMA0013-BLK1)</b>						Prepared: 02-Jan-2024 Analyzed: 03-Jan-2024 18:00					
Arsenic, Dissolved	75a	0.0448	0.0400	ug/L							
<b>LCS (BMA0013-BS1)</b>						Prepared: 02-Jan-2024 Analyzed: 03-Jan-2024 18:04					
Arsenic, Dissolved	75a	5.15	0.0400	ug/L	5.00		103	80-120			B
<b>Duplicate (BMA0013-DUP1)</b>						Source: 23L0546-03 Prepared: 02-Jan-2024 Analyzed: 03-Jan-2024 21:35					
Arsenic, Dissolved	75a	0.229	0.0400	ug/L		0.200			13.50	20	B
<b>Matrix Spike (BMA0013-MS1)</b>						Source: 23L0546-03 Prepared: 02-Jan-2024 Analyzed: 03-Jan-2024 21:40					
Arsenic, Dissolved	75a	4.85	0.0400	ug/L	5.00	0.200	92.9	75-125			B

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

<b>Matrix Spike Dup (BMA0013-MSD1)</b>						Source: 23L0546-03 Prepared: 02-Jan-2024 Analyzed: 03-Jan-2024 21:44					
Arsenic, Dissolved	75a	4.75	0.0400	ug/L	5.00	0.200	90.9	75-125	2.08	20	B

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**Analysis by: Analytical Resources, LLC**

**Metals and Metallic Compounds (dissolved) - Quality Control**

**Batch BMA0024 - EPA 6010D**

Instrument: ICP3 Analyst: DOE

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMA0024-BLK1)</b>		Prepared: 02-Jan-2024 Analyzed: 05-Jan-2024 11:16								
Barium, Dissolved	ND	0.0060	mg/L							U
Manganese, Dissolved	ND	0.0040	mg/L							U
<b>LCS (BMA0024-BS1)</b>		Prepared: 02-Jan-2024 Analyzed: 05-Jan-2024 11:19								
Barium, Dissolved	1.96	0.0061	mg/L	2.00		97.8	80-120			
Manganese, Dissolved	0.493	0.0040	mg/L	0.500		98.6	80-120			
<b>Duplicate (BMA0024-DUP1)</b>		<b>Source: 23L0546-02</b>		Prepared: 02-Jan-2024 Analyzed: 05-Jan-2024 11:24						
Barium, Dissolved	ND	0.0060	mg/L		ND					U
Manganese, Dissolved	ND	0.0040	mg/L		ND					U
<b>Matrix Spike (BMA0024-MS1)</b>		<b>Source: 23L0546-02</b>		Prepared: 02-Jan-2024 Analyzed: 05-Jan-2024 11:27						
Barium, Dissolved	1.97	0.0061	mg/L	2.00	ND	98.2	75-125			
Manganese, Dissolved	0.494	0.0040	mg/L	0.500	ND	98.8	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
<b>Matrix Spike Dup (BMA0024-MSD1)</b>		<b>Source: 23L0546-02</b>		Prepared: 02-Jan-2024 Analyzed: 05-Jan-2024 11:30						
Barium, Dissolved	1.97	0.0061	mg/L	2.00	ND	98.4	75-125	0.21	20	
Manganese, Dissolved	0.492	0.0040	mg/L	0.500	ND	98.4	75-125	0.45	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**Analysis by: Analytical Resources, LLC**

**Metals and Metallic Compounds (dissolved) - Quality Control**

**Batch BMA0184 - EPA 200.8 UCT-KED**

Instrument: ICPMS2 Analyst: DOE

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMA0184-BLK1)</b>						Prepared: 09-Jan-2024 Analyzed: 09-Jan-2024 18:48					
Arsenic, Dissolved	75a	ND	0.0400	ug/L							U
<b>LCS (BMA0184-BS1)</b>						Prepared: 09-Jan-2024 Analyzed: 09-Jan-2024 18:53					
Arsenic, Dissolved	75a	4.81	0.0400	ug/L	5.00		96.1	80-120			
<b>LCS Dup (BMA0184-BSD1)</b>						Prepared: 09-Jan-2024 Analyzed: 09-Jan-2024 20:08					
Arsenic, Dissolved	75a	4.83	0.0400	ug/L	5.00		96.6	80-120	0.48	20	



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLL0596 - SM 4500-H+ B-00**

Instrument: Accumet AB150 Analyst: PNG

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS (BLL0596-BS1)</b>						Prepared: 20-Dec-2023 Analyzed: 20-Dec-2023 16:15					
pH	7.04	0.01	0.01	pH Units	7.00		101	99.2-100.8			H



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLL0604 - SM 2320 B-97**

Instrument: Accumet AB150 Analyst: UW

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLL0604-BLK1)</b>						Prepared: 21-Dec-2023 Analyzed: 21-Dec-2023 09:26					
Alkalinity, Total	ND	1.00	1.00	mg/L CaCO3							U
<b>Duplicate (BLL0604-DUP1)</b>						Source: 23L0546-01 Prepared: 21-Dec-2023 Analyzed: 21-Dec-2023 09:26					
Alkalinity, Total	55.4	1.00	1.00	mg/L CaCO3		54.8			1.13	20	
<b>Reference (BLL0604-SRM1)</b>						Prepared: 21-Dec-2023 Analyzed: 21-Dec-2023 11:40					
Alkalinity, Total	101	1.00	1.00	mg/L CaCO3	102		99.3	85-114.06			



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLL0624 - EPA 353.2**

Instrument: LCHAT2 Analyst: EJK

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLL0624-BLK1)</b>						Prepared: 21-Dec-2023 Analyzed: 22-Dec-2023 12:44					
Nitrite-N	ND	0.010	0.010	mg/L							U
<b>LCS (BLL0624-BS4)</b>						Prepared: 21-Dec-2023 Analyzed: 22-Dec-2023 13:10					
Nitrite-N	0.488	0.010	0.010	mg/L	0.500		97.6	90-110			





TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLL0698 - EPA 353.2**

Instrument: LCHAT2 Analyst: CB

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLL0698-BLK1)</b>						Prepared: 26-Dec-2023 Analyzed: 28-Dec-2023 10:05					
Nitrate + Nitrite as N	ND	0.010	0.010	mg/L							U
<b>LCS (BLL0698-BS1)</b>						Prepared: 26-Dec-2023 Analyzed: 28-Dec-2023 10:06					
Nitrate + Nitrite as N	0.512	0.010	0.010	mg/L	0.500		102	90-110			
<b>Duplicate (BLL0698-DUP1)</b>						Source: 23L0546-01 Prepared: 26-Dec-2023 Analyzed: 28-Dec-2023 10:09					
Nitrate + Nitrite as N	0.199	0.010	0.010	mg/L		0.202			1.50	20	
<b>Matrix Spike (BLL0698-MS1)</b>						Source: 23L0546-01 Prepared: 26-Dec-2023 Analyzed: 28-Dec-2023 10:10					
Nitrate + Nitrite as N	0.708	0.010	0.010	mg/L	0.494	0.202	102	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

<b>Matrix Spike Dup (BLL0698-MSD1)</b>						Source: 23L0546-01 Prepared: 26-Dec-2023 Analyzed: 28-Dec-2023 10:11					
Nitrate + Nitrite as N	0.707	0.010	0.010	mg/L	0.494	0.202	102	75-125	0.14	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BLL0770 - EPA 410.4**

Instrument: UV1800-1 Analyst: CDE

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLL0770-BLK5)</b>						Prepared: 28-Dec-2023 Analyzed: 08-Jan-2024 17:50					
COD	ND	10.0	10.0	mg/L							U
<b>Blank (BLL0770-BLK6)</b>						Prepared: 28-Dec-2023 Analyzed: 08-Jan-2024 17:53					
COD	ND	10.0	10.0	mg/L							U
<b>Blank (BLL0770-BLK7)</b>						Prepared: 28-Dec-2023 Analyzed: 08-Jan-2024 18:00					
COD	ND	10.0	10.0	mg/L							U
<b>Blank (BLL0770-BLK8)</b>						Prepared: 28-Dec-2023 Analyzed: 08-Jan-2024 18:04					
COD	ND	10.0	10.0	mg/L							U
<b>LCS (BLL0770-BS5)</b>						Prepared: 28-Dec-2023 Analyzed: 08-Jan-2024 17:51					
COD	101	10.0	10.0	mg/L	100		101	90-110			
<b>LCS (BLL0770-BS6)</b>						Prepared: 28-Dec-2023 Analyzed: 08-Jan-2024 17:53					
COD	100	10.0	10.0	mg/L	100		100	90-110			
<b>LCS (BLL0770-BS7)</b>						Prepared: 28-Dec-2023 Analyzed: 08-Jan-2024 18:00					
COD	101	10.0	10.0	mg/L	100		101	90-110			
<b>LCS (BLL0770-BS8)</b>						Prepared: 28-Dec-2023 Analyzed: 08-Jan-2024 18:04					
COD	101	10.0	10.0	mg/L	100		101	90-110			
<b>Duplicate (BLL0770-DUP4)</b>						Source: 23L0546-01RE1 Prepared: 28-Dec-2023 Analyzed: 08-Jan-2024 17:59					
COD	ND	10.0	10.0	mg/L		ND					U
<b>Matrix Spike (BLL0770-MS4)</b>						Source: 23L0546-01RE1 Prepared: 28-Dec-2023 Analyzed: 08-Jan-2024 17:59					
COD	108	10.0	20.0	mg/L	100	ND	108	90-110			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
<b>Matrix Spike Dup (BLL0770-MSD4)</b>						Source: 23L0546-01RE1 Prepared: 28-Dec-2023 Analyzed: 08-Jan-2024 17:59					
COD	95.9	10.0	20.0	mg/L	100	ND	95.9	90-110	12.20	10	*
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BMA0059 - SM 4500-NH3 H-97**

Instrument: LCHAT1 Analyst: EJK

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMA0059-BLK1)</b>						Prepared: 03-Jan-2024 Analyzed: 04-Jan-2024 11:24					
Ammonia-N	ND	0.040	0.040	mg/L							U
<b>LCS (BMA0059-BS1)</b>						Prepared: 03-Jan-2024 Analyzed: 04-Jan-2024 11:26					
Ammonia-N	0.548	0.040	0.040	mg/L	0.500		110	90-110			



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BMA0144 - EPA 375.2**

Instrument: LCHAT2 Analyst: CB

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMA0144-BLK1)</b>						Prepared: 08-Jan-2024 Analyzed: 08-Jan-2024 12:51					
Sulfate	ND	2.00	2.00	mg/L							U
<b>LCS (BMA0144-BS1)</b>						Prepared: 08-Jan-2024 Analyzed: 08-Jan-2024 12:52					
Sulfate	14.3	2.00	2.00	mg/L	15.0		95.3	90-110			



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BMA0206 - EPA 9060A**

Instrument: TOC-LCSH Analyst: RMS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMA0206-BLK1)</b>						Prepared: 10-Jan-2024 Analyzed: 10-Jan-2024 05:19					
Total Organic Carbon	ND	0.50	0.50	mg/L							U
<b>LCS (BMA0206-BS1)</b>						Prepared: 10-Jan-2024 Analyzed: 10-Jan-2024 05:45					
Total Organic Carbon	20.01	0.50	0.50	mg/L	20.00		100	90-110			
<b>Duplicate (BMA0206-DUP1)</b>						Source: 23L0546-01 Prepared: 10-Jan-2024 Analyzed: 10-Jan-2024 06:33					
Total Organic Carbon	0.58	0.50	0.50	mg/L		0.65			11.80	20	
<b>Matrix Spike (BMA0206-MS1)</b>						Source: 23L0546-01 Prepared: 10-Jan-2024 Analyzed: 10-Jan-2024 06:55					
Total Organic Carbon	20.02	0.50	0.50	mg/L	20.00	0.65	96.9	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

<b>Matrix Spike Dup (BMA0206-MSD1)</b>						Source: 23L0546-01 Prepared: 10-Jan-2024 Analyzed: 10-Jan-2024 07:14					
Total Organic Carbon	19.66	0.50	0.50	mg/L	20.00	0.65	95.1	75-125	1.81	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BMA0234 - EPA 325.2**

Instrument: LCHAT2 Analyst: CB

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMA0234-BLK1)</b>						Prepared: 10-Jan-2024 Analyzed: 10-Jan-2024 17:11					
Chloride	ND	1.00	1.00	mg/L							U
<b>LCS (BMA0234-BS1)</b>						Prepared: 10-Jan-2024 Analyzed: 10-Jan-2024 17:12					
Chloride	4.93	1.00	1.00	mg/L	5.00		98.6	90-110			



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**Analysis by: Analytical Resources, LLC**

**Microbiology - Quality Control**

**Batch BLL0593 - SM 9222B**

Instrument: N/A

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BLL0593-BLK1)</b>						Prepared: 20-Dec-2023 Analyzed: 21-Dec-2023 15:00					
Total Coliforms	ND	1	1	CFU/100 ml							U



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
15-Jan-2024 17:56

**Certified Analyses included in this Report**

Analyte	Certifications
<b>EPA 200.8 in Water</b>	
Iron-54	NELAP,WADOE,DoD-ELAP
<b>EPA 200.8 UCT-KED in Water</b>	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Zinc-66	NELAP,WADOE,WA-DW,DoD-ELAP
<b>EPA 353.2 in Water</b>	
Nitrate + Nitrite as N	NELAP,DoD-ELAP,WADOE
Nitrite-N	WADOE,NELAP,DoD-ELAP
<b>EPA 375.2 in Water</b>	
Sulfate	WADOE,NELAP
<b>EPA 410.4 in Water</b>	
COD	DoD-ELAP,NELAP,WADOE
<b>EPA 6010D in Water</b>	
Calcium	WADOE,NELAP,DoD-ELAP
Potassium	WADOE,NELAP,DoD-ELAP
Sodium	DoD-ELAP,WADOE,NELAP
Barium	WADOE,NELAP,DoD-ELAP
Manganese	WADOE,NELAP,DoD-ELAP
<b>EPA 8260D in Water</b>	
Chloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Acrolein	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroeth	DoD-ELAP,ADEC,NELAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Iodomethane	DoD-ELAP,NELAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,WADOE





TRC Companies, Inc  
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Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
15-Jan-2024 17:56

Acrylonitrile	DoD-ELAP,NELAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Butanone	DoD-ELAP,NELAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

Reported:  
15-Jan-2024 17:56

m,p-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
Styrene	DoD-ELAP,NELAP,WADOE
Bromoform	DoD-ELAP,NELAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,WADOE
2-Pentanone	WADOE
<b>EPA 8260D-SIM in Water</b>	
Vinyl chloride	NELAP,WADOE
<b>EPA 9060A in Water</b>	
Total Organic Carbon	DoD-ELAP,WADOE,NELAP



TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 15-Jan-2024 17:56
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**SM 2320 B-97 in Water**

Alkalinity, Bicarbonate	NELAP,WADOE,WA-DW,DoD-ELAP
Alkalinity, Carbonate	WADOE,WA-DW,DoD-ELAP,NELAP
Alkalinity, Hydroxide	WADOE,WA-DW,DoD-ELAP,NELAP
Alkalinity, Total	DoD-ELAP,WADOE,WA-DW,NELAP

**SM 4500-H+ B-00 in Water**

pH	WADOE,NELAP,WA-DW
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**SM 4500-NH3 H-97 in Water**

Ammonia-N	WADOE,DoD-ELAP,NELAP
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**SM 9222B in Water**

Total Coliforms	WADOE
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Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2025
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program, PJLA Testing	66169	02/28/2025
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2024
WADOE	WA Dept of Ecology	C558	06/30/2024
WA-DW	Ecology - Drinking Water	C558	06/30/2024



TRC Companies, Inc  
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Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
15-Jan-2024 17:56

**Notes and Definitions**

- \* Flagged value is not within established control limits.
- B This analyte was detected in the method blank.
- D The reported value is from a dilution
- H Hold time violation - Hold time was exceeded.
- J Estimated concentration value detected below the reporting limit.
- L Analyte concentration is  $\leq 5$  times the reporting limit and the replicate control limit defaults to  $\pm$  RL instead of 20% RPD
- U This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- [2C] Indicates this result was quantified on the second column on a dual column analysis.



**Analytical Resources, LLC**  
Analytical Chemists and Consultants  
Tukwila, WA

21 February 2024

Eric Caddy  
TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah, WA 98027

RE: Olalla Landfill (533022)

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)  
24A0627

Associated SDG ID(s)  
N/A

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I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclosed Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Kelly Bottem, Client Services Manager

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*







TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
21-Feb-2024 15:04

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SW-2	24A0627-01	Water	29-Jan-2024 10:15	29-Jan-2024 12:49



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
21-Feb-2024 15:04

## **Work Order Case Narrative**

### **Wet Chemistry**

The sample(s) were prepared and analyzed within the recommended holding times with the exception of pH which was sent to the lab outside of the holding time.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The matrix spike (MS) percent recoveries and the duplicate (DUP) relative percent difference (RPD) were within advisory control limits.





# Cooler Receipt Form

ARI Client: TRC

Project Name: Clalla Landfill

COC No(s): \_\_\_\_\_ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: \_\_\_\_\_

Assigned ARI Job No: 24A0627-7

Tracking No: \_\_\_\_\_ (NA)

**Preliminary Examination Phase:**

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES NO

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.) YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1249 10.7

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 3009708

Cooler Accepted by: KFC Date: 1/29/24 Time: 1249

**Complete custody forms and attach all shipping documents**

**Log-In Phase:**

Was a temperature blank included in the cooler? YES NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Ice Gel Packs Baggies Foam Block Paper Other: \_\_\_\_\_

Was sufficient ice used (if appropriate)? NA YES NO

How were bottles sealed in plastic bags? Individually Grouped Not

Did all bottles arrive in good condition (unbroken)? YES NO

Were all bottle labels complete and legible? YES NO

Did the number of containers listed on COC match with the number of containers received? YES NO

Did all bottle labels and tags agree with custody papers? YES NO

Were all bottles used correct for the requested analyses? YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES NO

Were all VOC vials free of air bubbles? NA YES NO

Was sufficient amount of sample sent in each bottle? YES NO

Date VOC Trip Blank was made at ARI: NA

Were the sample(s) split by ARI? NA YES Date/Time: \_\_\_\_\_ Equipment: \_\_\_\_\_ Split by: \_\_\_\_\_

Samples Logged by: [Signature] Date: 1/29/24 Time: 1314 Labels checked by: CB

**\*\* Notify Project Manager of discrepancies or concerns \*\***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

**Additional Notes, Discrepancies, & Resolutions:**

By: \_\_\_\_\_ Date: \_\_\_\_\_





TRC Companies, Inc 1180 NW Maple Street, Suite 310 Issaquah WA, 98027	Project: Olalla Landfill Project Number: 533022 Project Manager: Eric Caddy	<b>Reported:</b> 21-Feb-2024 15:04
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**SW-2**  
**24A0627-01 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Sampled: 01/29/2024 10:15
Instrument: [CALC] Analyst: RMS	Analyzed: 01/31/2024 08:39
Sample Preparation:	Extract ID: 24A0627-01
Preparation Method: [CALC]	
Preparation Batch: [CALC]	
Prepared: 01/31/2024	Final Volume: 1

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.0200	0.0534	mg/L	



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**SW-2**  
**24A0627-01 (Water)**

**Wet Chemistry**

Method: EPA 353.2	Instrument: LACHAT2 Analyst: RMS	Sampled: 01/29/2024 10:15 Analyzed: 01/31/2024 08:39
Sample Preparation:	Preparation Method: No Prep Wet Chem Preparation Batch: BMA0791 Prepared: 01/31/2024	Sample Size: 10 mL Final Volume: 10 mL Extract ID: 24A0627-01 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate + Nitrite as N		1	0.010	0.010	0.053	mg/L	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrite-N	14797-65-0	1	0.010	0.010	ND	mg/L	U



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**SW-2**  
**24A0627-01 (Water)**

**Wet Chemistry**

Method: SM 4500-H+ B-00	Instrument: Accumet AB150	Analyst: CDE	Sampled: 01/29/2024 10:15	Analyzed: 01/29/2024 18:59
Sample Preparation:	Preparation Method: No Prep Wet Chem	Preparation Batch: BMA0727	Sample Size: 50 mL	Extract ID: 24A0627-01 A
	Prepared: 01/29/2024		Final Volume: 50 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
pH		1	0.01	0.01	6.93	pH Units	H



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**SW-2**  
**24A0627-01 (Water)**

**Microbiology**

Method: SM 9222D Sampled: 01/29/2024 10:15  
Instrument: N/A Analyst: EML2 Analyzed: 01/30/2024 18:08

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24A0627-01  
Preparation Batch: BMA0716 Sample Size: 100 mL  
Prepared: 01/29/2024 Final Volume: 100 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Fecal Coliforms		1	1	1	ND	CFU/100 ml	U



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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BMA0727 - SM 4500-H+ B-00**

Instrument: Accumet AB150 Analyst: CDE

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>LCS (BMA0727-BS1)</b>						Prepared: 29-Jan-2024 Analyzed: 29-Jan-2024 18:59					
pH	7.00	0.01	0.01	pH Units	7.00		100	99.2-100.8			





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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BMA0791 - EPA 353.2**

Instrument: LCHAT2 Analyst: RMS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMA0791-BLK1)</b>						Prepared: 31-Jan-2024 Analyzed: 31-Jan-2024 08:36					
Nitrate + Nitrite as N	ND	0.010	0.010	mg/L							U
Nitrite-N	ND	0.010	0.010	mg/L							U
<b>LCS (BMA0791-BS1)</b>						Prepared: 31-Jan-2024 Analyzed: 31-Jan-2024 08:37					
Nitrate + Nitrite as N	0.511	0.010	0.010	mg/L	0.500		102	90-110			
<b>LCS (BMA0791-BS2)</b>						Prepared: 31-Jan-2024 Analyzed: 31-Jan-2024 08:38					
Nitrate + Nitrite as N	0.527	0.010	0.010	mg/L	0.500		105	90-110			
Nitrite-N	0.504	0.010	0.010	mg/L	0.500		101	90-110			
<b>Duplicate (BMA0791-DUP1)</b>						Source: 24A0627-01 Prepared: 31-Jan-2024 Analyzed: 31-Jan-2024 08:40					
Nitrate + Nitrite as N	0.054	0.010	0.010	mg/L		0.053			0.75	20	
Nitrite-N	ND	0.010	0.010	mg/L		ND					U
<b>Matrix Spike (BMA0791-MS1)</b>						Source: 24A0627-01 Prepared: 31-Jan-2024 Analyzed: 31-Jan-2024 08:41					
Nitrate + Nitrite as N	0.549	0.010	0.010	mg/L	0.494	0.053	100	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
<b>Matrix Spike (BMA0791-MS2)</b>						Source: 24A0627-01 Prepared: 31-Jan-2024 Analyzed: 31-Jan-2024 08:44					
Nitrite-N	0.512	0.010	0.010	mg/L	0.508	ND	101	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
<b>Matrix Spike Dup (BMA0791-MSD1)</b>						Source: 24A0627-01 Prepared: 31-Jan-2024 Analyzed: 31-Jan-2024 08:42					
Nitrate + Nitrite as N	0.533	0.010	0.010	mg/L	0.494	0.053	97.0	75-125	2.96	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
<b>Matrix Spike Dup (BMA0791-MSD2)</b>						Source: 24A0627-01 Prepared: 31-Jan-2024 Analyzed: 31-Jan-2024 08:48					
Nitrite-N	0.509	0.010	0.010	mg/L	0.508	ND	100	75-125	0.59	200	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											





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**Analysis by: Analytical Resources, LLC**

**Microbiology - Quality Control**

**Batch BMA0716 - SM 9222D**

Instrument: N/A

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMA0716-BLK1)</b>						Prepared: 29-Jan-2024 Analyzed: 30-Jan-2024 18:08					
Fecal Coliforms	ND	1	1	CFU/100 ml							U



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**Certified Analyses included in this Report**

Analyte	Certifications
<b>EPA 353.2 in Water</b>	
Nitrate + Nitrite as N	NELAP,DoD-ELAP,WADOE
Nitrite-N	WADOE,NELAP,DoD-ELAP
<b>SM 4500-H+ B-00 in Water</b>	
pH	WADOE,NELAP,WA-DW
<b>SM 9222D in Water</b>	
Fecal Coliforms	WADOE

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2025
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program, PJLA Testing	66169	02/28/2025
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2024
WADOE	WA Dept of Ecology	C558	06/30/2024
WA-DW	Ecology - Drinking Water	C558	06/30/2024



TRC Companies, Inc  
1180 NW Maple Street, Suite 310  
Issaquah WA, 98027

Project: Olalla Landfill  
Project Number: 533022  
Project Manager: Eric Caddy

**Reported:**  
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### Notes and Definitions

- H Hold time violation - Hold time was exceeded.
- U This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- [2C] Indicates this result was quantified on the second column on a dual column analysis.